Egura Plants Project

Egura's Water, Energy, Hydrogen Plants Engineering Project Proposal

Prepared for:
Free Citizens, Investors, Entrepreneurs, Hubs, Clusters, Universities
of the Americas
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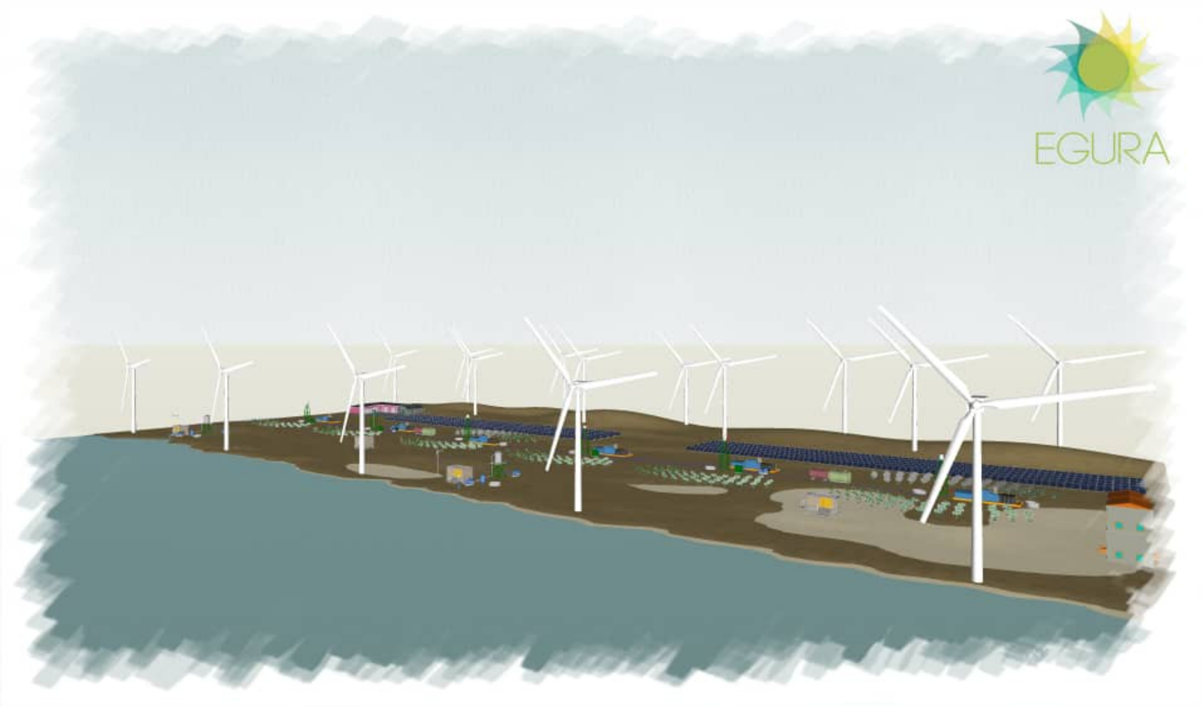

EGURA

Egura Busines Sustainable Plants I+D+i Abstract

Stage	Process	Tasks	Timing/ Estrategy
Initiation	1. Frame	Making sure we have identified the right problem to solve	■√
	2. Research	Understanding the needs of beneficiaries, users and other relevant stakeholders	■√
	3. Analyze	Turning data into insights to identify innovation opportunities	■√
Development	4. Ideate	Creating and screening a wide range of innovative solution proposals	■√
	4,1	*Transitional: investors to fund Pilots with Conceptual, Basic & Detailed Engineering*	□
	5. Prototype	Making prototypes of the most promising concepts within the 10 Hectares EBSP.	□
	6. Test	Testing of prototypes on field & ground settings.	□
	7. Pilot	Testing and refinement of prototypes in a field environment	□

Implementation	8. Plan	Planning and preparation for production and diffusion	☐
	9. Diffuse	Spreading products, services and practises as widely as possible so they can be scaled up for maximum impact	☐

Summary

Egura Business Plants claims in this proposal document that it can supply part of the energy and water daily needs for Planet's society in a sustainable ecofriendly approach and with well-known technologies in a 30-year action. All this from a 45 km² (per nation) option of dry land in coastal zones, based on seawater and sunlight. Also it is proposed in detail extra Egura Products & Services like the Egura Agro and Egura Protein farms connected to main Egura Plants using seawater and sunlight as main renewable natural resources. Egura Project is a global non-profit Initiative of the Luis Elguezabal Aristizabal Foundation (LEA) looking to facilitate access to water and energy at tropical and subtropical latitudes of our planet with the use of Egura Plants/Parks. To fund part of the Cooperation Phase of Egura Project, we have created the Egura Business Division during the 2020 lockdown to offer our solutions as engineering projects to those countries with both the capacity and the environmental conditions to install our Egura Plants approaches. An Egura Plant is a new approach putting together well-known technological principles in a smart and easy conjunction of technologies and scientific knowledge, with the principal role of thermosolar devices and secondly photovoltaic and wind power technologies, to use mainly seawater, but also wastewater, even polluted water from rivers and aquifers, using sunlight to produce potable and/or irrigation water and energy through a battery of solar distillers, solar boilers and steam turbines in a linear system. Egura Business is an opportunity for nations like Spain, Portugal, Italy, France, India, Egypt, Saudi Arabia, Australia, US, Brazil, Chile, Peru, Israel, e.g., to profit on nature and landscapes in a green, ecofriendly and sustainable development, with almost zero environmental impact at your coastal zones. Egura Project should be a better solution, easy water and energy for a well-known problem, scarcity of water and energy in the tropical and subtropical world.In the next pages we will describe *grosso modo* the geographical and ecological data of The Americas to calculate the best options for the Egura Plants/Parks to install in situ in a bright future together.An Egura Plant of 10 hectares proposed (common unit) will be able to produce 37 MWh/day*, depending on clients' choices. The construction and installation of the 10 ha. Egura Pilot Plant is around 40 million $.

Keywords: *Engineering solutions project; Egura Plant; Thermosolar; Hydrogen; Water; Energy; Sustainable Development; Eco Agriculture & Aquaculture; Coastal Zones; Future.*

Economic Potential of a single EBSP
'Egura Business Sustainable Plants' (BeachHead)

10 Has.	*Energy*	*Water*	*Salts*	*Food***	*C Bonds****
Quantity	*37,41 MWh/day*	48,000 m^3/day	10 tons/day	140 tons/yr Egura Protein	Almost 100,000 tons CO_2/yr Egura Agro & Aquaculture **CO2 Capture**/Sink
Value Euros	3.328/d 1.214.720/yr	41.760/d 15.242.400/yr	1.000/d 365.000/yr	2.750.000/yr	2.000.000/yr
Uses	Grid, Industries, Hydrogen	Potable, Animal**, Irrigation**	Human, Animal, Chem. & Pharm. Industries, Building material*	Human Nutrition	Bioconstruction
Competitors	*5 MWh/d 10 Has, PV*	48 MW/day used Reverse osmosis	Brine discharges into Marine environment	Pay for water Sources	No Farms connexed
Emissions Reduction	0,65 tonnes CO_2/MWh	0.0015 MW/m³ 72 MW/day			24,3 + 46,8 tonnes CO_2 /day 25.951,5 Tonnes CO_2 per year

* https://www.theplanjournal.com/system/files/articles/Pungercar_Vol6_Issue2_0.pdf
** Egura Farms Protein & Agro + Aquaculture of bivalves in open sea waters. ***Total CO2 : 125.000 tonnes/Year***
*** Egura Farms Wood + Aquaculture shells $CaCO_3$

EGURA

Technical Summary of Egura Plants
(More details in attached documents)

An Egura Plant relies on the following proposed approach: a new overview for water and energy solutions in a conjunction of well known procedures and technologies to achieve the production of water (human/irrigation/animal) and energy (electricity/Hydrogen fuel) and other very valuable goods from the seawater* and sunlight, in a sustainable way, that could aid to boost the economy and the social development around tropical and subtropical World adjacent to dry or semidesertic marine* coasts.

i) A seawater **Pumping Unit** powered by 'green' energy produced *in situ* by means of **photovoltaic** and **wind turbine generators**, also using **mechanical wind mills**.
ii) The seawater is filtered on land, and the filtered sea water is directed to a stainless steel tanks reservoirs at a required height, depending on the size (available area/surface) of the Egura Plant. The retained organic matter, both detritus and plankton, and mineral matter (sand, clay grains) is directed towards the **Aquaculture Hatcheries Unit** for reproduction of Bivalves, Crustaceans, and other marine organisms.
iii) The filtered seawater tank is connected and feeds (by gravity and vacuum pressure) the **Boiler Unit**, which consist in a spherical stainless steel boiler double heated by a) glass magnifiers attached at the upper side of the main boiler and b) an arch of wheeled movable set of self rotating flat metallic (aluminum, stainless steel, copper, or coating in chromium or other element to test) mirrors or heliostats subunits activated by a manual rope clock like system which is set up to follow the sun track depending on date and latitude. The size of the heliostats arch, and the numbers of subunits, and the focal distance, is proportional to the diameter/volume of the Boiler Unit. The Boiler Unit consists in a double spherical model with a space full of thermal accumulator mass between the two spheres (salt brine blend), which secures heating during intermittent radiation due to cloudiness, and extended heat hours after sunset, depending on the day's reached temperatures and heat conservation. The inner sphere connects the overheated water mass towards the **Steam Turbine Generator Unit** within a high pressure pipe, and is also connected to the **Brine Unit**, where the bottom heated water flow at a conceived rate

every time lapse after the salts concentration is calculated based on volume and temperature of steam and measurements from the filtered seawater tank (volumes and salinity, which can change in daily basis). The steam activating the turbine is condensed and collected in two different systems, one directed towards the **Water Unit**, and other redirected backwards to the boiler feeder joining the pipe connecting filtered seawater and Boiler Unit. <u>Optionally, part of all water produced at Water Unit could be directed towards the **Electrolysis Unit** to produce **Hydrogen**</u> and **Oxygen**, to store in pressured cylinders or tanks. This latter unit can be powered by all electricity sources available inside an Egura Farm/Plant: steam turbine generated, photovoltaic or wind turbine generated electricity.
Layout diagram of future Egura Plants are given in appendix.

<u>Besides seawater, this approach will work also with wastewater, polluted river water and polluted aquifer water at tropical and subtropical latitudes.</u>

The Problem Statement

In a world that needs social and political peace, amid recurrent droughts and energy tyrannies, where new threats constantly arise, free and virtuous nations could act with audacity to liberate our societies from inequalities in water, energy, and the economy. Africa, Latin America, the Caribbean nations, Asia, the Mediterranean region, and the Pacific nations have the resources to develop their local economies and invest in education and health—tangible solutions to create healthier and more educated citizens, even if they choose to live in the countryside. Nevertheless, many of them lack appropriate technology, basic resource availability (access to or production of water and/or energy), or an advanced institutional structure to improve their people's living standards. The Egura Project claims it could produce energy, potable water, irrigation water, hydrogen fuel, medicinal gas, salts, biomass, and seafood (as well as carbon credits), while boosting economies in many countries at tropical and subtropical latitudes. It also represents a historic opportunity for geographically well-positioned nations with suitable climatic and economic conditions and adequate coastal zones to become world leaders in the cleanest and smartest form of "green energy": hydrogen. The Egura Project is a historic opportunity for leading countries around the world. We are offering all our knowledge and experience in scientific and engineering fields to propose, install, manage, and carry out the maintenance of Egura Hydrogen, Water & Energy Plants. These are based on our robust technological approaches, already registered as intellectual property and with potential patent pendings for the entire Egura processes. The Egura Project is able to deliver solutions and business opportunities in the markets for hydrogen, water, and energy, as well as in agriculture and aquaculture products, for the well-being of open and free societies. We have selected a few ubiquitous regions and countries worldwide to freely offer our Egura Business Division opportunity: southern California, northern Australia, Venezuela, southern Europe, Qatar, Bahrain, Spain/Europe, southern Japan, Taiwan, and many others—just to mention some suitable regions. This is part of a strategy we call Egura Continental Companies: Egura Americas Inc. (Cumaná, ZFI), Egura Africa Inc. (Sinai, Egypt), Egura AustralAsia Inc. (Jerusalem, HK, Perth or Singapur) , and Egura Europa S.A. (Baztan, NEA). In this project proposal, we offer Americas—for a selected group of well-positioned countries in our Hemisphere with privileged geographical latitudes and access to coastal zones—the possibility to continue leading the global energy and water economy, as we once did together in OPEC. As oil may reach its peak in the coming decades, it is mandatory to shift soon to new sources from nature: almost infinite seawater and almost eternal sunlight. Americas and similar economies can invest in medium- to large-scale Egura Hydrogen Plants to meet both internal water and energy demands and, of course, for export. Hydrogen, once activated in a fuel cell engine, produces electricity and water as a byproduct at the same time. In the following pages of this private document from the Egura Business Division, we will explain the opportunity of our joint offer, including scalable market projections, the investment volume required for installation, maintenance, and management of Egura Plants. Every client can select the type of relationship they wish to have with the Egura Project. It is also very important to recall that any Egura Plant located in your country's suitable coastal zone could offer the added-value opportunity of developing two other approaches linked to the Egura processes at the main hydrogen plant: Egura Agro (wood and edible plantations, grass, goats, mangrove forests, etc.) and/or Egura Protein (maize, hens for eggs, shrimp lagoons, bivalves, and other aquaculture species). All these options can use part of the water and energy—desired or selected by the client—from the main Egura plants.

We make no secret of our virtuous intentions in establishing a Business Division for the Egura Project. Substantial additional funding—on a very large scale—is required to advance our nonprofit global initiative, our International Cooperation scopes under the LEA Foundation

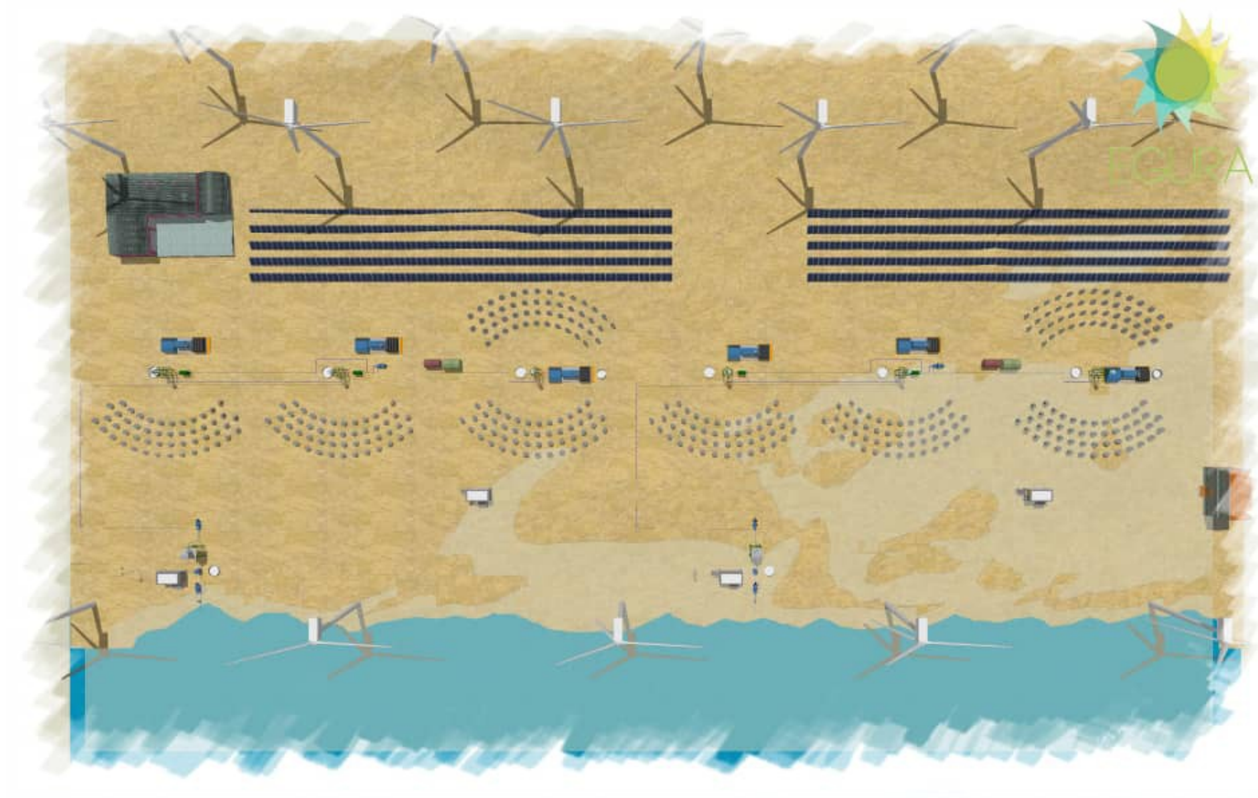
We invite you over the coming decades to play a fundamental role in Egura Business Plants (Water, Energy, Hydrogen, Agro, Protein). Here we present the energy and water potential of any given Egura Common Unit—a standard 10-hectare Egura Plant. We will disclose all our initial administrative calculations, plant costs, and production potential in each case, along with a comprehensive budget that includes Egura's economic value: general administration, maintenance and management, aquaculture, agriculture, hydrogen, water and energy engineering, economic performance, taxes, and commercial sales. We can cover vast areas of your coastal zones with Egura Plants, always maintaining a respectful relationship with nature through an eco-friendly approach with almost zero environmental impact. As biologists and ecologists in addition to engineers, we are deeply committed to this principle. We present here on paper—and in future live presentations—the vision of Egura Plants adapted to your privileged geography. This includes 2D projections of all possible Egura approaches you might wish to develop: only hydrogen, or all three core elements (hydrogen, water, and energy), plus Agro and Protein modules. You are free to choose whether you need or prefer to prioritize water, energy, or hydrogen—or any combination. To conclude this introduction to a new Egura World, we also declare our intention to collaborate closely with national universities and all levels of education in your country. This partnership will enable the use of Egura Plants for research, scientific investigations, training, education, formative visits, internships, and collaborative projects aimed at boosting your people's well-being through the knowledge, skills, and experiences gained from our integrated scientific, economic, and ecological approaches at the Egura Project.
Furthermore, the 15 engineers and 4 administrative staff working on-site will be recruited from local Venezuelan universities. We will organize meetings and conduct scouting processes to select the best-suited, gender-balanced personnel.

The Proposed Solutions, explained
Egura Project: Egura Water & Energy Plants. Hydrogen Option for The Americas.

We firmly maintain and seriously propose that our eco-friendly Egura approaches enable the production of fresh water and energy directly from seawater and sunlight in suitable latitudes and coastal locations. *In situ*, all or part of the produced freshwater can be converted into hydrogen using Egura Electrolysis Units. These units are powered by electricity from our thermosolar coupled boiler-steam turbine systems (which utilize dual heat sources from concentrated sunlight), augmented by photovoltaic panels and wind turbines. The hydrogen can then be transported to your cities or exported globally via ships. When utilized in fuel cell engines, hydrogen generates the two most precious resources on Earth: clean energy and pure water. *At the client's discretion

Energy

The Egura Thermosolar Unit has a potential output of 1,490 kWh/day/ha, while the Egura Photovoltaic Units have a potential of 2,390 kWh/day/ha. For a Beachhead Plant, we allocate the available area as follows: 2 ha for dedicated Photovoltaic Units and 4 ha for the Thermosolar Unit. The remaining space is shared with the Seawater Pump Unit (1 ha), Brine Pool Unit (1 ha), Hydrogen Unit (Electrolysis) (1 ha), and the Central Control Facility building (positioned above the Plankton Aquaculture Unit, 1 ha). Note that the Pump Unit, Hydrogen Unit, and Central Control + Plankton Unit will be fully roof-covered with photovoltaic panels, thereby increasing the total solar power harvesting area to the equivalent of 5 ha for photovoltaics (while still dedicating 1 ha specifically to ensure sufficient power for seawater pumping at 2,390 kWh/day). These roofs, and also the solar panels fields, can also incorporate horizontal wind-generating devices to further augment the overall energy pool as pùblished by Elguezabal et al., (2025). Assuming these data are accurate and verifiable in the field, a standard 10-ha Egura Common Plant would be capable of generating from photovoltaic means (equivalent to ~4 ha effective PV coverage, including roof-mounted additions) plus thermosolar means —totaling 37 MWh/day from all sources together. This can be further supplemented by small- to medium-sized wind generators (e.g., ~10 m² rotor area per 1 kW three-blade unit). The wind-generated electricity could support operations during daylight and overnight, particularly for the pumping unit and/or the electrolysis unit (hydrogen production).



Hydrogen

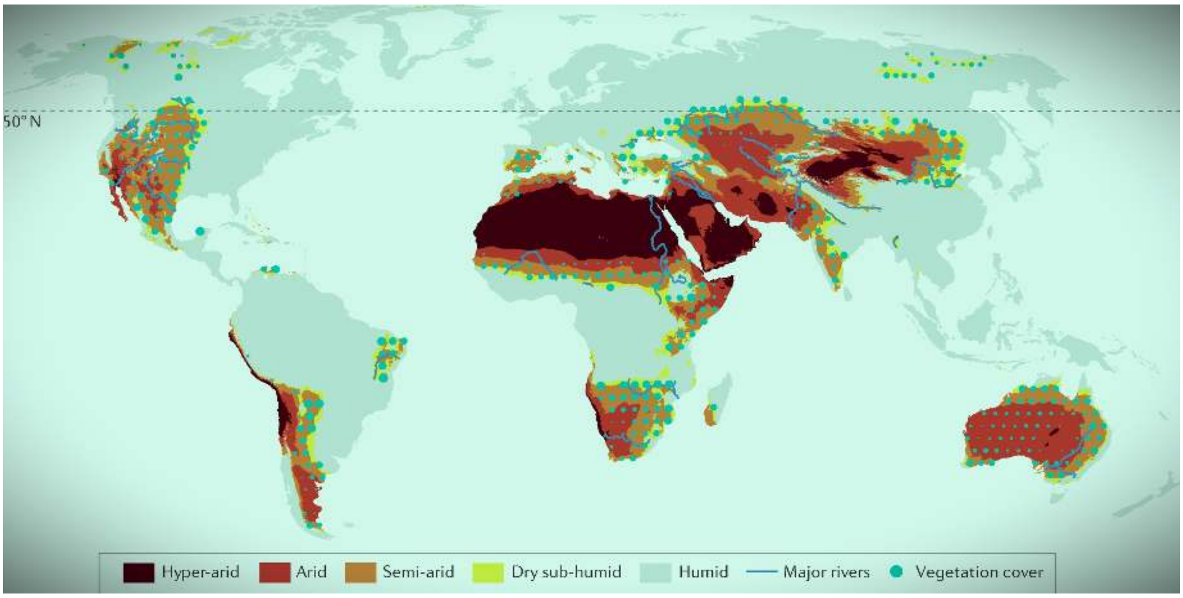
Generating 1 kg of hydrogen requires approximately 8 liters of water and 41.4 kWh of energy (based on high-efficiency electrolysis), while producing around 7 kg of oxygen (which can serve as a valuable medicinal gas). If an Egura Hydrogen Plant dedicates all its energy output from thermosolar, wind and photovoltaic sources—totaling 37 MWh/day in a standard 10-ha Egura Common Unit.

The Egura Plant produces 37 MWh (37,000 kWh) of electricity per day. Assuming 80% efficiency for electrolysis, the system requires approximately 49.25 kWh of electricity to produce 1 kg of H_2. This yields about 751 kg of H_2 per day. The corresponding O_2 production is about 6,008 kg per day. The energy lost in conversion is about 7,400 kWh per day.For the temperature test, there is more hydrogen per kWh with more heat (higher temperatures improve efficiency).

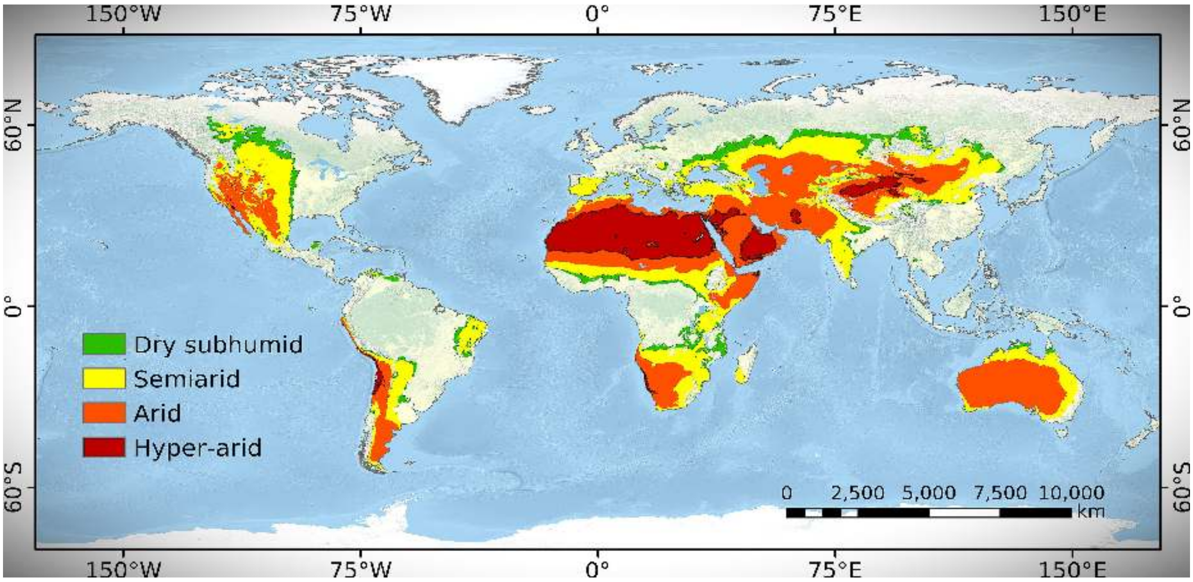
For the theoretical efficiency changes with distilled water temperature, the reversible voltage (E_rev) decreases as temperature increases, leading to higher theoretical electrical efficiency (η = 1.48 / E_rev, where 1.48 V is the thermoneutral voltage). The values are:10°C: E_rev ≈ 1.242 V, η ≈ 119.2%
20°C: E_rev ≈ 1.234 V, η ≈ 119.9%
40°C: E_rev ≈ 1.217 V, η ≈ 121.6%
60°C: E_rev ≈ 1.200 V, η ≈ 123.3%
80°C: E_rev ≈ 1.183 V, η ≈ 125.1%
90°C: E_rev ≈ 1.175 V, η ≈ 125.9%

The equation to project E_rev (in V) based on initial water temperature T (in Kelvin) is:
E_rev = 1.48 - 0.000839 * T This theoretical model assumes constant ΔH and ΔS, ideal gas behavior, and no overpotentials; practical efficiencies are lower (circa 80%) but follow a similar increasing trend with temperature due to reduced overpotentials and improved kinetics.

Total chemical energy in 751 kg H_2 ≈ 751 × 39.4 ≈ 29,590 kWh per day (or about 29.6 Mwh/day).



From Lin *et al*., (2021)



From Yi Li *et al*., 2025.

As seen in the previous images and only regarding the Americas Basins we can signal most of Semi-arid and Dry sub humid landscapes.

Egura Americas Inc., should point to these hundreds of square kilometers of semi arid and sub humid lands, 'inside' the major rivers' basins flowing to the oceans and seas.

We envision not only the mere coasline areas in the Venezuela example, but great distances inlandward, Llanos, Coastal Zones in Sucre, Anzoategui, Falcon, Zulia, Nueva Esparta, flat terrains, dry lands, sunny regions, lossing population and economic attractive, e.g.

We support the idea of a leading Venezuela in both water and energy markets in the Americas, in contrast with the nowadays reality of problematic perception, facing inimaginable challenges the next decades by water, energy and population problematics.

Venezuela has approximately 2,800 km of coastline along the Caribbean Sea (and a small portion on the Atlantic via the Orinoco Delta), making it one of the longest in the Caribbean region.The coastal zone climate is predominantly tropical, with hot temperatures year-round and variations in aridity. In many areas of the northern Caribbean coast (e.g., around Barcelona or eastern sectors), mean annual temperatures average around 28–29°C, with daily highs often 32–33°C. Rainfall is seasonal, with a drier period from December to April; annual precipitation in semi-arid to subhumid coastal sections (such as parts of the central-western coast near the Gulf of Venezuela or Paraguaná Peninsula) ranges from about 350–700 mm (with averages around 500–600 mm in drier zones), while wetter eastern areas receive more. Sunshine is abundant, typically exceeding 2,500–2,600 hours/year in coastal lowlands, with high solar irradiation (often 5–6 kWh/m²/day or roughly 1,800–2,200 kWh/m²/year equivalent). Average wind speeds are influenced by trade winds, commonly around 4–6 m/s in exposed coastal areas.The Caribbean Sea (relevant to Venezuela's coast) covers an approximate area of 2.75 million km². Its average depth is about 2,400 m, with the deepest point at 7,686 m in the Cayman Trench. The total Caribbean coastline (including all bordering countries and islands) exceeds 13,500 km. Major islands include Cuba, Jamaica, Hispaniola (Haiti and Dominican Republic), Puerto Rico, and closer to Venezuela: Margarita, Los Roques archipelago, and Trinidad (though Trinidad belongs to Trinidad and Tobago). The region attracts millions of tourists annually (pre-pandemic figures often exceeded 30 million stayover visitors across the wider Caribbean), drawn to its beaches, reefs, and biodiversity. However, less than 10–20% of critical marine habitats are effectively protected in many areas, with ongoing challenges from overdevelopment and climate impacts. Significant forest and mangrove loss has occurred due to historical clearing and modern pressures, though Venezuela maintains notable protected coastal and marine areas (e.g., Morrocoy National Park, Los Roques).

Imaging calculate a theoretical potential of 450 km^2 of Venezuela suitable Egura Surface (Inland and Coastline) or 45000 hectares, between 2030 and 2050.

This area equals 4500 Egura Common Unit, for **1.686.915 kg/day of Hydrogen** or **56.224.876 kW/day** : **56.224 Mw/day: 56,22 Gw/day**

Venezuela's daily electricity consumption (or average power demand) in recent years, such as around 2022–2023, has been approximately 6–7 gigawatts (GW) on average, reflecting severe constraints from infrastructure decline, frequent outages, and reduced generation capacity (with usable output often far below the nominal ~30–34 GW installed capacity).This contrasts sharply with Spain's much higher figure, as Venezuela's overall annual electricity consumption was around 56–57 TWh in 2022, equating to roughly 6.4–6.5 GW average power demand (calculated as annual TWh ÷ 8760 hours/year). Peak demand has historically reached higher levels (e.g., 16–18 GW in earlier decades), but actual met demand has remained low due to chronic shortages.For a specific academic reference: According to data compiled in energy profiles and reports drawing from international sources, Venezuela's electricity consumption in 2022 was approximately 56.689 TWh (U.S. Energy Information Administration and related analyses; see also consistent figures in scholarly discussions of Latin American energy sectors, e.g., in studies on regional electricity trends).

Data from U.S. Energy Information Administration (EIA) (2024) 'Venezuela Country Analysis Brief (updated data reflecting 2022–2023 consumption patterns)¡. Available at: https://www.eia.gov/international/analysis/country/VEN

(Note: Exact daily GW figures vary by source due to ongoing crises and underreporting, but averages hover in the 6–7 GW range for met consumption in that period.)

All this using 'only' **13.495.320 kg or litres of water**, 13500 m^3/day, which is an afordable data in an eco friendly scope. **In this moment you can see that Egura Plants does not need 450 km of coastline but less to get this volume of water for Hydrogen.**

As a 1 water pump (65- 70 Kwh) of **6**" suction provides up to a maximum of 8,3 m^3 per minute (498 m^3/h or 11952 m^3/day) **pumping** and up to 45 m of head. With a group of 4 pumps like this one (or more, dependending on client's target choice) in the Egura Pumping Unit, this is 47.808 m^3/day, the client can obtain enough to distribute water for Hydrogen Unit, Irrigation water and potable water for near villages and irrigation water for associated Egura Agro and Egura Protein farms besides main Egura Plant.

The Egura Pumping Unit power needs is thus 6.720 kW/day, from all sources available: photovoltaic, wind generator and steam turbine generator to power electric water pumps.

If the Americas free and open societies choose to invest in Egura Americas Inc. option, it could be used to power new industries, commercial areas, ports, airports and even classic desalination facilities already existing, but now using green eco friendly energy to activate wether distillation or reverse osmosis processes.

Water

For water, this hydrogen approach means some 13.495.320 litres of potable water. If we add the water from distillation units at thermosolar steam turbine coupled unit **of a single Egura Beachhead Plant**, 34308 m^3/day from total water pump unit potential, from 47808 m^3/day total minus the 13500 m^3/day for hydrogen production.

This big volume of daily water available could be splited under clients decision or choice: be 50%/50%, towards human consumption at near villages or cities and towards **conexe Egura Protein and Egura Agro farms** that we will explain further in next pages.

34308 m^3/day is equal to 34.308.000 litres a each day, but it is still far for daily water needs for Region's citizens. Thus, this **Egura Water daily potential production could be used for irrigation water purposes**, thinking in these facts for Egura Protein: Water needs are 26 tons/year for 2000 hens, for maize is 152.060 m^3 for 10 has during 1 year.

Desalination

After Wateruse Association Dsealination Committee (2011, Seawater Desalination Power Consumption White Paper, pag 15) it takes an average of 12 kw to desalinate 1 kgal of seawater from Pacific Ocean salinity, or 3785 litres of potable water. **Being this, the green energy from Hydrogen Fuel Cells Engines mentioned above, 16.492.092,95 kW/day will supply energy to desalinate 1.374.341,07 kgal of water** or **5.201.880.949,95 litres of potable water!**

It is important to recall that Wateruse Association (op. Cit.) calculates power use in water projects including all aspects possible. We share a scheme image from their White Paper document, which explains itself:

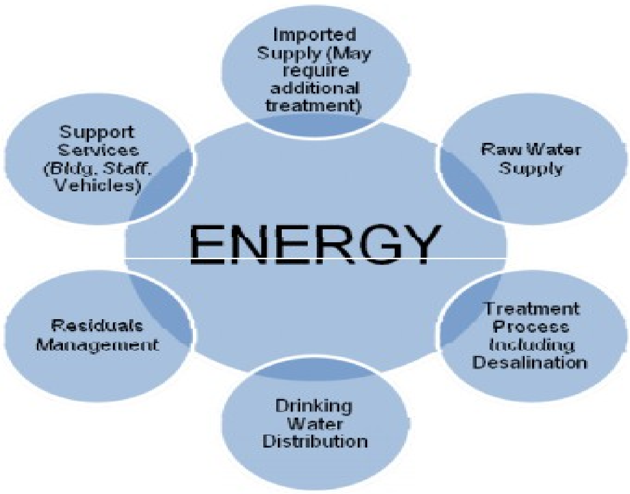
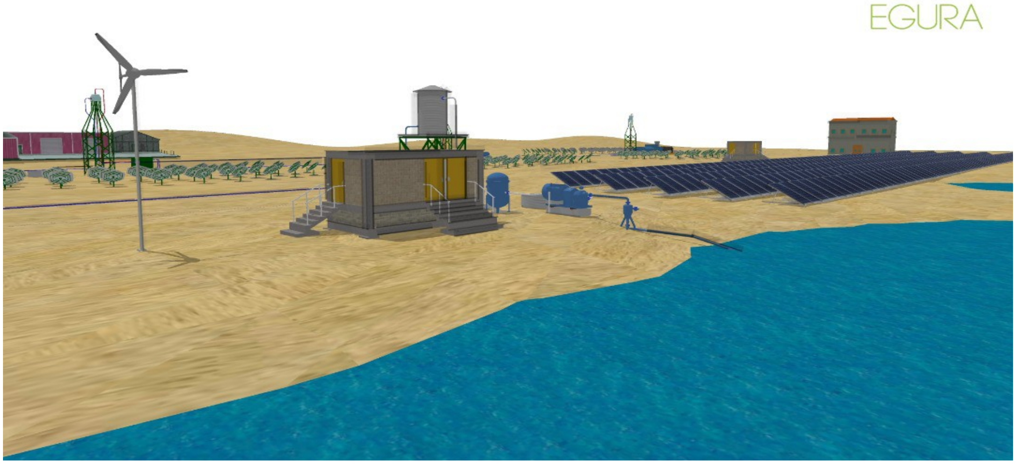


Figure 1
Areas Contributing to Energy Consumption for Water Projects[2]

If it is impossible to read or understand the text in the image above: energy consumption for water desalination projects in US, takes in account, I) the treatment process of desalination; ii) drinking water distribution; iii) residual management; iv) support services, satff, vehicles, e.g.; v) imported supplies and vi) raw water supply.

Now, we can recall also in that when using **hydrogen** for **electricity** through fuel cells, part of the energy is lost as heat (energy) that can be used by coupled Egura's System for **hot air steam turbines** at final client destination for more extra energetic efficiency. Also, extra water is obtained as byproduct of Hydrogen engines, that could be directed towards a potential distilled water SME (small & medium enterprise) for private and academic labs of your nation and for export also.



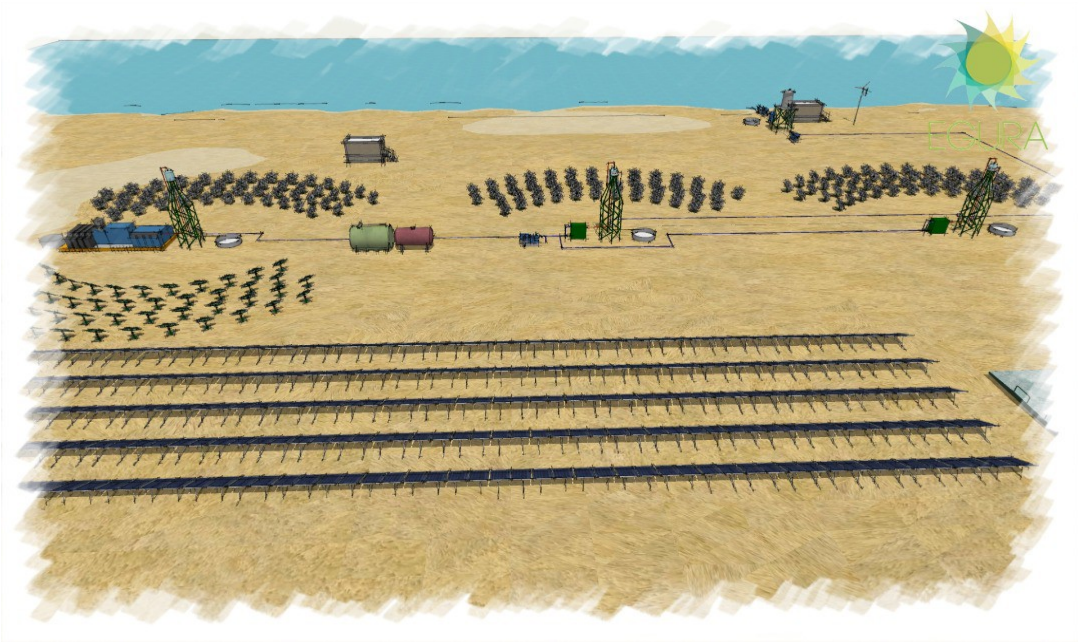
Potential of the Americas (Venezuela) Coastal Zones for Egura Project development

Using the knowledge of Coastal Development Guidelines produced by International entities (e.g. UN) that allows every nation to develop frameworks for an Integrated Coastal Zone Management Planning (ICZMP), also for Venezuela. As we understand the supreme importance of coastal zones, and our Egura approaches claims an almost zero environmental impact (to measure constantly) we propose, respectfully, to use the Coastal Zone scientific publication by Tortell (2004).

We would recommend to study the potential for Egura Plants & Farms in the zone highlithed in yellow: the Future Potential Egura Development Zone. 2030-2050, Egura Americas Plants & Farms. (Next Page).

https://earth.google.com/earth/d/1QVzqZqXChcV8LxTGy22FY9AJtfeHrQ-_?usp=sharing

Potential Location: Nearby of Cryogenic Complex, Jose, Anzoategui, Venezuela.



More details of the solution

How the Egura Plants Project will be done?
When total funds are available (via IPO e.g.) to assure the first years of Egura Plants Project, it will begins the coordination between Egura Engineers and sub contracted construction companies to start Egura Plants land adequation, construction of Egura facilities and Egura units installation works.

All equipment and materials, tools and hardwares will be bought at better from best quality/value rates available in market offered by well known and trusted enterprises.

Personnel?

Egura Plants Project will have different types of personnel adequated for distinctive stages: i) third party (contracted companies) personnel involved in the construction and installation works of Plants; ii) long term contratcs for local employees and staff for management, maintenance and production works once Egura Plants be active and productive, like engineers, scientists, technicians, administrative, following the national laws and rules; iii) local Egura Project Continental Companies anchors and Egura representatives, coordinating, evaluating, surveilling, controlling quality standards in workers well being (ILO standards), eco friendly processes (ISO 14000), human rights respect (OHCHR), as well as supervising efficiency, sustainability and security of all processes within Egura Plants and connexed potential farms, in energetic and economic areas.

When the work will begin and, when the Egura Plants Project will be completed?

Once the funds are available, and best suitable coastal areas and regions are choosen, and a deep enviromental impact study is carried out during at least 3 months before land adequaction and construction works begins, the Egura Plants would be deployed to begin steady *or rapid scallation during the 30 years approach and beyond.

During each year of the project, both client/investors and Egura Continental Companies representatives would decide to wheter increase or decrease velocity of Egura Plants extension and production of water and energy, based on economic and enviromental measurable standards of efficiency and security to avoid ecological and financial risks in any given moment.
*All decisions relays always on final client/investors will

Basic Financial Plan & Business Model

Egura Financial Plan: we will be offering the ownership of 90% to Egura Americas Inc.. new company to **International risk investors** and **general public** (via potential stocks' individual holders) to deploy **the First Egura Business 10 Ha. Plant to stud**y for i) security, ii) environmental impact and iii) energetic, hydric and economic efficiency researches.
Egura Business Model: Deploy the Egura *know-how* to built as many Egura Plants as needed to provide energy and water for The Americas Hospitals, Hotels, Drink & Food Industries, water companies, energy companies, farms, villages, Schools, libraries, universities, e.g., and also to reach a possible level for export hydrogen fuel towards high demanding energy economies around the world during the next decades. Taking Stock of Expenses*

Business Plan: The "Business and Cooperation" Model

Executive Summary & Ownership Structure

The Egura Americas Pilot Plant is a $40 million, 10-hectare integrated facility designed to produce green hydrogen and fresh water for a coastal oil refineries. This project operates under a unique virtuous business model where commercial success directly funds global humanitarian aid.

The equity of Egura Americas Inc. for this pilot and all successive plants is distributed as follows:

90% Investors: Reserved for the individuals, companies, and funds providing the $40 million CAPEX via a private contract or IPO.

7% Golden Partners: Allocated among 100 "Golden Partners" tasked with networking and securing the investment from families, funds, and high-net-worth leaders.

3% LEA Foundation: A non-negotiable stake for the Luis Elguezabal Aristizabal (LEA) Civil Association, represented by Mikel de Elguezabal Mendez-Rodulfo.

The Strategic Mission: The original aim of the Egura Project is to provide access to water, energy, health, and education in poor regions worldwide. To achieve this, the Egura Business Division was created to transform intellectual property into a high-return commercial opportunity. Revenues from the 3% foundation stake will fund Egura International Cooperation in energy & water-scarce regions of the Americas, Africa, and Asia, also health, and education projects, by LEA Foundation Civil Association.

II. Revenue Analysis: Texas Egura Pilot (10-Hectare Unit)

The pilot is projected to generate a gross annual revenue of $33.75 million. This revenue is essential for maintaining the 3% annual donation to the LEA Foundation's humanitarian projects.

Product/ Service	Annual Output	2026 Price Benchmark	Annual Revenue ($M)
Fresh Water	17.5M m^3 (48k m^3/day)	$1.50 / m^3	**$26.25**
Green Energy*	13.5 GWh (37 MWh/day)	$0.15 / kWh	**$2.02**
Green* Hydrogen	~200 tons (751 kg/day)	$4.00 / kg	**$0.80**
Sea Salts	~1,500 tons	$100 / ton	**$0.15**
Marine Food	~1,000 tons	$5.00 / kg	**$5.00**
Carbon Credits	~20,000 tons CO2e	$20 / tCO2e	**$0.40**

Note: By 2030, gross revenues are projected to scale toward $55 million through increased hydrogen volume and carbon credit value. * Option of owners of each Egura Plant, wheter all green electricity to power regional grids, whether to generate all or part of 37 Mwh/day into hydrogen fuel, thus losing 30% in conversion.

III. Cost Analysis: CAPEX & Humanitarian Distribution

Capital Expenditure (CAPEX) The $40 million raised through the Golden Partners Call will be used to deploy the first 10-hectare unit and fund initial operations.

Component	Cost ($M)	Technical Detail
Thermosolar MED Desalination	$15.00	Multi-effect distillation infrastructure.
CSP Infrastructure	$10.00	Heliostats, magnifiers, boilers, and turbines.
Civil Works & Construction	$8.00	Local Texas integration and facility building.
Solar PV & Wind Field	$2.50	5-ha equivalent PV and 0.3-ha wind perimeter.
Salts & Agro/Protein Infrastructure	$2.50	Connected units for aquaculture and salt extraction.
Core Personnel (Year 1)	$1.30	20 engineers/staff at OECD-level salaries.
H2 Electrolyzer & Storage	$0.40	High-efficiency unit for refinery supply.
Other (EIA, Legal, Contingency)	$0.30	Permits, studies, and execution buffer.

Financial Performance & Impact

•Operating Expenses (OPEX): ~$7.0 million annually.
•Net Profit: Approximately $16.40 million available for distribution.

•Humanitarian Contribution: The 3% share held by the LEA Foundation ensures that every commercial success in Texas directly translates into clean water and energy projects for impoverished communities, fulfilling Egura’s primary mission.

Sustainable Integrated Facility for Energy, Water, and Resource Production

Executive Summary

The Egura Plant is a 10-hectare integrated facility producing:

- Fresh water (potable, irrigation) via thermosolar multi-effect distillation (MED) desalination
- Green hydrogen via electrolysis
- Renewable electricity from CSP steam turbines, integrated aerogenerators, and solar PV
- Salts from brine
- Marine food via aquaculture; Food via Agriculture, Wood via Sylviculture.
- Carbon credits/bonds, from avoided emissions and carbon sequestration.

The plant is strategically located to serve Venezuela's coastal oil complexes (El Palito, Jose, Amuay Cardón, Tablazo), supplying reliable desalinated water (~1 m³ per barrel processed) and green hydrogen while exporting surplus at international prices. Key figures (2026 international pricing):

- Production: 48,000 m³ water/day (17.5 million m³/year) and 37 MWh/day (13.5 GWh/year)
- Initial CAPEX: $40 million (raised via BVC IPO – no debt)
- Year 1 full operations revenue (Q4 2026 onward): ~$33.75 million
- Typical annual net profit (post-tax, available for shareholder distribution): ~$16.40 million
- Lean core team: 20 highly qualified technicians & engineers (OECD-level salaries) + outsourcing for execution & support

The project delivers strong sustainability credentials (zero-emission design, brine reuse, eco-aquaculture) and positions Egura as a high-return green investment in Venezuela's energy transition.

Company Description

Egura evolves from a global sustainability initiative into a commercial entity focused on integrated resource production. The 10-ha pilot plant (expandable) combines:

- Thermosolar MED desalination powered by CSP heat
- Electricity generation via CSP steam turbines + aerogenerators + solar PV
- Green hydrogen production
- Brine valorization (salts) and aquaculture, agriculture, sylviculture.
- Carbon credit generation

Location: 40-ha coastal site (10 ha plant + 30 ha connected farms) near Amuay/Cardón or Jose, Anzoategui complexes.

Market Analysis

Demand Drivers

- Venezuelan oil complexes require reliable water (~1 m³/barrel) and energy. Amuay alone (645 kbpd) needs ~235 million m³ water/year. Total hub demand exceeds 500 million m³/year.
- Oil sold internationally at $50–100/barrel enables payment of global water & hydrogen prices despite local subsidies.
- Export potential: green hydrogen to Europe/USA, water to industrial users, credits to voluntary markets.

Prices (2026 international)

- Desalinated water: $1.50/m³
- Electricity: $0.15/kWh
- Green hydrogen: $4/kg
- Sea salts: $100/ton
- Marine food: $5/kg
- Carbon credits: $20/t$CO_2$e

2030 projections: water ~$1.80/m³, hydrogen ~$2.50/kg, credits ~$30/t, with volume growth.

Products and Services

Product	Annual Capacity	2026 Price	Key Markets
Fresh Water	17.5M m³ (48k m³/day)	$1.50/m³	Oil complexes, exports
Green Energy	13.5 GWh (37 MWh/day)	$0.15/kWh	Excess export, internal use
Green Hydrogen	~200 tons	$4/kg	Refining, exports
Sea Salts	~1,500 tons	$100/ton	Food & industrial
Marine Food	~1,000 tons	$5/kg	Local & export markets
Carbon Credits	~20,000 tons	$20/t	International voluntary markets

Operational Plan

- Site Acquisition: 40-ha coastal land near major oil complexes (e.g., Amuay, Cardón), acquired at an average price of approximately $2,000 to 6.250 per hectare, for a total land cost of $80,000 to 250,000.
- Technology and Sourcing:
    - Thermosolar multi-effect distillation (MED) desalination system: $15 million (India/China suppliers, 30–50% savings vs. Western)
    - CSP infrastructure (heliostats, magnifiers, boilers, steam turbines): $10 million (China/India)
    - Small-scale integrated aerogenerators: $1 million
    - Solar PV (fields + roofs): $1.5 million (China)
    - Hydrogen electrolyzer: $0.4 million (China/India)
    - Salts extraction + aquaculture/farms infrastructure: $2.5 million (partially local)
- Construction: Local Venezuelan firms for civil works, building, and integration: $8 million (~40% labor savings vs. international contractors). Specialized tasks via selected third-party contractors.
- Regulatory and Studies:

    - Environmental Impact Assessment (EIA): $300,000 (Venezuela-compliant + international standards)
    - Legal/registration costs: $100,000 (incorporation, permits, legal support)
- Personnel: Lean core team of 20 highly qualified technicians and engineers (initial year cost ≈ $1.3 million / €1.18 million).
  Salaries & employer costs at OECD-level (blended average total employer cost ≈ €59,000/person/year):
    - Gross salary ≈ €45,000
    - Social security & contributions ≈ 30.57% (Navarra Standards 2025–2026 rate)
      Core team handles: operations, supervision, optimization, maintenance oversight, safety, coordination.
      All detailed/routine work (construction, maintenance, repairs, admin, security) outsourced to local Venezuelan firms (cost efficiency) and specialized contractors (CSP, MED, electrolysis) as needed.
- Integration: CSP heat → MED desalination + steam turbines for power. Excess electricity → electrolyzer, pumps, exports. Brine → salts + aquaculture. Wind + PV supplement reliability.
- Timeline (Accelerated):
    - Q2 2026: BVC IPO to raise $40 million
    - Q3 2026: Simultaneous land purchase + EIA initiation; parallel engineering, permitting, long-lead procurement
    - Q3 2026 – Q4 2026: Procurement, construction, integration & commissioning (6 months total)
    - Q2 2027: Full commercial operations could begins
- Sustainability: Zero-emission target, advanced brine management, eco-friendly aquaculture, full eligibility for voluntary carbon credits.

Financial PlanCAPEX BreakdownAll $40 million from BVC IPO allocated as follows:

Component	Cost ($M)
Land (40 ha)	0.08 – 0.25
Environmental Impact Assessment (EIA)	0.3
Legal/Registration Costs	0.1
Thermosolar MED Desalination (India/China)	15
CSP (Heliostats, Magnifiers, Boilers, Turbines)	10
Aerogenerators (Wind)	1
Solar PV	1.5
Hydrogen Electrolyzer	0.4
Salts/Aquaculture/Farms Infrastructure	2.5
Tools/Machines/Hardware/Software	0.5
Construction/Integration (Local + Outsourced)	8
Initial Personnel Costs (1 Year – 20 core staff)	1.3
Contingency (accelerated execution buffer)	0.42
Total	40

Typical Annual Profit and Loss Statement (Full Operations – e.g. 2027 onward)

- Gross Revenue: $33.75 million
- Operating Expenses (core labor + outsourced services/maintenance/chemicals): ($7.0 million) (~20–22% of revenue)
- Gross Profit (before dep/tax): $26.75 million
- Depreciation (~$39M depreciable assets / 20 years): ($1.95 million)
- EBIT: $24.8 million
- Taxes (34% Venezuelan corporate rate): ($8.43 million for Cumaná's City Budgets)
- Net Profit (available for annual shareholder distribution): $16.40 million

5-Year Revenue ProjectionsAnnual gross revenues projected to grow ~10% per year through market expansion, efficiency gains, and volume/price adjustments (hydrogen to ~$2.50/kg by 2030 with ~40% volume increase).

By 2030: gross revenue ≈ $55 million, with correspondingly higher net profits available for shareholders (potentially $25–30 million range depending on cost control).Funding and IPO StrategyFunding exclusively via IPO on Bolsa de Valores de Caracas (BVC) — $40 million raised through initial share issuance. No loans or debt. Proceeds fund: land, EIA, legal, equipment, construction, and 1-year core personnel. Investment highlights: sustainable zero-emission model, international export pricing, high annual profit distributions, alignment with global energy transition.
Target post-IPO valuation: $100 million.

Risks and Mitigation

Risk Category	Description	Mitigation Strategy
Supply Chain	Delays/quality issues from India/China imports	Multiple vetted suppliers, contingency buffer, shift to local spares over time
Political/Economic	Venezuela instability, currency/regulatory changes	Partnerships with PDVSA/oil entities, export revenue hedge, lean cost base
Market	Price volatility, contract delays	Long-term offtake agreements at international prices, diversified export channels
Environmental/Regulatory	EIA/permit delays	Early, high-quality EIA + experienced local legal/regulatory team
Execution (6-month build)	Accelerated timeline risks	Parallel workstreams, pre-IPO preparation, strong core-team oversight + contingency

Overview of our Growth Plans

***For Egura B*usiness Division** to become successful, we need to move forward and grow in the national and international marketplaces of the Future.

By outlining an Egura Business expansion plan within the next 30 years toghether, we are clearly defining our common goals, organizing our teams and our leadership, to develop a strategy for the future Egura company efficiency and growing, always moving forward, adapting it, improving it, with continuous research and feddback analysis.

1. Executive Summary

The executive summary outlines our whole Egura Business plan from start to finish.

2. Company Description

How Egura Americas Inc.. Company stand out from our competitors?

Hydrogen from ocean water is the future oil for the planet next centuries. Our approach will be followed by others and can be a parallel business for Petrol and Gas Giants decades to come.

Can we clearly communicate our offerings in a way that will resonate with potential consumers?

Yes, national and international clients always will want an assured source for clean and vast energy.

Who are our target clients and industries?

Industrial countries from the template latitudes of the world for next centuries!

3. **Product and Service Description**

Egura Plants will provide a clean and abundant source of water for export while also meeting national demand. In addition, they will generate valuable byproducts for various economic sectors, including energy (such as electricity supplied directly to national or regional grids and hydrogen fuel for national and international markets), salts, oxygen, plankton for aquaculture, irrigation water, and carbon sequestration services.

4. **Market Analysis**

   As developing countries enter new eras of consumption, the growth in energy needs outpaces population growth on a global scale. Furthermore, the ecological consciousness of newer generations serves as a key driving force in future markets.

5. **Marketing Strategy**

   The strategy involves issuing official quotations from the newly established Egura Americas Inc. to clients in all relevant markets, including both private and public sectors. Information will also be disseminated via news media and social networks to engage global citizens and potential consumers.

6. **Organization and Management**

Egura Americas Inc. will be structured and managed to maximize its performance potential while fostering a highly organized, efficient workplace that prioritizes high morale, operational excellence, and balanced benefits for owners, employees, and management alike. As initiators and future minority shareholders (holding 3% of all Egura Continental Companies), LEA remains fully committed to safeguarding the core vision and dream of this project. We will actively work to prevent any form of inertial decay or mission drift—a common risk that can erode even the strongest companies over time—ensuring the organization stays true to its founding principles and long-term objectives. To achieve this, the company will adopt best-practice governance mechanisms, including clear mission-aligned decision-making processes, strong board oversight, performance accountability measures, and periodic reviews to maintain strategic focus and integrity.

Unique Value Proposition
Identifying All the Benefits Our Product Offers

Egura Business Sustainable Plants deliver a multifaceted suite of high-value resources and services, addressing critical global needs while generating substantial economic returns. Key benefits include: Abundant clean water (for domestic, agricultural, and industrial use, including irrigation) .

Renewable energy (electricity fed directly into national or regional grids via steam turbines, plus green hydrogen fuel for domestic and export markets)
Valuable byproducts (industrial-grade salts for food, nutrition, animal feed, chemical production, sanitization, and food preservation; oxygen; plankton suitable for aquaculture)
Environmental services (carbon sequestration through biomaterials and prevention of CO_2 emissions, monetized via trading Egura Carbon Bonds). Net revenues from market-priced sales of all outputs and services.

This integrated model transforms a single facility into a comprehensive resource hub, creating synergies across water, energy, materials, and climate sectors.

Problem Identification

The Egura Project Global Initiative recognizes two intertwined global crises: limited access to affordable clean water and reliable, low-cost energy. These shortages hinder individual and family well-being, limit human potential, and impede sustainable development in communities worldwide. By addressing both challenges simultaneously within a single integrated system, Egura Plants resolve multiple interconnected problems—water scarcity, energy poverty, environmental degradation, and economic underdevelopment—in one cohesive solution, unlocking greater human and societal progress across the planet.

Turning the Problem into a Great Opportunity

Egura Business Plants offer nations a transformative opportunity through one decisive commitment: embracing this forward-looking path secures near-infinite resources from abundant natural sources (oceans for water and sunlight for energy). Benefits include: Guaranteed long-term supplies of clean water and renewable energy.

Profitable economic returns comparable to any high-performing enterprise

High-quality goods that open new commercial sectors and job opportunities for local populations
Significant mitigation of greenhouse gas emissions, reducing the human contribution to global warming, improving air quality, and protecting ecosystem health

This holistic approach positions adopting countries as leaders in sustainable resource security and climate resilience.What Makes Egura Plants Different?
Egura Plants stand out through their innovative thermosolar (solar thermal) desalination process, which uses concentrated solar heat to distill seawater directly—eliminating reliance on imported grid electricity or photovoltaic-powered reverse osmosis systems. Key differentiators include: Integrated co-production: Solar heat drives both desalination

and electricity generation via steam turbines, while enabling byproduct valorization (e.g., harvesting valuable salts rather than discharging harmful brine).
Superior environmental performance: Unlike conventional reverse osmosis plants, which consume large amounts of electricity and often release concentrated brine effluents that harm coastal marine ecosystems, Egura's thermal approach minimizes energy imports, reduces ecological impact, and transforms brine residues into marketable resources for human/animal nutrition, industrial chemicals, and other applications.
Energy and resource efficiency: By harnessing solar thermal energy onsite, the system achieves greater overall sustainability, avoids fossil fuel dependency, and creates additional revenue streams from salts, oxygen, hydrogen, and more—delivering cleaner, more profitable outcomes than traditional desalination methods.

This clever, synergistic design not only produces fresh water but also generates clean power, valuable materials, and climate benefits in a single, low-impact operation.

Economic Potential and Resource Generation per Square Kilometer In the promising future we envision through this virtuous, collaborative venture, Egura offers your nation a transformative opportunity: harnessing near-infinite resources from the oceans and the sun to generate substantial renewable goods across every square kilometer of your sacred land and territory. A single square kilometer (equivalent to 10 Egura Business Sustainable Plants, each occupying 10 hectares) has the potential to produce: Renewable energy: 120–150 MW·day (megawatt-days) — depending on the primary output focus (hydrogen production via electrolysis or direct electricity generation via steam turbines)
Clean water: 44,000,000 liters per day (suitable for agricultural use in Egura Farms, human consumption, irrigation, and industrial applications)

Revenue Estimates (Conservative Global and Regional Benchmarks) These outputs translate into significant economic value at current market prices: Energy revenue: Using IRENA's recent global weighted-average levelized cost of electricity (LCOE) benchmarks for renewables (around \$0.04–\$0.09/kWh, with solar-related technologies in the lower range), a conservative sales price of approximately \$60 per MWh yields roughly \$3,285,000 per year per km² from electricity or equivalent hydrogen energy value.
Water revenue: At France's average residential water price (approximately €4.30/m³, or about \$4.50–\$4.70/m³ depending on exchange rates; user reference of \$3.50/m³ is conservative), annual value reaches approximately \$56,210,000 per km².
At South Korea's lower average rates (around \$0.50–\$0.60/m³ for residential/industrial use), annual value is approximately \$8,030,000 per km².
Salts: Between 1 and 10 tonnes per day per plant (derived from concentrated brine, avoiding environmental discharge). At a conservative global market price of \$0.50/kg (with higher values possible for specialized grades), this equates to \$500–\$5,000 per day per plant.
The global salt market (including table salt exports valued at around \$3.6–\$3.75 billion annually in recent data) offers robust demand. Surplus production can supply: Chemical industries (for dozens of applications, including sanitization and food preservation)
Animal nutrition (salt blocks)
Innovative uses such as compressed salt blocks for sustainable housing construction

As medical-grade oxygen (suitable for hospitals and health centers), this can be sold at \$20–\$40 per m³ (market-dependent; prices vary by region and purity) or donated to nearby private/public healthcare facilities to support community health.

This integrated approach not only delivers abundant clean water and green energy but also creates diversified, sustainable revenue from byproducts—turning what are often waste streams in conventional systems into valuable resources. By adopting Egura Plants, nations can secure resource independence, drive economic growth, improve public health, and contribute meaningfully to global climate goals—all from abundant, renewable sources.

Irrigation of Coastal Dry Mediterranean and Semi-Dry Mediterranean Plantations of Subtropical and Tropical Trees of Economic Interest and CO_2 ControllersBy planting and irrigating tree species as outlined in the Egura Agro Farms attachments (such as mangroves, conifers, palms, and fruit trees), the project will sequester substantial quantities of CO_2 through biomass growth in wood, roots, and soil.This agroforestry component leverages irrigation water from Egura Plants to establish productive coastal plantations that not only generate economic value but also contribute to climate mitigation. The following table summarizes the CO_2 sequestration potential for key species, based on cited research. Rates represent annual sequestration in mature stands per hectare, with scaled projections for a proposed 100-ha plantation (inferred from project calculations) assuming full maturity by year 10.

Tree Species	Annual CO_2 Sequestration per Hectare (tonnes)	Citation	Projected Annual CO_2 Sequestration at Maturity for 100-ha Plantation (tonnes)	Notes
Mangroves	937	Alongi, 2012	>93,700	Includes accumulation in wood, dead roots, soil, etc.; significant sequestration builds during the first 10 years, reaching mature rates thereafter.
Pinus caribaea (Caribbean Pine)	205	De Costa, 2012	>20,500	Conifer species suited for fast growth in coastal zones; sequestration rate achieved by the tenth year of the project.
Coconut and Date Palms	24	Magat, 2009	>2,400	Tropical palms offering dual benefits of fruit production and carbon storage; scalable for economic and environmental gains.

These plantations transform arid coastal areas into vibrant, carbon-sequestering ecosystems, enhancing biodiversity, providing sustainable livelihoods through timber, fruits, and other products, and supporting global efforts to combat climate change. The use of abundant, solar-desalinated irrigation water ensures long-term viability without straining freshwater resources.

Economic Yields from Agroforestry Plantations (Table Grapes, Pomegranates, and Olives)The Egura Agro Farms initiative incorporates high-value subtropical and tropical crops suited to irrigated coastal Mediterranean and semi-dry zones. Using drip or efficient irrigation from desalinated water, these plantations are projected to reach mature yields by the tenth year of the project (assuming a scaled implementation of approximately 100 ha per crop, based on consistent project scaling patterns).Projected annual production at maturity (tenth year):Table grapes: 30 tonnes per hectare → 1,800 tonnes total
Pomegranates: 6.75 tonnes per hectare → 405 tonnes total
Olives: 20 tonnes per hectare → 2,400 tonnes total (fresh olives; note that olives are often processed into oil, but valuation here uses fresh/olive equivalents)

These crops deliver substantial economic returns through market sales. Estimated annual revenues at the tenth year (based on conservative wholesale or farm-gate prices referenced in the proposal) include:Table grapes: Approximately $1.8 million per year (implying an average price of around $1,000 per tonne)
Pomegranates: Approximately $8.1 million per year (implying an average price of around $20,000 per tonne, reflecting premium positioning for fresh/export markets)
Olives: Approximately $2.4 million per year (implying an average price of around $1,000 per tonne for fresh olives or equivalent value)

These figures exclude additional products from coconut and date palms, focusing solely on the specified crops. Actual revenues may vary based on market conditions, quality grades, export opportunities, and value-added processing (e.g., table grapes for premium fresh markets, pomegranates for juice/arils, olives for oil production).Carbon Sequestration Value and Broader Environmental BenefitsThe total annual CO_2 sequestration from the combined plantations (mangroves, Pinus caribaea, coconut/date palms, and other species) reaches approximately 116,600 tonnes per year once mature (by the tenth year, as previously detailed).At historical 2020 global carbon market prices of around $15 per tonne, this equates to roughly $1,749,000 per year in potential carbon credit revenue.Looking forward, carbon prices have risen significantly in recent years, with voluntary market high-quality credits averaging around $20–$30 per tonne in late 2025, and compliance markets (e.g., EU ETS) exceeding $80–$90 per tonne. Forecasts for 2030 suggest prices could range from $50–$150 per tonne depending on the market (voluntary vs. compliance, with higher values for nature-based removal credits like afforestation).Using a conservative projected 2030 price of $25 per tonne (aligning with the proposal's estimate and mid-range voluntary market trends), sequestration value would rise to approximately $2,915,000 per year. Higher prices in premium or regulated markets could substantially increase this revenue stream, monetizing the project's climate impact through carbon bonds, credits, or offsets.Beyond direct financial gains, the plantations provide invaluable non-monetary benefits to the nation and its people:Landscape greening: Transforming dry coastal areas into lush, productive ecosystems enhances visual appeal, supports tourism, and boosts national pride in sustainable development.
Improved air quality: Increased vegetation filters pollutants, reduces dust, and promotes healthier environments for local communities.
Local temperature moderation: Tree cover creates microclimates that lower surface temperatures (urban/rural heat island mitigation), improving livability in semi-arid zones amid climate change pressures.

This integrated agroforestry model—powered by renewable water and energy—delivers diversified income from premium crops, reliable carbon revenues, and profound ecological and social co-benefits, positioning the adopting nation as a model of sustainable, climate-resilient agriculture.

Shelled Aquaculture and CO_2 SequestrationDrawing from Morris et al. (2018): "Global marine aquaculture, with its shellfish (shelled mollusk) component, is of increasing importance to the food industry amid impending freshwater shortages, energy security concerns, and a growing human population. Recent technological and scientific advances have enabled the development of offshore mollusk farming, as well as farming within an integrated multi-trophic aquaculture (IMTA) approach. This enhances the sustainability and productivity of global aquaculture while providing ecosystem services, such as controlling anthropogenic eutrophication, promoting reef growth for biodiversity maintenance, and delivering natural coastal protection."In addition to these benefits, shelled aquaculture plays a key role in CO_2 sequestration. Bivalves and other mollusks incorporate dissolved CO_2 from seawater into their calcium carbonate shells, effectively removing it from the ocean-atmosphere system and storing it long-term—a process that contributes to blue carbon strategies and mitigates ocean acidification.The Egura Hatchery Unit supports this by facilitating the reproduction and nursery stages for shelled mollusks (primarily bivalve species, but also encompassing gastropods, crustaceans, echinoderms, fishes, seaweeds, and more). It can accommodate over 200 mature organisms in dedicated tanks for breeding, utilizing proven FAO techniques (e.g., precise control of feed quality/quantity combined with temperature fluctuations). Since each reproductive specimen is capable of producing tens of millions of eggs (and even greater quantities of sperm), the hatchery has the potential to generate hundreds of millions of fertilized embryos, enabling scalable offshore and IMTA deployments to amplify both food production and environmental gains.

Scalable Production and Harvesting in Egura AquacultureThe Egura Hatchery Unit's high reproductive output ensures robust scalability despite natural mortality rates. Accounting for an expected 90% mortality at the egg stage and another 90% at the embryo stage, each monthly breeding cycle still yields tens of millions of viable spats (seeds or juvenile forms) of bivalves such as clams, mussels, or oysters. This results in millions of organisms available for distribution to regional aquaculturists, including families, companies, and institutions, fostering local economic participation and sustainable seafood production.The system employs the proven "Japanese-style" longline method for grow-out, featuring arched rope sections densely populated with attached bivalves, interspersed with plastic floats for buoyancy and structural support. This efficient design maximizes space and productivity in offshore or coastal environments.For the Egura model, focusing on Perna spp. mussels, each meter of longline can support 1,000–2,000 individuals, achieving a harvest yield of 10–11 kg of market-ready, edible-sized animals (50–100 mm shell length; 5.5–12 g individual weight). Growth timelines vary by climate:

Climate Zone	Harvest Timeframe	Notes
Tropical Seas	6 months	Optimal warm-water conditions accelerate maturation.
Subtropical Seas	9 months	Balanced growth in moderate climates.
Temperate Seas	12–18 months	Slower development due to cooler temperatures; still highly productive.

This approach integrates seamlessly with IMTA systems, enhancing nutrient recycling, CO_2 sequestration via shell formation, and overall ecosystem services while delivering high-volume, low-impact protein sources to meet global food demands.
Scalable Offshore Mussel Aquaculture Production and Economic PotentialThe Egura Aquaculture model scales efficiently using seafloor-anchored longline systems in suitable coastal bays, sounds, or near the Egura Beachhead Plant. A typical 1-hectare plot (e.g., 100 m × 100 m perimeter, with internal layout of 25 double-rope units, each 100 m long) can support high-density cultivation.Under the Japanese-style longline configuration (arched ropes with attached bivalves separated by floats), each meter of line typically yields 10–11 kg of market-ready mussels (edible-sized, 50–100 mm length, 5.5–12 g individual weight) at harvest. For the described 1-ha setup with approximately 2,500 m of productive rope (25 × 100 m), this translates to roughly 25 tonnes of harvested mussels per hectare per cycle.Food market value: At a conservative wholesale price of around $2 per kg (aligning with global averages for fresh mussels; recent data shows ranges of

$2.93–$3.49/kg in some markets, with higher values possible for premium or local sales), this equates to approximately $50,000 per hectare per harvest cycle.

Scaling to 1,000 hectares (10 km²) within our country's exclusive economic zone (EEZ) — a feasible area in many coastal nations — could generate $50 million annually in revenue from mussel sales alone, once operational after the initial 6–12 month growth cycle (depending on climate: tropical ~6 months, subtropical ~9 months, temperate 12–18 months).

Additional Opportunities from Biomass Utilization and Green Revenue

Harvesting ~25,000 tonnes of total biomass annually from 1,000 ha provides diversified value streams. Bivalve harvests typically split roughly 50/50% by weight between shell and edible fleshy tissue (meat), though this varies by species (30–70% meat yield reported across studies for mussels like *Mytilus* or *Perna* spp.).Edible portion (~12,500 tonnes/year): Highly nutritious protein, lipids, vitamins, and minerals — sold fresh, processed, or exported as premium seafood, contributing to food security and high-value markets.

Shell portion (~12,500 tonnes/year): Represents an extra business and ecological opportunity. Shells are rich in calcium carbonate ($CaCO_3$), which incorporates dissolved CO_2 during formation. While debates exist on net CO_2 sequestration (due to respiration and calcification releasing CO_2, with some studies showing near-neutral or slight net sink effects of ~0.08 kg CO_2 per kg mussels), shells offer practical blue carbon and circular economy benefits:Use in construction (e.g., lime, aggregates, or sustainable building materials).

Soil amendments or fertilizers.

Industrial applications (e.g., animal feed supplements, water treatment).

Potential monetization via emerging carbon credit mechanisms for biogenic $CaCO_3$ storage or avoidance of emissions from alternative sources.

CO_2 Sequestration in Mussel Shells: An Additional Carbon SinkThe mussel shells produced in Egura Aquaculture consist of an organic matrix embedded with a mineral matrix, primarily calcium carbonate ($CaCO_3$). These bivalves generate $CaCO_3$ by fixing dissolved CO_2 from the ocean-atmosphere interface, incorporating approximately 0.44 kg of CO_2 per 1 kg of $CaCO_3$. This process provides an extra carbon sequestration mechanism, complementing the CO_2 storage from woody biomass in the previously discussed tree plantations.From the projected annual harvest of 25,000 tonnes of mussels (across 1,000 ha), approximately 12,500 tonnes consist of shells—equivalent to sequestering about 5,500 tonnes of CO_2 (based on the 0.44 kg CO_2/kg $CaCO_3$ ratio, assuming shells are predominantly $CaCO_3$).Valorization Opportunities for Carbonated ShellsThe 12,500 tonnes of carbonated shells offer versatile, value-added applications in a circular economy model:Biocement production: Converted into sustainable biocement for local housing construction in nearby communities, reducing reliance on traditional cement (which has a high carbon footprint) and promoting eco-friendly building materials.

Calcium supplements: Processed into high-quality supplements for human and animal nutrition, capitalizing on the shells' natural mineral content to support health and livestock industries.

Soil enhancement: Used as an alkalizer and soil conditioner to improve pH balance, structure, and nutrient retention, thereby boosting agricultural productivity in arid or degraded lands.

These uses not only generate additional revenue but also enhance environmental sustainability by repurposing what would otherwise be waste.Monetizing Sequestration via Egura Carbon BondsThe fixed CO_2 in these shells can be monetized through international

carbon markets, where verified sequestration is traded as credits or bonds. Historical and projected prices include:2020 market value: Approximately $15 per tonne of CO_2, yielding around $82,500 per year.
2030 projected value: Closer to $25 per tonne (based on trends in voluntary and compliance markets), potentially generating $137,500 per year.

Egura Continental Companies could issue and sell Egura Carbon Bonds annually on these markets, with each Egura Beachhead Plant serving as the vanguard for an interconnected inland network of Egura Plants. This creates a recurring green revenue stream while advancing global climate goals.

Resumed Calculations for Egura Approaches

The Egura Water & Energy Plant operates as a modular Common Unit spanning 10 hectares (Ha). Beachhead plants (initial installations) allocate 1 Ha for a Hatchery facility and Control Center, while subsequent Common Units may omit this to focus on core operations. The system integrates hydraulics, energetics, and economics through renewable sources, emphasizing sustainability and multi-output efficiency.Below is a structured overview of the 10-Ha Egura Plant's key components, including energy generation/consumption (in kW/day; positive for production, negative for usage), water flows (in m³/day; positive for output, negative for input), and other relevant details. All figures are daily unless noted.

Unit	Area/ Allocation	Description/ Details	Energy Impact (kW/day)	Water Impact (m³/day)	Other Outputs/Notes
Pumping Unit (solar panel-covered roof)	1 Ha	Two groups of 4 pumps (6" diameter each). Water intake: 47,808 m³/day. Includes sieves for plankton retention (e.g., eggs/larvae for natural stock restoration; microalgae/zooplankton for Hatchery; filtered water for Distillation Unit). Day/night alternation for equipment recovery. 10 m² per pump; scalable for higher rates.	-6,720	+47,808 (at 5 m elevation)	Filtered water directed to downstream units.
Filtered Water Unit (solar panel-covered roof)	Not specified	Processes incoming water for further use in the system.	Not specified	Not specified	Prepares water for Hatchery and Distillation Units.
Hatchery Unit (two-floor building; Control Center above; solar panel-covered roof)	1 Ha	Facilities follow FAO guidelines for bivalves and shrimps. Per 1,000 m²: 60 hatchery tanks, 35 algal tanks, 2,000 m³ capacity, 16 kW for water circulation and air pumping. Scaled to 0.1 Ha increments.	-16 (per 0.1 Ha) -160 (per Ha)	-1,732	Supports reproduction of shelled mollusks, crustaceans, etc.; integrates with IMTA for sustainability.
Thermosolar Distillation Unit	Not specified	Double distillation of saltwater. Egura adaptation: Spiral blade axis in boiler	+1,900 (from 2 × 1 MW turbines;	+46,000	Avoids salt traces in turbines; generates electricity for

		exhaust (horizontal, belt-connected to dry electromotive turbine). Distilled water to Thermosolar Unit; hypersaline brine to Brine Unit.	after 5% transmission loss)		Egura energy pool.
Brine Unit	1 Ha	6 lagoons (1,500 m² each) for evaporation and processing. Outputs for human consumption, industrial use, and salt blocks (e.g., mineral supplements for cattle/export).	Not specified	-100 (evaporation) 250 ppm salinity	Transforms waste into valuable byproducts; minimizes environmental discharge.
Thermosolar Main Electrogenerator Unit	4 Ha**	6 sub-units with heliostat arches, magnifiers, boilers, and steam turbines.	+6,000 (from 6 × 1 MW turbines)	+45,000	Core renewable energy hub; scalable with heliostats.
Photovoltaic Pool	5 Ha (2 Ha on terrain + 3 Ha on roofs)	Distributed solar panels for electricity generation.	+9,560	Not applicable	Enhances overall energy independence.
Wind Generators Pool	0.3 Ha (distributed across 10 Ha perimeter)	8 × 1 MW wind turbines along the perimeter.	+8,000	Not applicable	Complements solar sources for reliable output.
Electrolysis Unit (solar panel-covered roof)	1 Ha	Uses DC electricity from thermosolar, photovoltaic, and wind sources. Processes 2,999 kg of water (125 L/h) to produce hydrogen and oxygen.	-15,520	-3	Inputs to storage tanks; enables green fuel production.
Hydrogen Storage Tanks (solar panel-covered roof)	Not specified	Stores hydrogen output from electrolysis.	Not applicable	Not applicable	+375 kg/day (hydrogen)
Oxygen Storage Tanks (solar panel-covered roof)	Not specified	Stores oxygen byproduct from electrolysis.	Not applicable	Not applicable	+2,624 kg/day (oxygen; medical-grade potential)
H_2 Fuel Cell Engines Units	Not specified (at target cities)	Converts stored hydrogen to electricity for external use.	>12,370 (per 10 Ha)	Not applicable	Scalable for national/international markets.
Irrigation Water Unit (optional)	Not specified	Distributes water via gravity to Egura Protein and Agro Farms.	Not applicable	+44,000 (split between farms)	Supports agricultural integration without pumps.

Egura Protein Farm (Integrated with Plant Outputs)

- Components: Maize fields; hen (egg) facilities with solar panel-covered roofs; shrimp lagoons (details in annexes).
- Water Allocation: 417 m^3/day for 10 Ha maize; 26 m^3/year for 2,000 hens (0.2 Ha); 30 shrimp lagoons (11 Ha total).

Egura Agro Farm (Integrated with Plant Outputs)

- Components: Mangroves, dates, pines, grapes, olives, pomegranates, stargrass, coconuts, goats, bees.
- Water Allocation: 437 m^3/day per Ha for all species (details in attached document).

Notes:

- Heliostats Approach: Potential for 7 Ha expansion in thermosolar units for enhanced output.
- All energetics and hydraulics are designed for net-positive sustainability, with byproducts (e.g., salts, oxygen, hydrogen) creating additional revenue streams. Economic valuations (e.g., from energy/water sales, carbon bonds) are detailed in prior sections.
- Figures are approximate and based on optimal conditions; actual performance may vary by location/climate.

Metallic Coating Options for Heliostat Units in Non-Beachhead Egura Plants (7 Ha Scale)

In the Egura thermosolar main electrogenerator units, heliostats use reflective metallic coatings to concentrate solar radiation onto boilers for steam turbine electricity generation. For non-Beachhead Common Units (where the full 7 Ha potential is dedicated to heliostats), the theoretical energy potential is calculated under equatorial conditions (latitude 0°), assuming a global annual mean solar irradiance of 6 kWh/m²/day (a reasonable average for equatorial regions with consistent high insolation).Key assumptions for the calculation:

- Total heliostat area: 7 hectares = 70,000 m².
- Daily incident solar energy on the area: 70,000 m² × 6 kWh/m²/day = 420,000 kWh/day.
- Reflected energy = Incident energy × Reflectance (%).
- Reflectance values represent solar-weighted (broad-spectrum) averages relevant to concentrated solar power (CSP) applications.
- These are theoretical maximums for clean, ideal conditions; real-world performance accounts for soiling, degradation, protective layers, and optical losses (typically reducing effective reflectance by 5–15% over time).

Modern CSP heliostats predominantly use protected silver coatings (often on low-iron glass or polymer substrates) for superior reflectance (~94–98%), or advanced aluminum-based systems with dielectric overcoats for cost-effective durability. Bare or simple metallic surfaces are less common due to oxidation, tarnishing, and lower long-term performance.The table below lists the provided metallic options, their assumed reflectance percentages, and the corresponding daily reflected energy (kWh/day) for the 7 Ha configuration. Values are sorted by descending reflected energy for clarity.

Metal	Reflectance (%)	Reflected Energy (kWh/day)	Notes / Practical Considerations for Heliostats
Silver	96.5	439,275	Highest reflectance; standard in high-performance CSP (protected silver on glass/polymer achieves 94–98%). Excellent solar-weighted performance but requires protective layers to prevent tarnishing. Top choice for maximum efficiency.
Gold	90	409,500	High reflectance, corrosion-resistant, but extremely expensive; rarely used in large-scale CSP due to cost.
Aluminum	90	409,500	Excellent balance of high reflectance (~88–92% for protected/polished; up to 96% with dielectric enhancements) and lower cost. Common alternative to silver; durable with proper coatings. Widely used in advanced designs.
Zinc	67.5	307,875	Moderate reflectance; potential for galvanic protection but not typical for heliostats (prone to oxidation).
Tin	67.5	307,875	Similar to zinc; limited use due to lower reflectance and durability issues.
Chrome	65	295,750	Moderate; chrome-plated surfaces tested in early CSP but outperformed by silver/aluminum.
Copper	65	295,750	Good initial reflectance but tarnishes rapidly; not practical without heavy protection.
Lithium	65	295,750	Rarely considered; highly reactive and impractical for outdoor exposure.
Palladium	65	295,750	High cost; corrosion-resistant but not cost-effective for large areas.
Platinum	65	295,750	Extremely expensive; excellent durability but uneconomical.
Nickel	60	273,000	Moderate; used in some alloys but lower reflectance limits efficiency.
Iron	60	273,000	Low; prone to rust; not viable without extensive coatings.
Cobalt	57.5	261,712.5	Limited data; not standard for heliostats.
Bronze	55	250,250	Alloy; reflectance too low for optimal CSP performance.
Lead	55	250,250	Toxic; environmental concerns; impractical.
Stainless Steel	55	250,250	Polished stainless offers ~55–65%; durable and low-cost but significantly lower reflectance than silver/aluminum. Used in prototypes but not preferred.
Titanium	52.5	238,462.5	Good corrosion resistance but lowest reflectance here; occasional use in substrates rather than reflective surfaces.

Recommendations for Egura Heliostats

- Optimal choices: Protected silver (highest energy yield) or enhanced aluminum (best cost-performance ratio with dielectric top layers potentially exceeding 95–96%). These align with industry standards in CSP plants (e.g., silver/glass mirrors achieve ~94–90% solar reflectance).
- Avoid: Lower-reflectance metals (e.g., stainless steel, titanium) unless for structural substrates; they would reduce daily reflected energy by 30–45% compared to silver/aluminum, lowering overall plant efficiency and revenue potential.
- Additional factors: Select coatings with proven durability against soiling, humidity, and UV (e.g., protected films). At equatorial latitudes, high insolation amplifies the

benefit of high-reflectance options, potentially increasing turbine output and hydrogen/electricity production significantly.

This analysis maximizes the 7 Ha heliostat potential, supporting the Egura model's goal of abundant renewable energy from solar thermal systems.

Economic Agreement

The Egura Project, through its Egura Business Division, establishes from the outset of this virtuous initiative a clear framework for scalable growth. To launch and sustain the first Egura Pilot Plant (10 hectares), we have calculated an initial investment requirement of $40 million. This capital covers the full first-year scope: installation, operations, energy and water generation, maintenance, administration, supervision, and preparatory management for the potential future deployment of up to 1,350 Egura Plants—or phased at 450 Plants per year—reaching 4,500 or 13,500 Plants over 30 years, or beyond, depending on market demand and strategic decisions by Egura Americas Inc. Following the first year of the Pilot Plant’s operation—including a comprehensive feasibility assessment of energetic efficiency, environmental impact, and overall performance—investors will have the option to continue funding on an annual basis, at any desired scale and pace aligned with long-term goals for the coming decades.Detailed cost breakdowns associated with engaging our newly established Europe-based company will be presented and discussed during working meetings. We look forward to negotiating every aspect of this mutually beneficial partnership in good faith.Revenue Reinvestment and Profitability Timeline

Egura Plants are projected to begin generating economic gains and profits starting in the second year of operations. These revenues will partially fund the construction and commissioning of additional plants each subsequent year, creating a self-reinforcing growth model that reduces reliance on external capital over time.The Egura Supervising and Management Headquarters, along with the LEA Foundation Headquarters, will be located in Baztan, Navarre, Spain, serving as the central hub for oversight, strategic direction, and coordination.Important Structural and Ownership Note

As outlined in the introductory sections of this document, the Egura Project has established a dedicated Business Division to generate sustainable funding streams. This enables the expansion of our non-profit Egura Cooperation Trials vision, supporting communities in Africa, Asia, and the Americas facing acute water and energy scarcity.Under this agreement, the LEA Foundation will retain a 3% ownership stake (in shares, property, or equivalent equity) in the future Egura Americas Inc. company, reflecting our foundational intellectual property, know-how, and vision. European owners, citizens, companies, and investors will hold the remaining 90%.The principal products—clean water, green hydrogen, and electricity—will be sold at prevailing European market prices, ensuring competitive returns and alignment with high-value regional demand.One of the core terms of this partnership is the annual allocation of the LEA Foundation’s 3% share of revenues. Egura Americas Inc. may structure this as a direct annual donation to the LEA Foundation (or equivalent mechanism), providing extraordinary, recurring funding to advance our global cooperation initiatives and humanitarian objectives. This arrangement is a fundamental and non-negotiable element of the agreement, designed to balance commercial success with meaningful social and environmental impact worldwide.This economic model ensures long-term viability, investor confidence, and alignment between profitability, scalability, and the broader mission of equitable resource access and climate resilience. We are committed to transparent, collaborative discussions to finalize all terms and bring this transformative vision to reality.

Terms and Conditions
Due to their length, legal significance, and contractual importance, the detailed Terms and Conditions governing the Egura Americas Project will be presented in a separate, comprehensive document. This forthcoming agreement will be subject to thorough review, enlightened discussion, and virtuous negotiation by all parties involved.The current proposal—including all described components, supporting documents, and referenced materials—serves as the foundational basis for this future contract. We invite stakeholders to engage in a careful, collaborative study of the entire Egura Project vision to ensure full alignment and mutual understanding before finalizing binding terms.

Project Proposal: Acceptance Process
Acceptance of the Egura Americas Project Proposal constitutes formal confirmation that the entire document (including all technical, economic, environmental, and operational details presented herein) is complete, accurate, and satisfactory to the accepting party.The Acceptance Process requires the formal signature of a Project Proposal Acceptance Document by authorized representatives of the investors, clients, governments, and/or the newly formed Egura Americas Inc. This acceptance applies to all phases, deliverables, and portions of the project executed under the forthcoming Terms & Conditions contract.Key Objectives and SafeguardsThe primary purpose of the Acceptance Process is to provide both parties with clear, written formal notice that the proposed Terms & Conditions are mutually acceptable and satisfactory.
Prior to final signature, procurement departments (on behalf of investors, clients, or governments) are strongly advised to conduct a thorough internal review. This ensures awareness of any special conditions, clauses, or obligations that could potentially delay or complicate contract execution.
During project implementation, rigorous random quality audits will be conducted annually throughout the lifespan of Egura Americas Inc. These audits allow early identification and correction of any deviations, ensuring compliance and performance standards are maintained proactively rather than reactively.

Punch List and Progressive Resolution
Before final acceptance or annual performance certification:Any minor outstanding items, defects, or incomplete works identified by the client/investor/government or the Egura Americas Inc. team will be documented on a punch list.
The company will develop a targeted schedule to address and complete all punch-list items efficiently.
As the punch list diminishes, the project transitions to a phased wind-down or “ease” stage, retaining only essential staff and resources to finalize remaining work.

Annual and Long-Term Performance CertificationIf the delivered products and services (clean water, renewable energy, hydrogen, byproducts, carbon sequestration, etc.) consistently meet or exceed project expectations on an annual basis, formal written notice will be issued to investors, clients, and governments confirming satisfactory performance and partial or full contract fulfillment for that period.
The procurement or contract administration department responsible for oversight will receive detailed annual performance reports throughout the projected 30-year horizon (or longer, as applicable).
These reports will document faithful adherence to the Terms & Conditions, triggering formal procedures to notify relevant parties of continued compliance and milestone achievement.

Collaborative Problem Resolution
It is far more efficient and cost-effective to identify, discuss, and resolve any potential issues among partners as they arise during project progression. Open communication throughout implementation enables timely corrections, minimizes delays, preserves relationships, and maximizes overall success.This structured Acceptance and performance framework ensures transparency, accountability, quality assurance, and shared commitment to the long-term vision of the Egura Americas Project—delivering sustainable water, energy, and environmental benefits while protecting the interests of all stakeholders. We look forward to advancing to the detailed Terms & Conditions negotiations in a spirit of mutual respect and shared purpose.

Archiving of Documents

All project-related documents must be systematically archived in secure, accessible locations to ensure long-term preservation, easy retrieval, and compliance with legal, tax, regulatory, and contractual requirements. This includes signed contracts, Terms & Conditions, financial records, technical specifications, environmental impact assessments, performance reports, and any materials that may be required for audits, tax reviews, litigation, or future reference.Key Principles and Requirements

- Dual Storage (Physical and Electronic): Every project document must be maintained in both physical (paper) and electronic formats whenever feasible. Electronic copies serve as the primary working and reference version, while paper originals provide legal backup where required (e.g., signed originals of contracts or government approvals).
- Access and Compliance: Authorized organizations, entities, external audit firms, regulatory bodies, investors, and government representatives shall have access to archived documents in accordance with applicable legal, contractual, and data protection policies (e.g., GDPR in Europe, local data retention laws). All parties must adhere to established storage, retrieval, confidentiality, and destruction protocols.
- Secure and Recoverable Storage:
  - Physical documents: Stored in fireproof, climate-controlled, access-restricted facilities with documented chain-of-custody procedures.
  - Electronic documents: Stored in secure, redundant, cloud-based or on-premise systems with encryption, regular backups, version control, and disaster recovery measures. Systems must ensure data integrity and prevent unauthorized alteration.
- Standard Naming Conventions: Electronic files must follow a consistent, logical naming scheme to enable efficient sorting, searching, and grouping. Recommended format example: [ProjectCode]_[DocumentType]_[Version/Date]_[Description]_[Signer/Status].pdf e.g., EGURA-AMER_Contract_V1.0_2026-01-25_Signed_TermsConditions.pdf
- Retention and Destruction:
  - Determine and document the retention period for each document category based on legal, tax, and contractual obligations (typically 7–30 years for major contracts and financial records; longer for core intellectual property or environmental compliance documents).
  - Paper documents nearing expiration should be reviewed, digitized (if not already), and securely destroyed (shredded or certified disposal) once the retention period ends and no ongoing need exists.

- Maintain a document retention schedule specific to Egura Americas Inc. and update it annually or as regulations change.

Typical Documents to be ArchivedThe following categories represent core project documents that must be permanently or long-term archived:

- Charter Documents — Project initiation charter, founding agreements, shareholder agreements, and incorporation documents for Egura Americas Inc.
- Scope Statement — Detailed project scope, technical specifications, plant designs, performance targets, and any approved scope baselines.
- Original Budget — Initial investment plan ($40 million for the Pilot Plant), cost breakdowns, funding commitments, and financial models.
- Change Documents — All approved change requests, variation orders, scope amendments, budget reallocations, and associated justifications.
- DPCI Ratings — Deliverable Performance & Compliance Index (DPCI) ratings, including interim and final assessments of quality, compliance, schedule, and cost performance.
- Manager’s Summary — Lessons Learned — Post-phase or post-project lessons-learned reports, executive summaries, risk registers, and improvement recommendations.
- Final DPCI Rating — Comprehensive end-of-phase or end-of-project performance evaluation, used for certification, investor reporting, and future reference.

Additional Recommended Archiving Categories (Egura-Specific)

- Signed contracts, Terms & Conditions, and all amendments
- Annual performance reports and audit findings
- Environmental impact assessments and carbon credit documentation
- Intellectual property records (patents, know-how agreements, 3% LEA Foundation stake documentation)
- Investor agreements, equity structures, and donation commitments to LEA Foundation
- Quality audit reports and punch-list resolutions
- Operational data summaries (energy/water/hydrogen production metrics)

By implementing these archiving practices, Egura Americas Inc. ensures full traceability, legal defensibility, investor confidence, regulatory compliance, and institutional memory across the multi-decade lifecycle of the project. This disciplined approach supports both commercial success and the broader mission of sustainable global resource cooperation.

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Annex: Egura Plant-Connected Egura Farms

(Attached as a separate document in the full proposal package)

The coastal valleys adjacent to Egura Plants present exceptional opportunities for developing interconnected, high-value business ecosystems. These leverage abundant desalinated irrigation water and surplus renewable energy from the main Egura units, at any scale selected by the client over the 30-year project horizon.We propose two complementary farm models—Egura Protein Farms and Egura Agro Farms—designed to transform dry Mediterranean coastal valleys and inland terrains into productive, biodiverse landscapes. These systems increase biomass accumulation, enhance soil fertility and structure, boost local biodiversity, generate food and wood products, and deliver diversified economic returns for investors, clients, and surrounding communities.Egura Protein Farms: Closed-Loop Protein ProductionEgura Protein Farms operate as near-closed nutrient cycles, starting with robust maize (*Zea mays*) plantations irrigated by desalinated water from the adjacent Egura Plant. The harvested corn grain serves multiple interconnected purposes, with allocation ratios determined by client priorities:Human consumption: A portion processed on-site in a small- to medium-scale mill for local food production (e.g., cornmeal, flour, or value-added products).

Animal feed: The remainder directed to:Egg production — Fed to laying hens in solar-covered facilities.

Shrimp production — Fed to intensive shrimp ponds cultivating Litopenaeus vannamei (Pacific whiteleg shrimp), a high-value export species.

Agro Farms: Multi-Layered Agroforestry and Biodiversity EnhancementEgura Agro Farms apply principles of plant ecology and permaculture to establish productive, resilient agroecosystems in coastal valleys. The design features concentric arcs of complementary plant species, progressing from the shoreline inland and uphill, optimized for soil stabilization, microclimate improvement, water retention, and multi-product output.Proposed spatial layout (from coast to upland slopes):Coastal zone (closest to sea) Mangrove restoration and production belt: Primary: Rhizophora mangle (red mangrove) — for habitat restoration, biodiversity support, coastal protection, and blue carbon sequestration.

Secondary: Avicennia germinans (black mangrove) — for timber production and additional ecosystem services.

Integrated: Cocos nucifera (coconut palm) — for dual-purpose fruit and wood.

Additional littoral grasses and halophytes recommended: Panicum virgatum (switchgrass), Sporobolus virginicus, Batis maritima, etc., for erosion control and habitat diversity.

Animal integration Multi-purpose goat flocks (Nubian–Canary–Sana'a interbreed) for meat, milk, and leather production. Goats graze controlled areas of stargrass and understory, providing natural fertilization and weed management.

Apiculture Mid-term introduction (from ~year 5 onward) of Apis mellifera (European honeybee) hives, once trees and plantations reach stable flowering and fruiting stages. Bees enhance pollination, support biodiversity, and generate honey as an additional high-value product.

Irrigation and Energy Integration

All plantations receive daily freshwater irrigation from the adjacent Egura Plants via gravity-fed or low-energy drip systems. Surplus renewable energy (electricity/hydrogen) powers on-farm processing, pumping (if needed), cold storage, milling, aquaculture aeration, and other operations.These interconnected Egura Farms create synergistic value: food security, export-grade products (shrimp, grapes, olives, dates, pomegranates, timber, honey, goat products), enhanced ecosystem services (carbon sequestration, coastal protection, soil regeneration), job creation, and community benefits—all powered by the clean water and energy abundance of the core Egura Plants.This modular, scalable approach allows clients to customize crop/livestock emphasis, phasing, and investment levels while maximizing long-term profitability and environmental restoration across the 30-year project timeline. Detailed layouts, species lists, yield projections, and economic models are available in supporting annex documents.

Annex: Executive Summary of Egura Pilot Trials

Industry

Energy & Water 4.0 – Integrated renewable systems for clean water, green energy, and circular resource production.Intellectual Protection

The Egura Project's core innovations are already registered with the Spanish Intellectual Property Agency. Due diligence is underway to initiate the application for a European Union patent, ensuring robust protection of the proprietary thermosolar adaptations, integrated multi-output design, and ecosystem synergies.Product

An integrated, disruptive solution combining enhanced thermosolar (concentrated solar thermal with steam turbines), aeolic (wind), and photovoltaic technologies to produce:
Electricity (grid-fed or onsite use)
Desalinated freshwater (potable, irrigation, industrial)
Green hydrogen and oxygen (via electrolysis)
Valuable salts and plankton biomass (from brine and seawater sieving)

All derived from abundant seawater and sunlight in tropical and subtropical coastal zones worldwide.

The system operates with zero direct carbon emissions and minimal ecological pressure, while valorizing byproducts for additional revenue and environmental benefits.

Complementing the commercial rollout is the Egura Cooperation Trials (ECTs) — pilot demonstrations focused on humanitarian and developmental impact in water- and energy-scarce regions.Customers and Business Model

Target customers include: Governments and public utilities
Food & beverage industries
Energy and water companies
Municipalities (city halls)
Cooperatives
Coastal hotels, hospitals, and resorts

The model emphasizes: Promotion and online sales via a dedicated platform
Custom fabrication and installation of Egura Plants tailored to available land/surface area and required output volumes
Ongoing technical accompaniment, optimization, and performance monitoring to ensure maximum efficiency and longevity

Status

The project has completed successful advanced theoretical modeling and simulations, conducted in collaboration with scientists and engineers. Multiple university campuses (in Europe, Mexico, the US, and Spain) have expressed strong interest in hosting Egura Cooperation Trials following successful financing. Funding pathways include crowdfunding campaigns, international organization grants, and philanthropic donors.Entities / Companies LEA Civil Association / AE, S.I. (Huarte, Navarra, Spain)

LEA Foundation / Aseis, C.A. (Cumaná, Venezuela)

These entities form the foundational structure, with the LEA Foundation driving the non-profit global cooperation vision.
Future Investors
Leading companies, private investors, citizens, innovation hubs, and universities across the European Union and beyond are invited to participate in scaling the initiative.Investment / Value $40,000,000 required for the first-year trial of one 10-hectare Egura Pilot Plant (proposed locations: Murcia, Spain; Anzoategui, Venezuela; Sinai, Egypt, Texas, US).
This covers design finalization, construction, commissioning, operations, maintenance, and preparatory scaling studies.

Principal Members of the Founding Team Mikel de Elguezabal Méndez (Navarre, Spain) — Social entrepreneur, biologist, ecologist, and oceanographer (PhD). Extensive experience since 2004 in developing biological, ecological, food, and water education/services, both in university settings and private ventures.
César Dommar Valerio (Canada) — Mechanical engineer specializing in alternative energy systems, with proven success in developing energy products and complex platforms.
Supported by the full Egura Team and staff of the LEA Foundation.

Financial Projection
Positive cash flow is achievable within 2 years of launching Egura Americas Inc. and the first operational plant.
Through global expansion via the Egura Project web/app platform and alignment with '2050 Goals', projected revenues include: Sales of customized Egura Plants worldwide
Direct sales of water, energy, hydrogen, and byproducts from company-owned facilities

Long-term scale: Millions of euros in annual revenues over the coming decades.
Special emphasis on collaboration with Small & Medium Enterprises (SMEs) under Circular Economy principles, formalized through agreements with Egura Americas Inc. in the Sucre state region.

The Problem
Drought and energy scarcity perpetuate poverty for a significant portion of the global population, particularly in tropical and subtropical regions. Water and energy poverty threaten widespread social and economic crises. Existing desalination technologies (often energy-intensive and brine-polluting) and alternative energy sources (e.g., large wind farms, biomass burners emitting CO_2/NO_x, or grid-dependent reverse osmosis) fail to integrate efficiently or avoid environmental harm.Egura Project Solution
A low-cost, robust, zero-emission technology that co-produces and distributes clean water, renewable electricity, green hydrogen, oxygen, salts, and plankton biomass to surrounding regions (coastal or inland via pipelines/grids). Egura Plants disrupt the status quo by combining improved thermosolar distillation (with onsite electricity generation), sieving for plankton, and electrolysis—delivering abundant resources while eliminating ecological pressure and enabling regional development in areas currently facing hardship.Competition Biomass burners (CO_2, NO_x emissions)
Conventional thermosolar farms (risks from boiling oils/heat transfer fluids)
Extensive wind generator fields (land/visual impact)
Grid-powered reverse osmosis desalters (high imported energy use, brine discharge pollution)

The Market

Hundreds of Egura Plants can be deployed across the European Mediterranean basin (coastal and suitable inland drainage areas). Scalable from small residential/cooperative units to large industrial/food-sector installations. The LEA Foundation, Egura Americas Inc., and the forthcoming global Egura online platform position the initiative as an unstoppable force for water and energy sovereignty in suitable regions worldwide.Traction

The Egura Project has generated widespread support and positive validations from scientists across Europe, Mexico, the US, and Spain.

For more information, presentations, or demos

Contact:

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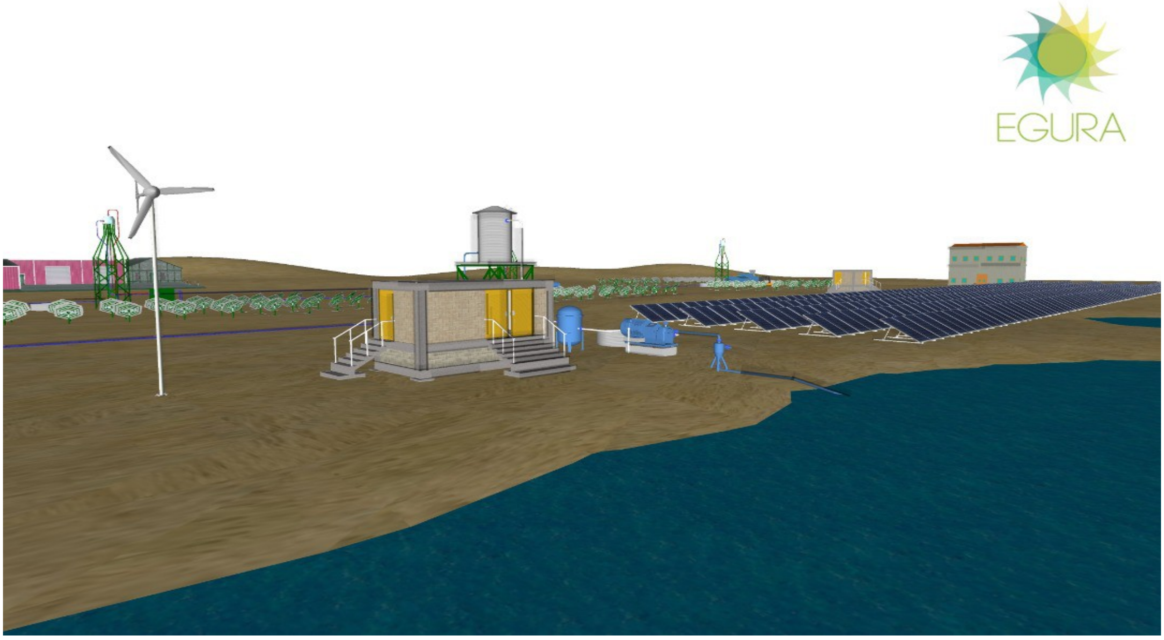
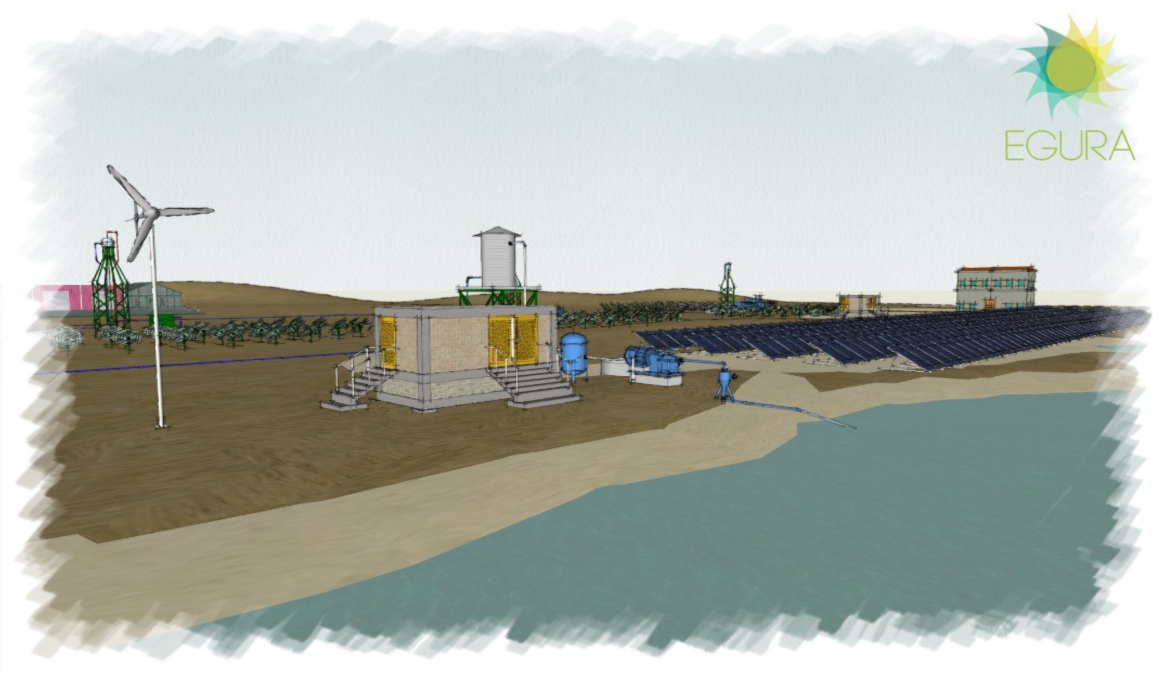
This executive summary encapsulates the vision, readiness, and transformative potential of the Egura Pilot Trials—bridging innovation, sustainability, and global equity.

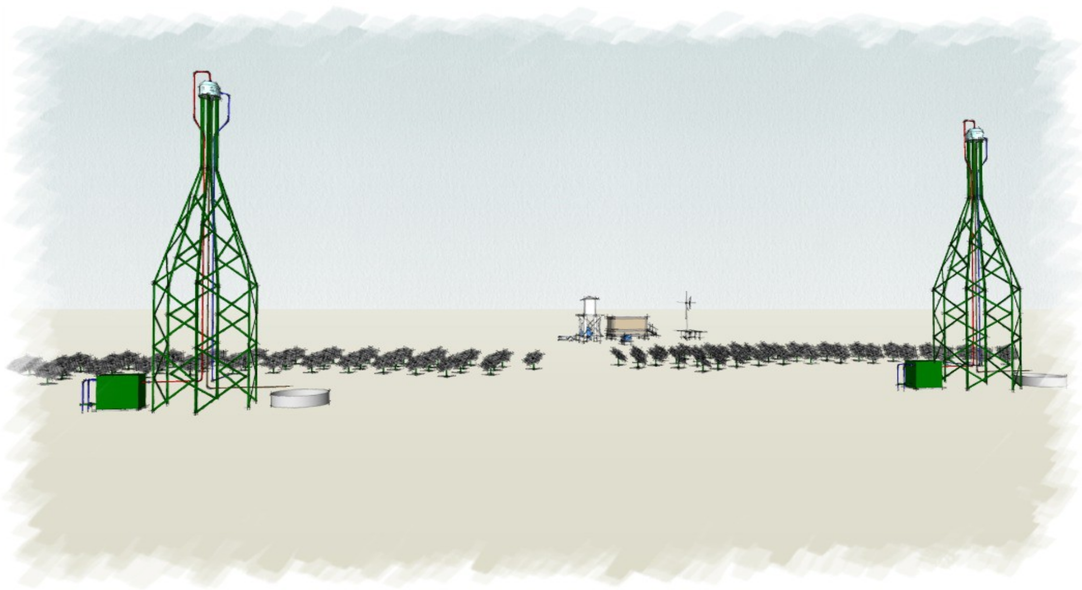
Annexes

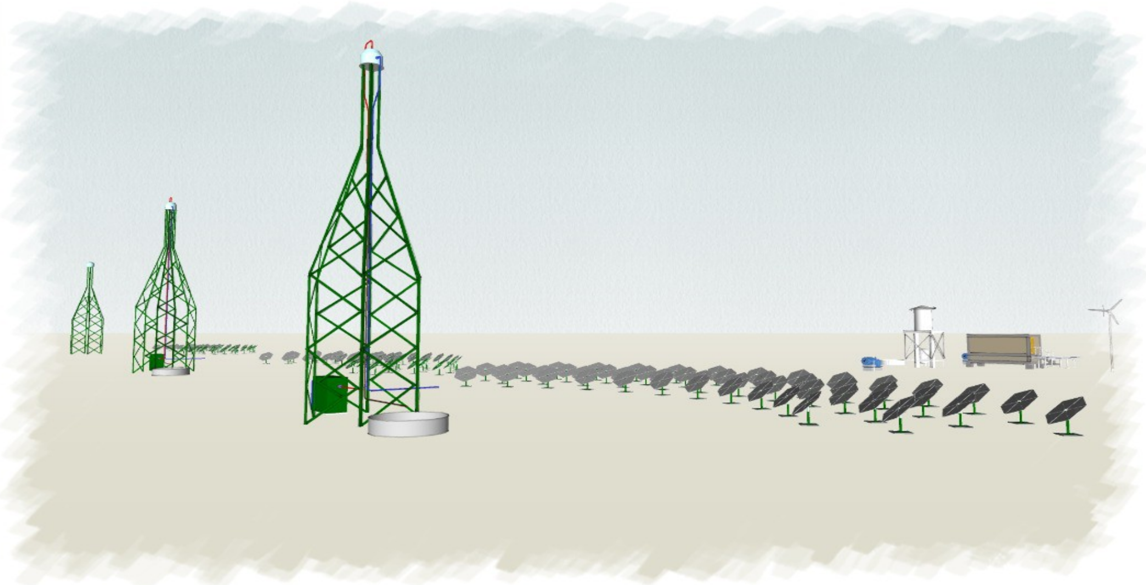
Envision of Egura Plant Beachhead Units

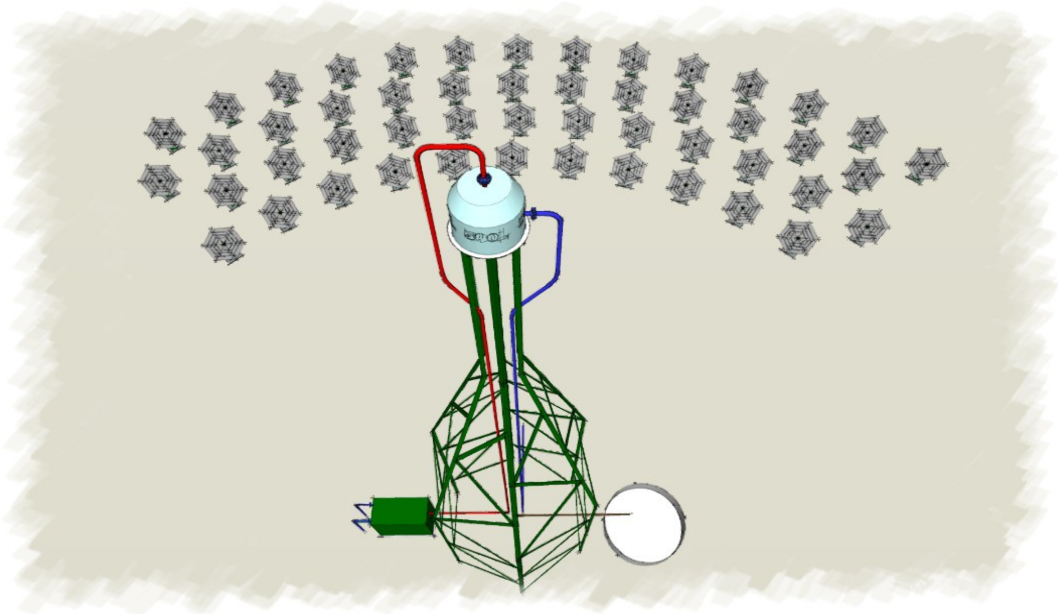


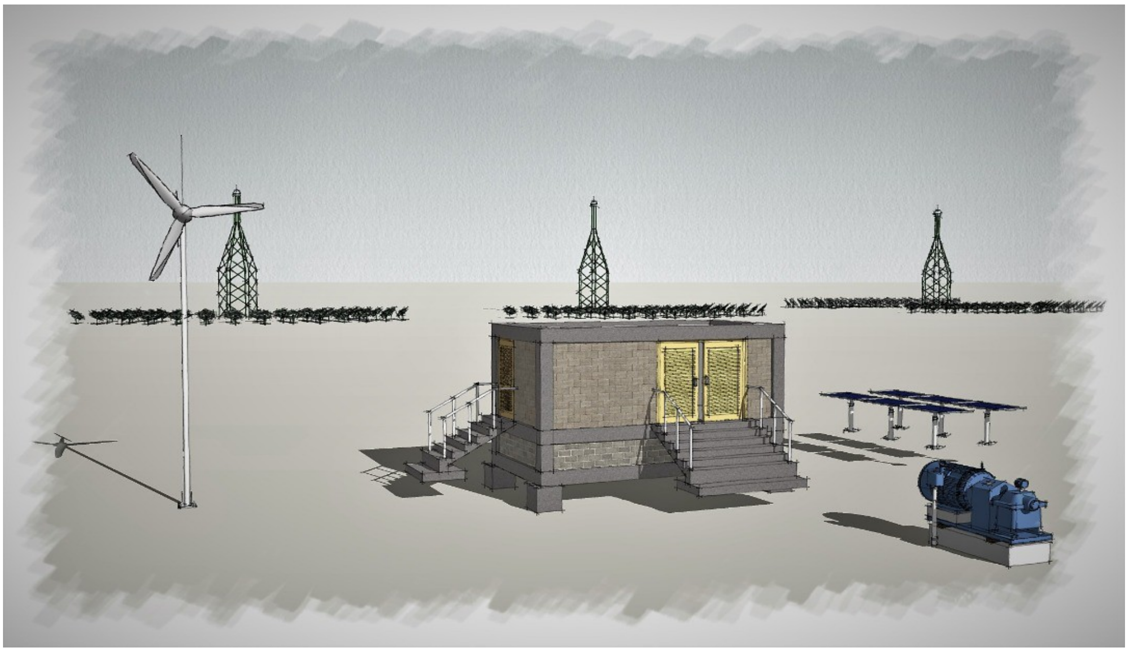


Envision of Egura Plant inland Units









Corollary

Egura Project is a Non Profit Global Initiative that is decided to help many developing countries to get better access to water and energy needs of world society from seawater and sunlight. ***To fund this International Cooperation Aim we have created in 2020 an Egura Business Division to offer our approaches to suitable nations***.

Egura Project **propose to create new Continental Egura Companies** within the trusted and virtuous participation of national investment funds of selected countries and regions of the world, for example: Bahrein, Kuwait, Venezuela, Europe/Spain, southern California, northern Australia, southern Japan and Taiwan.

Egura Companies will be a virtuous venture of 3% for Egura Project intellectual propietaries (LEA Foundation, LEA Civil Association, Aseis C.A. and A&E, S.I) represented by Dr. Mikel Alberto de Elguezabal Méndez, and 90% for National clients/investors/citizens/companies.

Egura Project declares that all these statements registered in this document are fully trustful, honest and is offering the honor of Dr. Mikel Alberto de Elguezabal Méndez, as well as all its civil and legal responsabilities.

Mikel Alberto de Elguezabal Méndez, 73492846A spanish ID

LEA Foundation, LEA Civil Association, Aseis C.A. and A&E, S.I

@eguraproject, Uharte, Navarre, September 8th 2026

Attachments

Egura Protein

Egura Agro

Introduction

The Core Mission of the Egura Project

The primary objective of the Egura Project is to provide abundant, affordable clean water and renewable energy by harnessing seawater and sunlight in an environmentally sustainable and zero-emission manner. As previously substantiated in the Egura Business Division Proposal for Egura Plants, a strategically deployed network covering, e.g., just 4 km² of land—after a 30-year scaling period—could generate sufficient green hydrogen (or equivalent electricity) and desalinated water to meaningfully contribute to meeting a significant portion of Venezuela's energy and water needs. This ambitious yet feasible outcome leverages the integrated "hydrogen approach," where solar-thermal energy drives both desalination and electrolysis for hydrogen fuel production.Each Egura Plant produces tens of thousands of cubic meters of high-quality irrigation water daily. This precious resource becomes a powerful catalyst for regional economic transformation. Nations adopting Egura technology can capitalize on this output to develop interconnected value-adding activities in close proximity to the main plants—specifically through Egura Protein Farms and Egura Agro Farms.In the following sections, we outline these two complementary models, designed to convert dry Mediterranean coastal zones and semi-arid valleys into lush, productive, biodiverse, and economically vibrant landscapes. These initiatives not only generate food, timber, and diversified income streams but also enhance soil health, biodiversity, carbon sequestration, and climate resilience—delivering lasting prosperity, food security, and greater autonomy for local communities and societies.This vision aligns seamlessly with the broader Egura Americas Vision Proposal 2050, which rests on four interconnected pillars of sustainable development:

1. Human Development
   Expanding opportunities and capabilities for all people, enabling them to lead fulfilling lives and contribute to a prosperous, inclusive society.
2. Social Development
   Building a just, caring, and equitable society grounded in high ethical standards, robust social policies, and active global partnership—ensuring Europe plays a leading role in international cooperation for shared progress.
3. Economic Development
   Fostering a competitive, diversified, and resilient economy capable of delivering and sustaining a high standard of living for present and future generations.
4. Environmental Development
   Managing natural resources and ecosystems in a way that harmonizes economic growth, social well-being, and environmental protection—the three inseparable dimensions of true sustainability.

These four pillars are tightly interlinked, with clearly defined long-term outcomes that reinforce one another. To realize this vision and remain faithful to its foundational values, Egura Americas commits to addressing five critical challenges over the coming decades:

This integrated framework—combining technological innovation (Egura Plants), productive land transformation (Protein & Agro Farms), and principled long-term development goals—

offers a coherent, actionable pathway to water and energy sovereignty, regional prosperity, and global climate leadership.

The Five Critical Challenges

To realize the Egura Americas Vision Proposal 2050 and faithfully uphold its four interconnected pillars (Human, Social, Economic, and Environmental Development), the project commits to addressing the following five critical challenges. These tensions represent key balancing acts that sustainable development must navigate: (i) Modernization and preservation of traditions, Pursuing technological and economic advancement while safeguarding cultural heritage, local customs, and historical identity. (ii) The needs of this generation and the needs of future generation, Meeting immediate human requirements for water, energy, food, and prosperity without compromising the resource base, ecological integrity, or opportunities available to those who follow. (iii) Managed growth and uncontrolled expansion, Fostering deliberate, strategic, and sustainable scaling of infrastructure, agriculture, and industry rather than haphazard or environmentally damaging sprawl. (iv) The size and quality of the expatriate labour force and the selected path of development, Carefully considering the scale, skills, and integration of foreign workers while prioritizing pathways that build local capacity, expertise, and self-reliance over time.(v) Economic growth, social development, and environmental management, Ensuring that economic progress reinforces social equity and cohesion while actively protecting and restoring the natural environment—maintaining harmony across the three core dimensions of sustainability.

Alignment with Egura's ApproachWe fully respect and embrace these pillars and challenges. The Egura Plants themselves, along with the interconnected Egura Agro Farms and Egura Protein Farms, are deliberately designed to advance eco-friendly development that is deeply respectful of Europe's people, their traditions, cultural values, and faith-based perspectives.Egura technology harnesses natural abundance (seawater and sunlight) with zero direct emissions and minimal ecological footprint, preserving the environment for future generations.

The farms restore degraded coastal and valley landscapes into productive, biodiverse systems—revitalizing traditional agricultural knowledge while introducing resilient, high-value modern practices.

By creating local jobs, food sovereignty, renewable energy independence, and community-centered prosperity, Egura supports inclusive social and economic development without displacing cultural identity or forcing uncontrolled growth.

The modular, customizable scale—from pilot to regional networks—ensures managed, intentional expansion that adapts to local contexts, traditions, and needs.

In this way, Egura not only resolves water and energy poverty but also contributes meaningfully to a balanced, harmonious future—one that honors America's heritage while building resilience and opportunity for generations to come. This path embodies sustainable development in its truest sense: progress that unites past wisdom with future responsibility.

Egura Protein Farms

Egura Protein Farms: Closed-Loop, Modular Protein Production System

The Egura Protein Farms represent a highly efficient, near-closed nutrient cycle that transforms desalinated irrigation water from adjacent Egura Plants into high-value animal protein (eggs and shrimp) while minimizing external inputs, waste, and environmental impact. The system is designed as a modular, client-customizable framework, allowing investors or operators to select the scale, components, and allocation ratios that best suit their goals, market opportunities, land availability, and risk preferences.

Core Closed-Loop Structure (Recommended Proportional Model).

The baseline configuration—optimized for nutrient recycling, economic viability, and ecological balance—operates as follows for every 10 hectares of irrigated maize cultivation: Maize (Zea mays) production

→ 10 hectares of drip-irrigated maize fields produce grain and stover (stalks/leaves).

→ Grain serves as the primary energy-rich feed base.

Egg-laying hens

→ Approximately 2,000 hens (in solar-covered roofs, welfare-oriented facilities).

→ Hens are fed a maize-based ration (supplemented as needed with local or purchased additives).

→ Daily egg output provides a stable, high-value human food product.

→ Manure (rich in nitrogen and phosphorus) is collected and directed to shrimp lagoons.

Shrimp production (Litopenaeus vannamei – Pacific whiteleg shrimp)

→ 11 hectares of lined or semi-natural lagoons (intensive or semi-intensive culture).

→ Shrimp feed primarily on naturally occurring microalgae blooms, stimulated and fertilized by hen manure.

→ Maize grain can supplement shrimp feed if higher densities or faster growth are desired.

→ Harvested shrimp represent a premium export-grade protein with strong international demand.

This 10 ha maize → 2,000 hens → 11 ha shrimp lagoons ratio creates a synergistic loop:
Maize provides baseline nutrition.
Hens convert maize into eggs (for human consumption) and manure (organic fertilizer).
Manure fuels microalgae growth, which serves as natural, low-cost feed for shrimp.
Shrimp harvest closes the protein-production cycle while recycling nutrients and reducing the need for synthetic fertilizers or commercial feeds.

Potential of Egura Plants Connexed Farms: Egura Protein

	Water needs	**Fertilizer/Feed**	**Production/Invest/ Value**
Egura Common Plant (beachhead)	Process water 10 m^3/day	0	Water 12.522.420 m^3/yr / 12 million $
Maize, 10 hectares	465,75 m^3/day 3 harvests/yr	58 tons/yr Manure, +shrimp legoons sediments, +bivalve shells	130 tons/yr /10.000/ 19.500 $
Hens/eggs, 0,2 Has.	7 m^3/week 2000 hens	104 tons/yr of Maize, 36 tons/yr of commercial* feed by Purina® +pelletized plankton	684,000 eggs/236.000/ 350.000$/ yr
Shrimp, 11 hectares	Seawater 19800 m^3/day renewal (10% of system volume)*	72 tons/yr of manure / 140 tons/yr of commercial* feed by Purina® Mid term trials with pelletized plankton + maize flakes selfgenerated.	83 tons/yr /220.000/ 80.000 $ Inversion Recovery time: 3 yrs
Total	173.883 m^3/yr	130 tons of manure	Protein tons: 9,1 from maize, 37 tons from eggs & 12,80 tons from shrimps / 600,000 $

Maize grains nutrients mean content: carbohydrates 75%, oils, 4%, protein 7%, minerals 2%, fibre 2%, water 10%.
Eggs nutrients mean content (white/yolk): carbohydrates 0,85/1,09 %, fats 0,19/26,71%, protein 10,82/15,50%, minerals 0,42/1,68 %, water 87,72/55,02%
Shrimp flesh nutrients mean content: carbohydrates 2%, fats 1,15%, protein 19,4%, minerals 1,5%, water 76%
*independent Seawater Pumping Unit.

Egura Farms Kuwait	Has.	Animal Unit	Has.	
Year	Maize	Egg Laying Hens	Shrimp	Total Has.
Water 2020 m³/day	465,7	1	18000	**18466,7**
2020	*10*	2000	*11*	2021
2021	*100*	4000	*22*	4122
2022	*190*	8000	*33*	8223
2023	*280*	16000	*44*	16324
2024	*370*	32000	*55*	32425
2025	*460*	64000	*66*	64526
2026	*550*	128000	*77*	128627
2027	*640*	150000	*88*	150728
2028	*730*	200000	*99*	200829
2029	*820*	250000	*110*	250930
2030	*910*	300000	*121*	301031
Water 2030 m³/day	42378,7	150	198000	**240528,7**
Production 2030	11.830 tons/yr	270000 eggs/day	913 tons/yr	
Irrigation	46,57 m³/day	365 m³/yr 2000 hens	10% seawater volume renewal/day	
Production	13 tons/ha/yr	0,9 eggs/animal/day	7.54 tons/ha/yr	

Egura Agro Farms

The alternative use of surplus irrigation water in the Egura Agro Farms model focuses primarily on plant production for wood and fruit trees, combined with a permanent green cover of selected grasses and herbs to support small- to medium-scale goat husbandry using a carefully interbred, hardy biotype. Given the immense volume of water still available from a single Egura Plant — more than 12 million cubic meters per year after hydrogen production and the relatively modest Egura Protein Farms consumption (only about 200,000 m³/year) — clients retain full freedom to decide: whether to allocate additional water toward expanding maize, hen, and shrimp production, or to direct the maximum possible volume toward irrigating suitable coastal topographic and orographic landscapes in your country, such as valleys or plains, to establish large-scale, productive agroforestry systems.

Arch stripes (organisms)	Grasses/Herbs/Bushes	Water needs	Production / Invest / Value
Rhizophora mangle Red mangroves	*Panicum virgatum,* *Sporobolus virginicus,* *Batis maritima* *Bambusa vulgari*	Daily water: 135 m^3/ha Density: 500 plant/ha	Lithoral biomass & biodiversity enhancement / 550 $/ha/yr planting / *7800$/ha/yr (*habitat + CO_2 sink pump in wood)
Avicennia germinans Black mangroves		Daily water: 35 m^3 /ha Density: 100 plant/ha	
Cocus nucifera Coconut palms	Ecotone	Daily water: 32 m^3 /ha Density: 200 plant/ha	1 ton copra/ha / 400$ /ha / 500$/ha 500$/ton (5 years to start)
Phoenix dactylifera Date palms		Daily water: 55 m^3 /ha Density: 120 plant/ha	18 tons fruit/ha / 5600$/ha / 9000$/ha 500$/ton (6 years to start)
Pinus caribaea *Tropical conifers*		Daily water: 17 m^3 /ha Density: 600 plant/ha	225 m^3/ha* / 500$/ha / 19.125$/ha 85$/ m^3(*>10 yrs old)
Vitis vinifera Grapes	*Cynodon plectostachyus* Daily water: 12 m^3 /ha	Daily water: 100 m^3 /ha Density: 1000 plant/ha	30 tons/ha / 5000$/yr / 30.000 $/ha 1000 $/ton(1 yrs to start)
Olea europaea Olives		Daily water: 30 m^3 /ha Density: 500 plant/ha	15 tons/ha / 1000 $/ha 4.500 $/ha 300$/ton (2 yrs to start)
Punica granatum Pomegranate		Daily water: 20 m^3 /ha Density: 500 plant/ha	20 tons/ha / 3000$/ha / 4.000 $/ha 200$/ton (2 yrs to start)
Nubia-Canary-Sanaa interbreed goat's flock		Daily water; 20 litres/animal Density: 5 animals/ha	*meat, milk, leather* *soil dynamics, weed control*
Apis melifera europea		Daily water: 100 mL/hives Density: 4 hives/ha	*Honey, wax, polen,propolis, pollination*

Having more than 30000 m^3 of water each day available for irrigation (12.000.000 m^3 / 365 days) makes possible a great multiplicity of space/surface/lands combinations between Egura Protein & Egura Agro, and also within each one of these in an internal perspective.
It will be always the free choice of clients/investors to use more or less water for the desired type of Egura Plant's connexed Farms.
Thus, we propose one example proportion (among infinite possible combinations) of using 3,570 m^3/day to irrigate 88 hectares during the first year, gradually increasing to 33,120 m^3/day for watering 588 hectares of projected plantations by the end of a 10-year period.

It is evident that daily pumping capacity must be scaled up over time, either by increasing the number of seawater pumps within the main Egura Common Plants (ECPs) — including the beachhead Egura Plants — or by adding new ECPs. The client's vision is the only limit: whether to design a 45 km² approach (or smaller, or larger), focusing on Egura Hydrogen, Egura Water & Energy Plants, Egura Protein Farms, Egura Agro Farms, or any combination thereof.

Annexes

Taxonomy of proposed biological species

Rhizophora mangle, L. – American mangrove, red mangrove

Subkingdom	Viridiplantae – green plants
Infrakingdom	Streptophyta – land plants
Superdivision	Embryophyta
Division	Tracheophyta – vascular plants
Subdivision	Spermatophytina – spermatophytes, seed plants
Class	Magnoliopsida
Superorder	Rosanae
Order	Malpighiales
Family	Rhizophoraceae – mangroves
Genus	Rhizophora, L. – mangrove
Species	*Rhizophora mangle,* L. – American mangrove, red mangrove

Avicennia germinans(L.) black mangrove

Subkingdom	Viridiplantae – green plants
Infrakingdom	Streptophyta– land plants
Superdivision	Embryophyta
Division	Tracheophyta – vascular plants
Subdivision	Spermatophytina– spermatophytes, seed plants
Class	Magnoliopsida
Superorder	Asteranae
Order	Lamiales
Family	Acanthaceae
Genus	Avicennia, L. – black mangrove, mangrove
Species	A*vicennia germinans,* L. – black mangrove

Cocos nucifera, L. coconut palm

Subkingdom	Viridiplantae– green plants
Infrakingdom	Streptophyta– land plants
Superdivision	Embryophyta
Division	Tracheophyta– vascular plants, tracheophytes
Subdivision	Spermatophytina – spermatophytes, seed plants
Class	Magnoliopsida
Superorder	Lilianae – monocots, monocotyledons
Order	Arecales
Family	Arecaceae
Genus	Cocos L. – coconut palm
Species	*Cocos nucifera,* L. – coconut palm

Phoenix dactylifera, L. – date palm

Subkingdom	Viridiplantae – green plants
Infrakingdom	Streptophyta– land plants
Superdivision	Embryophyta
Division	Tracheophyta – vascular plants
Subdivision	Spermatophytina – spermatophytes, seed plants
Class	Magnoliopsida
Superorder	Lilianae – monocots, monocotyledons
Order	Arecales
Family	Arecaceae
Genus	Phoenix, L. – date palm
Species	*Phoenix dactylifera*, L. – date palm

Pinus caribaea, Morelet – Caribbean pine

Subkingdom	Viridiplantae– green plants
Infrakingdom	Streptophyta – land plants
Superdivision	Embryophyta
Division	Tracheophyta – vascular plants
Subdivision	Spermatophytina – spermatophytes, seed plants
Class	Pinopsida – conifers
Subclass	Pinidae
Order	Pinales – pines
Family	Pinaceae – pines
Genus	Pinus, L. – pine
Species	*Pinus caribaea*, Morelet – Caribbean pine

*Cynodon plectostachyus, (*K. Schum.) stargrass

Subkingdom	Viridiplantae – green plants
Infrakingdom	Streptophyta– land plants
Superdivision	Embryophyta
Division	Tracheophyta – vascular plants
Subdivision	Spermatophytina – spermatophytes, seed plants
Class	Magnoliopsida
Superorder	Lilianae– monocots
Order	Poales
Family	Poaceae – grasses
Genus	Cynodon Rich. – cynodon, Bermuda grass
Species	*Cynodon plectostachyus* K. Schum.) stargrass

Sporobolus virginicus, (L.) seashore dropseed

Subkingdom	Viridiplantae – green plants
Infrakingdom	Streptophyta – land plants
Superdivision	Embryophyta
Division	Tracheophyta – vascular plants
Subdivision	Spermatophytina– spermatophytes, seed plants
Class	Magnoliopsida

Superorder	Lilianae – monocots, monocotyledons
Order	Poales
Family	Poaceae – grasses
Genus	Sporobolus, R. Br. – dropseed, dropseed spp.
Species	*Sporobolus virginicus*, (L.) Kunth – seashore dropseed

Panicum virgatum, L., switchgrass

Subkingdom	Viridiplantae – green plants
Infrakingdom	Streptophyta– land plants
Superdivision	Embryophyta
Division	Tracheophyta – vascular plants
Subdivision	Spermatophytina – spermatophytes, seed plants
Class	Magnoliopsida
Superorder	Lilianae – monocots, monocotyledons
Order	Poales
Family	Poaceae – grasses, graminées
Genus	Panicum, L. – panicum, panicgrass
Species	*Panicum virgatum,* L. – old switch panic grass, switchgrass

Batis maritima, L., turtleweed, saltwort

Subkingdom	Viridiplantae – green plants
Infrakingdom	Streptophyta – land plants
Superdivision	Embryophyta
Division	Tracheophyta – vascular plants
Subdivision	Spermatophytina – spermatophytes, seed plants
Class	Magnoliopsida
Superorder	Rosanae
Order	Brassicales
Family	Bataceae
Genus	Batis P. Browne – turtleweed
Species	*Batis maritima*, L. – turtleweed, saltwort

Olea europaea ssp. Europaea, L. – European olive

Subkingdom	Viridiplantae – green plants
Infrakingdom	Streptophyta – land plants
Superdivision	Embryophyta
Division	Tracheophyta – vascular plants
Subdivision	Spermatophytina – spermatophytes, seed plants
Class	Magnoliopsida
Superorder	Asteranae
Order	Lamiales
Family	Oleaceae – olives
Genus	Olea, L. – olive
Species	*Olea europaea* L. – olive
Subspecies	*Olea europaea ssp. europaea,* L. – European olive

Vitis vinifera, L. – wine grape

Subkingdom	Viridiplantae– green plants
Infrakingdom	Streptophyta – land plants
Superdivision	Embryophyta
Division	Tracheophyta– vascular plants
Subdivision	Spermatophytina – spermatophytes, seed plants
Class	Magnoliopsida
Superorder	Rosanae
Order	Vitales
Family	Vitaceae – grapes
Genus	Vitis, L. – grape
Speci	*Vitis vinifera,* L. – wine grape

es

P*unica granatum,* L. – pomegranate

Subkingdom	Viridiplantae– green plants
Infrakingdom	Streptophyta – land plants
Superdivision	Embryophyta
Division	Tracheophyta – vascular plants
Subdivision	Spermatophytina – spermatophytes, seed plants
Class	Magnoliopsida
Superorder	Rosanae
Order	Myrtales
Family	Lythraceae – loosestrife
Genus	PunicaL. – pomegranate
Speci	P*unica granatum,* L. – pomegranate

es

Capra hircus aegagrus.

Subkingdom	Bilateria
Infrakingdom	Deuterostomia
Phylum	Chordata, chordates
Subphylum	Vertebrata, vertebrates
Infraphylum	Gnathostomata
Superclass	Tetrapoda
Class	Mammalia, Linnaeus, 1758 – mammifères, mamífero, mammals
Subclass	Theria, Parker and Haswell, 1897
Infraclass	Eutheria, Gill, 1872
Order	Artiodactyla, Owen, 1848 – artiodactyls, cloven-hoofed ungulates, even-toed ungulates
Family	Bovidae, Gray, 1821 – antelopes, cattle, goats, sheep, bovids
Subfamily	Caprinae, Gray, 1821
Genus	Capra, Linnaeus, 1758 – goats
Species	Capra hircus, Linnaeus, 1758 – domestic goat, goat (feral), Goat
Subs	*Capra hircus aegagrus,* Erxleben, 1777 – bezoar

pecies

Litopenaeus vannamei

Subkingdom Bilateria
Infrakingdom Protostomia
Superphylum Ecdysozoa
Phylum Arthropoda – arthropods
Subphylum Crustacea, Brünnich, 1772 – crustaceans
Class Malacostraca, Latreille, 1802
Subclass Eumalacostraca, Grobben, 1892
Superorder Eucarida, Calman, 1904
Order Decapoda, Latreille, 1802 – crabs, crayfishes, lobsters, prawns, shrimps.
Suborder Dendrobranchiata, Bate, 1888
Superfamily Penaeoidea, Rafinesque, 1815 – penaeoid shrimps
Family Penaeidae, Rafinesque, 1815 – penaeid shrimps
Genus Litopenaeus, Pérez Farfante, 1969
Species*Litopenaeus vannamei,* (Boone, 1931) – whiteleg shrimp

Apis mellifera

Subkingdom Bilateria
Infrakingdom Protostomia
Superphylum Ecdysozoa
Phylum Arthropoda – Artrópode, arthropodes, arthropods
Subphylum Hexapoda – hexapods
Class Insecta – insects, hexapoda, inseto, insectes
Subclass Pterygota – insects ailés, winged insects
Infraclass Neoptera– modern, wing-folding insects
Superorder Holometabola
Order Hymenoptera– abelha, formiga, vespa, ants, bees, wasps
Superfamily Apoidea – bees, sphecoid wasps, apoid wasps
Family Apidae– bumble bees, euglossine, euglossines, honey bees, stingless bees
SubfamilyApinae
Tribe Apini
Genu Apis, Linnaeus, 1758
s
Species *Apis mellifera*, Linnaeus, 1758 – honey bee

Gallus gallus

Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata– chordates
Subphylum Vertebrata –vertebrates
Infraphylum Gnathostomata
Superclass Tetrapoda
Class Aves – Birds
Order Galliformes– Fowls, Gallinaceous Birds
Family Phasianidae – Partridges, Turkeys
Subfamily Phasianinae – Pheasants
Genus Gallus, Brisson, 1760 – Junglefowl
Species Gallus gallus, (Linnaeus, 1758) – Red Junglefowl
Subspeci*Gallus gallus* bankiva, Temminck, 1813
es

Epilogue

Corrected and improved version (keeping your original meaning and length very close):Beyond the Egura Americas coastal projects, we envision offshore development through the PSP — the Plowing the Seas Project: "…developing 'seafloor-anchored floating structures' to carry out aquaculture of macroalgae together with bivalves, fish, echinoderms and crustaceans in a multi-specific approach, deployed in the open oceans and international waters, working in association with multilateral state organizations such as CARICOM, OAS, ASEAN, UPM, UA and UE…"

Mikel Alberto de Elguezabal Méndez, 73492846A spanish ID

LEA Foundation, LEA Civil Association, Aseis C.A. and A&E, S.I

@eguraproject

Uharte, Navarre, September 8th 2026

Egura Project Plants

(Beachhead Plants)

Introduction

Corrected English version (minimal changes, natural and clear):Egura Plants will depend on seawater accessibility using an almost zero environmental impact approach. This means preferring a land-use shape that occupies the fewest possible surfaces or areas along the coastal frontline. This shape would be a triangle or trapezoid-like perimeter for each Egura Plant, with the narrowest part or angle directed towards the seashore.In this document we will present some summarised features of Egura Plants, based on the Egura Common Plants or Beachhead Plants. These include the following distinctive features:

Seawater Pumping Unit (solar panel-covered roof)

Filtration & Hatchery Unit

Control Centre (above the Hatchery, also with solar panel-covered roof)

Brine lagoons

Hydrogen Unit

The common features shared with the rest of the connected (inlandward) Egura Plants are:

Thermosolar Units

Photovoltaic Units

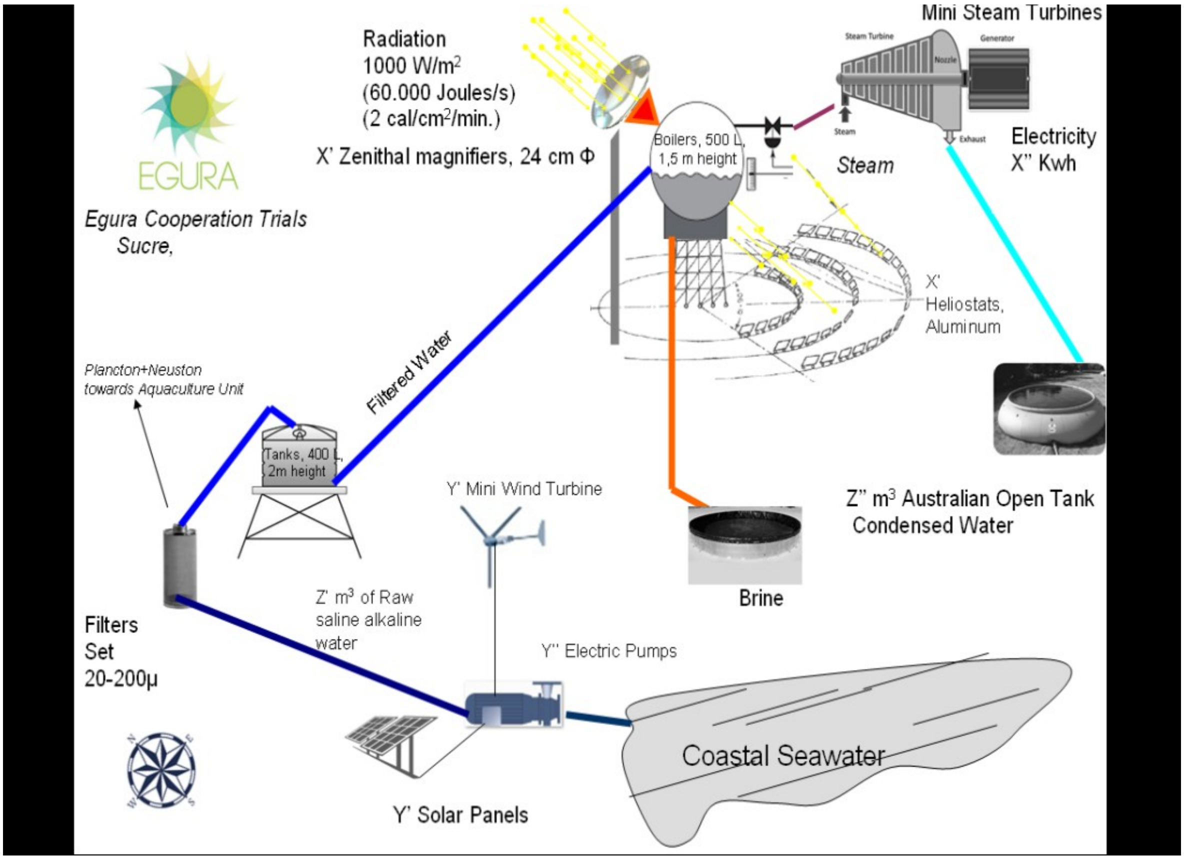
Aerogenerator Units

Egura Plants Layout

<table>
<tr><th>Units</th><th>*Indoors/outdoors
*solar panel roof covered</th><th>Situation</th><th>Function/Feature</th></tr>
<tr><td>Pumping</td><td rowspan="3">Indoors</td><td rowspan="5">Beachhead</td><td>Own energy powered</td></tr>
<tr><td>Filtering/Hatchery</td><td>FAO Schemes</td></tr>
<tr><td>Control Centre</td><td>Above Hatchery</td></tr>
<tr><td>Thermosolar Distillers</td><td rowspan="2">Outdoors</td><td>Desalinate seawater</td></tr>
<tr><td>Brine Lagoons</td><td>Salt Products</td></tr>
<tr><td>Water Storage Tanks</td><td>Indoors</td><td rowspan="4">Beachhead/inland</td><td>Water distribution*</td></tr>
<tr><td>Thermosolar Turbines</td><td rowspan="3">Outdoors</td><td rowspan="3">Energy generation**</td></tr>
<tr><td>Phovoltaic panels</td></tr>
<tr><td>Aerogenerators</td></tr>
<tr><td>Electrolisys Unit</td><td>Indoors</td><td>Beachhead</td><td>Hydrogen/Oxygen Fuel/Medicinal</td></tr>
<tr><td>*Option I</td><td colspan="3">For water electrolisys; for irrigation and hydration purposes at Egura Farms: Agro & Protein</td></tr>
<tr><td>**Option II</td><td colspan="3">For water electrolisys; for powering pumping unit, control centre and all Egura Plant & Farms facilities and operations.</td></tr>
</table>

Egura Plant Features

The Egura Project seek actively for Pilot Countries to set an Egura Pilot Plant with the double objective of producing part of the needs of the selected country in water and energy, and, to fund the Egura Cooperations Trials in water/energy poor regions.



The most suitable location for an Egura Plant to ensure optimal performance is a near-coastal, stable land site within the municipal administrative boundaries of a supportive local government. This allows seawater to be pumped (using wind and/or solar PV energy) from a previously confirmed depth with negligible ecological impact (e.g., extracting fish and invertebrate eggs and larvae). On land, the seawater is filtered through appropriate mesh textiles to separate mesoplankton (>200 µm), which is then concentrated and directed to the Seafood Facility of Egura (SFE1) in dedicated container tanks sized proportionally to the scale of the Egura Project at that site.The mesoplankton-filtered seawater proceeds to a second sieve stage to separate microplankton (>20 µm) and nanoplankton (>2 µm). After these consecutive filtration steps, only pico- and femtoplankton (<0.2 µm) remain in the water mass. These can be inactivated or destroyed in the next phase of the Egura Plant process.The filtered seawater then enters a system of six consecutive thermosolar distillers, where it is converted into highly concentrated brine

directed to the Salts Facility of Egura (SFE2), consisting of open brine lagoons for further processing and valorization.The vaporized water is condensed into a stainless steel sphere-boiler (heated by concentrated sunlight using arcs of reflector mirrors — heliostats — focused on the sphere at a precise focal point, with large magnifiers positioned on the opposite side). This generates high temperatures and steam pressure to drive rotors and dynamos, converting kinetic energy into electromagnetic energy via a steam turbine electrogenerator in the Energy Facility of Egura (EFE).The water, now double-distilled, can be split into two main flows according to project priorities:Potable sterilized water directed to the Water Facility of Egura (WFE), subdivided into:Human consumption water
Agricultural irrigation water
directly from the energy pool: photovoltaic solar panels + thermosolar + aerogenerators), yielding fuel for hydrogen engines in the Hydrogen Facility of Egura (HFE) and purified oxygen for medical purposes in the Oxygen Facility of Egura (OFE).

All of the options described above are free choices for future Egura Plant owners. Some may require only water, while others may prioritize water + energy, salts, plankton biomass, oxygen, hydrogen, or any combination thereof. Everything is possible.The key resource underpinning this system is the ecological concept of space, area, and surface. This leads to the following logical axiom:"The greater the available space, the greater the possibilities of achieving higher temperatures with larger thermosolar collection areas, more seawater intake, and greater desalted water storage capacity — resulting in higher energy and potable water production capacity."
IV. Egura Project Plant Details and Theoretical Calculations

A) Obtaining Seawater on LandThe core idea of an Egura Plant is to obtain seawater entirely without using fossil energy or electricity produced elsewhere — unlike conventional desalination plants worldwide. In favorable locations, the plant can even harness daily tidal energy to assist the natural inflow of seawater. To achieve this self-sufficiency, Egura Plants must generate their own clean energy to power seawater pumps, including:
Photovoltaic solar panels
Wind energy (aerogenerators)
Steam turbines driven by thermosolar energy

Additionally, in windy coastal regions, mechanical windmills can pump seawater volumes ranging from 1,000 to 20,000 liters per day (Vick et al., 2009). Modern wind-electric mills or solar-electric panels can power a single 6-inch pump at 20 m depth (for example), lifting approximately 498 m³ of seawater per hour when supported by daily solar irradiation between 6.0 and 7.0 kWh/m².Depending on the desired size of the Egura Plant and the available land surface area, owners can select from:High-efficiency, higher-cost approaches

Medium-cost-per-surface solutions

Simpler, lower-cost options

All methods ensure efficient and ecologically responsible seawater intake from the coastline.In the following table, we present example options for seawater pumping suitable for the initial Egura Cooperation Trials Plants, which represent the starting phase of the Egura Project.

Different options (or combinations) to obtain seawater at an Egura Cooperation Trials Plants

Technology	Example of Volume of water/time	Energy source	Comments
Option 1: The **simple windmill** pumps approach (Multi-bladed wind mill pump of 4.8 m diameter, to a 30 m elevation)	6400 litres/hour	Best performance 24 - 32 km/h wind speed. Minimum 5 - 6.5 km/h	Wind energy is the best option for water pumping in all cases, if the average wind speed in the critical month is 5 m/s (18 km/h) or above (Van Meel & Smulders, 1989)
Option 2: The medium cost/surface approach of **wind generators**: (3.5 kW wind turbine of 4 m diameter, 500 kWh/month, to a 10 m elevation)	1.250.000 - 1.771.200 litres/month Depending on power of water pump technology*	On a 18 km/h annual average daily wind speed at Canary Islands, Spain, e.g.	Option 1 and option 2 relies on wind availability and could pose disadvantages to provide seawater at the desired level required in a minimal size Egura Plant, but each Egura Farm should have one or both of these options together with the next ones of thermosolar steam turbine and/or photovoltaic energy to power electric water pumps. (Asfour *et al*., 2002)
Option 3: The medium cost/surface of thermosolar steam turbines: (Heliostat mirrors boiling water into **Steam Turbine**[1] to power Well Jet Pump to a 10 m elevation). 1. or Hot-Air Turbine (Nakatani *et al*., 2012).	1.250.000 - 1.771.200 litres/month Depending on power of water pump technology*	The potential solar radiation in sunny areas (1KW/m^2/day)	The third step of Egura Plant, is the mere electricity generation from predistilled seawater, and part of this own generated electricity here could be directed to pump seawater during daylight time, thus during the night time could be used electricity from wind turbines or suction force from mechanical windmills, (options 1 and 2) in a mixed approach. Storage of this water at an adequate height is crucial for any Egura Plant.

Option 4: Hyper expensive and huge surface/area for bigger Egura Plants: (**Photovoltaic Panel -PV-** to power water pumping system to a 30 m elevation)	70995 litres/day	PV power output between 75 to 85 W/m^2 irradiance (each second)	Maximum discharge logged was 163 litres/minute between 11AM to 2PM in November during the winter season. (Shiv *et al*., 2013)

*more details in: http://egura-project.blogspot.com.es/2016/04/obtaining-sea-water.html

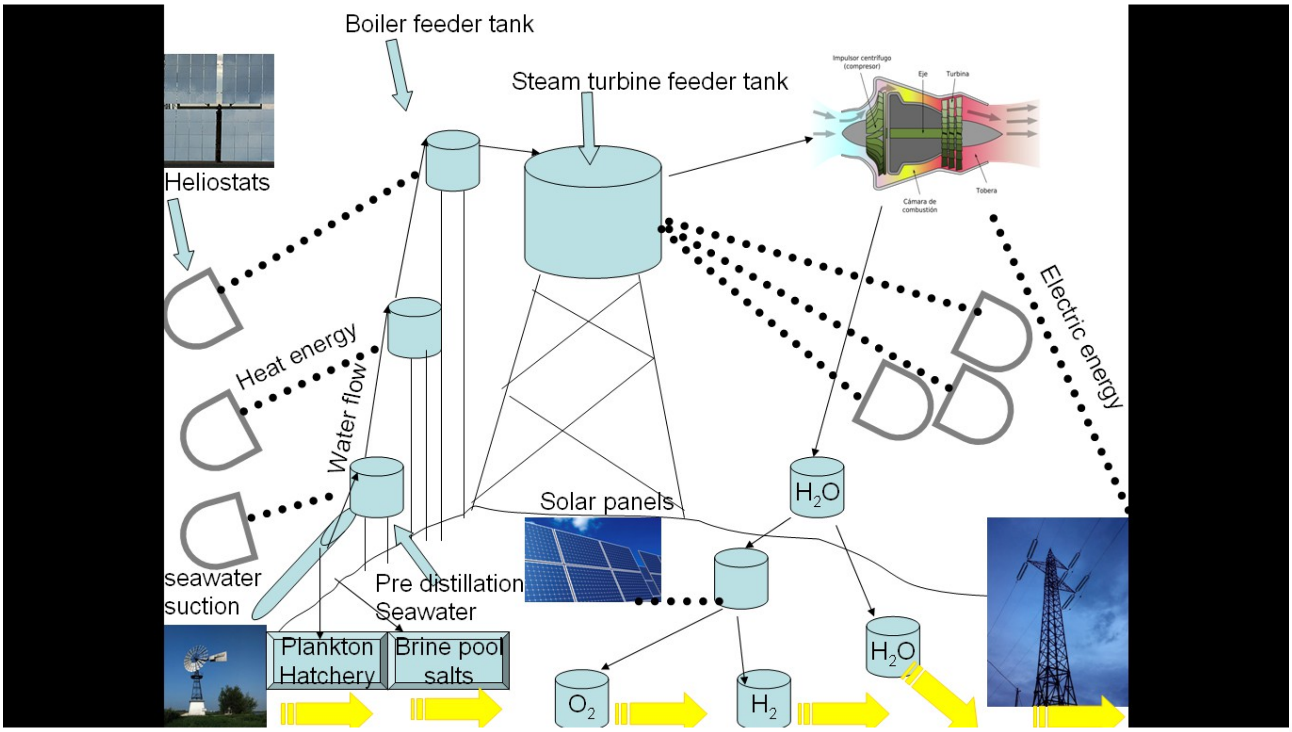
B) Filtration and Distillation of Seawater, Plankton and Salts Units Once the biggest problem in Egura Plants is solved — sustainable seawater pumping (without using excess energy that is intended to be produced and "exported" outside the Egura Farm) — we can continue with the important units to produce commodities and valuable products. As we pump seawater and before placing the required mass of water in the designated reservoirs, we must perform filtration for plankton and then distillation of seawater. Both are important steps to: i) capitalize on the biomass of plankton to feed the bivalves in the Hatchery (along with associated fish and crustacean species), planned to produce millions of "seeds" of autochthonous bivalves from the region where the Egura Plant is located, and also to capitalize on the salts to produce table salt for human consumption or animal use, or to produce sodium (Na+) or chlorine (Cl-) based products using available on-site photovoltaic energy to supply chemical industries nationwide; ii) prevent impurities in the following steps of Egura Plants, such as steam production using larger thermosolar energy to generate electricity with coupled turbines, and such as potable water for human consumption, or for the Gases Unit to produce high-quality oxygen, hydrogen or even ozone (the latter also "easily" produced by applying direct photovoltaic electricity to the desired oxygen gas masses). For agricultural water, it is desirable to reconstitute distilled water with required levels of salts and with organic matter (disinfected by thermosolar energy heaters) from hatchery facilities. So, depending on the option(s) we choose to pump seawater toward our Egura Plants — whether a windmill with mechanical suction or electrical pumps (activated by wind turbines, photovoltaic or thermosolar generated energy) or the tidal approach presented before — we will have two different height placements for water storage and filtration: tower-based tanks, and ground-based pools, whether excavated in terrain (sand or organic soil along the seacoast) or open cubes made of stainless steel (for decades of intended use). Before redirecting by pumping or gravity the water mass toward the reservoir tanks where the filtered seawater will be distilled, first we must filter it, but how? As we mentioned in the summary of the Egura Project, we must be able to separate plankton on land by using adequate textiles to retain the mesoplankton (>200 μm) therein, and concentrating it at the Seafood Facility of Egura

(SFE1) in tanks with mature bivalves (which are fed to achieve reproduction in situ by coupling rapid water temperature changes with the exact physiologic condition factor obtained from high-quality food items like micro crustaceans, rich in lipids, proteins, minerals, vitamins); at the same time/place the water mass is directed to a second sieve for microplankton (>20 μm) and nanoplankton (>2 μm) with the microalgae, flagellates, ciliates and other kinds of plankton of this size, directed to feed the larvae and juveniles produced by the mature bivalves. After these consecutive filters, just the remaining pico- and femtoplankton (around 0.2 μm) could be destroyed by heat in the next step of each Egura Plant, the distillation and thermosolar units ahead. The Hatchery Unit could be designed at each Egura Plant following the expert directions found in FAO documents available on the Internet as open resources, with the materials and equipment that could be constructed by local Egura Partners in any Egura Country. Once it is free from major plankton organisms, the seawater is going to be treated by heat energy from daylight (10 to 12 hours, depending on location — latitude, cloudiness — at Egura Plants), also depending on where the water is placed to heat and distill, whether in tower tanks or in ground-based open cubes. Here we have envisioned the design of a methodology for heating the seawater reservoir to obtain steam mass that will be captured by a stainless steel 'bell' and conducted by stainless steel tubes toward calculated heights and for subsequent distillation cycles in place. The heat will be concentrated by using flat mirrors, the heliostats, or concave mirrors and the magnifiers proposed before, in a combination of these tools together, always improving designs and testing different shapes, sizes, angles, materials or coatings of the key elements to Egura Plants that represent the heliostats. We can design from small size to larger scale Distillation Units, always leaving design features to extract the salts concentrated in the brine solution that will develop at the bottom of these units. This brine would be directed to open aerated pools or lagoons to obtain in classical ways the marine salts and then proceed to refine at desired qualities, even to separate Na^+ and Cl^- using electricity from coupled direct photovoltaic panels as an optional unit if more Egura Products are needed. In fact, applying electrolysis to a salt solution, the brine, would produce chlorine gas (Cl_2, dangerous, used in industry in the synthesis of chlorinated organic compounds like PVC) and sodium hydroxide ($NaOH$, the main areas of application today are: synthesis of organic or inorganic compounds, metallurgy — alumina/aluminium industry —, pulp and paper industry, textile industry or soaps, surfactants). Note that these potential by-products are dangerous or contaminants to human health and the environment, but certainly of important global consumption today until new cleaner technologies and materials arise in the world economy.

C) Thermosolar Electricity Generation at the Energy UnitUsing a steam turbine like those available on the global market (which could later be redesigned and constructed by Egura Partners), an Egura Plant Energy Unit could generate up to 20 megawatts with an inlet pressure of 105 kg/cm² and a temperature of 540 °C. For a 2-megawatt steam turbine generator with an inlet pressure of 45 kg/cm² and temperatures reaching 440 °C, approximately 20,000 kg/hour of steam would be required to feed the inlet flow.In the two examples above, conventional 20 MW steam turbine generators typically run on diesel- or gas-heated boilers to achieve these parameters, while a 2 MW unit might operate using a biomass incinerator boiler (e.g., rice harvest residues). Both approaches produce greenhouse gases (and acid rain precursors) and involve economic costs (volatile fuel prices) as well as logistical challenges (sourcing providers, fuel trading, and supply chain management).In contrast, an Egura Plant — located along the coasts of Europe or Spain, for example — uses steam turbine generators powered by steam from pre-distilled (also thermosolar) seawater. The inlet pressure is achieved by heating the steam through concentrated sunlight focused on a tower boiler tank or sphere, eliminating the need to purchase fuels and producing no greenhouse gases from combustion.The available land area of an Egura Plant is the key factor determining the model's efficiency: it influences seawater usage, storage capacity, and the potential daily inlet volume to the boiler tanks feeding the steam turbines. The exhaust steam or water vapor from the turbine can be redirected in several ways:Back to the boiler feeder tank (for recirculation), or
To the Water Units (potable + irrigation) and Gases Units (oxygen, hydrogen) in an adjustable ratio — for example, a 50/50% split between these two socially and economically important units.

This ratio can be adjusted according to the exact criteria and priorities of each Egura Plant owner. This thermosolar approach ensures clean, fuel-free, zero-emission electricity generation while maximizing the use of abundant seawater and sunlight — a fundamental advantage over conventional fossil- or biomass-based steam turbines.

First approach of an Egura Farm. (2013)



D) Water Units: Potable and AgriculturalDesalination of seawater (producing desalted water) is a common procedure in many countries around the world today. It typically involves high energy consumption, making the cost of desalinating seawater logically higher — and generally more expensive — than alternatives such as freshwater from rivers or groundwater. It is also very common for conventional desalination plants to discharge the concentrated brine back into the coastal ecosystem, thereby polluting the aquatic environment with extremely high salt concentrations that are harmful to local biota.

According to the WateReuse Association (2011):

“Seawater desalination, like any other water treatment technology or separation process, requires the use of energy to produce water. As a drinking water treatment technology, however, seawater desalination requires more energy than most other water treatment methods. Often, however, the power consumption associated with seawater desalination is exaggerated or inaccurately represented, particularly when compared to other treatment technologies or alternatives assuring safe, reliable public water supply.”Only the pre-treatment energy requirements are comparable to those of any other surface water treatment plant, ranging from 0.9 to 1.5 kWh per kgal (1 kgal = 3.78 m^3).This energy is typically drawn from the local or national electricity grid, where every kWh is sold at market prices that fluctuate constantly. Moreover, the energy source may not be renewable, thus adding pollution and extra CO_2 emissions to the atmosphere.In contrast, an Egura Plant couples thermosolar energy for the pre-distillation of plankton-filtered seawater, ultimately powering the steam turbine generator via a steam feeder boiler tank (also heated by thermosolar means: heliostats + magnifiers).We can further save energy by maximizing the efficiency of the heat energy used in the pre-distillation processes. This is achieved by attaching vacuum systems to lower the internal pressure — for example, at 0.1 atmospheres, water boils at around 50 °C instead of 100 °C. These vacuum systems will be designed by Egura engineers for each plant size, using a novel mechanical/physical approach: stainless steel spheres, tubes, and conduits that heat the air and create pressure differences naturally, without relying on electrical vacuum pumps at all. This innovative, fully solar-driven method ensures the production of high-quality potable and agricultural water with minimal energy input, zero imported electricity, zero direct emissions, and no harmful brine discharge — delivering a truly sustainable, low-cost, and ecologically responsible alternative to conventional desalination.

E) Gases Unit: Hydrogen, Oxygen

Water Electrolysis for HydrogenSome authors have searched for a “Holy Grail” in hydrogen production from water using sunlight (Bard & Fox, 1995), imitating one of the natural steps of photosynthesis in plant cells (the water photolysis that splits water molecules into oxygen and hydrogen).Egura Plants will use direct photovoltaic electrolysis (also wind-powered or thermosolar-powered) on condensed water collected from boilers and distillers. This process separates oxygen gas and hydrogen gas, which are then stored in pressurized tanks as two valuable products.There are other methods to produce hydrogen suitable for fuel cells in modern car engines and electricity generators. Remember that hydrogen gas must be cooled to -252 °C to store it as a liquid fuel. Once liquefied, it can be maintained in that state inside pressurized and thermally insulated containers.There are three main types of electrolysis cells for producing molecular hydrogen (H_2 gas):

i) Solid Oxide Electrolysis Cells (SOECs)

ii) Polymer Electrolyte Membrane cells (PEM)

iii) Alkaline Electrolysis Cells (AECs)i) SOECs operate at high temperatures, typically around 800 °C. At these high temperatures, a significant portion of the required energy can be supplied as thermal energy (heat). This is known as high-temperature electrolysis. The heat can come from various sources, including waste industrial heat, nuclear power plants, or concentrated solar thermal plants. This approach has the potential to reduce the overall cost of hydrogen production by decreasing the amount of electrical energy needed for electrolysis.ii) PEM electrolysis cells typically operate below 100 °C and are becoming increasingly commercially available. These cells have the advantage of being relatively simple in design and can handle widely varying voltage inputs, making them ideal for integration with renewable energy sources such as solar PV.iii) AECs perform best at high electrolyte concentrations (KOH or potassium carbonate) and at high temperatures, often near 200 °C.Since pure hydrogen does not occur naturally on Earth in large quantities, its industrial production requires a substantial amount of energy. Option (ii) presented above is a form of electrolysis — that is, electricity is passed through water to separate the hydrogen and oxygen atoms. This method can use electricity from wind, solar, geothermal, hydro, fossil fuels, biomass, nuclear, and many other sources.Electrolysis powered directly by photovoltaics therefore appears to be a cleaner and potentially cheaper method compared to the currently dominant technology of steam-methane reforming, which extracts hydrogen from methane but produces carbon dioxide and carbon monoxide as by-products. These greenhouse gases contribute to air pollution, acid rain, and global warming.Egura Engineers must develop an Electrolysis Unit for hydrogen production and storage of this valuable fuel to supply the modern global market. Egura Plants should also be equipped to generate electricity at night using hydrogen fuel generators.

Oxygen production

Oxygen gas can also be produced through the electrolysis of water, yielding molecular oxygen (O_2) and hydrogen (H_2), using only direct current (DC) electricity. Electrochemist insist: do not use alternating current (AC)!This electricity can be generated in situ — at the same place and time — using photovoltaic panels installed around the Electrolysis Unit.Notice that we repeatedly emphasize the use of photovoltaic panels across many units and processes in an Egura Plant. It is well known that solar potential on an average day in tropical and subtropical regions is quite high and can be “harvested” by solar panels. However, one major drawback of solar photovoltaic technology has been the storage of the generated electricity: batteries (accumulators) to store this energy in electrical form have remained very expensive in recent years.It is far more efficient to convert solar energy instantaneously into chemical energy stored in the molecular bonds of substances such as H_2.The oxygen produced during hydrogen production (or vice versa) must be handled aseptically if it is intended for medicinal use in hospitals in the surrounding region of any Egura Plant, or if it is to be commercialized on international markets at competitive prices.

Ozone production (optional)

A comprehensive model of ozone generation in dielectric barrier discharges is presented in Eliasson et al. (1987). However, UV methods appear better suited for an Egura Plant, which could generate artificial UV light using UV bulbs powered directly by photovoltaic electricity (once again) — this time applied to the oxygen mass obtained from the previous electrolysis step.UV ozone generators employ a light source that produces narrow-band ultraviolet light, a portion of the UV spectrum naturally emitted by the Sun. Recall that the Sun’s UV radiation is responsible for maintaining the ozone layer in Earth’s stratosphere.UV ozone generators are used in applications ranging from small swimming pools to systems handling millions of gallons of water. Unlike corona discharge generators, UV ozone generators do not produce harmful nitrogen by-products and perform extremely well in humid air environments.Commercial UV ozone generators, for example, operating at 50% humidity, can each produce between 14 g/h and 29 g/h of ozone (grams per hour) from a given mass of oxygen (theoretical reaction ratio: $3\ O_2 \rightarrow 2\ O_3$), while consuming a few kilowatts during daylight hours in any Egura Plant — power supplied directly by the photovoltaic panels connected to this optional additional unit.

Engineering Design Layouts, Fitted for Water and Energy Needs GoalsEgura Business Sustainable Plants (EBSP)

As detailed in the following figure, this is a simple proposed layout for conceiving scaled Egura Cooperation Trial Plants. The design is now adapted for every Egura Unit occupying 10 hectares of shadow-free coastal marine environments. The layout includes the following key components:

i) Water Pumping Unit

This unit is based on up to three independent power sources driving electric pumps with a capacity of 7–9 m^3/min: Solar photovoltaic panels (e.g., Texas Solar 100W Polycrystalline 100W Solar Panel), Wind turbine generators (e.g., YiiYaa 800 W), Thermosolar-generated electricity. The hybrid power system ensures reliable pumping even under variable weather conditions typical of coastal zones.

ii) Elevated Storage and Pre-Treatment

The pumped seawater (or brackish water) is delivered to one or more 10,000 m^3 stainless steel tanks elevated to 15 meters in height.

The number of tanks depends on the specific water and energy production goals of each Egura Business Plant (EBP) site.

Inside these tanks, the water undergoes initial filtration and settling before being directed to the boiler unit for further processing (e.g., distillation, steam generation, or electrolysis feed preparation).This modular, multi-source energy approach maximizes reliability and sustainability while aligning water pumping capacity with the overall water and energy objectives of each Egura site.

** Electric motor. This is preferable if electricity is cheap and no frequent power interruptions occur. The advantage of the electric motor is its long life, dependability, low maintenance cost, quiet operation and it is easy to operate. It is usually taken as 100 percent efficient.*

iii) The filtered water passes downwards to a 10-metre-high boiler tank (1000 litres spherical stainless steel tank) receiving concentrated solar energy by means of an arch of heliostats (1 m^2 each) arranged on rails (concentric array inspired in the designs of Baum, 1956) and a group of attached medium-size magnifying lenses (Doumoo, model 220-240, 220 mm, focal length 240 mm) situated at the optical focus distance and height on the opposite side of the heliostats railed system.

iv) The steam produced in the previous process is directed into an indoor steam turbine generator (2000 kWh) coupled with steam-pressured pipes from the boiler system.The complete list of parameters, variables, factors, equipment, tools, and resources for these experiments is given ahead in this chapter.

Solar Panels + Heliostats + Wind generators

Therefore, gathering all revised papers and reports data for this Egura Cooperation Trial Sucre Project, a theoretical mean of solar output of Photovoltaic Panels is 2390 kWh/day/hectare, or 239 watts/m²/day, that vary within latitude, cloudiness, suspended dust, and several other factors. Although the sun's energy reaching the troposphere is around 1000 watts/m², not all of this energy is available for today's technology; it is not even profited 100% by ecosystems, by primary producers like plants, algae or phytoplankton. So, it can be said that around 25% of potential energy from the sun is convertible to power/energy/electricity within PVs, much more than the 5% of the energy harvested by photosynthesis.

The solar panel model we have selected by its surface/watts and cost/efficiency is from Texas Solar brand, that harvests 100 watts in 0.67 m² of 1 single panel, will have a ratio of 149.25 watts/m² for our plant model, that is fully dependent on the free surface/area available to harvest sunlight, be it for solar panels, be it for thermosolar units.Now, potentially, a Heliostat field can reach a less efficient ratio on watts/surface, around 137 watts/m², but we are introducing the Thermosolar units in Egura Plants by its key role: to produce potable & irrigation water by desalting seawater, with distillers, boilers, and then profiting the steam pressure (coupled with modern or ancient electrogenerator turbines) to recover the energy recollected by the crucial key part of the Egura Model approach, the free available horizontal surfaces/areas at tropical and subtropical latitudes.Potable & Irrigation Water and sustainable Energy are the main features for Egura Project and Egura Cooperation Trials worldwide.The Boiler-Turbine Unit will be fed with a 260ºC inlet steam temperature, with 10 bar (1.0 MPa), and a flow rate of 1 ton/min of steam, passing through the blades of the steam turbines at around 3000 rpm; this system has a water consumption that should be zero in a closed circuit system.All the electricity from all generators inside the Egura Cooperation Plants will be directed towards adequate Transformers of 110-220 Volts (60 Hz frequency) and then concentrated and stabilized in a

Condenser before entering the Egura Electrolysis Unit to power.Hydrogen generated from the water electrolyzer is used as the energy storage medium for HESS (Hydrogen Energy Storage System). The water electrolyzer is powered by in situ generated renewable energy such as solar, wind-power, and surplus power energy from the electrogenerator of the steam turbines. When needed, hydrogen would be converted to electricity by the fuel cell.

Collection of Data: Sondes, Instruments, Equipments

Parameters, Units, Sondes, Instruments and Equipments at Egura Plants.

Parameter (unit)	Layout Unit	Sondes, Instruments, Equipments
Air Temperature (ºC)	Meteorological portable station	Thermometer
Wind speed (m/s)		Anemometer
Solar radiation (Einstein)		Irradiometer
Water temperature (ºC)	Raw water from sea Filtered Water tank Boiled Water	Thermometer
Water pH (log 1-14)		pHmeter
Water salinity (ppm)		Salinometer
Steam pressure (MPa)	Boiler-Turbine All containers All generators	Barometer
Water flux (cm^3/s)		Volumetric records
Electric Power (W)		Potentiometer

Data Management and Analysis Strategies: Statistics

For a minimum of 1008 samples from each of nine (9) parameters for each of the 3 areas of pilot study:

i) meteorological (air temperature, wind speed, radiation)

ii) water quality (temperature, pH, salinity at 3 stages: raw, filtered, boiled water)

iii) performance/efficiency of water (volumes) and energy (pressure, electricity) production units.Two types of statistical analysis will be applied. Inside each of the Egura Plants (beachhead), meteorological, water quality, and water/energy performances will be studied under a Multiple Regression matrix. Combining all study areas and units parameters, it will be carried out a PCA (Principal Component Analysis) considering all variables, and an ANOVA (Analysis of Variance), this latter analysis under the effect of the following factors and treatments:

a) Solar date (Factor) and < 12 hours of sunlight days (hsld) + 12-13 hsld + 13-14 hsld + > 14 hsld (Treatment).

b) Day Hour (Factor) and 6 am + 10 am + 2 pm + 6 pm (Treatment).

c) Wind Speed (Factor) and < 3 m/s + 3-4 m/s + 4-5 m/s + > 5 m/s (Treatment: only for water/energy units).

d) Air temperature (Factor) and < 25 ºC + 25-30 ºC + 30-35 ºC + > 35 ºC (Treatment: only for water/energy units).

Corollary

Egura Project is a Non-Profit Global Initiative that is decided to help many developing countries to get better access to water and energy needs of world society from seawater and sunlight. To fund this International Cooperation Aim we have created an Egura Business Division to offer our approaches to suitable nations.Egura Project proposes to create new Egura Companies within the trusted and virtuous participation of national investment funds of selected countries and regions of the world: Netherlands Overseas, Brazil, Chile, South Africa, Nigeria, Europe/Spain, Bahrain, Qatar, Venezuela, Kuwait, USA, Australia, India, South Korea, Italy, France, Japan and Taiwan.Egura National Companies will be a virtuous venture of 3% for Egura Project intellectual proprietors (LEA Foundation, LEA Civil Association, Aseis C.A. and A&E, S.I.) represented by Dr. Mikel Alberto de Elguezabal Méndez, and 90% for national clients/investors/governments.

Egura Project declares that all these statements registered in this document are fully truthful, honest and is offering the honor of Dr. Mikel Alberto de Elguezabal Méndez, as well as all its civil and legal responsibilities.

Mikel Alberto de Elguezabal Méndez, 73492846A spanish ID

LEA Foundation, LEA Civil Association, Aseis C.A. and A&E, S.I

@eguraproject

Uharte, Navarre, September 8th 2026

EGURA

Egura Business Sustainable Plants Project 2030- 2050
Executive Summary

Industry: Energy, Water 4.0
Intellectual Protection: Already registered at Spanish Intellectual Property Agency. Due diligence for the application for an EU patent will begin.
Product: Integrated solution of improved thermosolar, aeolic & photovoltaic approaches to produce mainly electricity & water, but also hydrogen, oxygen, salts and plankton biomass from seawater (also polluted water sources inland) and sunlight at tropical and subtropical zones worldwide.
Customers and business model: Governments, food & drink industries, energy & water companies, desalination facilities, city halls, cooperatives, schools & universities, hospitals & hotels, homes, e.g. Installation and operation of personalized sets of Egura Business Sustainable Plants - EBSP - (adapted to available surfaces) along with constant accompanying to achieve optimal performances of Egura Plants.
Status: Successful advanced modelled theoretical tests with the collaboration of scientists and the proven interest of university campuses to host the Egura Cooperation Trials during the next years after successful financing (IPO's, international organization funding, donors).
Company: LEA Civil Association & Foundation located in Huarte, Navarra.
Future Investors: Leading governments, investors, stock market launches: Chile, Venezuela, Brazil, USA, Netherlands Overseas, Spain, Italy, France, Europe, Qatar, Kuwait, Bahrain, India, Japan, South Korea, Taiwan, Australia, Nigeria and South Africa.
Investment/Value: 35-38 M $ per 2-year trials & feasibility tests at each selected country. Depends on countries' salary laws.
Principal members of the founders team: Biol. Dr. Mikel de Elguezabal Méndez, (Navarre) a social entrepreneur. Eng. M.Sc., César Dommar Valerio, (Canada) mechanical engineer, developer of alternative energy systems, successful experience of energy products and complex energy platforms. Besides, a whole Egura Team forming the staff of the future Egura Platform. At every country with EBSP interest there will be an Egura Anchor for each Egura Country.
Financial projection: The positive cash flow point can be reached in the 3rd year after Feasibility Trials. LEA Foundation will own 3 % of each Egura Company for LEA Foundation water, eenergy, health and educative projects.
*Small & Medium Enterprises (SMEs) with Circular Economy Approaches (recycling glass, plastics, metals), convened with Egura Project (LEA Foundation) through UNIDO, UN for Industrial Development Organization.
The problem: Drought and lack of energy sources anchor poverty in a major proportion of world's population. Water & energy poverties will lead to social and economic disasters on a worldwide scale. Mitigating these 2 kinds of 'poverties' would mean enough resources to achieve a positive path to an easier development at tropical and subtropical societies. Current desalting technologies and 'alternative' energy sources do not join the improved technologies as Egura Engineers & Egura Ecologists do.
Egura Project Solution: To produce and distribute part of water, energy needs for the selected country, as well as hydrogen fuel, oxygen, salts and plankton biomass for potential extra economic earnings. Producing this in an almost zero ecological pressure and zero carbon footprint technologies and approaches. Egura Plants are a disrupting solution (low cost & robust technology) that will help to develop your society in an eco-green manner to achieve a healthier environment and in a stimulating & prosperous national market. Competition are: biomass burners (CO_2, NO_x, etc.); dangerous boiling oils & salts at today's inlandward isolated Thermosolar farms; huge fields of wind generators; desalinators using 'imported' public electricity networks and polluting coastal zones with

effluents...
The market: It is possible to deploy all these EBSP Countries (2030-2050) in convention with interested investors & markets at tropical and subtropical regions. Egura Plants will meet a grand part of the country needs in a realistic proportion of available area/required quantities.
The LEA Foundation and the future online Egura Platform and the goods that will provide on the local markets of water and energy generation, in these selected nations across the planet, are unstoppable.
Traction: The Egura Project proposal has caused a wave of support and positive validations in scientists of Europe, Mexico, US, or Spain and is on the way to convince the public at very successful rounds of crowdfunding and of international funds and donors.

For more information or to schedule a presentation or demo, please contact Mikel de Elguezabal Méndez-Rodulfo, PhD., 73492846A, LEA Foundation
A6Labs@gmail.com (mailto:A6Labs@gmail.com). @EguraProject

Whatsapp: +34601312297

Drink Industries on seawater model

A medium to big drink industry uses huge quantities of water from the surrounding environment like rivers, lakes, aquifers but also from urban potable water systems. In both cases it also uses immense quantities of electric energy to treat this water for the process of production of drinks for massive consumption like beers or soda or bottled water.Every day, for example, Spain produced 40 million hectolitres or 4,000 million litres in 2018, so daily more than 10 million litres of beer; but for every litre of beer these industries use between 60 to 150 litres of water! 1,000 million litres (1 million m^3/day) of water every day! With the vision of using Egura Approaches to power (electricity) and supply (water) from coastal seawater, it would be possible for many drink industries in Spain — using today's underground water from aquifers and/or surface water from rivers — to move gradually, and inviting their workers and families, to new suitable regions in Murcia or Andalusia coastal regions where Egura Business Sustainable Plants would operate with no problems at environmental or socio-economic levels.Saving continental waters, both underground and surface water masses, would benefit the entire environment on a biome scale and would change for the better the local climate, and certainly ameliorate the rate of desertification very well known in central Spain.

Technical Engineering Framework: Egura Pilot Plant (Jose Cryogenic Complex, Venezuela)

1. Conceptual Engineering Phase

1.1. Global and Regional Water Stress Context

The global water crisis is defined by a widening delta between finite hydrological resources and exponential demand. Historical data indicates that the global population expanded from approximately 2.5 billion in 1950 to 7.84 billion by 2020 (Figure 1). This demographic surge has driven a corresponding rise in freshwater consumption, which climbed from 1,225 km^3 in 1950 to 3,870 km^3 by 2010 (Figure 2). Despite this growth, the availability of accessible freshwater remains critically constrained.

The following table summarizes the distribution of global water reserves based on established hydrological data:

Global Water Reserve Distribution

Form	Volume (km^3)	Percentage
Oceans and seas	1.338×10^9	96.54%
Saline groundwater	12.853×10^6	0.93%
Glaciers	24.064×10^6	1.74%
Directly Accessible Fresh Water	**10.623×10^6**	**0.77%**
Other (Atmospheric, Biological, etc.)	Varies	< 0.02%
Total	**1.386×10^9**	**100%**

Water Stress occurs when the demand for water within a specific geographic or industrial zone exceeds the naturally available supply, leading to resource depletion and operational instability. This condition is particularly acute at the Jose Cryogenic Complex in Venezuela. The high-density industrial requirements of the complex, coupled with regional climate volatility, necessitate the deployment of non-conventional water solutions to bypass the overexploitation of local aquifers.

1.2. Technology Selection: Thermosolar Multi-Effect Distillation (MED)

Multi-Effect Distillation (MED) is a thermal desalination process where seawater undergoes evaporation through a series of stages, or "effects," operating at successively lower pressures and temperatures. This configuration allows the latent heat of the vapor produced in one effect to serve as the primary heating medium for the subsequent stage, optimizing the thermodynamic efficiency of the cycle.

Process Comparison: MED vs. RO vs. MSF

Parameter	**Multi-Effect (MED)**	**Reverse Osmosis (RO)**	**Multi-Stage Flash (MSF)**
Energy Cost (kWh/m^3)	28 (Thermal + Elec)	4 – 8 (Electrical)	44 – 47
CO_2 Emissions (kg/m^3)	7.0	1.75	9.4
Conversion Rate (%)	15 – 50%	30 – 50%	15 – 50%
Technology Maturity	High	High	High

Rationale for Selection: While Reverse Osmosis (RO) features lower nominal energy requirements, its operational viability is tethered to high electrical costs and membrane sensitivity. For the Egura plant, **Thermosolar-MED** was selected to utilize solar thermal energy directly. By integrating Concentrating Solar Power (CSP), we mitigate the 28 kWh/m^3 thermal cost using renewable capture, effectively bypassing the electrical volatility associated with high-pressure RO pumping systems.

1.3. Core Production Targets and Purpose

The Egura Pilot Plant is designed as a self-sufficient industrial utility, providing critical inputs for the Jose Cryogenic Complex. The following **Egura Pilot Plant Design Specifications** represent the project's primary output goals:

- **48,000 m^3/day of desalinated water**
- **37 MWh/day of energy**

2. Basic Engineering Phase

2.1. Concentrating Solar Power (CSP) Infrastructure

The energy harvesting field utilizes a heliostat array consisting of high-reflectivity mirrors and magnifiers. In this context, "magnifiers" refer to the concentration factor—the ratio of the collector area to the absorber area—which allows for the generation of high-grade thermal energy. This concentrated radiation is directed toward **Spherical Stainless Steel Boilers**, which function as high-pressure steam generators. The resulting steam provides the initial thermal enthalpy required to drive the first effect of the MED process.

2.2. MED Process Flow and Evaporator Stages

Seawater enters the system and moves through successive evaporation effects as follows:

1. **Spraying Mechanism:** "Rociadores" (sprayers) distribute thin films of seawater over the outer surface of heat exchange tubes.
2. **Latent Heat Exchange:** Steam from the preceding effect circulates inside the tubes; its latent heat is transferred to the external seawater film, inducing evaporation at reduced pressures.
3. **Resulting Streams:**
    - **Permeate:** High-purity desalinated water.
    - **Rejection (Salmuera):** High-salinity brine.
    - **Condensate:** Recycled water from the condensed internal steam.

2.3. Power Generation and Steam Turbines

To meet the 37 MWh/day energy target, steam turbines are integrated into the primary thermal loop. High-pressure steam from the spherical boilers is first expanded through these turbines to produce mechanical work and electrical power. The exhaust steam, which retains sufficient thermal energy for distillation, is then routed into the MED unit's heat exchangers, maximizing the total system exergy.

2.4. Site Layout and Coastal Integration

The plant footprint follows a triangular/trapezoidal coastal perimeter to maximize solar exposure and intake proximity. For seawater acquisition, a **"Toma Cerrada" (Closed Intake)** system is specified. This recommendation is based on significant environmental and technical advantages:

- **Marine Flora Protection:** By filtering through the terrestrial ground, the system avoids the suction of microorganisms and protects local seagrasses (such as Posidonia in Mediterranean-analogous ecosystems) from physical disruption.
- **Intake Stability:** The natural ground serves as a pre-filter, ensuring a consistent chemical composition and temperature, which reduces the load on secondary pre-treatment systems.

3. Detailed Engineering and System Integration

3.1. Electrolysis Unit Integration

The Egura framework incorporates an Electrolysis Unit to convert excess utility capacity into high-value industrial gases.

- **Process Input:** Utilizes ultra-pure permeate and a dedicated fraction of the 37 MWh/day energy output.
- **Industrial Outputs:**
    - **Hydrogen (H_2):** High-purity gas for industrial combustion or chemical synthesis.
    - **Oxygen (O_2):** Captured for medical or industrial oxidation processes.

3.2. Materials and Corrosion Control

Material integrity is paramount given the high-salinity maritime environment.

- **Stainless Steel Specification:** High-grade stainless steel is mandatory for all spherical boilers and primary MED chambers.
- **Corrosion Rationale:** This selection is justified by the elevated chloride concentrations in the rejection stream (salmuera). Reference data indicates that

brine concentrations significantly exceed standard seawater levels, necessitating alloys with high Pitting Resistance Equivalent Numbers (PREN) to prevent chloride-induced stress corrosion cracking.

- **Brine Management:** Final discharge protocols must adhere to strict environmental standards regarding the temperature and salinity of the brine to prevent "saline plumes" that could degrade the surrounding ecosystem.

3.3. Final Process Summary

End-to-End Process Overview: Solar Capture → Steam Generation → Power Production (Turbines) → Multi-Effect Desalination (MED) → Electrolysis (H_2/O_2 Generation).

Environmental Impact Assesment

This document outlines the Environmental Impact Assessment (EIA) framework for the Egura Pilot Plant, a 10-hectare integrated facility located near the Jose Cryogenic Complex in Anzoátegui, Venezuela. It integrates the mandatory Venezuelan legal requirements with the specific technical and ecological commitments of the Egura Project.

Environmental Impact Assessment (EIA): Egura Pilot Plant (10 Ha)

1. Legal Framework and Regulatory Compliance

In accordance with the Constitution of the Republic of Venezuela (Article 129), any activity capable of generating damage to ecosystems must be preceded by environmental and socio-cultural impact studies. The Egura Pilot Plant project will strictly adhere to the standards administered by the Ministry of Environment (MINEC).

Key regulatory instruments governing this EIA include:

Organic Law of the Environment (LOA): Establishes environmental management as an obligatory tool for territory planning and control.

Decree No. 1,257: Regulates the methodology for environmental evaluations. Due to the industrial nature of the pilot plant, a full Environmental Impact Study (EIA) is required.

Environmental Penal Law: Prohibits the initiation of works without express authorization from MINEC.

Complementary Standards: Including Decree 638 (Air Quality), Decree 883 (Effluent Discharge), and Decree 2,635 (Hazardous Waste Management).

2. Project Description and Site Specifics

The project consists of a 10-hectare "Beachhead" Pilot Plant designed to produce 48,000 m^3/day of fresh water and 37 MWh/day of renewable energy.

Location: Coastal site within the Jose Cryogenic Complex, characterized by semi-arid landscapes and high solar irradiation (5–6 kWh/m^2/day).

Land Use Allocation: The 10 hectares include a Pumping Unit (1 ha), Thermosolar Unit

(4 ha), Photovoltaic Pool (2 ha), Brine/Salts Unit (1 ha), Hydrogen/Electrolysis Unit (1 ha), and a Central Control/Hatchery building (1 ha).

3. Mandatory Administrative Procedures

Egura Americas Inc. will engage authorized environmental consultants to execute the following phases:

1. Document of Intention: Submission of the project's descriptive memory to MINEC to obtain the Terms of Reference (TdR).

2. Territorial Approvals: Obtaining the Authorization for Territory Occupation (AOT) to ensure soil use compatibility and the Authorization for Natural Resource Affectation (AARNR) for land clearing and earthworks.

3. RACDA Registration: Registration in the Registry of Activities Capable of Degrading the Environment as a "Generator" of potential effluents or emissions.

4. Technical EIA Components: Baseline and Impact Matrix

The study will characterize the Environmental Baseline, focusing on the physical-natural characteristics (soil, air, sea water) and socio-economic environment of Anzoátegui.

Impact Assessment:

Construction Phase: Temporary impacts related to land adequacy and equipment installation.

Operational Phase: Long-term evaluation of resource extraction and byproduct management.

Specific Focus: Evaluation of the 1.6 million kg/day hydrogen production potential and its impact on regional energy grids.

5. Environmental Management and Mitigation (PAGRA)

A Plan for Environmental Administration and Management (PAGRA) will be implemented, featuring specific mitigation measures tailored to Egura's technology:

Marine Ecosystem Protection: To prevent suction of microorganisms or damage to seagrasses, the plant will utilize a "Toma Cerrada" (Closed Intake) system, filtering seawater through the terrestrial ground as a natural pre-filter.

Brine Valorization (Zero Discharge): Unlike conventional desalination, Egura will not discharge concentrated brine into the sea. Instead, brine will be directed to a Brine Unit for evaporation and processing into industrial-grade salts, mineral supplements, and building materials.

Emissions Control: The plant operates as a zero-emission design. By using thermosolar and PV energy to drive Multi-Effect Distillation (MED), it eliminates CO_2 emissions typical of grid-powered desalination.

Bio-Sequestration: Integration with Egura Agro and Protein Farms to sequester CO_2 through mangrove restoration and sustainable aquaculture.

6. Supervision and Performance Certification

A Plan for Environmental Supervision (PSA) will ensure strict adherence to the PAGRA. Environmental Accreditation (Conformidad Ambiental) from MINEC will be maintained through periodic audit reports. For the Jose Pilot, \$300,000 has been allocated specifically for the EIA and ongoing environmental monitoring to ensure an "almost zero environmental impact" status.

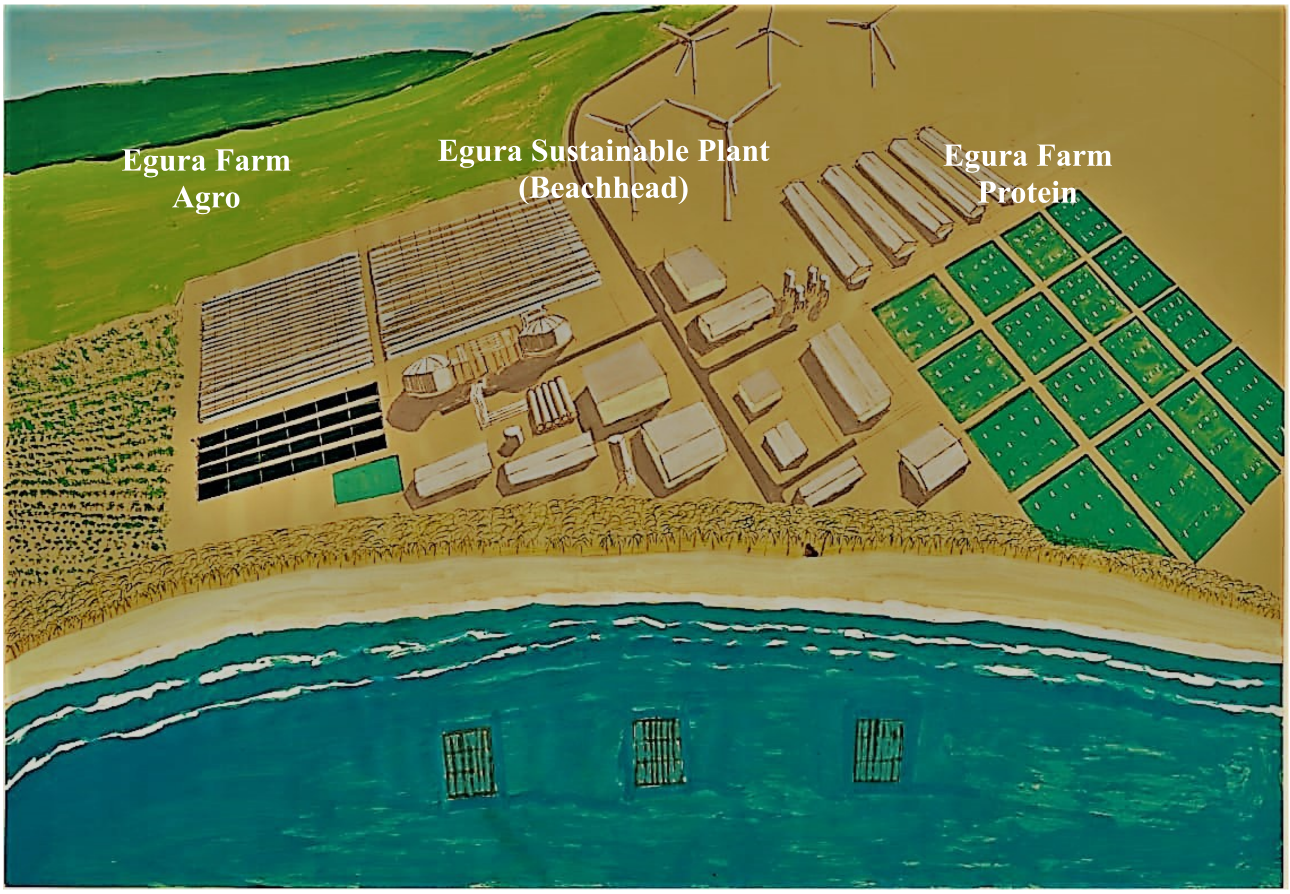
Project Proponent:

Mikel de Elguezabal Méndez-Rodulfo, Ph.D.,

Marine Biologist, Aquatic Ecologist, Oceanographer

LEA Foundation / Egura Americas Inc. Acknowledging that this report has been drafted based on the sources provided.

Perspective Cenital View (Hawk-Eye) Illustration of Coastal Egura Plants & Farms



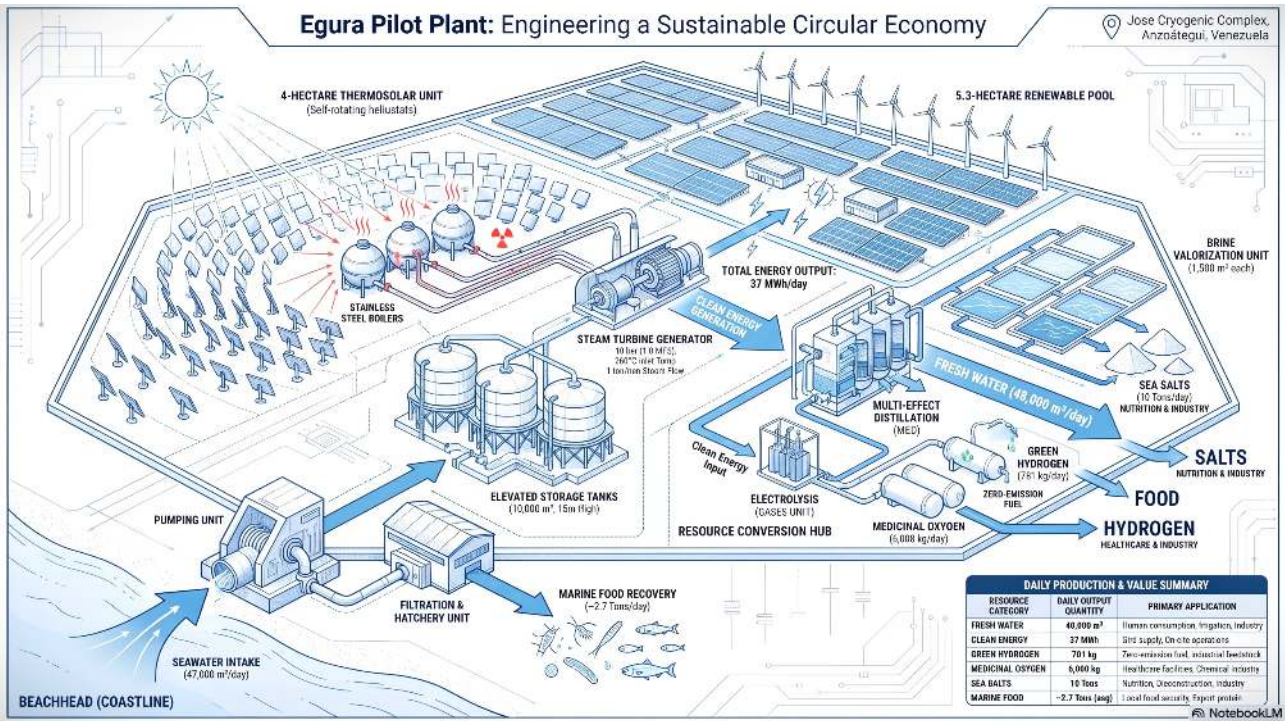
Cryogenic of Jose, Anzoátegui

Exploring free lands around for pilot plant 1.0 Egura Américas Inc., 10 hectares. Water, Electricity, Hydrogen, Oxygen, Salts, Aquaculture, Agriculture, Carbon Credits.

Perimeter: 27.89 km.

Area: 4,100.08 ha.

Elevations: Min: 0 masl; Median: 16.24 masl; Max: 88.5 masl



Egura Pilot Plant: Engineering a Sustainable Circular Economy
Jose Cryogenic Complex, Anzoátegui, Venezuela
4-HECTARE THERMOSOLAR UNIT
(Self-rotating heliostats)
5.3-HECTARE RENEWABLE POOL
STAINLESS STEEL BOILERS
STEAM TURBINE GENERATOR
TOTAL ENERGY OUTPUT: 37 MWh/day
CLEAN ENERGY GENERATION
BRINE VALORIZATION UNIT
(1,500 m² each)
SEA SALTS
(10 Tons/day)
NUTRITION & INDUSTRY
FRESH WATER (48,000 m³/day)
MULTI-EFFECT DISTILLATION
(MED)
Clean Energy Input
ELECTROLYSIS
(GASES UNIT)
RESOURCE CONVERSION HUB
GREEN HYDROGEN
(781 kg/day)
ZERO-EMISSION FUEL
MEDICINAL OXYOEN
(6,008 kg/day)
SALTS
NUTRITION & INDUSTRY
FOOD
HYDROGEN
HEALTHCARE & INDUSTRY
ELEVATED STORAGE TANKS
(10,000 m³, 15m High)
PUMPING UNIT
FILTRATION & HATCHERY UNIT
MARINE FOOD RECOVERY
(~2.7 Tons/day)
SEAWATER INTAKE
(47,000 m³/day)
BEACHHEAD (COASTLINE)
DAILY PRODUCTION & VALUE SUMMARY
RESOURCE CATEGORY
DAILY OUTPUT QUANTITY
PRIMARY APPLICATION
FRESH WATER
40,000 m³
Human consumption, Irrigation, Industry
CLEAN ENERGY
37 MWh
GREEN HYDROGEN
701 kg
MEDICINAL OSYGEN
6,000 kg
Healthcare facilities, Chemical industry
SEA SALTS
10 Tons
MARINE FOOD
~2.7 Tons (avg)
Local food security, Export protein
NotebookLM


THE EGURA PROJECT (2026) – Executive Financial Summary
Executive Financial Summary | Egura Américas Inc.
Cryogenic Facility of Jose, Anzoátegui, Venezuela – 10 Hectares Multi-Sector Utility Powerhouse
STRATEGIC OVERVIEW
Water
Electricity
Hydrogen
Oxygen
Salts
Aquaculture
Agriculture
Carbon Credits
Premier, high-density infrastructure asset delivering essential commodities and high-yield commercial operations.
VIRTUOUS BUSINESS MODEL
90/7/3
Structured Equity Split
90% Silver Partners (Property Share / Investors)
7% Golden Partners
3% LEA Foundation (Human Flourishing: Water, Energy, Health, Education)
Humanitarian Equity Structure – ESG Alpha through institutional social integration.
2026 CAPEX BUDGET: $40.0 MILLION USD
MED (Multi-Effect Distillation) $15.0M
CSP (Concentrated Solar Power) $10.0M
Civil Works $8.0M
PV / Wind Energy Assets $2.5M
Agro / Protein Systems $2.5M
Specialized Personnel $1.3M
Hydrogen (H₂) Infrastructure
Strategic Reserves / Other $0.3M
$0.3M
Total Deployment: $40.0 Million
2026 REVENUE STREAMS: $33.75 MILLION GROSS REVENUE
Water (48,000 m³/day) $33.75M
Potable Water $15.0M
Oxygen $25.5M
Protein $1.3M
Computation / Carbon Credits $0.4M
Multi-sector Impact
Sustainable & Scalable
Strong Partner Alignment
High-Value Long-Term Returns
Human-Centered Mission

EGURA PROJECT – GOLDEN PARTNERS

Elevator Pitch 2 minutes | Water + Energy + Shared Value

GOLDEN PARTNERS

- **100** people per company (friends & family)
- **1** per municipality / city / region
- **0.07** % of the **ENTIRE** company
- **Mission:** activate networks and attract investors for the 1st pilot plant

SILVER PARTNERS

- Invest up to **400,000 USD**
- **90** % of **EACH** plant
- The 10 % differential (Golden + LEA Foundation 3 %) is returned in the first years of operation
- → Recover your capital + keep the 90 %

Each 10 ha plant produces:

37 MWh/day | **48,000** m^3 water/day | + Green H_2 · Salts · Food · Timber · Carbon credits

Join as **Golden** or Silver Partner • Zero public funds • LEA Foundation promoter

egura project eguraproject

Easy Water & Easy Energy for all