# THE ENERGETIC POTENTIAL OF THE URBAN AREAS FOR THE THERMO PHOTOVOLTAIC REGENERATIVE HYBRID SOLAR SYSTEMS

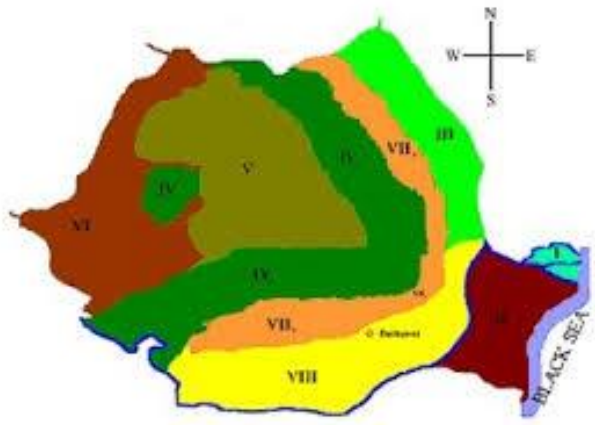
**Corina Macarie, Ionel Balcu, Bogdan Taranu**

*National Institute for Research and Development in Electrochemistry and Condensed Matter, 144 Dr. A. PaunescuPodeanu, 300569, Timisoara, Romania, Tel.: +40 256 222119*
*e-mail address:mac_cora@yahoo.com*

## Abstract

*Energetic potential of urban zones*

The implementation of an energy strategy for exploiting *the* potential of renewable energy sources (SRE) is part of the coordinates of Romania's energy development in the medium and long term and offers the appropriate framework for making decisions regarding the energy alternatives[1].
Renewable sources have significant energy potential and offer unlimited availability for use locally and nationally. These ensure increased security in energy supply and limit the import of energy resources, under the conditions of sustainable economic development. The requirements are realized in the national context, through the implementation of policies of conservation of energy, the increase of the energy efficiency and by the superior valorisation of the renewable sources[2].
The following figure shows the distribution of renewable energy sources in eight geographical territories of Romania: the Danube Delta, Dobrogea, Moldova, the Carpathians, the Transylvanian Plateau, the Western Plains, the Subcarpathians and the Roman Plains:




I- Danube Delta (solar energy);
II- Dobrogea (solar energy, wind energy);
III- Moldova (plateau plains: micro-hydro, wind energy, biomass);
IV- Carpathians (IV1- Eastern Carpathians; IV2- South Carpathians; IV3- Western Carpathians, high potential in biomass, wind micro-hydrosis);
V- Transylvania Plateau (high potential for micro-hydro and biomass);
VI- Western Plain (high potential for geothermal and wind energy);
VII- Subcarpathians (VII1- Geticisubcarpathians; VII2- Curvature subcarpathians; VII3- Moldovan subcarpathians: potential for biomass, micro-hydro);
VIII- Southern Plain (biomass, geothermal energy, solar energy).

Territorial distribution of renewable resources

*Recoverable hybrid solar systems*

Hybrid solar systems allow the storage of excess solar energy during the day, and at night, on cloudy days or when there is a power outage in the grid, or the automatic use of energy stored in batteries.

Photovoltaic systems have a number of advantages over conventional systems for electricity production. Among the most important features of a photovoltaic system are energy independence, modularity, operating safety, reliability and lastly the free fuel (the sun)[3,4].

Thermophotovoltaic technology is based on the conversion of thermal radiation from a heat source into electricity using photovoltaic cells.

The major differences from the classical photovoltaic system are due to the small distances from the emitter source and the photovoltaic cells. Thus, the temperature of the emitting body can be much lower, and the transmitted power density is much higher. Thermal radiation contributes to the heating of photovoltaic cells by conduction. In addition, due to heat losses not transformed into electricity, the cells are additionally heated[4].

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