



Green
INDEPENDENCE
EMPOWER EVERYBODY

We want to provide affordable and accessible green energy and clean water at source to accelerate energy independence from fossil fuels.

We will decentralize green energy production and storage by enabling cheap green hydrogen production from wastewater everywhere the Sun shines.

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EXECUTIVE SUMMARY

Green Independence (GI) is a pioneering company committed to accelerating the world's independence from fossil fuels by providing affordable and accessible green energy and clean water solutions. Our mission is to address the pressing global issues of water scarcity, fossil fuel dependency, and the intermittency of renewable energy sources.

Our groundbreaking solution, the **New Artificial Leaf (NAL)**, is a multifunctional solar panel that harnesses three times (**X3**) the **solar energy** compared to a conventional PV panel. The NAL system combines a unique Water Purification System (WPS) with the solar panel, utilizing otherwise wasted heat to purify or desalinate water. Meanwhile, the PV panel continues to generate electricity, producing - instead of consuming - twenty times (**X20**) the energy required for conventional **water desalination**.

For clients interested in storing the electricity, our Electrochemical Module (ECM) transforms the purified water into green hydrogen. This process operates locally and entirely off-grid, reducing the **cost of green hydrogen** production to **1€/kg**, making it competitive with fossil fuels.

Our market entry roadmap foresees the certification of the Solar-Water Purification Module (**S-WPM**) by 2025 and its **market entry in 2026**, while the complete NAL will be available on the market in 2027. We have **already secured €1.4M** in investments and are seeking at least an **additional €5M** to cover market entry and the expansion of the manufacturing capacity to be able to enter the global market. This funding round (seed) will open by the end of 2024 and will support the completion of the entire NAL development.

Our **go-to-market strategy** starts from the **B2B** sector with energy producers, hard-to-abate industries, and heavy-duty transportation infrastructures. We intend to start with early adopters and commercial partnerships, for which we already have some manifested interest: **Snam, Sirti, Enel, Eni, Italgas, Acea, Siram Veolia, Acquedotto Pugliese** and the **Italian Minister of the Environment** (around **20 LOIs** from early adopters, tech partners, and institutions).

Our business model centers on the design, assembly, and sale of the S-WPM first, followed by the complete NAL once industrialization is achieved. Initially, the **manufacturing** of sub-components **will be outsourced** to trusted partners to help GI expedite its market entry and growth. We will operate as an Original Equipment Manufacturer and also offer services such as Operation and Maintenance. We project to reach a market share of 0.8% of the SAM, equivalent to **€104M (\$110M)** in **cumulative revenues by 2028**, resulting from **30 hectares** of installations within five years. We expect to reach the breakeven point between the 4th and 5th year. During this initial phase where GI leverages third-party manufacturing, the **EBITDA margin** will range around **15-20%**; once the company starts insourcing some of the manufacturing process, the EBITDA margin will significantly increase.

Our solution is not only **cost-effective** but also **reduces the carbon footprint** and **improves the P&L** of renewable energy producers, oil and gas industries, and hard-to-abate sectors. The local production of green hydrogen will trigger a steep **reduction of hydrogen transportation and compression** needs and their consequent cost, enabling the creation of a sustainable network of hydrogen (H₂) fueling stations and the production of hydrogen along infrastructures.

In conclusion, Green Independence is poised to revolutionize the renewable energy sector with our innovative, cost-effective, and environmentally friendly solutions. We are committed to **empowering a greener future** using **only sun and water**.



COMPANY PURPOSE

Vision: At Green Independence, we envision a world where energy is not only sustainable but also accessible to all, irrespective of geographical constraints. A future where energy is clean, sustainable, and within everyone's reach.

Mission: Our mission is to accelerate the global transition from fossil fuels, mitigating their detrimental environmental impact. We are dedicated to addressing the pressing challenges of escalating energy demand, environmental pollution, and water scarcity.

Objective: our main commitment is completing the development of the New Artificial Leaf technology (NAL), the enabler of this decentralizing revolution. This multifaceted marvel:

- Harnesses the abundant power of the sun.
- Purifies wastewater and desalinates seawater, turning challenges into opportunities.
- Produces green hydrogen, offering a sustainable energy storage solution.
- Operates off-grid, ensuring energy accessibility even in the remotest corners.

By intertwining our vision and mission with the capabilities of the New Artificial Leaf, we're not just offering a product; we're presenting a **comprehensive approach to renewable energy**. Seamlessly integrating solar energy harnessing, wastewater purification, seawater desalination and green hydrogen production, it embodies our commitment to decentralization. We aim to revolutionize the renewable energy landscape in Europe and beyond, setting a new standard for eco-friendly innovation and ensuring that energy producers, industries, transportation infrastructures, and homeowners alike can benefit from clean and sustainable energy.

Our main commitment is completing the development of the New Artificial Leaf technology (NAL), the enabler of this decentralizing revolution. NAL is the **evolution of solar panels** and it works just like a leaf:

- It purifies/desalinates wastewater
- It produces energy from the sun
- It directly stores this energy by producing green hydrogen

All in a cheap and accessible way that is completely independent from the grid.

During its journey, Green Independence has found deep endorsement and support not only from big corporations but also institutions, worth mentioning here is the **letter of support from the Italian Ministry of Environment and Puglia Region**.

PROBLEMS & NEEDS

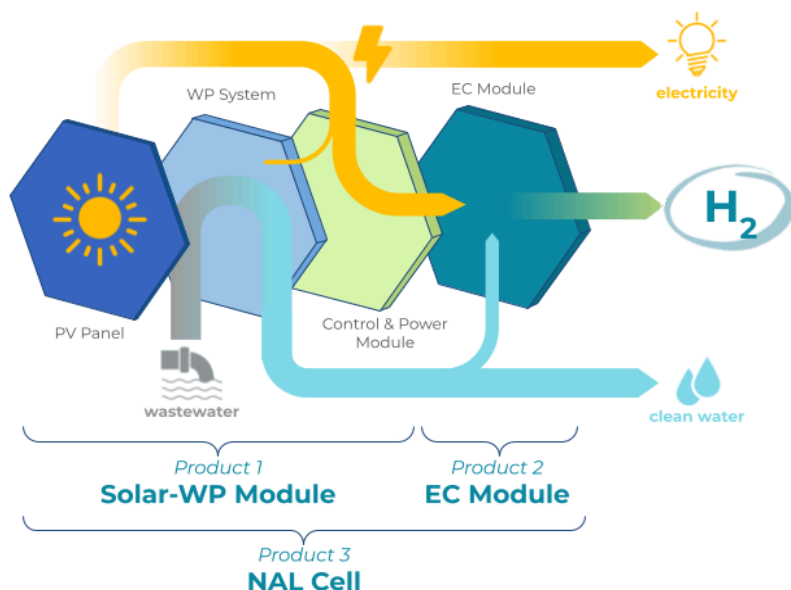
The rise of energy demand is unstoppable and to answer it, using fossil fuels, we are destroying our planet and our health. In one hour, the sun shines enough energy to power humanity for one year but renewable energies are intermittent and on average we **waste 70%** of them unless we are able to store them. Hydrogen is by far the best way to store them but we **lack infrastructures** and **inexpensive clean ways** to produce and transport it.

But what if we could store solar energy producing green hydrogen everywhere, from wastewater, while recycling wastewater?



OUR SOLUTION

Green Independence is working on a technology that will be able to do all these things.



The New Artificial Leaf (NAL) is a **multifunctional solar panel** that, like a sandwich, is composed of 2 modules: the Solar-Water Purification Module (made of a PV panel and a Water Purification System) and the Electrochemical Module (which contains an electrochemical cell). The NAL cell is the combination of these sub-modules, which can also be stand-alone products with their own reference markets. NAL cell is the modular unit that, like a solar panel, can be aggregated according to customer's need and space availability, providing high flexibility in installation and applications: it can

be easily scaled up both in size (higher demand = higher units installed) and in functions (i.e installing only the Solar-Water Purification Module or the complete NAL Cell).

How does NAL work?

On average, a solar panel has 20% efficiency converted into electrical power and 80% of energy wasted through heat dissipation.

1. NAL, using just this dissipated heat, purifies wastewater, benefitting also the lifecycle of the solar panel thanks to the cooling effect (**Solar-Water Purification Module → S-WPM**).
2. The integrated solar panel is used to produce electricity and the energy surplus - instead of being wasted - is stored producing green hydrogen directly on the solar panel thanks to an integrated electrochemical cell that uses an Anion Exchange Membrane and a zero-platinum catalyst (**Electrochemical Module → ECM**).

The NAL looks just like a thicker PV panel and it's completely independent from the grid or external buffer systems (i.e batteries).

GI filed a **patent application** in May 2021 that now has been extended internationally through PCT procedure (PCT/IB2022/054544); the current IP, **owned 100% by GI**, focuses on the systemic part and the 1:1 power ratio between PV and Electrochemical cell. In 2023, a **second patent application** was filed for an integrated Solar-Water Purification system, for water demineralization/purification and simultaneous hydrogen production (ID 102023000020166), and we are currently awaiting its approval. During the R&D phase, we anticipate the development of further intellectual properties and patents focusing on specific NAL subcomponents, resulting from ongoing research.



VALUE PROPOSITION & MAIN APPLICATIONS

- ◆ We want to guarantee a **cheaper**, more **flexible** green Hydrogen production that does not require continuous surveillance and maintenance but that can be integrated everywhere, also outside the industrial sector.

1 hectare of NAL, in 1 hour of sun, can purify 10 m³ of waste/sea-water and produce 45-65 kg of green hydrogen.

- ◆ The **techno-economic goals** of NAL tech are to bring, on one side, the LCoH (Levelized Cost of Hydrogen) below market standard of 8 €/kg with a target of 1 €/kg or lower by leveraging secondary products gain (pure water) and economy of scale and, on the other side, the LCW (Levelized Cost of Water) to zero thanks to the tandem production of solar energy and the LCoE (Levelized cost of Electricity) below 0,1 €/kWh thanks to the water purification benefits.
- ◆ NAL's **unique selling proposition** is the compounding effect of all its technological features, which allows it to reach the projected LCoH of 1€/kg. NAL's main **competitive advantage** is the **decentralized approach** which allows applications where other technologies cannot, where there is **no grid** and where industrial electrolyzers cannot be installed: on parking surfaces, naval docks, refueling stations and even buildings and homes as well as along roads, highways, railway lines, gas pipelines, thus transforming energetically unproductive infrastructures into ones that produce and transport hydrogen in an efficient and widespread way.

This advantage enables the paradigm shift from an intensive/centralized energy production to a decentralized/extensive independent production.

A decentralized hydrogen (H₂) production **lowers** the **need** of its **transportation** and **compression** to the minimum, also by leveraging on-site hydrogen exchange through existing gas infrastructure. This will literally eliminate all solar production waste and let us exploit the full potential of solar.

Moreover, the New Artificial Leaf technology is particularly strategic for the energy transition of existing industries because it can provide a tool for energy efficiency and for transitioning to green hydrogen **without** having to **decommission existing infrastructures** and to impose a traumatic change that could lead to closures, job losses or investments.

MARKET & GO-TO-MARKET STRATEGY

Green Independence's **market potential** is huge: the **TAM is the Advanced Energy Market**, a global market of **€ 1.4 trillion** showing compound annual growth rates (CAGR) of 6% globally (2011-2020). We have decided to start from Europe with:

- i) the renewable energy market valued at €58B;
- ii) the hydrogen industry valued at €35B in 2019 (CAGR 4.8% within 2026);
- iii) the water purifier market valued at €10.9B in 2021.

The **go-to-market strategy** starts from the **B2B** sector with energy producers, hard-to-abate industries and heavy-duty transportation infrastructures. We intend to start with early adopters and commercial partnerships, for which we have already some manifested interest: **Snam, Sirti, Enel, Eni, Italgas, Acea, Siram Veolia, Acquedotto Pugliese.**

We position as an Original Equipment Manufacturer (OEM) and **revenue model** is:



1. PoCs & Customization of the technology for early adopters;
2. production & installation of S-WPM with a cost of €2-2,5 M/ha and around 15% margin (first product to enter the market)
3. production & installation of NAL equipment with a cost of € 4-4,5M/ha and around 15% margin;
4. benefit share: it's about 7-10% of the installation annual profitability generated to the client (in cost savings and/or by-product sales);
5. Operation & Maintenance services of about 200k€/ha each year;
6. licensing of the technology.

SHARE OF MARKET & FINANCIAL PROJECTIONS

Within 5 years we expect to reach a market share of 0.8% of the SAM (equivalent to € 104M cumulated revenues) resulting from 30 hectares of installations. The achievement of such an initial result will be attained not only through marketing activities but, more importantly, through partnerships with key players in the industry, with whom we are already in discussions. These open innovation activities will help us to adapt the installation of the NAL to customer needs.

We expect to hit breakeven point between 4th-5th year, with **17% EBITDA margin** and **€6,5M cash flow** in the **5th year**. During this initial phase where GI leverages third-party manufacturing, the EBITDA margin will range around 15-20%; once the company starts insourcing some of the manufacturing processes, the EBITDA margin will significantly increase (25-30%).

TEAM

The **team** is composed of 3 people full-time and 3 people part-time and 2 research teams at PoliTO as R&D support.

Alessandro Monticelli (founder, CEO and CTO) is an engineer with several years of experience in supply chain management and industrialization of new products; **Marta Pisani** (co-founder, COO and CMO) is a marketing and communication professional with sales and open innovation experiences. **Federico Crespi** (Project coordinator) is our first hire with an economics and sustainability background. **Matteo Morciano** (WPS R&D Responsible) is a Professor at PoliTO, he has a fundamental role with the integration of the Water Purification System; **Noemi Figliolini** (Financial Advisor and future CFO) is a Consulting Executive at PwC. They will be integrated into the team once we complete the fundraising round; **Andrea Mingolla** (Strategy & BD advisor) is a Consulting Executive at EY and startup mentor.

We also have a very strong **Board of Advisors**: Luca Biagini, former CEO of Magneti Marelli and CNH China; Massimo Santarelli, one of the highest authority on hydrogen worldwide, Full Professor at Polytechnic of Turin and Affiliated Professor in KTH (Stockholm, Sweden) and in UIC (Chicago, IL, US); Fabrizia Faggiano, Head of Legal at Fedrigoni and former Senior M&A lawyer; Vito Alfarano, General Manager Supply Chain at GE Aviation.

TECH DEVELOPMENT & ROADMAP

The **development** that will take us to the market is divided into **3 main phases**: R&D, Industrialization and Industrial Pilot. For the S-WPM the remaining R&D will last only one year while for the ECM it will take 2 years to complete; the industrialization phase will take 1 year for



each module therefore the S-WPM will be ready for an industrial pilot in the 2nd-3rd year while the complete NAL Cell with the ECM integrated will enter the market in the 4th year.

To keep a lean structure in the initial phase, we will focus our investments mainly on intangible assets (IPs), so we are structuring an **externalized supply chain** to have the manufacturing capacity ready to answer early adopters' demand. In fact, we have several **letters of support** both from **suppliers/co-developers** (i.e. Fluid-o-Tech, Enel Green Power (with 3SUN), Punch, Sirti, Proplast, Masmec) and **potential big early adopters** (i.e. SNAM, ENI, Italgas, Acquadotto Pugliese, Acea, Siram Veolia).

FUNDING, USE OF FUNDS AND GROWTH STRATEGY

GI, founded in 2020, has made significant strides in securing funding and advancing our projects. To date, we've secured approximately **€2 million in funding**, comprising €1.4M from **pre-seed investments** from VCs and Angels, €350k from various **prizes and grants** and €290k from successful Proof of Concepts (**PoCs**) or Pilot/Demonstration installations, including a notable collaboration with gas industry giant Snam. The latest of these agreements is the preliminary signing for a pilot/demonstration of the S-WPM technology, agreed in January 2024. GI will receive €200k to establish a 100 sqm plant to validate the S-WPM technology in an industrial setting and gather valuable data to finalize product development.

Our **valuation** has grown very rapidly in recent months, starting from €3.7 million in the first convertible investment in December 2021, going through a priced round at €8.7 million post-money. We recently initiated a bridge funding round to secure the additional capital required for grant applications. This bridge round raised €500k between february and june through a SAFE-like investment, featuring a **pre-money valuation floor of €13 million** and a progressive discount. Since our first investment, we have achieved a **growth rate** of 350% over roughly **24 months**.

Of the €1.7 million already secured, approximately 30% has already been allocated to R&D, prototyping, and expenses related to IP protection, leaving us with a financial **runway of 6-8 months**.

To fuel our progress, completing crucial phases including ECM R&D, S-WPM R&D and Industrialization, and inaugural industrial Pilot production and installation, we foresee **additional funding of €5 million**, to be acquired between **Q4 2024** and **Q1 2025**. This investment will primarily cover R&D product development and certification, the expansion of the supply chain necessary to fuel the commercial expansion.

We foresee revenue generation commencing in the third year, driven by S-WPM sales. By Y2, we anticipate needing **€700k** to cover **working capital** for the launch of S-WPM in Y3 and another **€2.8 million** in year 3 to sustain S-WPM market growth and fuel the launch of NAL on the market in year 4. Multiple sources, including calibrated debt, sales margins, grants, and subsidized finance, can potentially fund this requirement, reducing the need for additional rounds.

We want to highlight the **strategic opportunity of public grants and subsidies** to bridge the financial gap between our Seed and Series A rounds. As of today, we have submitted applications to obtain €2.2 million, of which approximately 50% is non-repayable. We have already received approval for the first **€750,000** in non-repayable funds, and in the coming



months, we should receive the results for the remaining portion. Additionally, we are preparing applications for significantly larger grants that, if successful, could even allow us to avoid the Series A funding round. For example, we're shortlisted for the EIC Accelerator, with the potential of securing €2.5 million in grants and up to €15 million in matching-equity investment. Additionally, the **Puglia Region** recognizes us as a top startup (LOI signed) and offers grants from €1 million to €35 million. Moreover, our technology has been defined by the **Italian Environment Minister** "strategic for Italy and Europe" (LOI signed) and it perfectly aligns with the Italian government's grants scheme (PNRR and Invitalia) for fostering growth in key sectors. There are many opportunities for public funding and grants, and we are dedicated to actively seeking them out. This commitment is the main reason we are undertaking a bridge financing round and have chosen to delay our Seed funding round until at least Q4 2024.

From the supply chain perspective, we'll outsource manufacturing to trusted partners during the first **five years**, leveraging their expertise. Despite starting with 30 hectares of capacity, we expect to generate **€104 million in revenue** during this initial phase, targeting early adopters with an EBITDA margin of about 15%.

After five years, we'll launch a Series A funding round to in-source key manufacturing, bolster supply chain control, and fuel significant market expansion with investments in equipment and facilities that will also allow an increase of EBITDA margin above 25%.

Our comprehensive financial roadmap ensures the successful development and growth of our innovative solutions, positioning us as industry leaders.