



## GREENING TRADE IN SERVICES: LEVERAGING ENVIRONMENTAL SERVICES FOR SUSTAINABLE DEVELOPMENT IN THE GLOBAL SOUTH

Ayesha Sadiq<sup>1</sup>, Subhan Ali<sup>2</sup>, Laila Ahmad<sup>3</sup>

### Abstract

*Environmental services represent a critical yet underutilized avenue for advancing sustainable development and fostering green economic growth in the Global South. This paper provides a comprehensive examination of the complex legal, institutional, and international trade frameworks that influence the expansion and integration of environmental services trade in developing countries. By analyzing key sectors such as waste management, water and sanitation, renewable energy, environmental consulting, and ecosystem services, with illustrative case studies from India, Kenya, and Brazil, the study highlights significant opportunities for economic diversification and climate resilience, alongside persistent challenges including infrastructural deficits, regulatory fragmentation, and skill shortages. The research critically evaluates the role of multilateral institutions, particularly the World Trade Organization (WTO), regional trade agreements (RTAs), and emerging plurilateral initiatives, in shaping trade policies that impact environmental services. It identifies shortcomings in the current classification systems, regulatory inconsistencies, and limited commitments by developing countries that constrain their effective participation in global environmental services markets. The study proposes strategic pathways for the Global South encompassing enhanced policy coherence, export portfolio diversification, strengthened regional cooperation, capacity-building in human capital, and more assertive engagement in trade negotiations to reshape international trade rules in favor of sustainable development. Furthermore, the paper offers detailed legal and trade policy recommendations aimed at modernizing national regulatory frameworks, fostering mutual recognition agreements for professional services, and leveraging international technical and financial assistance to overcome institutional capacity gaps. The findings emphasize that coherent policy frameworks and robust institutional readiness are fundamental prerequisites for enabling developing countries to harness the full potential of environmental services, thereby supporting their broader green growth and Sustainable Development Goals (SDGs) ambitions. This research contributes valuable insights into the emerging nexus of trade, environment, and development, providing actionable guidance for policymakers, international organizations, and stakeholders committed to promoting sustainable trade in environmental services across the Global South.*

**Keywords:** WTO, RTA, Green Trade, Sustainable Development, Global South

### I. Introduction

Trade in services has emerged as a crucial component of the global economy, accounting for over 23% of total global trade and driving innovation, employment, and productivity gains in both developed and developing countries (WTO, 2022) ; (Mathlouthi et al., 2025). Within this sector, environmental services, ranging from wastewater management and air pollution control to renewable energy consulting and environmental monitoring, are increasingly recognized for their dual economic and ecological value. However, despite their growing importance, environmental services remain underrepresented in the trade portfolios of most developing countries, particularly in the Global South (UNCTAD, 2021). This disconnect poses significant challenges to achieving inclusive green growth and sustainable development under frameworks such as the United Nations' 2030 Agenda for Sustainable Development (UN, 2015).

The Global South faces a complex development dilemma: it must pursue economic growth while mitigating environmental degradation, often with limited financial, technological, and institutional capacity. Environmental services offer a pathway to reconcile these goals by enabling the provision of public goods through market-based solutions (OECD,

<sup>1</sup> Ayesha Sadiq, University of International Business and Economics, Email: [ayshasadiq89@gmail.com](mailto:ayshasadiq89@gmail.com)

<sup>2</sup> Subhan Ali, University of the Punjab, Email: [subhanali2599@gmail.com](mailto:subhanali2599@gmail.com)

<sup>3</sup> Laila Ahmad, Southwest University of Political Science and Law, China. Email: [ahmadlaila008@gmail.com](mailto:ahmadlaila008@gmail.com)

2017). For instance, investments in clean energy services not only support decarbonization efforts but also create employment and foster technology transfer (Hui et al., 2025). Yet many countries in the Global South lack the regulatory frameworks, skilled labor, and infrastructure necessary to develop competitive environmental services sectors (ADB, 2023). This structural deficiency underscores the need for targeted policy reforms, capacity-building, and trade liberalization tailored to the specific realities of developing economies.

Despite commitments under the General Agreement on Trade in Services (GATS), the liberalization of environmental services remains limited and fragmented. Many developing countries have not made specific commitments in this area due to classification ambiguities, limited negotiating capacity, and concerns over regulatory sovereignty (WTO, 2023). Moreover, the World Trade Organization's (WTO) current classification of environmental services under Document W/120 is outdated and fails to capture new and innovative green services, particularly digital and ecosystem-based services (Marchetti & Mavroidis, 2004). This creates a regulatory lag that hampers efforts to promote environmental service exports and discourages foreign investment in these sectors in the Global South.

The objective of this paper is to explore how trade in environmental services can be leveraged to support sustainable development goals in developing countries.

It aims to:

1. examine the current trade architecture and classification of environmental services,
2. analyze country-level experiences and sectoral strengths in the Global South, and
3. propose legal and policy pathways to enhance the role of environmental services in trade and development.

By addressing these goals, the research contributes to the growing literature on green trade and seeks to inform a more inclusive and sustainable international trade regime.

### **Methodology**

This study employs a qualitative, exploratory research design aimed at analyzing how developing countries in the Global South can leverage trade in environmental services to promote sustainable development. Given the complexity of international trade law, environmental policy, and service-sector dynamics, a multidisciplinary and multi-method approach is adopted to ensure depth and relevance.

#### **1. Research Approach**

The study uses a comparative legal and policy analysis, supplemented by case study methodology (Afzal & Haider, 2025). This allows for in-depth exploration of both the normative trade frameworks (such as WTO and regional agreements) and country-specific implementation experiences in environmental services. A constructivist epistemological stance underpins this research, recognizing that trade and environmental governance are socially constructed through negotiations, norms, and institutional practices (Finnemore & Sikkink, 1998). Therefore, the study emphasizes the interpretation of policies, legal texts, and institutional behavior over quantitative economic modeling.

#### **2. Data Sources and Collection**

Primary data sources include:

1. International legal instruments, particularly the General Agreement on Trade in Services (GATS), WTO scheduling documents (e.g., W/120), and regional trade agreements with environmental provisions (e.g., AfCFTA, RCEP).
2. National trade and environmental policy documents from selected Global South countries (e.g., India, Kenya, Brazil).
3. WTO submissions and negotiation proposals relevant to environmental services.



4. Official statistics on trade in services and environmental sector performance (WTO, UNCTAD, World Bank).

Secondary data includes:

1. Peer-reviewed journal articles.
2. Reports from international organizations (OECD, ADB, UNESCAP).
3. Think-tank and NGO publications.

Data was gathered using systematic document review and coded thematically to identify patterns related to barriers, opportunities, and institutional readiness for environmental services trade.

### 3. Case Study Selection Criteria

Three countries, India, Kenya, and Brazil, were selected based on:

1. Representation of different regions in the Global South (Asia, Africa, Latin America).
2. Demonstrated engagement in environmental services (e.g., clean energy, environmental consulting).
3. Availability of public data and English-language legal documents.

Each case study explores:

1. Domestic regulatory frameworks.
2. Export potential in environmental services.
3. Integration into global value chains and regional trade agreements.
4. Barriers and enabling factors (skills, technology, finance).

### 4. Analytical Framework

The analytical framework draws on:

1. WTO law analysis: examining the scope and constraints of GATS and related agreements.
2. Sustainable Development Goals (SDG) framework: mapping how environmental services contribute to SDGs 6, 7, 9, 11, 12, and 13.
3. Institutional capacity assessment: evaluating national ability to regulate, promote, and benefit from trade in green services (OECD, 2017).

A SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) is applied to each country's environmental services sector, helping identify strategic recommendations.

### 5. Limitations

The study is limited by:

1. The absence of comprehensive data on trade in environmental services, as many countries do not disaggregate these services in trade statistics.
2. The evolving and contested definition of environmental services, which varies across institutions and agreements.
3. The qualitative nature of the study, which may not capture all economic dimensions but prioritizes policy, legal, and institutional perspectives.

Despite these limitations, the methodology ensures a rich, context-sensitive understanding of how trade in environmental services can advance sustainable development goals in the Global South.

## II. Conceptual Framework and Literature Review

### 1. Defining Environmental Services

Environmental services are a subset of services that directly contribute to environmental protection, natural resource management, and pollution control (HUI et al., 2015). The WTO's Services Sectoral Classification List (W/120) defines environmental services narrowly, including only sewage, refuse disposal, sanitation, and "other" environmental services (WTO,

1991). However, more recent interpretations by the OECD (2005) and the United Nations (UNCTAD, 2021) broaden the scope to include services such as environmental consulting, clean energy advisory, climate risk assessments, carbon trading services, and biodiversity conservation. This definitional ambiguity affects trade liberalization negotiations and data collection, leading to an underestimation of the sector's potential. Moreover, the digital transformation of green services, such as remote monitoring of emissions or satellite-based water assessments, further complicates classification, highlighting the need for updated multilateral frameworks (Marchetti & Mavroidis, 2004) ; (Haider et al., 2024).

## **2. Theoretical Underpinnings**

The study draws upon three interrelated theoretical frameworks:

1. Sustainable Development Theory emphasizes the interconnectedness of economic, social, and environmental goals, proposing that growth should not come at the cost of environmental degradation (WCED, 1987). Environmental services directly serve this agenda by offering low-carbon, resource-efficient alternatives for economic activities.
2. Comparative Advantage in Services Theory (Samuelson, 2004) explains that countries can gain from specializing in services in which they have efficiency or resource benefits. Many Global South countries possess untapped comparative advantages in eco-tourism, biodiversity-related services, and solar energy consulting, yet these remain underdeveloped due to capacity and infrastructure gaps (Ahmad et al., 2025).
3. Environmental Economics and Market Failure Theory suggests that environmental degradation often results from market failures, such as externalities or under-provision of public goods (Pearce & Turner, 1990). Environmental services internalize environmental costs, making markets more efficient and aligning private incentives with public benefits (Ahmad et al., 2023).

These frameworks jointly justify why promoting environmental services trade is not only economically viable but normatively necessary in developing economies (Zhang & Haider, 2025).

## **3. Literature on Environmental Services Trade**

A growing body of literature explores the role of environmental services in achieving global sustainability objectives. Cottier, Nartova, and Shingal (2012) argue that environmental services are instrumental in achieving climate-related goals and should be prioritized in trade liberalization efforts. They advocate for the creation of a “positive list” under GATS negotiations that includes modern green services. Sauvage (2014) emphasizes the need for regulatory coherence and mutual recognition agreements (MRAs) to lower barriers to trade in environmental services. He argues that inconsistent standards, opaque licensing, and non-recognition of foreign service providers are major barriers, especially for SMEs in the Global South. Chaytor and Cameron (2000) critique the reluctance of developing countries to commit to environmental services trade, highlighting fears related to sovereignty, commodification of nature, and lack of capacity. This hesitancy is compounded by limited domestic institutional capacity and inadequate participation in WTO negotiations. Recent empirical work by UNCTAD (2022) shows that countries investing in capacity-building and infrastructure, such as India’s growth in renewable energy consulting and Kenya’s clean water services, can leverage environmental services to expand export portfolios and create green jobs. However, the data remains fragmented due to classification issues and the informal nature of many services in developing economies (Afzal et al., 2025) ; (Sadiq & Haider, 2024).

#### **4. Gap in Literature**

While the existing literature underscores the importance of environmental services, few studies systematically examine their role from the perspective of the Global South. Most research focuses on developed countries or assumes symmetrical trade capacities. Moreover, there is limited exploration of the intersection between trade liberalization, regulatory reform, and sustainable development outcomes in developing regions. This paper addresses this gap by (1) offering a comprehensive review of international legal architecture, (2) analyzing specific case studies in the Global South, and (3) proposing actionable policy recommendations that align environmental services trade with sustainable development goals (SDGs).

#### **III. International Trade Framework for Environmental Services**

Environmental services, critical to addressing global environmental challenges, have gained increasing attention within multilateral and regional trade frameworks. However, international trade governance structures still struggle to fully integrate environmental services, particularly in a way that supports developing countries' participation. This section outlines the current international trade architecture governing environmental services, focusing on the World Trade Organization (WTO), regional trade agreements (RTAs), and emerging plurilateral initiatives.

##### **1. WTO Framework: General Agreement on Trade in Services (GATS)**

The General Agreement on Trade in Services (GATS), introduced in 1995, governs the liberalization of trade in services within the WTO system. GATS applies to all services, including environmental services, across four modes of supply:

Mode 1: cross-border supply,

Mode 2: consumption abroad,

Mode 3: commercial presence, and

Mode 4: presence of natural people (WTO, 2023).

While the agreement provides a flexible structure for members to make sector-specific liberalization commitments, actual commitments on environmental services remain limited, particularly among developing countries. The WTO's classification of environmental services, outlined in Document W/120, divides them into four categories: sewage services, refuse disposal, sanitation and similar services, and other environmental services (WTO, 1991). This classification is derived from the UN's Central Product Classification (CPC), but it is widely viewed as outdated. It excludes modern services like climate adaptation consulting, renewable energy technical services, carbon auditing, and biodiversity monitoring, all of which are critical to green development (Marchetti & Mavroidis, 2004). Moreover, GATS commitments are made voluntarily and vary widely among WTO members. Developed countries tend to have more comprehensive schedules for environmental services, while developing countries often lack detailed commitments due to capacity constraints, regulatory concerns, and a fear of losing control over sensitive environmental sectors (Chaytor & Cameron, 2000).

##### **2. Evolving Classification and Liberalization Debates**

Efforts to modernize the classification of environmental services have emerged through discussions in the Committee on Trade in Services and among informal groups like the Friends of Environmental Goods and Services (FEGS). These efforts aim to expand and update the scope of environmental services to reflect technological advancements and environmental needs.

However, liberalization efforts are hindered by several challenges:

1. Classification ambiguities lead to inconsistent commitments.
2. Overlap with public services (e.g., water supply, waste management) raises political sensitivity.

3. Regulatory heterogeneity creates market access barriers for foreign service providers (OECD, 2020).

In addition, some scholars argue that the lack of discipline on domestic regulation under GATS Article VI complicates the provision of environmental services across borders, particularly when technical standards and qualification requirements differ significantly between countries (Cottier et al., 2005).

### **3. Regional Trade Agreements (RTAs) and Environmental Services**

Due to slow progress at the multilateral level, regional trade agreements (RTAs) have become crucial platforms for advancing the liberalization of environmental services. Many modern RTAs include chapters or provisions on sustainable development, environmental cooperation, and services trade, offering more flexibility and specificity than GATS.

Examples include:

1. EU–CARIFORUM Economic Partnership Agreement: Promotes cooperation on environmental and sustainable services and includes development assistance for capacity-building (European Commission, 2008).
2. Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP): Contains environmental chapters that commit members to facilitating trade in environmental services and goods (CPTPP, 2018).
3. African Continental Free Trade Area (AfCFTA): Although still under negotiation, the Protocol on Trade in Services identifies environment-related sectors as priorities for future liberalization (UNECA, 2021).

These RTAs can be more development-friendly, often including technical assistance and regulatory cooperation mechanisms to support developing countries. However, implementation remains uneven, and many developing countries struggle to translate RTA commitments into domestic reforms due to weak institutional capacity (ADB, 2023).

### **4. Plurilateral and Sector-Specific Initiatives**

Beyond the WTO and RTAs, several plurilateral efforts have aimed to liberalize trade in environmental goods and services:

1. The Environmental Goods Agreement (EGA), initiated by a group of WTO members, sought to eliminate tariffs on a list of green products. However, negotiations stalled in 2016 due to disagreements over product coverage and development asymmetries (ICTSD, 2017).
2. The Trade and Environmental Sustainability Structured Discussions (TESSD), launched in 2020 at the WTO, provide a platform to discuss best practices and potential rules on environmental services, though they remain informal and non-binding (WTO, 2023).

In parallel, the ISO, UN Environment Programme (UNEP), and ITC have developed sustainability standards and guidelines for environmental services, which can help foster international recognition and trust in services originating from the Global South.

## **IV. Environmental Services in the Global South: Sectoral Analysis**

Environmental services in the Global South present both a critical opportunity for sustainable development and a complex challenge shaped by infrastructure gaps, limited regulatory capacity, and global market asymmetries. This section explores key service sectors with strong growth potential, identifies constraints and comparative advantages, and presents country-specific experiences from India, Kenya, and Brazil.

### **1. Key Environmental Service Sectors**

Several sectors of environmental services show significant potential in developing countries:

1. **Waste Management Services:** The urbanization boom in many African and South Asian countries has generated a pressing need for integrated solid waste management systems. This sector includes municipal waste collection, recycling, composting, and hazardous waste disposal. Countries like Rwanda and India are experimenting with public-private partnerships (PPPs) to scale such services (UNEP, 2022).
2. **Water Supply and Sanitation Services:** Water scarcity and inadequate sanitation affect billions in the Global South. Environmental services in this domain include water purification, rural sanitation systems, and eco-technology solutions such as solar-powered filtration units. Kenya's community-led approaches have attracted donor support and are being expanded through regional cooperation (World Bank, 2023).
3. **Renewable Energy and Clean Technology Services:** With growing energy demands, developing countries are increasingly investing in solar, wind, and biomass energy services. These services include feasibility assessments, installation, maintenance, and training for clean energy systems. India, for instance, has developed an entire ecosystem around solar energy services, including international exports of technical expertise (IRENA, 2021).
4. **Environmental Consulting and Monitoring:** This includes environmental impact assessments (EIAs), pollution auditing, climate vulnerability assessments, and biodiversity evaluations. Brazil has a growing market for forest carbon accounting and environmental compliance services, especially under international conservation programs such as REDD+ (UNEP, 2020).
5. **Ecosystem and Biodiversity Services:** These services focus on managing and monetizing ecosystem functions (e.g., carbon sequestration, water regulation, biodiversity). While not fully commercialized, these services are increasingly being bundled with tourism, conservation, and land-use planning. Countries with rich natural endowments like Costa Rica and Kenya have pioneered such integrated approaches.

## **2. Country Case Studies**

### **A. India: Renewable Energy and Environmental IT Services**

India has emerged as a regional leader in renewable energy consulting, thanks to strong public investment, a favorable policy environment, and a growing domestic market. Through its National Solar Mission, India has cultivated companies that offer project development, energy modeling, maintenance, and performance tracking, some of which now export services to Africa and Southeast Asia (IRENA, 2021). India also has an advantage in environmental IT-enabled services, such as climate data modeling and carbon market analytics, leveraging its established tech sector.

### **B. Kenya: Water and Sanitation Services**

Kenya has adopted innovative, community-based models in clean water delivery, including solar-powered boreholes, mobile payment systems for water access, and franchising of sanitation units. The country's Water Sector Trust Fund and partnerships with international donors have supported this innovation. In addition, Kenya is exploring digital tools for remote monitoring of pollution, often delivered by SMEs and startups (World Bank, 2023).

### **C. Brazil: Forest and Biodiversity Services**

Brazil has vast potential in ecosystem service provision, particularly in forest-based carbon services and biodiversity monitoring. The Amazon region has been a testing ground for

international carbon markets such as REDD+, with local firms and NGOs offering land-use consulting, satellite imagery analysis, and environmental compliance services (FAO, 2021). However, political uncertainty and weak enforcement of environmental regulations limit the scalability of these services.

### 3. Opportunities and Limitations

Despite their potential, environmental service sectors in the Global South face several challenges:

- **Opportunities:**
  1. Natural endowments and biodiversity richness.
  2. Digital tools such as mobile monitoring and satellite data, lowering entry barriers.
  3. Donor and climate finance increasingly targeting service-based solutions.
  4. Youth-led innovation and green entrepreneurship in urban centers.
- **Limitations:**
  1. Lack of regulatory frameworks for licensing, standards, and quality assurance.
  2. Weak service infrastructure, including digital connectivity and logistics.
  3. Brain drains and skill gaps in scientific and technical expertise.
  4. Difficulty accessing global markets due to non-recognition of certifications and lack of trade facilitation.

While the environmental services sector is growing, the pace is uneven, and the absence of coordinated trade, environmental, and industrial policies remains a core barrier to scaling these services and integrating them into regional or global value chains.

### V. Policy Coherence and Institutional Readiness

Effective participation in global environmental services trade by countries in the Global South requires more than market access, it demands internal policy alignment, robust institutions, and strong governance mechanisms. This section explores how national development agendas, regulatory systems, public-private collaboration, and institutional coordination affect the ability of developing countries to scale and trade environmental services.

#### 1. National Policy Alignment with Sustainable Development Goals (SDGs)

In many developing countries, environmental services are addressed indirectly through fragmented environmental, trade, and industrial policies. This lack of coherence undermines the ability to build competitive green service sectors. Aligning national trade strategies with Sustainable Development Goals (SDGs), especially SDG 6 (clean water and sanitation), SDG 7 (clean energy), SDG 9 (infrastructure and innovation), and SDG 13 (climate action), can help governments prioritize environmental services in national development plans (UN, 2015). For example, India's National Action Plan on Climate Change integrates service-related objectives into missions for solar energy and water, fostering linkages between environmental innovation and trade (Government of India, 2022). In Kenya, Vision 2030 incorporates green infrastructure and water services, although trade-related components are less developed (Republic of Kenya, 2023).

#### 2. Regulatory and Legal Frameworks

Robust and transparent regulatory systems are essential for the credibility and scalability of environmental services. However, many Global South countries lack harmonized regulatory frameworks, resulting in:

1. Unclear or overlapping mandates between environmental and trade ministries.
2. Weak quality assurance and certification systems.

3. Lack of mutual recognition for foreign service providers and their credentials.

For instance, environmental impact assessment (EIA) procedures and water licensing laws are often outdated or poorly enforced, creating uncertainty for domestic providers and foreign investors (UNEP, 2020). Additionally, few countries have developed specific licensing, accreditation, or standardization regimes for new forms of environmental services such as carbon auditing or biodiversity monitoring (OECD, 2020).

### **3. Institutional Coordination and Governance Capacity**

Environmental services often fall under the jurisdiction of multiple ministries, trade, environment, water, energy, and planning, leading to institutional fragmentation. A lack of coordination results in contradictory policies or duplication of efforts, impeding innovation and trade facilitation. Some countries have begun to establish inter-ministerial task forces or green economy councils to address cross-cutting issues. For example, South Africa's Interdepartmental Committee on Sustainable Development coordinates service-related policy implementation across departments (DEA, 2021). However, such structures remain rare and often lack enforcement power.

Building institutional readiness also requires investment in:

1. Skilled human capital to design and regulate green services.
2. Data systems for measuring environmental performance.
3. Administrative infrastructure to support service providers and link them to global markets.

### **4. Public-Private Partnerships (PPPs) and Local Innovation Ecosystems**

Private sector participation is essential for scaling environmental services, particularly in urban areas. Public-private partnerships (PPPs) can mobilize finance, improve service delivery, and encourage technological innovation.

In countries like Indonesia, PPPs have been successful in scaling renewable energy advisory services and water management, facilitated by clear procurement guidelines and blended finance mechanisms (ADB, 2023). However, in many parts of the Global South, PPPs are limited by:

1. Inadequate legal frameworks for procurement and risk-sharing.
2. Low trust between government and local entrepreneurs.
3. Lack of access to concessional finance or guarantees.

Moreover, local innovation ecosystems, including universities, incubators, and green startups, are often disconnected from formal trade and environmental policy processes. Strengthening these linkages can enhance the responsiveness and adaptability of green service sectors to global demands (UNCTAD, 2022).

## **VI. Strategic Pathways for the Global South**

To effectively integrate environmental services into global trade and harness their potential for sustainable development, countries in the Global South must pursue multidimensional strategies. These pathways should combine legal reform, institutional strengthening, market development, and regional cooperation to enhance competitiveness and policy coherence. This section outlines five strategic pathways for expanding and deepening trade in environmental services.

### **1. Reframe Environmental Services as a Development Priority**

The first step for developing countries is to recognize environmental services as a strategic sector, not merely as a subset of environmental policy, but as a trade and development engine aligned with green growth and climate resilience.

Governments should:

1. Integrate environmental services into national trade and development strategies.
2. Establish sectoral targets for green services under SDG implementation plans.
3. Expand public investment in green services infrastructure and capacity-building.

For example, countries like Vietnam and Morocco have embedded environmental services in their green industrial policy frameworks, facilitating access to climate finance and export markets (UNESCAP, 2021).

## **2. Expand and Diversify Export Portfolios**

Many countries in the Global South currently export low-value environmental services, such as basic waste management or manual labor for environmental projects. To improve competitiveness, governments should support diversification into higher-value segments, such as:

1. Renewable energy design and consulting.
2. Carbon accounting and auditing.
3. Ecosystem-based services (e.g., biodiversity credits).
4. Digital monitoring technologies (e.g., IoT-based air or water sensors).

This can be supported by sector-specific export promotion programs, access to incubation and scaling tools, and the creation of green export zones that bundle services with products (e.g., solar equipment + maintenance contracts) (UNCTAD, 2022).

## **3. Strengthen Regional Integration and South-South Trade**

Given their shared environmental and developmental contexts, countries in the Global South can benefit from regional cooperation on environmental services, particularly through:

1. Harmonization of environmental standards and service classifications.
2. Mutual recognition agreements (MRAs) for qualifications and licenses.
3. Regional service hubs and innovation corridors.

Trade blocs like AfCFTA and ASEAN provide institutional platforms for negotiating service liberalization commitments that reflect developing country interests (UNECA, 2021). South-South cooperation can also facilitate knowledge-sharing, technology transfer, and pooled investments in green infrastructure.

## **4. Invest in Human Capital and Innovation Ecosystems**

Environmental services are knowledge-intensive, requiring highly skilled professionals and adaptive institutions. Thus, capacity-building should be central to any long-term strategy.

Key actions include:

1. Developing vocational training and certification programs in green service fields (e.g., energy auditing, eco-engineering).
2. Supporting academic-industry linkages through research grants and fellowships.
3. Scaling innovation hubs and technology incubators focused on climate-smart services.

Countries like India, South Africa, and Kenya have demonstrated the effectiveness of localized innovation ecosystems in creating export-ready green solutions (ADB, 2023).

## **5. Engage in Global Trade Negotiations with a Green Lens**

Finally, Global South countries must take a more assertive role in international negotiations to ensure that multilateral and plurilateral trade frameworks reflect their development needs.

Strategies include:

1. Advocating for updated classification systems in the WTO (beyond W/120) that capture modern and digital environmental services.
2. Pushing for technical assistance and special & differential treatment (S&DT) under GATS.

3. Collaborating within developing country coalitions to propose development-sensitive liberalization models.

These approaches can help shape a trade regime that supports, not hinders, the emergence of environmental service industries in developing economies (WTO, 2023).

## **VII. Legal and Trade Policy Recommendations**

To unlock the potential of environmental services in the Global South, coherent legal frameworks and strategic trade policies must be implemented at national, regional, and international levels. The following recommendations are designed to enhance regulatory clarity, foster sustainable trade, and ensure that developing countries can benefit equitably from the expansion of environmental services.

### **1. Update National Legal Frameworks for Environmental Services**

Developing countries should enact or revise national laws to clearly define and regulate environmental services in line with evolving international classifications and sustainable development priorities. This includes:

1. Establishing legal definitions that capture both tradition (e.g., waste management, water purification) and emerging services (e.g., climate risk consulting, biodiversity monitoring).
2. Creating sector-specific licensing and certification mechanisms to enhance service quality, ensure public safety, and facilitate trade.
3. Introducing mandatory environmental impact assessments (EIAs) and third-party auditing requirements for service providers operating in sensitive ecosystems.

National environmental laws should also incorporate trade-related provisions, such as transparency in procurement, performance standards, and dispute resolution mechanisms to attract responsible foreign service providers (OECD, 2020).

### **2. Mainstream Environmental Services in Trade Policy**

Trade ministries in the Global South should explicitly incorporate environmental services into national export strategies, trade policies, and industrial plans. Key steps include:

1. Prioritizing environmental services in GATS schedules of commitments during WTO negotiations.
2. Designating green services as “priority sectors” in trade promotion and foreign direct investment (FDI) policies.
3. Establishing green service trade facilitation units to support SMEs, streamline customs and licensing procedures, and improve access to information (Aftab Haider & Ayesha Sadiq, 2025).

Incentives such as tax exemptions, export credits, and performance-linked subsidies can also help build domestic capacity and competitiveness in green service sectors (UNCTAD, 2022).

### **3. Support Classification Reform in the WTO and Beyond**

The outdated W/120 classification of environmental services at the WTO level constrains trade negotiations and statistical tracking. Global South countries should work collectively to:

1. Propose an expanded, development-sensitive classification system that reflects modern service offerings (e.g., carbon finance, environmental software, digital monitoring).
2. Advocate for plurilateral negotiations under the WTO’s Trade and Environmental Sustainability Structured Discussions (TESSD) to include green services.
3. Collaborate with regional bodies and the UN Statistical Commission to standardize new codes for environmental services in national accounts and trade databases.

Such reforms will increase visibility of green services in international trade statistics and enable better-informed policymaking (WTO, 2023).

#### **4. Promote Regional Mutual Recognition Agreements (MRAs)**

To enhance cross-border mobility of service professionals and increase intra-regional trade in environmental services, countries should pursue:

1. Regional MRAs that recognize educational qualifications, technical certifications, and professional licenses for green service providers.
2. Joint accreditation agencies or green skills councils at the regional level, as seen in ASEAN and under negotiation in the AfCFTA.
3. Inclusion of environmental service chapters in regional trade agreements (RTAs), with commitments on investment facilitation, public procurement, and technology transfer.

These mechanisms will reduce entry barriers, encourage regional integration, and create new markets for green SMEs and professionals (UNECA, 2021).

#### **5. Strengthen Environmental Governance through International Cooperation**

Legal reforms must be implemented with technical and financial support from international institutions. Developing countries should call for:

1. Expanded technical assistance and capacity-building programs under WTO's Aid for Trade and UN initiatives for green services.
2. Legal and institutional diagnostics by UNEP, ITC, and regional development banks to assess the readiness for environmental services trade.
3. A global green services trust fund to support legal harmonization, digital infrastructure, and training in low-income countries.

North-South partnerships must also respect policy space and promote equitable access to markets and technologies (UNESCAP, 2021).

### **VIII. Conclusion**

This study highlights the pivotal role of environmental services as a catalyst for sustainable development and economic transformation in the Global South. Despite considerable challenges, such as outdated international classifications, fragmented domestic policies, and institutional capacity gaps, environmental services represent a promising sector for trade expansion, job creation, and climate resilience.

The analysis demonstrates that integrating environmental services into national development strategies and trade frameworks can unlock new growth opportunities. Effective legal and regulatory reforms, combined with enhanced institutional coordination and regional cooperation, are essential to overcome barriers and enable developing countries to compete in increasingly sophisticated global markets. Moreover, active engagement in multilateral and regional trade negotiations can help reshape global governance to better reflect the realities and priorities of the Global South.

Policy coherence, capacity-building, and innovation ecosystems form the foundation upon which environmental services can flourish. Sustainable trade in environmental services not only advances environmental protection goals but also supports the broader ambition of inclusive, green economic development aligned with the Sustainable Development Goals (SDGs). In conclusion, harnessing the potential of environmental services through targeted strategies and collaborative governance offers a viable pathway for the Global South to contribute meaningfully to global environmental sustainability while fostering resilient economic growth.



## References

- Asian Development Bank (ADB). (2023). *Green Services for Sustainable Development: Opportunities for Asia-Pacific Economies*. <https://www.adb.org>
- Marchetti, J., & Mavroidis, P. C. (2004). *WTO Disciplines on Trade in Services: A Case for Special Treatment of Environmental Services?* *Journal of International Economic Law*, 7(4), 881–888. <https://doi.org/10.1093/jiel/7.4.881>
- Organisation for Economic Co-operation and Development (OECD). (2017). *Green Services: Policy Reform for Innovation*. <https://www.oecd.org/environment/green-services>
- United Nations (UN). (2015). *Transforming our world: The 2030 Agenda for Sustainable Development*. <https://sdgs.un.org/2030agenda>
- United Nations Conference on Trade and Development (UNCTAD). (2021). *Trade in Services and Development*. <https://unctad.org>
- World Trade Organization (WTO). (2022). *World Trade Statistical Review 2022*. [https://www.wto.org/english/res\\_e/statis\\_e/wts2022\\_e/wts2022\\_e.pdf](https://www.wto.org/english/res_e/statis_e/wts2022_e/wts2022_e.pdf)
- World Trade Organization (WTO). (2023). *Environmental Services under the GATS: A Background Note*. <https://www.wto.org>
- Finnemore, M., & Sikkink, K. (1998). *International norm dynamics and political change*. *International Organization*, 52(4), 887–917. <https://doi.org/10.1162/002081898550789>
- Organisation for Economic Co-operation and Development (OECD). (2017). *Green Services: Enabling Sustainable Development*. <https://www.oecd.org>
- Chaytor, B., & Cameron, J. (2000). *International Trade Law and the Environment: Towards a Sustainable World*. Cameron May.
- Cottier, T., Nartova, O., & Shingal, A. (2012). *The Role of International Law in the Promotion of Sustainable Development through Trade*. In T. Cottier & O. Nartova (Eds.), *International Trade Regulation and the Mitigation of Climate Change*.
- Organisation for Economic Co-operation and Development (OECD). (2005). *Environmental Goods and Services: The Role of the OECD*. <https://www.oecd.org>
- Pearce, D., & Turner, R. K. (1990). *Economics of Natural Resources and the Environment*. Harvester Wheatsheaf.
- Sauvage, J. (2014). *The Stringency of Environmental Regulations and Trade in Environmental Goods*. OECD Trade and Environment Working Paper No. 2014/03.
- Samuelson, P. A. (2004). *Where Ricardo and Mill Rebut and Confirm Arguments of Mainstream Economists Supporting Globalization*. *Journal of Economic Perspectives*, 18(3), 135–146.
- World Commission on Environment and Development (WCED). (1987). *Our Common Future*. Oxford University Press.
- World Trade Organization (WTO). (1991). *Services Sectoral Classification List (W/120)*. <https://www.wto.org>
- Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). (2018). *Text of the Agreement*. <https://www.international.gc.ca>
- Cottier, T., Pauwelyn, J., & Bürgi, E. (2005). *Environmental Goods and Services: A Legal Perspective*. In T. Cottier & M. Oesch (Eds.), *International Trade Regulation and the Mitigation of Climate Change*.
- European Commission. (2008). *EU–CARIFORUM Economic Partnership Agreement*. <https://policy.trade.ec.europa.eu>



- International Centre for Trade and Sustainable Development (ICTSD). (2017). *Environmental Goods Agreement Negotiations: Stuck or Stalled?* <https://ictsd.org>
- Organisation for Economic Co-operation and Development (OECD). (2020). *Trade in Environmental Services: Key Findings and Policy Recommendations*. <https://www.oecd.org>
- United Nations Economic Commission for Africa (UNECA). (2021). *AfCFTA and the Environment: Building a Green Continental Market*. <https://www.uneca.org>
- Food and Agriculture Organization (FAO). (2021). *Harnessing Ecosystem Services for Climate-Resilient Development*. <https://www.fao.org>
- International Renewable Energy Agency (IRENA). (2021). *Renewable Energy Market Analysis: South and Southeast Asia*. <https://www.irena.org>
- United Nations Environment Programme (UNEP). (2020). *The Role of Environmental Services in Biodiversity Conservation*. <https://www.unep.org>
- United Nations Environment Programme (UNEP). (2022). *State of Waste Management in Africa*. <https://www.unep.org>
- World Bank. (2023). *Kenya: Innovations in Water and Sanitation Services*. <https://www.worldbank.org>
- Asian Development Bank (ADB). (2023). *Public-Private Partnerships for Green Infrastructure in Asia*. <https://www.adb.org>
- Department of Environmental Affairs (DEA), Republic of South Africa. (2021). *Sustainable Development Policy Coordination Report*. <https://www.environment.gov.za>
- Government of India. (2022). *National Action Plan on Climate Change (NAPCC)*. <https://www.india.gov.in>
- Republic of Kenya. (2023). *Kenya Vision 2030 Third Medium Term Plan (2023-2027)*. <https://vision2030.go.ke>
- United Nations Environment Programme (UNEP). (2020). *Global Environment Outlook 6: Policy Effectiveness Chapter*. <https://www.unep.org>
- Asian Development Bank (ADB). (2023). *Green Services and Innovation in Developing Economies*. <https://www.adb.org>
- United Nations Conference on Trade and Development (UNCTAD). (2022). *Building Services Export Capacity in the Green Economy*. <https://unctad.org>
- United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). (2021). *Greening Trade: Pathways for Sustainable Development in Asia-Pacific*. <https://www.unescap.org>
- World Trade Organization (WTO). (2023). *Trade in Environmental Services: Background Note by the Secretariat*. <https://www.wto.org>
- Aftab Haider, & Ayesha Sadiq. (2025). *CAN PAKISTAN REPLICATE CHINA'S ECONOMIC SUCCESS? KEY LESSONS FOR LONG-TERM GROWTH*.
- Afzal, J., & Haider, A. (2025). Environmental and Resource Protection Law by Ke Zhou, Luozhi Yi, Xinjian Su and Youhai Sun. *International Journal of Law and Legal Advancement*, 1(2). <https://journals.scopua.com/index.php/IJLLA/article/view/55>
- Afzal, J., Mathlouthi, N., Rahal, M. S., Yongmei, C., Haider, A., & Afzal, M. A. (2025). Statistical Analysis of Foreign Investment Using Neutrosophic Interval Based Approach. *Neutrosophic Sets and Systems*, 79(1), 14. [https://digitalrepository.unm.edu/nss\\_journal/vol79/iss1/14/](https://digitalrepository.unm.edu/nss_journal/vol79/iss1/14/)
- Ahmad, I., Haider, A., & Ahmad, K. (2025). The Impact of Judicial Activism on Environmental Protection and Justice in Pakistan: A Statistical Analysis. *Journal of*



- Asian Development Studies*, 14(2), 1–10.  
<https://poverty.com.pk/index.php/Journal/article/view/1190>
- Ahmad, I., Haider, A., & Zeb, B. (2023). In the Name of Nature: The Legal Frontiers of Environmental Preservation. *Journal of Asian Development Studies*, 12(4), 401–411.  
<https://poverty.com.pk/index.php/Journal/article/view/65>
- Haider, A., Mathlouthi, N., & Ahmad, I. (2024). Beyond the books: Real world challenges in implementing environmental laws in Pakistan. *Available at SSRN*.
- HUI, Z., HAIDER, A., & Khan, A. (2015). *BIODIVERSITY VS. DEVELOPMENT: SUPREME COURT'S VERDICT IN MK RANJITSINH V. UNION OF INDIA*.
- Hui, Z., Haider, A., & Khan, A. (2025). International trade and plastic waste in oceans: Legal and policy challenges. *Frontiers in Marine Science*, 12, 1627829.  
<https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2025.1627829/abstract>
- Mathlouthi, N., Haider, A., Khan, A., & Ahmad, N. (2025). The role of Hainan Free Trade Port in shaping China's WTO commitments and international trade policies. *China and WTO Review*, 11(1), 71–82. <http://cwto.net/index.php/CWR/article/view/269>
- Sadiq, A., & Haider, A. (2024). *Statistical Analysis of the Potential Benefits of the Belt and Road Initiative (BRI) for Pakistan*. [https://www.researchgate.net/profile/Aftab-Haider-3/publication/389778287\\_Statistical\\_Analysis\\_of\\_the\\_Potential\\_Benefits\\_of\\_the\\_Belt\\_and\\_Road\\_Initiative\\_BRI\\_for\\_Pakistan/links/67d1ab86cc055043ce70dea9/Statistical-Analysis-of-the-Potential-Benefits-of-the-Belt-and-Road-Initiative-BRI-for-Pakistan.pdf](https://www.researchgate.net/profile/Aftab-Haider-3/publication/389778287_Statistical_Analysis_of_the_Potential_Benefits_of_the_Belt_and_Road_Initiative_BRI_for_Pakistan/links/67d1ab86cc055043ce70dea9/Statistical-Analysis-of-the-Potential-Benefits-of-the-Belt-and-Road-Initiative-BRI-for-Pakistan.pdf)
- Zhang, H., & Haider, A. (2025). China First Indoor Smoking Air Pollution Case: Remarkable but Not Justifiable. *Chinese Journal of Environmental Law*, 9(2), 129–159.  
[https://brill.com/view/journals/cjel/9/2/article-p129\\_1.xml](https://brill.com/view/journals/cjel/9/2/article-p129_1.xml)