

# Francesco Paolo Lamacchia

Polytechnic University of Bari, Italy



### TITLE

## Building-Integrated PV (BIPV) for Budapest's Panelház Blocks

### ABSTRACT

Panelház, is a soviet model of industrialized mass housing solutions, based on prefabricated panel apartments, that Hungary used for accommodating the influx of workers migrating from rural to urban areas after World War II. Panel apartment districts were designed as self-sufficient micro-communities with schools, medical facilities, shopping centers, and large green spaces. Nowadays, the increasing energy demand of the city along with to the energy poverty and the adoption of buildings' energy efficiency measures, imposed by EU directives, leads to a new energy renovation model involving clean energy production nearby or inside the building. This research shows the potential of BIPV facades in the Hungarian apartment blocks. A large amount of building facades constitute the true richness for all people living in an urban dense area, but they are still not harnessed. Each building can become an electric energy generator by avoiding ground-mounted photovoltaic systems' land occupancy. The goal is to contribute to a major awareness and knowledge of building integrated photovoltaic technologies in multi-family residential buildings of central eastern Europe and to understand the economic and architectural impact. Due to the ageing Budapest's Panelház Blocks, most buildings do not meet modern European energy standards, and PV-roof building-integrated systems do not satisfy the household's energy demand.

### CV

Francesco Paolo Lamacchia is a PhD candidate in Sustainability Engineering and Safety in Civil & Industrial Building (DRISS) at the Department of Civil Architecture, Built Environment and Design of the Polytechnic University of Bari, Italy (PhD Programme with the University of Salento and ITC-CNR). He also holds a Doctor of Philosophy in Earthquake, Structural and Geo-mechanics Engineering from the Politecnico di Milano (2004-2008) and an M.S./B.S. degree in Civil-Architecture Engineering from the Politecnico di Bari (2003, summa cum laude). Since 2010, he has been active as a consultant, researcher, and project designer in renewable energy systems, zero-energy buildings, and building-integrated photovoltaics. He is the founder and president of the First Italian National Zero Energy Building Network (Network Ec0) and has extensive international experience as a speaker, workshop organizer, and peer reviewer. His recent work includes large-scale agrovoltaic plant design and BIPV integration in urban building renovation.

