Business opportunities in the field of distributed electricity generation

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Players in the DG arena

POLICY MAKERS & REGULATORS
- Create an incentivising environment

DSOs
- Provide regulated services

BUSINESS PLAYERS
- Make business or comply with other objectives
Policy makers

• Responsible for the development of energy/environment/climate policies.
• Represent social interests.
• Balance between short term survival/competitiveness and long-term sustainability.
  • Short term interest: minimize spending on longer term issues, such as depletion of fossil fuels and climate change.
• Have to show solidarity with international climate mitigation efforts.
• Create an environment, which encourages the development of DG (mainly renewable) according to higher level policy objectives.
Renewable energies and sustainability

• The present development path of mankind is **not sustainable**.

• The extended use of renewables can help tackle climate change and depletion of fossil/nuclear energy sources.

• The Paris Climate Agreement sets the target of limiting global temperature increase by the end of the century below 2°C, preferably to 1.5°C.

• The greenhouse gas emission reduction pledges of the UN member states is enough only for 3°C, what would probably mean the extinction of the human race.

• According to the models of IPCC, limiting temperature increase to 1.5°C requires that **all GHG emissions are stopped by the second half of the century**, and negative emission technologies are introduced to remove excess CO2 from the atmosphere.
Climate change is not an issue of the distant future. It is already here...
For further reading

• www.climate.nasa.gov
• https://insideclimateneWS.org/

New 1.5°C IPCC report expected by 2018.
Cornerstones of the EU’s climate policy

• Climate and energy are handled together.
• EU: frontrunner of climate mitigation actions.
• Horizons of action:
  • Up to 2020 legally binding targets for energy efficiency, greenhouse gas emission limitation and share of renewables.
  • For 2030 binding targets on the EU level. The coming „winter package” of the Commission initiates policy development to ensure that the targets will be met.
  • For 2050 road map.
• By the help of renewable developments the EU has already decreased its independence on imported energy, created millions of new jobs, and secured a leading position in technology development.
Regulators

• Have key role in the implementation of energy policy on liberalized markets.

• The independent operation of regulators and other authorities is a basic condition of creating a safe investment environment.

• The regulators, as experts, can also help policy development.

• DG related tasks of the regulators:
  • DG’s access to the grid; connection rules, priority at bottlenecks and at dispatching;
  • network charges taking into account the additional costs of integrating renewable generators;
  • system use: balancing, scheduling, time of use tariffs, net metering.
Business players - overview

• Project owners: own or rent the equipment, operate the generator, sell the (surplus) energy
• Investors: make DG investment as business
• Project developers
• Equipment suppliers
• Designers: design the DG and its connection to the grid according to the applicable rules
• Contractors: erect/install the equipment and the balance of plant (auxiliaries)
• Financiers: provide money in the form of loan or capital
• Service providers
  • Consultants
  • Experts
  • Maintenance
Authority type relationships

- ENERGY TRADER
  - Selling energy
  - Reduction of purchased electricity cost

- NETWORK OPERATOR
  - Network services, connection permit

- AUTHORITIES
  - Licenses

PROJECT OWNER
Business type relationships

- PROJECT OWNER
- DEVELOPER
- DESIGNER
- EQUIPMENT SUPPLIER
- CONTRACTOR
- FINANCIER
- SERVICE PROVIDER
Huh, it seems to be rather complicated!

• Only professional, well-prepared project owners can manage so many contacts.

• Poor management leads to losses.

• On the market of small UEGs
  • the project owners mostly do not exist at all – they have to be created;
  • and if they exist, they are far from being prepared.

• It calls for **aggregated services**.

• The scope of services and the market strategy has to be developed according to the characteristics of the **targeted market segments**.
The market of low capacity DG – general characteristics

• Micro – mini – small size projects.
• Low money flows.
• Small returns per project and per investment.
• Commercially mature technologies.
• Large number of projects.
• Typifying (development of standardized solutions) is possible and needed.
• Huge growth of the market expected.
Individual private projects in the residential sector

• Typical size: 2-3 kW, 5-8000 €.
• Expectable number of projects: 10 thousands per year (?).
• Possible project owners are hardly aware of renewables and cost saving opportunities. Awareness development shall be part of market development.
• Typical, replicable solutions can be worked out.
Public institution's projects

• Typical size: 5-10 kW, 10-30,000 €, if energy supply for only an individual building/facility is foreseen. The question is whether the produced green energy can be accounted in other institutions of the same owner. If yes, and if net metering is available for such cases, the project size may be bigger, up to 2-3 million €.

• Expectable number of projects: a couple of hundreds per year (?).

• Possible project owners are hardly aware of renewables and cost saving opportunities. Awareness development shall be part of market development.

• Typical, replicable technologies can be worked out, however, adaption of the technology to the site requires customization.
Investment type projects

- Production for the green electricity market (export) through the FIT system, or self-generation to replace purchased electricity.

- Project size up to 2-3 million € (UEG).
  - Can be 50-100 million € with large licensed generators.

- Custom designed solutions are required.
The vision of a venture, which provides comprehensive services on the DG market (the DG Company)
From development of the market to operational projects
Market development

• Developing the environmental awareness of people, institutions, and enterprises.

• Message: with renewable power generation you can save the environment (local air pollution, climate), and earn/save money.

• The green NGOs, the renewable industry organizations and the relevant government bodies are natural allies. It may make sense to establish special NGOs.

• Public communication tools available: campaigns, programs, distribution of materials, web-sites, etc.
Example: the Hungarian Energy Efficiency Society (META)

• Established in 2000 by enterprises, who wanted to make business of energy efficiency services: consultants, equipment suppliers, contractors, banks, universities, ESCOs.

• A not-for-profit organization serving the public good, at the same time creating business for its members.

• Web page, newsletter, regional and national conferences, participation in consultations about policy development, lobbying, harmonized marketing strategies.
Project development

• Prerequisite: the project owner has been identified (or created), and he wants to implement a project.
  • Business concept
  • Technical concept
  • Pre-engineering – technical and financial
  • Business plan
  • Licenses and permits
  • Identification of project participants
  • Contracts
  • Documentation

→ The project reaches its bankable stage
ESCO type DG Company

• Full service, One-Stop Shop.
• There is only a single contract between the Project Owner and the DG Company. Depending on the regulation, the Project Owner may have to sign the utility contract.
• All the other contracts are made by the DG Company.
• The investment and operational moneys flow through the DG Company.
• The costs of the DG Company are reimbursed by instalments.
• The ownership of the equipment is maintained by the DG Company for the contract period, or other types of collateral are offered by the Project Owner.
Network services, connection permit

Reduction of purchased electricity cost
Selling energy

License
Elements of ESCO-type contracts between the Project Owner and the DG Company

1. Background: the baseline energy situation of the Project Owner.
2. Technical specification of the investment.
3. Obligations of the DG Company (extensive list).
4. Obligations of the Project Owner (very short list).
5. Payment conditions. Instalments as percentage of savings or fixed sums.
6. Ownership and collateral.
7. Insurances.
8. Dispute resolution.
Facilitator type DG Company

• Comprehensive but not full service.

• There is a contract between the Project Owner and the DG Company. Other contracts are prepared by the DG Company, but signed by the Project Owner.

• The investment and operational moneys do not flow through the DG Company.

• The costs of the DG Company are reimbursed from the Project Owner (service fee) or the Contractor (success fee).

• The Project Owner offers collateral according to the financing arrangement.
Services that can be aggregated into the scope of the DG Company

1) Preliminary analysis of the energy situation at the Project Owner - may be a free service of the DG Company.

2) Preliminary proposal for the technical solution, price and business arrangement – the Project Owners are reluctant to pay at this stage.

3) Pre-engineering, resulting in precise costs, licensing documentations, and procedural proposal (what shall the Project Owner do) – against contract.

4) Arrangement of financing.

5) Management of implementation.

6) Supervision of operation.
Elements of facilitator-type contracts between the Project Owner and the DG Company

1. Background: the baseline energy situation of the Project Owner.
2. Reference to the preliminary proposal of the DG Company.
3. Obligations of the DG Company (pre-engineering, licensing, arrangement od financing, selection of contractors, supervision of construction and operation).
4. Obligations of the Project Owner (sign the contracts and other papers prepared by the DG Company, provision of access to the site).
5. Payment conditions. Instalments at project milestones.
6. Exclusivity for the DG Company for a period of time.
Financing of individual residential projects

• The easiest way of financing is cash payment by the Project Owner according to the schedule of the Project. Affluent Project Owners may be ready to do that.

• Another possibility is loan financing. The Project Owner is expected to pay a certain equity and the collateral can be the installed equipment.

• The third option is leasing. The lessor keeps the ownership of the equipment against a rental fee. The costs of installation shall be paid by the Project Owner.
Financing of larger projects

• One way of financing is **balance sheet financing**. A loan is arranged according to the practice of the Project Owner. The DG Company provides only assistance.

• Another possibility is **project financing**. The prerequisite is that the Project Owner is a single-purpose establishment, called Special Purpose Vehicle (SPV) or Project Company. This is possible if the Project is of the investment type (producing electricity for selling). If the Project is of the self-generation type, the selling of the electricity by the Project Company to the mother organization may be limited by regulation.

• **Leasing** is also possible. The lessor keeps the ownership of the equipment against a rental fee. The costs of installation shall be paid by the Project Owner.
Project financing is possible
Project financing may not be possible
Key to success: keeping the transaction costs low

• Transaction costs: labor costs for market development, project development, arranging financing, after sales services.

• The labor cost of the DG Company per project shall be limited to minimum.

• This is only possible if a pipeline of standardized projects is implemented, and public money is available for market development.

• The DG Company should execute a market survey and based on its findings work out typical solutions and documents, and select his suppliers and contractors.