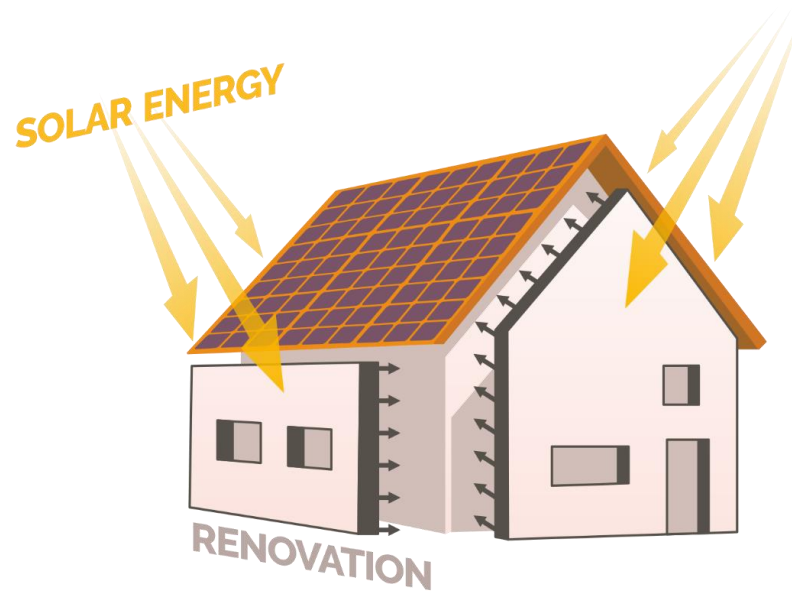




ENergy harVesting by Invisible Solar IntegratiON in  
building skins

## ENVISION Project Presentation



ENVISION aims at developing and demonstrating an **integrated renovation concept** using all the available building surfaces for thermal and electrical energy harvesting.



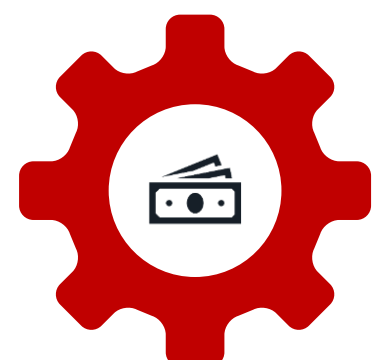
**8 WORK  
PACKAGES**







**13  
PARTNERS**



**54  
MONTHS**

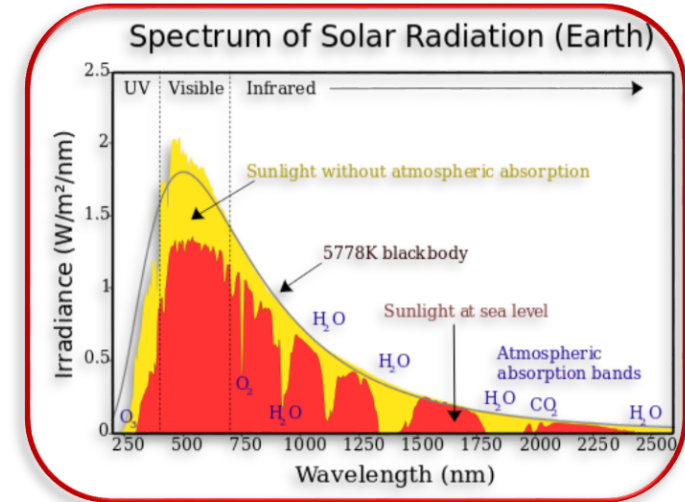
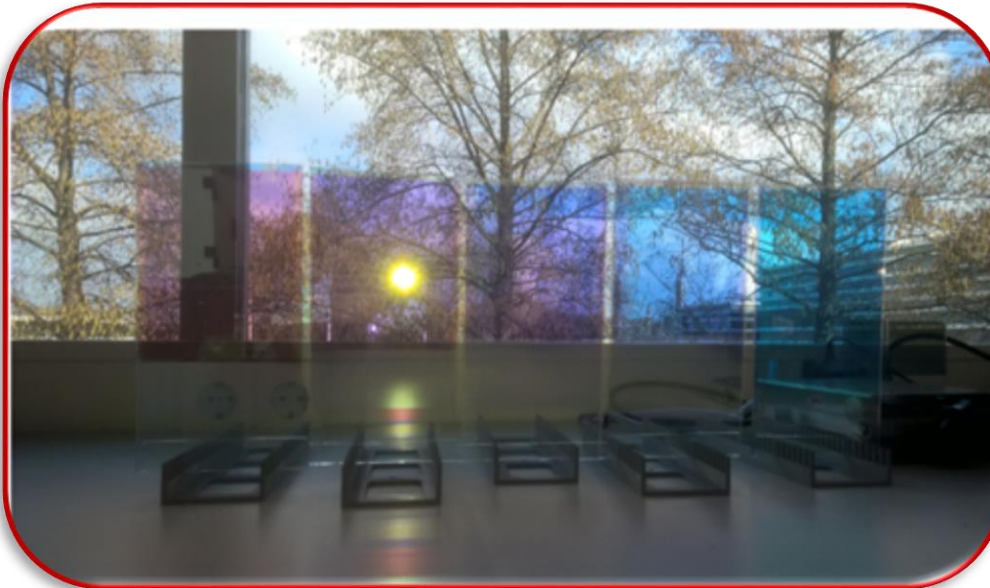


**6M  
BUDGET**

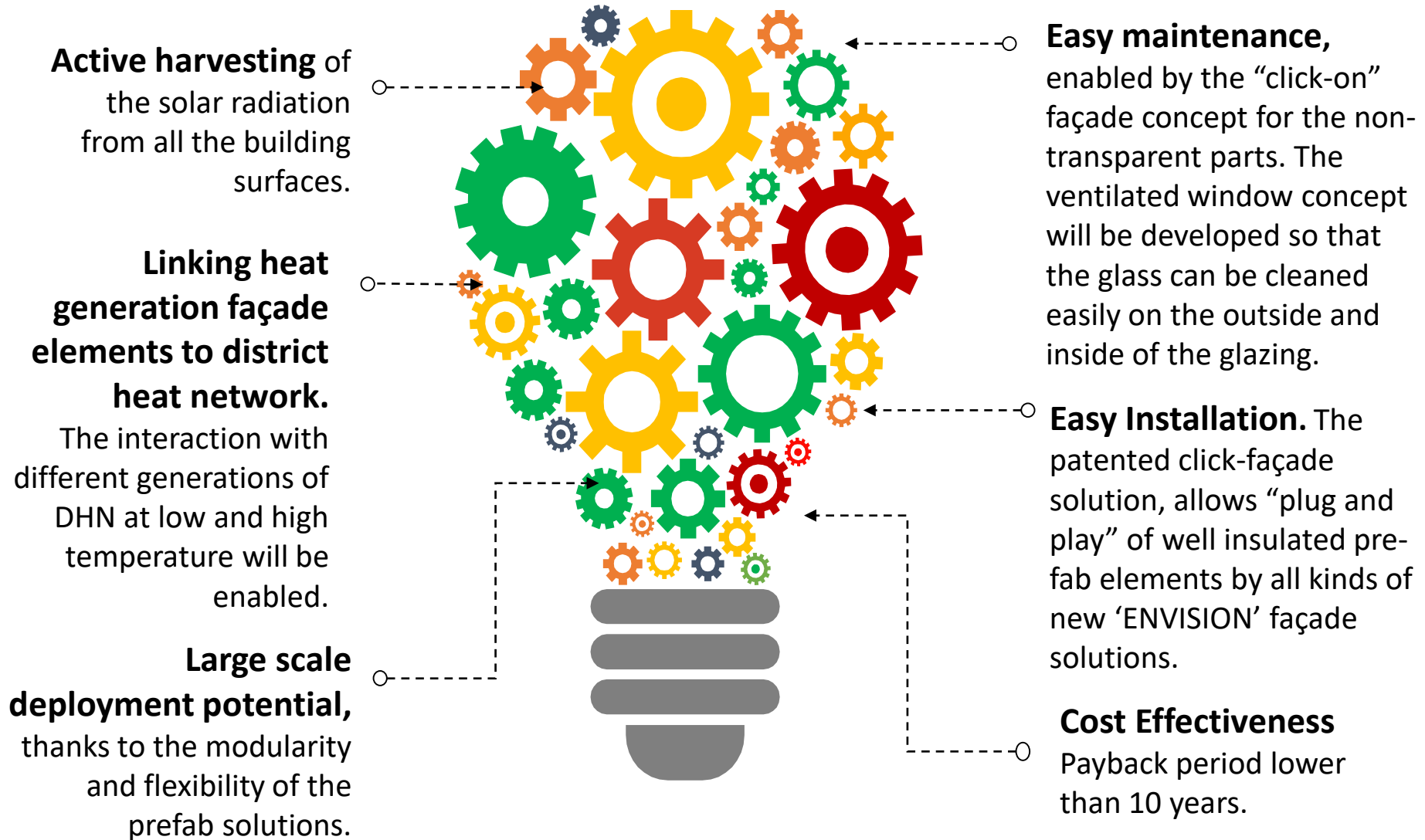
-  To achieve the European goal of an **energy-neutral built environment** in 2050, harvesting of solar energy from all surfaces of buildings should be maximized.
-  Considering that approximately 85% of existing dwellings were built before 1990 with poor insulation ( $R \leq 1.6 \text{ m}^2\text{K/W}$ ), **major renovation will take place in the upcoming period.**
-  Efficiently managing solar radiation on buildings provides an enormous potential, since in EU28 a total of **60 billion square meters of façade surfaces exists**, and the current usage of solar radiation on opaque surfaces is still minimal.
-  Together with roofs this would mean a total of **120 billion square meters** of potential energy harvesting surfaces.

ENVISION focuses on **energy harvesting of the façade**.

The technologies work by absorbing the invisible part of the solar radiation, the **near-infrared (NIR)** part, constituting roughly the **50% of the solar energy spectrum**.



Because it is invisible, the NIR radiation can be harvested while **retaining visible and aesthetic aspects** of the façade.





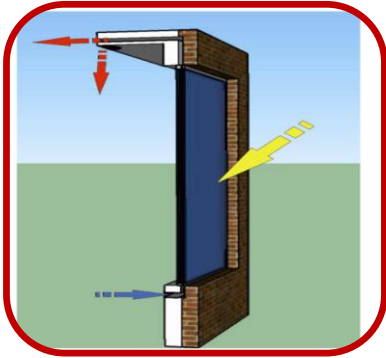
## **Solar heat collectors based on the usage of NIR absorbing coloured coatings.**

The covered and uncovered colored heat harvesting facade elements are designed in such a way that a maximum energy with retaining aesthetics are achieved.



## **Covered solar heat collectors using colored NIR transparent glasses**

Colored glass is provided with high transmission features to obtain nice aesthetic properties combined with high energy storage



## Smart ventilated heat harvesting window

The ventilated glass solution will harvest heat from the infrared part of the solar radiation,. In the summer mode the heat is harvested via an heat-exchanger, to be used whenever needed. In winter mode the air is heated and directly used in the inside.



## PV harvesting glasses

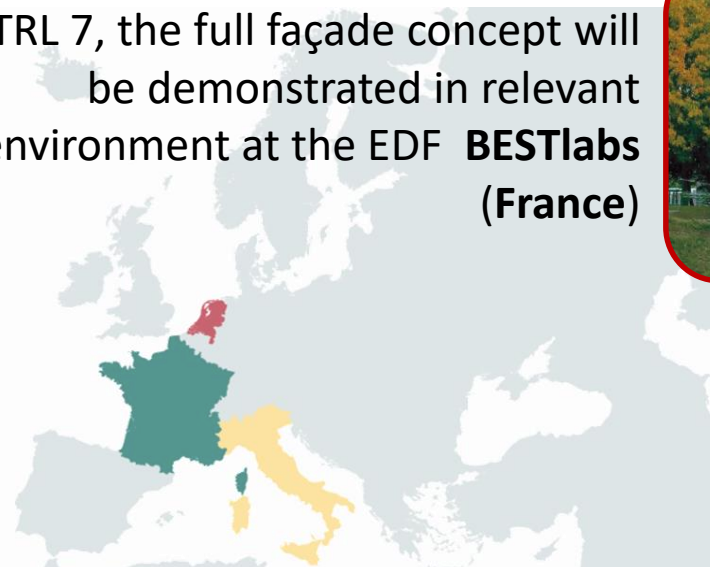
PV glass with transparent appearance and improved efficiency that harvest electricity from the PV part of the glass





TRL6 real case-study of subsystem prototypes will be tested (façade element) at the **SOLAR-Beat (Netherlands)**.

At TRL 7, the full façade concept will be demonstrated in relevant environment at the EDF **BESTlabs (France)**



Technologies will be finally tested in real environment (TRL8) to study the link to the district network and the grid connection (**Italy, University of Genoa Savona Campus**), and in a real case study of a renovation action (**VESTIA apartments, Delft**)







For further project information please contact:



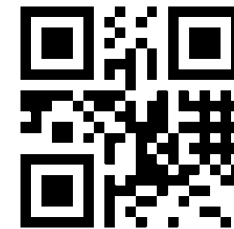
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Visit the project's website for more information:

**<http://www.energy-envision.eu>**



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