

Roman Vybranovskyy

# COLLABORATIVE EFFORT TOOLKIT

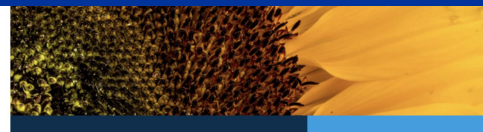
Enabling **private investment** into **decentralized  
green energy** system development

**OPPORTUNITIES FOR PRIVATE INVESTMENT IN ENERGY AND DEFENCE:**  
where Ukraine's Recovery meets Europe's strategic autonomy

10 July 2025, Rome

# Developing power system in Ukraine

## ENABLING OPPORTUNITIES



### Private Sector Opportunities for a Green and Resilient Reconstruction in Ukraine

Synthesis Report  
October 2023



IFC estimates in 2023: with reforms realization – private investments attraction up to **\$167 bln in energy only**

Why don't we see private investments in the energy sector?

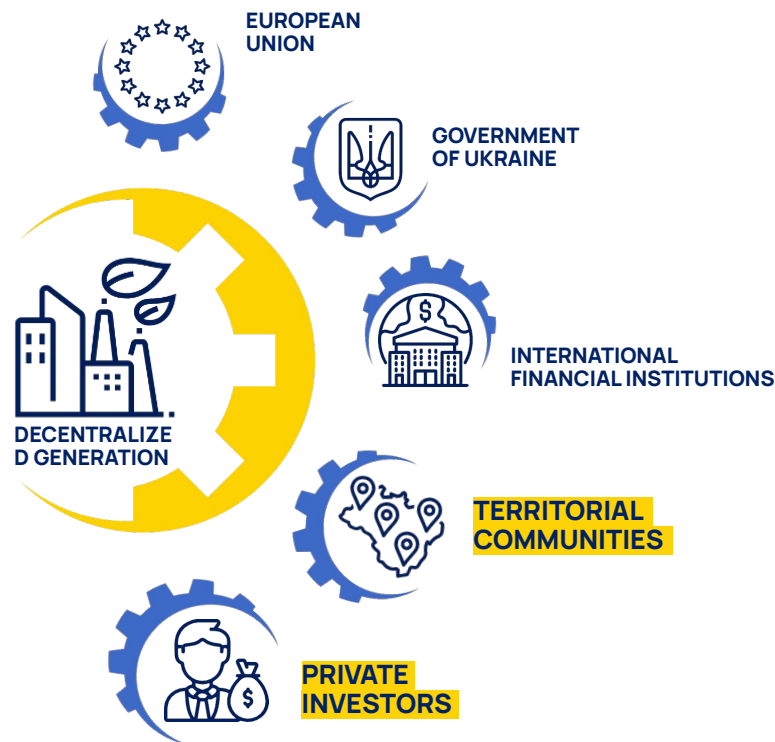


Private investments in the energy sector in 2024-2025: **only 2 big projects up to €675 million**

To enable the rollout of decentralized generation projects in Ukraine at scale, the UAFP has developed **Collaborative Effort Toolkit:** a set of measures and instruments that solves the issue of **lacking collaboration of all stakeholders** of energy security and sustainability in Europe, and Ukraine as its part, **to address urgent problems and fulfill strategic interests** of each one

To unleash projects implementation the UAFP uses a holistic approach:

- **Technology mix** provide lucrative and sustainable opportunities
- Stakeholder cooperation, based on **synergy of private business and communities** enable growth
- Collaborative efforts produce **bankable projects** and ensure public good
- Focus on private sector provides **enables generation roll out** with significant share of HRES technologies
- Community based decentralized generation serves as **gravity point** for the business clusters
- **State policy** should be focused on enabling conditions

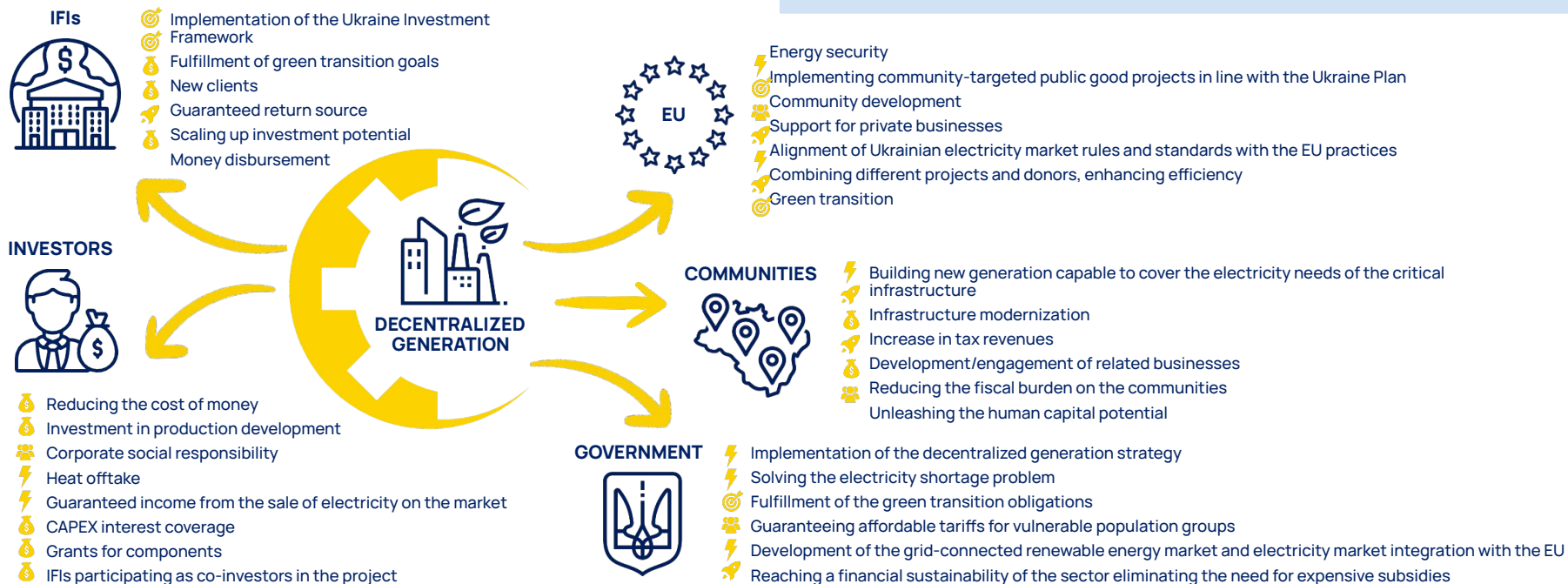


## Collaborative Effort Toolkit:

Unlocking private investment into decentralized green energy system development

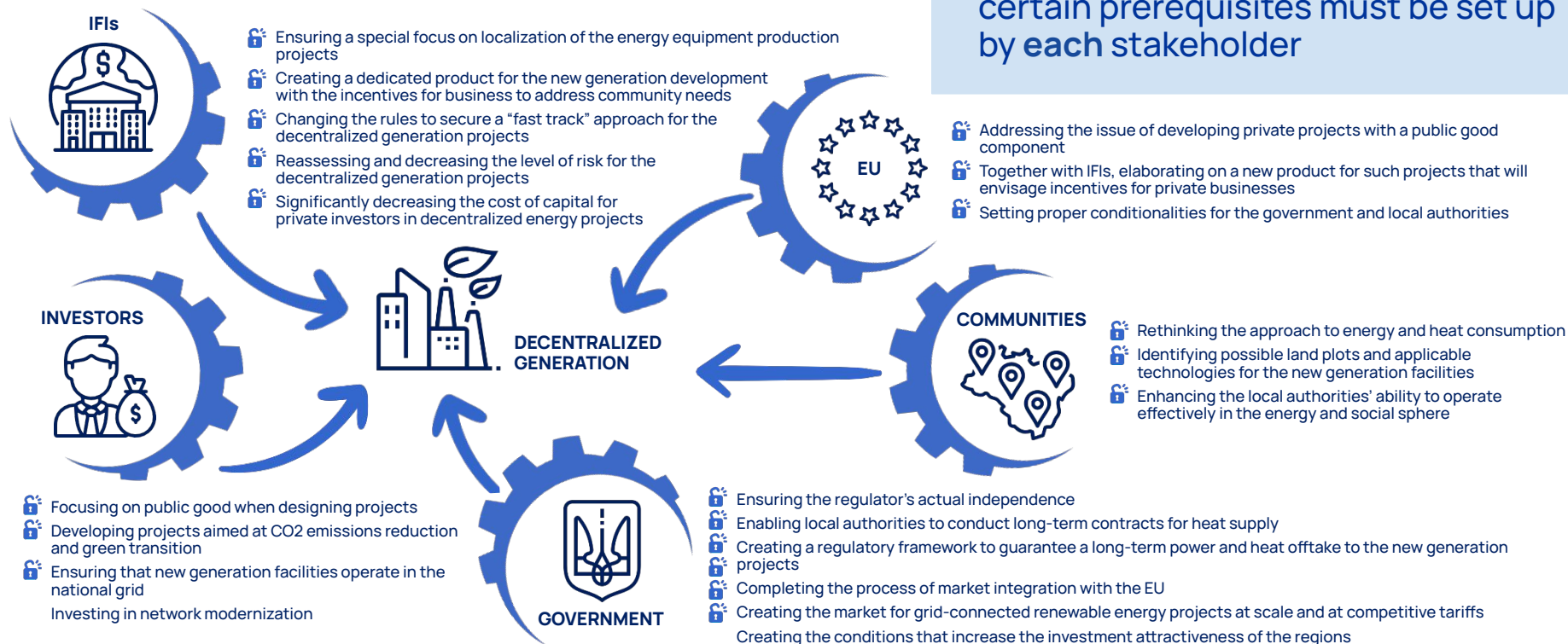
# STAKEHOLDER BENEFITS

Toolkit implementation fulfills the critical interests of each stakeholder



# PREREQUISITES FRAMEWORK

To unlock the benefits,  
certain prerequisites must be set up  
by each stakeholder



# THE WAR-DRIVEN PHASE-OUT OF COAL THERMAL GENERATION CREATES **UNIQUE OPPORTUNITIES TO BOOST RES TECHNOLOGIES**

## STATE OF PLAY

- Due to the Russian aggression, **Ukraine has lost 18 GW of generation capacity**
- This means that **60% of coal-based “dirty” thermal generation** has been phased out of the power system
- Gas infrastructure severely damaged = **Ukraine depends on gas imports from the EU**
- **Gas prices** in the EU at least **doubled** for the past three years

## HOW DOES BUSINESS IN UKRAINE REACT?

- Building generation for **back-up own production capacities**
- **Focus on costly emergency backup gas technologies**: gas pistons and gas peakers
- For the past two years, up to 200 MW of new generation has been built. **0 MW – connected to the power grid**
- **30% of efficiency – income generated exclusively during peak hours**

The most effective solution, according to studies by European experts, is **a combination of biomass technologies, wind and solar power, battery storage technologies**, which offers the highest efficiency under region-specific conditions.

# SCENARIO 1:

If **nothing changes** in terms of 3-5 years

## FACTORS

1. **Behind-the-meter generation growth (up to 3-4 GW)**
2. **Perverted market rules and growing debt crisis**
3. **Donor and banking resources focused on state-owned assets**
4. **Emergency prevails on long-term development**

## CONSEQUENCES :

- Curtailments of RES operating under feed-in tariffs;
- Further decrease of the available grid capacity;
- Undermining grid resilience and growing operational difficulties for TSO;
- Lack of incentives for industrial investors;
- System design enables corruption risks;
- Inability to implement market coupling, market competition distortion;
- Market liquidity collapse and loss of investor confidence;
- Growth of distribution and transmission tariffs;
- Absence of large private projects;
- Public good is not in focus;
- Restoration of outdated obsolete assets instead of creating incentives for the new generation.

# SCENARIO 2:

If Collaborative Toolkit is **implemented** in 3-5 years

## AIM

1. Up to 12-13 GW of decentralized generation with at least 3 GW HRES
2. Private business investments in energy generation and infrastructure
3. Efficient, transparent, and competitive market
4. Public good and buy-in from society with the community development

## CONSEQUENCES:

- Resilience of the power system to Russian attacks;
- Growth of RES share in the energy mix due to availability of balancing capacity;
- Communities become key beneficiary of public good;
- Development of industrial parks through simplified grid connection procedures;
- Development of financially lucrative and bankable projects with system-wide effects;
- Market liquidity restored. Market coupling with the EU;
- Lower distribution and transmission tariffs due to reduced network losses;
- Private investments attracted to the energy sector;
- Payment default risks nearly eliminated.

How to implement

# THE COLLABORATIVE EFFORT TOOLKIT?

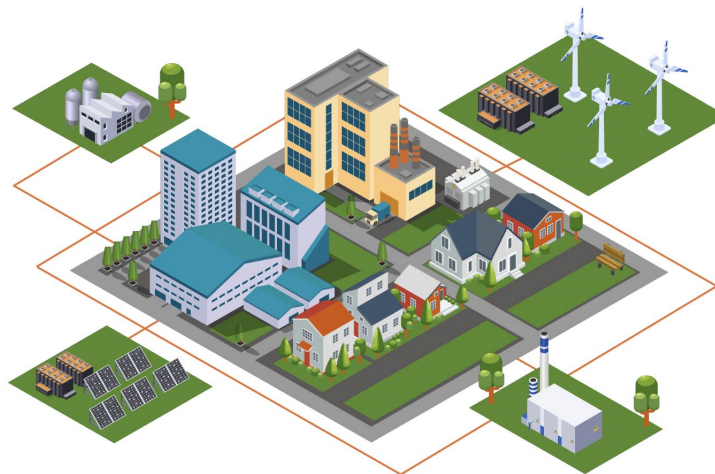
*The effectiveness of the Toolkit depends on the parallel implementation of all its stages, with the involvement of all key stakeholders*



Regional  
Readiness



Investors  
engagement



Financial  
opportunities



Policy and  
Regulation

*Collaboration of key stakeholders for  
**HRES projects** realisation and forming  
resilient energy system around  
communities*

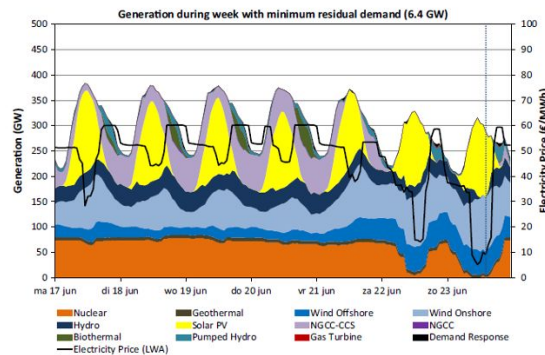
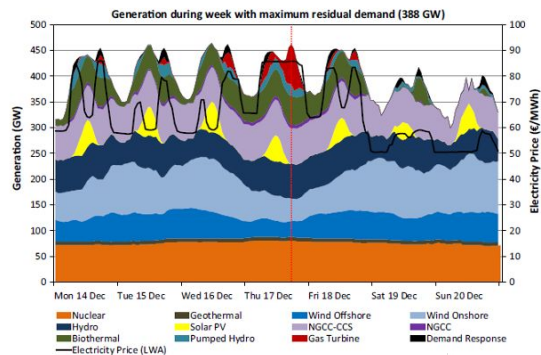
# OPENS OPPORTUNITIES FOR ECONOMIC GROWTH



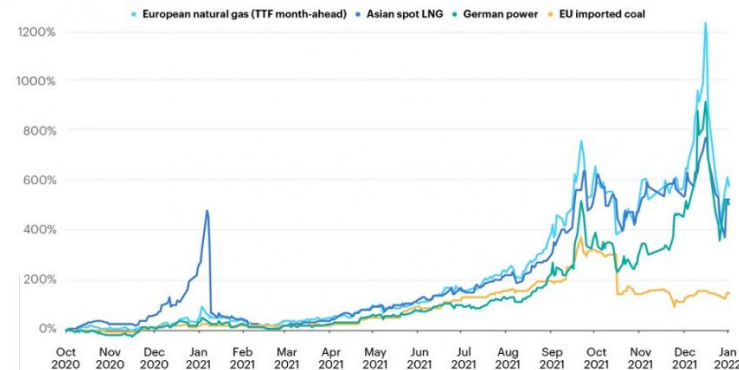
## Scaling-Up and EU collaboration: all stakeholders

- Modelling the replication of the approach and project implementation in other regions, based on the similarities of conditions and resources demand in other regions
- Exploring opportunities for deploying European green technologies in Ukraine
- Coordinating efforts with international partners and the European Commission to meet the conditions for integrating the European and Ukrainian energy markets

## MIX OF TECHNOLOGIES PROVIDES EFFECTIVENESS



Evolution of energy prices, Oct 2020-Jan 2022  
IEA analysis



Scientifically proved /  
mentioned in adequacy  
report: **mix of the  
technologies works best**

*The more renewables the less  
pressure on EU to buy gas*

The opportunity for Ukraine:

# RES TECH – KEY FOR ENERGY INVESTMENTS

- Ukraine needs up to **13 GW new capacities** to cover the electricity demand
- 70% of this new generation** – RES technologies (wind, PV, biomass, storage). Their roll out **will help UA to fulfil the green obligations** on the way to EU integration
- Huge export potential: 70% doesn't include the EU electricity demand. Ukraine has a potential to cover it: EU&UA power systems technically united. **In 2026 Ukraine have to fulfill integration to EU energy market with possibility to trade electricity on the EU market**
- Maximum income:** field studies demonstrate that best solution – optimal mix of RES tech adapted for the local communities demand
- Preliminary: payback period** – 3 to 5 years. **Positive P&L** for biomass power plants – up to \$6-9 mln, \$13-15 mln for renewables.

|                                           |         |         |         |         |         |
|-------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Generation technology                     | High-Maneuvering gas-powered stations                                                      | Biomass-powered cogeneration                                                               | Battery storages                                                                           | Wind stations                                                                              | PV stations                                                                                |
| Current installed capacity                | 0,0                                                                                        | 0,3                                                                                        | 0,0                                                                                        | 0,5                                                                                        | 6,2                                                                                        |
| The need to build                         | +1,4                                                                                       | +1,1                                                                                       | +0,8                                                                                       | +4,5                                                                                       | +3,8                                                                                       |
| Expected total                            | 1,4                                                                                        | 1,4                                                                                        | 0,8                                                                                        | 5,0                                                                                        | 10,0                                                                                       |
| <b>12,8</b><br>Investment needed (€ bln)  | <br>1,5 | <br>3,9 | <br>0,7 | <br>4,0 | <br>2,7 |
| Expected not-discounted investment return | 4                                                                                          | 3-4                                                                                        | 3                                                                                          | 3                                                                                          | 4                                                                                          |

*Power grid operator calculations for power system development for the next 3-5 years*

# PARTNERS READINESS FOR COOPERATION

- **15 communities** willing to be the part of the UAFP Collaborative Toolkit approach
- UAFP discussed with **EBRD, EIB, IFC** Toolkit approach and forming the propositions for banks engagement
- 8-steps plan to establish pipeline
- **Use of identified local solutions, adjusted to local conditions that already have an experience**



## REGIONAL READINESS



*Field missions for collecting technological database in at least 10 adequate communities*

What is the main goal of the field missions:

- **Site selection:** includes data collection about resources, infrastructure, economic conditions of the regions, researching possibilities to unlock 50-200 MW of the new capacities
- **Design HRES Tool:** includes creation of the technological catalogue of the power capacities which could form balanced power mix in communities: PV, wind farms, BESS, bio-power plants, gas peakers, gas pistons
- **Analyzing similarities** in communities to form the cost-reflective model of the HRES projects that could be scaled up in several regions

# INVESTOR ENGAGEMENT



## *Business and Local Communities are working together on:*

- Establishing **cooperation** for common analysis of governmental models for cooperation: private-public collaboration, municipal level.
- Forming a 3-5 year **Roadmap** to roll out at least **3 GW** of RES capacities
- Forming **Technological Database**, including:
  - how business and communities interests could serve for economic growth and public good
  - design technical and economic feasibility study of the energy mix to be rolled out in the region using the collected technical database
  - design bankable financial model of the project including grid connection and trade strategy on the day-a-head and balancing market

# FINANCIAL OPPORTUNITIES



## *Business , Communities with IFIs and donors:*

- Offer investment-attractive regional projects that enable IFIs to implement the Ukraine Investment Framework, are aligned with green transition goals, provide a guaranteed return source, and allow for scaling up investment potential.
- Together with donors – seeking opportunities to secure long-term loan financing for projects implementation (for example, through Ukraine Facility funds).
- Working together on forming the **financial collaborative toolkit** for realization of investment-attractive regional projects and unlocking the IFIs and Ukrainian Facility funds for private investors and local communities

## POLICY AND REGULATION



### *Collaboration of all stakeholders for Ukrainian transition towards EU*

- Business and IFIs are addressing to the UA Government **reform agenda to enabling conditions for new energy projects** development (market and energy sector regulations)
- Working on forming **IFIs special credit terms for private investors into HRES regional projects** to unlock the access to the donor funds and Ukraine Facility funds.
- Local communities and Government – working on **propositions for private-public partnership for businesses and fiscal preferences for investors**
- Business, Local communities and IFIs – forming **roadmap for communities development** and capacity building projects
- Coordination Hub with all stakeholders for pipeline rollout

# UAFP COLLABORATIVE TOOLKIT

## 8-STEPS PLAN TO ESTABLISH PIPELINE

### Regional Readiness



**1. Select 10 diverse municipalities (expanding from the 3–5 shown in earlier analyses)** in the 50–200 MW range, each representing a unique use case. Conduct stakeholder alignment, initial scoping, and system definition.

**2. Development of advanced technical tooling** to allow for the optimization, comparison, and analysis of HRES business cases.

### Policy and Regulation



**3. Address policy gaps, regulatory bottlenecks, tariff structures, and legal frameworks that influence HRES viability.** Conduct a dialogue process leading to a reform action agenda relevant for private sector participation.

### Investor Engagement



**4. Compile a database of commercial renewable energy technologies (RET),** flexibility solutions, and system components, including technical specs, CAPEX/OPEX, and vendor profiles—across both Ukrainian and EU markets.

**5. Developing scalable models for HRES cogeneration projects** deployment

### Financial Opportunities



**6. Overview and specification on behalf of the IFI's & donor countries on the funding conditions and possibilities** for involved regions, manufacturers, energy companies and investors. This component is also to cover strategic scenario analysis to underpin the roadmap to scale up to desired 3 GW/yr capacity for the next 10 years



**7. Establish a dedicated organization or platform** to manage the pipeline, support municipalities, interface with investors, and carry the methodology forward under national recovery and energy planning structures.

**8. Develop a full capacity-building program** for local and regional stakeholders on HRES planning, operation, and maintenance. **Special focus** will be placed on bioenergy logistics and agro-industrial integration, given Ukraine's resource potential.

# UAFP SUGGESTIVE APPROACH PLAN



## COMPLETED

- **Pre-feasibility studies** conducted in **6 communities** across western and central regions.
- **Methodology developed** for data collection and research for applying the approach to regional contexts
- **Research carried out** on the technological efficiency of the bio-waste and RES roll-out for the local businesses in Ukraine
- **Technical solutions for heat and electricity cogeneration** from biomass and renewables developed in cooperation with European experts



## IN PROGRESS

- **Developing scalable models** for bio-waste+RES cogeneration projects deployment
- **Conducting research** for agri-waste base and resource base in **10 communities**
- Conducting **field missions to assess local conditions in 10 communities**: grid connection potential, land availability, and biomass resource mapping, water assessment and adequacy of communities
- **Conducting deep engineering research together with TNO experts** on applicable in Ukraine European green technologies and the potential of EU business interest to invest in Ukraine



## PLANNED

- **Designing bankable financial models** for energy projects in **8 researched communities**



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your attention**

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