

BIPV AS A GLOBAL TREND

Introduction

BIPV (Building Integrated Photovoltaics) are primarily used for facing of buildings with ventilated facades. In addition to generating electricity, BIPV modules provide the aesthetic appeal of the facility, giving the building an architectural expressiveness. Popularity of BIPV solutions is growing rapidly throughout the world. New industry and the whole community is being formed. New standards are being written. The industry is full of innovations - from engineering to installation, from usage of new materials to creation of new legislation acts. Expansion of BIPV systems has been increasing in recent years due to the growing awareness of consumers about saving energy, primarily in the USA, UK, Germany and Japan. The global compound annual growth rate for the BIPV sector from 2009 to 2021 is about 40%. In most European countries, new rules on the energy performance of buildings (stemming from the European Directive on the Energy Performance of Buildings and the Energy Efficiency Directive) have been translated into national rules and standards. The integration of photovoltaic systems into the facade of a building, in addition to the main function of converting solar power into electric power, is able to improve the appearance of the building, and acts as a protective and decorative function of the buildings external structure.

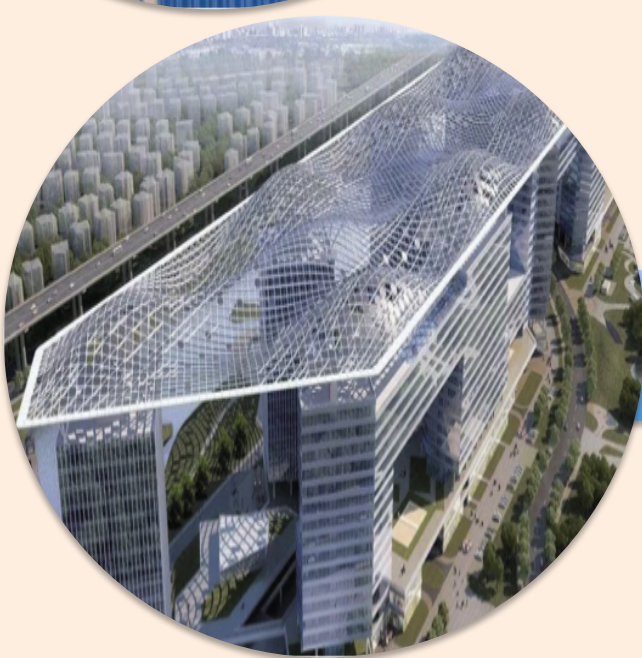
BIPV Projects Growth



BIPV façade, Germany, by A2 Solar



BIPV façade, Belgium, by ISSOL

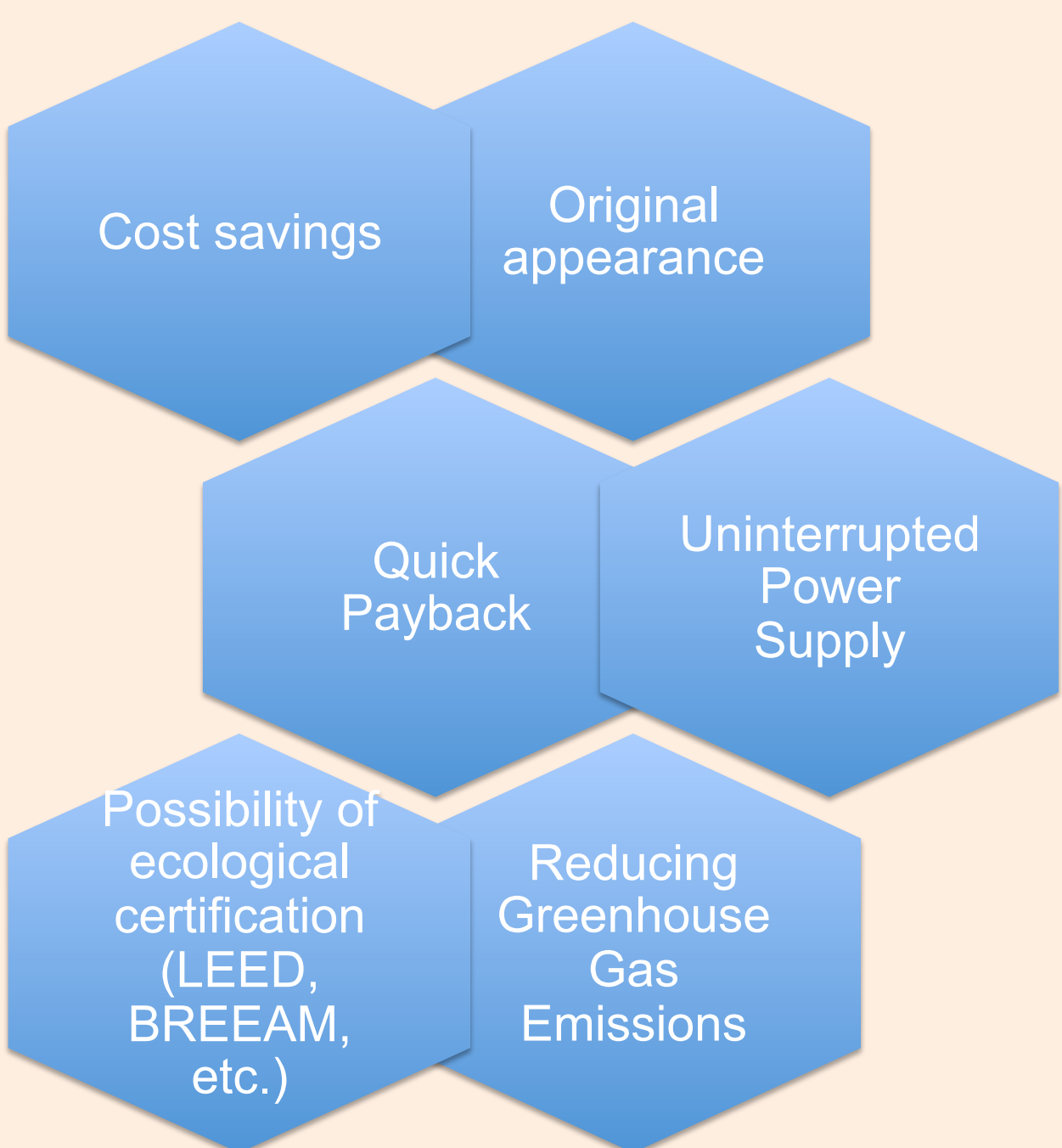


BIPV roof, Shanghai, China



BIPV façade, Mumbai, India

Advantages of a BIPV System

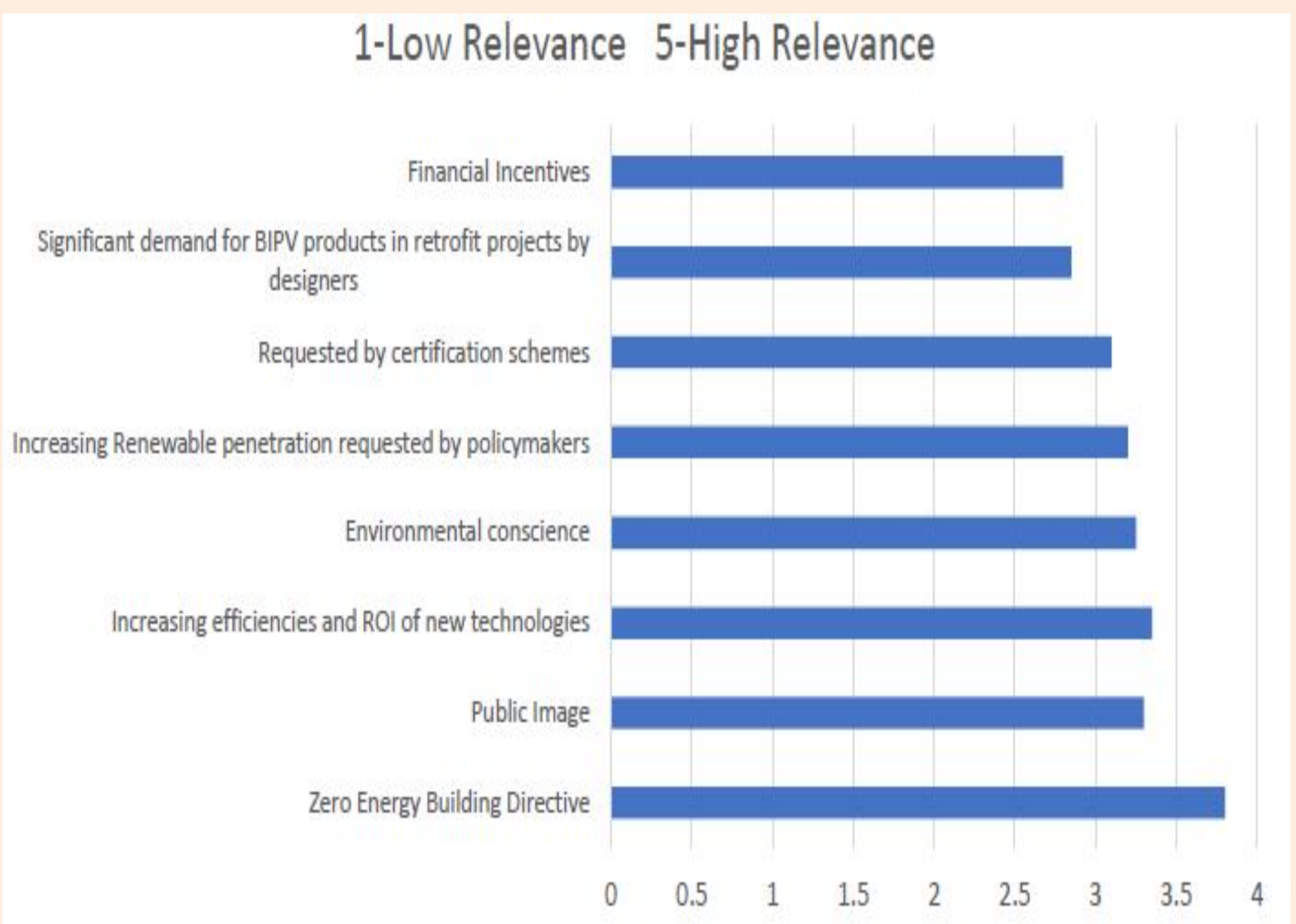


Designed buildings with BIPV

A Moscow high-rise building that will deploy Hevel's BIPV product

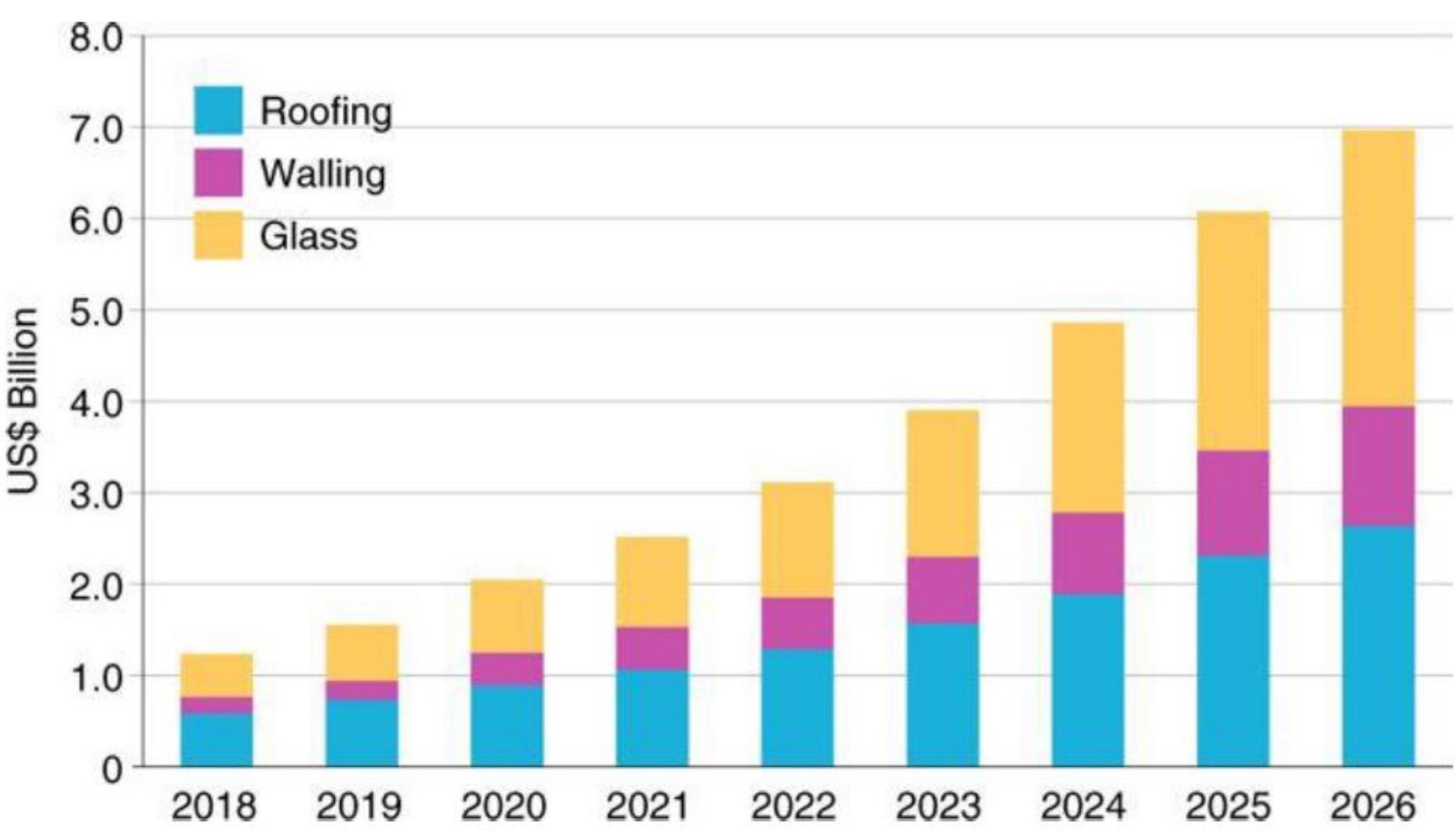


Key Market Drivers



BIPV Market Growth

Current and forecast BIPV market in US \$



BIPV in Russia

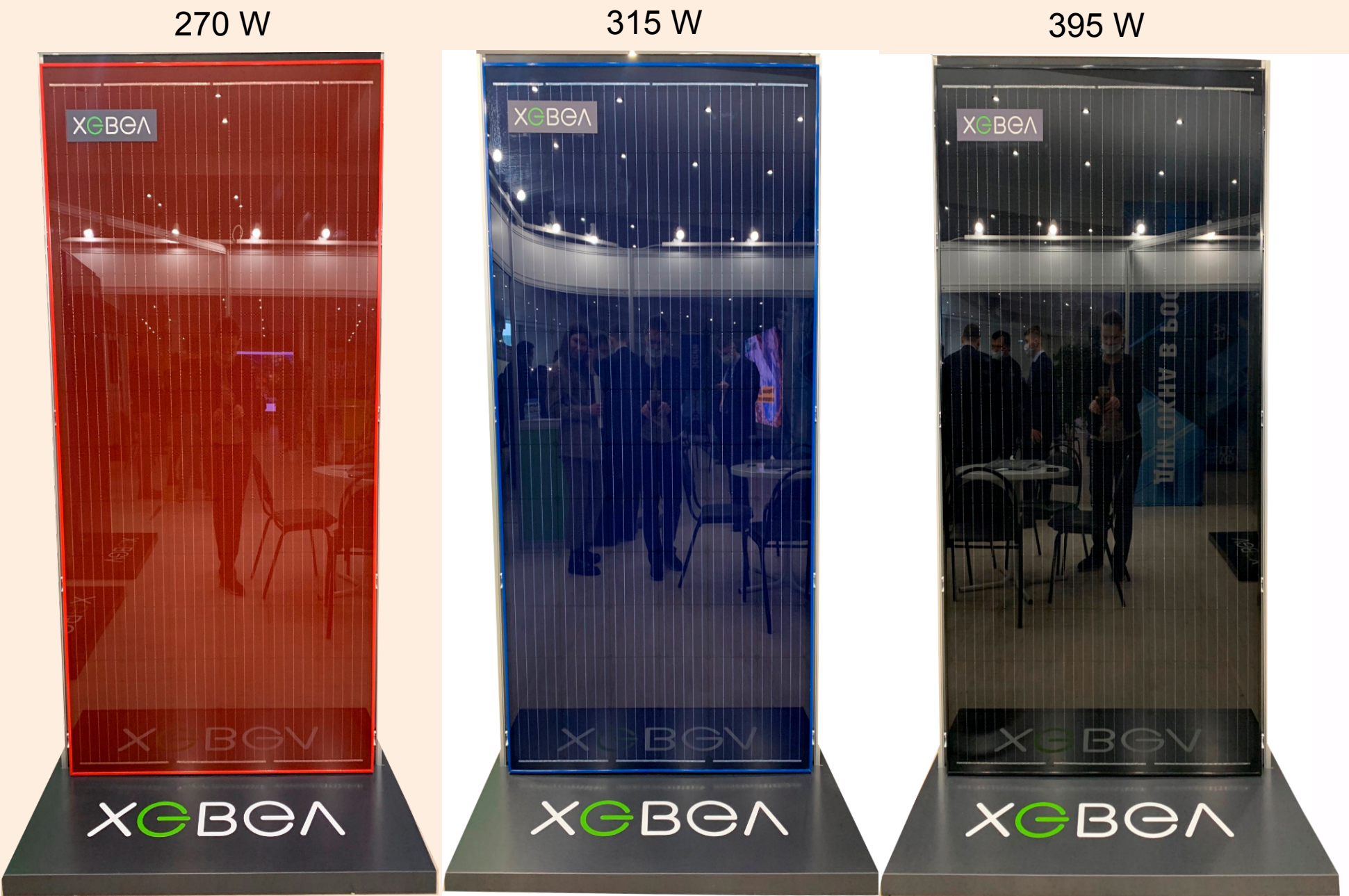
First BIPV Project in Russia, Omsk, by Hevel Group, 2019



Research Hypothesis

BIPV systems can provide savings in construction materials and expenses for grid electricity, reduce environmental impacts and generate additional interest in the architectural design of a building. Specialists in photovoltaics and modern designers in Europe, Japan, the USA and other countries have been introducing solar solutions for building facades for several years, which is gradually forming a completely new type of architecture. The implementation of BIPV solutions will become a global trend in solar energy during this decade. It will radically change the urban environment and shape the modern architectural appearance of cities.

Colored BIPV solar panels, Moscow, by Hevel Group, 2021



Conclusions

BIPV market will grow rapidly during this decade both in developed and developing countries. Solar panels as a facing material influence the formation of the architectural appearance of the building. BIPV solutions also create space for the creativity of architects and designers due to the variety of colors and dimensions. The construction of BIPV systems using an innovative facing material with proper government support can initiate the creation of a new industry at the junction of construction and green energy. As well it will contribute to the achievement of the global goals to reduce greenhouse gas emissions by 2050. The emergence and consolidation of BIPV solutions in the construction materials market will give impetus to the development of green technologies in construction and encourage companies from different industries to invest more actively in the development of new construction technologies and the development of innovative carbon neutral construction materials.

Contacts and further information

This poster has been made by **Vladislav Sukhanov**. If you are interested in cooperation or have any questions concerning this research, feel free to contact me. E-mail: sukhanowlad@gmail.com

