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**GOOD PRACTICE, that successfully promotes sustainable development and regional attractiveness through peri-urban areas.**

**PART ONE - Characterize the selected Good Practice**

**What** - Short summary of the practice

**Creating a GIS system which is based on modern remote sensing methods and satellite data**

Post-socialist countries (thus Hungary) have undergone significant development since 1990, which affected our environment. Systems that form the basis of present-day urban and regional planning are outdated. To meet the challenges of the 21st century, municipalities/authorities need to set up new, modern methods. Based on remote sensing technology developed by Envirosense Hungary Ltd., the GIS system supports fact and data-based policy decision making.

This system could give an accurate picture of the state of green areas, urban spatial structure, building density etc. of a city. Time series analysis of satellite data show us how the urban structure of a given area, the proportion of built-in and green areas have changed over time, thus trends can be identified, ongoing processes can be monitored. In the GIS system the spatial is complemented with attributive data (e.g. demography, POIs and institution locations, public transport network data, etc.) that gives the basis of several spatial analyses.

Having such a database which integrates existing city development and urban management data enables to gain exact information of the values and economic activities of peri-urban areas. These data are important to set the goals of a sustainable development strategy.

Which PROSPERA leverages are core of this GOOD PRACTICE? : **(1) From smart to wise governance**

**Why** - Origin and aim of the practice

Modern remote sensing techniques allow us to create images of large areas in a short space of time, which can be processed and evaluated to provide a more accurate picture of peri-urban areas. Thanks to this comprehensive method we can set development goals more precisely.

The technology and know-how are available locally at Envirosense Hungary Ltd. and Remote Sensing Centre of the University of Debrecen.

**Where** is the practices implemented

Envirosense Hungary Ltd. observed several major Hungarian cities and built up database that has been a contributing factor in city planning and development.

Cities are: Budapest, Kecskemét, Érd, Szigetszentmiklós etc.

The Envirosense Hungary Ltd. is located at Debrecen. They made a database of Debrecen’s inner urban areas in 2017.

**When** – duration of the practice

Depending on the size of the peri-urban areas, the aerial survey can be completed in 1-2 days. From recorded data it is possible to create a database in just a few weeks.

**Who** is involved in the coordination and the implementation

Envirosense Hungary Ltd. and the Remote Sensing Centre of the University of Debrecen.

**How – What are the resources (staff – costs)**

Staff: the staff of Envirosense Hungary Ltd.

Resources: Envirosense Hungary Ltd. has all the technology, know-how and human resources, data processing and building the GIS database. Maintaining the system requires additional manpower from the municipalities.

Costs: can only be determined after the area has been selected. Costs depend on the size of the observed area. Unit costs are lower in case of assessing larger areas.

**PART TWO - Evaluate the selected Good Practice**

**Evidence** of **success** (result achieved)

Completed GIS system of major Hungarian cities: Budapest, Kecskemét, Érd, Szigetszentmiklós etc.

Case studies:

<https://envirosense.hu/case-study/>

Which are the **core** elements /**key** elements of success?

1. Data-driven, modern technology

2. Employees are skilled experts

3. R&D background is available; partnership between the company and the Remote Sensing Centre of the University of Debrecen

4. Existing GIS systems in major Hungarian cities

Potential for **learning** or transfer (already some communication material available?)

The success of using remote sensing data in decision making stands or falls on the transfer of information. By generating easy-to-understand information products, remote sensing become more tangible. Online platforms, map services where data can be filtered, analysed are great tools to support decision making.

Although, aerial remote sensing data is not available for each area, satellite data that covers larger areas can be widely used for several analyses. Data processing routines are already developed they just have to be adapted to any certain area of interest.

Municipality of Debrecen is committed to develop a GIS based decision support system, where all data will be channelled step by step to a database and online platform. The development of the system is already ongoing and the built framework is suitable to handle data for any municipality. Moreover, the flexibility of the framework gives the possibility for the implementation of new functions that are important for decision makers.

**Challenges** encountered (optional)

Although the system is data-driven, the effectiveness depends on decision makers. So, it is crucial to convince them to use this as a decision support system and to understand the capabilities of spatial data and GIS. To better analyse spatial processes, it is important to involve different stakeholders.

*Further information on this Good Practice (URL) :*

<https://envirosense.hu/>