## Schools as Living Labs for the New European Bauhaus



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## NEW EUROPEAN BAUHAUS







## Outline

- Introduction to the New European Bauhaus (NEB) initiative
- Examples of buildings and cities transformation
- NEB and School buildings
- NEB Labs in educational settings





## New European Bauhaus in a nutshell

- The New European Bauhaus (NEB) initiative started back in January 2021, expressing the EU aim and desire of creating beautiful, sustainable and inclusive places, products and ways of living.
- The New European Bauhaus is a creative and interdisciplinary initiative that connects the European Green Deal to our living spaces and experiences.
- The New European Bauhaus initiative calls on all of us to imagine and build together a sustainable and inclusive future that is beautiful for our eyes, minds, and souls.



## New European Bauhaus in a nutshell (2)

- The European Energy Performance of Buildings Directive (EPBD) required all new buildings (public buildings from 2019) to be nearly zero-energy buildings (nZEB) by 31 December 2020. Already since 31 December 2018, new buildings occupied and owned by public authorities should be nZEB.
  - EU is nearly on track when it comes to investments in renovation, these investments do not adequately deliver on the EU's decarbonisation and energy efficiency targets for buildings.





## **Key pillars**

#### **SUSTAINABILITY**

- climate goals;
- circularity;
- zero pollution;
- biodiversity.

**AESTHETICS** 

- quality of experience and style;
- inspired by art and culture;
- responding to needs beyond functionality.

#### INCLUSION

- diversity;
- equality for all;
- accessibility;
- affordability.



New European Bauhaus beautiful | sustainable | together





## NEB into the delivery of transformation

- **Reconnecting with nature:** more awareness and willingness to address climate change and reduce exposure to pollution.
- **Regaining sense of belonging:** building bridges between people, emphasizing the role of cultural and social assets as key factors to make place unique.
- **Prioritising the places and people that need it the most:** affordable and accessible solutions for all, with focus on the most vulnerable groups and individuals.
- Fostering long term, life cycle and integrated thinking in the industrial ecosystem: the need for more circularity to tackle unsustainable use of resources and waste.



### The CO-DESIGN phase

The first step taken by the Commission was a six-month co-design phase, where the civil society and stakeholders were invited to contribute with ideas, visions, examples and challenges. It was crucial to involve people from different backgrounds and areas to think and work together following a participatory approach.



## **Upcoming projects**

#### Croatia - City of Dubrovnik

The project proposal aims at **transforming the factory** into a place that promotes local creative ideas, coexistence of the local community and tourists.

#### **Cyprus - Nicosia Municipality**

The project aims at bringing life back to the area (main pedestrian commercial streets) in an aesthetically pleasing, inclusive and sustainable way.

#### **Denmark - The municipality of Albertslund**

The project aims at **transforming a former prison into a new liveable and green neighbourhood**, where the future residents of the area.

#### **Greece - Municipality of Katerini**

The project proposal rests on **re-designing the urban space of the city's center** through extended water-permeable paving systems, natural materials, natural elements such as trees, shaping a new sustainable identity.

#### Latvia - Cēsis Municipality

RAINIS is a meeting and working place for the creative community in the heart of the city with its own ecosystem, where people of all ages meet to set the direction for a better and greener future

#### Portugal - Municipality of Pampilhosa da Serra

The project idea is to define and implement a new policy mix for the Villages of the cross-border EUROACE Euroregion, structure catchment areas based on complementary network services and foster new rural-urban relationships.

#### Spain - Ajuntament de Sant Boi de Llobregat

The transformation of an existing building into an innovative education public facility. It is intended to become a green, neutral-emissions building with a spirit of full circularity.





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## **New European Bauhaus in Education**

## NEB – Labs in Schools

- Demonstrate that Educational Buildings could become Enablers of the New European Bauhaus,
- Develop and deliver the pathway on how schools can become a physical place of education and knowledge,
- **Propose ways of learning or gaining knowledge** and/or the education and pedagogical focus for an effective **integration of these topics to the curriculum** and finally,
- **Re-consider the relationship of the schools with the local communities** as hubs of innovation towards the green transition and sustainable development (**Co-design**).



## **NEB and School buildings**

- Significantly reduce the consumption of energy-resources with qualitative retrofitting in a circular approach (= <u>Footprint reduction</u>),
- Make the existing buildings 'Net zero consumers' with renewable energies in self-consumption,
- Be prepared for rising temperatures, heat waves/storms, seasonal water shortage with smart adaptation of the urban environment (= make a just and safe side step to restoring nature) – NBS & green neighbourhoods
- **Targeting a deep change in behaviour (knowledge, offers and habits)**, with rising need for lifelong Education involving 3 generations in cooperation, for achieving with a learning by doing process sustainable global performance, in continuous improvement (= <u>Environmental Handprint</u>).





## NEB and School buildings (2)

Energy use of school buildings in European countries (varying from about 52 to 197 kWh/m2 year) .







## NEB and School buildings (3)



Thermal and Energy Consumption of 68 European School Buildings (Standard, Low-Energy and Passive Buildings) in different locations of Europe.



Pro – environmental behavior

### **Innovative & holistic pedagogies**

Educational approaches

Living Labs

Links to the curriculum

**NEB** goals

Green competencies

GREEN FUTURE

Concrete and replicable climate action plans

GDA

**Green Digital Accessibility** 





## 

Based on the concept of the Living Labs and the New European Bauhaus initiatives, **NEB-Labs will** work as a 'think and do tank' to co-create, prototype or even test new tools, solutions and policy recommendations in the school settings.





## LLs & Co - creation

The four steps of our living lab methodology

- Co-creation: Identifying needs Defining issues –
  Coming up with ideas
- Exploration: Going deeper into selected ideas Defining main questions or elements to test in the real world – Dealing with feedback, the unexpected, new questions
- **Experimentation:** Testing the prototype or scenario of the solution in real life
- **Evaluation:** Analysing the results of the experimentation to validate or improve the solution





## **NEB – Labs topics**

- Indoor Air Quality
- Thermal & Acoustic Comfort
- Visual Comfort and Daylighting
- Building design
- Energy use











## NEB – Labs topics (2)



Lighting: Example classroom side lighting strategies for both north and south orientations



Heating - Fractal Shade: applying the fractal geometric concept by using smaller surfaces to get larger heat exchange

Smart Urban Metabolism: Towards a Real-Time Understanding of the Energy and Material Flows





**ICTs** & BIM-enabled mobile mixed reality visualisation of heating and ventilation pipes



## 

'NEB-LAB approach considers that schools and educational spaces by facilitating the transformation of the pilot sites to innovation hubs in their communities, raising citizen awareness activities to facilitate social innovation, promoting education and training for sustainability, conducive to competences and positive behavior for a resource efficient and environmentally respectful energy use.'









# Thank you for your attention.

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