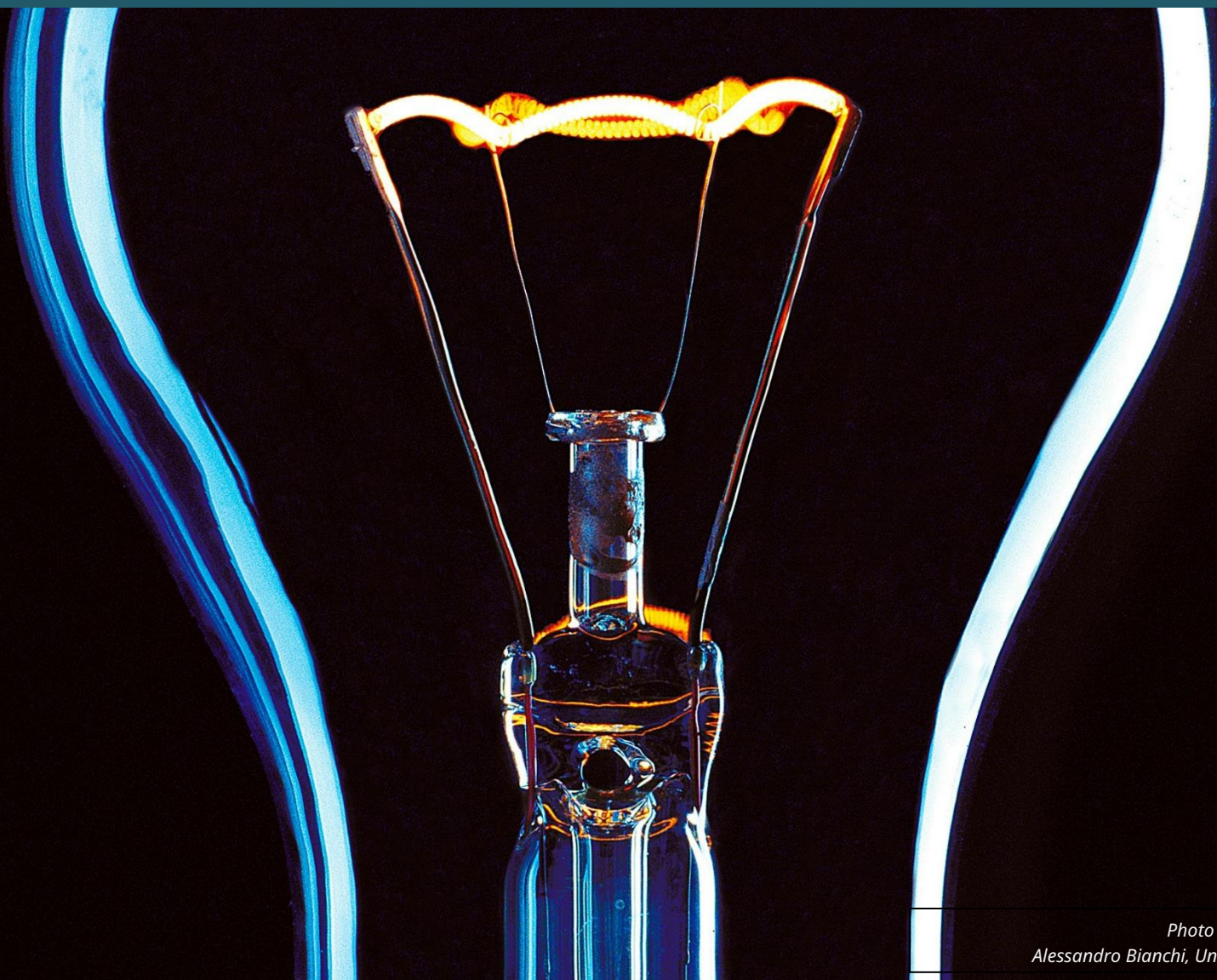


SUSTAINABLE PUBLIC PROCUREMENT FOR CLIMATE AND ENERGY INITIATIVES



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This document is targeted at local and regional governments, with the aim of providing guidance on integrating sustainable procurement processes into their activities, particularly as it relates to climate and energy projects.

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ABOUT THE 100% RENEWABLES CITIES AND REGIONS ROADMAP PROJECT

The 100% Renewables Cities and Regions Roadmap project facilitates the energy transition by raising local awareness on renewable energy sources, showcasing how local and national governments can create coordinated enabling frameworks and policies, exploring access to public and private sector finance, and building local renewable energy projects to address electricity, heating, and cooling. The project is implemented by ICLEI and funded by the German Federal Ministry for Economic Affairs and Climate Action (BMWK) through the International Climate Initiative (IKI).

ABOUT RENEW-SEA

The RENEW-SEA project is implemented by the ICLEI World Secretariat and the ICLEI Southeast Asia Secretariat. It aims to develop awareness and capacities related to sustainable energy and improve multi-level coordination in Indonesia, Malaysia, and Thailand.

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ICLEI - Local Governments for Sustainability is a global network working with more than 2,500 local and regional governments committed to sustainable urban development. Active in 125+ countries, ICLEI influences sustainability policy and drives local action for low emission, nature-based, equitable, resilient and circular development. ICLEI's Members and team of experts work together through peer exchange, partnerships and capacity building to create systemic change for urban sustainability.

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Glossary

Term	Definition
AI	Artificial Intelligence
AREI	Africa Renewable Energy Initiative
CAMMESA	Argentine Wholesale Electricity Market Clearing Company
CO₂	Carbon Dioxide
CONSIP	Concessionaria Servizi Informativi Pubblici
EE	Energy Efficiency
EIA	Environmental Impact Assessment
EMS	Environmental Management System
EPA	Environmental Protection Agency
EPD	Environmental Product Declaration
EPRA	Energy and Petroleum Regulatory Authority
ESCO	Energy Service Company
ESMS	Environmental and Social Management Standards
EU	European Union
EV	Electric Vehicle
FAQs	Frequently Asked Questions
FiT	Feed-in-Tariff
FSC	Forest Stewardship Council
GESIP	Green Economy Strategy and Implementation Plan
GGP	Green Government Procurement
GHG	Green House Gases
GPP	Green Public Procurement
GSA	General Services Administration
HVAC	Heating, Ventilation, and Air Conditioning
ISO	International Organization for Standardization
IT	Information Technology
KEN	Kebijakan Energi Nasional

KP	Global Knowledge Product
KPI	Key Performance Indicator
LCA	Life-cycle Analysis
LCC	Life-cycle Costing
LCCA	Life-cycle Cost Analysis
LCPDP	Least Cost Power Development Plan
LED	Light Emitting Diode
LRGs	Local and Regional Governments
MAPS	Methodology for Assessing Procurement Systems
MEMR	Ministry of Energy and Mineral Resources
MW	Megawatt
NHS	National Health Service
NZGP	New Zealand Government Procurement
OECD	Organization for Economic Co-operation and Development
PCF	Product Carbon Footprint
PPA	Power Purchase Agreement
PPS	Public Procurement Service
PV	Photovoltaic
RE	Renewable Energy
REIPPPP	Renewable Energy Independent Power Producer Procurement Program
RfP	Request for Proposal
RfQ	Request for Quotation
RfS	Request for Submission
ROI	Return on Investment
RUEN	Rencana Umum Energi Nasional
SDGs	Sustainable Development Goals
SMEs	Small and Medium Enterprises
SPP	Sustainable Public Procurement
UK	United Kingdom
UNEP	United Nations Environment Program
US	United States of America
ZEV	Zero-emission Vehicle

Definition of terms

Sustainable public procurement: The process of acquiring goods, services, works, and utilities to achieve value for money over the entire life cycle by taking into account environmental, social, and economic factors.

Life-cycle cost analysis: The approach of assessing the total cost of ownership over a product's lifespan, factoring in potential savings from reduced energy use, lower maintenance expenses, and minimized environmental impact.

Circular economy: An approach that focuses on minimizing waste and maximizing resource efficiency. It involves prioritizing the use of recycled materials in renewable energy infrastructure.

Green public procurement: The practice of prioritizing the purchase of goods, services, works, and utilities that have lower environmental impact in order to promote sustainability, reduce waste and support eco-friendly practices in the supply chain.

Tendering: The formal process by which suppliers are invited to compete, by submitting bids to provide goods, services, works, or utilities. It aims to achieve the best value by evaluating proposals and selecting the supplier that meets cost, quality, and other criteria such as sustainability and environmental considerations.

Sustainable practices: Procurement that focuses on making purchasing decisions that consider environmental, social, and economic factors by selecting products that conserve resources, reduce environmental harm, support ethical sourcing, promote fair labor and ensure long-term cost efficiency.

Life-cycle thinking: It involves assessing the greenhouse gas emissions of a product or service across its entire life-cycle, from production to disposal.

Sustainability criteria: These are the standards used to assess the environmental, social, and economic impacts of a product or service to ensure that purchasing decisions promote resource efficiency, reduce environmental harm and support ethical practices.

Executive Summary

The global transition to sustainable energy is vital for combating climate change, resource depletion, and social inequalities. In this context, Sustainable Public Procurement (SPP) has emerged as a crucial tool for incorporating sustainability into public procurement decisions. SPP is commonly defined as a procurement process that integrates sustainability principles into the purchasing decisions of public sector entities. SPP aligns procurement activities with broader environmental, social, economic, and innovation objectives, aiding the achievement of the United Nations' Sustainable Development Goals (SDGs) established in 2015.

Public entities wield significant purchasing power globally, giving them the potential to influence market behaviors toward sustainability. By integrating sustainability considerations into procurement processes, governments can drive more sustainable practices across industries. This Knowledge Product (KP) delves into the complexities of SPP, emphasizing its critical role in supporting the sustainable energy transition. It covers core principles, challenges, actionable solutions, and global case studies that showcase best practices to encourage widespread adoption of SPP.

Traditionally, procurement decisions have been driven by cost-efficiency, with a strong focus on selecting the lowest-priced options. SPP shifts this approach by considering long-term impacts. For instance, while renewable energy technologies might involve higher upfront costs compared to conventional fossil-fuel alternatives, they deliver long-term benefits such as lower greenhouse gas emissions, reduced operational costs, and improved durability.

SPP significantly contributes to environmental protection by promoting ecosystem preservation, reducing emissions, and fostering a circular economy. One of the core principles of SPP is Life-cycle costing (LCC), which accounts for the total cost of ownership, from production and use to disposal. LCC enables procurement professionals to make informed decisions, not just based on the initial price but also on long-term savings related to energy consumption, maintenance, and environmental impact. This approach ensures that procurement decisions are financially and environmentally sound.

Economically, SPP enhances efficiency by revealing the long-term financial benefits of sustainable choices. While sustainable products and services may seem more expensive at first glance, LCC demonstrates how energy-efficient options lead to significant cost savings over time due to reduced operating and maintenance costs. Additionally, SPP promotes investment in renewable energy technologies and sustainable infrastructure, stimulating economic growth by fostering new industries and creating job opportunities. This in turn strengthens the financial stability of both public institutions and local economies.

Socially, SPP promotes inclusion through support for fair labor practices, improved working conditions, and local job creation. In the renewable energy sector, SPP helps develop new industries and create employment opportunities, particularly in regions with limited access to traditional energy sources. By prioritizing socially responsible suppliers and enforcing labor and human rights standards, public procurement can have a positive impact on social equity, contributing to broader societal goals.

Despite the benefits of Sustainable Public Procurement (SPP), its implementation faces several challenges, including perceptions of higher initial costs, a lack of awareness and capacity among

procurement officials and suppliers, and the absence of standardized policies and guidelines. Many procurement officials perceive sustainable products as costlier due to higher upfront expenses, though LCC demonstrates their potential for long-term savings. Additionally, both procurement professionals and suppliers often lack knowledge of SPP's benefits and sustainability criteria, highlighting the need for comprehensive training and capacity-building initiatives. Furthermore, the lack of clear, enforceable policies mandating SPP adoption poses a significant barrier, unlike in regions like Europe where Green Public Procurement (GPP) is regulated. To facilitate consistent SPP adoption, other governments should establish policies and standardized frameworks that integrate sustainability criteria into procurement processes, ensuring alignment with national and international sustainability goals.

The SPP process, as outlined in the KP, begins with **securing funding and budget allocation**. This often involves collaborations between governments, international organizations, and financial institutions. Securing financial resources for sustainable procurement projects can be challenging, especially in regions with limited access to financial support. However, partnerships with international organizations and financial institutions can help secure the necessary funds for SPP initiatives.

The next phase involves **planning and needs assessment**, where procurement officials identify sustainability requirements and align procurement activities with strategic goals, such as reducing carbon emissions. This phase is crucial to ensuring that procurement decisions reflect long-term sustainability objectives and meet environmental and social criteria.

The tendering and supplier engagement phase follows, where procurement officials draft clear tender documents that include sustainability criteria. Early market engagement ensures that suppliers understand sustainability expectations and can offer products and services that meet these criteria. Successful SPP implementation relies on close collaboration between public entities and suppliers.

The final stages of SPP involve **implementation and monitoring**. Once contracts are awarded, procurement officials must ensure that the products, services, and works delivered meet the sustainability criteria outlined in the tender documents. Continuous monitoring is essential for tracking progress and ensuring suppliers comply with sustainability requirements. Risk management strategies should be developed proactively to address potential issues, such as supplier non-compliance or financial instability.

Global case studies from Argentina, Indonesia, and Kenya highlight how SPP can be applied in renewable energy procurement, offering insights for other countries to follow.

In Argentina, SPP has supported wind and solar energy projects through LCC, minimizing environmental impacts while ensuring economic efficiency. This approach showcases the importance of evaluating the total cost of ownership, illustrating how SPP contributes to long-term sustainability goals.

Indonesia's case study emphasizes energy efficiency and integrating environmental management systems into public procurement. These practices have improved the sustainability of procurement activities and promoted renewable energy development, highlighting the importance of integrating environmental management frameworks into procurement to address sustainability goals comprehensively.

In Kenya, SPP has been instrumental in procuring off-grid renewable energy solutions, particularly in remote regions with limited access to conventional energy sources. SPP has enhanced access to clean energy, promoted social equity, and addressed regional challenges related to energy access. The Kenyan case demonstrates how SPP can contribute to broader sustainability objectives while addressing specific local needs.

The KP provides a range of tools and best practices to guide procurement officials and suppliers in effectively implementing SPP. It includes guidelines and training modules to equip procurement teams with the necessary knowledge and skills to align procurement activities with sustainability goals.

In conclusion, SPP is a crucial enabler of the sustainable energy transition. This KP offers a comprehensive framework for understanding the complexities of SPP and its role in advancing sustainability. By addressing common challenges and offering practical solutions, the KP equips procurement officials, suppliers, and stakeholders with the tools and insights needed for effective SPP implementation. With support from global case studies and best practices, the KP emphasizes the need for a collaborative, multi-stakeholder approach to ensure SPP plays a pivotal role in the global shift toward sustainability.



1

INTRODUCTION



1 Introduction

1.1 Definition of sustainable public procurement¹

SPP is commonly defined as *“the process or instrument by which public sector organizations or the government meet their needs for goods, services, works, and utilities in a manner that achieves value for money on an entire whole-life basis, precisely by considering environmental, social and economic factors.”* Sustainable public procurement (SPP) has recently emerged as a key strategy for promoting environmental and social criteria within the tender documentation and to provide innovative solutions in public procurement. Ultimately, this benefits not only the organization but also society at large and the economy while minimizing any damage to the environment.

1.2 Principles of SPP²

SPP is based on several key principles that guide procurement practices towards sustainability:

Principle	Aspects
Environmental 	<ul style="list-style-type: none"> ➤ Environmental resource management ➤ Sustainable urban planning ➤ Carbon dioxide (CO₂) reduction ➤ Alternative energies, e.g., solar and wind ➤ Water management ➤ Sustainable agriculture ➤ Marine resources management ➤ Protection of ecosystems ➤ Pollution and waste management ➤ Clean drinking water ➤ Circular economy ➤ Climate resilience and adaptation ➤ Energy efficiency
Social 	<ul style="list-style-type: none"> ➤ Human rights ➤ Ethical supply chain ➤ Cultural and indigenous empowerment ➤ Community development ➤ Food security ➤ Local skills and employability development ➤ Anti-child labor and forced labor laws ➤ Fair trade ➤ Fair labor practices ➤ Supplier diversity ➤ Health and safety

¹ https://www.afdb.org/sites/default/files/2020/12/18/guidance_note_-_sustainable_public_procurement.pdf;

https://www.oneplanetnetwork.org/sites/default/files/handbook_spp.pdf

² https://www.afdb.org/sites/default/files/2020/12/18/guidance_note_-_sustainable_public_procurement.pdf; <https://www.upphandlingsmyndigheten.se/en/sustainable-public-procurement/>



	<ul style="list-style-type: none"> ➤ Gender equality, including universal education, women-owned business ➤ Child mortality and maternal health ➤ Healthy lives and well-being for all ➤ Social inclusion and equity
<p>Economic</p> 	<ul style="list-style-type: none"> ➤ Economic regeneration ➤ Sustainable economic development ➤ Emerging markets ➤ Development of SMEs ➤ Value for money ➤ Supply chain capacity development ➤ Poverty reduction ➤ Innovation and stimulation ➤ Cost-effectiveness
<p>Institutional</p> 	<ul style="list-style-type: none"> ➤ Business ethics ➤ Sustainable institutional development ➤ Governance and management ➤ Quality of teaching and learning ➤ Relations with the community ➤ Equality ➤ Encouraging strengthening systems ➤ Use of country systems ➤ Policies and targets ➤ Capacity building ➤ Technological integration

Table 1: Principles of SPP

1.3 Benefits and importance of SPP for local and regional governments³

For local and regional governments (LRGs), SPP represents a significant opportunity to leverage their purchasing power to drive sustainable development. The benefits of SPP for LRGs include:

1.3.1 Economic benefits

- **Cost savings:** By adopting SPP practices, local and regional governments can achieve long-term cost savings through energy-efficient products, reduced waste, and lower maintenance costs; especially by Life-cycle costing assessment which ensures the potential economic benefits of SPP. Investing in durable, high-quality goods can lead to fewer replacements and repairs, ultimately reducing expenses.

³ https://www.oneplanetnetwork.org/sites/default/files/handbook_spp.pdf;
https://www.oneplanetnetwork.org/sites/default/files/measuring_and_communicating_the_benefits_of_sustainable_public_procurement_spp_baseline_review_and_development_of_a_guidance_framework.pdf;
https://www.oneplanetnetwork.org/sites/default/files/measuring_and_communicating_the_benefits_of_sustainable_public_procurement_spp_baseline_review_and_development_of_a_guidance_framework.pdf

- **Stimulating local economies:** SPP can prioritize local suppliers, particularly small and medium-sized enterprises (SMEs), fostering local economic development. By encouraging local businesses to provide goods and services that meet sustainability criteria, governments can help create jobs and boost local economies.
- **Innovation and competitiveness:** The implementation of SPP also drives innovation in public procurement by promoting green innovation and technology. This encourages companies to innovate and differentiate themselves from competitors.

1.3.2 Environmental benefits

- **Reduction of environmental impact:** SPP promotes the purchase of goods and services that have a lower environmental footprint. This includes products that use efficient natural resources, generate less waste, and reduce greenhouse gas emissions. By prioritizing eco-friendly products, governments can significantly lessen their environmental impact.
- **Encouragement of sustainable practices:** Through SPP, governments can incentivize suppliers to adopt sustainable practices such as reducing waste, using renewable energy, and minimizing harmful chemicals. This not only leads to a more sustainable supply chain but also encourages broader adoption of sustainable practices across industries.
- **Conservation of resources:** SPP helps in conserving natural resources by encouraging the use of recycled and renewable materials. This supports the circular economy, where products are reused, remanufactured, and recycled, extending their life-cycles and reducing waste.

1.3.3 Social benefits

- **Promotion of social equity:** SPP can include social criteria such as fair labor practices, human rights adherence, and support for disadvantaged groups. By enforcing these criteria, governments can promote social equity and enhance the quality of life for their communities.
- **Improvement of public health:** By selecting products and services that are free from toxic substances and pollutants, local and regional governments can contribute to a healthier environment and improved public health. For example, choosing low-emission vehicles or non-toxic cleaning supplies can reduce health risks for both public employees and the community.
- **Enhancement of community well-being:** SPP fosters community engagement by aligning procurement practices with local values and needs. This can enhance the sense of ownership and pride among residents, contributing to overall community well-being and social cohesion.

1.3.4 Governance and policy benefits

- **Alignment with Sustainable Development Goals (SDGs):** SPP supports the achievement of various SDGs, including those related to responsible consumption and production, climate action, and sustainable cities and communities. By integrating SPP into procurement policies, governments can align their actions with global sustainability agendas.
- **Transparency and accountability:** SPP can enhance transparency and accountability in the procurement process. By clearly defining sustainability criteria and ensuring these are met, governments can build trust with citizens and stakeholders, demonstrating a commitment to ethical and responsible governance.
- **Risk management:** SPP helps governments mitigate risks associated with environmental degradation, social injustice, economic instability, and supply chain management disruptions. By choosing sustainable options, governments can avoid the negative impacts associated with unsustainable practices, such as regulatory penalties, reputational damage, and community opposition.

1.3.5 Strategic importance for LRGs

- **Leadership in sustainability:** LRGs play a critical role in leading by example in their communities. By adopting SPP, they can demonstrate a strong commitment to sustainability, influencing other sectors to follow suit and fostering a culture of sustainability.
- **Compliance with regulations and policies:** As sustainability regulations and policies continue to evolve, SPP ensures that local and regional governments comply with national and international standards. This proactive approach helps avoid legal challenges and fosters a proactive approach to sustainability.
- **Long-term planning and resilience:** SPP contributes to long-term planning and resilience by ensuring that procurement decisions consider future impacts and sustainability. This approach helps governments build resilient communities that can better withstand environmental, economic, and social challenges.

Summarily, SPP provides LRGs with a comprehensive framework to achieve economic, environmental, social, and governance goals. By integrating sustainability into procurement practices, LRGs are able to not only enhance their own operations, but also contribute significantly to the overall well-being of their communities and planet.

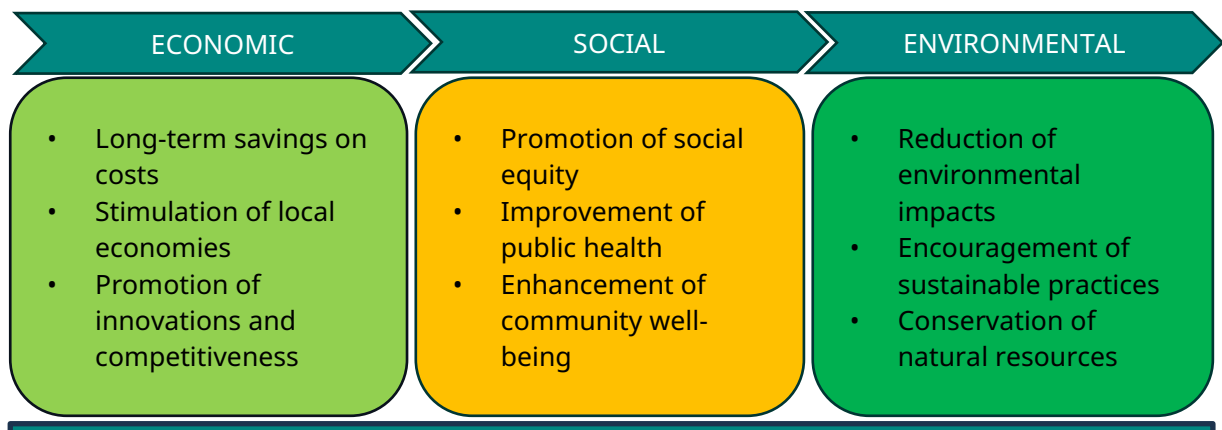


Figure 1: Benefits of SPP to LRGs

1.4 Challenges and solutions⁴

Whereas SPP offers several benefits for LRGs, their implementation has its fair share of challenges. Addressing the said challenges is key to fostering the effectiveness of SPP and ensuring that sustainability goals are achieved. Below are some of the common challenges faced by LRGs in the implementation of SPP, along with suitable solutions.

Low-capacity LRGs

⁴ <https://publication.sipmm.edu.sg/key-challenges-sustainable-procurement/>; <http://article.sapub.org/10.5923.j.ijcem.20211004.01.html>; https://www.researchgate.net/publication/354688775_Implementation_Challenges_of_Sustainable_Procurement_in_Ghana's_Public_Sector

1.4.1 Higher initial costs

- **Challenge:** Sustainable products and services often have higher upfront costs compared to conventional alternatives. This is compounded by procurement regulations in many countries, which require entities to prioritize "best value for money" in their tendering processes. This interpretation of best value often focuses on immediate costs, which may not align with the long-term benefits of SPP measures. Consequently, LRGs that adopt SPP measures risk exposing themselves to litigation for not adhering to procurement laws if sustainability is perceived as inflating initial costs.
- **Solution:** To address this, it is crucial to shift the focus from short-term cost considerations to long-term value. Governments can employ a life-cycle cost analysis (LCCA) approach, which evaluates the total cost of ownership over the product's lifespan, including potential savings from reduced energy consumption, lower maintenance costs, and minimized environmental impacts. This approach demonstrates that sustainable options, while more expensive initially, often deliver superior long-term financial and environmental benefits. Additionally, revising procurement regulations to explicitly include life-cycle cost analysis and environmental factors in the definition of "best value for money" can provide legal clarity and reduce the risk of litigation for local governments.

1.4.2 Limited availability of sustainable products

- **Challenge:** In some regions, sustainable products and services may be unavailable to meet specific procurement needs. This can make it difficult for procurement officers to find suitable sustainable options.
- **Solution:** To address this, it is crucial to shift the focus from short-term cost considerations to long-term value. Governments can employ an LCCA approach, which evaluates the total cost of ownership over the product's lifespan, including potential savings from reduced energy consumption, lower maintenance costs, and minimized environmental impacts. This approach demonstrates that sustainable options, while more expensive initially, often deliver superior long-term financial and environmental benefits.
- Moreover, governments can work closely with suppliers to encourage the development of sustainable products and services. This can be achieved through market engagement activities, such as pre-tender consultations, that communicate the demand for sustainable goods. Forming regional or international procurement partnerships can further expand access to sustainable products, making them more competitive in price. Additionally, subsidies or financial incentives to develop specific sustainable markets or activities can help stimulate the growth of the sector, reduce costs, and increase market availability, making it easier for local governments to adopt sustainable procurement practices without fear of litigation.

1.4.3 Lack of policy and regulatory framework

- **Challenge:** In some cases, there may be a lack of supportive policies and regulations that mandate or encourage SPP. Without a clear policy framework, procurement officials may lack the guidance needed to prioritize sustainability in purchasing decisions.
- **Solution:** Governments can develop and implement clear SPP policies and regulations that outline sustainability criteria and objectives. These policies should be aligned with national and international sustainability goals and provide a roadmap for integrating sustainability into procurement processes.

1.4.4 Lack of awareness and understanding

- **Challenge:** Most of the public officials and procurement officers may lack a comprehensive understanding of the SPP concept and its key benefits. The preceding lack of awareness results in resistance to change and failure to integrate sustainability into the procurement process.
- **Solution:** Providing training and educational programs for procurement officials could increase understanding and awareness of SPP. Workshops, seminars, and online courses can help build the capacity of public procurement staff to implement sustainable practices effectively. Peer-to-peer learnings between different contracting authorities would also be helpful.

Medium-capacity LRGs

1.4.5 Resistance to change

- **Challenge:** Resistance to change is a common issue in the public sector, where established practices and procedures are deeply ingrained. Implementing SPP may require changes in procurement processes, which can meet with resistance from staff accustomed to traditional methods.
- **Solution:** Engaging stakeholders throughout the organization in the development and implementation of SPP policies can help build buy-in and reduce resistance. Communicating the benefits of SPP, both for the organization and the broader community, can also help overcome resistance.

1.4.6 Difficulty in measuring and reporting impact

- **Challenge:** Measuring and reporting the impact of SPP can be challenging due to a lack of standardized metrics and data. This can make it difficult for governments to demonstrate the benefits of SPP and justify its continued use.
- **Solution:** Establishing a robust monitoring and reporting framework for SPP can help track progress and measure impact. Governments can adopt key performance indicators (KPIs) that align with sustainability goals, such as carbon footprint reduction, energy savings, or social inclusion metrics. Additionally, data analytics tools can be employed to evaluate the effectiveness of procurement decisions and their broader impact on sustainability objectives.

- Existing frameworks like the European Union’s Green Public Procurement Monitoring and Reporting guidelines, the UN Environment Program’s Sustainable Public Procurement Indicators, and the OECD’s SPP Monitoring Framework can serve as models for developing national or regional systems. These frameworks provide practical tools and standardized metrics to help track performance, making it easier to demonstrate the long-term benefits of SPP and justify its continued adoption.

1.4.7 Monitoring and evaluation

- **Challenge:** Ensuring that suppliers comply with sustainability criteria and avoiding greenwashing, which entails the practice of falsely claiming to be environmentally friendly, can be challenging. Suppliers may make sustainability claims that are not substantiated or fail to meet required standards.

Solution: To make sure vendors follow sustainable standards, governments should put in place stringent verification and auditing procedures. The veracity of their promises can be ascertained by using third-party certifications, carrying out frequent audits, and demanding regular sustainability reporting from vendors. In addition, ongoing monitoring and the establishment of a strong supplier evaluation and selection procedure can guarantee that contracts are only awarded to vendors who truly fulfil sustainability criteria. Increased transparency can be achieved by suppliers providing regular reports, which will make it simpler to identify and reduce the risks associated with greenwashing.

High-capacity LRGs

1.4.8 The complexity of evaluating sustainability

- **Challenge:** Evaluating the sustainability of products and services can be complex and time-consuming. Procurement officials may lack the expertise or tools needed to assess environmental, social, and economic impacts effectively.
- **Solution:** Developing standardized criteria and tools for evaluating sustainability can simplify the process. Governments can adopt third-party certifications and eco-labels as indicators of sustainability. Providing procurement officials with clear guidelines and checklists can also help in assessing the sustainability credentials of suppliers.

1.4.9 Navigating complex-decision making

- **Challenge:** Public procurement often involves balancing multiple objectives, such as cost, quality, and delivery time. Integrating sustainability into procurement decisions can add another layer of complexity, making it challenging to balance all objectives effectively.
- **Solution:** Creating a comprehensive procurement plan that includes cost, quality, delivery, and sustainability as a primary goal can assist in striking a balance between several goals. Sustainability criteria are taken into consideration without compromising other procurement goals when sustainability is prioritized in the procurement process and a weighted evaluation technique is used. Furthermore, sustainability itself tackles several issues at once. For instance, using renewable energy sources addresses problems with energy production while also lowering air pollution, promoting environmental preservation, and enhancing public health. Therefore, sustainability should not be seen as a stand-alone goal but rather as an efficient way to achieve more general procurement goals.

1.4.10 Supply chain constraints

- **Challenge:** Sustainable procurement can be hindered by supply chain constraints, such as the lack of transparency, limited supplier capacity, and inadequate sustainability practices among suppliers.
- **Solution:** Building strong relationships with suppliers and encouraging them to adopt sustainable practices can help address supply chain constraints. Governments can provide training and support to suppliers to help them meet sustainability criteria and engage in capacity-building initiatives that enhance suppliers' ability to provide sustainable products and services. Additionally, prioritizing local production and shorter supply chains can make it easier to ensure transparency, as it allows for closer oversight of the production process. This approach can also reduce the environmental impact affiliated with long-distance transportation while supporting local economies.

2

ADOPTING SUSTAINABLE PROCUREMENT PRACTICES

2 Adopting SPP Practices⁵

2.1 Integrating sustainability in the SPP process

As we said above, integrating sustainability into decision-making in the public procurement process is a vital step towards achieving broader sustainability goals. Below are the key aspects of integrating sustainability into the SPP process:

2.1.1 Identifying sustainability priorities

Each public authority may have different sustainability priorities based on their specific needs and context. Identifying these priorities involves:

- **Needs identification:** Considering what and how the public authorities are buying. Indeed, detecting the subject matter of the contract which informs the market about what a contracting authority is buying is important to understand if a market dialogue could be useful.
- **Stakeholder engagement:** Starting a market dialogue could be helpful to understand the market offers regarding environmental and social aspects in products and services in order to determine which kind of procedure is better to choose and how to draft technical specifications and award criteria. Moreover, encouraging the participation of MSMEs and startups is a key to including sustainability into tender documents.
- **Setting environmental and social objectives:** Based on the identified needs, public authorities should set specific sustainability objectives and targets. It is important to check if there is a list of GPP criteria settled for some products or services. Moreover, considering the best studies carried on by the more sustainable contracting authorities could be helpful in this context.

2.1.2 Establishing a sustainability framework

The first step in integrating sustainability into the SPP process is establishing a **robust framework**. This basically entails:

- **Training and capacity building of procurement officials:** Procurement officials and stakeholders should be trained on sustainability issues, including how to apply sustainability criteria in procurement decisions. Sustainable procurement involves multiple departments, for instance, finance, legal, and environmental. Cross-departmental training sessions can ensure that all stakeholders understand the sustainability goals and criteria, creating cohesion and eliminating silos. Collaboration across procurement agencies can enhance the overall impact of sustainable procurement. Training programs should be tailored to procurement staff, emphasizing how to integrate sustainability criteria into tender documentation: assessing the possibility of introducing green products or delivering services taking into account social aspects of the work, checking if green products are indicated in a list of GPP criteria, and conducting life-cycle costing in procurement process etc. Training should also cover how to evaluate suppliers based on their sustainability performance and ensure compliance with regulations. Procurement professionals need to be trained on tools like LCCA, eco-label certifications, and third-party sustainability audits. Capacity building ensures that those involved in procurement understand the importance of sustainability and how to evaluate suppliers and products

⁵ https://www.researchgate.net/figure/Strategies-to-Integrate-Sustainability-through-Project-Planning-Process-and-the_tbl1_264712328; <https://www.ieomsociety.org/proceedings/2021india/42.pdf>; https://www.afdb.org/sites/default/files/2020/12/18/guidance_note_-_sustainable_public_procurement.pdf; <http://norden.diva-portal.org/smash/get/diva2:1554600/FULLTEXT01.pdf>

accordingly. For instance, the City of Toronto offers training programs for procurement officials on incorporating sustainability into procurement processes. These programs cover LCCA, eco-label certifications, and supplier evaluation. Similarly, the U.S. Environmental Protection Agency (EPA) provides resources and training on sustainable procurement practices.

- **Supplier capacity building:** Suppliers also need support to meet the sustainability criteria set out in public procurement policies. Training initiatives for suppliers can focus on improving their understanding of sustainable products, ethical practices, and environmental impact reduction. Offering training on energy efficiency, waste reduction, and ethical labor practices can help suppliers align with sustainability goals. Foster initiatives that bring together cities, industry, investors and other stakeholders in order to know the grade of maturity about sustainability in the market and share information about the improvement of environmental and social aspects in tender (for instance the Smart Cities Marketplace, an initiative promoted by the European Commission could be seen as inspiration). For instance, the City of Melbourne's Sustainable Procurement Policy includes initiatives to support suppliers in meeting sustainability criteria. This includes training programs focused on energy efficiency, waste reduction, and ethical labor practices. The City of Amsterdam also provides workshops and resources for suppliers to help them align with sustainability goals.
- **Development of e-learning platforms:** Online learning platforms can be developed to provide continuous, accessible, and scalable training for procurement professionals and suppliers. These platforms can offer modules on topics such as sustainable procurement frameworks, sustainable product certifications, and the implementation of international standards. A good instance is the United Nations' Sustainable Procurement E-Learning platform which offers online courses and resources for procurement professionals and suppliers.
- **Mentorship and advisory services:** Mentoring programs that connect procurement officials with sustainability experts can provide guidance on specific challenges related to sustainable procurement. Access to advisory services from professionals with expertise in sustainable supply chains, green technologies, and ethical sourcing can help build the procurement community's capacity to implement sustainability measures. For example, São Paulo's procurement department has established mentorship programs that link procurement officers with green technology experts, while Stockholm offers advisory services on sustainable supply chain management and ethical sourcing strategies.
- **Policy development and sustainability criteria:** Governments and public organizations must develop clear policies that mandate or encourage the consideration of sustainability in procurement. These policies should align with national and international sustainability goals, such as the United Nations SDGs. For instance, the City of Vancouver's Green Procurement Policy mandates that sustainability considerations be integrated into procurement processes. This policy aligns with national goals, such as Canada's commitment to the Paris Agreement and the SDGs. For instance, Cape Town's Green Procurement Policy requires sustainability criteria to be embedded in procurement processes, aligning with South Africa's broader sustainability commitments. Similarly, the European Union's Public Procurement Directive encourages its member states to include environmental and social aspects in procurement. Ecolabels and other tools can help establish technical specifications, evaluation criteria, and methods for verifying sustainability compliance. Additionally, developing criteria that reflect environmental, social, and economic sustainability is critical, with factors such as energy efficiency, reduced carbon footprint, fair labor practices, and life-cycle cost-effectiveness being key considerations.

2.1.3 Incorporating sustainability into procurement practices

Once the framework and needs are identified, sustainability must be incorporated into tender documentation. This involves:

- **Drafting specifications:** Drafting technical specifications which consider the sustainability of products and services, identifying specific award criteria into best value for money criteria, establishing contracting performance clauses to monitor sustainability during the execution of the contract. Where the government has drawn up Green Government Procurement (GGP) it is useful to include them in the tender specification such as technical specifications, award criteria or contracting performance clauses. Eco labels could be included in tender documentation as technical specifications.
- **Life-cycle cost analysis (LCCA):** Evaluating the total cost of ownership, including the initial purchase price, operating costs, maintenance, and disposal costs. LCCA helps identify products that may have a higher upfront cost but offer long-term savings and sustainability benefits.
- **Supplier evaluation and development:** Implementing evaluation criteria that recognize the contribution of certain suppliers, such as their potential for sustainability as indicated in tender documentation.

2.2 Environmental considerations for SPP

The environmental aspects of SPP focus on minimizing the ecological footprint of public sector purchases. As illustrated above, the SPP process integrates environmental considerations into the procurement process. One of the main ways to emphasize environmental sustainability is by prioritizing products and services that have reduced environmental impacts throughout their life-cycle costing, in the context of a circular economy.

2.2.1 Product carbon footprint⁶

A product's carbon footprint (PCF) refers to the total amount of greenhouse gases (GHG), primarily CO₂, emitted throughout the product's life-cycle. In SPP, evaluating and reducing the carbon footprint of purchased products and services is essential for achieving environmental goals, such as reducing GHG emissions and mitigating climate change. The importance of considering PCF in the SPP process includes:

- **Reduction in GHG emissions:** SPP represents a significant portion of a country's total expenditures, making it a powerful tool for reducing GHG emissions. By selecting products with lower carbon footprints, public entities can directly contribute to national and global climate targets.
- **Driving market demand for low-carbon products:** Governments and public institutions are large consumers, and their procurement decisions can drive demand for low-carbon products. This stimulates innovation and encourages companies to develop products with reduced carbon footprints.
- **Life-cycle thinking:** Considering the carbon footprint of a product aligns with the life-cycle approach in SPP. It involves assessing the GHG emissions at each stage of a product's life-cycle, from production to disposal. This ensures that the environmental impact is minimized throughout the product's entire lifespan, rather than focusing only on the initial purchase phase.

⁶ <https://www.ecologic.eu/sites/default/files/publication/2023/33007-Report-Public-Procurement-for-Climate-Neutrality.pdf>; https://www3.weforum.org/docs/WEF_Green_Public_Procurement_2022.pdf; https://www.sustainability.vic.gov.au/Procurement/Introduction-to-Sustainable-Procurement/Sustainable-Procurement-Definition-and-Key-Considerations?trk=article-ssr-frontend-pulse_little-text-block; <https://info.mercell.com/en/blog/sustainable-public-procurement-blog/>

- The integration of life-cycle thinking in procurement helps avoid “carbon leakage,” where emissions are simply shifted from one stage to another rather than being genuinely reduced.
- When local governments prioritize products with lower carbon footprints, it incentivizes manufacturers to innovate and reduce emissions in their production processes. This shift not only benefits the environment but can also lead to cost savings over the product's life-cycle through improved efficiency and reduced operational costs.
- **Compliance with environmental standards and regulations:** Many governments are setting carbon reduction targets and adopting stricter environmental regulations. SPP that accounts for product carbon footprints, ensures compliance with these standards, helping public institutions avoid penalties and contribute to national climate commitments.
- Certifications like the International Organization for Standardization (ISO) 14067 (Carbon Footprint of Products) provide standardized methods for measuring and reducing carbon footprints, which can be incorporated into procurement criteria.

Integrating the PCF into sustainable public procurement policies is crucial for reducing the public sector's environmental impact. By selecting low-carbon products and services, governments can contribute to climate goals, stimulate green markets, and set an example for the private sector and consumers. Addressing the challenges associated with data availability and capacity building will be crucial for the successful integration of PCF assessments into public procurement processes.

2.2.2 Environmental standards and impacts⁷

Environmental standards provide guidelines for SPP by establishing criteria and benchmarks to ensure that environmental factors are considered during the procurement process. Important environmental standards for SPP include:



Figure 2: SPP environmental standards

- **International certification.** The **ISO 14000** family of standards provides a framework for organizations to manage their environmental responsibilities. The most widely recognized standard in this series is **ISO 14001**, which outlines requirements for EMS. Public procurement agencies often use **ISO 14001** certification as a criterion for selecting suppliers, ensuring that environmental management practices are embedded in their operations. **ISO 14040** standards

⁷ https://www.oneplanetnetwork.org/sites/default/files/handbook_spp.pdf; <https://www.unep.org/explore-topics/resource-efficiency/what-we-do/sustainable-public-procurement>; <https://www.mapsinitiative.org/methodology/MAPS-Sustainable-Public-Procurement-Module-v2.pdf>; <https://documents1.worldbank.org/curated/en/157141636056129273/pdf/Green-Public-Procurement-An-Overview-of-Green-Reforms-in-Country-Procurement-Systems.pdf>; <https://www.mdpi.com/2071-1050/15/3/2817>

focus on life-cycle assessment (LCA), which is crucial for evaluating the environmental impacts of products throughout their life-cycle. This helps procurement officials make informed decisions by considering the full environmental footprint of the products and services they procure. **ISO 14024** - Environmental labels and declarations: This standard helps identify products and services that have a reduced environmental impact. **ISO 20400** - Sustainable Procurement: This is the main certification dedicated to sustainable procurement. It provides guidelines on how to integrate sustainability into procurement processes, considering the entire life-cycle of products and services, the environmental, social and economic impact. **ISO 50001** - Energy Management Systems: This standard specifies requirements for establishing, implementing, maintaining and improving an energy management system.

- **Eco-labels.** EU Ecolabel, Energy Star, Forest Stewardship Council (FSC) certification, and Cradle to Cradle certification are examples of eco-labels that set environmental standards for products. These labels indicate that products meet specific environmental criteria, such as reduced energy consumption, sustainable resource use, or minimal environmental harm during production. Public procurement policies often prioritize products with recognized eco-labels, making it easier for procurement officers to identify environmentally preferable products. As we saw above, environmental labels can be included in the selection criteria for sustainable procurement.
- **Green public procurement criteria.** Many countries and regions, particularly in the European Union (EU), have developed GPP criteria, which set specific environmental performance requirements for products and services purchased by public authorities. These criteria cover a wide range of sectors, including construction, transport, food, and office supplies and are constantly expanding.
- **Environmental product declarations.** Environmental product declarations (EPDs) are standardized and verified documents that provide transparent information about the environmental performance of products. They include data on raw material acquisition, energy use, emissions, waste generation, and other environmental impacts throughout the product's life-cycle. EPDs help procurement officials make informed decisions based on environmental criteria.

These analyzed tools ensure that public sector spending supports environmental protection, resource efficiency, and pollution reduction. By adhering to recognized standards such as ISO certifications and eco-labels, public procurement agencies can reduce their environmental impacts and contribute to broader sustainability goals. Despite challenges, the adoption of these sustainable tools plays a crucial role in shifting markets toward greener products and fostering a more sustainable economy.

2.3 Stages and activities of the SPP process⁸

The public procurement can be divided into four stages, each with a specific activity aimed at integrating sustainability considerations.

⁸ <https://thedocs.worldbank.org/en/doc/1d103f001ad2288cd3a0c2a18db76ca5-0290012024/original/SUSTAINABLE-PROCUREMENT-CH1-16574.pdf>

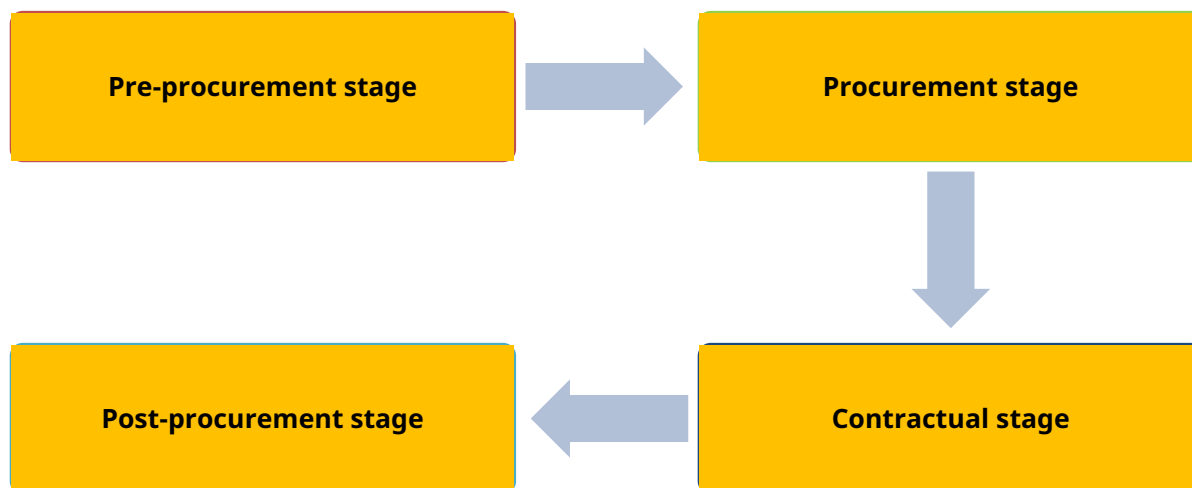


Figure 3: Stages of the SPP process

2.3.1 Pre-procurement stage

The pre-procurement phase includes all activities ranging from the planning of the tender to the design of the object of the contract. This stage is critical for setting the foundation for sustainable procurement.

- **Needs assessment:** This involves identifying and analyzing the needs of the organization to ensure that they align with sustainability objectives. This assessment includes considering whether the purchase is necessary or if alternative solutions, such as leasing or sharing, might be more sustainable.
- **Engaging stakeholders:** Engaging with internal and external stakeholders to gather input and build support for sustainable procurement. This engagement helps ensure that the procurement process considers a diverse range of perspectives and expertise.
- **Market research and analysis:** Conducting market research to understand the availability of sustainable products and services. This research helps identify suppliers who are capable of meeting sustainability criteria and assess market trends.
- **Securing funding:** Identifying and securing funding sources that support sustainable procurement initiatives. This may involve applying for grants or allocating budget resources specifically to begin the procurement process.
- **Type of procedure:** After finalizing the tender strategy, choose the most suitable procurement procedure.
- **Drafting specifications:** Drafting technical specifications which consider the sustainability of products and services, identifying specific award criteria into best value for money criteria, establishing contracting performance clauses to monitor sustainability during the execution of the contract. Where the government has drawn up GGPs it is useful to include them in the tender documentation as technical specifications, award criteria or contracting performance clauses.
- Eco labels could be included in tender documentation as technical specifications for example.
- **Risk assessment:** This is a critical process that involves identifying, evaluating, and mitigating potential risks associated with the environmental, social, economic, and regulatory aspects of the procurement process. Through this process, negative impacts such as environmental degradation, financial losses, social injustices and noncompliance are avoided during the procurement process.

- **Life-cycle costing (LCC):** LCC evaluates the total cost of a product, service, or project throughout its entire life-cycle. Integrating all costs including costs related to use, operation maintenance, and disposal into the upfront cost helps to make sustainable decisions that emphasize the long-term economic and environmental benefits of a product.

2.3.2 Procurement stage

The procurement stage involves from the publication of the tender documents to the awarding of the contract. Key activities in this stage include:

- **Tender preparation and publication:** Preparing Request for Quotation (RfQ) or Request for Proposal (RfP), or Request for Submission (RfS) documents that clearly outline sustainability requirements. By choosing “best value for money” as award criteria, contracting authorities have more probability to receive sustainability products or services from suppliers, because in this way it is possible to check the quality beside the price only.
- The technical offers should be filled up according to what was decided in the award criteria transposed into “request for proposal” which is the most important document to check sustainability.
- **Supplier evaluation:** Evaluate potential suppliers should be based on their technical and financial capabilities, their experience and track record, as well as their ability to provide sustainable and innovative solutions. This evaluation helps to create a shortlist of suppliers who are capable of delivering sustainable goods and services.
- **Bid evaluation and selection:** The evaluation process should include a scoring system that gives weight to sustainability aspects according to the award criteria established in tender specifications. The bid evaluation process is distinct and separate from the supplier selection process. The bid evaluation process must provide a fair, transparent, and accountable method for evaluating supplier bids based on balancing sustainability and other non-financial factors with cost.
- **Contract award and negotiation:** Awarding contracts to suppliers who meet the tender specifications and result on the top of the scoring system regarding award criteria focused on sustainability will win the contract. In some procedures, there is room for negotiation with suppliers except for minimum requirements asked in call for tender; in these cases, some clauses regarding sustainability could be the object of negotiation.

2.3.3 Contractual stage

This stage focuses on putting the terms set up in the Tender Document into action, with an emphasis on sustainability. To do so, the following aspects need to be reflected in the contract:

- **Project Planning:** Detailed planning to ensure that the activities of the contract resulting from the procurement process support sustainable outcomes. This includes setting timelines, resource allocation, and defining roles and responsibilities.
- **Risk Mitigation:** Identifying and addressing potential risks that could impact the sustainability of the activities stated in the contract. This involves developing strategies to mitigate risks, such as supply chain disruptions, non-compliance with sustainability standards, or financial constraints.
- **Stakeholder engagement:** Continuous engagement with stakeholders to ensure their needs and concerns are addressed throughout the implementation phase. Effective stakeholder management helps maintain support for sustainability initiatives and fosters collaboration.

- **Environmental and Social Management Standards (ESMS):** The service provider will need to adhere to the ESMS of the Tendering Agency.

2.3.4 Post-procurement stage

The post-procurement stage involves monitoring and managing the contract to ensure that sustainability commitments are met in the long-term.

- **Contract management:** Monitoring the performance of suppliers to ensure they adhere to the sustainability criteria outlined in the contract. This can include regular audits, reporting requirements, and performance reviews. In order to measure the benefits associated with sustainable procurement, related performance measures and reporting requirements must be specified in the tender document. Contracts should include clauses that ensure compliance with sustainability standards throughout the contract period, under penalty of paying penalties that could lead to future exclusion.
- **Performance evaluation and reporting:** Evaluating the performance of the procurement process and the sustainability outcomes achieved. This evaluation helps identify successes and areas for improvement, providing valuable insights for future procurement activities.
- **Continuous improvement:** Continuously improving the SPP process by learning from past experiences, incorporating feedback from stakeholders, and staying up to date with emerging sustainability trends and best practices.
- **Procurement KPI:** Procurement KPIs (Key Performance Indicators) are key performance indicators used to measure and monitor the effectiveness and efficiency of procurement processes within an organization. Among the indicators related to sustainability, there are the Sustainability Metrics, which evaluate the contribution of procurement activities to sustainability objectives.



3

CASE STUDIES

3 Case Studies by Country and Sector

3.1 Case study by country

3.1.1 Energy-efficient lighting Argentina⁹

Introduction

Argentina has emerged as a leader in integrating sustainable practices into its public procurement processes, largely due to a strong legal framework that mandates the inclusion of environmental and social criteria. Central to these efforts is the Public Procurement Law (Ley 24.156), which emphasizes prioritizing environmentally friendly goods and services and encourages public entities to consider the life-cycle impact of products.

Challenge

Despite this robust framework, Argentina faced significant challenges in addressing high energy consumption and associated costs in urban areas. Buenos Aires, in particular, struggled with outdated lighting systems that contributed to excessive energy use and financial burdens on the city's budget.

Solution

In response, Buenos Aires initiated an energy-efficient lighting project aimed at replacing traditional lighting systems in public buildings with energy-efficient alternatives. This project was guided by the principles outlined in Ley 24.156, ensuring that sustainability criteria were at the forefront of procurement decisions.

Outcome

The implementation of this project resulted in a remarkable 40% reduction in energy consumption, demonstrating the tangible benefits of sustainable public procurement. Additionally, this initiative has served as a model for other municipalities across Argentina, reinforcing the importance of sustainability criteria in public tenders and paving the way for broader adoption of green procurement practices nationwide. The success of Buenos Aires' project illustrates how effective public procurement can lead to significant environmental and economic improvements, setting a precedent for future initiatives throughout the country.

3.1.2 Green building in Indonesia¹⁰

Introduction

Indonesia has made significant strides in aligning its public procurement strategies with national goals for sustainable development and environmental stewardship. A key instrument in this effort is Government Regulation No. 43/2020 on Public Procurement, which emphasizes the necessity of selecting goods and services that meet environmental standards. This regulation has been instrumental in embedding sustainability into public procurement practices at both national and regional levels.

Challenges

⁹ https://gicn-on-sp.org/fileadmin/user_upload/Buenos_Aires/City_of_Buenos_Aires_GLCN_on_SP_Profile.pdf

¹⁰ <https://frw.studenttheses.ub.rug.nl/3073/1/fbudianto.pdf>

Despite the strong regulatory framework, Indonesia faces several challenges in implementing SPP. These include a lack of awareness and understanding of sustainability principles among procurement officials, limited access to sustainable products, and insufficient capacity within local governments to enforce and monitor compliance with environmental standards. Additionally, there may be resistance to change from traditional procurement practices, which can hinder the adoption of innovative solutions.

Solution

To address these challenges, Indonesia has initiated a collaboration with the Green Building Council Indonesia for public infrastructure projects. This partnership ensures that sustainable building materials, energy-efficient designs, and environmentally conscious construction practices are mandated in public projects. A notable example of this initiative is the construction of government office buildings in Jakarta, which adhered to stringent green building standards.

Outcome

As a result of these efforts, the Jakarta office buildings utilized sustainable materials, incorporated energy-efficient systems, and adopted water-saving technologies. This project significantly reduced the carbon footprint of public buildings, contributing to Indonesia's commitments under the Paris Agreement. Furthermore, it serves as a benchmark for future infrastructure projects across the country, showcasing how effective public procurement can lead to substantial environmental benefits while promoting sustainability as a core principle in governmental operations. Through these initiatives, Indonesia is paving the way for a more sustainable future in public procurement practices.

3.1.3 Rural healthcare facilities in Kenya¹¹

Introduction

Kenya is strongly committed to sustainable development through its public procurement strategies, guided by key legislative and policy frameworks such as the Public Procurement and Asset Disposal Act (2015) and the Green Economy Strategy and Implementation Plan (GESIP). These frameworks are designed to promote the procurement of goods and services that align with environmental sustainability and social equity goals.

Challenges

Despite these robust frameworks, Kenya faces significant challenges in implementing SPP. Many rural healthcare facilities have historically relied on unstable grid power, which hampers the delivery of essential health services. The lack of reliable electricity affects operational efficiency and poses risks to patient care, particularly in emergencies where consistent power is critical for medical equipment and refrigeration of vaccines.

Solution

To address these challenges, the Kenyan government prioritized deploying solar energy systems in rural healthcare facilities through its sustainable public procurement framework. By collaborating with organizations like Energy 4 Impact, the government facilitated the installation of solar energy solutions

¹¹ <https://energy.go.ke/sites/default/files/KAWI/Publication/KNEECS%20Implementation%20Plan29.11.21.pdf>; https://www.kisumu.go.ke/wp-content/uploads/100RE_Terms-of-Reference_-_Development-of-a-finance-ready-RE-and-EE-project-in-Kisumu-county-Kenya.pdf; <https://energy4impact.org/news/project-jua-clinics-serving-rural-vaccination-hubs-kenya-thanks-reliable-refrigeration>;

in clinics that previously struggled with unreliable power sources. This initiative ensured that healthcare centers could access a stable and sustainable power supply, significantly improving their operational capabilities.

Outcome

The implementation of solar energy systems has led to substantial improvements in healthcare delivery in rural areas. Facilities such as the Kichangachini and Mata clinics have reported enhanced service provision, including improved diagnostic capabilities and reliable refrigeration for vaccines. As a result, these clinics can now provide critical health services more effectively, reducing operational costs and ensuring continuous power supply. This project not only addresses environmental sustainability by utilizing renewable energy but also enhances social equity by improving healthcare access in underserved regions. The success of the solar energy initiative exemplifies how sustainable public procurement can effectively tackle both environmental and social challenges, paving the way for broader adoption of similar practices across Kenya.

3.1.4 Low-emissions public transport in Germany¹²

Introduction

The European Union (EU) has taken a leading role in promoting SPP across its member states, supported by a comprehensive set of directives and regulations. The EU's GPP criteria are designed to assist member states in integrating sustainability into their procurement processes, establishing ambitious targets aimed at reducing the environmental impact of public spending.

Challenges

Despite these efforts, the implementation of SPP faces several challenges. One significant issue is the variability in uptake among member states, as GPP practices are voluntary and not uniformly adopted. This inconsistency can lead to disparities in environmental standards and procurement practices across the EU. Additionally, there is a misconception that environmentally friendly products and services are more expensive, which can deter procurement officials from prioritizing sustainable options. Furthermore, the lack of mandatory targets for GPP means that many public authorities may not feel compelled to adopt these practices fully.

Solution

A notable example of successful SPP in Europe is Germany's initiative to procure low-emission vehicles for public transport. In line with its commitment to reducing greenhouse gas emissions, Germany's public transport authorities launched a program to replace traditional diesel buses with electric and hybrid models. This initiative was supported by the EU's GPP criteria, which guided the selection of sustainable transportation solutions.

Outcome

The transition to low-emission vehicles has resulted in a significant reduction in the carbon footprint of public transportation in Germany, contributing to improved air quality in urban areas. This initiative not only aligns with the EU's broader environmental goals but also serves as a model for other member states looking to enhance their sustainable procurement practices. By demonstrating the tangible

¹² <https://www.clientearth.org/media/10lfzlu/briefing-competitive-eu-public-procurement.pdf>; https://sustainable-procurement.org/fileadmin/user_upload/layout/Documents/Buying-Green-Handbook-3rd-Edition.pdf

benefits of SPP, Germany's program reinforces the importance of integrating sustainability criteria into public tenders and encourages further adoption of green procurement practices across Europe. Ultimately, these efforts contribute to a more sustainable future while addressing pressing environmental challenges faced by member states.

3.1.5 Public-private partnerships in the Netherlands

Introduction

The Netherlands has implemented the “Green Deals” program to foster partnerships between the government and the private sector, aiming to advance circular economy principles in procurement. This initiative focuses on promoting sustainable practices, particularly within the construction sector, to enhance resource efficiency and minimize waste.

Challenges

Despite the potential benefits, the implementation of circular economy principles in procurement faces several challenges. These include resistance from traditional industries accustomed to conventional practices, a lack of awareness about the advantages of using recycled materials, and difficulties in changing established waste management practices. Additionally, there may be regulatory barriers that hinder the adoption of innovative solutions in public infrastructure projects.

Solution

To tackle these challenges, one of the key focuses of the Green Deals program is to promote the use of recycled materials and innovative waste management practices in public infrastructure projects. By collaborating with stakeholders in the construction sector, the program encourages the integration of sustainable materials and methods into procurement processes.

Outcome

As a result of these efforts, there has been a significant reduction in resource consumption and waste generation associated with public infrastructure projects in the Netherlands. This initiative not only reinforces the role of SPP in achieving a sustainable circular economy but also serves as a model for other countries looking to implement similar practices. By demonstrating the effectiveness of integrating circular economy principles into procurement, the Green Deals program paves the way for broader adoption of sustainable practices across various sectors.

3.1.6 Sustainable procurement in the United States¹³

Introduction

In the United States, President Biden's Executive Order 14008 mandates that all government procurement be sustainable by 2050. This ambitious target reflects the federal government's commitment to using its purchasing power to promote sustainability and address climate change.

Challenges

Implementing this ambitious goal presents several challenges. Federal agencies must transition from traditional procurement practices to sustainable ones, which can involve significant changes in processes and supplier relationships. Additionally, there may be concerns about the costs associated with sustainable options compared to conventional products and services, leading to potential resistance from procurement officials accustomed to prioritizing short-term savings.

Solution

A landmark initiative under this executive order is the U.S. federal government's procurement of renewable energy for its buildings. By prioritizing the transition to renewable energy sources such as solar and wind power, federal agencies are actively working to reduce their energy costs and carbon emissions. This initiative is part of a broader strategy aimed at achieving net-zero emissions across federal operations.

Outcome

¹³ https://www.oneplanetnetwork.org/sites/default/files/from-crm/sustainable_public_procurement_a_global_review_2013.pdf;
https://www.oneplanetnetwork.org/sites/default/files/sustainable_public_procurement_implementation_guidelines.pdf

The shift to renewable energy has resulted in significant reductions in both energy costs and GHG emissions for federal buildings. This initiative not only contributes to the federal government's sustainability goals but also serves as a model for other public entities seeking to enhance their sustainable procurement practices. By demonstrating the effectiveness of integrating sustainability into procurement, the U.S. government is paving the way for a more sustainable future while addressing critical environmental challenges.

3.1.7 Sustainability criteria in Canada¹⁴

Introduction

In Canada, the City of Vancouver has set a high standard for SPP through its “Greenest City Action Plan.” This initiative establishes stringent sustainability criteria for the procurement of goods and services, covering a wide range of items from office supplies to construction materials.

Challenges

Despite its ambitious goals, Vancouver faces challenges in implementing these sustainability criteria effectively. These include resistance from suppliers who may not meet the required standards, potential higher costs associated with sustainable products, and the need for ongoing education and training for procurement officials to ensure compliance with the plan's objectives.

Solution

To address these challenges, Vancouver prioritizes the procurement of products with low environmental impact, actively engaging suppliers and stakeholders to promote the use of sustainable materials and practices. The city has implemented various programs to support this transition, ensuring that sustainability is a core consideration in all procurement decisions.

Outcome

As a result of these efforts, Vancouver has significantly reduced its carbon footprint and waste generation, positioning itself as a leader in urban sustainability. The success of the Greenest City Action Plan not only demonstrates the effectiveness of integrating sustainability into municipal procurement but also serves as an inspiring model for other cities aiming to enhance their sustainable practices. Through this initiative, Vancouver is making substantial progress toward a more sustainable future while addressing critical environmental challenges.

3.1.8 Public procurement in Japan

Introduction

The Asia-Pacific region presents diverse approaches to SPP, with countries like Japan and Australia leading the way. Japan's “Green Purchasing Law (2000)” is a pioneering piece of legislation that mandates environmental considerations in all government procurement activities, promoting the acquisition of eco-friendly products and services across the public sector.

Challenges

¹⁴ <https://thedocs.worldbank.org/en/doc/d55a9641736f64f82419cb51e7ddcac0-0070012024/original/PIC-Sustainability-FINAL-v4.pdf>;
http://www.igpn.org/igpn_events/2023/pdf/2.%20Low%20carbon%20public%20procurement%20policy%20study%20in%20the%20Asia%20Pacific.pdf;
https://www.apec.org/docs/default-source/publications/2013/6/green-public-procurement-in-the-asia-pacific-region-challenges-and-opportunities-for-green-growth-an/toc/annex-d---best-practices-on-green-public-procurement-factsheet.pdf?sfvrsn=402e224f_1

Despite the progress facilitated by the Green Purchasing Law, Japan faces challenges in fully realizing its potential. These include resistance from suppliers who may not meet eco-friendly standards, limited awareness among procurement officials about sustainable options, and the need for robust monitoring and enforcement mechanisms to ensure compliance with environmental criteria.

Solution

A successful application of this law is seen in the procurement of eco-friendly office supplies by the Tokyo Metropolitan Government. By prioritizing products with minimal environmental impact, such as recycled paper and energy-efficient office equipment, the government has effectively integrated sustainability into its procurement processes.

Outcome

As a result of these initiatives, the Tokyo Metropolitan Government has significantly reduced waste and resource consumption, reinforcing its commitment to sustainability. This approach has also encouraged suppliers to innovate and offer more sustainable products, contributing to the growth of Japan's green economy. The success of the Green Purchasing Law serves as a model for other countries in the region seeking to enhance their sustainable procurement practices and address environmental challenges.

3.1.9 Green skills training in Australia

Introduction

In Australia, the "Sustainable Procurement Guide" provides a comprehensive framework for integrating sustainability into procurement processes across all levels of government. This guide emphasizes the importance of considering environmental, social, and economic impacts when making procurement decisions, fostering a commitment to sustainability in public sector operations.

Challenges

Despite the existence of this guide, public sector employees often lack the necessary training and knowledge to effectively implement sustainable procurement practices. This gap can lead to inconsistent application of sustainability criteria and a reliance on traditional procurement methods that do not prioritize environmental considerations.

Solution

To address these challenges, the "Green Skills Agreement" was introduced, focusing on training public sector employees in sustainable procurement practices. This initiative equips procurement officers with the skills and knowledge needed to make informed decisions that align with Australia's sustainability goals.

Outcome

As a result of the Green Skills Agreement, public procurement officers are now better empowered to integrate sustainability into their purchasing decisions. This training has fostered a culture of sustainability within the public sector, leading to more environmentally responsible procurement practices. Ultimately, these efforts contribute to Australia's broader sustainability objectives and promote a more sustainable future for government operations.

3.2 Case study by sector

3.2.1 Construction and infrastructure¹⁵

The construction and infrastructure sectors are among the most resource-intensive industries, making them prime targets for Sustainable Public Procurement (SPP) initiatives. A landmark example of SPP in action is the construction of facilities for the London 2012 Olympics, where the Olympic Delivery Authority implemented a comprehensive sustainable procurement strategy.



Source¹⁶

Despite the potential benefits of sustainable procurement, the construction sector faces significant challenges, including high resource consumption, waste generation, and the environmental impact of traditional building practices. Additionally, there can be resistance from stakeholders accustomed to conventional procurement methods that prioritize cost over sustainability.

To address these challenges, the Olympic Delivery Authority adopted a sustainable procurement strategy that included the use of recycled materials, energy-efficient designs, and sustainable construction practices. This approach aimed to minimize the environmental impact of the construction process while setting new standards for public infrastructure projects in the UK.

The implementation of these sustainability measures during the London Olympics significantly reduced resource consumption and waste generation. The success of this initiative has since influenced broader public procurement policies in the UK, promoting sustainable practices in future infrastructure projects.

¹⁵ <https://www.mdpi.com/2071-1050/14/18/11616>; https://www.researchgate.net/publication/271349782_Enabling_sustainable_construction_in_UK_public_procurement;
https://www.greenpolicyplatform.org/sites/default/files/downloads/resource//UNEP_362_Driving_sustainability_web.pdf

¹⁶ <http://eurasia-china.com/page-141712.html>

By demonstrating effective SPP, the London 2012 Olympics has established a model for integrating sustainability into construction that other projects can emulate, contributing to a more sustainable future in urban development.

3.2.2 Transportation¹⁷

The transportation sector is a key focus for SPP, particularly in efforts to reduce GHG emissions and promote sustainable mobility. In Norway, the capital city of Oslo has made significant advancements in lowering its carbon footprint through the procurement of electric buses for its public transport system, aligning with its goal of becoming a carbon-neutral city by 2030.

Despite these ambitions, Oslo faced challenges related to the transition from traditional diesel buses to electric alternatives. Concerns included the initial costs of electric buses, the need for adequate charging infrastructure, and ensuring that public transport services remained reliable during the transition.

To overcome these challenges, Oslo implemented a strategic procurement plan focused on acquiring electric buses that not only reduce emissions but also provide improved energy efficiency and lower operational costs compared to diesel buses. This initiative has been supported by significant investments in charging infrastructure, ensuring that the electric fleet can operate effectively.



¹⁷ <https://anskaffelser.no/sites/default/files/maps-norway-spp.pdf>; https://www.researchgate.net/publication/275764274_Green_public_procurement_in_practice_-_The_case_of_Norway; <https://calsta.ca.gov/press-releases/2021-03-10-plan-to-promote-sustainable-transportation>; https://sustainable-procurement.org/fileadmin/templates/sp_platform/lib/sp_platform_resources//tools/push_resource_file.php?uid=36e54fbb

As a result of this initiative, Oslo has significantly reduced its carbon emissions from public transportation, with plans to achieve nearly 100% electric buses in its fleet by the end of 2023. The success of this project has inspired other cities in Norway and beyond to adopt similar sustainable transportation approaches. By demonstrating the effectiveness of SPP in the transportation sector, Oslo is setting a precedent for urban sustainability and showcasing the viability of electric mobility as a solution to environmental challenges.

3.2.3 Healthcare¹⁹

The healthcare sector faces unique sustainability challenges due to its reliance on energy-intensive equipment and the necessity for high standards of hygiene and safety. In the United Kingdom, the National Health Service (NHS) has implemented a series of SPP initiatives aimed at reducing the environmental impact of its operations while maintaining high standards of care.

One of the primary challenges within the healthcare sector is balancing the need for high-quality medical services to minimize environmental harm. The procurement of traditional medical equipment and food services often leads to significant energy consumption and waste generation, making it difficult to achieve sustainability targets without compromising patient care.

Source²⁰

In response to these challenges, the NHS has prioritized the procurement of energy-efficient medical equipment, such as MRI scanners and surgical lighting systems, which consume considerably less energy than conventional options. Additionally, the NHS has focused on sustainable food services by sourcing locally produced and organic food for hospital cafeterias, thereby promoting healthier options while reducing carbon footprints.

¹⁸<https://www.oneplanetnetwork.org/sites/default/files/2021-08/Final%20Strategic%20Plan%20on%20Construction.pdf>

¹⁹ <https://www.molnlycke.com/globalassets/consensus-document-sustainable-procurement-in-the-health-care-sector-2024.pdf>;
<https://www.sciencedirect.com/science/article/abs/pii/S0959652617311964>

²⁰ <https://greenhealthcarewaste.org/wp-content/uploads/2020/12/Sustainable-Procurement-in-Health-Care-Guide.pdf>

These initiatives have led to a notable reduction in energy consumption and GHG emissions within the NHS, significantly improving the overall sustainability of the healthcare sector in the UK. By integrating sustainable practices into procurement processes, the NHS not only enhances its operational efficiency but also sets a benchmark for other healthcare organizations to follow. This commitment to sustainability demonstrates that it is possible to uphold high standards of care while actively addressing environmental challenges.

3.2.4 Education²¹

The education sector presents significant opportunities for SPP, particularly through the procurement of green technologies and the creation of sustainable learning environments. In New Zealand, the Ministry of Education has launched a nationwide initiative to install solar panels and energy-efficient lighting in schools, reflecting the government's commitment to sustainability.

Despite these efforts, schools often face challenges in implementing sustainable practices due to budget constraints, limited access to green technologies, and a lack of awareness regarding the benefits of energy-efficient solutions. Additionally, there can be resistance to change from traditional procurement methods that prioritize cost over sustainability.



Source²²

To address these challenges, the Ministry of Education has spearheaded the initiative to equip schools with solar panels and energy-efficient lighting systems. This initiative not only reduces energy consumption but also lowers operational costs, allowing schools to redirect resources toward

²¹ https://www.researchgate.net/publication/349297798_The_Business_Case_is_positive_-_Evaluating_Ten_Procurement_Strategies_for_Implementing_Sustainable_Procurement_in_New_Zealand_Organisations; https://www.researchgate.net/publication/349297798_The_Business_Case_is_positive_-_Evaluating_Ten_Procurement_Strategies_for_Implementing_Sustainable_Procurement_in_New_Zealand_Organisations

²² [https://www.sciencedirect.com/science/article/abs/pii/S095965262034004X#:~:text=Sustainable%20public%20procurement%20\(SPP\)%20offers,environment%2C%20economy%2C%20and%20society.](https://www.sciencedirect.com/science/article/abs/pii/S095965262034004X#:~:text=Sustainable%20public%20procurement%20(SPP)%20offers,environment%2C%20economy%2C%20and%20society.)

educational programs. Furthermore, it engages students in monitoring energy performance, fostering a culture of sustainability within the school community.

As a result of this initiative, schools have achieved substantial energy savings, which can be reinvested into educational resources. The project has also raised environmental awareness among students, who actively participate in sustainability efforts and learn about its importance. Overall, this initiative has significantly improved the sustainability of New Zealand's education sector while enhancing student engagement and educational outcomes.

3.2.5 Digital²³

The digital sector has emerged as a significant focus for SPP, driven by the need to reduce electronic waste (e-waste), improve energy efficiency, and promote the life-cycle management of digital equipment. Public procurement plays a pivotal role in shaping sustainability trends in the digital economy, as governments, educational institutions, and healthcare systems increasingly adopt green procurement practices.



Source²⁴

Below are key case studies highlighting how various sectors have incorporated SPP into the digital sphere:

- Germany has led sustainable information technology (IT) procurement by enforcing stringent energy efficiency standards for digital devices used by public agencies. Their approach includes eco-friendly certifications, such as Blue Angel and Energy Star, significantly reducing electronic waste, lowering energy consumption, and extending the life-cycle of IT products.
- Denmark follows a similar path, with public universities focusing on sustainable IT procurement to lower their digital carbon footprint, prioritize energy-efficient equipment, and promote

²³ <https://www.twobirds.com/en/insights/2023/germany/green-public-procurement-more-sustainability-in-public-procurement#:~:text=Most%20recently%2C%20the%20UBA%20published,energy%20consumption%20of%20data%20centres.>; https://www.oecd.org/en/publications/public-procurement-in-germany_1db30826-en.html; <https://www.itu.int/en/ITU-D/Environment/Pages/Toolbox/Circular-and-Sustainable-Public-Procurement-for-ICTs.aspx>

²⁴ <https://www.unep.org/explore-topics/resource-efficiency/what-we-do/sustainable-public-procurement>

suppliers with strong environmental credentials, aligning with the country's climate neutrality goals.

- In the UK, the NHS integrates SPP policies for IT systems, emphasizing energy efficiency and reducing the digital carbon footprint through green-certified devices and energy-efficient data centers.
- The Netherlands' private sector has adopted a circular economy approach, leasing IT equipment to minimize e-waste. Singapore's smart city initiative focuses on sustainable digital procurement, using IoT technologies to reduce carbon emissions.
- Sweden's telecommunications sector prioritizes energy-efficient servers and green data centers, resulting in reduced operational energy costs and improved resource management.

4

INNOVATIONS, BEST PRACTICES, AND FUTURE TRENDS

4 Innovations, Best Practices and Future Trends

4.1 Innovative practices in SPP²⁵

4.1.1 Circular economy approaches

Circular economy approaches are increasingly recognized for their long-term impact on sustainability, especially in the context of 100% renewable energy projects, as they focus on minimizing waste and enhancing resource efficiency. A notable example is Sweden's "Green Energy Infrastructure" initiative, which integrates circular economy principles into renewable energy procurement. This initiative emphasizes the use of recycled materials in renewable energy infrastructure, such as solar panels and wind turbines, while also incorporating designs that facilitate disassembly and reuse.

By prioritizing these practices, Sweden not only promotes sustainable production and installation but also ensures the recycling of renewable energy components. This approach significantly reduces resource consumption and fosters a culture of sustainability that can have enduring effects on environmental health and resource management.

In the long term, the adoption of circular economy strategies will likely transform how resources are utilized across various sectors, leading to a more resilient and sustainable economic model. As organizations increasingly embrace these principles, we can expect a shift towards systems that prioritize longevity and efficiency, ultimately reducing the environmental footprint of energy production and consumption. By embedding circularity into the fabric of renewable energy initiatives, countries can create a sustainable legacy that benefits future generations while addressing pressing environmental challenges today.

4.1.2 Community engagement and stakeholder involvement

Community engagement and stakeholder involvement are vital for the future effectiveness of SPP initiatives. In South Africa, the "Renewable Energy Independent Power Producer Procurement Programme" (REIPPPP) exemplifies how integrating local communities into renewable energy projects, such as wind and solar farms, can foster long-term environmental and social sustainability. By actively incorporating local perspectives during the planning and implementation phases, these projects not only create job opportunities but also empower communities and promote clean energy solutions that resonate with local needs and cultural values. This approach ensures that the benefits of such initiatives are sustainable and aligned with community aspirations.

Looking ahead, the role of community engagement in SPP will likely expand, leading to more inclusive decision-making processes that enhance project outcomes. As stakeholders from diverse backgrounds contribute their insights and expertise, procurement practices will become more responsive to the specific challenges and opportunities faced by communities. This collaborative approach will not only improve the effectiveness of sustainable procurement initiatives but also build stronger relationships between public entities and community members.

²⁵ [https://www.cowater.com/en/accelerating-development-through-sustainable-public-procurement/#:~:text=Sustainable%20Public%20Procurement%20promotes%20practices,reaching%20their%20Sustainable%20Development%20Goals.;](https://www.cowater.com/en/accelerating-development-through-sustainable-public-procurement/#:~:text=Sustainable%20Public%20Procurement%20promotes%20practices,reaching%20their%20Sustainable%20Development%20Goals;)
[https://www.researchgate.net/publication/375103904_Public_Procurement_for_Sustainability;](https://www.researchgate.net/publication/375103904_Public_Procurement_for_Sustainability)
https://research.manchester.ac.uk/files/35320251/FULL_TEXT.PDF;<https://projects.worldbank.org/en/projects-operations/products-and-services/brief/e-s-procurement-joint-guidance-on-sustainable-procurement>

Moreover, as communities become more engaged in the procurement process, they will develop a greater sense of ownership over projects that affect their lives. This increased involvement can lead to heightened accountability and transparency in public spending, ultimately fostering trust between citizens and government agencies. By prioritizing community engagement, SPP initiatives can evolve into powerful vehicles for social change, driving innovation and resilience while ensuring that sustainability goals are met in a way that is equitable and beneficial for all stakeholders involved.

4.1.3 Green criteria in the tendering process

The integration of sustainable practices in procurement is becoming increasingly vital for shaping future trends in environmental responsibility. Many nations are adopting green criteria in their tendering processes to promote the purchase of sustainably produced goods and services. For instance, Denmark's "Green Public Procurement (GPP) Strategy" mandates that all public tenders incorporate environmental requirements, significantly influencing market behavior by encouraging suppliers to offer eco-friendly products.

Similarly, Costa Rica's "National Decarbonization Plan" requires that governmental procurement procedures include renewable energy sources. This initiative has effectively reduced the nation's reliance on fossil fuels by increasing investments in wind and solar energy projects, thereby advancing Costa Rica's goal of achieving carbon neutrality. By embedding renewable energy requirements into contract specifications, the country not only supports its national objectives but also sets a precedent for sustainable procurement practices that can inspire similar initiatives globally.

These strategies illustrate how sustainable procurement can drive significant changes in market dynamics and contribute to broader environmental goals. As more countries adopt such practices, we can expect a future where sustainable procurement becomes a standard expectation rather than an exception, fostering innovation and collaboration across sectors while promoting a circular economy and reducing carbon footprints.

4.1.4 Community platforms for SPP

Digital tools and platforms are increasingly pivotal in enhancing and streamlining SPP processes, significantly influencing future sustainability practices. The EU's "Procura+ Network", coordinated by ICLEI Europe, serves as a vital digital platform that facilitates the exchange of best practices, resources, and case studies among public procurement professionals across Europe. This platform has been crucial in promoting SPP and ensuring compliance with EU directives, acting as a centralized hub for knowledge sharing and collaboration. By driving the adoption of sustainable procurement practices, Procura+ exemplifies how digital solutions can accelerate the transition to a more sustainable economy.

In addition, the "Africa Renewable Energy Initiative" (AREI) provides a collaborative platform for African nations to share knowledge and promote the procurement of renewable energy technologies. Through this initiative, stakeholders can exchange case studies, technical guidelines, and best practices, which streamline the adoption of renewable energy solutions across the continent. Such collaborative platforms are essential for building networks among public and private entities committed to scaling up renewable energy projects.

The impact of these digital tools extends beyond immediate procurement efficiencies; they are shaping a future where sustainable procurement is not only standardized but also integrated into broader economic frameworks. As these platforms facilitate collaboration and knowledge sharing, they empower stakeholders to adopt innovative practices that align with sustainability goals, ultimately fostering a more resilient and environmentally responsible economy.

4.1.5 Collaboration and partnerships

Collaboration and partnerships are crucial for advancing SPP initiatives and achieving broader sustainability objectives in the future. In the United States, the “Green Procurement Compilation” exemplifies a collaborative effort among multiple federal agencies to develop a comprehensive database of sustainable products and services. This initiative not only simplifies access for public sector entities to environmentally friendly options but also enhances the sustainability of government operations. By serving as a resource for private sector organizations aiming to align their procurement practices with sustainability goals, it underscores the significance of cross-sector collaboration in propelling SPP forward.

In Germany, the “Energiewende” program further illustrates the transformative potential of partnerships. This national initiative fosters collaboration between government agencies, private sector stakeholders, and international organizations to expedite the transition to renewable energy. Through these cooperative efforts, Germany has significantly increased its renewable energy capacity, particularly in wind and solar power, while also promoting innovation in energy storage solutions. This program highlights how cross-sector partnerships can facilitate the achievement of ambitious renewable energy targets.

Looking ahead, the impact of such collaborative frameworks on sustainable public procurement will be profound. As more entities engage in partnerships that prioritize sustainability, we can expect an acceleration in the adoption of innovative practices and technologies. These collaborations will not only enhance resource efficiency but also create a robust network of stakeholders committed to shared environmental goals. Ultimately, this collective approach will shape a future where sustainable procurement becomes integral to public policy and economic development, driving significant progress toward a more sustainable and resilient society.

4.1.6 Impact of global sustainability agendas

Global sustainability agendas, including the SDGs and the Paris Agreement, are increasingly influencing SPP practices worldwide. As governments align their procurement strategies with these international frameworks, a more coordinated and impactful approach to sustainability in public procurement is emerging.

For instance, the EU’s “Green Deal” highlights the critical role of SPP in achieving climate neutrality by 2050, advocating for a substantial increase in sustainable procurement practices throughout the region. This alignment with global sustainability agendas is not only fostering innovation but also enhancing collaboration in SPP, thereby accelerating the transition to a more sustainable and circular economy.

At the local level, initiatives such as “Local Green Deals”, developed by ICLEI Europe, exemplify how localized agreements between buyers and stakeholders can effectively meet the objectives outlined in the Green Deal.

Looking to the future, the integration of these global sustainability frameworks into public procurement will likely lead to transformative changes. By embedding sustainability into procurement practices, governments can drive market demand for green products and services, stimulate economic growth in sustainable industries, and create jobs that align with environmental goals. This shift will also encourage greater accountability and transparency in public spending, ensuring that resources are used efficiently to support sustainable development.

As SPP practices evolve in response to these global agendas, we can anticipate a more resilient and equitable approach to public procurement that not only addresses immediate environmental challenges but also lays the groundwork for long-term sustainability. The collaborative efforts fostered by these frameworks will be instrumental in creating a future where public procurement serves as a powerful tool for achieving comprehensive sustainability objectives across all sectors

4.2 Future trends and innovation in SPP²⁶

4.2.1 Emerging trends and innovations in SPP

As SPP continues to evolve, emerging trends and innovations are shaping the future of procurement practices. One of the most promising developments is the increasing use of Artificial Intelligence (AI) and blockchain technology to enhance transparency and efficiency in procurement processes.

AI can be used to analyze vast amounts of data to identify the most sustainable products and suppliers, while blockchain technology provides a secure and transparent way to track the sustainability credentials of products throughout their life-cycle. These technologies have the potential to revolutionize SPP by making it easier for public entities to make informed, sustainable procurement decisions.

In addition, innovative procurement practices, such as green energy leases, are becoming more prevalent. These leases ensure that renewable energy standards are maintained throughout the project life-cycle, ensuring that sustainability is embedded not just at procurement but also during the operation and maintenance phases.

Technology plays a critical role in driving efficiency and sustainability in renewable energy procurement. Below are key innovations:

²⁶ <https://thedocs.worldbank.org/en/doc/11ed02930623289f8851ebd991dc19d9-0070012024/original/Trends-in-Sustainable-Public-Procurement-Chris-Browne.pdf>;
https://www.researchgate.net/publication/378823662_Sustainable_Public_Procurement_Research_Trends_and_Gaps;
https://scholar.archive.org/work/ay5cs3f5x5hz5hy3kkjcopve6m/access/wayback/http://indianecologicalsociety.com/society/wp-content/themes/ecology/volume_pdfs/1656317624.pdf;
<https://assets.gov.ie/279165/3f3e1722-9ff3-41a5-864d-1a0f783a24eb.pdf>

4.2.1.1 *E-procurement platforms*

E-procurement stands for electronic procurement and refers to the digital purchasing of goods and services by companies. platforms facilitate the digital procurement of renewable energy products and services. These centralized and automated systems allow public authorities to integrate renewable energy and sustainability criteria into tender specifications. With these platforms, procurement officials can easily verify suppliers' compliance with renewable energy standards and assess environmental and social impacts in real time.

Countries like South Korea and Italy have integrated e-procurement platforms with sustainability criteria. South Korea's Public Procurement Service (PPS) and Italy's CONSIP system incorporate renewable energy standards in tender processes, helping streamline the procurement of clean energy technologies.

4.2.1.2 *Blockchain for supply chain technology*

Blockchain technology enhances supply chain transparency by tracking the sustainability of renewable energy components throughout their life-cycle. This immutable record of transactions ensures that suppliers' claims regarding the sourcing of renewable energy technologies and materials are verifiable, such as the use of ethically sourced raw materials in solar panels or wind turbines.

The United Kingdom has explored blockchain for tracking sustainability credentials, with pilots in sectors like food and pharmaceuticals. Applying this to renewable energy will ensure that suppliers adhere to strict environmental standards.

4.2.1.3 *Data analytics for supplier evaluation*

Data analytics tools can evaluate suppliers' renewable energy performance by analyzing key metrics like energy efficiency, carbon emissions, and resource use. With big data, procurement officials can measure suppliers' compliance with sustainability targets, ensuring the most environmentally friendly choices are made.

In the U.S., the General Services Administration (GSA) uses data analytics to assess suppliers' sustainability performance, including their energy consumption and greenhouse gas emissions, facilitating the procurement of renewable energy solutions.

4.2.1.4 *AI and Machine Learning*

AI and machine learning can automate the analysis of tender documents to identify suppliers meeting renewable energy criteria. These technologies also help predict trends in renewable energy markets, enabling procurement officials to stay ahead in sourcing innovative, sustainable energy solutions. Some of the privacy and confidentiality aspects to consider when using AI and machine learning for Sustainable Public Procurement (SPP), especially in the analysis of tender documents and predicting market trends. Key concerns include:

- **Data Privacy:** AI and machine learning require access to large datasets, which may include sensitive information from suppliers, such as financial details, intellectual property, or proprietary business strategies. Ensuring that this data is anonymized and handled in compliance with data protection laws (e.g., GDPR) is critical.
- **Confidentiality of Tender Documents:** Tender documents often contain confidential information, including project specifications and evaluation criteria. If this information is

exposed or mishandled by AI systems, it could compromise the fairness of the procurement process or lead to data breaches.

- **Bias and Transparency:** AI algorithms may inadvertently introduce bias based on the data used for training, which can affect the objectivity of supplier evaluation. It's essential to ensure transparency in how the AI systems process and evaluate tenders to maintain trust in the procurement process.
- **Security of Predictive Analysis:** Predicting trends in renewable energy markets involves handling market-sensitive data, which could be exploited if not securely managed. Robust cybersecurity measures are needed to prevent unauthorized access to such data.

To mitigate these risks, procurement officials should implement strict data governance frameworks, ensure AI tools comply with relevant data protection regulations, and maintain transparency in how AI systems are used to evaluate suppliers and market trends.

4.2.1.5 Eco-labeling and certification databases

Digital platforms that maintain eco-labels and certifications help procurement officials verify the sustainability credentials of renewable energy suppliers quickly. By integrating these databases into e-procurement systems, public authorities can automate the verification process, ensuring that only certified renewable energy products are procured.

Germany's Blue Angel certification system is an example where eco-labeling and certification databases are linked to e-procurement, ensuring that renewable energy products meet the highest environmental standards.

4.2.1.6 The Internet of Things (IoT) and smart sensors for sustainable procurement monitoring

The Internet of Things (IoT) and smart sensors are essential for monitoring the sustainability of procured renewable energy systems. For instance, smart energy meters can track the performance of solar panels or wind turbines, ensuring they meet energy efficiency standards, while IoT devices can monitor emissions and waste from renewable energy projects.

In the Netherlands, IoT and smart sensors are used in public infrastructure projects to monitor energy consumption and waste reduction, ensuring that renewable energy systems perform as intended and contribute to national sustainability goals.

4.2.1.7 Sustainable procurement dashboards

Customized dashboards provide real-time visibility into the sustainability performance of renewable energy procurement. These dashboards aggregate data from various sources, such as supplier reports and internal procurement records, offering procurement officials a comprehensive view of how well renewable energy projects align with sustainability objectives.

New Zealand's procurement dashboards, used in the New Zealand Government Procurement (NZGP) system, monitor real-time performance, helping procurement officials assess the sustainability outcomes of renewable energy projects and ensure alignment with environmental and social goals.



5

CONCLUSION

5 Conclusion

Sustainable Public Procurement (SPP) is a powerful tool for achieving long-term sustainability goals, particularly in the renewable energy sector. By incorporating environmental, social, and economic criteria into procurement processes, public entities can significantly impact both local communities and global sustainability efforts. This document outlines key stages and processes for implementing SPP, emphasizing practical tools such as life-cycle costing and supplier engagement to overcome common challenges.

Collaboration, the adoption of technology, and capacity-building initiatives are central to the successful integration of SPP, especially for renewable energy projects. Engaging suppliers and stakeholders early in the procurement process and leveraging tools like e-procurement platforms can streamline operations and enable data-driven decisions, ultimately enhancing sustainability outcomes.

Global case studies, including examples from Argentina, Indonesia, and Kenya, demonstrate the real-world application of SPP principles in renewable energy projects. These cases highlight innovative practices and proven solutions that can be adapted across regions and sectors to promote sustainability.

This guide serves as a practical resource for building capacity within the procurement community. It provides a comprehensive approach to embedding sustainability into procurement practices, drawing on global experiences to ensure a greener, more sustainable future for public sector operations worldwide.

By adopting SPP for renewable energy, governments and public organizations can not only enhance the sustainability of their operations but also lead by example, inspiring the private sector to follow suit. The journey towards sustainable procurement demands commitment, innovation, and collaboration, and this guide plays a crucial role in driving that transformation.



6

FURTHER GUIDANCE

6 Further Guidance

6.1 Frequently asked questions (FAQs)

Here are some of the FAQs on SPP:

1. What is Sustainable Public Procurement (SPP)?

SPP is the process by which public sector organizations procure goods and services, and works in a way that considers environmental, social, and economic impacts. It aims to achieve value for money while minimizing negative environmental effects and supporting sustainable development.

2. Why is SPP important for climate and energy projects?

SPP helps reduce carbon emissions, promotes energy efficiency, and supports the transition to renewable energy sources. By incorporating sustainability criteria into procurement processes, public organizations can drive climate action, stimulate innovation, and create demand for green technologies.

3. What are the key stages of the SPP process for climate and energy projects?

The key stages include:

- Planning: Identifying sustainability needs and establishing procurement goals.
- Tendering: Integrating environmental and energy efficiency requirements into tender specifications.
- Implementation: Monitoring supplier compliance with sustainability standards.
- Evaluation: Assessing the environmental and social outcomes of procurement decisions.

4. How does SPP contribute to climate change mitigation?

By prioritizing low-carbon technologies and energy-efficient solutions, SPP reduces greenhouse gas emissions.

5. What are the benefits of SPP for public authorities?

SPP leads to cost savings through energy efficiency, reduces environmental impacts, enhances public reputation, and aligns procurement with sustainable development goals targets, including climate action commitments under the Paris Agreement.

6. How can public organizations ensure the successful implementation of SPP for climate and energy projects?

Success requires:

- Clear sustainability criteria in procurement documents.
- Capacity building and training for procurement officers.
- Strong stakeholder engagement.
- Monitoring and evaluation frameworks to assess the impact of procurement decisions on sustainability outcomes.

7. What are some common challenges in implementing SPP for climate and energy projects?

Challenges include:

- Lack of knowledge or expertise in sustainable procurement.
- Limited availability of sustainable products or services.
- Higher upfront costs of green technologies.
- Difficulty in measuring long-term environmental benefits.
- Poor budget.

8. What role do governments play in promoting SPP?

Governments play a central role by setting policies and regulations that mandate or incentivize sustainable procurement. They can provide guidelines, frameworks, and support to public agencies for integrating sustainability into procurement processes.

9. Are there international guidelines or standards for SPP?

Yes, there are several international frameworks and guidelines, such as:

- The UNEP SPP program.
- ISO 20400: International Standard for Sustainable Procurement.
- EU's GPP criteria.

10. What sectors can benefit from SPP in climate and energy projects?

SPP can be applied across multiple sectors, including:

- Energy: Procuring renewable energy sources and energy-efficient technologies.
- Construction: Sustainable building materials and energy-efficient designs.
- Transport: Low-emission vehicles and public transport systems.
- Waste management: Environmentally friendly waste reduction and recycling systems.

11. How does SPP align with the Sustainable Development Goals (SDGs)?

- SPP contributes to several SDGs, particularly:
- SDG 7: Affordable and clean energy.
- SDG 12: Responsible consumption and production.
- SDG 13: Climate action. It also supports goals related to economic growth, innovation, and reduced inequalities.

12. What are the future trends in SPP for climate and energy projects?

Emerging trends include:

- Increased use of circular economy principles in procurement: Greater emphasis on life cycle costing and total cost of ownership in procurement decisions.
- Technological innovations like smart grids and AI-driven energy management.

13. How can organizations track and report on the impact of SPP?

Organizations can use sustainability indicators, energy audits, and carbon accounting tools to track the environmental benefits of their procurement choices. Reporting on these impacts is essential for transparency and accountability.

14. What resources are available to support the adoption of SPP for climate and energy projects?

Various resources are available, including:

- Toolkits and guidelines from international organizations like UNEP.
- National and regional government frameworks.
- Training and capacity-building programs for procurement professionals.

15. How can private sector suppliers engage with public organizations on SPP?

Private sector suppliers can:

- Align their products and services with sustainability criteria.
- Offer innovative, green technologies.
- Participate in government-led sustainability initiatives and partnerships.

6.2 Further reading

- https://www.afdb.org/sites/default/files/2020/12/18/guidance_note_-_sustainable_public_procurement.pdf
- https://www.oneplanetnetwork.org/sites/default/files/handbook_spp.pdf
- https://www.oneplanetnetwork.org/sites/default/files/measuring_and_communicating_the_benefits_of_sustainable_public_procurement_spp_baseline_review_and_development_of_a_guidance_framework.pdf
- https://www.afdb.org/sites/default/files/2020/12/18/guidance_note_-_sustainable_public_procurement.pdf
- <https://www.upphandlingsmyndigheten.se/en/sustainable-public-procurement/>
- <https://publication.sipmm.edu.sg/key-challenges-sustainable-procurement/>
- <http://article.sapub.org/10.5923.j.ijcem.20211004.01.html>
- https://www.researchgate.net/publication/354688775_Implementation_Challenges_of_Sustainable_Procurement_in_Ghana's_Public_Sector
- https://www.researchgate.net/figure/Strategies-to-Integrate-Sustainability-through-Project-Planning-Process-and-the_tbl1_264712328
- <https://www.ieomsociety.org/proceedings/2021india/42.pdf>
- https://www.afdb.org/sites/default/files/2020/12/18/guidance_note_-_sustainable_public_procurement.pdf;
- <http://norden.diva-portal.org/smash/get/diva2:1554600/FULLTEXT01.pdf>
- <https://thedocs.worldbank.org/en/doc/1d103f001ad2288cd3a0c2a18db76ca5-0290012024/original/SUSTAINABLE-PROCUREMENT-CH1-16574.pdf>
- <https://www.mdpi.com/2673-9941/2/2/8>;https://climate-laws.org/document/law-27191-on-renewable-energy_4586
- https://gln-on-sp.org/fileadmin/user_upload/Buenos_Aires/City_of_Buenos_Aires_GLCN_on_SP_Profile.pdf; <https://sustainabledevelopment.un.org/content/documents/no5.pdf>
- <https://www.un.org/esa/sustdev/sdissues/consumption/HendayaniAdiseshapaper.pdf>
- <https://frw.studenttheses.ub.rug.nl/3073/1/fbudianto.pdf>
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A.

APPENDIX

8 Appendices - Requirements for SPP

This section provides an overview of the Renewable Energy (RE) projects undertaken in Argentina, Indonesia, and Kenya under the 100% Renewables Cities and Regions Roadmap project. These activities were carried out in order to support the three deep-dive governments in these countries with the development of bankable projects to help realize their 100% renewable energy target. The projects demonstrate the diverse approaches assumed by different nations to integrate SPP practices in the renewable energy sector, each tailored to the unique environmental, social, and economic contexts of the respective countries.

In response to global climate change commitments, many countries as well as subnational governments have embarked on ambitious renewable energy plans aimed at achieving 100% RE targets. The cities and regions of Avellaneda, Santa Fe, Argentina; West Nusa Tenggara, Indonesia; and Kisumu County, Kenya are notable examples of subnational governments countries implementing innovative renewable energy solutions to address their specific energy needs while contributing to national and global sustainability goals.

The following assessment of each country's procurement processes are anchored around the bankable projects selected by each of their deep-dive cities. Argentina's focus in its deep-dive city includes utility-scale ground-mount solar photovoltaic (PV) projects, which enhance national energy security and reduce dependence on fossil fuels. In Indonesia, specific regions are prioritizing off-grid rooftop solar PV projects with energy storage, addressing the unique challenges of electrifying remote and isolated communities. In Kenya, the emphasis is on implementing a comprehensive program that integrates renewable energy (RE) and energy efficiency (EE) measures across public healthcare centers, ensuring a reliable and sustainable energy supply for essential services.

8.1 Appendix 1 - Argentina²⁷



Figure 4: Map of Argentina²⁸

8.1.1 Argentina: Utility-scale ground mount solar PV project background

Argentina's energy landscape has undergone significant changes over the past few decades, shifting from a relatively balanced mix of hydroelectric and fossil-fuel power generation to a more fossil-fuel-dominant system. As one of the main producers of natural gas and oil in South America, Argentina meets about 75% of its total electricity demand from fossil fuels. The share of renewable energy in

²⁷ <https://www.mdpi.com/2673-9941/2/2/8>; https://climate-laws.org/document/law-27191-on-renewable-energy_4586; https://glcn-on-sp.org/fileadmin/user_upload/Buenos_Aires/City_of_Buenos_Aires_GLCN_on_SP_Profile.pdf; <https://sustainabledevelopment.un.org/content/documents/no5.pdf>

²⁸ <https://www.worldatlas.com/maps/argentina>

electricity generation decreased from 36% to 25% between 1990 and 2019 due to a combination of rising electricity demand and rather constant renewable energy supply. The largest contributor to this share of renewables is hydropower, which covers about 20% of electricity demand (in 2019). Excluding hydropower, renewable electricity generation has a share of only 5.3% (in 2019). Looking at the total primary energy consumption of Argentina, fossil fuels contribute to about 91.7% and RE to 8.3% (from Hydropower 3.5%; biomass/waste 4.6%; and geothermal, solar, wind 0.16% (in 2018)). In Argentina, there are still quite a few tax breaks for companies investing in oil and gas production. This has a direct impact on the renewable energy projects, retarding the return on investment.

The shift towards RE in Argentina became more pronounced after a shortage of gas reserves in 2004. This crisis highlighted the need for diversification in the energy sector and spurred the adoption of renewable energy sources. Legal instruments promoting investments in renewable energy began to take shape, particularly from 2009 onwards, with significant support for large-scale solar PV projects.

These large-scale projects involve installing PV panels across extensive land areas with high solar irradiance. These solar farms are directly connected to the national grid and are designed to contribute significantly to Argentina's energy mix, with capacities ranging from tens to hundreds of megawatts (MW).

The primary objective of these utility-scale solar PV projects is to increase the share of renewable energy within Argentina's overall energy portfolio. By doing so, the projects aim to reduce greenhouse gas emissions, enhance energy security, and decrease the nation's reliance on imported fossil fuels. Additionally, these projects align with Argentina's commitment to global climate goals, including the targets set by the Paris Agreement.

Further, the anticipated impact on the national energy grid and carbon emissions include:

- **Stabilization of the energy supply:** The integration of solar energy into the grid helps to stabilize the national energy supply, particularly during peak demand periods.
- **Reduction of peak demand pressures:** By providing an additional and reliable source of energy, solar PV projects can alleviate the pressure on the grid during times of high demand.
- **Lower overall carbon emissions:** As solar PV displaces fossil-fuel-based generation, the carbon intensity of Argentina's electricity generation decreases, contributing to the country's overall reduction in greenhouse gas emissions.

8.1.2 Regulatory and policy framework in Argentina supporting SPP

Argentina's government has developed a robust regulatory and policy framework to support the growth of renewable energy, particularly through Sustainable Public Procurement (SPP). This framework includes a variety of laws, policies, and regulations aimed at promoting the development of renewable energy projects, including utility-scale solar PV.

8.1.2.1 *Renewable Energy Act*

One of the key legislative instruments supporting renewable energy in Argentina is the Renewable Energy Act (Law 27.191) which was enacted in 2015. This law set ambitious targets for the incorporation of renewable energy into the national energy mix. Specifically, it mandated that 20% of Argentina's

electricity consumption should come from renewable sources by 2025. To achieve this goal, the law introduced several mechanisms, including:

- **Incentives for renewable energy projects:** The law provides fiscal incentives for renewable energy projects, such as tax benefits and exemptions, to encourage investment in the sector.
- **Mandatory renewable energy quotas:** The law established mandatory renewable energy quotas for large energy consumers, requiring them to source a certain percentage of their electricity from renewable sources

8.1.2.2 *National Renewable Energy Plan*

In addition to the Renewable Energy Act, Argentina launched the RenovAr Program in 2016. This program is a key component of Argentina's strategy to attract private investment in the renewable energy sector. It includes several rounds of competitive bidding processes, known as "RenovAr Rounds," through which the government solicits proposals for renewable energy projects and further entails the following aspects:

- **Competitive bidding process:** The RenovAr Program uses a competitive bidding process to select renewable energy projects. This process ensures that the projects selected are not only cost-effective but also meet specific sustainability criteria.
- **Long-term Power Purchase Agreements (PPAs):** Successful bidders under the RenovAr Program are awarded long-term PPAs, which provide them with a guaranteed revenue stream over the contract period. This financial security is crucial for attracting investment in large-scale renewable energy projects.

8.1.3 Key sustainability criteria for solar PV projects

In line with Argentina's regulatory framework and international commitments, utility-scale solar PV projects must meet several key sustainability criteria to ensure that the projects not only contribute to the country's energy and climate goals but also align with broader environmental, social, and economic objectives. The said criteria encompass the following:

- **Environmental impact:**
 - **Land use and degradation:** Solar PV projects must minimize land degradation by selecting sites with minimal ecological value or by employing technologies that reduce the physical footprint of installations.
 - **Biodiversity protection:** Projects must include measures to protect local biodiversity, such as avoiding critical habitats and implementing conservation programs.
 - **Waste management:** Throughout the project life-cycle, from construction to decommissioning, responsible waste management practices must be in place, including recycling and safe disposal of PV materials.
- **Social equity:**
 - **Community engagement:** Effective community engagement strategies are crucial to ensure that local populations benefit from the projects. This includes job creation, access to clean energy, and participation in decision-making processes.
 - **Fair labor practices:** The projects must adhere to fair labor standards, ensuring safe working conditions, fair wages, and respect for workers' rights.
 - **Equitable access:** The benefits of renewable energy, such as lower electricity costs and improved energy security, must be distributed equitably among different social groups.
- **Economic viability:**

- **Life-cycle cost analysis:** Projects should be evaluated based on life-cycle costs, which consider not only the initial investment but also long-term operational and maintenance costs, ensuring economic sustainability.
- **Economic returns:** The projects must demonstrate clear economic returns, both in terms of direct financial benefits and broader economic impacts, such as job creation and reduced energy imports.

8.1.4 Implementation processes

The implementation of utility-scale solar PV projects in Argentina involves a set of structured and critical processes. These processes are essential for ensuring that the projects align with high standards of sustainability, operational efficiency, and economic viability. Key implementation stages include tendering, developing technical specifications, supplier qualification, and awarding contracts. Each stage integrates sustainability and innovation to maximize the environmental and economic benefits of solar energy deployment.

8.1.4.1 Tendering process

The tendering process for solar PV projects in Argentina is designed to promote sustainability at every stage. This process begins with the development of tender documents that clearly outline the sustainability requirements, including environmental, social, and economic criteria.

- **Innovation in bidding:** The tender process encourages innovation by allowing bidders to propose advanced technologies and construction practices that enhance the sustainability of the project. This could include using more efficient PV modules, integrating energy storage solutions, or employing sustainable building materials.
- **Transparent evaluation:** The evaluation of bids is conducted transparently, with a significant portion of the scoring dedicated to sustainability criteria. This ensures that projects are awarded not just on financial terms but also on their potential to deliver long-term environmental and social benefits.

The key steps in the tendering process for solar PV projects in Argentina are as follows:

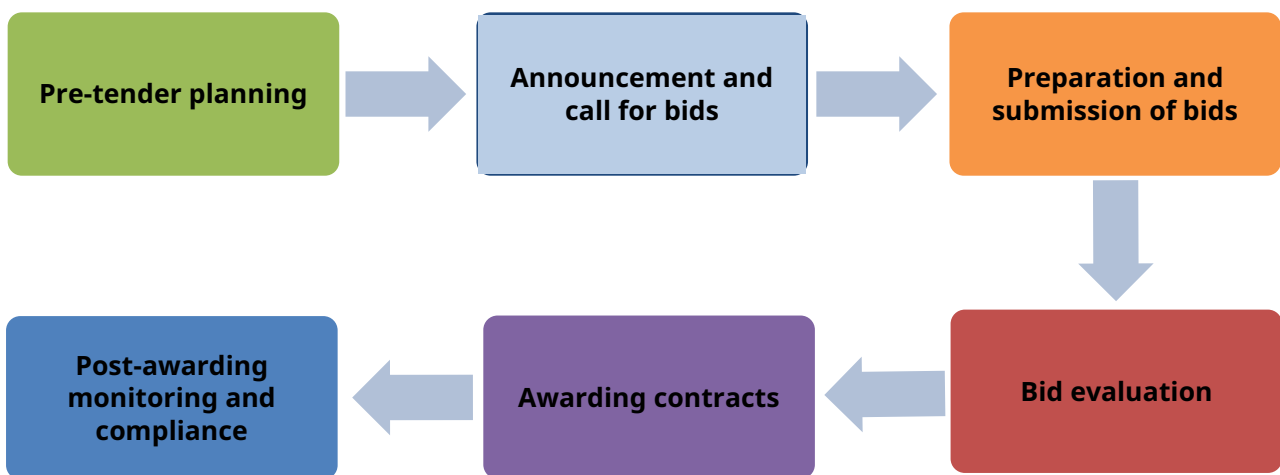


Figure 5: Tendering process in Argentina

8.1.4.2 *Technical specifications*

Detailed technical specifications are crucial for ensuring that solar PV installations meet the required sustainability standards which entail:

- **Materials:** Preference is given to materials that are sustainably sourced and recyclable. For instance, PV modules should be manufactured with minimal environmental impact and designed for easy recycling at the end of their life-cycle.
- **Efficiency standards:** Minimum efficiency thresholds are set for PV modules and inverters, ensuring that their systems generate the maximum possible energy from the available sunlight.
- **Environmental Impact Assessments (EIA):** Mandatory EIAs to evaluate and mitigate potential environmental risks.

8.1.4.3 *Supplier qualification*

The main criteria for selecting suppliers include:

- **Experience:** Proven track record in delivering large-scale solar projects.
- **Financial stability:** Ensuring the supplier has the financial capacity to undertake the project.
- **Sustainability practices:** Demonstrated commitment to sustainable practices in previous projects, including adherence to environmental and social standards.

8.1.4.4 *Contract awarding and clauses*

Once the bids are evaluated, the contracting authority selects the winning bid. Contracts are awarded based on a comprehensive evaluation of technical and financial proposals, with significant weight given to sustainability criteria. The key clauses include:

- **Performance monitoring:** Regular audits and reporting requirements to ensure compliance with sustainability targets.
- **Penalties for non-compliance:** Financial penalties for failing to meet sustainability commitments.
- **Incentives for exceeding targets:** Bonuses or other incentives for exceeding specified sustainability performance metrics.

8.2 Appendix 2 - Indonesia²⁹



Figure 6: Map of Indonesia³⁰

8.2.1 Overview of the off-grid rooftop solar PV project in Indonesia

Indonesia, an archipelagic nation with over 17,000 islands, faces significant challenges in providing reliable electricity access to its remote and rural areas. Despite the government's efforts to expand the national grid, many regions remain off-grid due to logistical, geographical, and economic constraints. In response to these challenges, Indonesia has made some attempts to adopt off-grid renewable energy solutions, particularly rooftop solar PV systems, to enhance energy access in these underserved areas. Further, Indonesia faces the challenge of meeting its national climate change target in the energy sector on the one hand and meeting the increasing energy demand for the country's economic growth on the other. The country's archipelagic location also makes it difficult to distribute energy evenly. Indonesia is currently heavily dependent on fossil fuels, which account for 64.2% of total energy consumption. RE's share to date has come from geothermal, wind and solar (10.4%), hydropower (0.8%), biodiesel, and waste (14.5%) (in 2018). These existing renewable sectors have the potential for further expansion. However, given growing energy demand and national emission reduction commitments, these sectors need to be complemented by decentralized RE solutions such as those supported by this project.

The off-grid rooftop solar PV projects in Indonesia are designed to provide decentralized energy solutions to communities that are not connected to the national grid. These systems typically involve the installation of solar panels on the rooftops of homes, schools, healthcare facilities, and other

²⁹ <https://www.un.org/esa/sustdev/ssissues/consumption/HendayaniAdishesapaper.pdf>; <https://frw.studenttheses.ub.rug.nl/3073/1/fbudianto.pdf>; <http://eprints2.ipdn.ac.id/983/1/Jurnal%20Budapest%20Husin%20Asyari.pdf>

³⁰ <https://www.ezilon.com/maps/asia/indonesian-maps.html>

community buildings. The electricity generated is used to power local needs, with surplus energy stored in battery systems for use during periods of low solar irradiance or at night.

The Indonesian government, through initiatives such as the National Energy Policy (Kebijakan Energi Nasional - KEN) and the General Plan of National Energy (Rencana Umum Energi Nasional - RUEN), has prioritized the expansion of renewable energy, aiming to achieve 23% renewable energy in the national energy mix by 2025. Off-grid solar PV projects are a key component of this strategy, particularly in remote areas where grid extension is not feasible or economically viable.

8.2.2 Focus on energy storage solutions

A critical aspect of off-grid solar PV projects in Indonesia is the integration of energy storage solutions. Battery storage systems are essential for ensuring the reliability of electricity supply, particularly in remote areas where weather conditions can be unpredictable, and sunlight may not always be available. Energy storage allows for the capture and storage of excess solar energy generated during the day, which can then be used during periods of low sunlight or at night, thereby ensuring a continuous power supply.

The focus on energy storage is particularly important in Indonesia, given the country's geographical diversity and the varying levels of solar irradiance across different regions. By incorporating advanced battery storage technologies, these off-grid solar PV systems can provide a more stable and reliable energy supply, reduce reliance on diesel generators, and contribute to the country's broader goals of reducing greenhouse gas emissions and increasing energy security.

8.2.3 Objectives and expected outcomes

The primary objectives of the off-grid rooftop solar PV projects with energy storage in Indonesia include:

- **Enhancing energy access:** Providing reliable electricity access to remote and underserved communities, thereby improving the quality of life, and enabling economic development.
- **Reducing greenhouse gas Emissions:** By replacing diesel generators with solar PV and battery storage systems, the projects aim to reduce the carbon footprint of energy generation in remote areas.
- **Promoting energy security:** Decentralized energy solutions increase energy security by reducing dependency on imported fuels and centralized power generation.

The expected outcomes include:

- **Improved energy reliability:** The integration of energy storage solutions ensures a continuous and reliable power supply, even during periods of low solar irradiance.
- **Reduction in fossil fuel dependence:** The shift from diesel generators to solar PV systems reduces reliance on fossil fuels, contributing to Indonesia's climate goals.
- **Community empowerment:** The provision of reliable electricity enables communities to engage in economic activities, improve educational and healthcare services, and enhance overall quality of life.

8.2.4 SPP requirements

8.2.4.1 Examination of Indonesia's Regulatory and Policy Landscape for SPP

Indonesia's regulatory and policy framework for Sustainable Public Procurement (SPP) in renewable energy projects is shaped by several key laws and policies that promote the adoption of renewable energy and the integration of sustainability into procurement practices. Such include:

- **The National Energy Policy (KEN)** was established under Presidential Regulation No. 79/2014. It outlines Indonesia's long-term energy strategy, with a strong emphasis on increasing the share of renewable energy in the national energy mix. The policy sets a target of achieving 23% renewable energy by 2025 and encourages the development of decentralized energy systems, particularly in remote and rural areas.
- **The General Plan of National Energy (RUEN)**, which operationalizes the KEN, further emphasizes the importance of renewable energy projects, including off-grid solutions, in achieving national energy security and sustainability goals. The RUEN includes specific provisions for the development of solar PV systems and the integration of energy storage technologies to enhance energy reliability.
- **Law No. 30/2009 on Electricity.** This law provides the legal framework for the electricity sector, including the promotion of renewable energy. The law encourages the use of renewable energy sources for electricity generation, particularly in remote areas where grid extension is not feasible. It also supports the development of decentralized energy systems and the involvement of local communities in energy projects.
- **Presidential Regulation No. 22/2017** on the National Energy General Plan. This regulation reinforces the goals set out in the KEN and RUEN by providing detailed guidelines for the development and implementation of renewable energy projects. It emphasizes the importance of sustainability in energy procurement and includes provisions for ensuring that public procurement processes for energy projects incorporate environmental, social, and economic sustainability criteria.

8.2.5 Sustainability criteria specific to off-grid solar PV projects

For off-grid solar PV projects in Indonesia, sustainability criteria are essential to ensure that the projects not only meet energy needs but also contribute positively to environmental protection, social equity, and economic development. Key sustainability criteria include:

- **Energy storage solutions:** The integration of energy storage systems is crucial for the sustainability of off-grid solar PV projects. These systems must be capable of providing reliable energy storage, have a long lifespan, and be recyclable or safely disposable at the end of their life-cycle.
- **Community engagement:** Off-grid solar PV projects must actively involve local communities in the planning, implementation, and operation phases. This ensures that the projects meet local needs, provide employment opportunities, and empower communities to take ownership of their energy systems.
- **Environmental impact:** Projects must minimize environmental impacts, particularly in sensitive ecosystems. This includes conducting EIAs and implementing measures to mitigate any negative effects on local biodiversity and natural resources.
- **Economic viability:** The economic sustainability of off-grid solar PV projects is critical. This includes ensuring that the projects are cost-effective over their entire life-cycle, provide a reasonable return on investment, and contribute to local economic development by creating jobs and supporting local industries.

8.2.6 Implementation processes

The successful implementation of off-grid rooftop solar PV projects with energy storage in Indonesia involves several key processes, including tendering, technical specification development, supplier qualification, and contract awarding. These processes are designed to ensure transparency, inclusivity, and the achievement of sustainability goals.

8.2.6.1 Tendering process

The tendering process for off-grid solar PV projects in Indonesia is designed to ensure transparency and inclusivity, allowing a wide range of bidders to participate, and encouraging innovation in project proposals. The key steps in the tendering process include:

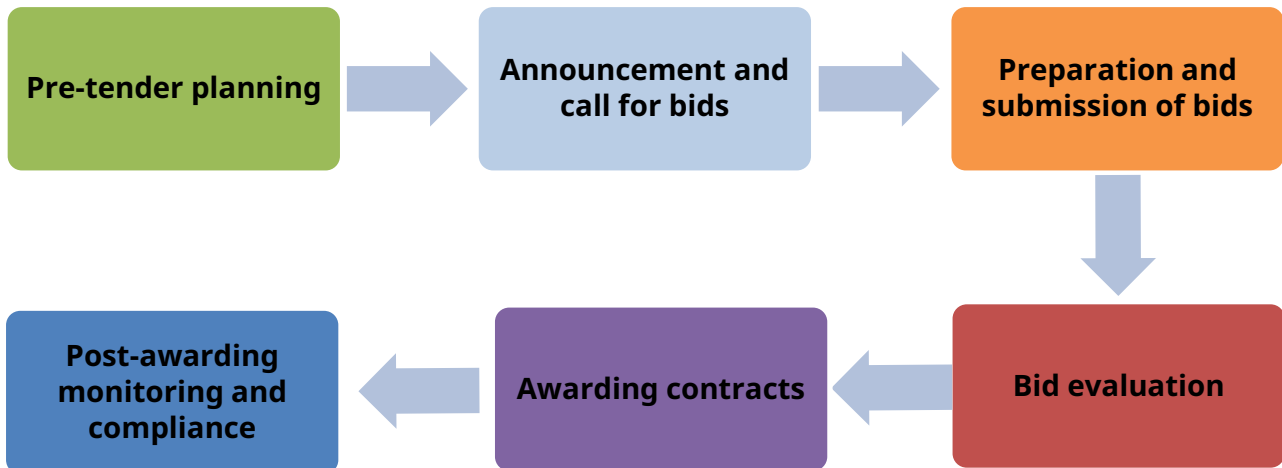


Figure 7: Tendering process in Indonesia

To further promote sustainability, Indonesia's tenders for off-grid solar PV projects often include clauses that incentivize exceeding environmental targets and impose penalties for failing to meet them:

- **Incentives:** Bonuses or financial incentives for developers that exceed EE or sustainability targets, such as higher-than-expected energy output or reduced carbon emissions.
- **Penalties:** Financial penalties or contract termination if the project fails to meet the agreed-upon sustainability, technical, or operational standards.

Given the critical role of energy storage in off-grid solar PV projects, the tendering process must include specific criteria for evaluating the energy storage components of the bids. This includes assessing the storage capacity, battery technology, lifespan, and environmental impact of the proposed solutions. Bidders are encouraged to propose innovative energy storage solutions that enhance the reliability and sustainability of the off-grid systems.

8.2.6.2 Technical Specifications

The technical specifications for off-grid rooftop solar PV systems and energy storage solutions are designed to ensure that the systems are efficient, reliable, and sustainable. Key technical specifications include:

- **Solar PV modules:** The solar PV modules must meet high efficiency and durability standards. This includes using materials that are resistant to the harsh environmental conditions often

found in remote areas of Indonesia, such as high humidity, temperature fluctuations, and salinity in coastal regions.

- **Battery technology:** The energy storage systems must use advanced battery technologies that offer high storage capacity, long lifespan, and minimal environmental impact. Lithium-ion batteries are commonly used due to their high energy density and efficiency, but other technologies such as flow batteries or solid-state batteries may also be considered.
- **System integration:** The PV systems and energy storage solutions must be integrated to work seamlessly, ensuring efficient energy management and reliable power supply. This includes the use of inverters and charge controllers that optimize the performance of the entire system.
- **Maintenance requirements:** The systems must be designed for easy maintenance, with clear guidelines on routine checks, repairs, and component replacement. This is particularly important in remote.

8.3 Appendix 3 - Kenya³¹



Figure 8: Map of Kenya³²

³¹ <https://energy.go.ke/sites/default/files/KAWI/Publication/KNEECS%20Implementation%20Plan29.11.21.pdf>; https://www.kisumu.go.ke/wp-content/uploads/100RE_Terms-of-Reference_Development-of-a-finance-ready-RE-and-EE-project-in-Kisumu-county-Kenya.pdf; https://www.researchgate.net/publication/349716727_Energy_Efficiency_in_Kenya_Public_Awareness_Strategies_Challenges_and_Opportunities; https://ma.boell.org/sites/default/files/2020-05/Energy_efficiency_in_kenya_study.pdf

³² <https://www.ezilon.com/maps/africa/kenya-maps.html>

8.3.1 Kenya: Renewable energy & energy efficiency measures across public healthcare centers

8.3.1.1 Project background

An analysis of Kenya's national energy supply mix shows a heavy reliance on fuelwood and other biomass, which account for 63.5% of total energy consumption. Oil has an 18% share, coal 0.95%, hydropower 1.2% and Wind, geothermal and PV about 16.2% (all in 2018). Renewable energy sources have a high share of electricity generation in Kenya. In 2018, this was 83%, with about 30% hydropower, 40% geothermal, 11% wind, 1.7% solar, and 1.4% bioenergy (International Energy Agency 2021). Further, in 2018, 75% of the population had access to electricity, and the government has a stated goal of 100% access by 2030. Much of the progress in the last years can be attributed to solar home systems.

Kenya currently has one of the most active markets for commercial solar photovoltaic (PV) systems compared to other developing countries. This increases the potential for access to affordable RE technologies. The government is waiving the 16% VAT on all solar products to make them more attractive, especially for rural, sparsely populated, arid, and semi-arid areas.

The project is focused on implementing renewable energy (RE) and energy efficiency (EE) measures across public healthcare centers in Kenya. These centers are crucial in providing medical services to the population, and ensuring their reliable operation is vital for public health. The project's primary objective is to address the high energy costs, frequent power outages, and the need for a stable power supply in healthcare facilities, which is essential for effective healthcare delivery.

By integrating RE and EE measures, the project seeks to reduce the operational costs of these centers, improve the reliability of energy supply, and enhance the quality of healthcare services. The project encompasses a variety of renewable energy technologies, such as solar PV systems and solar thermal systems, as well as energy efficiency solutions, including efficient lighting, efficient heating, ventilation, and air conditioning (HVAC) systems, and smart energy management systems.

8.3.1.2 Goals of the project

- **Reducing energy costs:** Public healthcare centers in Kenya often face high energy costs, which can strain their operational budgets. The project aims to lower these costs by reducing dependence on the national grid and fossil fuels through the adoption of renewable energy sources like solar power and by implementing energy-efficient technologies.
- **Improving energy reliability:** Frequent power outages in Kenya disrupt the provision of healthcare services, particularly in rural and remote areas. By installing renewable energy systems, such as off-grid solar PV systems with battery storage, the project ensures a stable and reliable power supply, which is critical for continuous healthcare service delivery.
- **Enhancing healthcare services:** Reliable and sustainable energy solutions improve the overall quality of healthcare services. A consistent power supply is essential for operating medical equipment, maintaining appropriate storage conditions for vaccines and medicines, and ensuring proper lighting and temperature control in healthcare facilities.

8.3.2 SPP requirements

Kenya has established a comprehensive policy framework to support the integration of renewable energy and energy efficiency in public services, including healthcare. Key legislative and policy instruments as well as programs include:

- **The Energy Act (2019):** This act provides the legal framework for the regulation, management, and development of energy resources in Kenya. It mandates the promotion of renewable energy and energy efficiency and outlines the responsibilities of the Energy and Petroleum Regulatory Authority (EPRA) in enforcing energy policies.
- **National Energy Policy (2018):** This policy outlines Kenya's commitment to sustainable energy development, focusing on increasing the share of renewable energy in the national energy mix, improving energy efficiency, and enhancing energy access, particularly in rural areas.
- **Devolution Policy:** The policy consolidates devolution processes and clarifies and strengthens the roles and responsibilities of both the national and county governments to boost the implementation of devolution, as it is envisaged in the constitution. The devolved governance system includes the allocation of responsibility for energy planning to the county level. In the energy sector, decentralisation allows redressing of historical imbalances created by the centralised approach to energy planning. Such centralised planning prioritised large-scale centralised energy systems, often with little inclusion of the household sector (despite it accounting for the majority of the country's energy demand), resulting in limited access to modern energy services.
- **Least Cost Power Development Plan (LCPDP) (2017-2037):** This Plan is a Kenya Energy Sector Report intended to guide the sector-on-sector status, generation expansion opportunities, and transmission infrastructure target network expansion, as well as resource requirements for the expansion programme. The LCPDP drives all energy projects, and policy guidance is provided by the Ministry of Energy (MoE), while regulatory issues as well as secretariat services are provided by the Commission. LCPDP guides stakeholders on how the energy sector plans to meet the energy needs of the nation for development, at least cost to the economy and environment.
- **Public Private Partnership (PPP) Act (2013) – amended (2017):** The purpose of the PPP Act 2013 is to create an attractive investment environment that will extend the scope of PPPs to cover economic (including for power generation) and social infrastructure projects (including solid waste management facilities). It provides a clear legal structure for government bodies to enter into contracts with the private sector, improve certainty, reduce risk, and create investor confidence, as well as provide a clear approval process for PPPs.
- **Feed-in Tariff (FiT) Policy (2008) – amended (2012):** Kenya's FiT policy encourages the development of renewable energy projects by providing guaranteed pricing for energy generated from renewable sources and fed into the national grid. This policy supports the economic viability of renewable energy projects.

8.3.3 Sustainable criteria for RE and EE projects

- **Energy savings:** The primary sustainability criterion is ensuring that the implemented RE and EE measures lead to significant reductions in energy consumption and costs. This involves the use of energy-efficient technologies and practices, such as light emitting diode (LED) lighting, energy-efficient HVAC systems, and energy management systems that optimize energy use in healthcare facilities.

- **Environmental impact:** The project aims to minimize the environmental impact of healthcare centers by reducing greenhouse gas emissions through the adoption of clean energy technologies. This includes the installation of solar PV systems and the use of energy-efficient appliances that lower carbon footprints.
- **Social benefits:** The project prioritizes social equity by ensuring that all public healthcare centers, particularly those in underserved and remote areas, benefit from improved energy services. The project also focuses on creating job opportunities in the renewable energy sector, particularly for local communities, and enhancing the capacity of healthcare workers through training in energy management.
- **Economic viability:** Ensuring that the RE and EE measures are economically viable is crucial for the project's success. This involves assessing the life-cycle costs of the technologies used, considering not just the initial investment but also the long-term operational and maintenance costs. The project aims to achieve a balance between cost-effectiveness and sustainability.

8.3.4 Implementation process

8.3.4.1 Tendering process

The technical specifications for the RE and EE measures in Kenya's public healthcare centers are critical to ensuring the project's success. These specifications include:

- **Solar PV systems:** The specifications for solar PV installations include requirements for high-efficiency solar panels, inverters, and mounting systems that are designed to withstand local environmental conditions. The specifications also include guidelines for system sizing, ensuring that the solar PV systems can meet the energy needs of the healthcare centers.
- **Energy storage solutions:** Given the frequent power outages in Kenya, energy storage systems, such as batteries, are an essential component of the project. The specifications for energy storage include requirements for battery capacity, life-cycle, and safety standards. The integration of battery storage with solar PV systems is critical for ensuring a reliable power supply.
- **Energy-efficient technologies:** The project specifies the use of energy-efficient appliances, such as LED lighting, energy-efficient HVAC systems, and energy management systems. These technologies are selected based on their energy savings potential, durability, and ease of maintenance.
- **EIAs:** Mandatory EIAs are required for all RE and EE projects to identify and mitigate potential environmental risks. The specifications include guidelines for conducting EIAs, covering aspects such as land use, biodiversity, water resources, and waste management.

The tendering process is as follows:

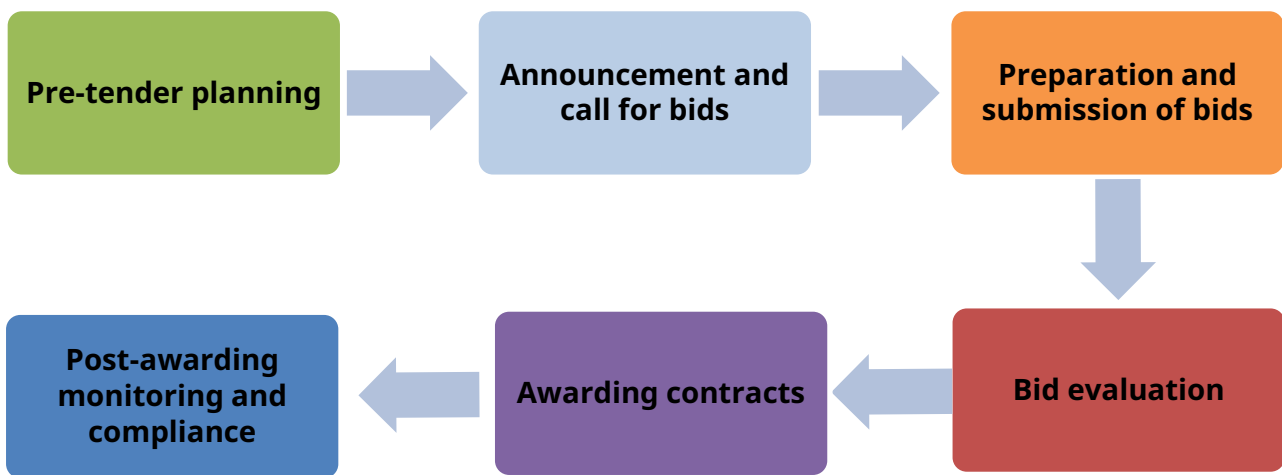


Figure 9: Tendering process in Kenya

- **Technical capability:** Assessing the technical soundness of the proposed RE & EE solutions and the ability of the bidder to deliver the project.
- **Financial feasibility:** Evaluating the cost-effectiveness of the bid, including the potential return on investment (ROI) from energy savings.
- **Sustainability and innovation:** Giving priority to solutions that promote sustainability, reduce carbon emissions, and align with Kenya's renewable energy targets.
- **Local content and social impact:** Considering the extent to which local contractors, suppliers, and labor will be utilized, as well as the project's potential social benefits, such as improving energy reliability in healthcare centers.

In summary, the tendering process for RE & EE measures in Kenyan public healthcare centers ensures the selection of qualified contractors and innovative, sustainable solutions that align with national energy policies. Through rigorous evaluation and monitoring, the process aims to enhance energy reliability and efficiency in healthcare facilities while reducing operational costs and environmental impact.

8.3.4.2 Supplier qualification

The qualification of suppliers for the RE and EE project in Kenya's public healthcare sector is based on several key criteria:

- **Experience:** Suppliers must demonstrate a proven track record in delivering RE and EE projects, particularly in the healthcare sector. Experience in similar projects in Kenya or other developing countries is highly valued.
- **Financial stability:** Suppliers must have the financial capacity to undertake the project, including the ability to provide warranties and guarantees for the performance of the installed systems. This ensures that the supplier can deliver on their commitments and provide ongoing support for the systems' operation and maintenance.
- **Sustainability practices:** Suppliers must demonstrate a commitment to sustainability, including adherence to environmental and social standards in their operations. This includes the use of sustainable materials, fair labor practices, and community engagement in project implementation.

8.3.4.3 *Contract awarding and clauses*

The contract awarding process and the specific clauses included in the contracts are designed to ensure that the RE and EE project achieves its sustainability goals:

- **Performance monitoring:** Contracts include provisions for regular audits and performance reviews to ensure that the installed systems are operating as expected and delivering the projected energy savings. These audits are conducted by independent third parties to ensure objectivity.
- **Penalties for non-compliance:** To enforce compliance with sustainability commitments, contracts include financial penalties for suppliers who fail to meet the specified performance standards. These penalties provide a strong incentive for suppliers to adhere to the contract terms.
- **Incentives for exceeding targets:** To encourage suppliers to exceed the minimum sustainability requirements, contracts include incentives, such as bonuses or extended contracts, for suppliers who achieve higher-than-expected energy savings or other sustainability outcomes.

The implementation of renewable energy and energy efficiency measures across public healthcare centers in Kenya represents a critical step towards achieving sustainable development goals in the healthcare sector. By reducing energy costs, improving energy reliability, and enhancing healthcare services, the project not only contributes to the well-being of the population but also aligns with Kenya's broader energy and environmental policies. The success of the project depends on the effective integration of sustainability criteria throughout the procurement process, from the tendering phase to the awarding of contracts and ongoing performance monitoring.

100% RENEWABLES CITIES & REGIONS ROADMAP

The 100% Renewables Cities and Regions Roadmap project is implemented by ICLEI – Local Governments for Sustainability and funded by the German Federal Ministry for the Economic Affairs and Climate Action (BMWK) through the International Climate Initiative (IKI).

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