





# Electromobility, Energy Storage and Green Hydrogen - PERU

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### CONTENT









**GREEN HYDROGEN** 







## ENERGY POLICY AND REGULATORY FRAMEWORK







### The National Energy Policy 2010 – 2040

"An Energy System that meets the National Energy Demand in a reliable, regular, continuous and efficient manner, which promotes sustainable development and supported by planning and technological innovation". DS 064-2010-EM



Relative Objective to Renewable Energy and Energy Efficiency



### **Energy Policy and Planning**

### **Energy Policy**

"The vision to establish the energy agenda, the objectives, and the strategic guidelines of the planning".

### **Energy Planning**

"The role of planning is to concretize, to give coherent operability to the guidelines established within the energy policy"

### **Energy Efficiency Plan 2050**

Programs to ensure the efficient

- Energy audits,
- Clean cookstoves
- Electric mobility
- Green hydrogen
- Massification of natural gas



It will integrate both plans and consider aspects of energy security and carbon neutrality.



The generation and transmission expansion projects Electricity Grid in the long term.

















### **Regulatory Framework**

### National Development Strategic Plan 2050 DS 095-2022-PCM



### Declared of national interest the climate emergency DS Nº003-2022-MINAM





#### **Energy Activities Vision :**

- Hydrogen from water to export and domestic use.
- Massification of **natural gas** for safety and transition.
- Intensive use of electromobility.
- Massive use of solar energy with distributed generation systems.
- Biomass for circular economy.
- **Geothermal** for power generation and heating in isolated areas.

#### **Priority climate emergency actions:**

- Increased participation of non-conventional **renewable energies** in power generation (20% by 2030 due to competition) and other uses.
- Development of technologies, use and production of green hydrogen.
- Efficient use of energy in the public, productive, service, residential, and transportation sectors.
- **Electromobility** with emphasis on urban transportation.

Source:

[2] https://www.mef.gob.pe/es/normatividad-externa/29768-decreto-supremo-n-095-2022-pcm/file

<sup>[3]</sup> https://www.gob.pe/institucion/minam/normas-legales/2715982-003-2022-minam







### **Planning process**

### Scheduled activities include:

- Update the National Energy Policy 2010- 2040 that was approved by DS 034-2010-EM The purpose is to update the policy for the period 2023 2050 considering energy transition aspects, which includes ensuring energy security, achieving carbon neutrality goals, and addressing climate change.
- Development of a Roadmap for the development of Green Hydrogen. Analyze the conditions of the regulatory and political framework in Peru for the production of green hydrogen.\*
- Development of electrical planning guidelines and methodologies. Elaboration of guidelines for distribution planning with distributed energy resources and new technologies.\*\*

Etapa 1: Diseño	Etapa 2: Formulación	Etapa 3: Implementación	Etapa 4: Seguimiento y evaluación
Paso 1: Delimitación del problema público	Paso 5: Elaboración de los objetivos prioritarios e indicadores	Paso 9: Identificación de los niveles de intervención existentes	Paso 11: Seguimiento
Paso 2: Enunciación y estructuración del problema público	Paso 6: Elaboración de lineamientos	Paso 10: Articulación de la política nacional en los planes	<b>Paso 12:</b> Evaluación
Paso 3: Determinación de la situación futura deseada	Paso 7: Identificación de los servicios y estándares de cumplimiento		
Paso 4: Selección de alternativas de solución	Paso 8: Identificación de las políticas relacionadas		

\* This work is developed with the support of the IDB

\*\* This work is being carried out with the support of GIZ within the framework of a program called "Distribution 4".



LINEAMIENTOS Y ACCIONES PARA LA REGULACIÓN ENTORNO A LA PLANIFICACIÓN ELÉCTRICA CON RECURSOS ENERGÉTICOS DISTRIBUIDOS Y NUEVAS TECNOLOGÍAS

Proyecto Distribución Eléctrica 4.0 - Diciembre 2022

Este documento ha sido elaborado con asesoría técnica de: Fundación Universidad Nacional de San Juan, Unidad Ejecutora INSTITUTO DE ENERGÍA ELÉCTRICA (IEE)

#### Gráfico 4: Etapas y pasos de una política nacional







### ELECTROMOBILITY







# **Electromobility**

Draft Regulation "Installation and Operation of Charging Infrastructure for Electric Mobility".



- Load standards
- Classification of installations
- Earthing system
- Safety requirements
- Technical requirements
- Interoperability

- Parking facilities
- Self-service stations with public access
- ElectroStations EV charging services
- Electro terminals or charging centers

In order to promote charging infrastructure for electric mobility, it is proposed to develop a

"STRATEGY AND ROADMAP FOR ELECTRIC MOBILITY IN PERU".



### Electric Vehicle in MINEM

MINEM managed and received a one-year loan for the use of an electric vehicle and the donation of a charging infrastructure for electric mobility.





**Electromobility** 

HEV

### **Electromobility Promotion Law**

#### **OBJETIVE:**

Establish specific conditions for the Promotion of Electromobility in the national territory and its charging infrastructure, through the creation of a legal framework that reduces or eliminates access barriers to import and commercialization in the Electrical National Market.

#### TAXES EXONERATION

**EXEMPTS THE FOLLOWING TAXES** Electric vehicles and their parts for up to 10 years





**Electric Vehicle** /Battery Electric Vehicle EV/BEV

Plug in Hybrid Electric Vehicle PHEV

#### **OTHER PROVISIONS OF THE DRAF LAW**



Source:







## **Standards Technical Committee**



During the 2021-2022 period, 11 Peruvian technical standards of the CTN TE were approved.

Electrical Transportation



Energy

01 Peruvian technical standard of the CTN ERNC was approved.



International Organization for Standardization



INTERNATIONAL ELECTROTECHNICAL COMMISSION



### **Peruvian Technical Standards for Electromobility**

CODE	TITLE
NTP-IEC 61851 -1:2020	Electric vehicle conductive charging system - Part 1: General requirements.
NTP-IEC 61851-23:2020	Electric vehicle conductive charging system - Part 23: DC electric vehicle supply equipment.
NTP-IEC 61851-21-1:2020	Electric vehicle conductive charging system - Part 21-1 Electric vehicle on-board charger EMC requirements for conductive connection to AC /DC.
NTP-IEC 61851-21-2:2020	Electric vehicle conductive charging system - Part 21-2: Electric vehicle requirements for conductive connection to an AC/DC supply - EMC requirements for off board electric vehicle charging systems.
NTP-IEC 62196 -1:2020	Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 1: General requirements.
NTP-IEC 62196 -2:2020	Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 2: Dimensional compatibility requirements for AC pin and contact-tube accessories.
NTP-IEC 62196 -3:2020	Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 3: Dimensional compatibility requirements for DC and AC/DC pin and contact-tube vehicle couplers.
NTP-IEC 61851-24:2020	Electric vehicle conductive charging system - Part 24: Digital communication between a DC EV supply equipment and an electric vehicle for control of DC charging.
ETP-IECTS 62351-2:2021	Power systems management and associated information exchange – Data and communications security – Part 2: Glossary of terms
ETP-IECTS 62351-1:2021	Power systems management and associated information exchange – Data and communications security Part 1: Communication network and system security – Introduction to security issues
NTP-IEC 62351-3:2022	Power systems management and associated information exchange - Data and communications security - Part 3: Communication network and system security - Profiles including TCP/IP
NTP-IEC 62351-7:2023	Power systems management and associated information exchange - Data and communications security - Part 7: Network and System Management (NSM) data object models
NTP-IEC 61000-3-12:2023	Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16 A and $\leq$ 75 A per phase
NTP-IEC 61000-6-3:2023	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for equipment in residential environments











Source: https://www.nrel.gov/news/program/2021/grid-scale-storage-us-storage-capacity-could-grow-five-fold-by-2050.html







# **Grid-scale storage**

Law to ensure the efficient development of electricity generation (amendment to law no. 28832)

#### **IDENTIFIED ISSUE**

- Current legislation does not specify what should be understood by electric storage, nor the basic rules that allow its participation as a service provider in the electricity market.
- This limits the benefits offered by the different technologies currently available in the market, especially in the provision of complementary services.

#### **PROPOSAL OBJECTIVE**

- Establish the definitions that will enable competition mechanisms in the provision of complementary services.
- Enable the participation of energy storage systems as complementary service providers.
- Specify the powers that the COES should have to act in situations that pose a high-security risk and reliability in the national electrical grid.



















# **Green Hydrogen in Perú**

### Problem: Reducing the sustainability of energy service in framework of an energy transtion process

Final energy consumption dependent on hydrocarbons



#### Negative hydrocarbon trade balance



### Issues Framework:

- Final user with transport systems, captive hydrocarbon heat generation.
- Electricity generation dependent on natural gas and a single gas pipeline.
- Reduction of natural gas reserves and difficulties in international financing for hydrocarbon exploitation.
- High volatility of imported hydrocarbons due to international conflicts.
- Climate commitments to reduce GHGs.

#### **Opportunities:**

- High potential and quality of decentralized renewable resources (900 GW solar, 70 GW hydropower, 20 GW onshore wind, 3 GW geothermal).
- Competitive costs of wind and solar technology.
- Fast advancement of energy storage technologies, in electric transport vehicles and adaptations for hydrogen transport and use.
- Generation of employment and foreign exchange with large investments that will export clean products such as hydrogen.
- Improving the competitiveness of goods and services that use clean energy (such as green hydrogen).









#### GTM H2V

In order to develop a "Strategy and regulatory proposals for the development of Green Hydrogen in Peru", a multi-sectoral working group is formed, where national experts and policymakers will participate, supporting the energy transition towards the use of cleaner energy technologies.

### CONSULTING

The international consultancy service are supporting to elaborate "Roadmap and strategy for green hydrogen in Peru", which is being developed with support from the IDB.

### PROJECT

project "Analysis of the The regulatory and policy framework conditions in Peru for the production of green hydrogen" will be initiated with the support of GIZ Peru, involving knowledge sharing and a study that assesses the regulatory framework conditions for the competitive production of green hydrogen with a certificate of origin identifies the associated and technical prerequisites.

### FRAMEWORK AGREEMENT

Cooperation between the Ministry of Energy and Mines and the Peruvian Hydrogen Association was signed to promote the efficient use of energy, increase interest in green hydrogen, promote access to energy generation without pollution, and improve people's quality of life





**Solar Potencial** 



Mapping for sustainable projects

**Technical documents** 

### **Energy Efficiency**

#### Siee Rolatin DED -Centro de **Balance** Nacional de Energía enidos al Sistema Interactivo de Eficiencia Energética OCUMENTO **Boletín Mensual** EDICIÓN ESPECIAL 2021 Documento **ZONIFICACIÓN DE** SISTEMA ELÉCTRICO **PLANIFICACIÓN** Técnico de **EN TRANSFORMACIÓN** Trabaio **DE HIDROENERGÍA ENERGÍAS RENOVABLES** A ESCALA DE SISTEMA EN ÁREAS DE BAJO IMPACTO Planificación Energética y Energías Renovables s de negocio de GD Potencial de centrales solares fotovoltaicas mayores a 20 MW para generar electricidad al Sistema Eléctrico Interconectado Nacional (SEIN) 20 PERÚ Ministerio de Energía y Mina: Siempre om el pueblo Dirección General de Eficiencia Energética Área de Planeamiento Energético ----A Date 6

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**Energy Balance** 

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# ¡Gracias!

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