POLICY BRIEF I

Energytran

Research Infrastructures Cooperation for Energy Transition Between European and Latin American and Caribbean Countries

Policy Recommendations on Technologies and Gender for the Energy Transition: The Role of Technology in the Energy Transition with a Focus on Lithium, Green Hydrogen, and Solar Energy in Latin America and Europe from a Gender Perspective

ACCELERATING SDG 5, 7 & 9 ACHIEVEMENT

POLICY BRIEF #1
POLICY RECOMMENDATIONS ON TECHNOLOGIES AND GENDER FOR THE ENERGY TRANSITION:

THE ROLE OF TECHNOLOGY IN THE ENERGY TRANSITION WITH A FOCUS ON LITHIUM, GREEN HYDROGEN AND SOLAR ENERGY IN LATIN AMERICA AND EUROPE FROM A GENDER PERSPECTIVE

This project has received funding from the European Union's Horizon research and innovation program under grant agreement No 101131725.

Document Control Information

Settings	Value
Document Title:	Policy Brief I
Project Title:	EULAC Energytran: Research infrastructures cooperation for energy transition between Europe and Latin-American and the Caribbean countries
Project Coordinator:	OEI
Deliverable leader:	OEI
Number and type of deliverable:	D3.6– PU - Public
Work Package number:	WP3
Doc. Version:	Final version
Description:	Document that summarizes key issues and recommendations for decision-makers, ensuring they understand the project's impact and actions needed
Dissemination level:	Public, Basic, High
Date:	[Issue Date]

Document Approver(s) and Reviewer(s):

NOTE: All Approvers are required. Records of each approver must be maintained. All Reviewers in the list are considered required unless explicitly listed as Optional.

Name	Role	Action	Date
OEI	Coordinator	Elaboration	10/09/2024
General Assembly of the project	Decision-making body of the consortium	Review	30/11/2024
Steering Committee	Executive body of the consortium	Approve	16/12/2024

Document history:

The Document Author is authorized to make the following types of changes to the document without requiring that the document be re-approved:

- Editorial, formatting, and spelling
- Clarification

To request a change to this document, contact the Document Author.

Changes to this document are summarized in the following table in reverse chronological order (latest version first).

Revision	Date	Created by	Short Description of Changes
Draft 1	10/09/2024	OEI	Starting of drafting version 1

Configuration Management: Document Location The latest version of this controlled document will be stored in EULAC Energytran intranet. Within the framework of the project, a website has been developed, including this document once it will be validated with all the corresponding information, in this https://energytran.oei.int/context/.

This project has received funding from the European Union's Horizon research and innovation program under grant agreement No 101131725.

KEY MESSAGES

Status of the technology in the energy transition and progress towards SDG 5 – Gender Equality

- Gender disparities remain significant in energy and technology fields, often excluding women from leadership roles. Ensuring women's participation in decision-making processes for lithium extraction, green hydrogen and solar energy is crucial for equitable and sustainable outcomes.
- Promoting gender equality in STEM fields and including women in research, policymaking and leadership in the energy sector can drive inclusive innovation and growth.
- Women's leadership in renewable energy projects, particularly in rural solar initiatives, can empower communities and reduce the gender gap.

Status of technology in the energy transition and progress towards SDG 7 – Affordable and Clean Energy

- Technological advancements in lithium extraction, green hydrogen production and solar energy are key drivers of the global energy transition, cutting carbon emissions and expanding renewable energy use.
- Green hydrogen is regarded as a key solution for decarbonizing industries and transportation, with ambitious targets in Europe and growing investments in Latin America.
- Solar energy is one of the fastest-growing sectors, particularly in Latin America and Europe, offering increased access to clean energy, especially in rural areas.

Status of the technology in the energy transition and progress towards SDG 9 – Industry, Innovation and Infrastructure.

- Innovation in energy technologies, such as direct lithium extraction, green hydrogen electrolysis and advanced photovoltaic systems is crucial for scaling renewable energy production and minimizing environmental footprints.
- International cooperation in science, technology and innovation (STI) cooperation overcomes limitations in renewable energy sectors and drives sustainable, gender-inclusive growth.
- Success in energy transition hinges on value-added production, adequate infrastructure and efficient regulation. Transformative science policies are required to include new models of energy production that address social, environmental and economic impacts.

This project has received funding from the European Union's Horizon research and innovation program under grant agreement No 101131725.

Policy Brief 1: The Role of Technology in Energy Transition With a Focus on Lithium, Green Hydrogen and Solar Energy in Latin America and Europe From a Gender Perspective

Executive Summary

The energy transition is a global imperative driven by the urgent need to combat climate change and achieve sustainable development. In both Latin America and the Caribbean, as well as Europe, this transition is fueled by technological progress in key areas such as lithium extraction, green hydrogen production and the expansion of solar energy. These developments have significant potential to reduce carbon emissions and promote the growth of renewable energy. However, without a gender-focused approach, the benefits of this transition may be distributed unequally.

This policy brief explores the role of technology in the energy transition within these regions and sectors, highlighting the importance of integrating gender equality into technological innovation, resource management and energy policies to ensure inclusive and equitable progress. The Energytran[1] project, which aims to strengthen cooperation between the European Union and Latin America and the Caribbean, serves as a reference point; this project addresses the shared challenge of the energy transition through knowledge exchange, with a focus not only on technology but also on environmental and social aspects.

Context and Relevance

Both Latin America and Europe are key players in the global energy transition aligned with environmental protection and social justice. Latin America's vast lithium reserves and growing solar industry, alongside Europe's leadership in green hydrogen, position these regions as benchmarks for the shift toward cleaner energy. However, gender disparities continue to persist in the technology and energy sectors, often marginalizing women's contributions and excluding them from leadership roles. Thus, both regions face the challenge of ensuring that these technological developments are inclusive and benefit men and women equally.

Traditionally, the energy sectors have been dominated by men, and technological innovation often overlooks the needs and contributions of women. To address these gaps, it is necessary to integrate gender equality into technological innovation, workforce development and policy frameworks. A gender-sensitive approach is essential to ensure that women are included to play active roles in the energy transition. Women's participation in the energy transition not

[1] https://energytran.oei.int/es/

This project has received funding from the European Union's Horizon research and innovation program under grant agreement No 101131725.

only promotes equality but also leads to more inclusive and sustainable outcomes, ensuring that clean energy benefits all sectors of society. This intersection of technology and gender equity can create new opportunities for innovation and ensure more inclusive growth.

Key Factors in Energy Transition

Lithium Extraction

Latin America, particularly the "Lithium Triangle" (Bolivia, Chile, Argentina), holds over 60% of the world's lithium reserves, a key resource for batteries used in electric vehicles and energy storage systems. Technological advancements in lithium extraction, such as direct lithium extraction (DLE) technologies, promise to reduce environmental impacts in the shift toward renewable energy, where community participation is crucial to achieving equitable and sustainable outcomes. However, lithium mining operations can have significant social and environmental impacts, particularly on local communities.

> **Gender Perspective.** Women in lithium-producing regions often face disproportionate environmental and social risks (water shortages, health hazards, economic displacement, etc.). Ensuring women's participation in decision-making processes related to lithium mining, including the adoption of technology and environmental management, is essential for achieving equitable and sustainable outcomes. Women's involvement in decision-making processes related to resource management can help mitigate impacts. Additionally, training and integrating more women into this sector could foster new opportunities for economic advancement.

Green Hydrogen

Europe is at the forefront of green hydrogen innovation, with countries like Germany, Spain and the Netherlands heavily investing in hydrogen produced from renewable energy sources. In line with the goal of achieving climate neutrality by 2050, the European Union has set ambitious targets for the production of hydrogen from renewable sources through the REPower EU Strategy for more affordable, secure and sustainable energy.

Green hydrogen, produced through electrolysis powered by renewable energy, offers a promising pathway to decarbonizing heavy industries and transportation. Latin America and Caribbean nations like Chile and Brazil are also investing and taking steps to become key players in green hydrogen production as part of their energy strategies. Technological development in electrolysis, storage and distribution is crucial for accelerating the energy transition.

> **Gender Perspective.** The green hydrogen sector is still in its early stages, and gender inclusion remains a challenge. Women's participation in STEM fields is limited, and the green hydrogen sector reflects this gap. Encouraging women's participation in research, engineering and policymaking in green hydrogen is crucial to fostering an inclusive energy transition. Specific educational programs and gender quotas could help bridge the gap.

This project has received funding from the European Union's Horizon research and innovation program under grant agreement No 101131725.

Solar Energy

Solar energy is one of the fastest-growing renewable sectors worldwide, with significant potential in both Latin America and Europe. Countries like Mexico, Brazil and Spain are heavily investing in solar energy infrastructure, while technological advancements in photovoltaic systems continue to drive down costs and boost efficiency.

> **Gender Perspective**. Solar energy provides unique opportunities for women, especially in rural areas where access to electricity remains limited. By facilitating access to solar technologies, women can improve their livelihoods through entrepreneurship, education and healthcare services. Additionally, women-led solar initiatives—including those focused on design, installation, and project management, as well as rural solar cooperatives—can empower local communities and provide women with leadership opportunities.

Policy Recommendations

1. **Promote Gender-Sensitive Energy Policies**

Governments, institutions and international organizations from both regions should ensure that energy policies, as well as technological innovations, take gender issues into account, recognizing and addressing the needs and contributions of women. This includes supporting research and development (R&D) that considers the specific needs of women in energy access and use. Additionally, programs should prioritize the education and training of women in STEM fields, enabling them to participate in technological advancements within the energy sector. Policies should also promote the participation of women in decision-making roles, particularly in sectors like lithium extraction, hydrogen production and solar energy deployment.

2. **Promote Women's Leadership in the Energy Sector**

Women's leadership can be fostered through specific measures, such as implementing quotas for female leadership in both the public and private energy sectors, specific financial incentives and mentoring programs that encourage women's participation in technical and leadership roles in energy technology. Furthermore, supporting women to take on leadership roles in energy policy formulation, technology development and corporate governance is crucial. Ensuring that women are part of decision-making processes guarantees that energy solutions are inclusive and equitable. Governments should collaborate with the private sector and civil society organizations to create networks that promote women's leadership in the energy sector.

3. **Support Gender-Sensitive Education and Skills Development in STEM fields (as well as in emerging areas such as lithium mining, green hydrogen, and solar technology**)

To boost women's participation in renewable energy production, educational systems must prioritize gender inclusion in STEM fields. To that end, governments should offer scholarships, training programs and internships specifically aimed at young women. Technical training and

This project has received funding from the European Union's Horizon research and innovation program under grant agreement No 101131725.

capacity-building initiatives, particularly in rural and indigenous communities, will help close the gender gap in these industries.

4. **Ensure Equitable Resource Management and Benefit Distribution**

Policies should be enacted to ensure that communities, particularly women, do not suffer the negative consequences of resource extraction activities such as lithium mining. Establishing transparent and equitable benefit-sharing mechanisms is essential to ensure that local populations, particularly women, benefit from the economic opportunities created by the energy transition.

5. **Integrate Gender Equality into International Scientific Cooperation in the Energy Sector**

Energy agreements and partnerships between Latin America and Europe should make gender equality a core principle. Technology transfer programs, international scientific cooperation and capacity-building initiatives can help ensure that the best practices for gender inclusion are shared and implemented in both regions. This will further promote women's participation to foster inclusive growth in the energy sector.

Main Conclusions

The energy transition offers a unique opportunity for technological innovation, economic growth and social inclusion. Technological advancements in lithium, green hydrogen and solar energy are driving the energy transition in Latin America and Europe. However, to ensure that the benefits of clean energy are distributed equitably, it is essential to integrate a gender perspective into these technological advancements.

By adopting gender-sensitive policies and promoting women's leadership in the energy sector, governments and international organizations can create more inclusive, equitable, sustainable and resilient energy systems and futures. Policymakers must prioritize gender equality in energy strategies to ensure that the benefits of the energy transition are shared by all.

The energy transition is a top priority on political agendas in both the European Union and Lantin America and the Caribbean. Enhanced scientific cooperation between these regions can contribute to consolidating it as a priority area for interregional and bi-regional relationships, driving the energy transition through technological and sustainable progress, while also contributing to social advancements by reducing the gender gap in the energy sector.

Energy transition presents a unique opportunity for technological innovation, economic growth and social inclusion.

This project has received funding from the European Union's Horizon research and innovation program under grant agreement No 101131725.

References:

- International Energy Agency (IEA) – www.iea.org
- World Bank Group – Lithium Development in Latin America, www.worldbank.org
- European Hydrogen Strategy – European Commission, www.ec.europa.eu
- Chile's Green Hydrogen Plan – Chilean Ministry of Energy, www.minenergia.cl
- International Renewable Energy Agency (IRENA) – Solar Energy Reports, www.irena.org
- Solar Projects in Latin America –Latin American Energy Organization (OLADE), www.olade.org
- International Energy Agency (IEA), www.iea.org
- Chilean Ministry of Energy (Green Hydrogen Plan), www.minenergia.cl
- Latin American Energy Organization (OLADE), www.olade.org

This project has received funding from the European Union's Horizon research and innovation program under grant agreement No 101131725.

Energytran

Research Infrastructures Cooperation for Energy Transition Between European and Latin American and Caribbean Countries

Funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.