



**RURAL ELECTRIFICATION AGENCY**  
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# **UNVEILING THE REF RESEARCH AND INNOVATION HUB**

**MARCH 2021**



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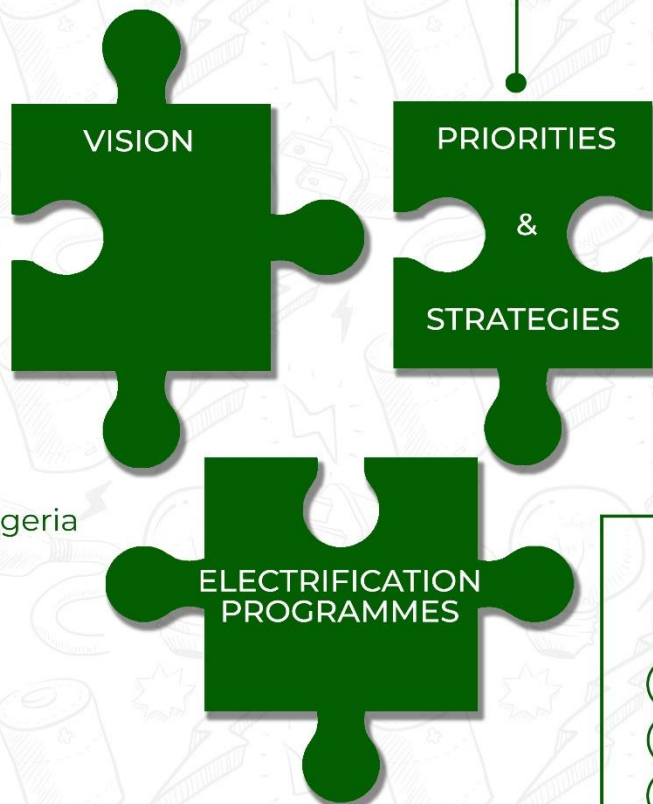
REF RESEARCH AND INNOVATION HUB





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# RURAL ELECTRIFICATION AGENCY



## OUR VISION

Support Acceleration of access to Electricity in Rural communities in Nigeria

## OUR PRIORITIES & STRATEGIES

- ▶ On Unserved & Underserved Communities
- ▶ PPP

## ELECTRIFICATION PROGRAMMES

### ELECTRIFICATION PROGRAMMES

- REA CAPITAL PROJECTS
- REF Projects
- IMAS
- MAS
- NEP

### INFRASTRUCTURE PROJECTS

Grid Extension  
Mini Grids  
Isolated and Interconnected

### NON INFRASTRUCTURE PROJECTS

Solar Home Systems  
Residential and Productive

*Towards improving the Grid and providing innovative solutions for Rural Electrification and in the long run achieving the Targets of the FGN and the NDCs*



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# REA ELECTRIFICATION TARGETS

## STATUS

Between **2017** and **2019**, the REA and REF have recorded between **2-3%** increase in the rural electrification rate. However, the REA through its Rural Electrification Strategy and Implementation Plan (RESIP) is committed to electrifying about **1.1 million** households annually until **2025**.

## GOAL OF THE FGN

The goal of the FGN is to increase electricity access to **75%** and **90%** nationally by **2020** and 2030 respectively (both urban and rural) with at least **10%** of renewable energy mix by **2025**. With current achievements recorded by the REA and REF projects, it is estimated that urban and rural customers currently have about **60%** and **40%** access to electricity of respectively.

## STRATEGY

About **6,000 MW** of rural electrification is required to deliver power to more than **10 million** additional rural households (assuming **7** persons per household). Achieving this would take the rural electrification rate to **60%**.





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# OBJECTIVES AND FUNCTIONS OF RURAL ELECTRIFICATION FUND (REF)

## OBJECTIVES

Section (13) of the EPSRA, 2005 mandates that the REF is used to promote, support and provide rural electrification programs through public and private sector participation in order to;

The REF is established to provide co-funding and/or technical assistance to private sector investors through PPP, using the RBF approach to rapidly expand sustainable energy access

A RBF approach is used where capital grant incentives is offered to rural and under-served electricity providers for projects that would otherwise have been unviable

REF aims to attract project developers with a track record of deploying rural electrification systems, and who are able to commit private capital to viable project sites.

## FUNCTIONS

Achieve more equitable regional access to Electricity

Promote expansion of the grid and development of off-grid electrification

Maximize the economic, social and environmental benefits of Rural Electrification subsidies

Stimulate innovative approaches to Rural Electrification, but no part of the REF shall be used as subsidies for consumption



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# REF CALL TWO



## INFRASTRUCTURAL PROJECTS

- ▶ Grid Extension
- ▶ Isolated Mini-Grids
- ▶ ICMG



## NON-INFRASTRUCTURAL PROJECTS

- ▶ Solar Home System
- ▶ Stand Alone systems for productive use (solar dryers, solar welding, solar cooling rooms etc.)



## INNOVATION (300 MILLION)

- ▶ Start Ups
- ▶ Innovation Hubs
- ▶ University Research Calls
- ▶ Hackathons etc.



## STATE GOVERNMENT MATCHING FUND (300 MILLION)

- ▶ REUCS Supports via promotions department

**Status: GRANT AWARD**









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# RESEARCH AND INNOVATION HUB

***Section (13) of the EPSRA, 2005 mandates that the REF is used to promote, support and provide rural electrification programs through public and private sector participation in order to;***

-  **Achieve more equitable regional access to Electricity** 1
-  **Maximize the economic, social and environmental benefits of Rural Electrification subsidies** 2
-  **Promote expansion of the grid and development of off-grid electrification** 3
-  **Stimulate innovative approaches to Rural Electrification, but no part of the REF shall be used as subsidies for consumption** 4

***REF RESEARCH AND INNOVATION HUB seeks to harvest and nurture innovative approaches to rural electrification by providing grant funding to support promising renewable energy technologies, systems and business models and related research in a bid to improve rural electrification and/or development.***



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# OBJECTIVES OF THE RESEARCH AND INNOVATION HUB



**Bring together the skills and knowledge of diverse set of individuals and enterprises committed to addressing rural electrification challenges in Nigerian communities.**

**To nurture viable technologies/systems/concepts that are proven in other geographies by creating the enabling conditions to become established in the Nigerian rural electrification market.**



**Work with teams of innovators, experts, entrepreneurs and inventors, to co-create and refine ideas, which birth prototypes of processes and products to uplift the lives of rural people across the six geo political zones of Nigeria**

**Address key knowledge gaps within the off-grid sector that can spur scale-up of decentralised renewable energy systems for rural development**

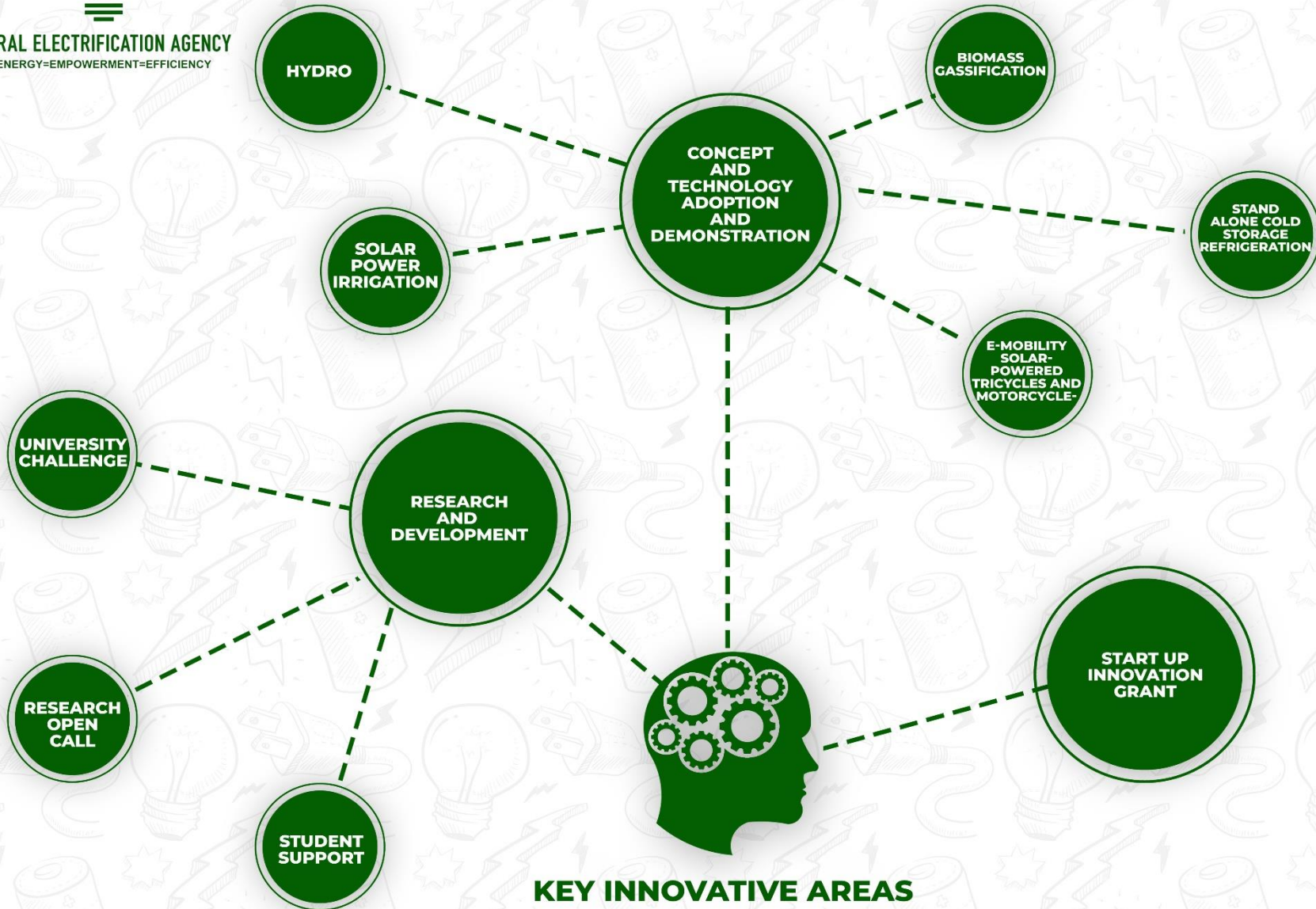






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# CONCEPT DESIGN AND EXECUTION



**KEY INNOVATIVE AREAS**





# COMPONENT 1

## CONCEPT AND TECHNOLOGY DEMONSTRATION



### HYDRO MINI-GRID

This project provides an opportunity to demonstrate ideals on small hydro technology targeting agricultural clusters to power irrigation systems, processing centers and households.



### BIOMASS GASIFICATION MINI-GRID

This project provides an opportunity to demonstrate the biomass-to-power technology. It will target an agriculture processing cluster where the processing businesses and households will be provided electricity and the processing facilities will in turn provide feedstock to the plant.



### E-MOBILITY SUPPORT: SOLAR-POWERED TRICYCLES AND MOTORCYCLE /TRICYCLE PICKUPS

Solar-powered tricycles are modern forms of tricycles that are powered by electrical motors which get its supply from photovoltaic panels as a substitute to conventional tricycles that use petroleum as a means of energy. This is targeted towards the reduction of emissions and sustainable transportation initiatives. This is also a substitute for the recurring and expensive purchase of unclean fuels



### STAND-ALONE COLD STORAGE /REFRIGERATION

The cold storage would utilize solar energy to provide cooling to a containerized unit



### MOBILE SOLAR-POWERED IRRIGATION SYSTEMS

The mobile standalone solar-powered irrigation systems will target clusters of rural smallholder farmers and pump/channel underground or surface water to provide up to 3 planting seasons for cash crops. This will utilise electric water pumps powered by solar PV that are mounted on movable carriages to serve smallholder farmers on a pay-as-you-go basis. These



# COMPONENT 2

## START-UP INNOVATION GRANT



### START-UP INNOVATION GRANT

**This aims to bridge the funding gap and provide ecosystem coordination for off grid solution providers to ensure:**

- ▶ **Access to seed investment in the form of grants, needed to refine and deploy solutions for entry into wider funding market**
- ▶ **Nurture sustainable solutions, products, and/or technologies that would boost and promote business operations and stimulate socio-economic growth in rural communities in Nigeria**
- ▶ **Access to a wide network of mentors, innovators, enterprises, and professionals that share passion and drive towards an integrated multi-layered support and feedback system**
- ▶ **Promote and strengthen knowledge capacity through fostering knowledge sharing among strategic partners and funding agents.**

# COMPONENT 3

## RESEARCH AND DEVELOPMENT

### 1 UNIVERSITY CHALLENGE

1

An event where rural electrification related challenges be presented amongst universities in Nigeria. The purpose of the challenge is to enable the academic sector provide solutions to some identified challenges of the rural electrification programs, and offer innovative ideas or product.

### 2 OPEN RESEARCH CALLS

2

Aim to expose researchers to the research opportunities in rural electrification and renewable energy agenda. The call would enable the research communities to access funds to conduct and demonstrate researches addressing key questions on the challenges of, and funding options for rural electrification.

### 3 STUDENT SUPPORT

3

The student research assistance component will provide student researchers at the undergraduate, master's and doctoral level with non-financial support to complete their research in topics of relevance to REA's purview; this will be through providing access to REA staff, developers, project locations, documents/data and identification of knowledge gaps.





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# FUNDING STRUCTURE

RESEARCH AND INNOVATION HUB

CONCEPT & TECHNOLOGY DEMONSTRATION

HYDRO

BIO MASS

SOLAR POWERED COLD STORAGE

IRRI-GATION SYSTEM

E-MOBILITY SUPPORT

RESEARCH & DEVELOPMENT

RESEARCH CALL

UNIVERSITY CHALLENGE

INNOVATION GRANT

CAPACITY BUILDING

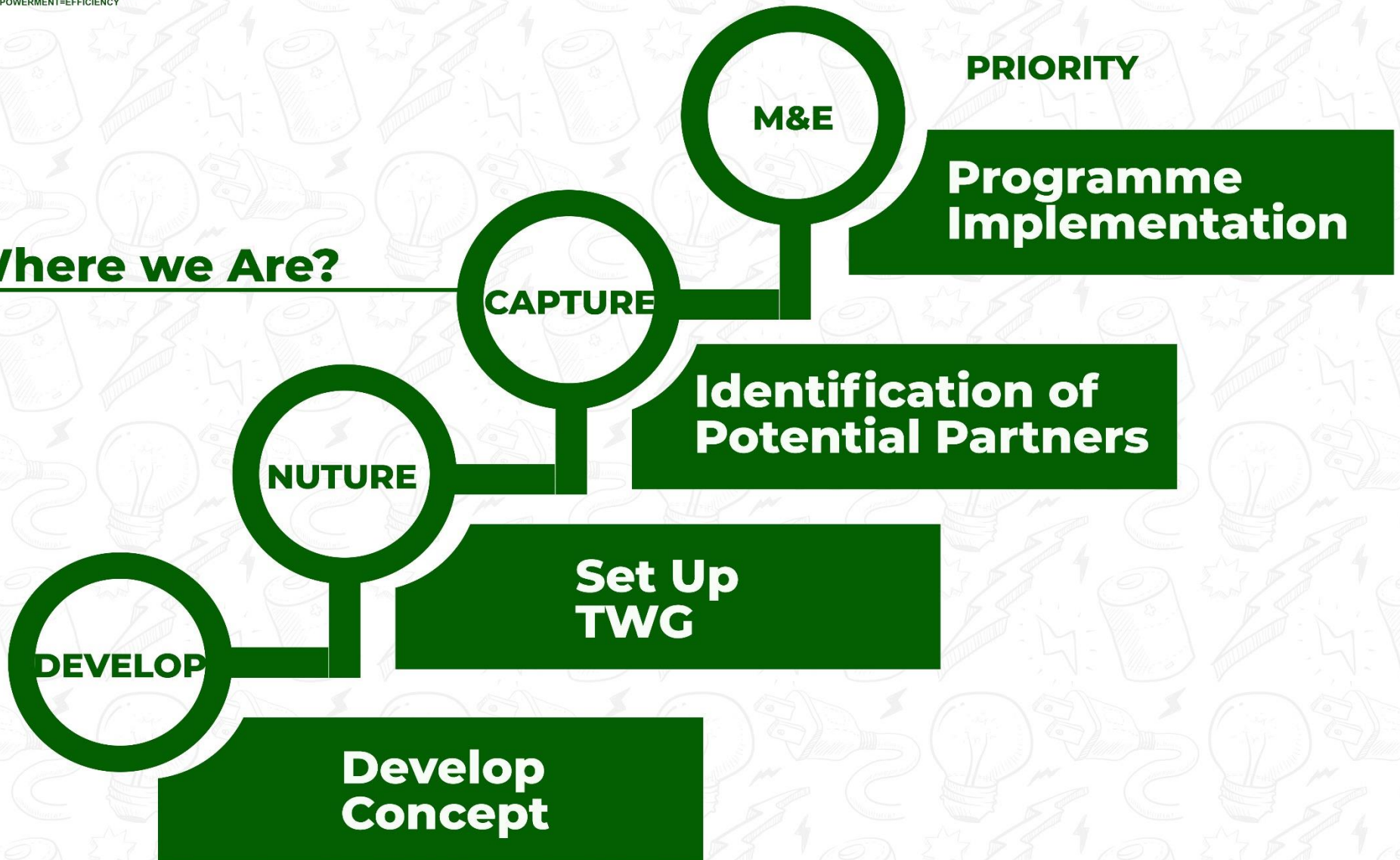
NGN 300 Million



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# FUNDING STRUCTURE

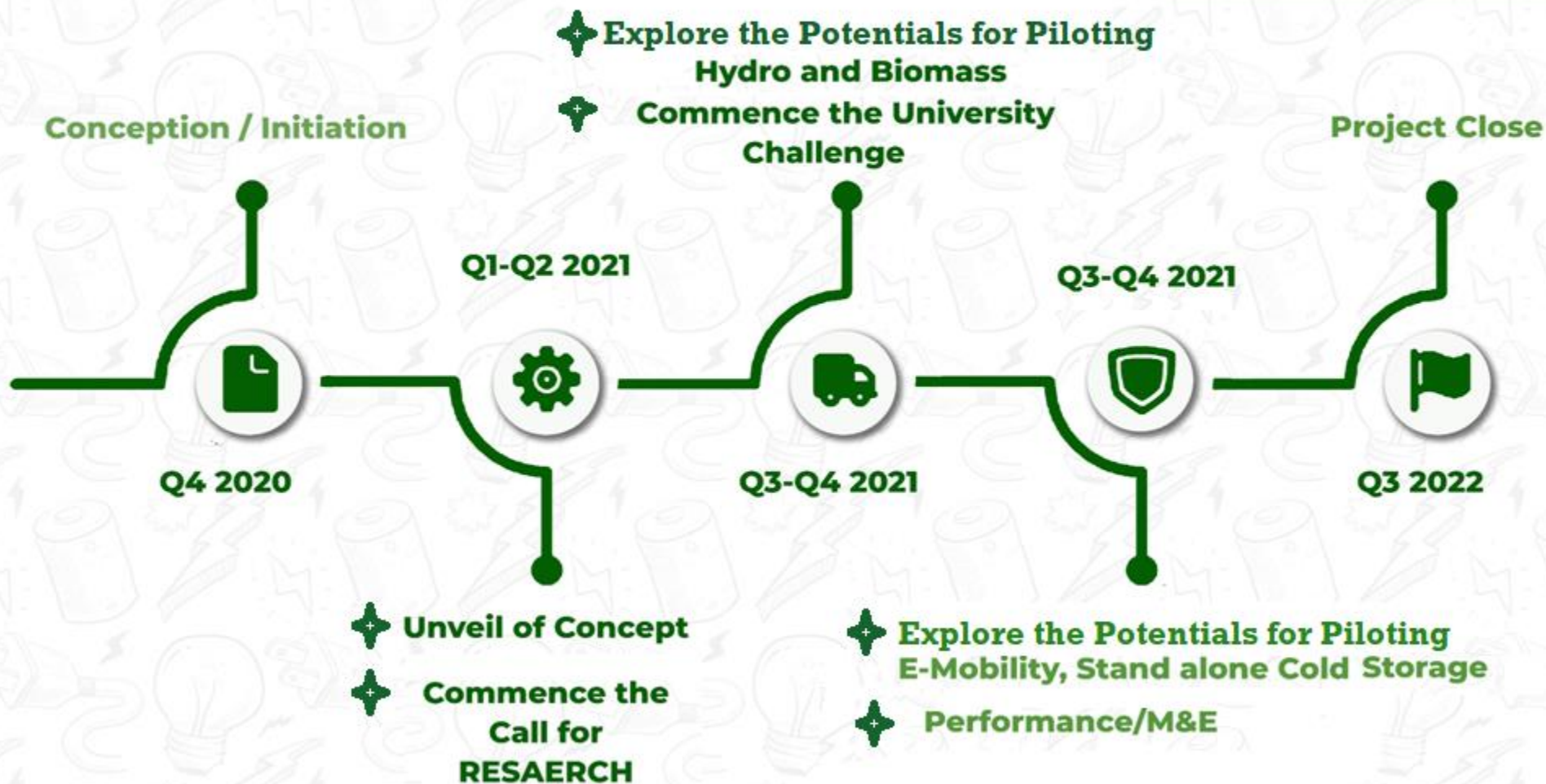
Where we Are?





# NEXT STEP/TIMELINES

 **18 Months**





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**THANK YOU FOR LISTENING**

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