

# Project Development Programme

## German Energy Solutions initiative



# GIZ in profile

GIZ is a state-owned enterprise by the German federal government and acts in the field of international cooperation for sustainable development and extends its 50 years in areas that include; energy, environment, economic development, employment promotion, etc.



# GIZ in Vietnam at a glance



More than 300 employees



Working in Vietnam for more than **25 years**



**12 running bilateral TC projects and programmes**, and **over 30 country development measures** from global/regional TC projects and programmes

## Our partners



Federal Ministry for Economic Cooperation and Development (**BMZ**)



Federal Ministry for Economic Affairs and Climate Action (**BMWK**)



International partners (**EU, Switzerland, UK**)

# GIZ in Vietnam at a glance

## 4 main priority areas



Climate and Environment



Energy



Sustainable Economic Development



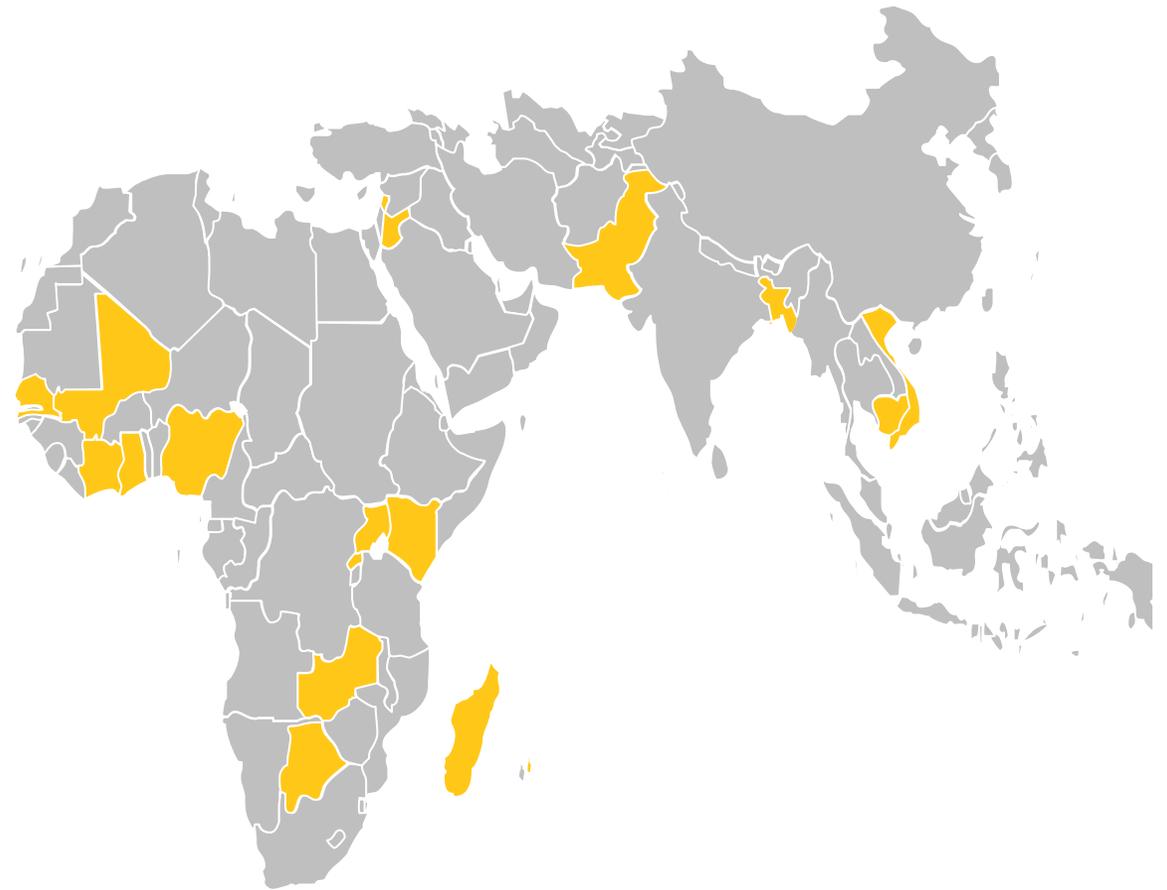
Technical and Vocational Education  
and Training



# Project Development Programme's (PDP) mission

As part of the German Energy Solutions Initiative (BMWK), PDP intends to support the energy transition of the local industrial and commercial end-users in 20 countries located in southeast Asia, the middle east, and Africa by extending our 12 years of intensive knowledge and experience in solar PV development.

Also, it aims to facilitate business partnerships between those end-users and experienced German service providers in the field of solar PV.



Jordan; Lebanon; Bangladesh; Vietnam; Cambodia;  
Uganda; Rwanda; Mali; Ghana; Cote Ivor; Nigeria;  
Kenya; Zambia; Burundi; Madagascar;  
Mozambique; Senegal; Burkina Faso; Mauritius

# Services by PDP

PDP works in three different stages covering most of the involved stakeholders in PV industry:

## Business Development

We attend and promote the international and national events organized by our sponsor and partners and facilitate B2B.

## Market Development

We advise policymakers and regulators on renewables regulations and mechanisms  
We conduct training weeks to build the capacity of local end-users and service providers.

## Project Development

Guide our partners through the development process of Solar PV technology and the selection of system size; service provider, equipment, and best investment scenario.

# We accompany you along all steps of solar project development

## PDP service portfolio

### Project Origination

- **Raise the awareness of Solar PV technology**

We explain the applications of solar PV and its positive impact economically & environmentally

- **Identification of solar PV requirements**

We interpret the technical and commercial factors for PV projects e.g., solar resources, shading impact, capital requirements

### Technical Evaluation

- **Electrical consumption analysis**

We analyze the operational pattern (daily/monthly) and the share of different sources of supply on the electrical profile

- **Site survey**

We inspect the available spaces for PV installations and

- **System simulation**

We advise on suitable optimization criteria to specify system size and expected generation

### Investment Appraisal

- **Display available investment scenarios and discuss their merits and advantages**
- **Estimate the accumulated annual savings and calculate capital budgeting tools; IRR, NPV, PBP, etc.**

### Project Implementation

- **Recommend experienced German service providers**
- **Advice on the technical specification of system components**
- **Support with an invitation to bid package coach on technical and financial evaluation**
- **Link with interested financing institutions and developers**

**All our service is offered at NO COST**

# Realized projects in Vietnam (2021)

No	Project name	Size (MWp)	Investment volume (EUR)
1	Annora	1.7	1,105,000
2	Tans Vietnam	2	1,300,000
3	Huge Bamboo	2.5	1,625,000
4	Alliance One	1	600,000
5	Samho An Giang	2	1,300,000
6	JiaHsin Long An	1.5	975,000
<b>TOTAL</b>		<b>10.7</b>	<b>6,905,000</b>



Annora (Thanh Hoa) (1.7MWp)



JiaHsin Long An (Long An) (1.5MWp)

# Energy Efficiency (EE)

In Germany and Europe 40 percent of the total final energy is consumed in buildings. The cleanest and most economical resource for this energy requirement is energy efficiency. In industry, energy efficiency is becoming more and more important. For the reduction of harmful exhaust gases, to be less dependent on fossil fuels, and thus to save costs.

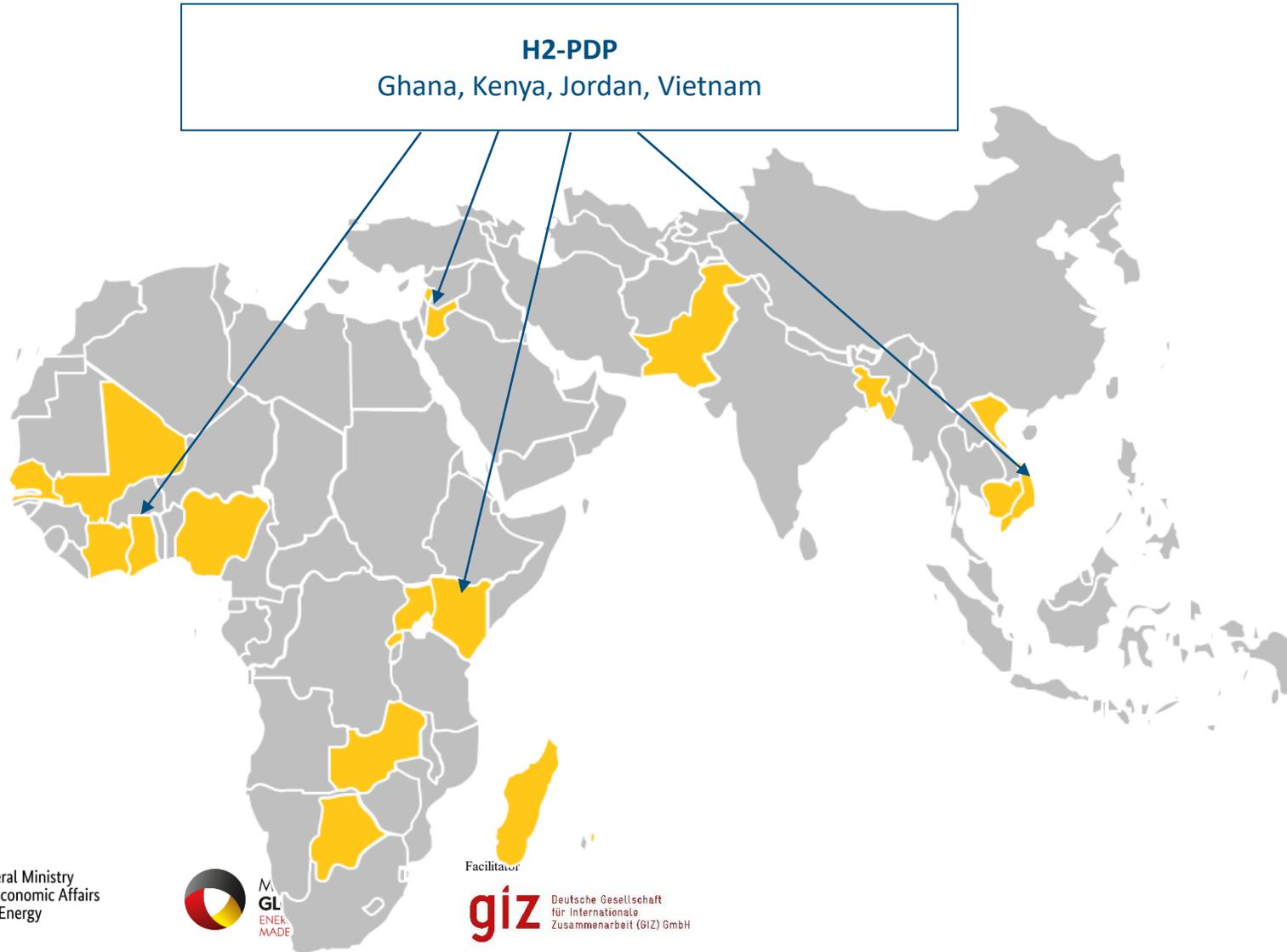
Topics on Energy Efficiency will become the focus of PDP for the next phase (2023 – 2025).

Upcoming event: German Training Week on Energy Efficiency in Buildings in Q2 – 2023.



# Green Hydrogen H2-PDP

# H2-PDP - Target Countries



- **Africa**
  - Kenya
  - Ghana
  - Nigeria
  - Mali
  - Senegal
  - Côte d'Ivoire
  - Botswana
  - Zambia
  - Mauritius
  - Madagascar
  - Uganda
  - Rwanda
  - Mozambique
  - South Africa
- **Middle-East**
  - Jordan
- **Asia**
  - Pakistan
  - Bangladesh
  - Vietnam
  - Cambodia

# H2 -PDP's Services

## Project Development

Identification of commercially viable and scalable projects

Techno-economic analysis

Project opportunities forwarded to German SME

## Business Development

Market information on target countries (incl. public tenders)

Marketing support

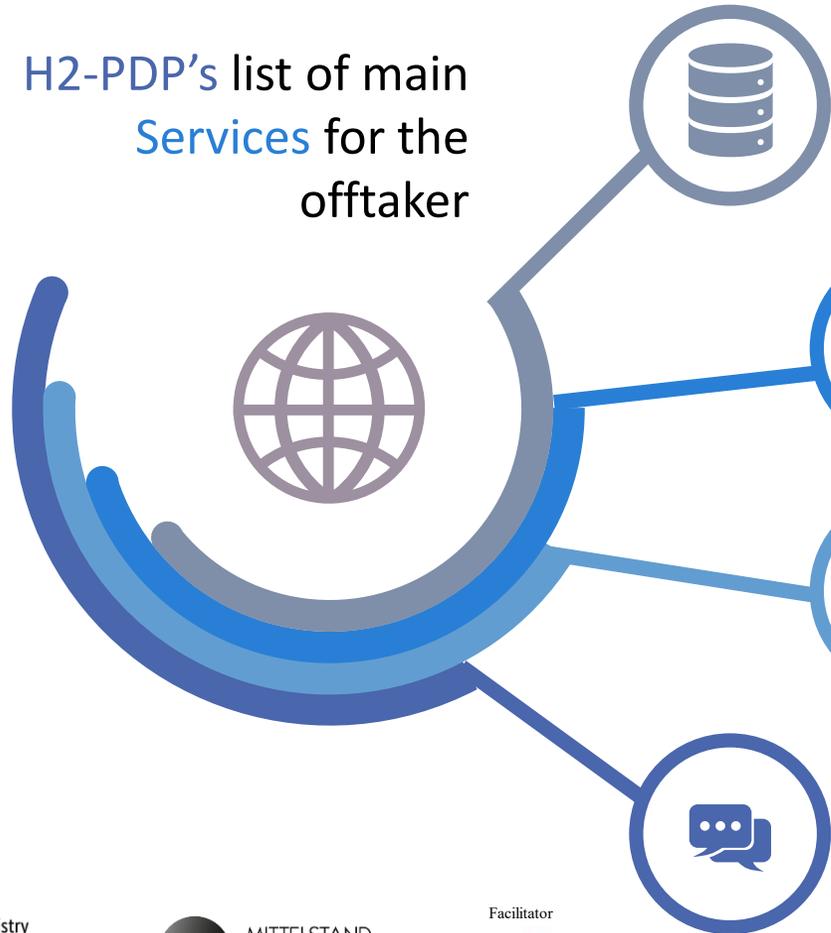
## Market Development

Onsite skill development through German Training Week

Trade fair participations

# Our services – Project development

H2-PDP's list of main  
Services for the  
offtaker



## Data collection & analysis

Assessment and documentation (Load Measurements (electrical + gas flows), HOMER calculations (for LCOH), Project CFM, Data collection tool Abstract)

## Techno-economic calculations

System sizing, economic analysis incl. concrete independent advisory for a potential investment (client presentation)

## Matchmaking

Matchmaking with experienced German/EU companies

## Follow up services

Follow up services: Support for tender processes, support for the evaluation of offers, Marketing and communication support after realisation

# Our approach



Assessment of hydrogen needs



Technical optimization

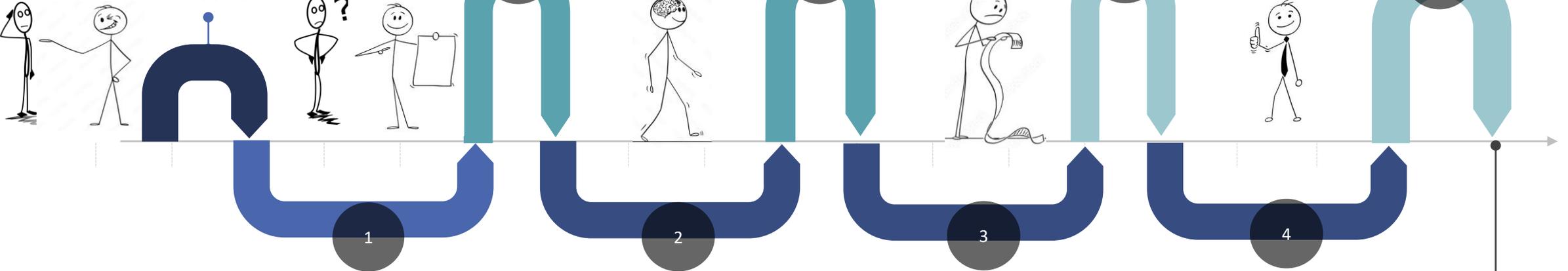


Investment models



Finding suitable partners

Start of project



## Data collection



- Data collector app
- Data loggers

## Simulation and analysis

- System specification (PV + Electrolyzer)
- Technical requirements
- Space requirements



Facilitator



Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

## Financial analysis

- Business case analysis
- Cash flow model
- Evaluation of investment options



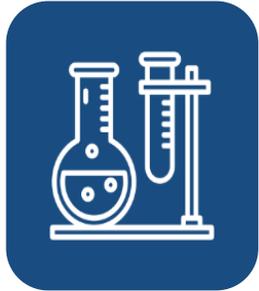
## Follow up services

- Project dossier
- Requirements for EPC
- Lead presentation
- Finding suitable partners



# Target market

## Heavy Industries



### Chemicals

Ammonia synthesis  
Methanol synthesis  
E-Fuels

## Light Industries



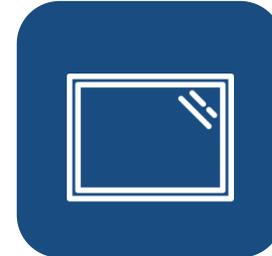
### Oil & Fat

- Control melting point
- Harden texture & lighten color
- Enhance resistance to oxidation



### Pharmaceuticals

To manufacture vitamins and other pharmaceutical products



### Glass

Cooling under a nitrogen-hydrogen atmosphere to avoid oxidation for a smooth surface. (reliable & pure H<sub>2</sub>)

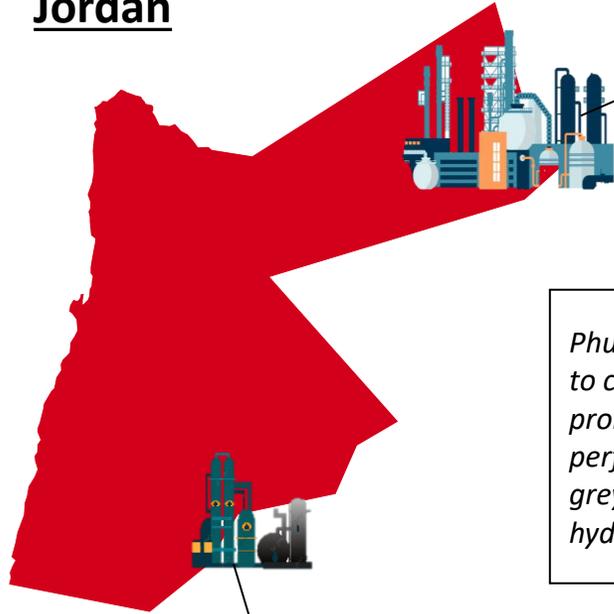


### Gas selling companies

Direct grey H<sub>2</sub> selling companies (e.g., Air Liquide, Linde etc.)

# Current projects – Examples (for internal use only)

## Jordan



*Philadelphia Solar: a green ammonia production facility is planned to cover the domestic needs. 300 ton NH<sub>3</sub>/day, 87.5 MW electrolyzer, 360 MW PV, around 100 MUSD of investment*

*Phu My Floating Glass (PFG) has decided to come onboard with H<sub>2</sub>-PEP as a very promising lead. The team will start to perform techno-economic analysis for a grey H<sub>2</sub> demand of 120m<sup>3</sup> of hourly green hydrogen*

*Arab Fertilizers & Chemicals Industries Ltd (KEMAPCO): a green ammonia production system to be planned to produce 100 ton NH<sub>3</sub>/day to cover the company demands*

## Vietnam



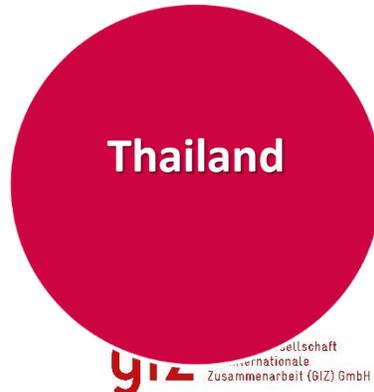
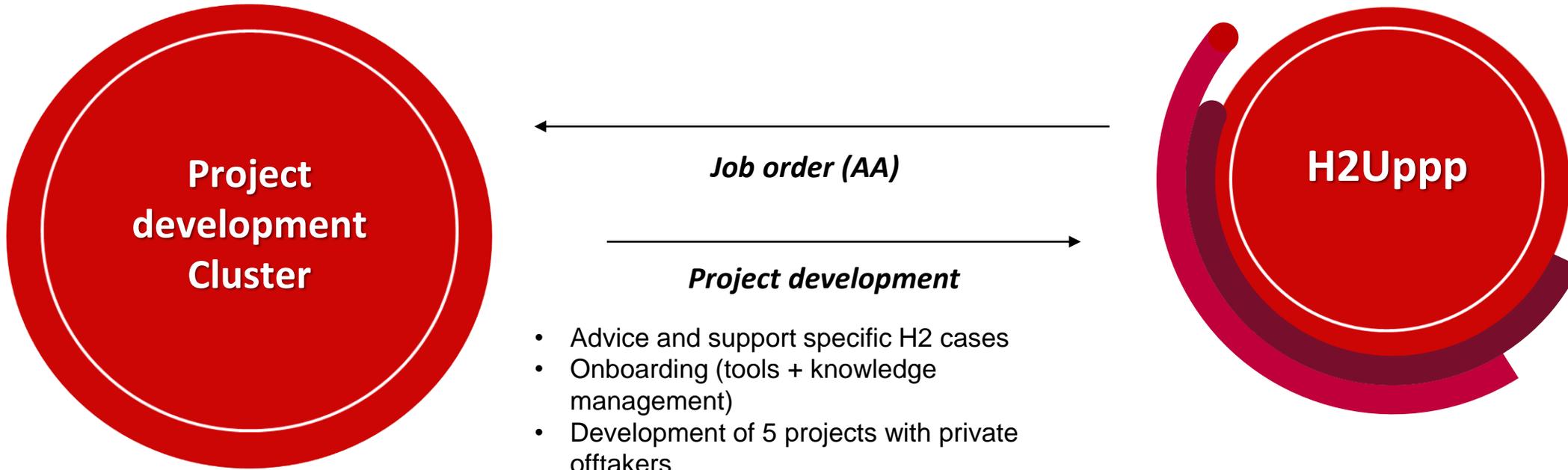
*Total companies approached*

**>24**

*Data collected*

**>7**

# Project development as standard service and integrated solution



# Contact us

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