



Implementation of renewable energy projects in Ukraine: Finding a Professional Local Partner

Who we are?

Business area

- Rentechno is an industrial group of companies focused on development and engineering solutions introduction using energy efficient technologies and renewable energy sources

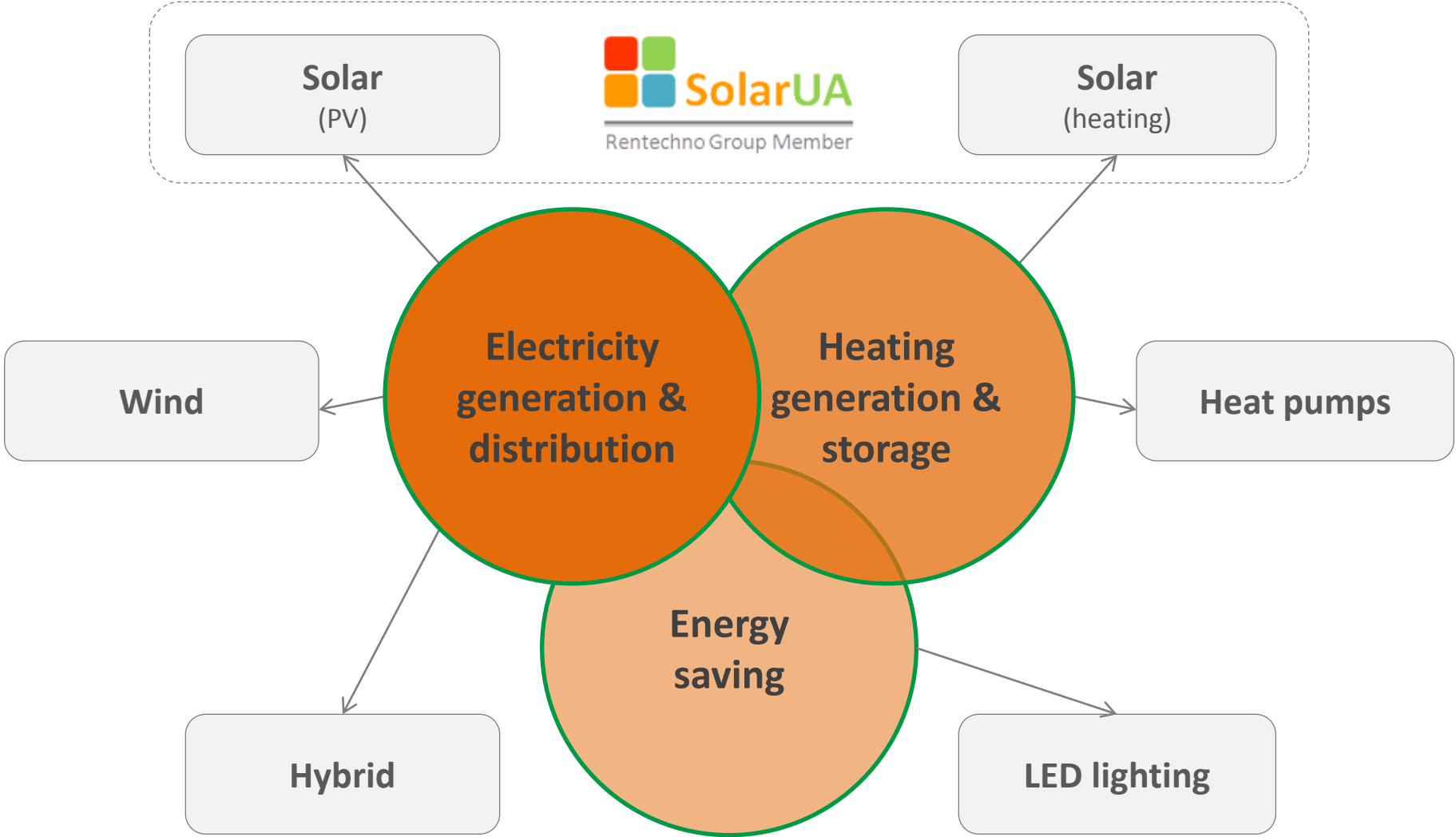
Main markets

- Ukraine
- CIS and Eastern Europe
- Middle East

Experience

- Project management
- Design and installation of power generation, transition and distribution systems (low, middle and high voltage up to 35 kV)
- Commissioning works
- Operations and services
- Quality management
- Government relations management
- Industrial consulting in renewable energy sector

What we do?



Milestones

- 2007** - SolarUA project (www.solarua.com) is started
- 2009** - Initiation of some investment projects related to the photovoltaic (PV) components manufacturing and PV projects development under the SolarUA brand
- 2010** - Rentechno company is founded, SolarUA turns into Rentechno
- Residential solutions and retail business are started
- 2011** - The 1st solar power plant is completed by Rentechno as EPC-contractor
- 2012** - Own 'shovel ready' projects development are started
- Utility scale power plants (8 MW) construction are completed
- Kherson branch is opened
- 21,5 MW pipe-line is accumulated for 2013

Membership

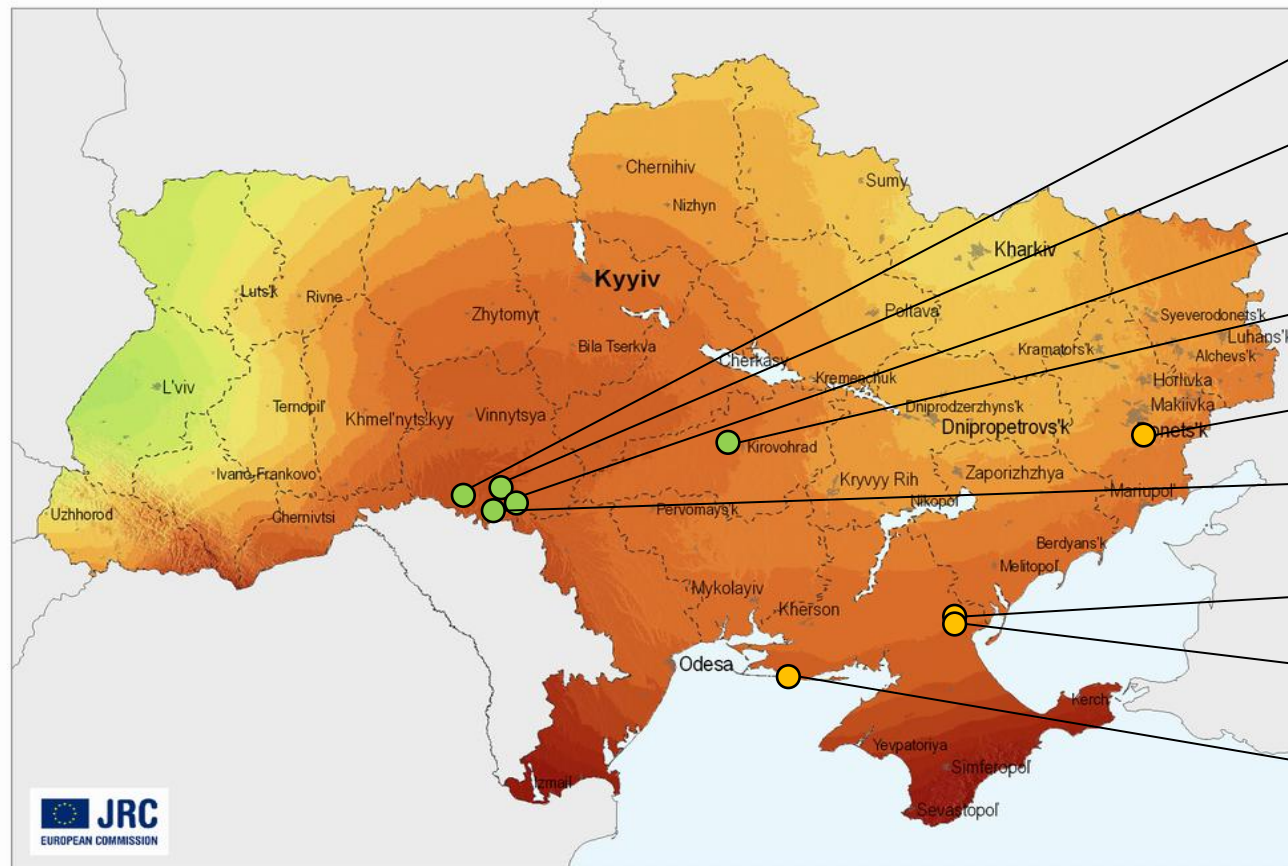
Member of APEU (www.apeu.info) since 2012

Member of EUEA (www.euea-energyagency.org) since 2012

Rentechno's track record in Ukraine

Global irradiation and solar electricity potential Optimally-inclined photovoltaic modules

Ukraine



1,87 MW

1,45 MW

1,74 MW

1,33 MW

12 MW

1,43 MW

2,7 MW

6,8 MW

9 MW



Yearly sum of global irradiation [kWh/m²]

<1150 1200 1250 1300 1350 1400 1450 1500 1550>



<863 900 938 975 1013 1050 1088 1125 1163>

Yearly electricity generated by 1kW_{peak} system with performance ratio 0.75 [kWh/kW_{peak}]

Authors: M. Šúri, T. Cebebauer, T. Huld, E. D. Dunlop

PVGIS © European Communities, 2001-2008

<http://re.jrc.ec.europa.eu/pvgis/>

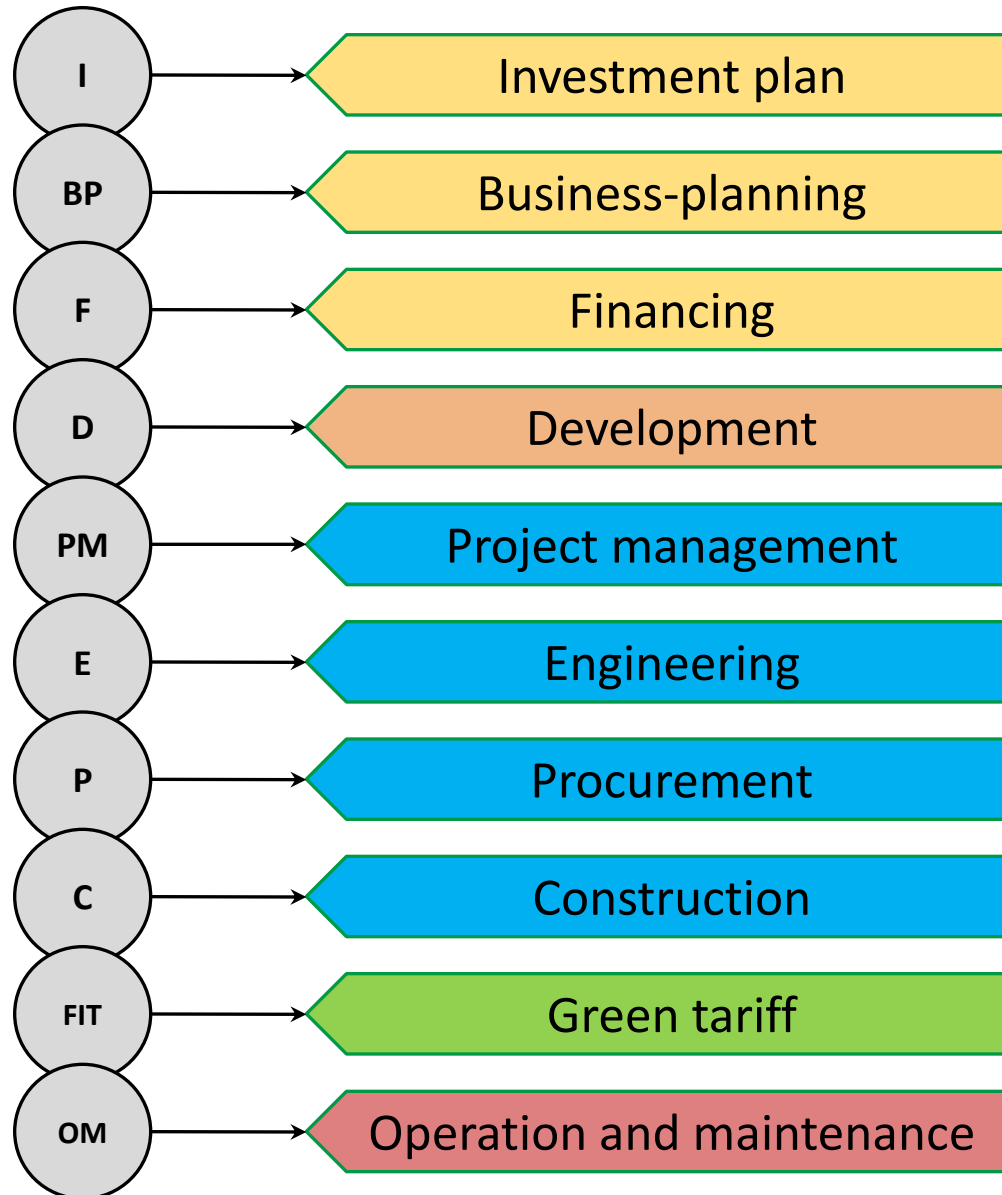
0 50 100 200 km

Project's indication:

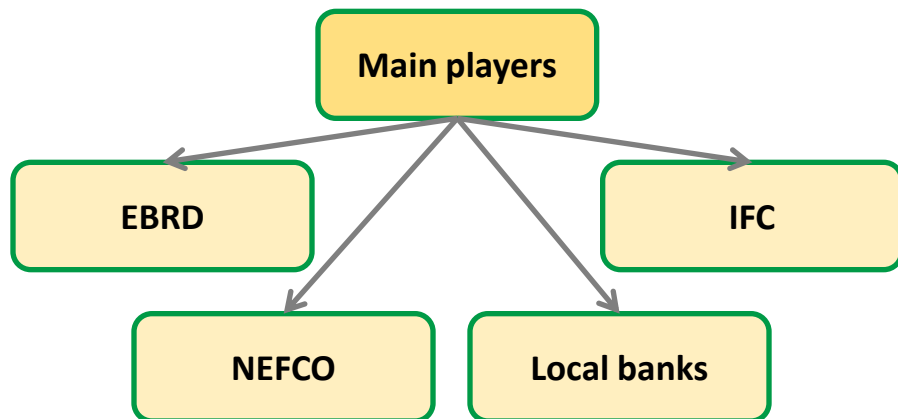
● Operating

● In progress

Basic investment and construction process



Key issues



Local banks are not ready to finance RE projects by themselves:

- Money availability
- Special Purpose Entity (SPE)
 - ✓ Warranties
 - ✓ Investor share

What to do?

1. Work with local branches of foreign banks
2. Be ready to invest at least 50%
3. Be ready to give guarantee
4. Try to find a loan abroad

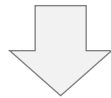


Key issues



Rules are different:

- Not fully developed legal framework
- Local stakeholders features



Development

Land permits

+

Grid connection permits

Long-term, unclear and tedious procedure:

- Zoning
- Architectural issues
- Land lease agreement
- Servitudes (easements)

- Connection feasibility study
- Technical conditions

Local partner expertise

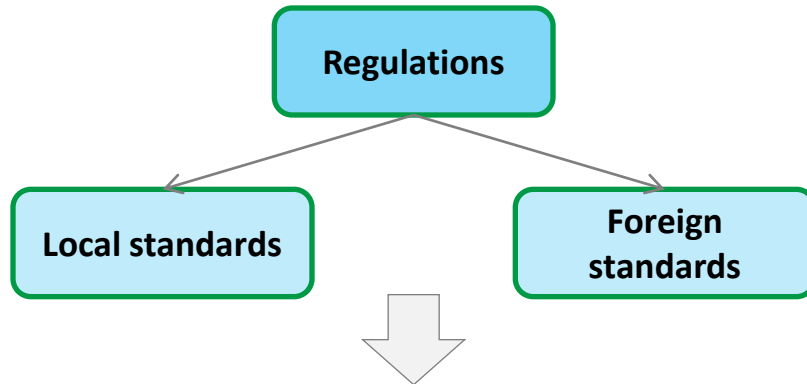
1. Strong understanding of local reality
2. Experience in land issues:
 - Zoning
 - Architectural issues
 - Land lease agreement
3. Legal background
4. Technical background

or

‘Shovel ready’ projects availability



Key issues



Local features:

1. The heavily regulated order of development and approval (laws, standards, rules)
2. Some sets of documentation:
 - Power generating unit
 - Connection to the grid
3. Licensing and certification
4. Local content requirements (LCR):
 - 15% currently
 - 30% since 2013
 - 50% since 2014

Local partner expertise

1. License availability
2. Personal certificates availability
3. Expertise in design and deep knowledge of local requirements
4. Expertise in foreign requirements to design documentation (e.g. EN62446)
5. Relations with local subcontractors for grid connection
6. Expertise in local equipment and services to meet LCR



Key issues

Imported equipment

- Custom clearance
- Import VAT

Local content

- Non competitive market
- Quality level
- Long-term warranty
- Logistics
- Payment terms
- Tenders
- Services

Local partner expertise

1. Distributor expertise:

- Experience in import activities
- Long-term customs relations
- Transport insurance (CIF)

2. Manufacturer expertise:

- Strong supply chain relationships
- Verified local suppliers
- Transport and logistics
- Warranty

Key issues

1. General contractor & subcontractors:

- Quality level
- Price
- Terms

2. Regulations:

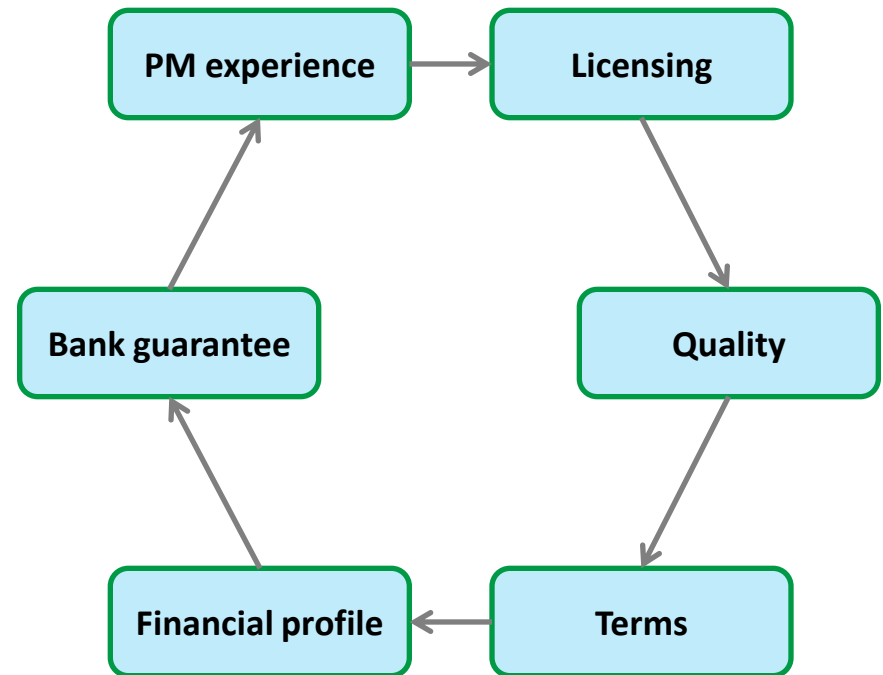
- License
- General contractor's license for EPC companies

3. Grid reconstruction:

- Substations
- Lines
- Grid monitoring

4. Commissioning procedure regulation

Local partner expertise



Main steps

Electricity producer license

Wholesale electricity market membership

Local content requirement verification

NERC's resolution on FIT

PPA with EnergoRynok

Local partner expertise



Main requirements:

1. Legal background
2. Practical experience

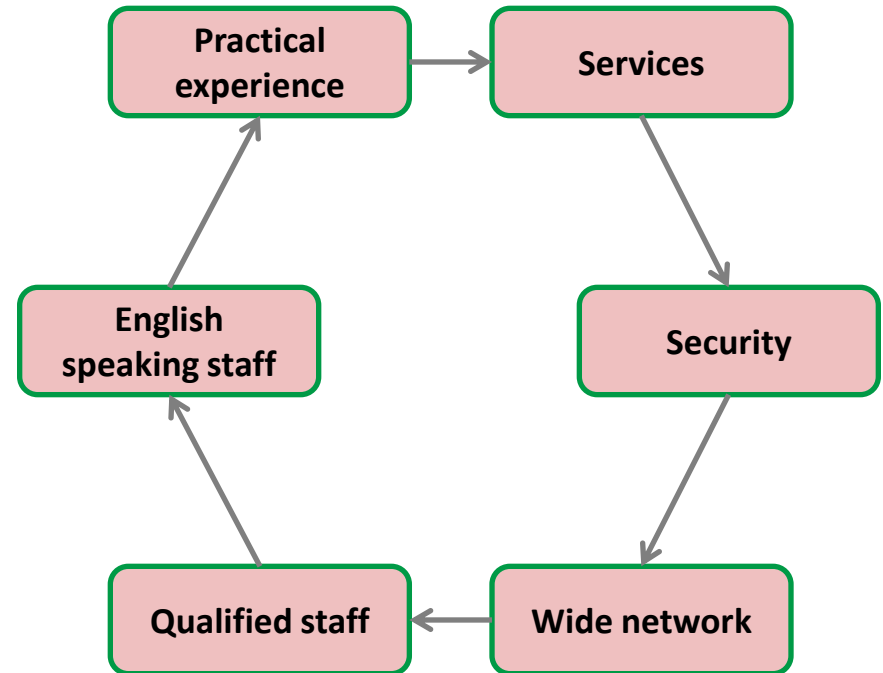
Key issues

Operational risks

- Malfunction of the system
- Mistakes in technology
- Increased maintenance expenses
- Physical damages
- External disasters (vandalism, theft, etc)
- Other failures

Insurance

Local partner expertise





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