SAUREA

THE AUTONOMOUS SOLAR MOTOR

"Creator of solar solutions,
Motor of sustainable energy"

ENS CACHAN

GeePs
Génie électrique et électronique de Paris

05 Brevets

06 Prix d'innovation

STATION F

EDF PULSE
PRIX START-UP
2019 Winner

The WORD of the president

MADE IN FRANCE

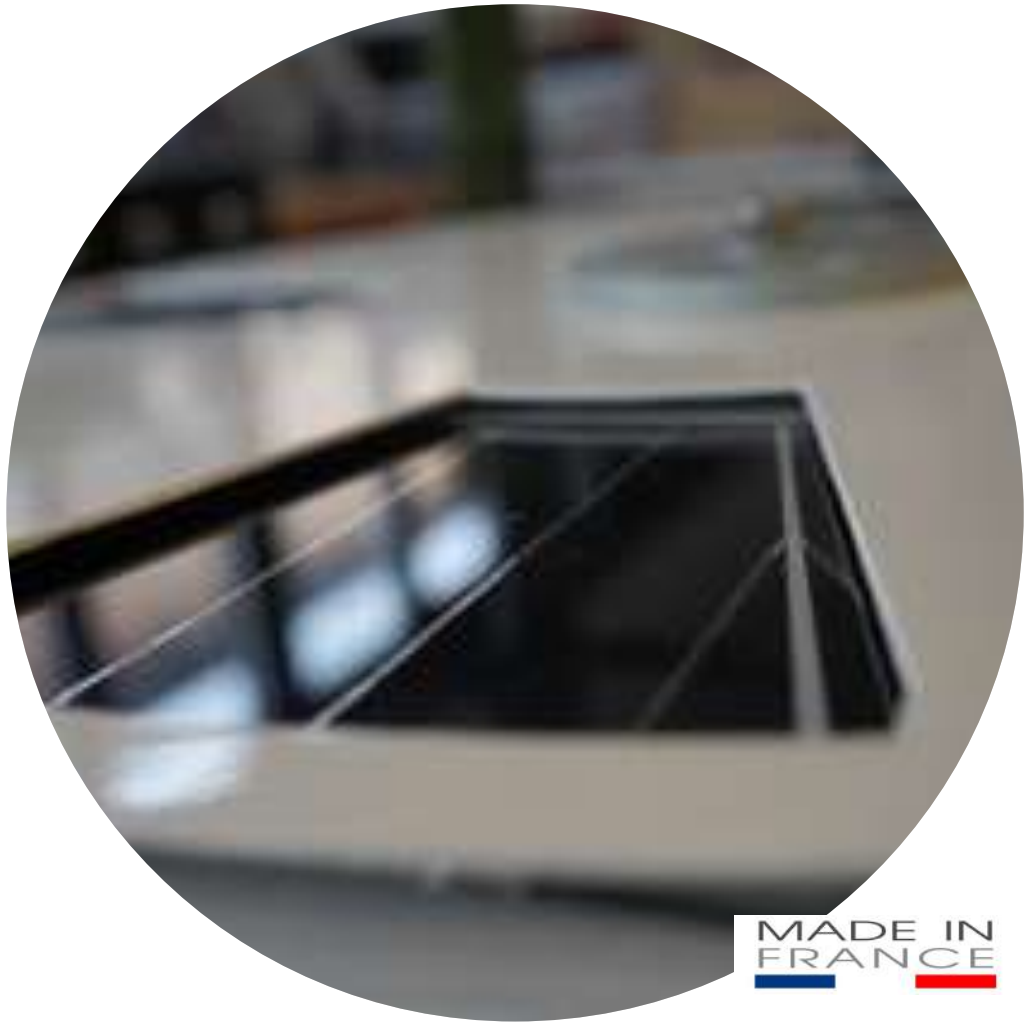
Isabelle GALLET-COTY

« Result of more than12 years of R&D valued by 5 patents families, our product is a major innovation in the field of motorization making it accessible, for the first time, the integration of solar energy into many applications.

Access to the market goes through our main growth vector, pumping application, for which SAUREA already benefits from a real commercial traction.

Over the next 5 years, our ambition is to become one of the major players in solar motorization and more globally, in solar devices without any electronics, and this, at the international level. »

A major innovation in the field of motorization



SAUREA
THE AUTONOMOUS SOLAR MOTOR

invents a new generation of electric motor

Our invention:

THE SELF-SWITCHED PHOTOVOLTAIC MOTOR

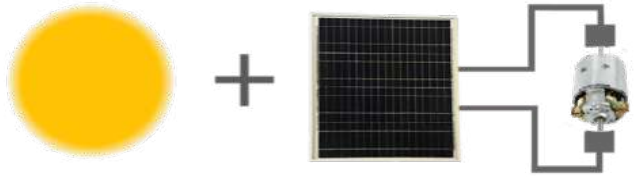
The 1st solar motor in the world that converts directly solar energy into mechanical energy

To drive low power machines and devices

Video Link MOTOR	Video Link PUMPING
Non-active	Non-active

Facts : Solar powered electric AC/DC motors

PV cells + Direct Current motor



- Simple
- Need maintenance (brushes)

DC = CC
direct current = continuous current

PV cells + Electronics + Alternating Current Motor

- Good efficiency
- Low reliability (electronics)

AC
Alternating current

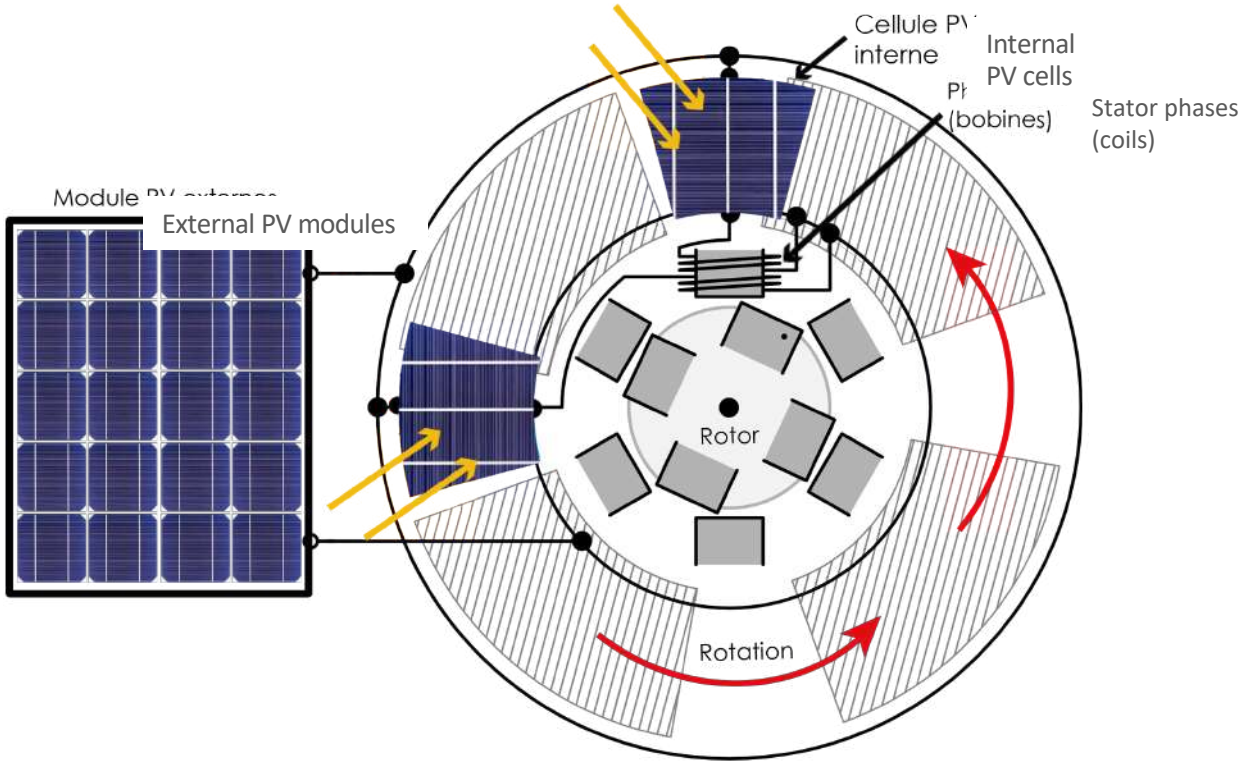
Our disruptive innovation

The self-switched photovoltaic motor

- Reliability +++
- PV cells +++

* PV = Photovoltaic

The operating principle



01 Internal PV* cells supplying coils

02 Control of the PV* cells by an optical shutter attached to the engine rotor, to supply motor phases

03 Variable reluctance motor, without permanent magnets

* PV = Photovoltaic

20 YEARS Ultra Operational Simplicity without maintenance

Without fragile conversion electronics
without mechanical wear parts

Our MISSION

Reduce energy bill

50% Solar

50% Electrical

100% Solar

Enhance reliability of motorized solar installations

A versatile technology with vast application potential

Pumping
& water supply

Ventilation
& Air extraction

Aquaculture
& water circulation

An ecological motor With strong socio-economic impact

An ecological motor

- **Clean solar technology,** Reliable, Simple,
- **Sustainable, robust**
- **Without electronics**, direct connection of PV modules
- No wear parts
- No magnets
- No rare earth
- No fine particle emission

Economical impact

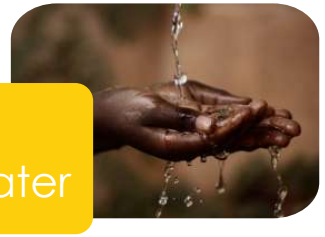
- **Simplicity of installation**
- **Simplicity of use** for non-experts
- **No maintenance** for 20 years
- Long lifetime and low **TCO**
- **Access to energy** for off – grid systems

Social Impact

- **Technology aligned with several UN SDGs**
- Access to water
- Accelerating the **energy transition**
- Use of **renewable energies**
- **Equality** Men/Women
- **Autonomy** of women

CSR Commitment

SUSTAINABLE DEVELOPMENT GOALS



SDG6: Access to water

- 663 Millions of people do not have access to water
- 380 Millions of people still lack water supply services
- 80% of these people live in rural areas

SAUREA solution

- Sustainable and reliable access to water for Off-Grid sites
- Water extraction for populations, livestock, vegetable crops…
- Engaged local actor: Partnership with NGO ESF on a solar pumping project in BURKINA FASO

SDG7: Ensuring Access to Clean Energy

- Ensure access to all to affordable, reliable and sustainable energy services
- Expand the use of renewable energy beyond the electricity sector

SAUREA solution

- Solar Motor with clean technology
- No electronics = direct conversion of solar energy into mechanical energy
- No wear part
- No maintenance & 10-years guarantee
- Actively contributes to energy transition, without OPEX

SDG9: Industry & Innovation

- Innovate to reduce environmental impact
- Encourage innovation
- Research & development program + open innovation

SAUREA solution

- Innovation / Disruptive technology
- Innovation is the core business
- SAUREA is incubated by STATION F
- Standing innovation with new patents, new applications …
- Participation to Research & Innovation clusters and competitiveness pole

CSR Commitment SDG6

SDG6:
Access to water

SAUREA

- 663 millions of people do not have access to water, mainly in rural area, in Off-Grid sites, namely 80% of this population.
- 380 millions of people still lack basic water supply services
- Among all economical sectors, agriculture is the most sensitive to water shortage and represents 70% of global source water withdrawals
- Access to irrigation is a key societal issue
- Being responsible for a fair price for water and solidarity with the poorest is a prerequisite.

- SAUREA MISSION is to sustain solar installations and to accelerate energy mix with a new generation of motors:
- Improvement of access to water with a robust and reliable motor without maintenance for 20 ans, guaranteed for 10 years - motor interfaced with a pump -
- In order to calibrate at best access to water, (availability/price) SAUREA proposes a PUMPING application in emerging countries:
- The first motor of the range has a mechanical power of 130 W which is the equivalent to the human motor force.
- Engaged local actor, SAUREA SAS acts in partnership with the NGO ESF on solar pumping project at SAPAGA in BURKINA FASO
- Drip system is compatible with SAUREA motor: More reliable with an energy saving of about 70% compared to gravity irrigation and 30% compared to sprinkler irrigation

CSR Commitment SDG7

SDG7: Ensuring Access to Clean Energy

- Energy efficiency continues to improve but more focused actions are needed to achieve the Sustainable Development Goals target
- Improve energy efficiency, while making energy more accessible and affordable, is key to achieve the global goal of reducing greenhouse gas emissions
- Ensure everyone's access to reliable, sustainable and modern energy services at an affordable cost, increase the use of EnR beyond the electricity sector

SAUREA

The SAUREA solar motor is a green motor (…)
New energy approach: converts solar energy into mechanical energy
Actively contributes to the energy transition (eco-design over the entire life cycle)

- Totally clean technology/Clean, reliable, simple solar technology
- No electronics, no wear parts
- Without maintenance for 20 ans and 10-year warranty
- Sustainable, robust
- No electronics, direct connexion with PV modules
- No wear parts
- No magnets
- No rare earth
- No fine particle emission

Good for the planet

CSR Commitment SDG9

ODD9: Industry, Innovation & Infrastructure

SAUREA

Ecodesign

Life-cycle analysis

Innovate to reduce environmental impact

Innovation is the core business of SAUREA which is part of a proactive and sustained approach, with its integrated Research and Development Department:

- SAUREA is composed of a team of engineers and technicians highly specialized by fields who continuously explore new innovations to meet the technical requirements of today and tomorrow (new patents…)
- Daily, the founding and operating associates work together (active partnership) to explore new technical tracks & propose innovative products by tomorrow

Cf. technical road map:

ENS Cachan and centrale Supélec (founders) -> scientific researchers: ½ spin-off ½ private

- SAUREA is part of Funders Program of STATION F the world's largest start-up campus – Paris

CSR Commitment SDG9

ODD9: Industry, Innovation & Infrastructure

SAUREA

- Build an Innovation roadmap [Research & Development]
- Encourage innovation

STATION F

BIC DE MONTPELLIER

6 innovation trophies

Winner Emergence I-lab 2015 Emergence competition

Prix Coup de cœur RETIF/ADEME 2016

Gold Innovation Winner GIFA 2017

Winner Start-up EDF Pulse 2019

- R&D in renewable energy/Ecological transition
- SAUREA contributes, feeds Innovation taking part to Research & Innovation clusters and competitiveness poles:
  - BIC Montpellier : Business Innovation Centre with SAUREA INVENT
  - AquaValley
  - Agronov
  - France water team

AQUA VALLEY

agronov PÔLE D'INNOVATION EN AGROÉCOLOGIE

FRANCE Water Team Pôle de compétitivité de la filière de l'eau

CSR Commitment SDG9

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Technology watch SAUREA

ACTU-ENVIRONNEMENT.com

FRANCE Water Team
Pôle de compétitivité de la filière de l'eau

POSITIVR

Afrik 21

LA TRIBUNE
PARTAGEONS L'ÉCONOMIE

AQUATECH INNOVATION

BUSINESSFRANCE

agronov®
PÔLE D'INNOVATION EN AGROÉCOLOGIE

aer
agence économique régionale de bourgogne-franche-comté

enviro pro

CAPTEURS D'AVENIR BY POLLUTEC

LE MONDE DE L'ENERGIE
REJOIGNEZ LA COMMUNAUTÉ

pv magazine

ÉNERGIES POUR LE MONDE

< l'EnerGEEK />
NUCLÉAIRE RENOUVELABLES THERMIQUE RÉSEAU

CCI FRANCE GHANA

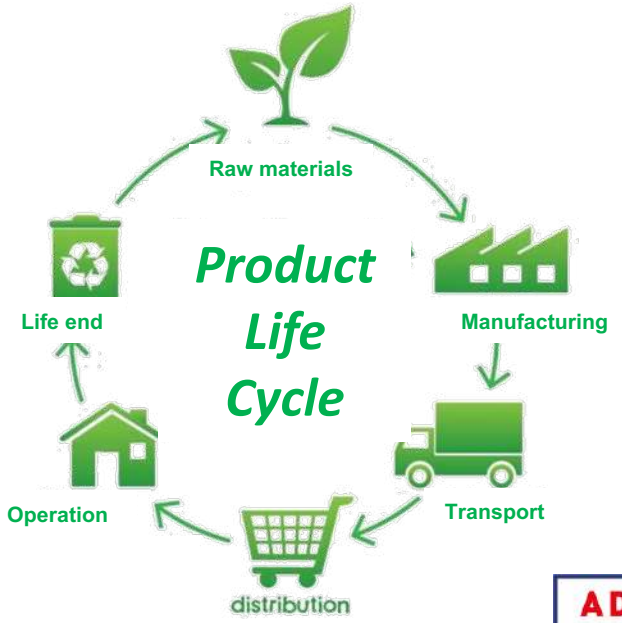
FINERGREEN

euroénergie

A green motor
With low environmental footprint

Life cycle analysis

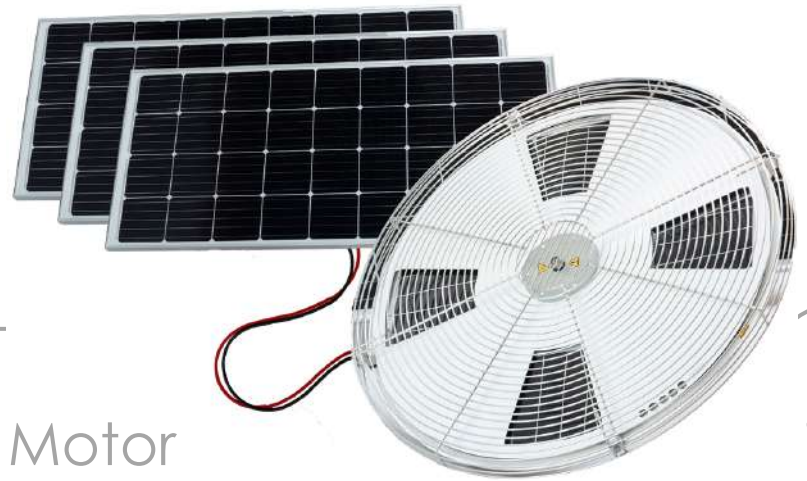
- Identify and quantify, throughout the life of the product, the physical flows of materials and energy associated with human activities.
- Assess the potential impacts on the environment and then interpret the results obtained according to initial objectives.
- If necessary, correct high impact points to reduce the environmental footprint.
- Standardized Assessment Methodology (ISO 14040 and 14044)



ADFINE BUREAU D'ÉTUDES & DE CONSEIL

ADEME AGENCE DE LA TRANSITION ÉCOLOGIQUE

Scope of study – Functional unit



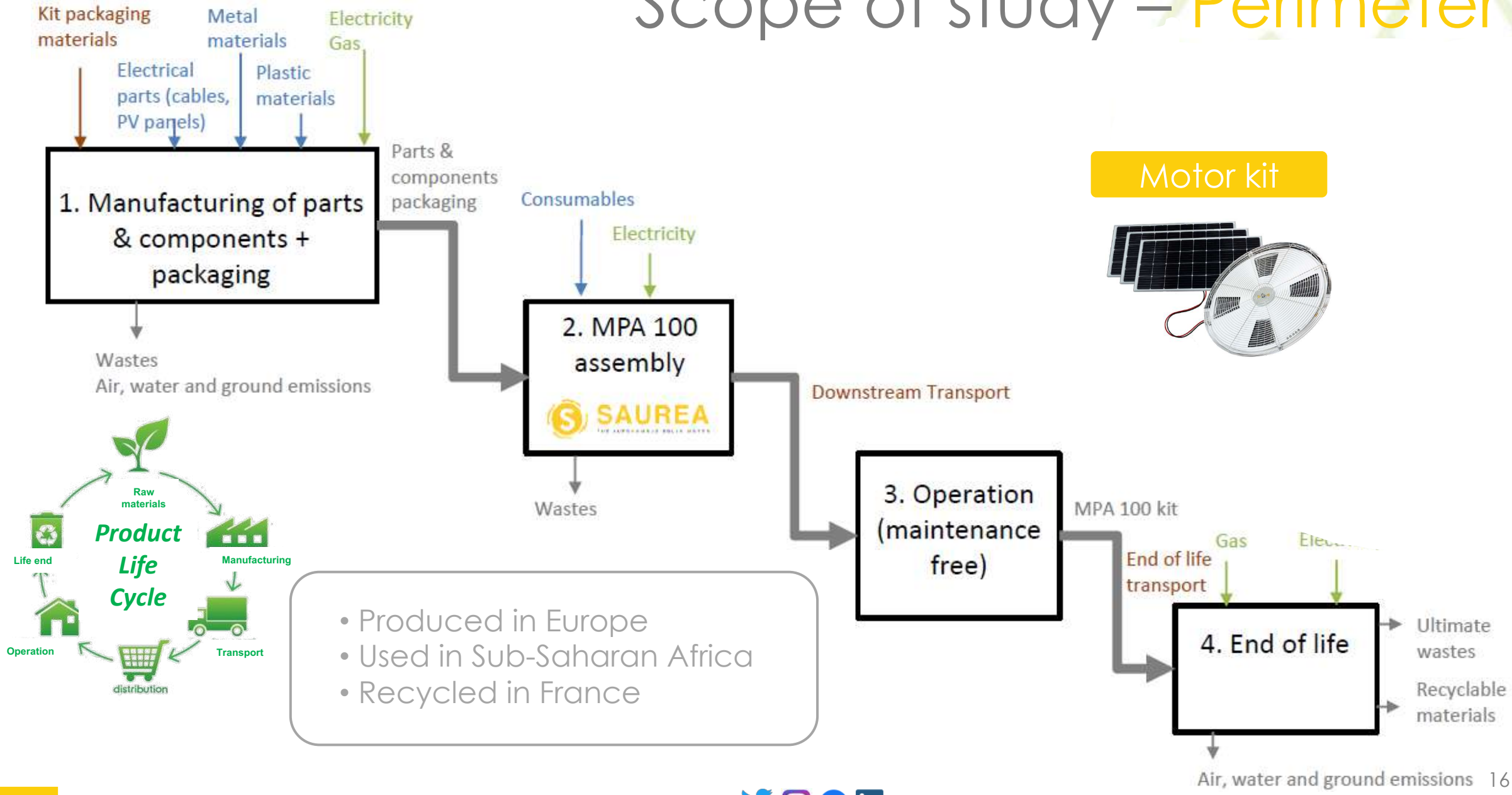
- MPA100 Motor
- PV panels
- Supports and cables
- Packing

Motor Kit

- Supply a mechanical energy of 1kWh a day
- 300 days a year
- For 20 years
- Produced in Europe
- Used in Sub-Saharan Africa

Pumping, aeration, mixing

Scope of study – Perimeter

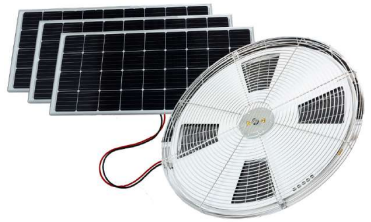


- Produced in Europe
- Used in Sub-Saharan Africa
- Recycled in France

Scope of study – Impact indicators

Category	Midpoint Indicators	Units
Air pollution	Climate change/warming	kg CO2 eq
	Destruction of the stratospheric ozone layer	kg CFC11 eq
	Ionizing radiations	kBq Co-60 / U235 eq
	Photochemical ozone formation	kg NOx eq / kg NMVOC eq
	Fine particles formation	kg PM2,5 eq
Soil pollution	Land acidification	kg SO2 eq / molc H+ eq
	Terrestrial ecotoxicity	kg 1,4-DCB
	Terrestrial eutrophication	molc N eq
	Land Occupancy	m2a crop eq / kg C deficit
Water pollution	Eutrophication of fresh water	kg P eq
	Marine eutrophication	kg N eq
	Freshwater ecotoxicity	kg 1,4-DCB / CTUe
	Marine ecotoxicity	kg 1,4-DCB
Human health	Human carcinogenic toxicity	kg 1,4-DCB / CTUh
	Noncarcinogenic toxicity in humans	kg 1,4-DCB / CTUh
Depletion of resources	Scarcity of mineral, fossil and renewable resources	kg Cu eq / Sbeq kg oil eq (fossil)
	Water consumption	m3

Motor kit



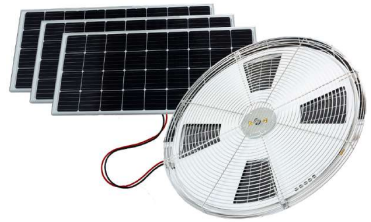
- *Modeling with software SimaPro (8,5,0,0)*
- *Database Ecoinvent 3,5*
- *Methodology for calculating impacts ReCiPe*
- *Ultimate End-of-Life Waste Treatment*

Scope of study – End-of-life

End-of-life waste collection and treatment:

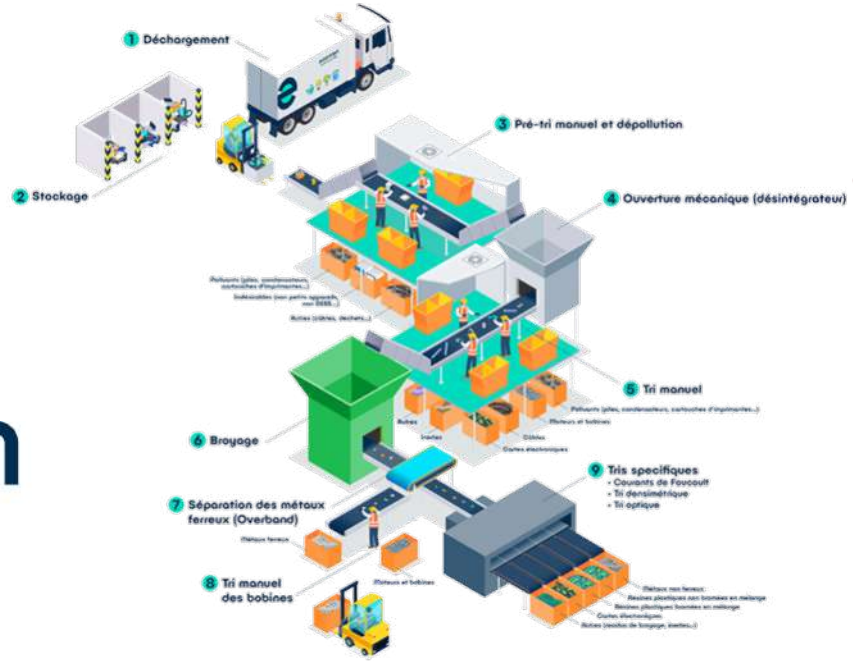
- *Photovoltaic*
- *Electric* ***DEEE***

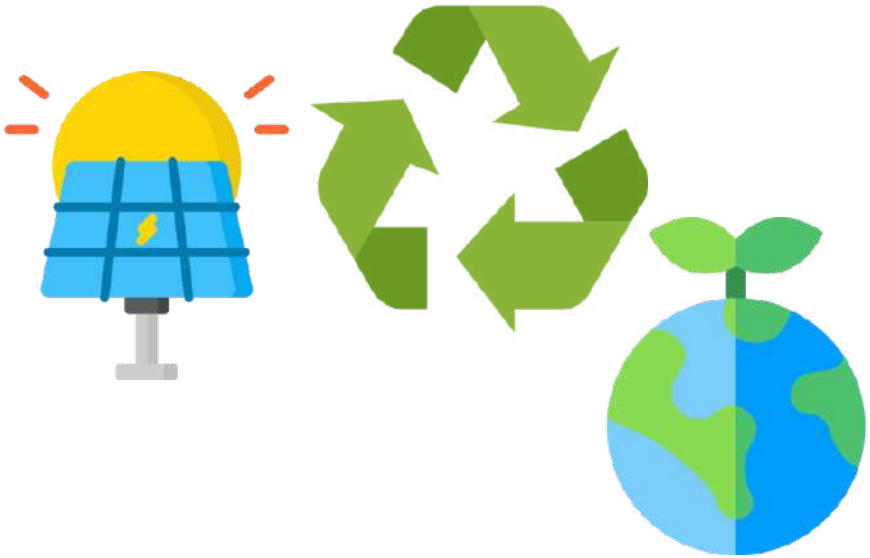
Motor kit



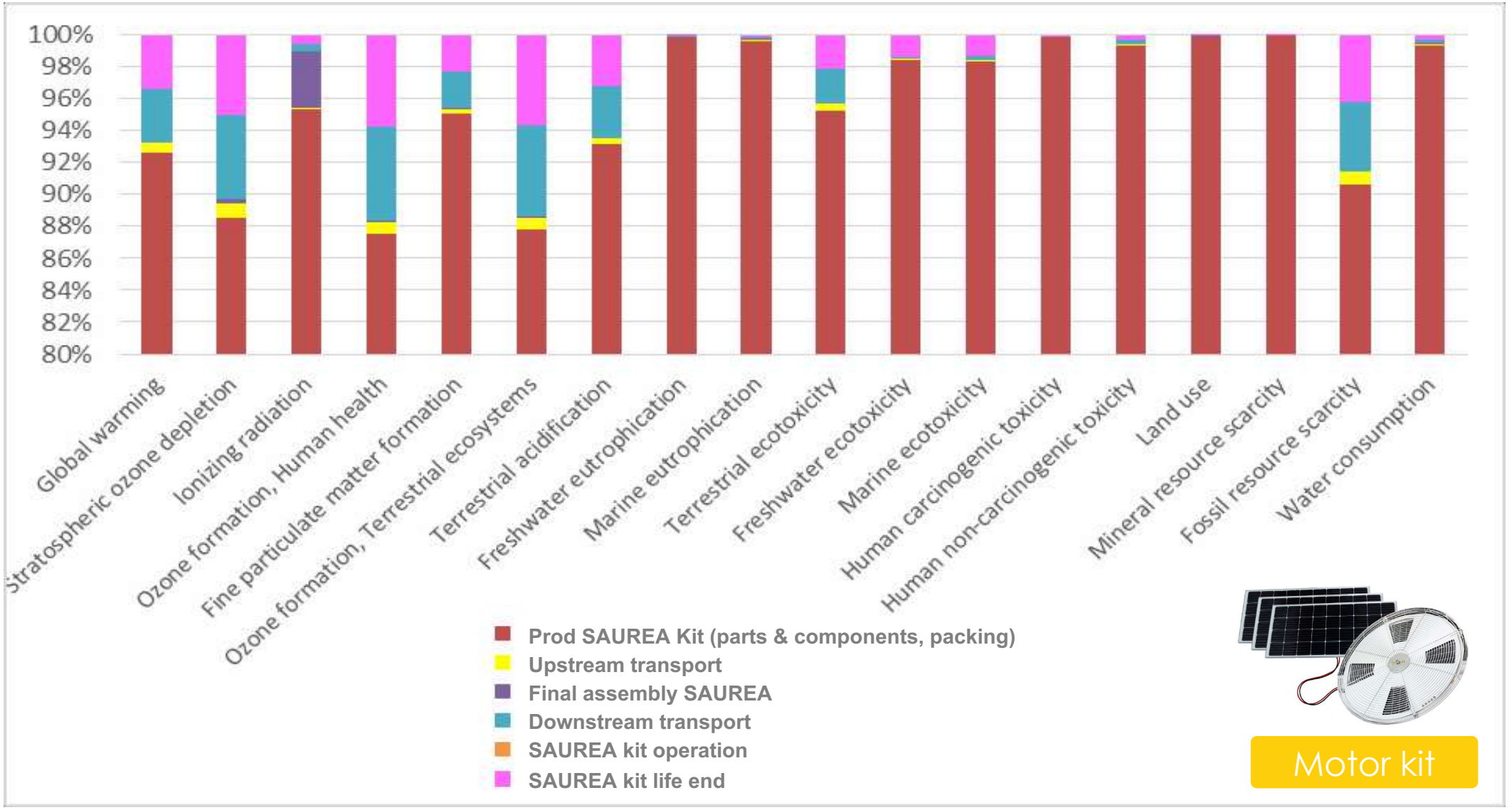
PV CYCLE

ecosystem
recycler c'est protéger



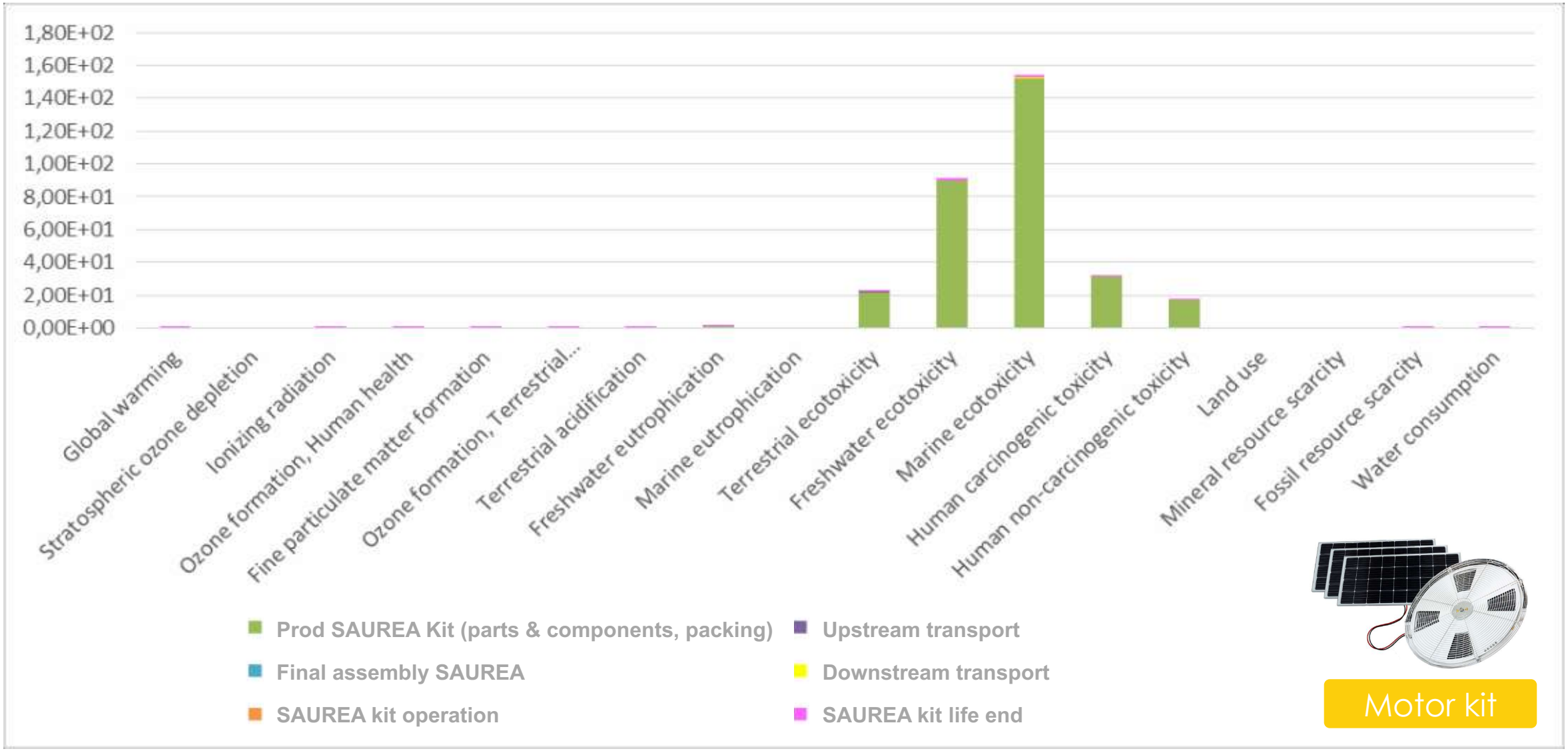


SAUREA Impacts – Global lifecyle



Motor kit

SAUREA Impacts – Global lifecyle



Motor kit

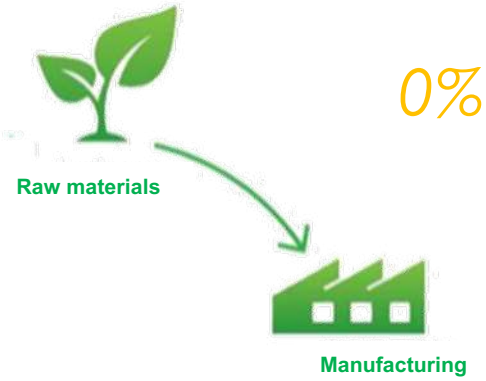
SAUREA Impacts – Assessment

Indicator	Value and unit	Equivalences
Climate change Global warming power at 100 years	1140 kg CO_2 equivalent	4935 km by car [0-5CV] 350 liters de domestic fuel
Water consumption	26,8 m^3	about 1340 individual showers
Marine ecotoxic pollution	160 kg 1,4-DCB equivalent	Potential Impacts of Mining and Transportation of 7,6 kg copper

Motor kit

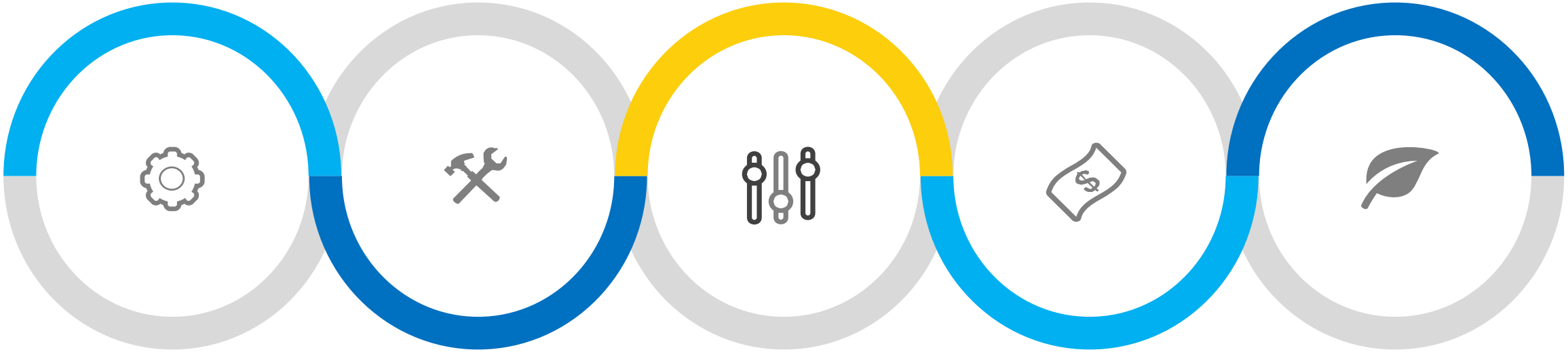
88% due to parts manufacturing:

- *Raw materials extraction*
- *Transformation*



0% due to use

Motor Competitive Advantages



1 Simplicity of installation & implementation

2 Scalability, foolproof reliability & robustness

3 Reduction of OPEX

4 Reduction of energy bill

5 Reduction of environmental footprint

Reduction of one factor:

12 of global cost vs thermal installation

2 TCO vs electrical installation

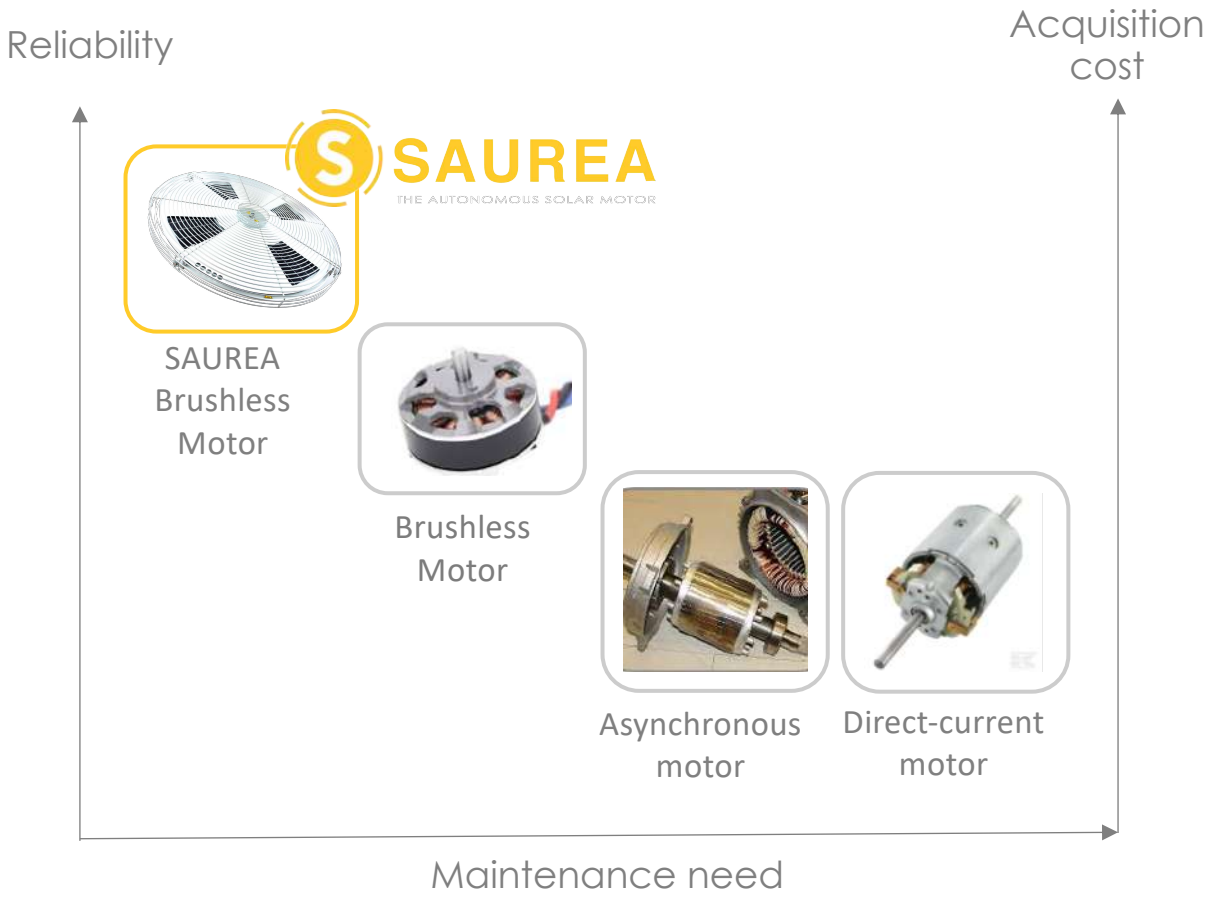
Environmental impact reduced of 90% vs a classic installation

* Total Cost of Ownership

Motor Benchmark

Electrical motor	Strengths	Weaknesses
Solar Motor 	- No electronics - Direct connection with PV modules - No wear part - No magnet - Green solution - No maintenance for 20 ans	- Power limited at 250 mechanical Watts to date
Direct current Motor 	- Low price - No electronics - Direct connection with PV modules	- Frictions, brushes wear, maintenance - Fine particles emission - Faible durée de vie - Magnets - Overheatings (wound rotor)
Asynchronous Motor 	- Mass-market - Robustness	- Poor starting torque - Need inverter DC → AC : FAILURES - Need battery (Compensation of PV module energy supply decrease, shutoff risk)
Brushless motor 	- High efficiency - Reliable mechanics	- Poor starting torque - Need monitoring electronics and rotor position sensor: FAILURES - Need battery (Compensation of PV module energy supply decrease, shutoff risk) - Magnets

A significant competitive advantage



Electronics is a critical element of the solar pumping systems:

- Conversion electronics fragile and difficult to replace
- Lack of reliability in severe conditions
- Periodic maintenance required

Our promise :

Robustness & reliability,
no maintenance,
TCO controlled

Ventilation, air extraction…

Motorization of ventilation turbines, of fans

ROOF or WALL AERATION

Buildings

- Private
- Public
- Eco-designed homes
- Sustainable hotels…

Structures

- Greenhouses
- Stabulations
- Industrial
- Schools …

Ningbo Zihong Solar Energy

exhale FANS

fiabitat scop
construction et ingénierie écologique

Kingspan Light · Air
ECODIS

TOSHIBA

Panasonic

MITSUBISHI ELECTRIC

LG

Water Mixing

Motorization of mixing and bubbling modules

Water Aerator, stirrer

Oxygenation/bubbling

- Fish farming
- Ponds, lakes
- Aquaculture farms(spirulina)

Denitrification

- Activated sludge ponds
- Phosphorus removal

Outdoor water solutions inc. · Etang.ca · Probul.fr · KEETON INDUSTRIES · Kasco · AQUAGO TECHSUB

Multi-channel strategy

B to B

Prescribers,
Design offices,
Architects,
NGOs,
Donors…

INTEGRATORS
in SOLAR,
PUMPING…

INSTALLERS
RESELLERS
DISTRIBUTORS

COMMUNITIES
UNIONS
Energy, Water

USES


Off-grid Sites
= water + ventilation


Agriculture

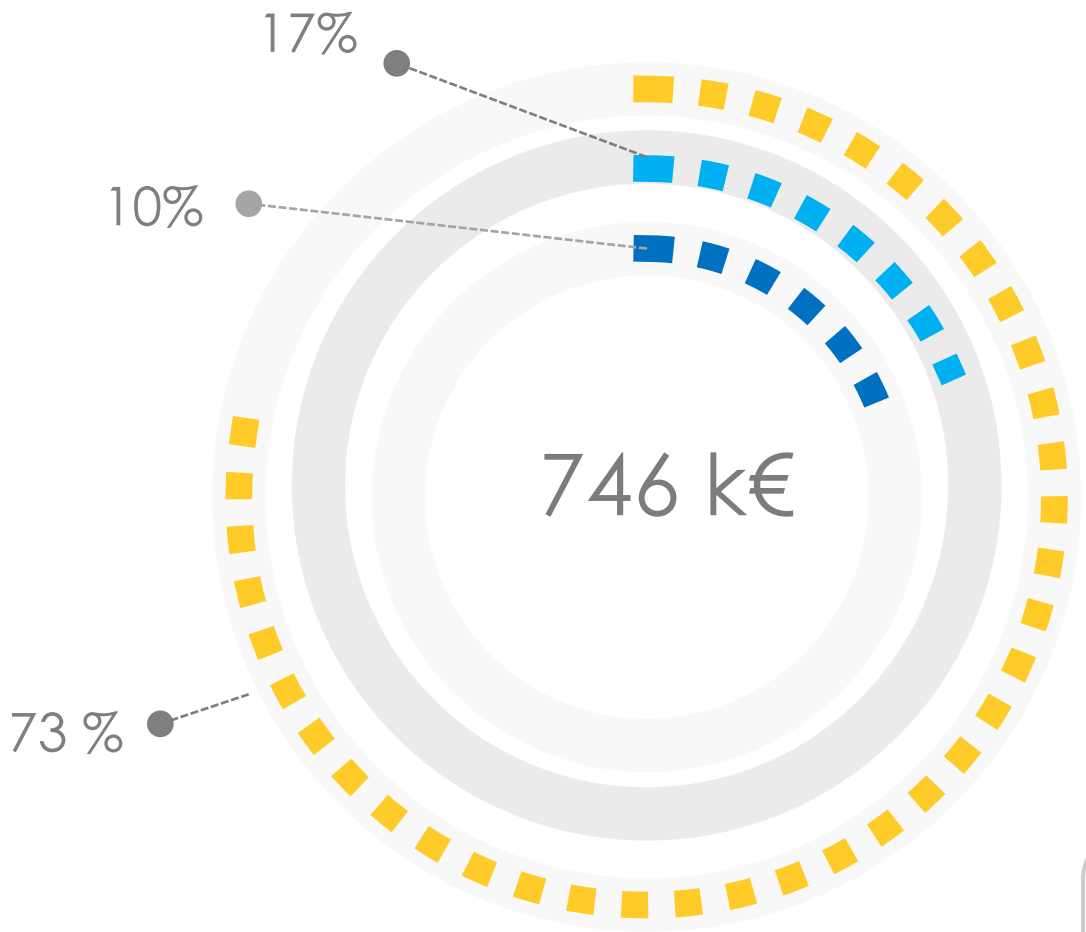

Aquaculture


Sustainable tourism


Architecture/buildings


Green Art/Fountains

CURRENT COMMERCIAL Pipe End 2020



Distribution of commercial offers in value according to final applications and type of revenue flow :

1. Water pumping systems (540 k€)
2. Ventilation & air extraction systems (131 k€)
3. Solar motors MPA100/MPA200 (75 k€)

Pumping share → Current commercial flow:
- France: 78% Pumping
- Emerging countries: 71% Pumping irrigation

Nb : Commercialization start in June 2019

Technological innovation

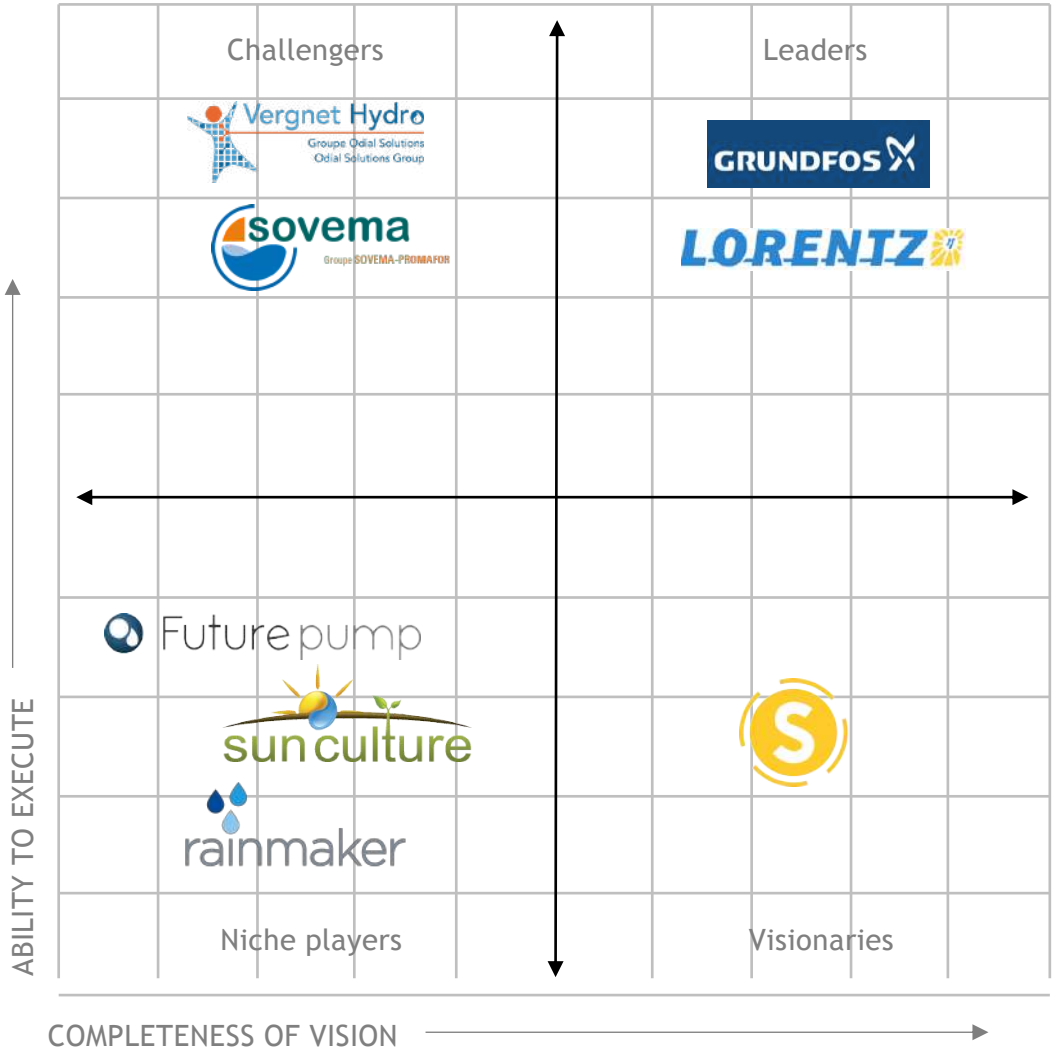
is at the heart of our market

Focus on our primary market: pumping systems

Technological advance + Our in-depth knowledge of our primary market (+ 30 years combined)
⇒ Clear positioning within the « Visionaries » quadrant

Our Business model focused on two complementary revenue streams :

- Commercialization of solar pumping systems incorporating SAUREA technology
- Motors unit selling (integrators, installers)



Water Pumping

Motorization of Centrifugal Pump

PUMPING transfer < 8 m

Motorization of Piston Pump

PUMPING Depth < 80 m

Water extraction

- Populations
- (Off-Grid)
- Cattle
- Breeding …

Irrigation

- Agricultural crops
- Green roofs and walls
- Shared gardens…
- *Open channel, in a drip*

Misting

- Greenhouses
- Terraces
- Stabulations…

Fountains

- Water games
- Artistic works…

GRUNDFOS

LORENTZ

Vergnet Hydro
Groupe Odial Solutions
Odial Solutions Group

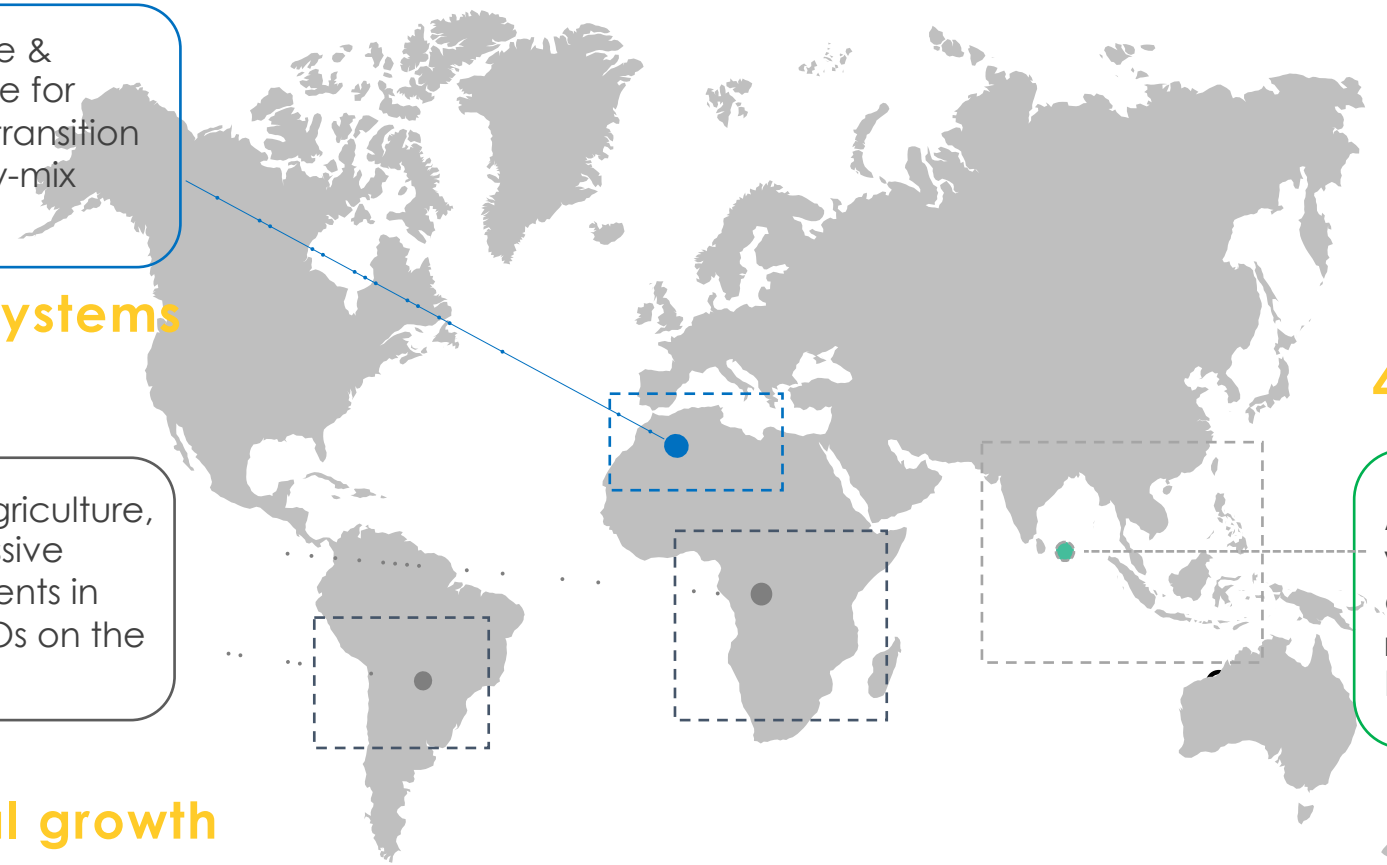
sovema
Groupe SOVEMA-PROMAFOR

SHURflo

Market of Pumping systems = €1,01 bn in 2020

EU & MED – Agriculture & energy mix. Challenge for OPEX reduction and transition to renewable (energy-mix

60% irrigation systems



40% of global market

LATAM & AFRICA - Agriculture, off-grid systems . Massive government investments in solar, key role of NGOs on the ground

LATAM = Latin America

+20% annual growth

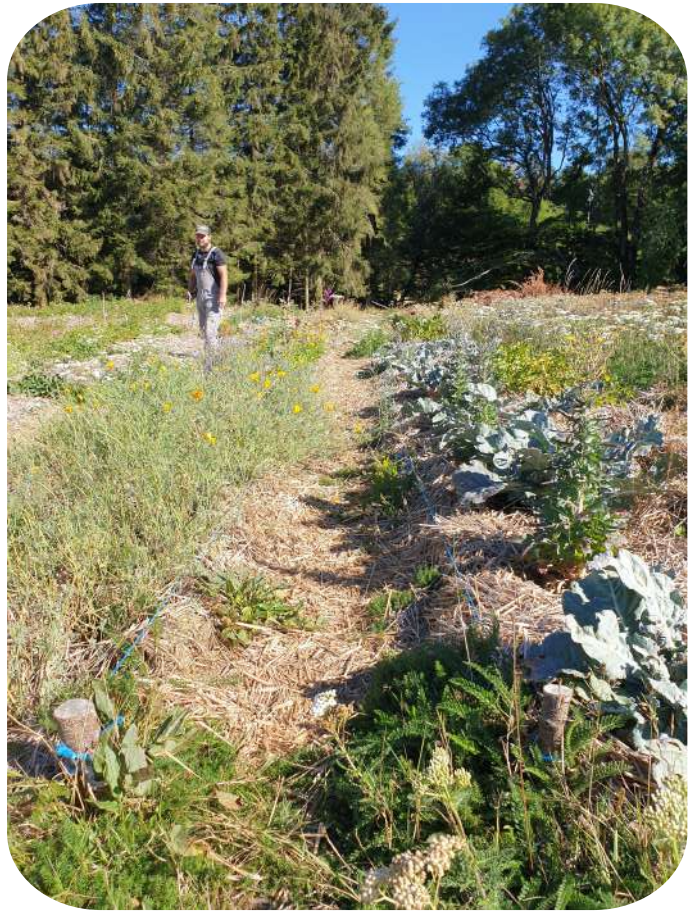
APAC – Agriculture, extraction & water treatment. Strong acceptance of solar systems, rapidly increasing paying power, booming market

APAC = Asia Pacific

Sources : Solar Water Pumps Market Research Report - Global Forecast till 2025, Market Research Future, May 2020

OUR PRIMARY TARGET:
WATER PUMPING SYSTEMS MARKET (1/2)

OUR PRIMARY TARGET:
WATER PUMPING SYSTEMS MARKET(2/2)



Our installations

Off-Grid Site

- Pumping, Drip irrigation, permaculture
  → SCI Pradelles, South of France

SCI Pradelles

Urban area

- Pumping, Irrigation for shared gardens → Town hall [Community] in Auxerre, France

AUXERRE

Our installations Projects

1/2

In Partnership with ESF
Electriciens sans frontières

Electriciens sans frontières

Off-Grid Site

- Rehabilitation of pumping system providing Saint Bellarmin High School
- + ventilation system → Sapaga in Burkina Faso.

Urban area

- Pumping on autonomous site → Chartres
- Food production garden based on an energy-efficient ecosystem model with recovery in tanks of rainwater pumped for site needs

DESMICHELLE
Architecture et Urbanisme

Our installations Projects 2/2

Off-Grid Site

"Engineering for a sustainable future"

- « Dream Farm Project »
- Forced ventilation → cattle stabling and breeding →Japan Bio Methane (Japan)

GPSS GROUP

Off-Grid Site

- Pumping for agricultural cooperative
- Drip-to-drip reasoned irrigation→ Voindze Agri at Mayotte

MAYOTTE

APPENDICES

How is water pumping used ?

Application	Sub-application	Power needed
Community drinking water	• Medical center • Medium/Large village / off-grid site	• 1 to 5kW • <10kW
Agricultural irrigation	• Irrigation Small, medium and large scale	• <2,5kW • 2,5 to 10 kW • Up to several tens of kW
Leisure / Services	• Swimming-pool, private spaces	• <5kW • >5kW
Industrial (mining, cement works,…)	• Mining intake, reverse osmosis, distribution, transportation	• Several tens of kW and more

Main segments addressed by SAUREA solar pumping

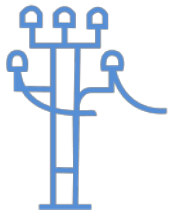
A few numbers:

Agricultural pumping represents in:

- India nearly 23% of electricity and 15% of diesel consumption
- Bangladesh 15% of installed power capacity

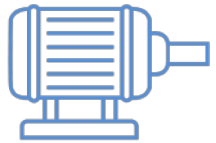
Other types of pumps = Motors indirect competition

Grid-connected pumps



- The most common today
- Only available for grid-connected areas with sufficient quality of service

Diesel pumps

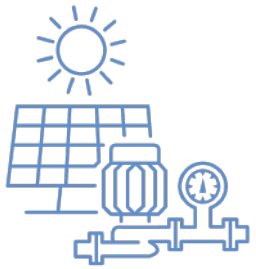


- Mechanical power in Watt
- Historical alternative for off-grid sites.
- Low CAPEX but high OPEX : maintenance and fuel
- Polluting

Hand pumps

- Economic alternative for off-grid sites
- Most common solution for off-grid sites
- Drudgery & "unscheduled maintenance"

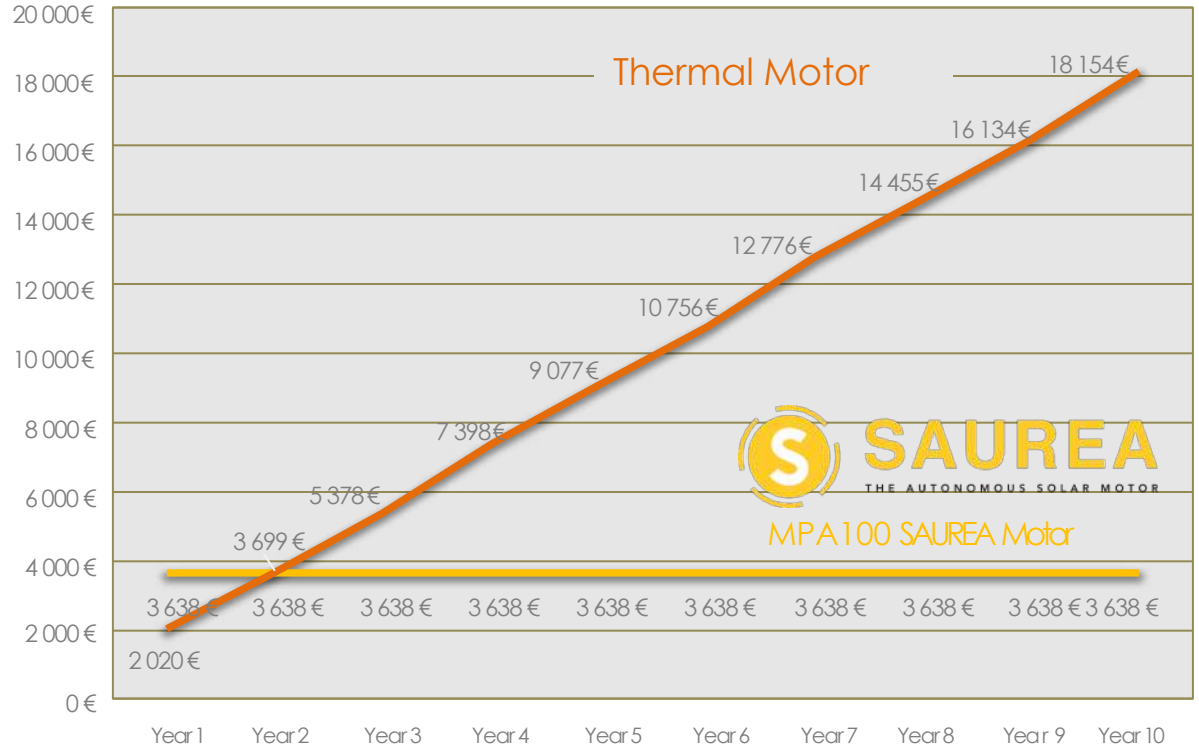
Solar pumps



- Pumping flowrate in m3/h
- The most recent alternative
- Highly developed since price decrease of PV* (2000's)

*PV = Photovoltaic

Comparative study MPA100 Motor - Thermal Motor



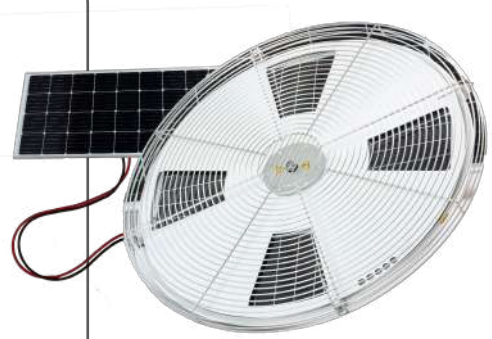
WORKING HYPOTHESIS

SAUREA Motor-130W :

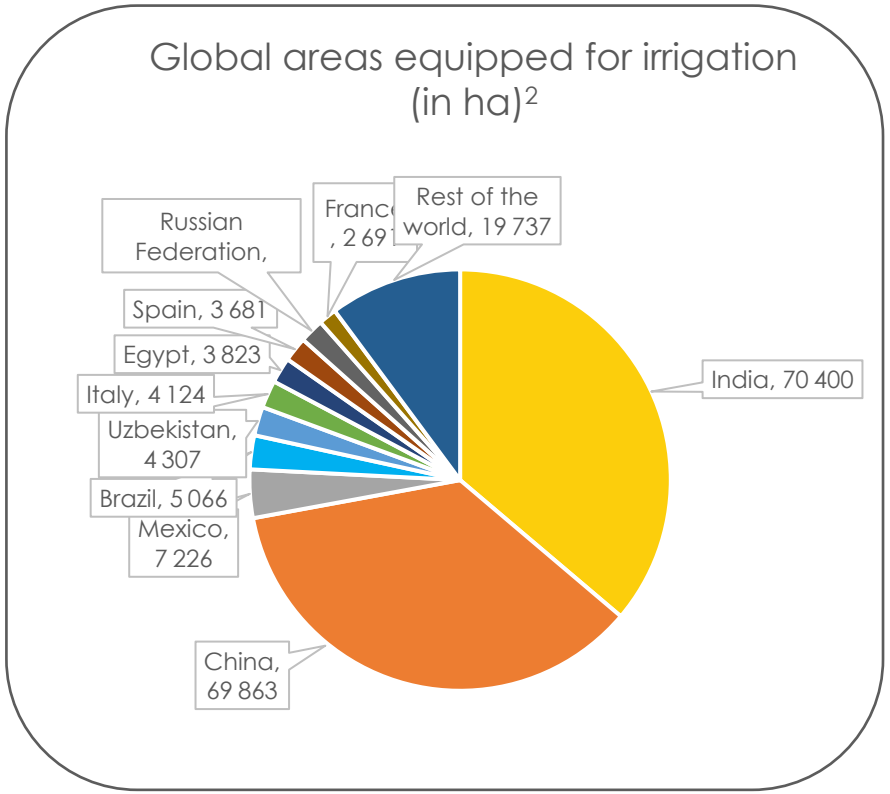
- Public price 3 834€ HT with 10 years warranty

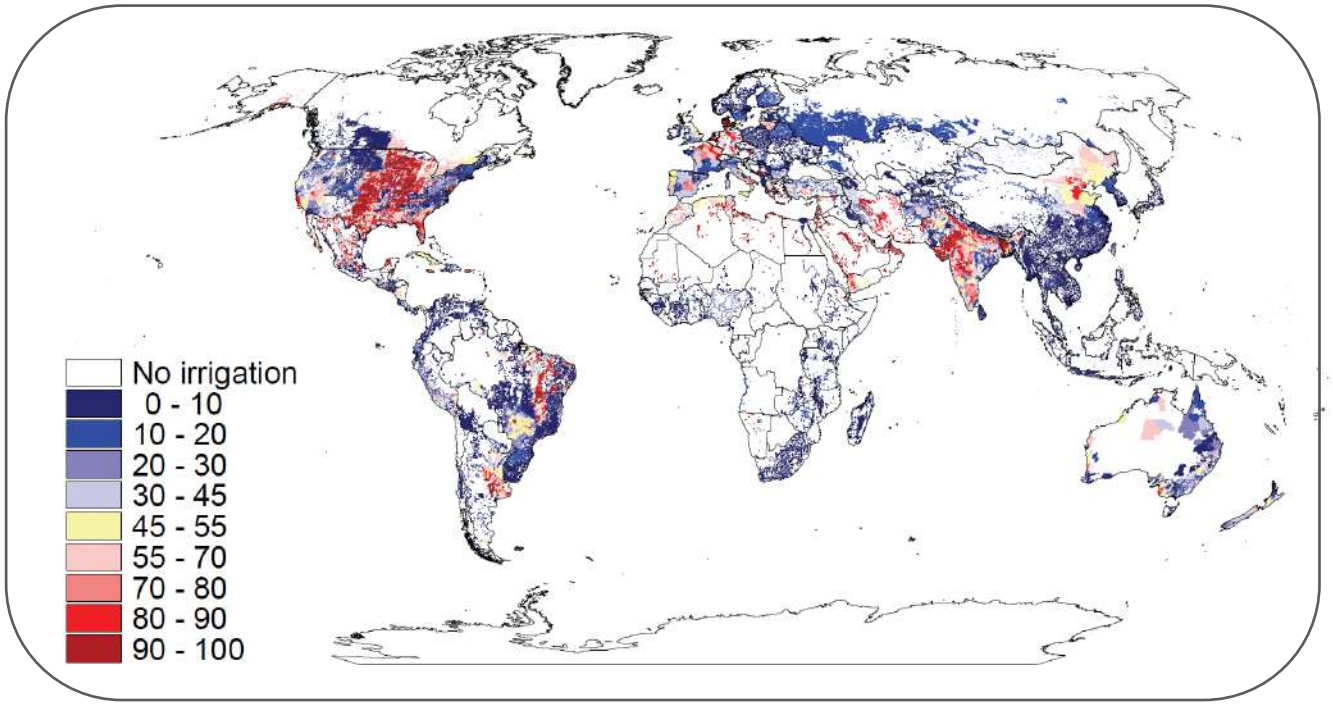
Thermal Motor :

- Public Price 341 € HT
- To be replaced every 3 years (3 years warranty !)
- 0,90€/liter of diesel, with consumption of 0,5 liter/hour, 8h a day
- 1 annual maintenance visit, average cost 350€ with trip



WORLD AGRICULTURAL PUMPING





Percentage of each cell area equipped for irrigation (with groundwater or with surface water)[1]

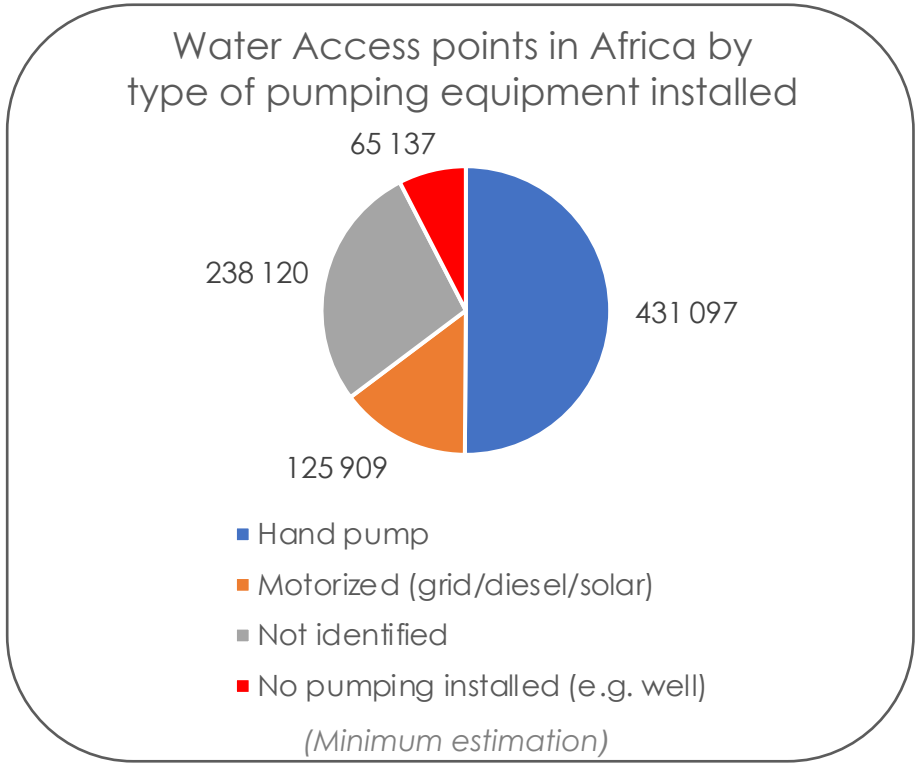
South East Asia is the biggest market for water pumps, followed by West Asia-Pacific, by Europe and by North America.

High potential for new markets, especially in Africa where only 5% of cultivated land are irrigated (against 20% worldwide).

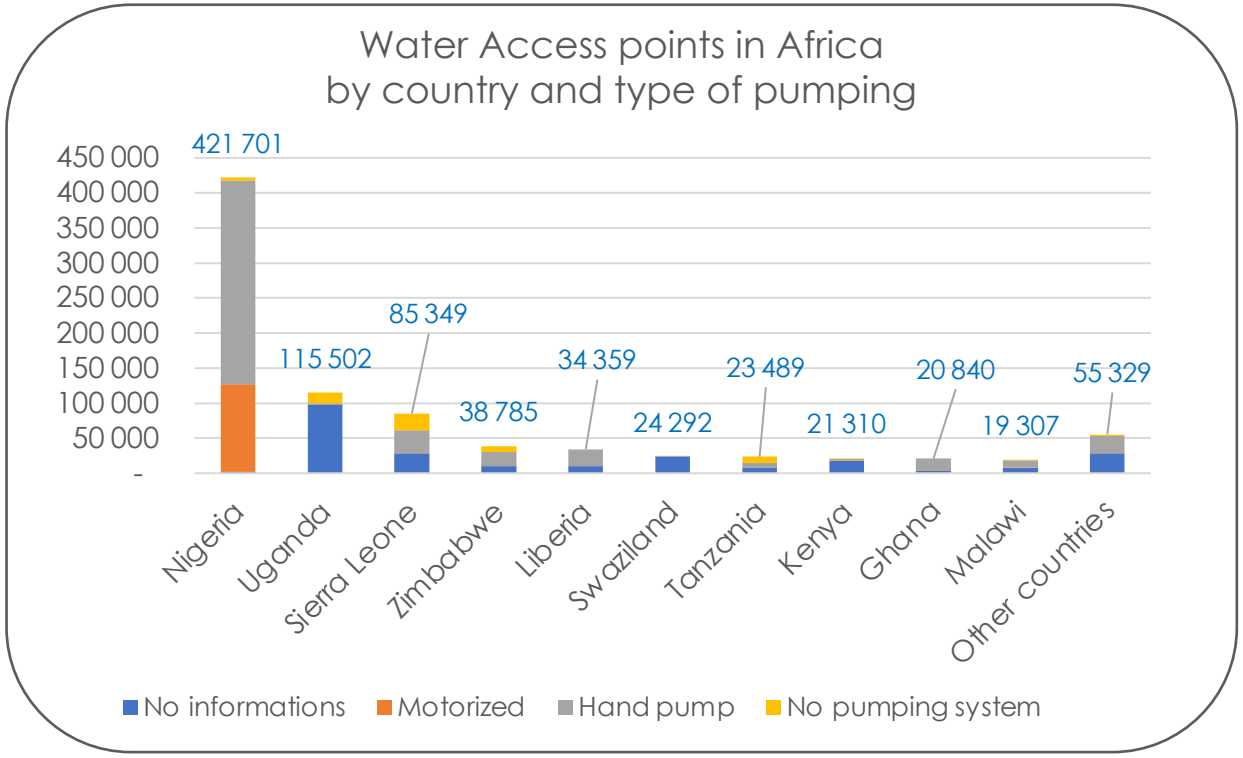
Source: 1. S. Siebert et al. GroundWater use for irrigation - a global inventory 2. FAO, aquastat

SOLAR PUMPING in AFRICA

- Pumping African market is mainly driven by access to water and small-scale irrigation



NB : These figures only include products affiliated to Lighting Global with a PV capacity below 3 kW.



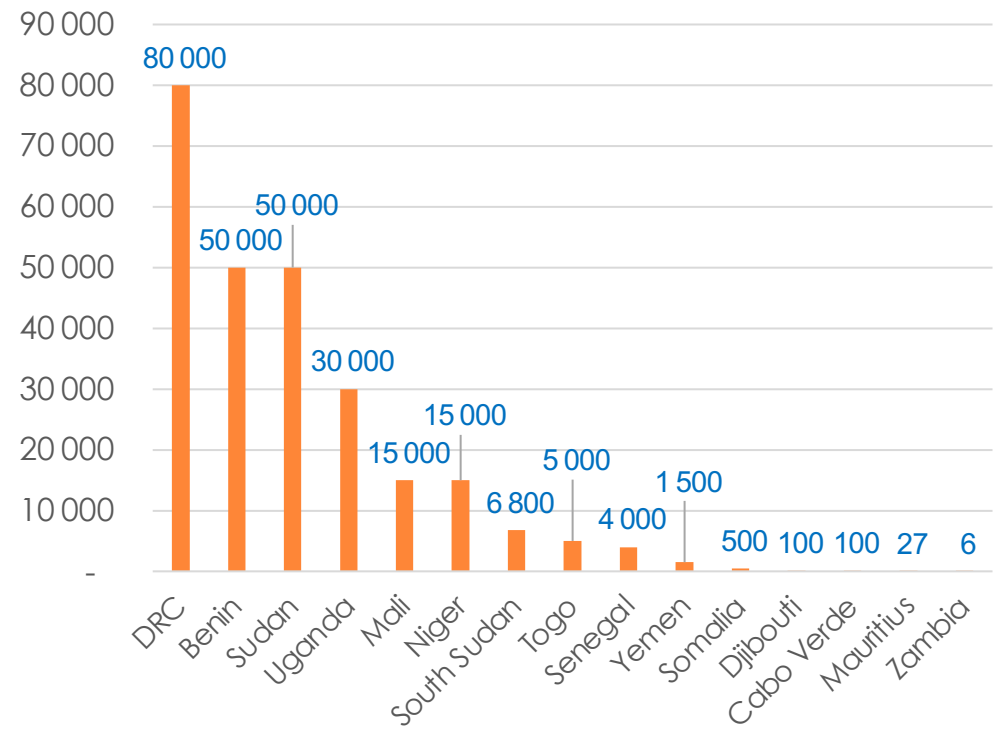
N.B: These data are self-published by water point owners, so the list may be incomplete.

Sources: waterpointdata 2020, GOGLA 2019

SOLAR PUMPING in AFRICA

Perspective

- Need for solar water pump : 700 000 African households[2]
- 258 033 solar pumps in DRC, Benin, Sudan and Uganda should be the main beneficiaries of these call for tenders[1]
- Growth encouraged by incentives[3] in favour of solar pumps in Kenya, Tanzania, Rwanda, Uganda, Zambia and Senegal

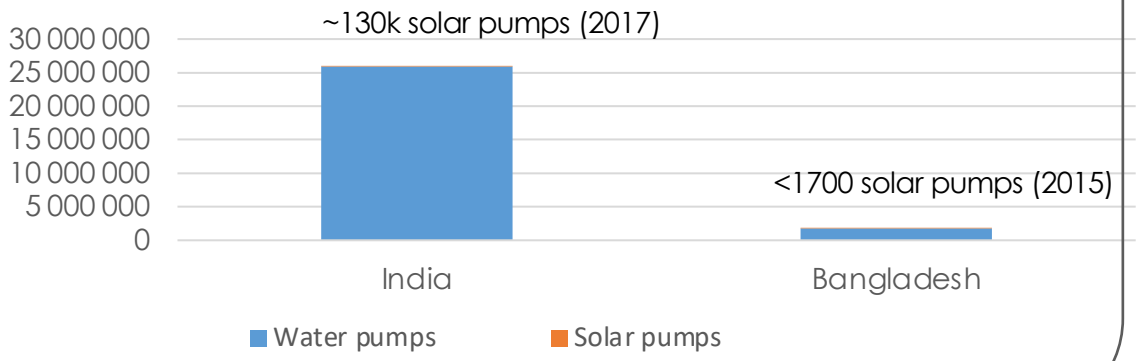


Source: 1 : ISA, 2 : UKAID 2019 , 3 : FBR Global LEAP

Sources: waterpointdata 2020, GOGLA 2019

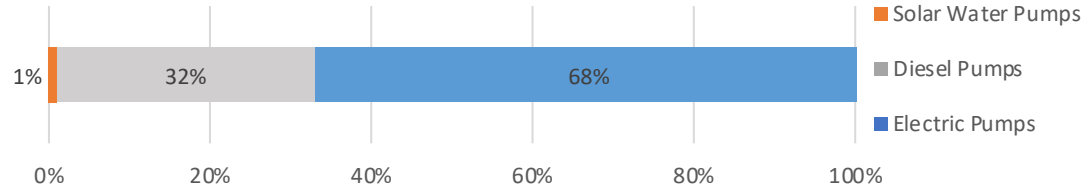
SOLAR PUMPING in ASIA

Water pumps installations in the main South-Asia countries(in installed units)



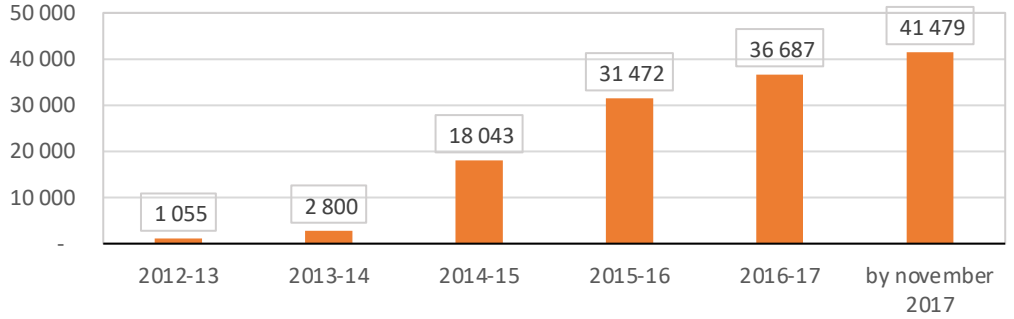
Sources: FAO-Giz 2015, GGGI 2017, Infinergia's Analysis

Water pumping types in India



Sources: UKAID 2019

New solar water pump installations in India per year (in units)



Sources: UKAID 2019

- 90% of water pumping market in South-Asia is in India
- India = 1st world market for solar pumping with more than 130 000 solar pumps installed.
- Strong market growth since 2014/2015

SOLAR PUMPING in ASIA

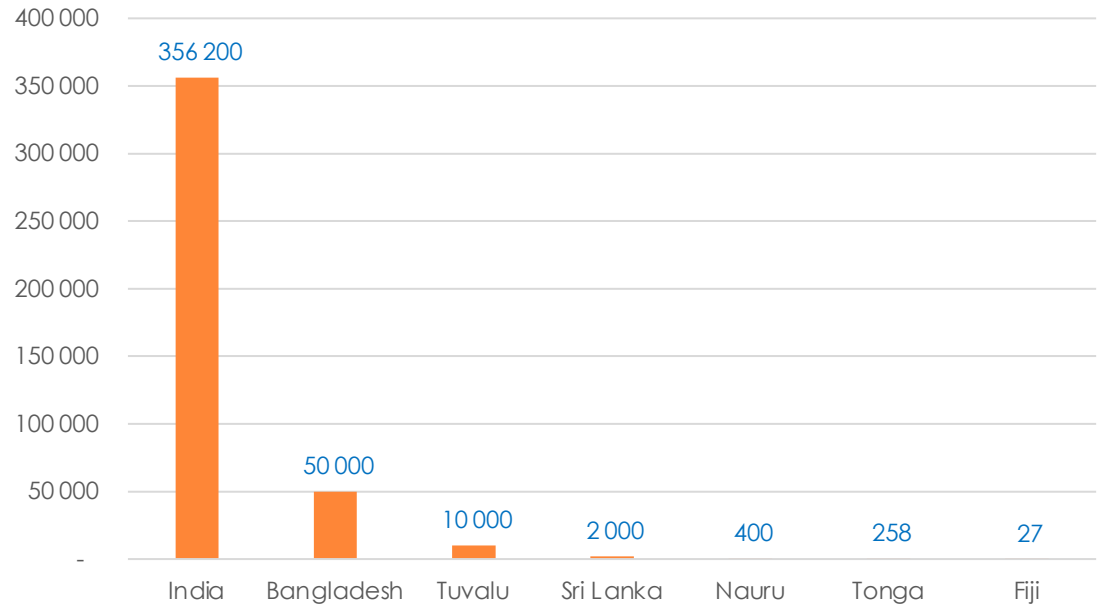
Existing market and perspectives

Need for solar pumps

- 4,2 millions of farming households need a solar pump and can afford it (ISA)
- 356 200 solar pumps in India over the 3 coming years - 2 calls for tenders[1]
- Potential market of 1 Million solar pumps by 2025[3]

NB : Minimum estimation

Country need for solar water pumping according to ISA call for tenders in Asia and Oceania



Sources :1 – ISA 2 – Energy World 2018, 3 - UKAID 2019

SOLAR PUMPING in LATIN AMERICA

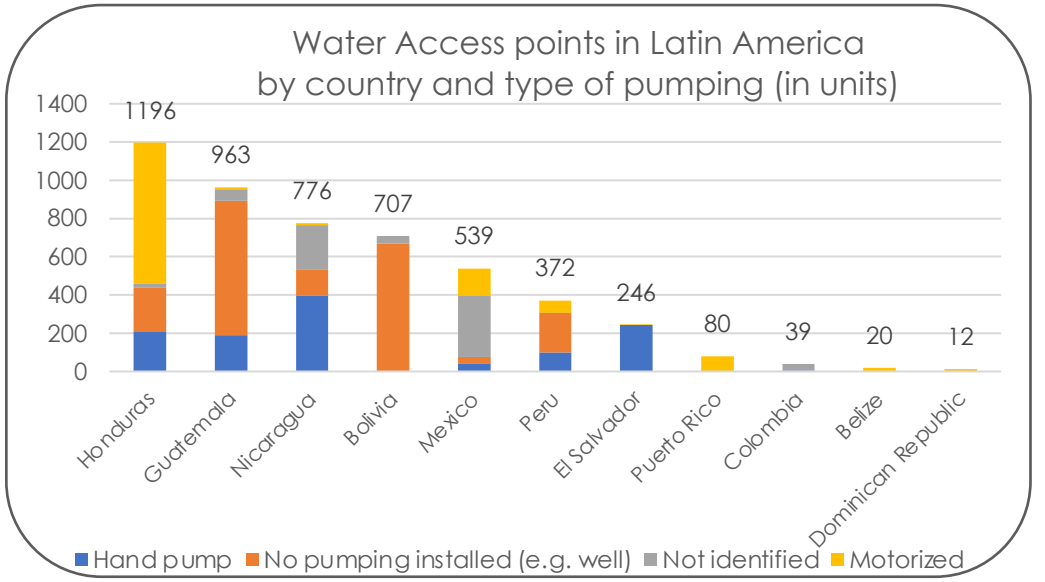
Existing market and perspectives

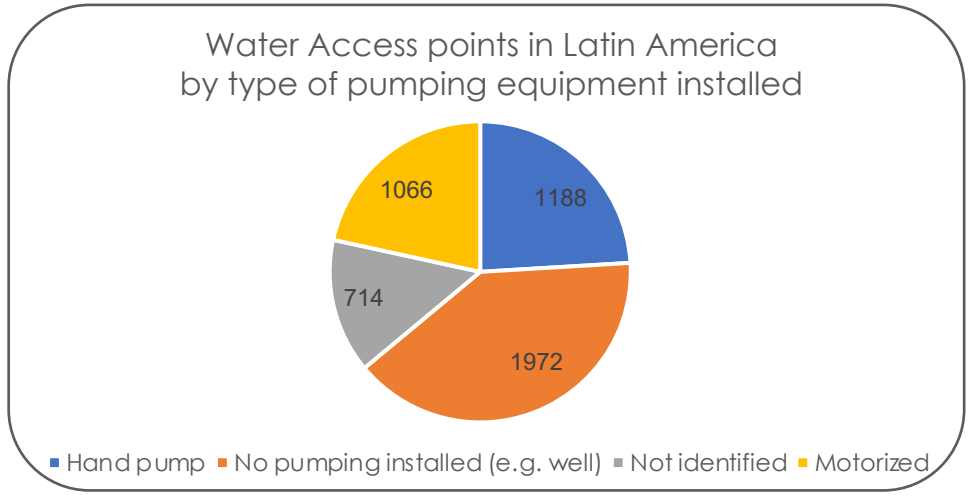
In Latin America[1]

- 6 millions of households are "off-grid" with potential solar pumping market:
- 1 188 hand pumps may be motorized - solarized
- In 2018, 5 calls for tenders: Brazil, Nicaragua, Chile, Belize and Colombia, have been launched since 2018,
- Including 1for 300 water pumps in Brazil
- Short-term need for solar pumping: Guyana for 111 pumps and Peru for 1750 pumps[2]

Sources: 1: Waterpointdata 2020, *GOGLA 2019*
2 : ISA-Alliance Solaire Internationale

N.B: Data self-published by water point owners.
→The list maybe incomplete





Acces to market Strategy

5-year target

Turnover : 8,3 M€

Gross operating margin:
20%

Systems on off-grid sites (GPSS + ESF) + quantitative demonstration of technology robustness / efficiency + induced benefit for users

Increase of sales force & structuring of commercial effort : focus on pumping segment & on high potential emerging countries

Signatures of partnerships with market prescribers on these zones : ONGs (ex: ESF), distributors et integrators, installers

Finalization of motors industrialization work to reduce BOM* by 2 and strongly increase our margins

* Bill Of Material

Exploding demand on solar systems: +12%/year - € 2,83 bn in 2021

01 Solar pumping systems for agriculture and irrigation are the main drivers of global market growth

02 Emerging markets- Asia, Middle-East, Africa – present the most important opportunities many off-grid sites, strong government action, share of agriculture in GDP)

03 A strong demand for new generation systems (Brushless DC) that are more efficient, reliable and less expensive in terms of TCO

04 Strong coming growth in established markets(EU,US). Context of energy transition & sustainable development coupled with a strong appetite for low environmental impact technologies

SAUREA is ideally positioned in a global diversified market, with sustained growth over the next 10 years

Sources: Solar Water Pumps Market Research Report - Global Forecast till 2025, Market Research Future, May 2020

Our goal :
To capture 2,5% of solar systems global market within 7 years (8,5% SOM/SAM)

Total Available Market (TAM)

1 bn €

Fast-growing solar pumping systems global market

Serviceable Available Market (SAM)

99 M€

5% market penetration of the SAUREA technology

Serviceable Obtainable Market (SOM)

2,5 M€ in 3 years

(8,5 M€ in 5 years)

Focus on 6 geographical zones with progressive market from 0,20% to 20% within 7 years

The founding team

Isabelle GALLET-COTY

CEO

- Applied Physics engineer
- Technical Direction (aerospace industry)
- Management +++
- Auditor at Institute of Higher National Defense Studies
- Dale Carnegy Certificate 'communication & leadership'

Gilles COTY

CTO

- Mechanical engineer,
- General Mechanics Competition Winner,
- Technical Director Motor
- Pumping technical Expert,
- Dale Carnegie Coach

Lionel VIDO

Motor Expert

- Lecturer at Cergy-Pontoise University
- PhD. in Electrical Engineering ENS Cachan
- Motor performances & simulation Expert

Loïc QUEVAL

Solar pumping Expert

- Lecturer at Centrale Supélec, University Paris Saclay
- PhD Univ. Tokyo
- Pumping systems optimization Expert

Alain COTY

Inventor

- Research associate ENS Cachan,
- Electrotechnical engineer,
- Entrepreneur

The operational team

Isabelle GALLET-COTY

CEO

- Applied Physics engineer
- Technical Direction (aerospace industry)
- Leadership +++
- Auditor at Institute of Higher National Defense Studies
- Dale Carnegy Certificate 'communication & leadership'

Gilles COTY

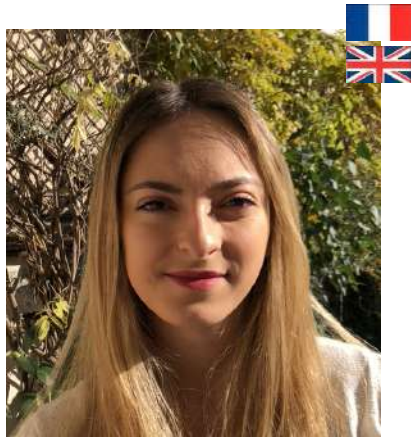
CTO

- Mechancal engineer +++,
- General Mechanics Competition Winner,
- Technical Director Motor
- Pumping technical Expert +++,
- Dale Carnegie Coach

Magali LOUAULT

CCO

- 25 years international Customer Service +++
- Team Management
- Projects follow-up, contracts and processes
- Skills in pumping techniques



Louise COTY

Community Manager

- The Girl Power !
- Photoshop, Illustrator, InDesign, WIX +++
- 4D Cinema
- Roadtrip & Woofing of 1 ½ year in Australia Melbourne

Jordan Demangeot

Development Engineer

- Apprentice ISAT*
- Applications, tests, installations
- Sourcing, costs optimization
- Technical skills in mechanics
- CAD design

* ISAT : Automotive & Transport Institute

SAUREA, milestones achieved

2007 — 1

Emergence of the idea
Construction of 1st prototype

2015 — 2

Intensive phase of R&D
Prototypes development

2016 — 3

Creation of the SAUREA company
End of prototyping
1st Motor MPA100

2017 — 4

MPA100-200
Feasibility study
Prototypes development
1st market positioning

2018 — 5

Fundraising
Business Angels 305 k€

2019 — 6

Commercialization
June 2019
MPA100 Motor
1st motor of the range

2020

MPA100 = 130W

Scalable technology

MPA200 = 250W

Technical Road map

2021

1 — MPA100-200
Costs reduction V07

2 — EDF Photowatt / SOL TECH
Motor optimization

3 — MPA200
ENS CACHAN / GeePS
Industrialization
MPA200

4 — MPA100-200
Open innovation
SAUREA pumps
8-20-80 m

5 — Field feed-back
Data, complementary tests

2022

6 — MPA10
Motorized PV panel
Development & Production

7 — MPA50

2023

8 — Patents exploitation
Hybrid systems solar/wind
Patents exploitation
SAUREA
Desmodromic pump

Barriers to entry → PATENTS

Pays	N° de dépôt	Date de dépôt	N° de délivrance	Date de délivrance	Prochaine annuité	Déposant(s)	Titulaire(s)
Famille 1 - MOTEUR PHOTOVOLTAÏQUE AUTOCOMMUTE							
Allemagne	EP10707324.9	20/01/2010	EP2380261	13/04/2016	31/01/2021	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
France	EP10707324.9	20/01/2010	EP2380261	13/04/2016	31/01/2021	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
Suisse	EP10707324.9	20/01/2010	EP2380261	13/04/2016	31/01/2021	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
Famille 2 - MOTEUR PHOTOVOLTAÏQUE AUTOCOMMUTE A BOBINE FRACTIONNEE							
France	FR1253030	03/04/2012	FR2988930	18/04/2014	30/04/2021	Alain COTY SANDYC INDUSTRIES	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
Famille 3 - MOTEUR PHOTOVOLTAÏQUE MIXTE							
France	FR1060544	15/12/2010	FR2969423	30/08/2013	31/12/2020	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
Famille 4 - MOTEUR PHOTOVOLTAÏQUE AUTOCOMMUTE A PUISSANCE AUGMENTEE							
France	FR1059757	25/11/2010	FR2968146	28/12/2012	30/11/2020	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
Famille 5 - TRANSISTOR A EFFET PHOTOVOLTAÏQUE ET MOTEUR PHOTOVOLTAÏQUE A PUISSANCE AUGMENTEE ASSOCIE							
France	FR1459605	07/10/2014	FR3026893	12/01/2018	02/11/2020	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
Espagne	EP15777649.9	02/10/2015	EP3204964	22/08/2018	02/11/2020	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
France	EP15777649.9	02/10/2015	EP3204964	22/08/2018	02/11/2020	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
Portugal	EP15777649.9	02/10/2015	EP3204964	22/08/2018	02/11/2020	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
Turquie	EP15777649.9	02/10/2015	EP3204964	22/08/2018	02/11/2020	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE

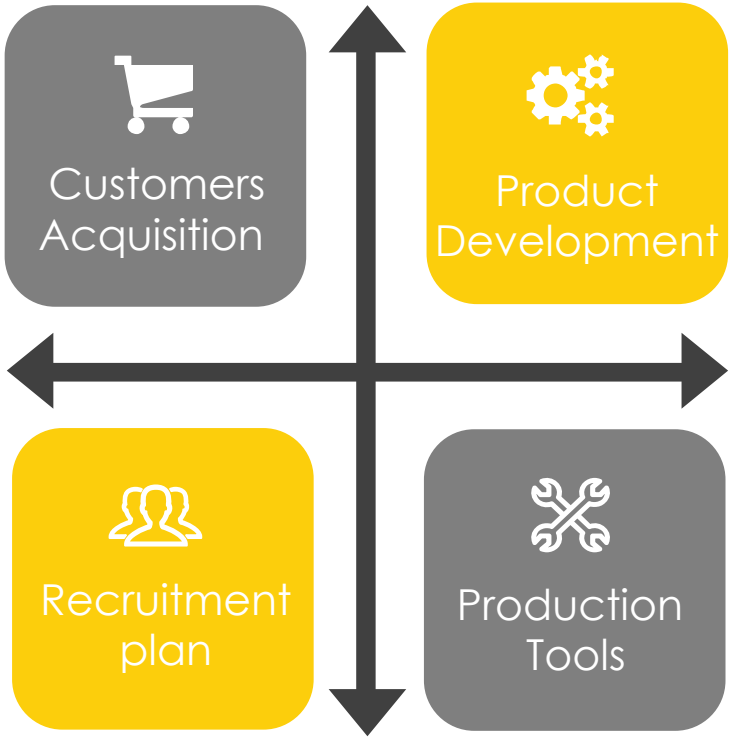
SEARCH FOR FUNDING
to achieve our objectives

Access to market & customers acquisition

Structuring of commercial effort on strategic geographical areas, signatures of partnerships with prescribers and distributors

Team reinforcement

Short-term recruitment of 3 collaborators: business developer, production technician, support function



Products / Systems range development

Finalization of R&D effort – industrialization MPA200, MPA10, Motorized solar panel, REX on pilot phases…

Production tool structuring

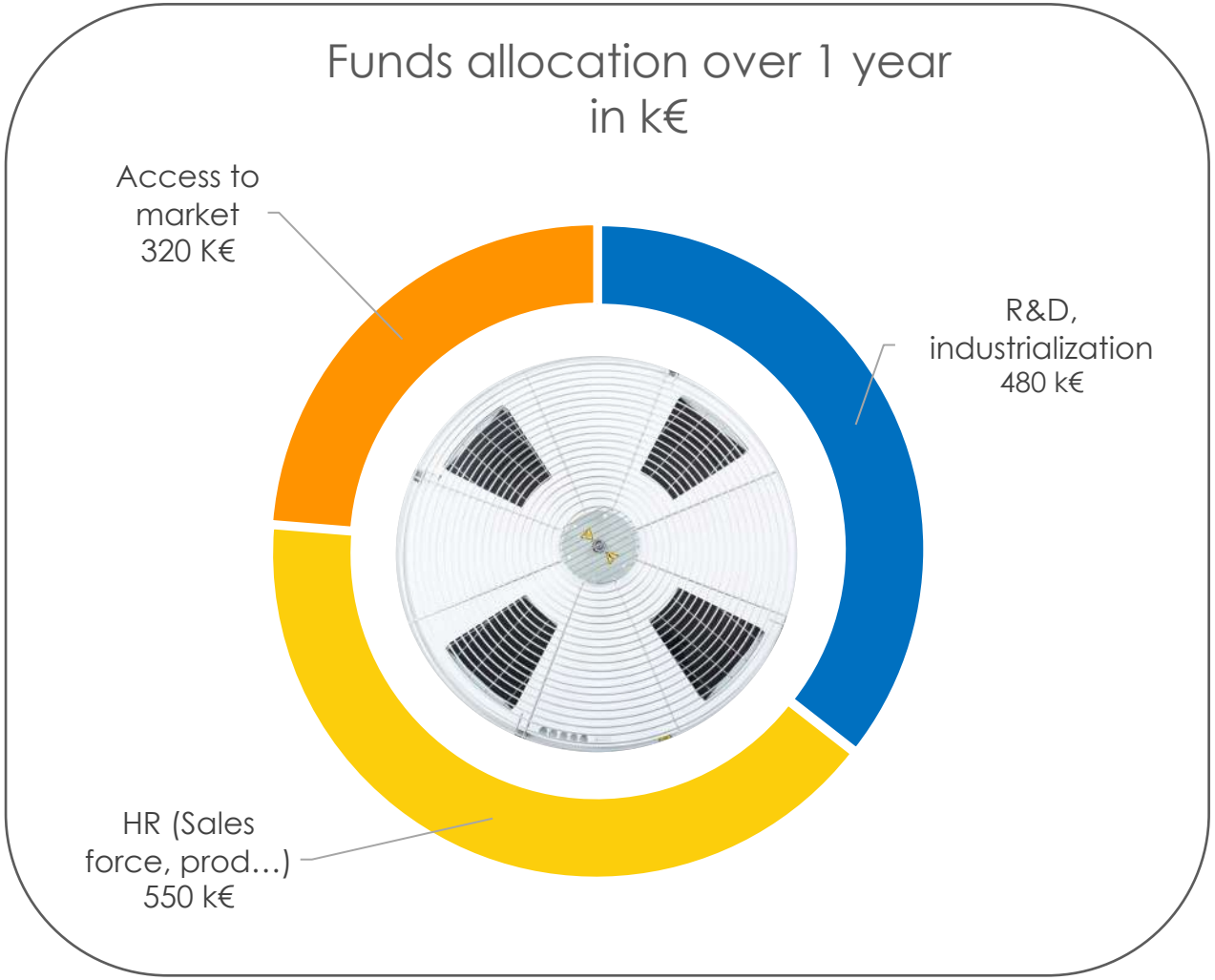
Increase of our production capacity – Investment in assembly line, tooling, measurement devices, test bench & associated labor force

Allocations of funds raised

Team reinforcement
41%

Research & Development + Structuring of production tool
36%

Access to market & customers acquisition
23%



Awards – Distinctive awards

Founders Program in January 2020

STATION F

Founders Program

Winner EDF Pulse 2019

EDF PULSE
PRIX START-UP
2019 Winner

Semi-finalist female founder challenge

VIVA TECHNOLOGY 16-18 MAI 2019 PARIS

Gold Innovation Winner -GIFA 2017

GIFA-LEPFIDA
INTERNATIONAL

Solar Impulse Label

In progress…

SOLAR IMPULSE EFFICIENT SOLUTION LABEL

Prix Coup de Cœur RETIF/ADEME 2016

pexe Les éco-entreprises de France

FORUM NATIONAL DES ECO-ENTREPRISES

ADEME
Agence de l'Environnement et de la Maîtrise de l'Energie

Winner Emergence Competition I-LAB, 2015

17e CONCOURS NATIONAL D'AIDE À LA CRÉATION D'ENTREPRISE DE TECHNOLOGIES INNOVANTES
i-LAB

Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

MINISTÈRE DE L'ENSEIGNEMENT SUPÉRIEUR ET DE LA RECHERCHE

FOLLOW US :

They talk about SAUREA

THE AUTONOMOUS SOLAR MOTOR


SAUREA
THE AUTONOMOUS SOLAR MOTOR
VIVA

APPENDICES

Forecast income statement

	2021	2022	2023	2024	2025
Total company turnover (ex. tax)	88 775 ¤	361 245 ¤	1 026 600 ¤	5 135 617 ¤	8 338 047 ¤
A. TOTAL OPERATING REVENUES	**88 775 ¤**	**361 245 ¤**	**1 026 600 ¤**	**5 135 617 ¤**	**8 338 047 ¤**
Purchases of raw materials and goods	63 047 ¤	232 962 ¤	665 381 ¤	3 328 601 ¤	5 434 539 ¤
+/- Change in stock of materials and goods					
+ Other purchases and external expenses	112 889 ¤	143 387 ¤	141 893 ¤	232 960 ¤	319 750 ¤
including sub-contracting	0 ¤	16 500 ¤	0 ¤	0 ¤	0 ¤
including leasing - royalties					
B. TOTAL CONSUMPTION FROM THIRD PARTIES	**175 935 ¤**	**376 348 ¤**	**807 273 ¤**	**3 561 561 ¤**	**5 754 289 ¤**
C. ADDED VALUE (A-B)	-87 160 ¤	-15 103 ¤	219 326 ¤	1 574 056 ¤	2 583 758 ¤
+ Operating subsidy	0 ¤	0 ¤	0 ¤	0 ¤	0 ¤
- Taxes	3 242 ¤	4 844 ¤	7 888 ¤	39 454 ¤	62 518 ¤
- Personnel expenses	268 675 ¤	441 824 ¤	474 428 ¤	662 525 ¤	961 838 ¤
D. GROSS OPERATING PROFIT	**-359 077 ¤**	**-461 772 ¤**	**-262 989 ¤**	**872 078 ¤**	**1 559 401 ¤**
- Depreciation charges	11 840 ¤	33 520 ¤	67 714 ¤	76 343 ¤	74 033 ¤
- Other operating charges					
+ Other operating income					
E. OPERATING PROFIT	**-370 918 ¤**	**-495 291 ¤**	**-330 704 ¤**	**795 735 ¤**	**1 485 369 ¤**
+ Financial revenues					
- Financial charges	4 523 ¤	6 490 ¤	0 ¤	0 ¤	0 ¤
F. CURRENT PRE-TAX PROFIT	**-375 441 ¤**	**-501 782 ¤**	**-330 704 ¤**	**795 735 ¤**	**1 485 369 ¤**
+ Exceptional income					
- Exceptional charges					
- Employee profit share					
- Income tax	-28 425 ¤	-47 695 ¤	-52 975 ¤	-53 255 ¤	318 595 ¤
G. RESULT OF THE EXERCISE	**-347 016 ¤**	**-454 086 ¤**	**-277 729 ¤**	**848 990 ¤**	**1 166 773 ¤**

Staff	6	8	9	13	17
CASH FLOW (G + depreciation + or - exceptional income)	**-335 175 ¤**	**-420 567 ¤**	**-210 014 ¤**	**925 333 ¤**	**1 240 806 ¤**

Business, Margin and Employment Forecasts

	2021	2022	2023	2024	2025
Number of units sold	26	118	392	1 961	3 137
including Motor Kits	17	65	196	981	1 412
including complete pumping systems	9	53	196	981	1 725
GENERATED TURNOVER	**88 775 ¤**	**361 245 ¤**	**1 026 600 ¤**	**5 135 617 ¤**	**8 338 047 ¤**
Cost price	61 196 ¤	232 962 ¤	665 381 ¤	3 328 601 ¤	5 434 539 ¤
PREDICTED NET MARGIN	**25 729 ¤**	**128 283 ¤**	**361 219 ¤**	**1 807 016 ¤**	**2 903 508 ¤**
Recruitment	-	4	1	4	5
Company global workforce (FTE)	4	8	9	13	17

Financial plan

	2021	2022	2023	2024	2025
EMPLOYMENT (a)					
Change in WCR (Working Capital Requirement)	12 872 ¤	4 497 ¤	30 060 ¤	176 947 ¤	127 032 ¤
Investment	61 233 ¤	103 775 ¤	191 063 ¤	52 058 ¤	
In-kind contribution					
Leasing investment					
Bank loans repayment	97 092 ¤	144 301 ¤	207 533 ¤	146 000 ¤	140 714 ¤
Repayment of incubator advances					
Repayment of current accounts					
Repayment of repayable advances					
Negative cash flow (Excl. R&D tax credit and subsidies)	363 601 ¤	468 262 ¤	272 138 ¤		
TOTAL EMPLOYMENT	**534 798 ¤**	**720 836 ¤**	**700 795 ¤**	**375 005 ¤**	**267 746 ¤**
RESSOURCES (b)					
Capital increase (founders)	600 000 ¤				
Capital increase (investors)		600 000 ¤			
In-kind contribution					
Current account					
TOTAL (quasi) EQUITY	**600 000 ¤**	**600 000 ¤**			
ST Bank loan					
MT/LT bank loan	250 000 ¤	250 000 ¤			
Leasing					
Advance and repayable loan					
Subsidies	11 840 ¤	33 520 ¤	67 714 ¤	76 343 ¤	74 033 ¤
Positive cash flow (excl. R&D tax credit and susidies)				865 657 ¤	1 148 991 ¤
R&D Tax credit (Y-1)		28 425 ¤	47 695 ¤	52 975 ¤	53 255 ¤
Tax debt					
TOTAL RESSOURCES	**861 840 ¤**	**911 945 ¤**	**115 409 ¤**	**994 975 ¤**	**1 680 570 ¤**
Period surplus (b) - (a)	327 042 ¤	191 109 ¤	-585 385 ¤	619 970 ¤	1 412 823 ¤
Beginning period surplus	192 000 ¤	519 042 ¤	710 151 ¤	124 766 ¤	744 736 ¤
SURPLUS	**519 042 ¤**	**710 151 ¤**	**124 766 ¤**	**744 736 ¤**	**2 157 559 ¤**

Income statement(Ex. Tax)

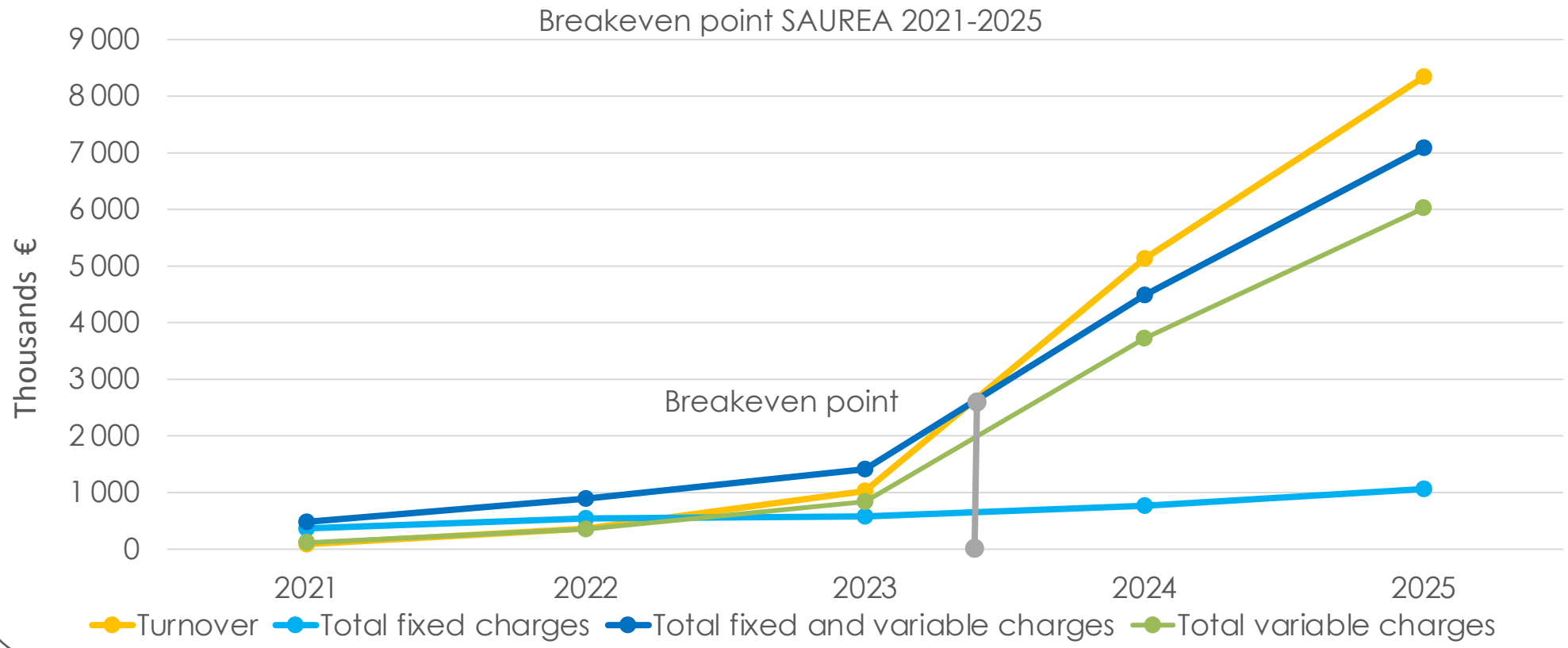
	2021	2022	2023	2024	2025
TURNOVER	**88 775 €**	**361 245 €**	**1 026 600 €**	**5 135 617 €**	**8 338 047 €**
Purchase and Production charges	63 047 €	232 962 €	665 381 €	3 328 601 €	5 434 539 €
GROSS MARGIN	**25 729 €**	**128 283 €**	**361 219 €**	**1 807 016 €**	**2 903 508 €**
	29.0%	35.5%	35.2%	35.2%	34.8%
External charges	112 889 €	143 387 €	141 893 €	232 960 €	319 750 €
ADDED VALUE (AV)	**- 87 160 €**	**- 15 103 €**	**219 326 €**	**1 574 056 €**	**2 583 758 €**
	-98.2%	-4.2%	21.4%	30.6%	31.0%
Taxes	3 242 €	4 844 €	7 888 €	39 454 €	62 518 €
Operating subsidies	- €	- €	- €	- €	- €
Personnel charges (Excl. YIC)	268 675 €	441 824 €	474 428 €	662 525 €	961 838 €
GROSS OPERATING MARGIN (EBITDA)	**- 359 077 €**	**- 461 772 €**	**- 262 989 €**	**872 078 €**	**1 559 401 €**
	-404.5%	-127.8%	-25.6%	17.0%	18.7%
Dépréciation charges	11 840 €	33 520 €	67 714 €	76 343 €	74 033 €
OPERATING PROFIT	**- 370 918 €**	**- 495 291 €**	**- 330 704 €**	**795 735 €**	**1 485 369 €**
	-417.8%	-137.1%	-32.2%	15.5%	17.8%
Financial charges	4 523 €	6 490 €	9 149 €	6 421 €	6 119 €
CURRENT PROFIT	**- 375 441 €**	**- 501 782 €**	**- 339 853 €**	**789 314 €**	**1 479 249 €**
	-422.9%	-138.9%	-33.1%	15.4%	17.7%
YIC (Employer's contribution and TSA)	- €	- €	- €	- €	- €
Loss carry-forward	- €	347 016 €	801 102 €	1 087 980 €	245 410 €
Corporate Tax	- €	- €	- €	- €	404 291 €
IYIC (Corporate tax exemption)	- €	- €	- €	- €	- €
R&D tax credit & Innovation Tax Credit & Competitiveness and Employment Tax Credit	28 425 €	47 695 €	52 975 €	53 255 €	85 696 €
Aid surpluses linked to European de minimis	- €	- €	- €	- €	- €
NET PROFIT	**- 347 016 €**	**- 454 086 €**	**- 286 878 €**	**842 569 €**	**1 160 654 €**
	-390.9%	-125.7%	-27.9%	16.4%	13.9%

Gross margin rate	41%	55%	54%	54%	53%
Net margin rate	-391%	-126%	-28%	16%	14%

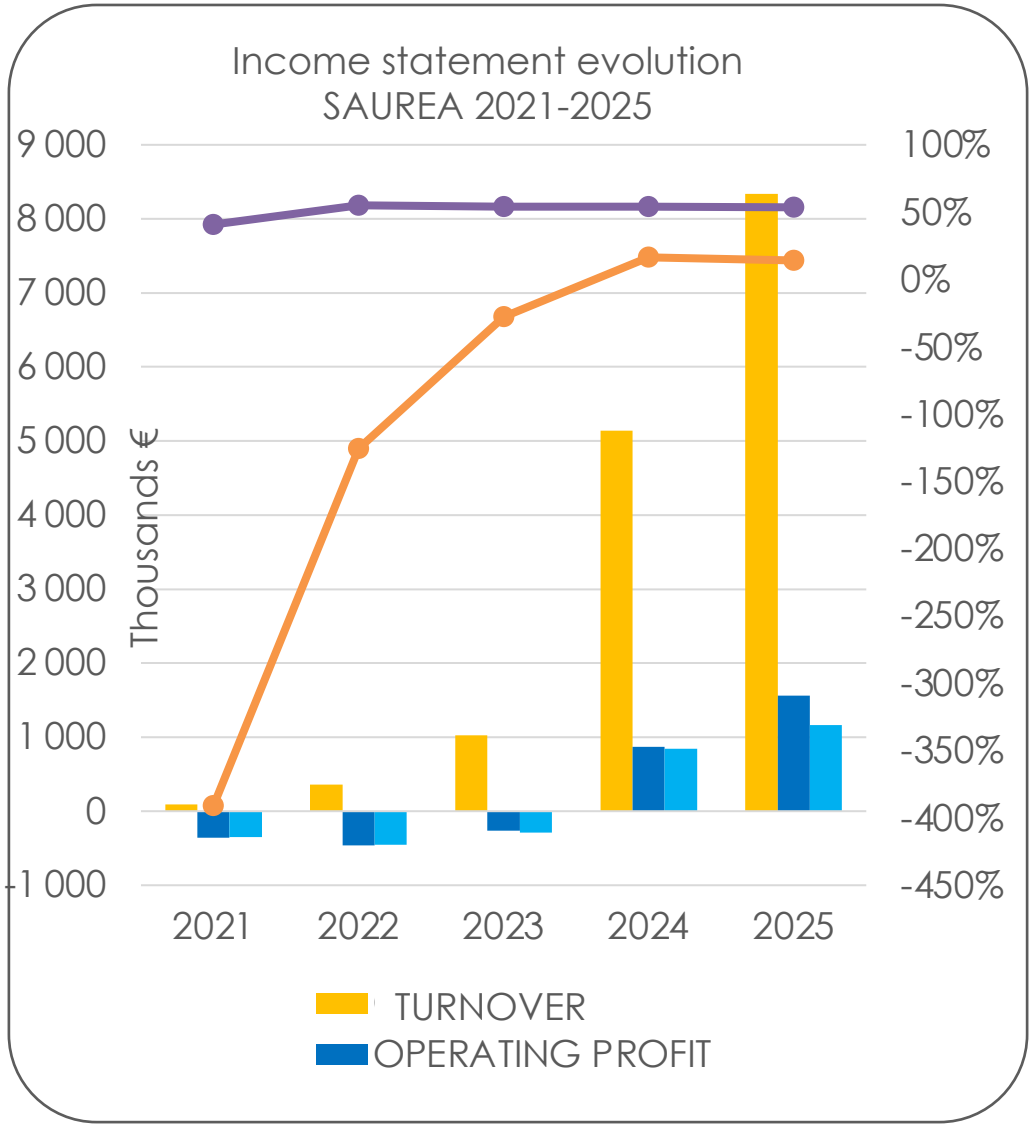
Fixed charges on external charges	94 369 €	94 369 €	94 369 €	94 369 €	94 369 €
Share of variable charges on fixed charges	18 520 €	32 518 €	47 524 €	138 591 €	225 381 €
Personal fixed charges	268 675 €	441 824 €	474 428 €	662 525 €	961 838 €
Personal variable charges	0 €	0 €	0 €	0 €	0 €
Activity variable charges	81 566 €	281 979 €	712 904 €	3 467 192 €	5 659 920 €
Other variable charges	15 083 €	38 364 €	75 602 €	115 796 €	136 551 €
Other fixed charges	4 523 €	6 490 €	9 149 €	6 421 €	6 119 €

Breakeven point

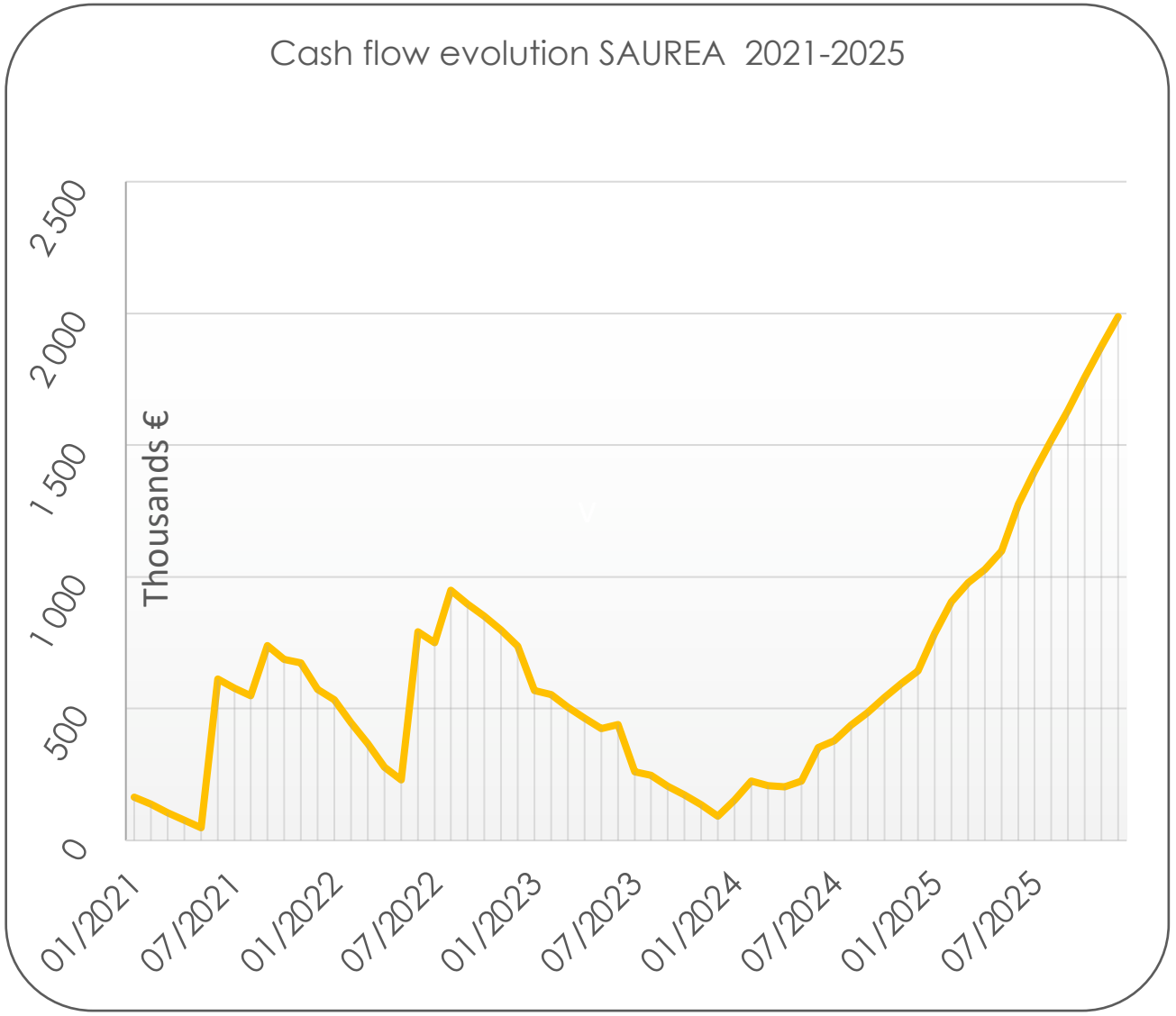
	2021	2022	2023	2024	2025
Turnover	88 775 €	361 245 €	1 026 600 €	5 135 617 €	8 338 047 €
Total fixed charges	367 567 €	542 683 €	577 946 €	763 315 €	1 062 327 €
Total variable charges	115 169 €	352 861 €	836 030 €	3 721 579 €	6 021 852 €
Total fixed & variable charges	482 736 €	895 544 €	1 413 976 €	4 484 894 €	7 084 179 €



Income statement



Cash flow



APPENDICES

Failures in conventional pumping

Solar pumps:

- 36% of solar pumps failed at least once[3]
- 43% of these failures are due to electronic components

Handpumps:

- 36% of handpumps are failing in Sub-saharan Africa[1]
- 22% of water points are not functional

Sources: 1-RWSN, 2- RWSN 2016, 3- UNICEF 2016

Failures in conventional pumping

SP2 (solar)
submersible motor pumps:

GRUNDFOS

- 2 years lifetime: pump rotors complete clogging due to sludge accumulation, subsequently causing an electrical problem with the submerged motor (sealing): not-repairable pump.

Source : PRACTICA

Failures in conventional pumping

Diaphragm motor pump:

- Defective pump regulator as from installation + Battery charge function non-functional
- After 30 days of operation, water entry into the motor : pump not-repairable
- Motor (carbons) brushes with advanced wear

Source : PRACTICA

Centrifugal & helical pumps:

- Sludge accumulation with 3 years lifetime as very sensible to water quality and to sand presence
- Helical rotor pump are less sensitive to water quality than centrifugal pumps

Source : PRACTICA

APPENDICES

Barriers to entry PATENTS

Pays	N° de dépôt	Date de dépôt	N° de délivrance	Date de délivrance	Prochaine annuité	Déposant(s)	Titulaire(s)
Famille 1 - MOTEUR PHOTOVOLTAÏQUE AUTOCOMMUTE							
Allemagne	EP10707324.9	20/01/2010	EP2380261	13/04/2016	31/01/2021	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
France	EP10707324.9	20/01/2010	EP2380261	13/04/2016	31/01/2021	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
Suisse	EP10707324.9	20/01/2010	EP2380261	13/04/2016	31/01/2021	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
Famille 2 - MOTEUR PHOTOVOLTAÏQUE AUTOCOMMUTE A BOBINE FRACTIONNEE							
France	FR1253030	03/04/2012	FR2988930	18/04/2014	30/04/2021	Alain COTY SANDYC INDUSTRIES	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
Famille 3 - MOTEUR PHOTOVOLTAÏQUE MIXTE							
France	FR1060544	15/12/2010	FR2969423	30/08/2013	31/12/2020	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
Famille 4 - MOTEUR PHOTOVOLTAÏQUE AUTOCOMMUTE A PUISSANCE AUGMENTEE							
France	FR1059757	25/11/2010	FR2968146	28/12/2012	30/11/2020	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
Famille 5 - TRANSISTOR A EFFET PHOTOVOLTAÏQUE ET MOTEUR PHOTOVOLTAÏQUE A PUISSANCE AUGMENTEE ASSOCIE							
France	FR1459605	07/10/2014	FR3026893	12/01/2018	02/11/2020	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
Espagne	EP15777649.9	02/10/2015	EP3204964	22/08/2018	02/11/2020	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
France	EP15777649.9	02/10/2015	EP3204964	22/08/2018	02/11/2020	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
Portugal	EP15777649.9	02/10/2015	EP3204964	22/08/2018	02/11/2020	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE
Turquie	EP15777649.9	02/10/2015	EP3204964	22/08/2018	02/11/2020	Alain COTY	SAUREA 8 Rue Marcelin Berthelot - 89000 AUXERRE

APPENDICES

Key partners

Institutionnels : Initiactive 89 · aer · Initiative France · bpifrance

R&D

ENS CACHAN · SATIE · GeePS · Photowatt TECHNOLOGIES · EDF

Production

SOL TECH – SOL INVICTUS GROUP · S'TILE · 2E WINDINGS – ELECTRIC ENGINES WINDINGS

Assemblage final : SAUREA – THE AUTONOMOUS SOLAR MOTOR

Partnership with ESF Electriciens sans frontières on a project convention

Electriciens sans frontières

For REX = Experience feedback over 5 years

Partnerships with distributors, resellers

RICOCHET INTERNATIONAL · GRILLOT Fabricant de Pompes