Best practices of the Smart Synergy Project and Hungarian Case Study leading to the SET-UP Project (Hungary)

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Managing director, Tolna County Development Agency
SET-UP at a glance

« Smart Energy Transition to Upgrade regional Performance »

SET-UP aims at improving energy performance of the partner regions with **enhanced policies on smart grids**, addressing 3 main challenges of:

- **Empowering consumers**
- **Securing funding sources**
- **Developing economic models**

**SET-UP in figures**

- **1,35 M € ERDF**
- **2016 - 2021**
- **8 partners from 6 EU regions**

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# SetupProject
SET-UP partners

« Smart Energy Transition to Upgrade regional Performance »

- Regen
- Leicester Energy Agency / Leicester City Council
- Bretagne Développement Innovation / Regional Council of Brittany
- AREAL – Regional Energy and Environment Agency of Algarve
- Andalusian Energy Agency / Regional Ministry of Employment, Enterprise and Commerce
- Kaunas Regional Energy Agency
- Tolna County Development Agency
SET-UP interregional learning process
« Smart Energy Transition to Upgrade regional Performance »

1. Analyse common challenges
2. Exchange good practices
3. Define efficient actions

Support from regional authorities and key stakeholders

Improve regional energy policies
Focus on consumer engagement

« Smart Energy Transition to Upgrade regional Performance »

General lack of knowledge and understanding of the smart grid concept

Focus on good practices contributing to consumer engagement and the provision of information tools, support services and opportunities

- Demand response solutions
- Awareness raising initiatives
- New business models (e.g. self-consumption)
- Legislation
What have led to SET-UP? – Hungarian experiences

Smart Synergy project – Measuring the impact of smart meters on consumers

- Testing smart meters at representative group of diverse consumers, selected by statistical methodology
- Implemented by DÉMÁSZ - South-Hungarian Power Supply Plc.
- DÉMÁSZ Zrt. supplies electricity for 775,000 household and business customers all over Hungary and operates a network having a length of 32,320 km in South Eastern Hungary.
- The project has analysed the rollout solutions, obstacles and technological need from the aspect of a Distribution System Operator (DSO)
- Mission:
  - Analyse the attitude of the consumers related to SM
  - Examine the technological possibilities of multi-utility smart metering
  - Define possible business models for SM system
  - Observe the data security&protection aspects
What have led to SET-UP? – Hungarian experiences

Smart Synergy project – Measuring the impact of smart meters on consumers

- **Partners:**
  - ÉGÁZ-DÉGÁZ Földgázelosztó Zrt.
  - Szegedi Vízmű Zrt.
  - EDF DÉMÁSZ Zrt. (universal service provider)
  - EDF DÉMÁSZ Partner Kft. (installing meters)

- **Planned volume of meters**
  - Electricity meter: 3000 (500 PLC, 2500 GPRS)
  - Gas meter: ca. 10-50
  - Water meter: ca. 50-100 as submeter of block of flats
What have led to SET-UP? – Hungarian experiences

Smart Synergy project – Measuring the impact of smart meters on consumers

Budapest
city with county rights
town
village
What have led to SET-UP? – Hungarian experiences

Smart Synergy project – Measuring the impact of smart meters on consumers

Test metering:
*Consumer panel equipped with smart meters*
- where the changes in consumption due to metering or energy market offers can be registered.

Control meters:
*Consumer panel equipped with meters registering data with 15 mins frequency*
- similar characteristics as the test panel, therefore comparable as a reference consumption.

12,000

6,000

18,000
What have led to SET-UP? – Hungarian experiences

Smart Synergy project – Measuring the impact of smart meters on consumers

- Experiences:
  - Successful data reading: GSM 97-99%, PLC 96-98 %
  - PLC meters can be installed easily
  - The PLC concentrator should be installed with the same type of meter
  - External GSM antenna is needed for the 4 % of the meters
  - During the installation of the meters only minimal consumer resistance was found
  - It is hard to establish well-operating balance of the meter + adapter + head end + system + SAP
  - It is hard to adjust the gas and water meters
What have led to SET-UP? – Hungarian experiences

Smart Synergy project – Measuring the impact of smart meters on consumers
What have led to SET-UP? – Hungarian experiences

Smart Synergy project – Measuring the impact of smart meters on consumers

- Consumer information on SM

![Chart showing consumer information on SM]
What have led to SET-UP? – Hungarian experiences

Central Smart Metering LTD project – Smart meter rollout in Hungary

• Founded by MAVIR Ltd. as its wholly owned subsidiary in September 2011.
• Financial background for the company was provided by the Hungarian government by transitional allocation of carbon dioxide emission allowances free of charge with the support of the European Union.
• Mission: To harmonize the initiations of smart metering, smart grids, to support establishing synergies and competencies between the different industrial fields,
• **Tasks:**
  • Developing and testing of an infrastructure for data collection contributing to the modernisation of the energy system
  • Contributing to solving system regulation problems (household power plants, E-Mobility) and decreasing the system level energy losses
  • Providing necessary information for the country wide roll-out of smart metering in Hungary, collecting and methodizing experiences, creating recommendations
What have led to SET-UP? – Hungarian experiences

Central Smart Metering LTD project – Smart meter rollout in Hungary

Metering locations, partners in cooperation

- Municipalities of Budapest and rural municipalities managing city administration offices, public institutions: nursery, kindergarten, school, hospital, university
- Small household power plants and electric charging stations
- Infrastructure operators
- Energy Traders
- Market Players
- Citizens – Universal Service
What have led to SET-UP? – Hungarian experiences

Central Smart Metering LTD project – Smart meter rollout in Hungary

Public procurements
- 90% (October 2015 – August 2017)

System Integration
- 80% (August 2016 – September 2017)

Installation of smart meters
- 20% (March 2017 – October 2017)

Data Collection
- 15% (October 2016 –)

Closing Document
- 5% (March 2018)

Progress of the Central Smart Network Pilot Project
- 75%
What have led to SET-UP? – Hungarian experiences

Central Smart Metering LTD project – Smart meter rollout in Hungary

Examples for the technologies applied:

**Electricity - G3 PLC**

- The following appliances are used as the noise source in the field trial:
  - IH Heater, TV, triac, 3 Kotasu Heaters, Microwave, Rice Cooker, Water Pot, Blanket, and carpet vacuum
- The noise spectrum of two major noise sources IH Heater an Kotasu are as shown below:

![Home Appliances Noise](image)

**Natural gas – 169 MHz WMBUS concentrator**
SET-UP main activities

**Phase 1 (2016 – 2019):**
Interregional exchange and definition of an action plan for each territory

![Venn diagram showing Analysis of local energy systems, Exchange of good practices, and Definition of action plans]

**Phase 2 (2019 – 2021):**
Implementation and monitoring of the action plans
## Empowering consumers - SWOT

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<td><strong>STRENGTHS</strong></td>
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<td><strong>THREATS</strong></td>
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<td>Electricity Directive is transposed into the HU legislation.</td>
<td>Energy Efficiency Directive is not fully transposed to HU legislation.</td>
<td>Extended consumer empowerment actions targeting households and business units for a better uptake of smart metering.</td>
<td>Smart meters may reveal personal assets/appliances when the occupants are away or present.</td>
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<td>There are already successfully implemented smart grid pilots by DSOs.</td>
<td>Electricity prices are too moderated to provide impetus for demand side actions and decentralised electricity production.</td>
<td>Early detection of meter failures.</td>
<td>Data about personal energy usage can be sold to marketers or packaged with other data to create detailed portraits of the habits, lifestyle, and income level.</td>
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<td>Awareness raising actions target the end users/consumers.</td>
<td>Price of smart meter has to be probably born by the consumer (to be regulated after the pilot project).</td>
<td>Faster service restoration, flexible billing cycles.</td>
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<td>Regional pilot actions have been initiated by the DSOs, and currently a national level pilot is run by the TSO, experiences could be used.</td>
<td>Data privacy solutions are not complexly elaborated.</td>
<td>Providing a variety of time-based rate options to customers.</td>
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<td>The necessary technologies are available for metering and signal transmission.</td>
<td>Data transfer methods have to be carefully fitted to the location of the consumer (GPS for remote, PLC for densely inhabited areas), and some methods have their distortion risks.</td>
<td>Creating customer energy profiles for improved access to the electricity market via accurate consumption history and possibilities to benefit from demand flexibility.</td>
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<td>A dedicated company was set up on national level to coordinate smart metering.</td>
<td>Consumers are not aware of the meaning of smart metering and they are often sceptic about new technologies.</td>
<td>More accurate and timely billing.</td>
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<td>ICT companies are striving to join smart metering projects and integrate their technologies.</td>
<td>Dynamic pricing model and other benefits are not elaborated to provide advantages for the households.</td>
<td>Increased meter reading accuracy.</td>
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<td>Feedback on energy consumption to the consumer and his energy automation systems.</td>
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<td>Improved safety of humans and equipment through better power quality and fault management.</td>
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<td>Reduction in meter reads and associated management and administrative support (results indirectly lower energy costs for consumers).</td>
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<td>Improved utility asset management (results indirectly lower energy costs for consumers).</td>
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<td>Easier energy theft detection.</td>
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<td>Easier outage management.</td>
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SET-UP expected impacts

« Smart Energy Transition to Upgrade regional Performance »

Definition and implementation of action plans

Improved regional policies

New funded projects

New opportunities for local companies

Increased application of smart grids

Better energy management
Thank you.

Any questions?

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