

TERMS OF REFERENCE

Strategies for Clean Ammonia Economy development in Chile

Regional

RG-T4475: Support for Acceleration of Clean Ammonia Economy

<https://www.iadb.org/en/project/RG-T4475>

1. Background and Justification

- 1.1.** The Energy Division (INE/ENE) of the Inter-American Development Bank (IDB) is a functional division of the Infrastructure and Energy Sector (INE/INE), under the Vice Presidency of Sectors and Knowledge (VPS/VPS), which supports and develops knowledge in the energy sector in Latin America and the Caribbean (LAC). INE/ENE is responsible for the development of technical analysis, identification and preparation of programs, projects, technical cooperation, studies, and sectoral notes in the energy sector.
- 1.2.** INE/ENE is pursuing to analyze the Chilean scenario on clean ammonia which emerges as a strategic ally, particularly for decarbonizing heavy industries and transportation sectors. Chile, with its vast renewable energy sources and commitment to environmental sustainability, is positioned to leverage this shift. This project, supported by the IDB under TC RG-T4475, aims to catalyze Chile's transition to a clean ammonia economy. The need for a comprehensive policy and strategic framework is evident to navigate the challenges and harness the opportunities presented by clean ammonia, ensuring environmental, economic, and social benefits.
- 1.3.** Consequently, the Energy Division (INE/ENE) of the Inter-American Development Bank (IDB) seeks a consultant firm with experience relevant in energy and clean ammonia, and the experience specifically in master plans, national strategies, technical and economic analysis to assess the potential of clean ammonia as part of the green transition in LAC countries. This assessment will include the potential, the barriers, and the necessary training.

2. Objectives

- 2.1.** *The objective of the consultancy is to develop a comprehensive and integrated policy and strategy framework that enables Chile to capitalize on the clean ammonia economy, addresses regulatory, financial, technical, and environmental challenges, and fosters stakeholder alignment and collaboration through robust public-private partnerships.*

3. Scope of Services

- 3.1.** *The scope of the services of this consultancy will be:*

- A thorough analysis of the current global landscape and Chile's potential role in the clean ammonia economy, covering production, utilization, and exportation aspects.
- Estimation of market and the potential of production and transportation infrastructure.
- Policy and regulatory framework development
- Definition of potential projects.
- Strategy formulation for stakeholder engagement and investment

4. Key Activities

- Conduct a global benchmarking study to identify best practices in clean ammonia economies, opportunities, and barriers.
- Analyze Chile's potential for clean ammonia production and all its value chain.
- Develop a policy and strategy document, including regulatory, financial, and technical frameworks.
- Engage with key stakeholders through consultations and workshops.

5. Expected Outcome and Deliverables

- 5.1. Deliverable 1: Detailed work plan and Studies on Ammonia Potential
- 5.2. Deliverable 2: Document for Chile's clean ammonia economy pathway.
- 5.3. Deliverable 3: Policy, regulatory and financial recommendations, including a stakeholder engagement plan to foster collaboration and investment
- 5.4. Deliverable 4: Organization and presentation of Deliverable 1, 2 and 3 in a workshop (s) with key players in Chile
- 5.5. Deliverable 5: Final report for the publication

6. Project Schedule and Milestones

Deliverable 1	90 days after signing contract
Deliverable 2	180 days after signing contract
Deliverable 3	240 days after signing contract
Deliverable 4	270 days after signing contract
Deliverable 5	360 days after signing contract

7. Reporting Requirements

- 7.1. *The reports must be written in Spanish and English. The final version of deliverable 5.4 must have in English, Spanish and Portuguese.*
- 7.2. *All deliverables will be accompanied by an internal presentation to the Bank. Presentations will*

be in Spanish and English.

8. Supervision and Reporting

8.1. *The consulting firm will work under the supervision of Christiaan Gischler (INE/ENE), Sector Lead Energy Specialist (INE/ENE), and Matilde Urquiza, Consultant (INE/ENE).*

9. Schedule of Payments

9.1. Payment terms will be based on project milestones or deliverables. The Bank does not expect to make advance payments under consulting contracts unless a significant amount of travel is required. The Bank wishes to receive the most competitive cost proposal for the services described herein.

9.2. The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

Payment Schedule	
<i>Deliverable</i>	%
1. Detailed work plan and Studies on NH3 Potential	10%
2. Document for country’s clean ammonia economy pathway.	30%
3. Policy, regulatory and financial recommendations, including a stakeholder engagement plan to foster collaboration and investment	30%
4. Organization and presentation of Deliverable 1, 2 and 3 in a workshop (s) with key players in the country	20%
5. Final report for the publication	10%
TOTAL	100%

TERMS OF REFERENCE

Strategies for Clean Ammonia Economy development in Colombia

Regional

RG-T4475: Support for Acceleration of Clean Ammonia Economy

<https://www.iadb.org/en/project/RG-T4475>

1. Background and Justification

- 1.1.** The Energy Division (INE/ENE) of the Inter-American Development Bank (IDB) is a functional division of the Infrastructure and Energy Sector (INE/INE), under the Vice Presidency of Sectors and Knowledge (VPS/VPS), which supports and develops knowledge in the energy sector in Latin America and the Caribbean (LAC). INE/ENE is responsible for the development of technical analysis, identification and preparation of programs, projects, technical cooperation, studies, and sectoral notes in the energy sector.
- 1.2.** INE/ENE is pursuing to analyze the Colombian scenario on clean ammonia which emerges as a strategic ally, particularly for decarbonizing heavy industries and transportation sectors. Colombia, with its vast renewable energy sources and commitment to environmental sustainability, is positioned to leverage this shift. This project, supported by the IDB under TC RG-T4475, aims to catalyze Colombia's transition to a clean ammonia economy. The need for a comprehensive policy and strategic framework is evident to navigate the challenges and harness the opportunities presented by clean ammonia, ensuring environmental, economic, and social benefits.
- 1.3.** Consequently, the Energy Division (INE/ENE) of the Inter-American Development Bank (IDB) seeks a consultant firm with experience relevant in energy and clean ammonia, and the experience specifically in master plans, national strategies, technical and economic analysis to assess the potential of clean ammonia as part of the green transition in LAC countries. This assessment will include the potential, the barriers, and the necessary training.

The transition towards a sustainable and green economy necessitates the exploration and adoption of clean energy sources. In this context, clean ammonia presents a promising pathway, offering potential for decarbonization across various sectors including agriculture, energy, and transportation. Recognizing the strategic importance of clean ammonia, [Entity/Agency Name] aims to investigate the feasibility of initiating a clean ammonia project. This study is crucial for assessing the technical, economic, environmental, and social viability of such a project, aligning with [Country/Region]'s commitment to sustainable development and carbon neutrality goals.

2. Objectives

- 2.1.** *The objective of the consultancy is to develop a comprehensive and integrated policy and strategy framework that enables Colombia to capitalize on the clean ammonia economy, addresses*

regulatory, financial, technical, and environmental challenges, and fosters stakeholder alignment and collaboration through robust public-private partnerships.

3. Scope of Services

3.1. The scope of the services of this consultancy will be:

- A thorough analysis of the current global landscape and Colombia's potential role in the clean ammonia economy, covering production, utilization, and exportation aspects.
- Estimation of market and the potential of production and transportation infrastructure.
- Policy and regulatory framework development
- Definition of potential projects.
- Strategy formulation for stakeholder engagement and investment

4. Key Activities

- Conduct a global benchmarking study to identify best practices in clean ammonia economies, opportunities, and barriers.
- Analyze Colombia's potential for clean ammonia production and all its value chain.
- Develop a policy and strategy document, including regulatory, financial, and technical frameworks.
- Engage with key stakeholders through consultations and workshops.

5. Expected Outcome and Deliverables

5.1. Deliverable 1: Detailed work plan and Studies on Ammonia Potential

5.2. Deliverable 2: Document for Colombia's clean ammonia economy pathway.

5.3. Deliverable 3: Policy, regulatory and financial recommendations, including a stakeholder engagement plan to foster collaboration and investment.

5.4. Deliverable 4: Organization and presentation of Deliverable 1, 2 and 3 in a workshop (s) with key players in Chile

5.5. Deliverable 5: Final report for the publication

6. Project Schedule and Milestones

Deliverable 1	90 days after signing contract
Deliverable 2	180 days after signing contract
Deliverable 3	240 days after signing contract
Deliverable 4	270 days after signing contract
Deliverable 5	360 days after signing contract

7. Reporting Requirements

7.1. *The reports must be written in Spanish and English. The final version of deliverable 5.4 must have in English, Spanish and Portuguese.*

7.2. *All deliverables will be accompanied by an internal presentation to the Bank. Presentations will be in Spanish and English.*

8. Supervision and Reporting

8.1. *The consulting firm will work under the supervision of Christiaan Gischler (INE/ENE), Sector Lead Specialist, and Matilde Urquiza, Consultant (INE/ENE).*

9. Schedule of Payments

9.1. Payment terms will be based on project milestones or deliverables. The Bank does not expect to make advance payments under consulting contracts unless a significant amount of travel is required. The Bank wishes to receive the most competitive cost proposal for the services described herein.

9.2. The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

Payment Schedule	
<i>Deliverable</i>	%
1. Detailed work plan and Studies on NH3 Potential	10%
2. Document for country's clean ammonia economy pathway.	30%
3. Policy, regulatory and financial recommendations, including a stakeholder engagement plan to foster collaboration and investment	30%
4. Organization and presentation of Deliverable 1, 2 and 3 in a workshop (s) with key players in the country	20%
5. Final report for the publication	10%
TOTAL	100%

TERMS OF REFERENCE

Strategies for Clean Ammonia Economy development in Brazil

Regional

RG-T4475: Support for Acceleration of Clean Ammonia Economy

<https://www.iadb.org/en/project/RG-T4475>

1. Background and Justification

- 1.1.** The Energy Division (INE/ENE) of the Inter-American Development Bank (IDB) is a functional division of the Infrastructure and Energy Sector (INE/INE), under the Vice Presidency of Sectors and Knowledge (VPS/VPS), which supports and develops knowledge in the energy sector in Latin America and the Caribbean (LAC). INE/ENE is responsible for the development of technical analysis, identification and preparation of programs, projects, technical cooperation, studies, and sectoral notes in the energy sector.
- 1.2.** INE/ENE is pursuing to analyze the Brazilian scenario on clean ammonia which emerges as a strategic ally, particularly for decarbonizing heavy industries and transportation sectors. Brazil, with its vast renewable energy sources and commitment to environmental sustainability, is positioned to leverage this shift. This project, supported by the IDB under TC RG-T4475, aims to catalyze Brazil's transition to a clean ammonia economy. The need for a comprehensive policy and strategic framework is evident to navigate the challenges and harness the opportunities presented by clean ammonia, ensuring environmental, economic, and social benefits.
- 1.3.** Consequently, the Energy Division (INE/ENE) of the Inter-American Development Bank (IDB) seeks a consultant firm with experience relevant in energy and clean ammonia, and the experience specifically in master plans, national strategies, technical and economic analysis to assess the potential of clean ammonia as part of the green transition in LAC countries. This assessment will include the potential, the barriers, and the necessary training.

2. Objectives

- 2.1.** *The objective of the consultancy is to develop a comprehensive and integrated policy and strategy framework that enables Brazil to capitalize on the clean ammonia economy, addresses regulatory, financial, technical, and environmental challenges, and fosters stakeholder alignment and collaboration through robust public-private partnerships.*

3. Scope of Services

- 3.1.** *The scope of the services of this consultancy will be:*
 - A thorough analysis of the current global landscape and Brazil's potential role in the clean ammonia economy, covering production, utilization, and exportation aspects.

- Estimation of market and the potential of production and transportation infrastructure.
- Policy and regulatory framework development
- Definition of potential projects.
- Strategy formulation for stakeholder engagement and investment

4. Key Activities

- Conduct a global benchmarking study to identify best practices in clean ammonia economies, opportunities, and barriers.
- Analyze Brazil's potential for clean ammonia production and all its value chain.
- Develop a policy and strategy document, including regulatory, financial, and technical frameworks.
- Engage with key stakeholders through consultations and workshops.

5. Expected Outcome and Deliverables

- 5.1. Deliverable 1: Detailed work plan and Studies on Ammonia Potential
- 5.2. Deliverable 2: Document for Brazil's clean ammonia economy pathway.
- 5.3. Deliverable 3: Policy, regulatory and financial recommendations, including a A stakeholder engagement plan to foster collaboration and investment.
- 5.4. Deliverable 4: Organization and presentation of Deliverable 1, 2 and 3 in a workshop (s) with key players in Chile
- 5.5. Deliverable 5: Final report for the publication

6. Project Schedule and Milestones

Deliverable 1	90 days after signing contract
Deliverable 2	180 days after signing contract
Deliverable 3	240 days after signing contract
Deliverable 4	270 days after signing contract
Deliverable 5	360 days after signing contract

7. Reporting Requirements

- 7.1. *The reports must be written in Spanish and English. The final version of deliverable 5.4 must have in English, Spanish and Portuguese.*
- 7.2. *All deliverables will be accompanied by an internal presentation to the Bank. Presentations will be in Spanish and English.*

8. Supervision and Reporting

8.1. *The consulting firm will work under the supervision of Christiaan Gischler (INE/ENE), Sector Lead Specialist, Carlos Echevarria, Energy Specialist (INE/ENE), and Matilde Urquizo, Consultant (INE/ENE).*

9. Schedule of Payments

9.1. Payment terms will be based on project milestones or deliverables. The Bank does not expect to make advance payments under consulting contracts unless a significant amount of travel is required. The Bank wishes to receive the most competitive cost proposal for the services described herein.

9.2. The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

Payment Schedule	
<i>Deliverable</i>	%
1. Detailed work plan and Studies on NH3 Potential	10%
2. Document for country’s clean ammonia economy pathway.	30%
3. Policy, regulatory and financial recommendations, including a stakeholder engagement plan to foster collaboration and investment	30%
4. Organization and presentation of Deliverable 1, 2 and 3 in a workshop (s) with key players in the country	20%
5. Final report for the publication	10%
TOTAL	100%

TERMS OF REFERENCE

Assessment of the feasibility of regulatory, financial, technical, environmental, and social aspects, including safety measures.

Regional

RG-T4475: Support for Acceleration of Clean Ammonia Economy

<https://www.iadb.org/en/project/RG-T4475>

1. Background and Justification

- 1.1.** The Energy Division (INE/ENE) of the Inter-American Development Bank (IDB) is a functional division of the Infrastructure and Energy Sector (INE/INE), under the Vice Presidency of Sectors and Knowledge (VPS/VPS), which supports and develops knowledge in the energy sector in Latin America and the Caribbean (LAC). INE/ENE is responsible for the development of technical analysis, identification and preparation of programs, projects, technical cooperation, studies, and sectoral notes in the energy sector.
- 1.2.** INE/ENE aims to investigate the feasibility of a clean ammonia project. This study is crucial for assessing the technical, economic, legal, environmental, and social viability of such a project, aligning with the country's commitment to sustainable development and carbon neutrality goals. Clean Ammonia presents a promising pathway, offering potential for decarbonization across various sectors including agriculture, energy, and transportation.
- 1.3.** Consequently, the Energy Division (INE/ENE) of the Inter-American Development Bank (IDB) seeks a consultant firm with experience relevant in energy and green hydrogen, and the experience specifically in technical and economic analysis to assess the potential of GH₂ and Clean Ammonia as part of the green transition in LAC. This assessment will include the potential, the barriers, the technology and all the gaps to fulfill to contribute to its success.

2. Objectives

- 2.1.** *The objective of this consultancy is to conduct a comprehensive feasibility study for a Clean Ammonia Initiative. It should encompass technical and technological assessment, including production, storage, and transportation; operational and market assessment, economic and financial analysis to determine investment requirements, cost-benefit analysis and return on investment; legal assessment, environmental and social assessment, including the potential benefits for local communities and stakeholders.*

3. Scope of Services

- 3.1.** *The scope of the services of this consultancy will be:*

- Project Definition and Scope Clarification
- Site Evaluation
- Technology and Process Selection
- Regulatory Compliance and Permitting Process
- Economic and Financial Viability Analysis
- Environmental and Sustainability preliminary assessment
- Social Impact and Community Engagement
- Market Analysis and Offtake Strategies
- Risk Management and Mitigation Plans
- Project Implementation Plan
- Feasibility Study Report Preparation and Presentation

4. Key Activities

4.1. *Project Definition and Scope Clarification*

Define the specific objectives, scale, and scope of the clean ammonia project, including production capacity, target markets, and potential applications.

4.2. *Site Evaluation*

Conduct an in-depth analysis of the chosen site, evaluating geographic, climatic, and logistical factors that could impact project implementation.

Assess local infrastructure and its suitability for the project's needs, such as renewable energy availability, water resources, and transportation access.

4.3. *Technology and Process Selection*

Evaluate and select the most appropriate and efficient technologies for renewable energy procurement, hydrogen production, ammonia synthesis, and storage solutions specific to the project's scope and site characteristics.

Design a preliminary process flow diagram outlining key process steps, inputs, and outputs.

4.4. *Regulatory Compliance and Permitting Process*

Identify all relevant local, national, and international regulations that the project must comply with, including environmental, safety, and industry-specific standards.

Outline the permitting process, timelines, and responsible agencies for regulatory approval.

4.5. *Economic and Financial Viability Analysis*

Update the economic model specifically for the project, including detailed cost estimates for capital investment, operational expenses, and potential financing structures.

Analyze revenue models based on the project's production capacity, product pricing, and market demand.

Perform sensitivity analysis to understand the impact of variable factors on the project's financial outcomes.

4.6. Environmental and Sustainability Assessment

Conduct a preliminary environmental impact assessment to identify potential effects on local ecosystems, water resources, and air quality.

4.7. Social Impact and Community Engagement

Assess the project's potential impacts on the local community, including job creation, economic development, and any potential disruptions.

4.8. Market Analysis and Offtake Strategies

Perform a market analysis focused on identifying potential customers, understanding market trends, and assessing competitive dynamics within the target segments for clean ammonia.

4.9. Risk Management and Mitigation Plans

Identify project-specific risks, including technical, market, financial, environmental, and social risks.

4.10. Project Implementation Plan

Outline a preliminary project implementation plan, including key milestones, timelines, resource allocation, and responsibilities.

Develop a project management framework to guide the project from feasibility through to construction and operation.

4.11. Feasibility Study Report Preparation and Presentation

Compile the findings, analyses, and recommendations from all the activities into a final feasibility study report.

Prepare a presentation summarizing key findings and recommendations for project stakeholders, highlighting the path forward for decision-making and potential project implementation.

5. Expected Outcome and Deliverables

5.1. Deliverable 1: Detailed work plan

5.2. Deliverable 2: Feasibility Study draft

5.3. Deliverable 3: Organization and presentation of Deliverable 3 in a workshop with key players

5.4. Deliverable 4: Final report

6. Project Schedule and Milestones

Deliverable 1	10 days after signing contract
Deliverable 2	210 days after signing contract
Deliverable 3	240 days after signing contract
Deliverable 4	300 days after signing contract

7. Reporting Requirements

7.1. *The partial reports must be written in Spanish and English. The final version of deliverable 5.5 must have in English, Spanish and Portuguese.*

7.2. *All deliverables will be accompanied by an internal presentation to the Bank. Presentations will be in Spanish and English.*

8. Supervision and Reporting

8.1. *The consulting firm will work under the supervision of Michelle Hallack, Economics Senior Specialist (INE/ENE), Cecilia Correa, Energy Specialist (INE/ENE), and Eric Daza, Consultant (INE/ENE).*

The consultancy will report to a designated IDB Lead Energy Specialist and liaise with Chile's Ministry of Energy for local coordination and feedback.

9. Schedule of Payments

9.1. Payment terms will be based on project milestones or deliverables. The Bank does not expect to make advance payments under consulting contracts unless a significant amount of travel is required. The Bank wishes to receive the most competitive cost proposal for the services described herein.

9.2. The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

Payment Schedule	
<i>Deliverable</i>	%
1. Detailed work plan	20%
2. Feasibility Study draft	50%
3. Organization and presentation in a workshop with key players	10%
4. Final report	20%
TOTAL	100%

TERMS OF REFERENCE

Capacity Building and Knowledge Sharing

Regional

RG-T4475: Support for Acceleration of Clean Ammonia Economy

<https://www.iadb.org/en/project/RG-T4475>

1. Background and Justification

- 1.1.** The Energy Division (INE/ENE) of the Inter-American Development Bank (IDB) is a functional division of the Infrastructure and Energy Sector (INE/INE), under the Vice Presidency of Sectors and Knowledge (VPS/VPS), which supports and develops knowledge in the energy sector in Latin America and the Caribbean (LAC). INE/ENE is responsible for the development of technical analysis, identification and preparation of programs, projects, technical cooperation, studies, and sectoral notes in the energy sector.
- 1.2.** INE/ENE is pursuing to enhance understanding, collaboration, and technical knowledge among key stakeholders. The integration of clean ammonia into national energy systems presents significant opportunities for reducing carbon emissions and transitioning to sustainable energy sources. To support this transition, capacity building and targeted knowledge exchange are crucial. This involves collaboration with international partners, notably with the government of Japan, and other countries to glean insights from their advanced clean ammonia programs, including policy measures, technology applications, and safety protocols. This project, supported by the IDB under TC RG-T4475, aims to catalyze Brazil, Chile and Colombia's transition to a clean ammonia economy.
- 1.3.** Consequently, the Energy Division (INE/ENE) of the Inter-American Development Bank (IDB) seeks a consultant firm with experience relevant in energy and clean ammonia, and organization of international exchanging events and capacity building programs.

2. Objectives

- 2.1.** *The objective is to facilitate knowledge sharing and capacity building among government entities and private stakeholders in the three target countries, integrating international expertise, to enhance local understanding and implementation strategies for clean ammonia.*

3. Scope of Services

3.1. *The scope of the services of this consultancy will be:*

- Planning, coordination, and execution of a series of workshops and knowledge exchange events. These activities will focus on disseminating critical information, best practices,

technological innovations, and policy frameworks and fostering dialogue on clean ammonia development.

4. **Key Activities**

- Develop and deliver a series of workshops aimed at raising awareness and exchanging opinions among local government entities and private stakeholders in the three countries.
- Workshops will focus on effective policy measures, the latest technology for power generation, industrial use, and transportation, and best practices for safety and regulation.
- Organize international events and leverage existing platforms such as H2LAC to integrate these activities into broader regional or global events, enhancing visibility and participation.
- These events should include among the participants Japanese and other industrialized countries government entities and related organizations, also companies and private sector associations to share their experiences and lessons learned in the clean ammonia sector.
- Focus areas include policy measures, technological advancements, case studies of successful projects, and the development of regulations and norms for the clean ammonia market.

5. **Expected Outcome and Deliverables**

- 5.1. Deliverable 1: Detailed plan and schedule for workshops and the international knowledge exchange event.
- 5.2. Deliverable 2: Report of the execution of multiple workshops in the three target countries, with documented outcomes and participant feedback.
- 5.3. Deliverable 3: Report of the organization and completion of 2 international knowledge exchange event, including a comprehensive report detailing discussions, insights, and actionable recommendations.
- 5.4. Deliverable 4: Final report summarizing all activities, key learnings, stakeholder feedback, and recommendations for future initiatives.

6. **Project Schedule and Milestones**

Deliverable 1	1 month after signing contract
Deliverable 2	12 months after signing contract
Deliverable 3	20 months after signing contract
Deliverable 4	24 months after signing contract

7. Reporting Requirements

7.1. *The reports must be written in English.*

8. Supervision and Reporting

8.1. *The consulting firm will work under the supervision of Christiaan Gischler (INE/ENE), Sector Lead Specialist, , and Matilde Urquiza, Consultant (INE/ENE).*

9. Schedule of Payments

9.1. Payment terms will be based on project milestones or deliverables. The Bank does not expect to make advance payments under consulting contracts unless a significant amount of travel is required. The Bank wishes to receive the most competitive cost proposal for the services described herein.

9.2. The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

Payment Schedule	
<i>Deliverable</i>	%
1. Deliverable 1	10%
2. Deliverable 2	20%
3. Deliverable 3	60%
4. Deliverable 4	10%
TOTAL	100%