



#ALL4  
CLIMATE  
ITALY  
2021



MINISTERO DELLA  
TRANSIZIONE ECOLOGICA

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# DIGITALISATION FOR FLEXIBLE AND RESILIENT ENERGY SYSTEMS

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Launch of the open call for proposal

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ALL4CLIMATE ITALY 2021 (Pre-COP 26, Milano, Italy)  
Thursday 30 September 2021 14:30 to 15:30 CEST

START	TOPIC	PRESENTER
<i>4 minutes</i>	<b>OPENING AND WELCOME REMARKS</b>	<b>MYRIEM TOUHAMI</b> Project Manager, UNEP
<i>6 minutes</i>	<b>PRESENTATION OF THE INITIATIVE</b>	<b>ANNALIDIA PANSINI</b> Climate and Energy Policy Advisor, IMET
<i>10 minutes</i>	<b>THE IMPORTANCE OF DIGITALISATION AND FLEXIBLE ENERGY SYSTEMS</b>	<b>PAULINE HENRIOT</b> Energy Policy Analyst, IEA
<i>15 minutes</i>	<b>OPEN CALL FOR PROPOSAL OVERVIEW</b> Introduction to the framework document, application process, selection criteria, application timelines, application forms	<b>RAKESH SHEJWAL</b> Programme Management Officer, UNEP
<i>20 - 25 minutes</i>	<b>Q&amp;A SESSION</b>	<b>IEA &amp; UNEP</b>

Session will be moderated by **Vida Rozite** (Energy Policy Analyst, IEA)

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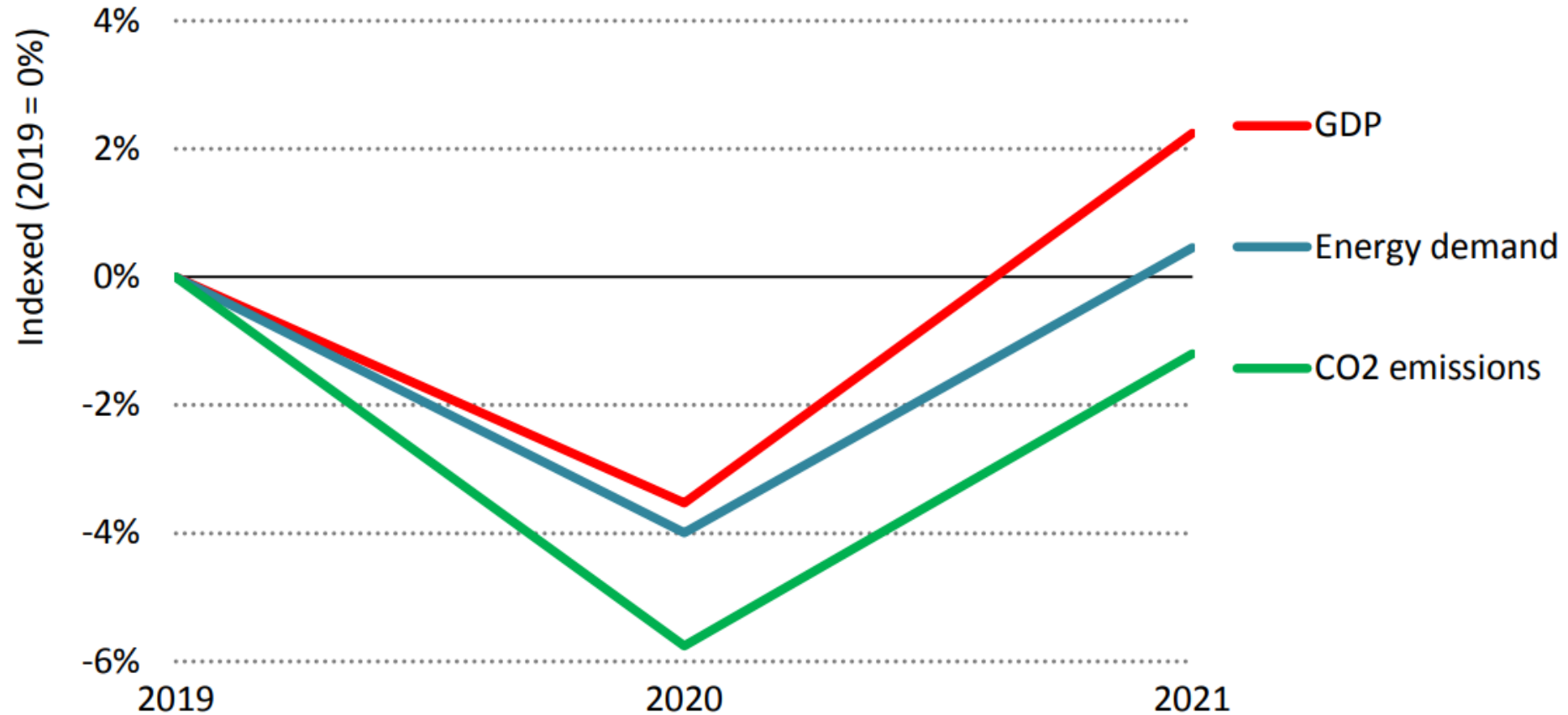


# The importance of digitalization and flexible energy system

Pauline Henriot, Energy Policy Analyst

# Global CO<sub>2</sub> emissions are on the rebound

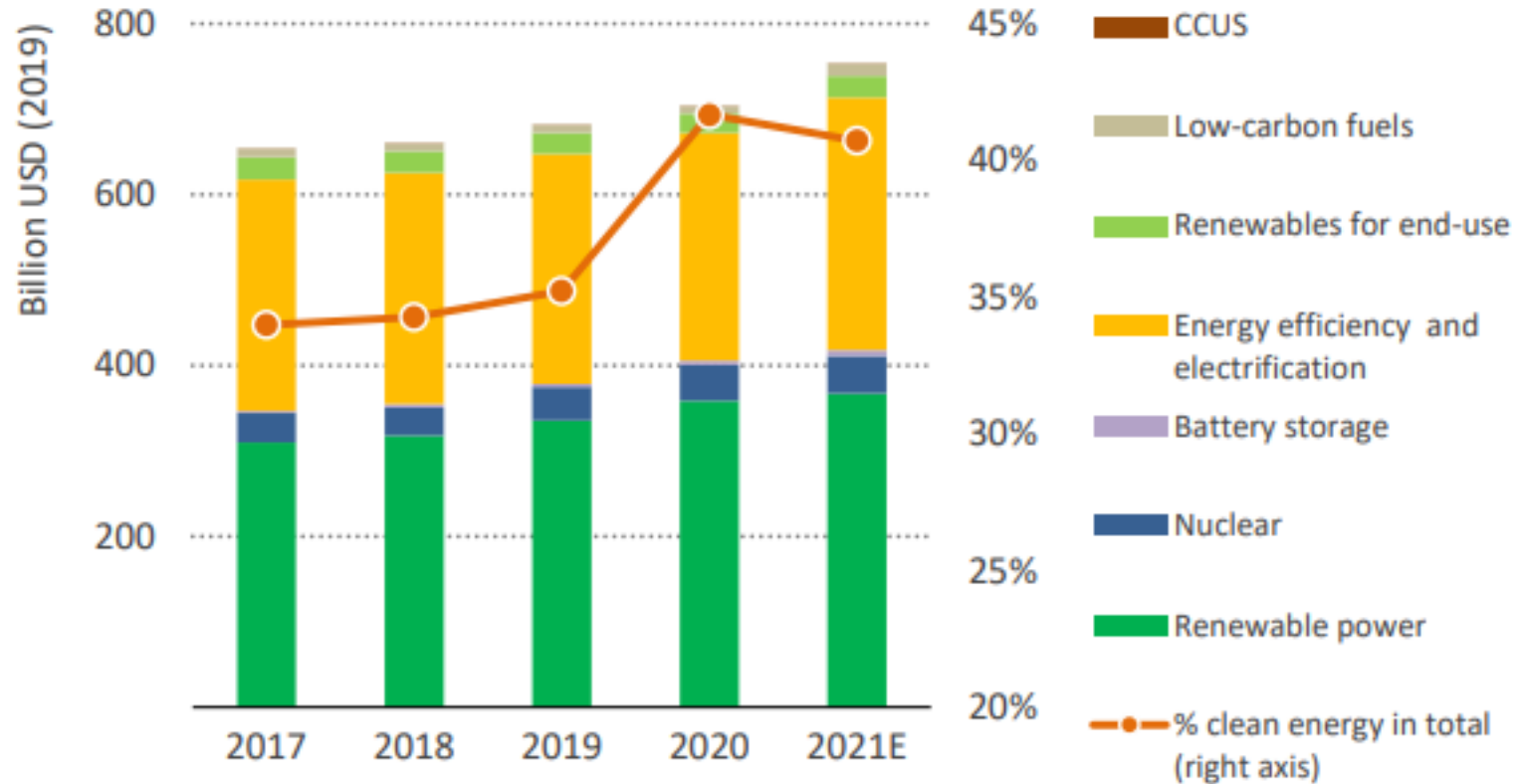
Evolution of global GDP, total primary energy demand, and energy-related CO<sub>2</sub> emissions, relative to 2019



**Global energy demand is set to increase by 4.6% in 2021, surpassing pre-Covid-19 levels.**

# Clean energy investment is growing slowly

Global investment in clean energy and energy efficiency 2017-2021

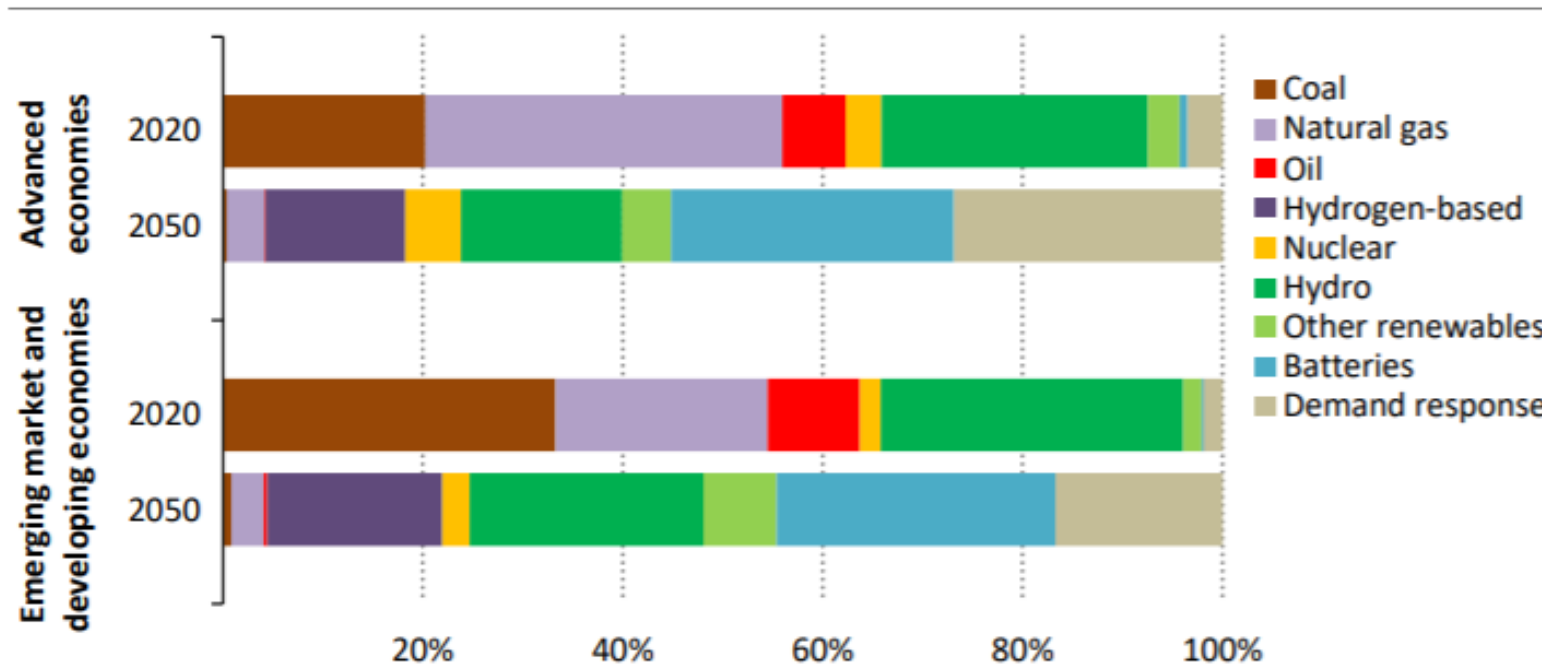


Total clean energy investment is set to rise in 2021 by around 7%



# The demand-side is at the centre of clean energy transitions

Electricity system flexibility by source in the NZE



IEA. All rights reserved.

*To meet four-times the amount of hour-to-hour flexibility needs, batteries and demand response step up to become the primary sources of flexibility*

**2000**

6.1 billion ●

68 trillion ●

14 PWh ●

0.4 billion ●

0.9 EB ○

**Population**

**GDP**

**Electricity use**

**Internet users**

**Internet traffic**

**2019**

● 7.7 billion

● 130 trillion

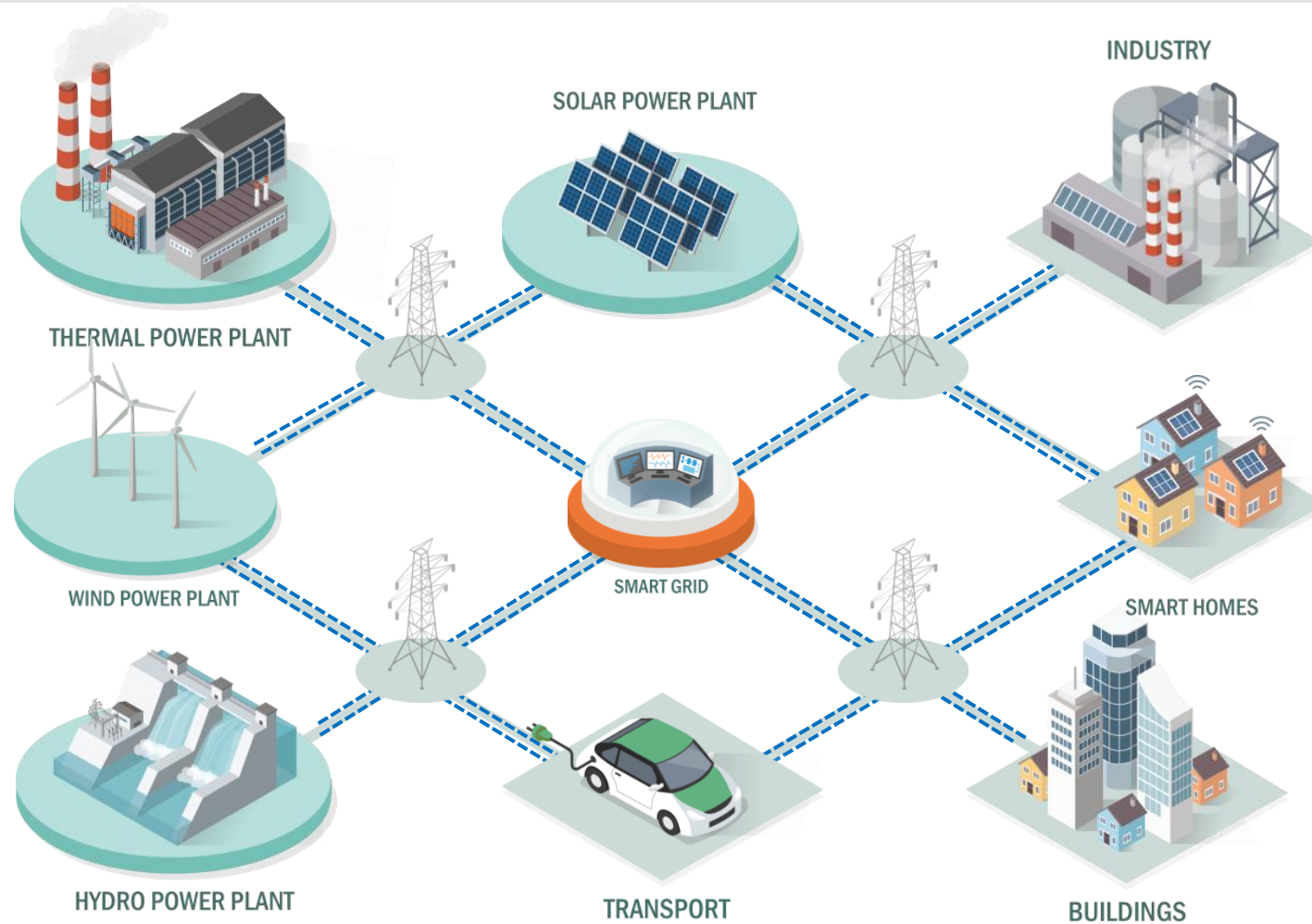
● 23 PWh

● 4.1 billion

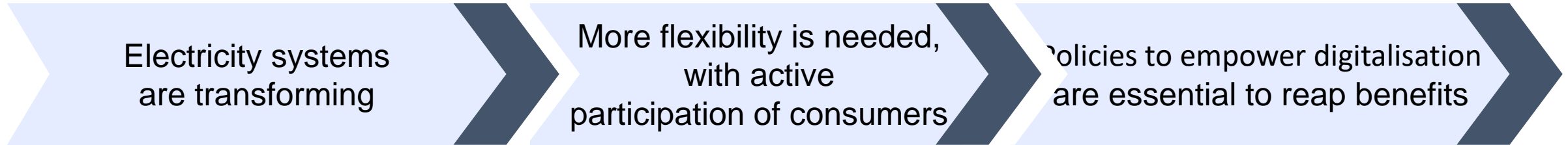
2000 EB 2000

Sources: UN (2019), World Population Prospects 2019; World Bank (2020), Data Bank: GDP, PPP (Constant 2017 International \$); IEA (2020), Data and statistics; ITU (2020), Statistics; Cisco (2015), The History and Future of Internet Traffic; Cisco (2018), Cisco Visual Networking Index: Forecast and Trends, 2017–2022

# The digital transformation of the energy system



**Pre-digital energy systems are defined by unidirectional flows and distinct roles, digital technologies enable a multi-directional and highly integrated energy system**



- **Digitalisation** can help leverage opportunities:
  - Create a more interconnected and responsive electricity system
  - Support carbon emissions reduction
  - Help to minimise system cost and need for new investment
  - Improve stability, resilience and security
  - Enhance quality of power supply

**Implementing right policies, digital technologies and new business models is key to enable transformation**

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## Digitalisation for flexible and resilient energy systems

Digital technologies enable power systems to forecast demand-side resource availability and leverage these to benefit the climate, power system resilience, and consumers.

Showcase innovative business and regulatory models for the uptake of smarter digital power infrastructure

Italian Government

United Nations Environment  
Programme (UNEP)

International Energy Agency  
(IEA)'s

### Main selection criteria and expected benefits

- Enable transformational impacts
- Embed replicability and scalability
- Innovation and visibility
- Quantify sustainable development benefits

# Open call for proposal

## Digitalisation for flexible and resilient energy systems

### AIM OF LAUNCHING THE CALL FOR PROPOSALS

1

#### Background

- Increase the availability of a huge set of data and **connectivity** that **allows the exchange of large amounts of data**
- **Facilitating data analytics** by tools and methods to extract useful information from data
- **Promoting data-driven decision making**

2

#### Objectives

- Strengthen ability to move towards Sustainable Development Goals strategies
- Enhanced system operation thanks to advanced measurement and monitoring systems
- Enhanced forecasts and predictive maintenance
- Demand-side opportunities

### SUPPORT FOR APPLICANTS

3

Projects should be rewarded if the target country is a priority region, namely: Brazil, Colombia, India, Indonesia, Morocco, South Africa and Tunisia

4

**Financial support:** An applicant can submit a project for maximum of **euro 1.800.000** (excluding co-funding, minimum **30% co-funding from external sources is required**)



#### Type I: Urban smart energy:

local neighbourhood or a part of a city, where digitalisation can be applied to existing infrastructure



#### Type II: Islanded systems:

power systems already enabled for islanding, where digitalisation would have demand-side integration benefits



**Type III: Existing asset enhancement:** add a digital layer to existing network assets

### EXPECTED OUTCOMES

5

The project caters to an increasingly urgent need to **ensure efficiency and resilience** of power systems to enable **cost-effective clean energy transitions, mainly based on renewables.**

The project will contribute to:

- Stimulus and economic recovery
- Mapping in emerging economies/regions of policy context, key stakeholders, priorities, power system challenges and opportunities
- Testing new approaches to scale up the use of demand-side resources and flexibility
- Technological progress for smart grids and demand side resources
- Screening and tracking of technological progress for smart grids and demand side resources
- review of digitalisation and demand-side resources case studies
- Creating a project primer for policymakers

# Open call for proposal

## Type I, II & III projects

### TYPE I: URBAN SMART ENERGY

- 1 Testing the impacts of EV charging on the distribution grid
- 2 Testing flexibility options in constrained grid
- 3 Testing local energy markets
- 4 Testing various behavioural nudging instruments by providing simple smart meter devices
- 5 Testing of technologies and measures to enable socially vulnerable communities

### TYPE II: ISLANDED SYSTEMS

- 1 Hybridisation of small islands with existing assets or remote/isolated/off-grid diesel-fuelled systems with rooftop solar
- 2 Digital twinning (associated with other geographical datasets) to help optimise renewable location
- 3 Testing a micro-grid in a remote town with diverse distributed energy resources (DERs)
- 4 Local energy community related projects could be an upgrading of an existing system

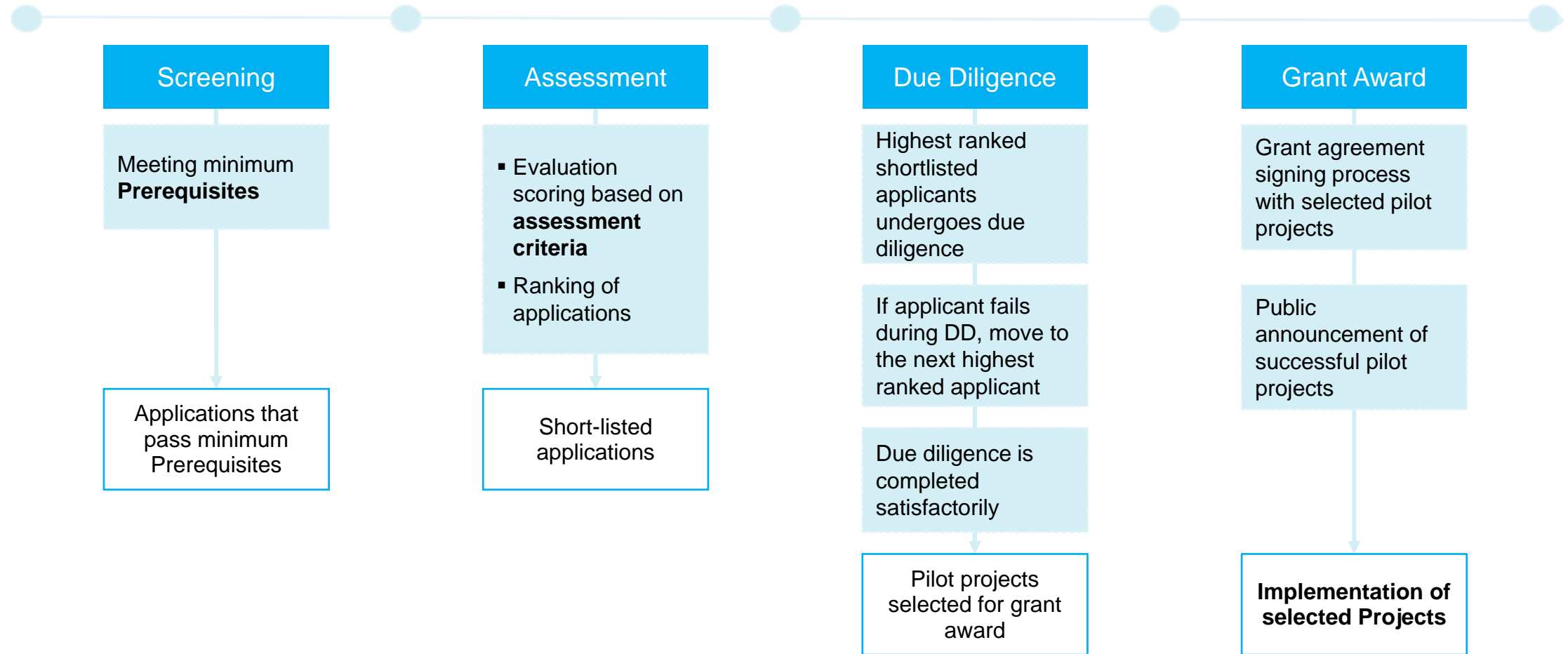
### TYPE III: EXISTING ASSET ENHANCEMENT

- 1 Digital twinning associated with consumption data to enhance operations
- 2 Digital twinning associated with consumption data to better target investment in a constrained area
- 3 A pilot project on local vs zonal constraints
- 4 Testing automated demand response technologies



# Open call for proposal

## Process



# Open call for proposal

## Prerequisites

1

### Eligibility

- Geographical scope
- Pilot size and budget
- Project consortium and expertise
- Co-funding

TYPE I: URBAN SMART ENERGY

TYPE II: ISLANDED SYSTEMS

TYPE III: EXISTING ASSET ENHANCEMENT

2

### DEMONSTRATION EFFECTS

- Innovativeness
- Replicability/Scalability
- Learning outcomes

3

### ADDITIONALITY

- Existence
- Benefit of digitalising assets
- Regulatory component
- Market component

4

### TECHNICAL VIABILITY

- International consortium
- Proven experience
- Partnerships
- Assessment of the technology readiness level (TRL)
- Digital component
- Advanced solutions
- Technologies and manufactures used

5

### FINANCIAL VIABILITY

- Funding resources
- Financial capability
- Assessment availability

6

### MONITORING, REPORTING AND VERIFICATION (MRV)

*If successful, applicants will agree to allow:*

- Monitoring planning
- Data collecting and reporting
- Verification planning
- Data component
- Cyber-security and data privacy

7

### E&S STANDARDS

- CO2 benefits
- SDGs involvement
- Government priority alignment
- Environmental & Social standards
- Gender equality
- Non-discrimination
- Community benefits
- Power system benefits

# Open call for proposal

## Criteria for eligibility

Applicants will duly complete the relevant Application Form (attaching all requested and relevant documents) in **English**, ensuring that the submission is made before the **deadline date of the 30th of November 2021**.

### Geographical scope

Brazil, Colombia, India, Indonesia, Morocco, South Africa, and Tunisia

### Project consortium

- To be part of an international consortium

### Co-funding

- Projects would target 30% co-funding from external sources

### Pilot size and budget

- Large neighbourhood and city
- Isolated system of network rated capacities in the [10-100 MW+] range
- Cap amounting to 1.8 million Euros

### Project duration

- Implemented within the 24 months' timeframe
- Show a viable business model

# Open call for proposal

## Eligible and ineligible costs

### ELIGIBLE COSTS

- Overhead (20% maximum)
- Project management (7% maximum)
- Hard-ware purchase (15 % maximum)
- Software costs (for permits, if any)
- Installation costs
- Working hours
- Travel costs
- Meeting costs
- Communication
- External services
  
- Other eligible pre-operative expenses approved

### INELIGIBLE COSTS

Basic research	Investments in individual companies
Writing applications	Independent freelance activities
Leasing costs	Marketing, sales and distribution costs for products and services
“Return on capital employed”	Provisions for possible future losses and charges
Overtime costs	Costs related to any interests
Salary increases	Provisions for doubtful debts
Indirect taxes and duties, including VAT	Unnecessary or ill-considered expenses

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## Do you have any questions?



# Application form

For more information

Please visit the webpage for more information:

<https://www.unep.org/explore-topics/energy/what-we-do/digitalisation-flexible-and-resilient-energy-systems>

The applicant may contact the project's focal points at [myriem.touhami@un.org](mailto:myriem.touhami@un.org) and [carolina.merighi@un.org](mailto:carolina.merighi@un.org). The team will then guide the applicant based on the specific questions.

Please refer to application form documents.



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# Thank you

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For more information please visit: <https://www.unep.org/explore-topics/energy/what-we-do/digitalisation-flexible-and-resilient-energy-systems>

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