

TINY WIND TURBINE (TWT)



**Innovative solution making affordable wind energy
for off-grid communities**

Vietnam, 2024

GOAL SETTING



Vision

Become well-known on the international market and be able to participate in wind farms.

Mission

Pioneer in accessible wind energy.

Social impact goal

Improve standard of living

Develop local economy

Creating jobs

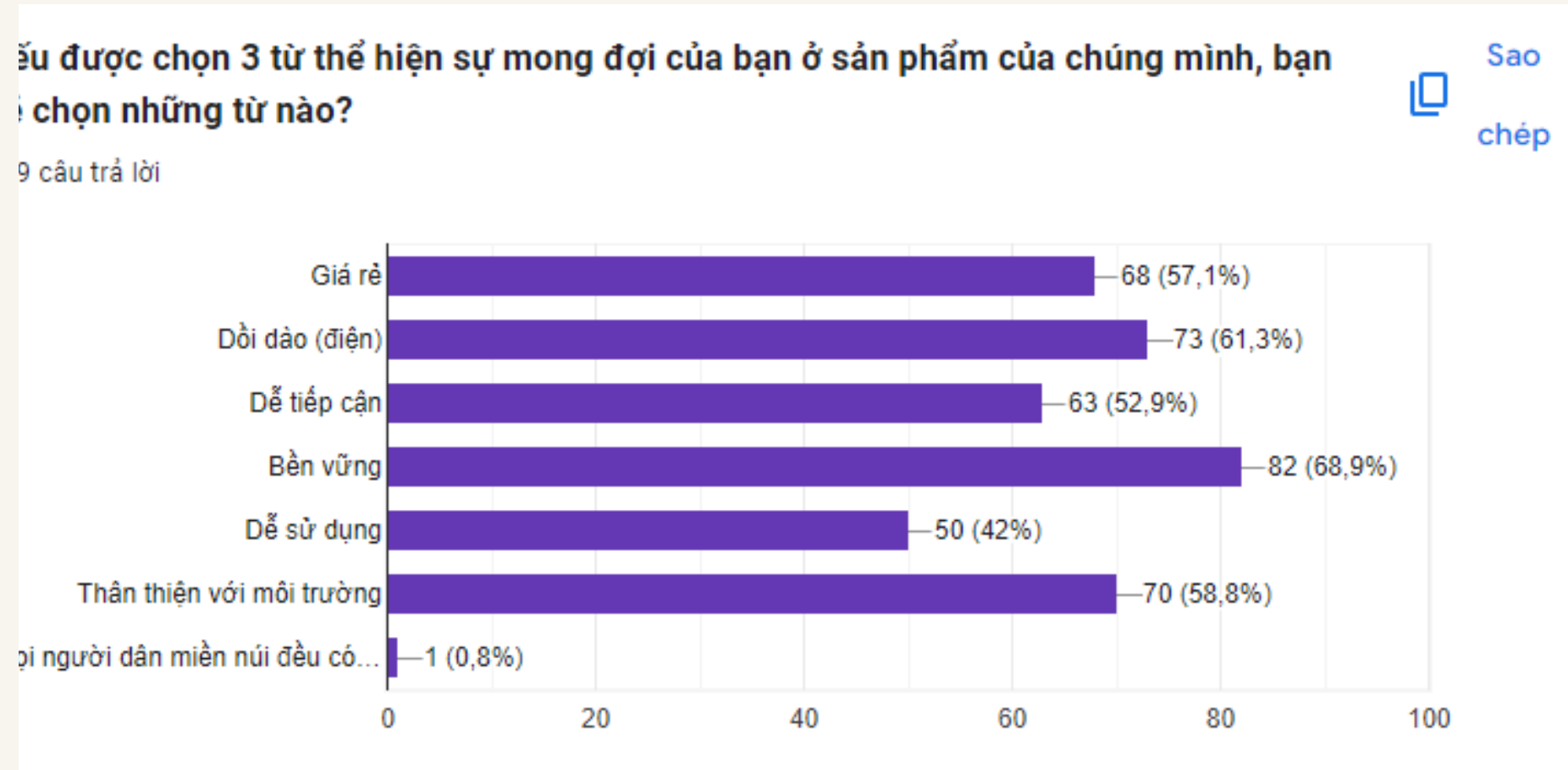
Protect environment

Develop sustainable energy

GOAL SETTING



Evidence for Social impact goal



“According to **Mr. Dinh Ba Thinh**, Deputy Head of the Economic and Infrastructure Department of Tua Chua district, currently in the district there are still **9/120** villages and hamlets that **do not have electricity from the national grid** and **65 villages and hamlets** that have electricity but only a part of it. A population group with a total of **1,715 households scattered in 12/12** communes and towns that **have not yet used the national grid**”

Newspaper named Dien Bien Phu (10-2023)



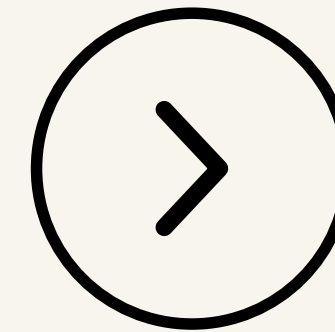
ENVIRONMENT ANALYSIS

Macro Environment



ECONOMY

- Lack of infrastructure
- Difficulty in production and consumption
- Low income
- Difficulty in accessing information and services
- Support Policy
- Distance from the mainland
- Depends on the sea source



- Facilitating economic growth in a sustainable and inclusive way
- Promoting the progress and development of communities and nations

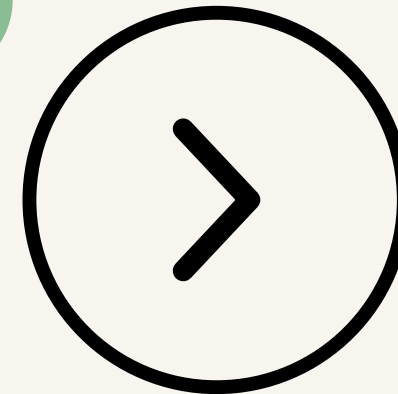
ENVIRONMENT ANALYSIS

Macro Environment



SOCIETY

- green consumption trend



Wind turbines are the optimal solution to that trend.

- TWT design
- TWT's approach
- Reduce energy costs, but also save time and effort.
- Minimize the negative impact on the environment

ENVIRONMENT ANALYSIS

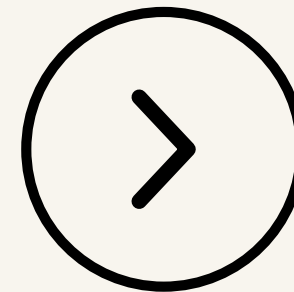
Macro Environment



ENVIRONMENT



- Vietnam's potential for developing and generating wind energy is considerable



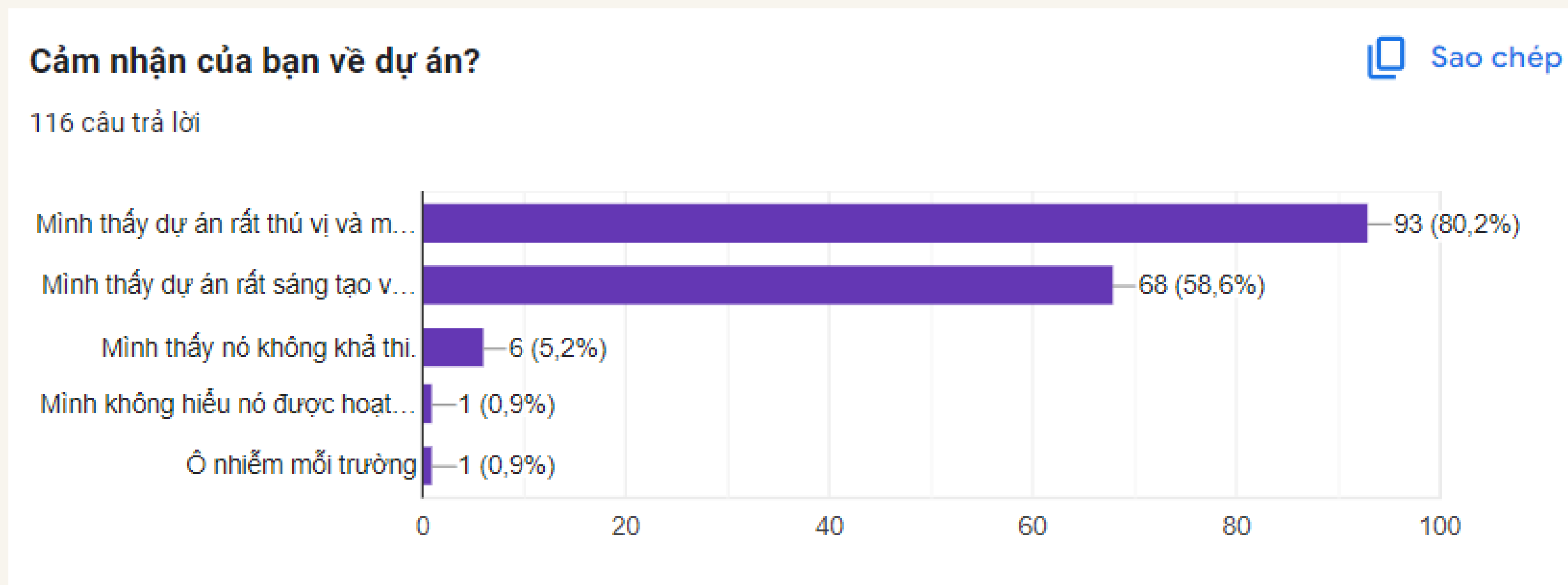
- Make effective use of the environmental conditions and available energy resources of Viet Nam's territory.
- Offshore wind power extraction has a positive impact on the environment.

ENVIRONMENT ANALYSIS

Macro Environment



Evidence 1: A popular product on the market



ENVIRONMENT ANALYSIS

Macro Environment



Evidence 2: It's a big potential market

- In the Consumer Habits Survey - December 2021, PwC surveyed 9,370 respondents living in 26 territories and countries, including Vietnam, showing that today's consumers are more concerned about the environment. More than 47% of respondents said they prefer to use self-destructive products.

SOCIETY (Green consumption trend)

- The International Declaration and National Plan of Action on Sustainable Production and Consumption (1999), legal instruments relating to the protection of consumer rights; The Law of Energy Saving, Efficient Use; International Declaration on Clean Production (1999).
- “The eco-label program” (Ministry of Resources and Environment); along with “The energy-saving labels” (Minister of Commerce); and “The ecological labels for the tourism industry” were also implemented. In Viet Nam's National Strategy for Green Growth 2021-2030 and Vision 2050.

ENVIRONMENT ANALYSIS

Macro Environment



ECONOMIC BENEFITS

- Remove infrastructure barriers and provide people with access to clean and stable energy, thus facilitating production, commerce and service operations
- The use of distributed wind turbines reduces dependence on fossil energy sources, thereby reducing the risks associated with energy price volatility and enhancing energy supply diversity.
- Businesses and communities can leverage this renewable energy to create community and business projects, thereby generating income, jobs and growth opportunities.

Goal setting

Environment analysis

Strategic business

Value chain

Business model canvas

Learning curve

ENVIRONMENT ANALYSIS

Macro Environment



Evidence 2: It's a big potential market



ENVIRONMENT

- Vietnam is considered to have the best wind resources in Southeast Asia. Located in the winter climate and shaped by more than 3,000 kilometers of coastline.
- The theoretical wind power potential is about 379 GW. Of these, coastal wind potential reaches about 217 GW (wind speeds greater than 6 m/s), while offshore wind potential is about 162 GW.

ENVIRONMENT ANALYSIS

Micro Environment

CUSTOMER BARGAINING POWER

1. The remote people can't make up for themselves, they're dependent on the support of the community.

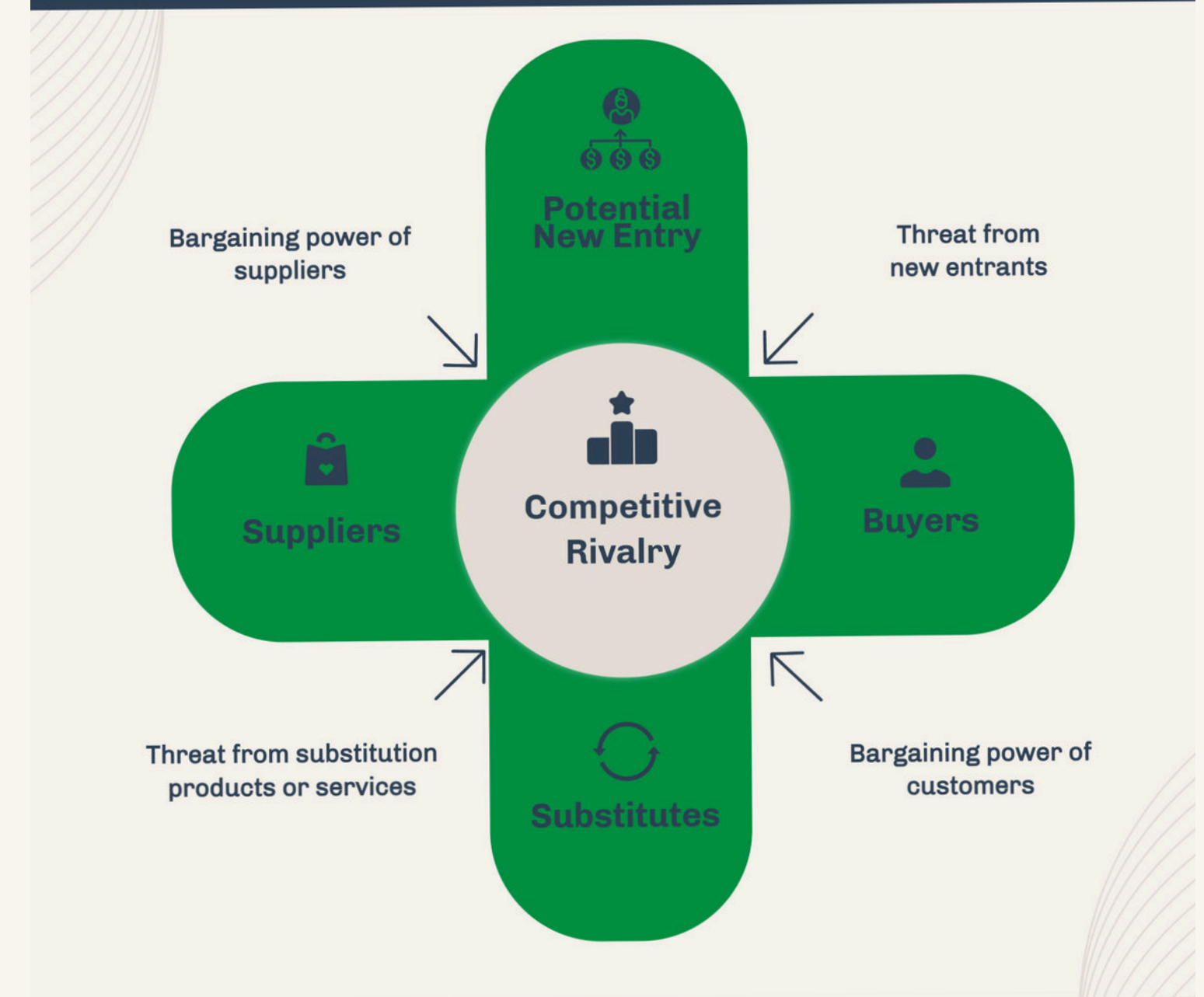
=> Businesses will call on investment funds, to export with state programmers to invest TWT instead of other more expensive forms.

2. Ordinary households in the area have the advantage of wind so they want to take advantage of it. They don't have investment experience, they may have financial constraints.

=> The business will set up an investment fund that calls on people to contribute or start projects with the bank to get capital. As long as people contribute about 30 percent of the dividend, they'll spend it on expanding investments.



PORTER'S FIVE FORCES



ENVIRONMENT ANALYSIS

Micro Environment

SUPPLIER

Major products like generators or electronic components will be imported from different brands such as: Vietnam Power Generator Co., Ltd., Nguyen Gia Technology and Equipment Co., Makawa Technology Equipment Ltd.

RIVALRY, NEW ENTRANTS

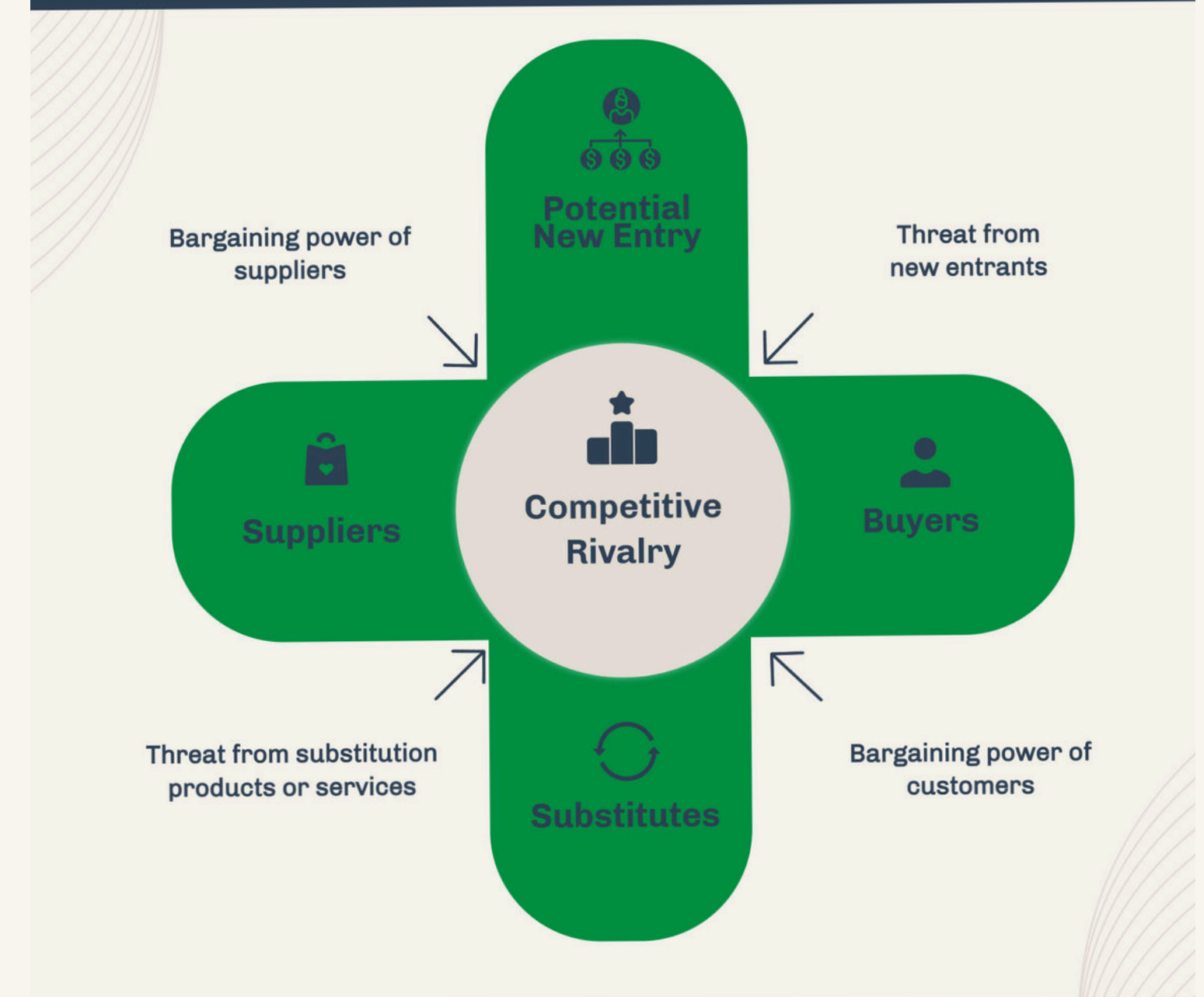
There is no product on the market with the same design as the Tiny Wind Turbine that is aimed at consumers who do not have access to electricity.

THREAT OF SUBSTITUTES

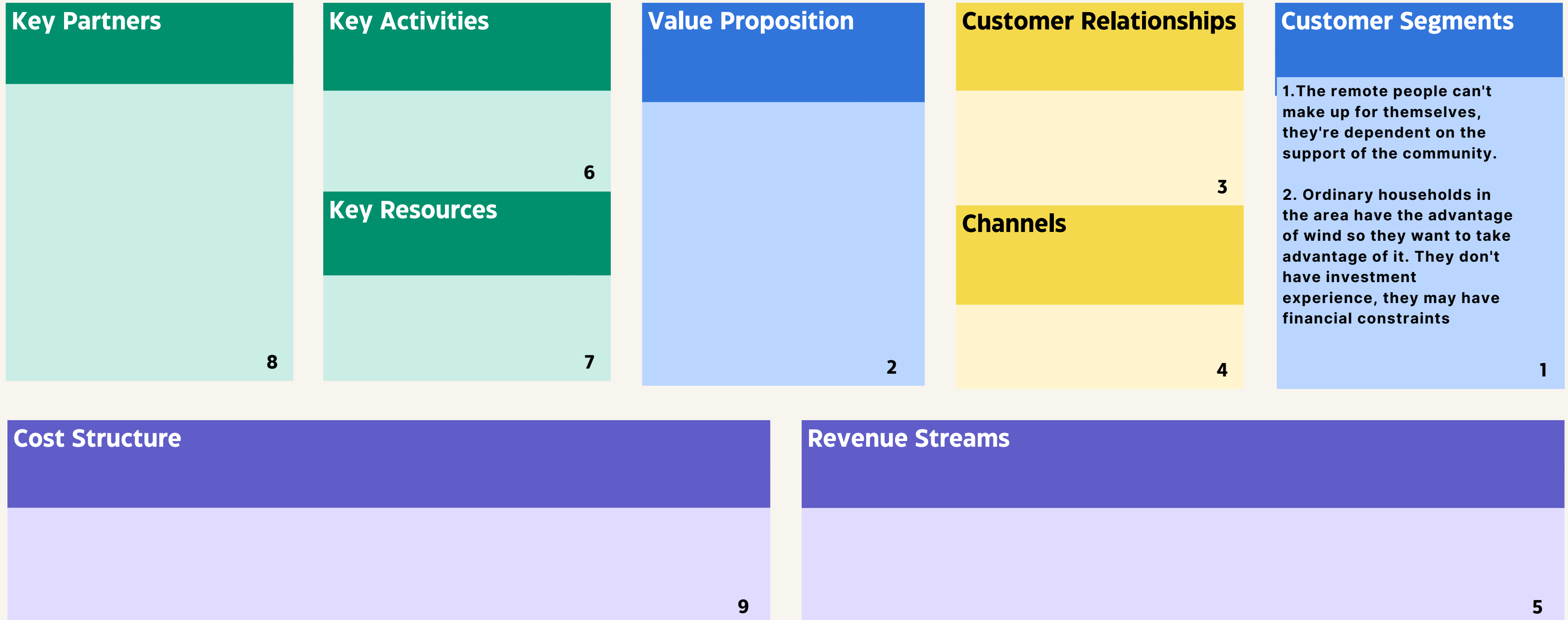
No threats



PORTER'S FIVE FORCES



Business Model Canvas

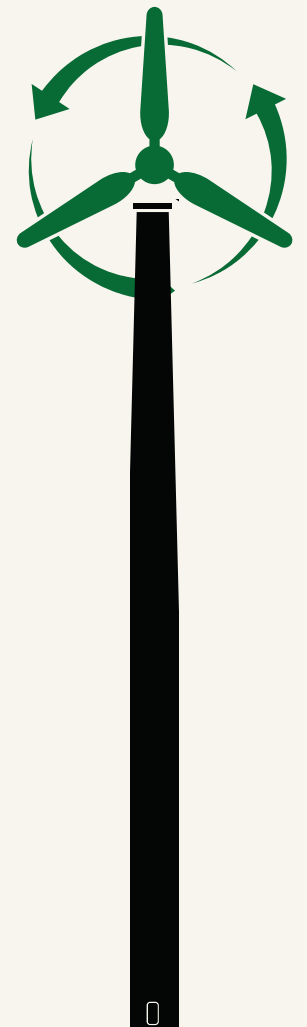


STRATEGIC BUSINESS

Product links with ESG goals

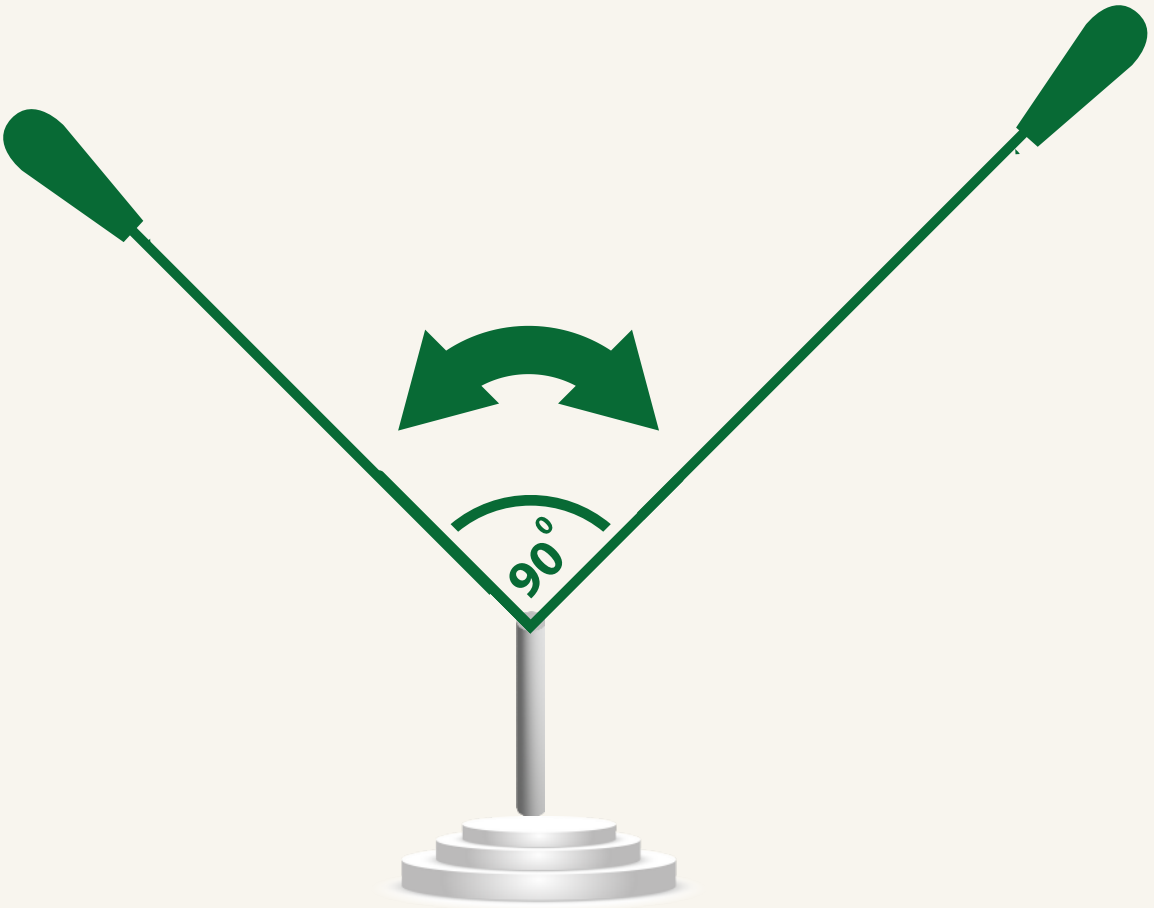


Comparative between: HAWT & TWT



HAWT

VS



TWT

STRATEGIC BUSINESS

Product links with ESG goals

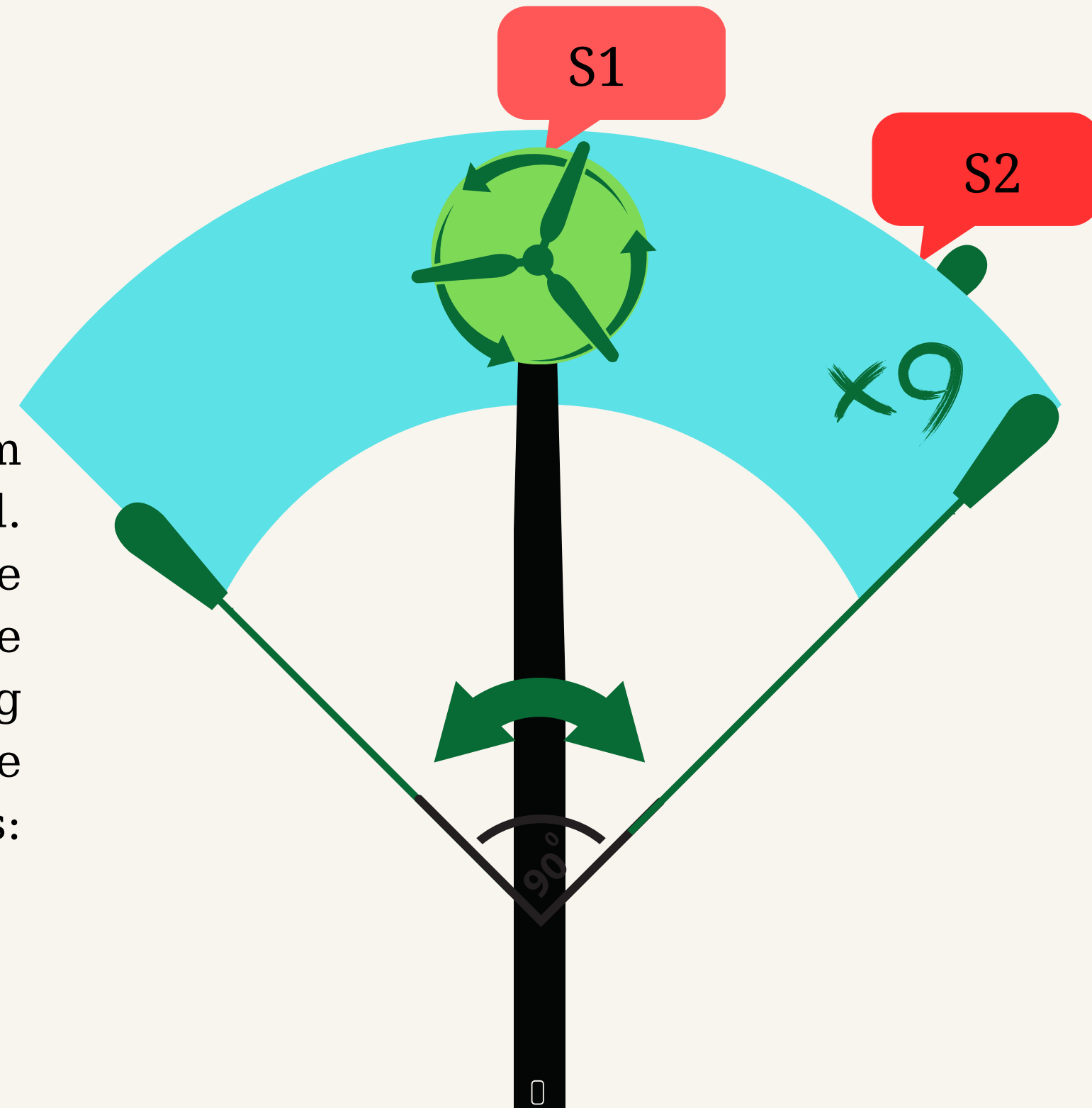


Cost reduction due to the advantage of swept area

"For example, a HAWT with a blade span of $2R=4\text{m}$ must be raised to a height of 23m to capture wind. When converted to a HAWT-WB with the same wind-catching height and blade length R , the turbine axis is positioned at a height of 3m (using extension arms $l_1=18\text{m}$, $l_2=16\text{m}$). In this case, the increased area is calculated as:

$$S1/S2 = 3.142^2 / 3.14(20^2 - 16^2) / 4 = 9$$

=> S2=9 times S1."



3.5

Goal setting

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Business model canvas

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STRATEGIC BUSINESS

Product links with ESG goals



Current Status of Wind Power

E

S

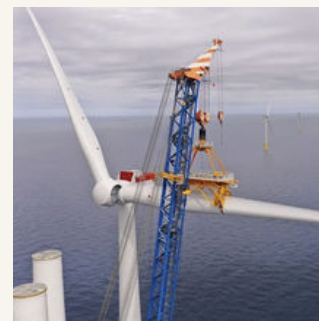
G

Gia Lai: Cánh quạt điện gió gây gập, nhiều mảnh vỡ rơi xuống đất canh tác



Chỉ trong một tuần, trên địa bàn tỉnh Sóc Trăng xảy ra 2 vụ gãy cánh quạt điện gió. Vụ việc làm nhiều hộ dân hoang mang, lo lắng.

Ngày 22.11, ông Võ Văn Chiêu, Giám đốc Sở Công thương tỉnh Sóc Trăng, cho biết ngày 21.11, trên địa bàn xã Vĩnh Hải (TX.Vĩnh Châu) xảy ra sự cố gãy cánh quạt điện gió thuộc Dự án nhà máy điện gió Quốc Vinh. Rất may, vụ gãy cánh quạt điện gió không gây thương vong về người.



<https://www.facebook.com/watch/?ref=saved&v=655520572286548>



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STRATEGIC BUSINESS

Product links with ESG goals



S

Thanks to the compact design, the assembly process is also easier

E

TWT is designed with an intelligent system that automatically folds the turbine boom when the wind speed becomes too high.

G

By placing the center of gravity of the TWT relatively low, installation costs are reduced while ensuring safety for workers in case of accidents.

STRATEGIC BUSINESS



Competitive advantages

- Being especially effective on a mini scale (bringing 2-5 times more electricity than traditional turbines)
- Install onshore and offshore
- Not effect on the landscape, environment and microclimate wind disturbances

Evidences

- In the design of the new generation wind turbine, the turbine blades do not rotate around the axis but are installed on extension rods.
- These rods have a height equal to the height of a comparable traditional turbine. Each turbine requires two opposing rods, rotating on a horizontal axis in the direction of the wind.
- The waving angle is 90-120 degrees depending on the terrain and working status. In addition, the turbine is also connected to the server to measure technical indicators, support automatic operation and disaster prevention solutions.

STRATEGIC BUSINESS

Corporate level strategy



Centralized growth strategy
Market penetration strategy



VALUE CHAIN



Value proposition

Customer Jobs

- Fisherman
- Farmer

Product and service

- Wind turbines with modern, compact design and efficient operation without requiring too many operating conditions

Gains

- Having a favorable geographical location for exploiting wind resources

Gains Creator

- Take advantage of available wind power to maintain electricity production

Pains

- Limited understanding of investment knowledge, financial, not taking advantage of available resources

Pains Relievers

- Wind turbines help to maintain cheap electricity
- Wind turbine help continuous power sources to increase production productivity



Goal setting

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Value chain

Business model canvas

Learning curves

Business Model Canvas



Key Partners

8

Key Activities

6

Key Resources

7

Value Proposition

- Help to maintain cheap electricity
- Help continuous power sources to increase production productivity

2

Customer Relationships

3

Channels

4

Customer Segments

1. The remote people can't make up for themselves, they're dependent on the support of the community.

2. Ordinary households in the area have the advantage of wind so they want to take advantage of it. They don't have investment experience, they may have financial constraints

1

Cost Structure

9

Revenue Streams

5

VALUE CHAIN

Crowdfunding activities



1. TARGET INVESTOR

- **Demographics:**
 - Age: 30-50
 - Location: around country
- **Psychology:** Have a green lifestyle, prioritize choosing products that have a positive impact on the community and the environment. Besides, there is also a desire to have a secondary source of income besides the main source of labor.
- **Behavioral:** Follow communities and groups about financial investment.

2. OBJECTIVE

- **Fund objective:** Collected 1 billion VND through calling for investment.
- **Communication objective:** Raising public awareness of renewable energy sources, moving towards a green lifestyle, a sustainable lifestyle, and having a positive impact on the environment.



JOB TO BE DONE

- GET** *People in developed societies always want to **pioneer in contributing** to creating a more sustainable and developed social community.*
- DO** ***Feel proud** that they have contributed to the community.*
- BY** *Bringing investors advanced, energy-saving wind turbine solutions to **spread green lifestyle to people***

VALUE CHAIN

Crowdfunding activities



Strategic approach

- 1. *Storytelling:*** Create an inspirational story about the wind power project, about the origin of the product and the dream of Mr. Phong who is project own.
- 2. *Fundraising strategy:*** Divide sponsorship packages into each segment: copper, silver, gold, diamond to suit each investor's payment level and individual benefits.
- 3. *Community building strategy:***
 - Create a social network Fan page on Facebook to connect with product project supporters.
 - Organize community events to share information about project products, attract participation and build community.
 - Build cooperative relationships with non-governmental organizations (NGOs) and businesses operating in the field of environment and energy.

Goal setting

Environment analysis

Strategic business

Value chain

Business model canvas











Learning curves

VALUE CHAIN

Crowdfunding activities

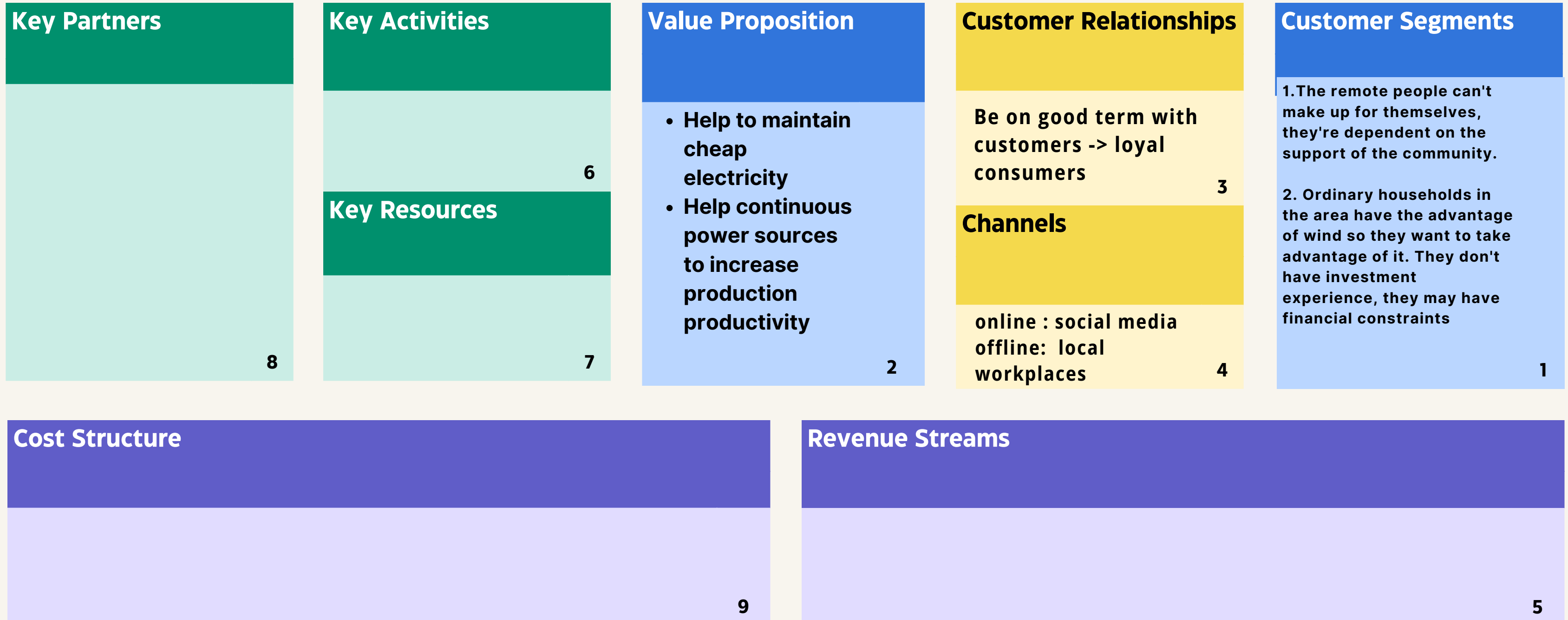
ROADMAP PLAN



	TRIGGER	ENGAGE	AMPLIFY
Timing	1 month	2 months	3 months
Objective	Evoke investors' motivation to contribute meaningfully to the social community.	Encourage potential investors to join the community, interact and respond with practical values.	Spread positive values and project potential to the community.
Key hook	TVC with key message: "The wind not only brings freshness but also carries warm hearts to life in faraway places"	Deploy a survey trip to coastal neighborhoods on the issue of electrical wiring and fishermen's activities when power sources are limited.	Webinar shares knowledge about wind energy sources and applications to demonstrate turbine potential in investment.
CHANNELS	  	  	   
SUPPORT TACTICS	<ul style="list-style-type: none"> • PR MARKETING • TVC • GROUP SEEDING • COMMUNITY PAGES 	<ul style="list-style-type: none"> • PR MARKETING • OOH • GROUP SEEDING • COMMUNITY PAGES 	<ul style="list-style-type: none"> • PR MARKETING • OOH • GROUP SEEDING • COMMUNITY PAGES



Business Model Canvas



VALUE CHAIN

Key Activities



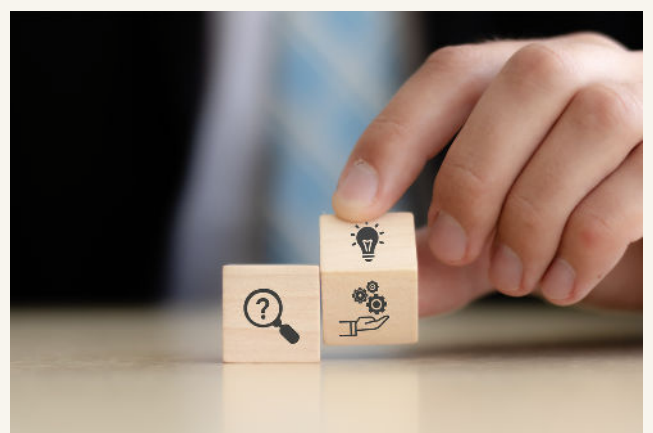
Develop an IoT system for remote monitoring of systems and devices



Study the mechanism for lowering the crane boom when wind speed exceeds the allowable limit.



Continuously research and explore new solutions to enhance turbine efficiency.



Send engineers abroad to learn and acquire the latest scientific and technical advancements.



Goal setting

Environment analysis

Strategic business



Value chain

Business model canvas

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Business Model Canvas



Key Partners

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Key Activities

- System development
- Human resource development
- Performance enhancement

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Key Resources

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Value Proposition

- Help to maintain cheap electricity
- Help continuous power sources to increase production productivity

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Customer Relationships

Be on good term with customers -> loyal consumers

Channels

online : social media
offline: local workplaces

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VALUE CHAIN

Key Partnership



IN STEP: DEVELOPING & TESTING

- **Funding and Research Partners:** Collaborate with organizations that can provide financial support and expertise for research and development activities.
- **Legal Advisory Partners:** Engage legal consultants to assist with business establishment, intellectual property protection, and regulatory compliance.
- **Policy Advocacy Partners:** Partner with representatives and policy brokers to advocate for social impact investments and favorable policies.



IN STEP: Making the Case

- **Manufacturing Partners:** Establish partnerships with manufacturers or component suppliers for production of devices or equipment.
- **Financial Lending Partners:** Collaborate with financial institutions to offer installment purchase plans for project implementation.
- **Social Financial Organizations:** Partner with organizations that provide access to electricity and other essential services in underserved areas.
- **Legal and Implementation Consulting Partners:** Engage consultants to advise on legal procedures, intellectual property protection, and project implementation strategies.
- **Government**

Goal setting

Environment analysis

Strategic business

Value chain

Business model canvas

Learning curves

Business Model Canvas



Key Partners

Related manufacturing units, investors, and financial entities.

Key Activities

- System development
- Human resource development
- Performance enhancement

Key Resources

Value Proposition

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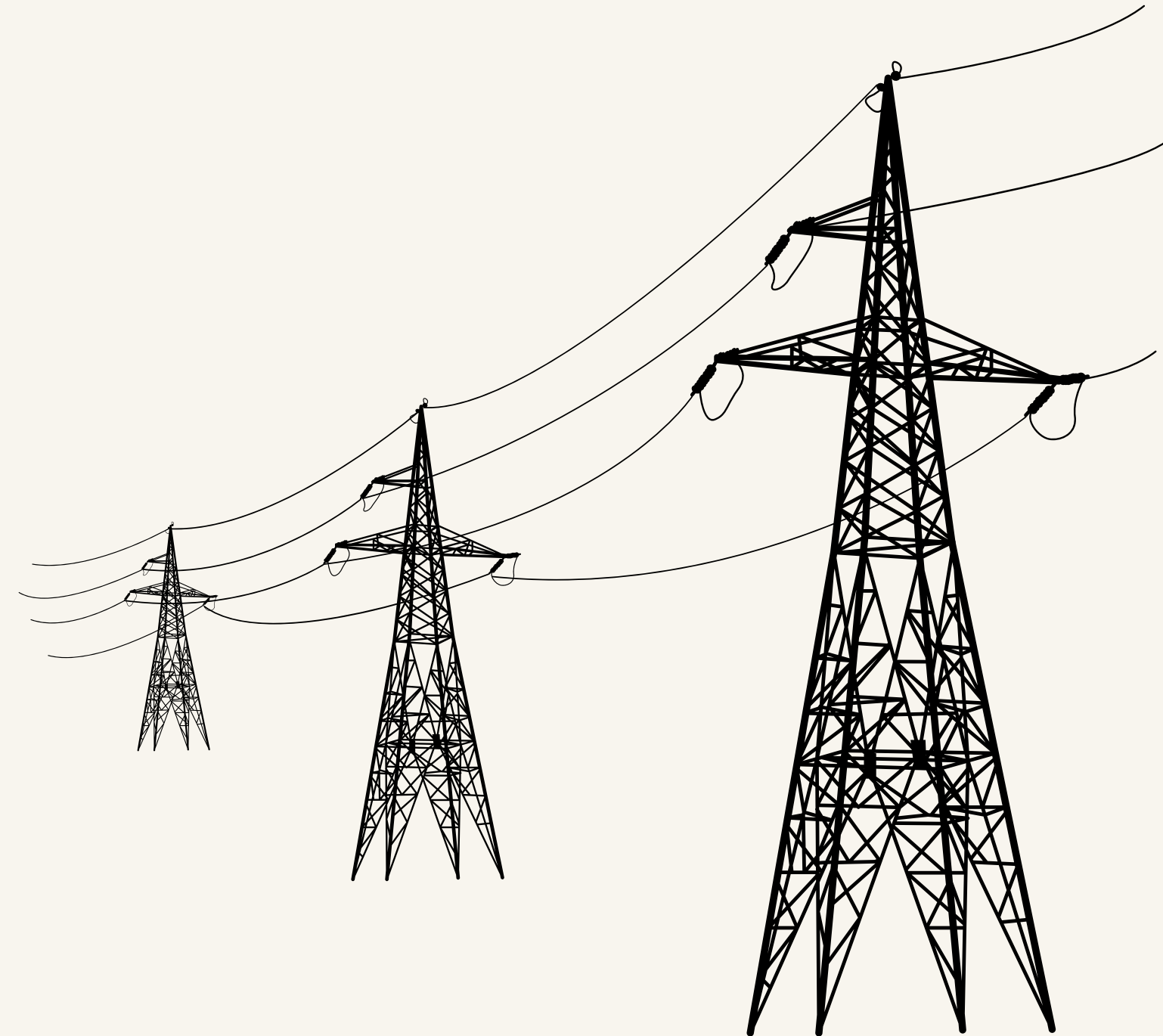
Key Resources

Human Resources

- Professors and PhDs from universities such as Foreign Trade University, Phenikaa University, and Vietnam National University.
- Leading experts in mechanics, dynamics, and economics.

Financial Resources

- Self-funding
- Funds raised from family, relatives, and friends.



Goal setting

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VALUE CHAIN

Key Resources

MEMBERS



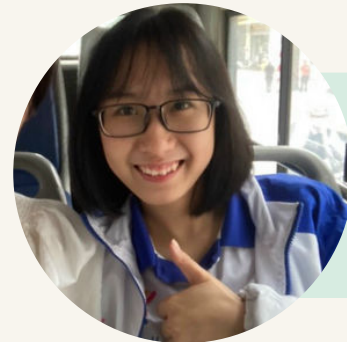
Mai Quoc Phong
Leader



Nguyen Van Thang
Member



Vu Thi Tuong Minh
Member



Nguyen Thi Dieu Linh
Member



Dau Van Kien
Member



Nguyen Le Minh Duong
Member



Chu Thao Linh
Member



Do Thi Thanh Hien
Member



Nguyen Tien Dat
Member

Business Model Canvas



Key Partners

Related manufacturing units, investors, and financial entities.

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Key Activities

- System development
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Key Resources

- Human Resources
- Financial Resources
- Infrastructure

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VALUE CHAIN

SROI Model - Social Return On Investment



Stage 1		Stage 2	
Stakeholders	Intended/Unintended changes	Input	Output
Mountainous and sea - based residents	Standard of living will be enhanced		
	Improve standard of livings including education, culture, medical areas, daily life		

Trang tinh1



Goal setting

Environment analysis

Strategic business

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VALUE CHAIN

Anticipated Budget



**The company's 12-month research goals:
There are about 50kW of initial order capacity (10/25 products with capacity from 2-5kw)**

Indicator	Value (VND)	Unit (VND)
Revenue	521.250.000	10.425.000
Variable cost	417.000.000	8.340.000
Contribution margin	104.250.000	2.085.000
Fixed cost	592.800.000	
Profit	-488.550.000	

VALUE CHAIN

Anticipated Budget



$$\text{Break event point (quantity)} = \frac{\text{Fixed cost}}{\text{Contribution margin/unit}} = 284\text{kW}$$

$$\text{Break even point (value)} = \frac{\text{Fixed cost}}{\text{Contribution margin/unit}} = 2.964.000.000 \text{ VND}$$

Business Model Canvas



Key Partners

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**The company's 12-month research goals:
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(10/25 products with capacity from 2-5kw)**

5

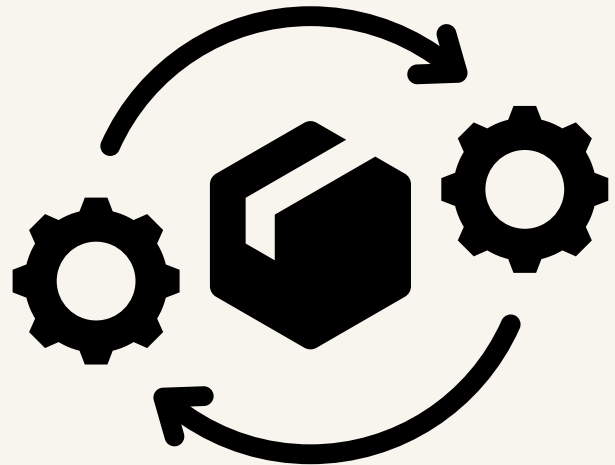
VALUE CHAIN

Cost structure



Fixed cost:
Salaries of administrative staff
Salary deductions
Depreciation
Marketing costs

Variable cost:
Material cost
Shopping cost
Outsourcing cost



Business Model Canvas



Key Partners

Related manufacturing units, investors, and financial entities.

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Cost Structure

Fixed costs: 592,800,000 VND
Variable costs: 417,000,000 VND

9

Revenue Streams

The company's 12-month research goals:
There are about 50kW of initial order capacity (10/25 products with capacity from 2-5kw)

5

LEARNING CURVE



BEFORE

- **Thinking**
focus on what we really wanted bring for customers from 1 side
- **Business model**
Have no idea about process to make strategy as well as model for business



AFTER

- **Design thinking**
Empathy- define-prototype - test - deliver&sale- empathy-...- final product
- **Business model canvas**
9 elements linked with ESG logically

**THANK YOU
VERY MUCH!**

