Urban regeneration in the aftermath of the Baia Mare cyanide spill – the C-BREATH project as an idea for an EU promoted Urban Innovative Action

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WHERE DOES THE STORY BEGIN?

On the night of **January 30, 2000**, a dam holding contaminated waters burst at a mining works in Bozinta Mare (Baia Mare), Romania, and **100,000 cubic meters of cyanide-contaminated water** (containing an estimated 100 tonnes of cyanide) spilled over some farmland and then **into the Someş River**.

The gold mining company, Aurul, was a joint venture of Australian company Esmeralda Exploration and the Romanian government.

The polluted waters eventually reached the Tisza and then the Danube, killing large quantities of fish in Hungary and Serbia. The spill has been called the worst environmental disaster in Europe since Chernobyl.

This is an example of the devastating impacts of an accident with **transboundary effects**. This is why **transboundary cooperation** on prevention and response to potentially far-reaching accidents **is** so **important**, **which the UNECE Industrial Accidents Convention helps countries to achieve.**

THE INSPIRING OPPORTUNITY

Urban Innovative Actions (UIA) is an Initiative of the European Union that provides urban areas throughout Europe with resources to test new and unproven solutions to address urban challenges. Based on article 8 of ERDF, the Initiative has a total ERDF budget of EUR 372 million for 2014-2020.

Urban Innovative Actions offers urban authorities with the possibility to take a risk and experiment the most innovative and creative solutions.

The Partnership on "Air Quality" of the Urban Agenda for the EU aims to improve air quality in cities and to bring the 'healthy City' higher on the local, national and EU agenda.

C-BREATH

Catch the city's breath

To catch one's breath means to start breathing regularly again after experiencing a heavy physical stress. The stress suffered by Baia Mare in being , for many years, the mining and metallurgical capital of Romania. This role left profound signs in the development of the city, but also on the inhabitants' health.

STATE OF PLAY

Places: recent studies indicate soil pollution with Pb (up to 3943 mg/kg) as the main pollutant and also with Cu (ut 621 mg/kg), As (ut ,72,5 mg/kg) Cd (ut 21,1 mg/kg) and Zn (ut 1002 mg/kg)
as significant contributors, while Cr, Ni, Sn, Sb and Co are below the alert threshold. Ferneziu district is the most polluted area, followed by Săsar and the Center (Mihali, 2017): Where
contamination is over the threshold the HMs has concentrations until the quintuple of the acceptable value.

People: The reports based on studies conducted targeting air pollution public health consequences in BM, indicate that “a more significant deterioration of public health occurred in this
region compared to other settlements” (Coman, 2006). The studies’ results showed that:

- life expectancy reduced by 2,2 years;
- the overall mortality index 10-15% higher;
- D2 avitaminosis frequency 65-95% higher;
- the frequence of metabolic diseases caused by Pb 40-60% higher.

Pb was considered the main pollutant in the BM area, causing many cases of lead poisoning (Manoiu, 2018).
The data here above provide the reason why it is necessary to intervene to secure the air pollution sources (open

THE MAIN OBJECTIVE

Economy

- Local post-industrial economy based on knowledge;
- Quality space both for leaving and working;
- Generating link with adjacent urban and rural;
- Powerful tourist attractor.

Environmental protection

- Eliminate all the environmental hazards;
- Reinforcing the green infrastructure - network of ecological corridors and green quality spots;
- Relink the Rural, Ru-urban and Urban Ecosystems;

Socio - cultural

- Support to the touristic development currently showing quality and attractiveness just in the rural areas surrounding Baia Mare;
- A new contextualization linked to the development of an economy based on services, knowledge and creativity.

OVERALL OBJECTIVE: To get rid of the many **environmental hazards** still present within the city fabric that can further affect the air quality with relevant risks of toxic dusts through an innovative approach to brownfields management and decontamination

THE SPECIFIC OBJECTIVES

1) To mitigate and, on medium term eliminate heavy metals with re-suspension risk currently affecting air, soil and water in Baia Mare using advanced and cost-effective bio- andphytoremediation techniques, giving historically closed-off areas back to the city for redevelopment;

2) To deploy immediate implementation of nature-based measures and solutions that consent the amelioration of the quality of air and the reduction of environmental risks, specifically through large-scale city green infrastructure along the Săsar River, reuse of pilot biomass as heating and electricity source for residential use, and policies supporting implementation of environmental renewal of housing (in line with the local Integrated Strategy);

3) **To develop a locally-rooted, municipality-backed immaterial Local Environmental Utility cryptocurrency fostering better and more socially-responsible services and eco-entrepreneurship initiatives**

4) To constantly monitor, via innovative real-time iGIS and community Monitoring Tools (sensors), the progress of the implemented measures and create a replication plan for the over 25haof contaminated sites in Baia Mare and 1682 contaminated sites in the National Inventory;

5**) To set up the Clean Air Innovation Hub as an innovation driver at EU level** and training provider for local and EU new clean air-based economies and practices.

THE ENVISAGED SOLUTIONS

The proposed solutions frame a strategic approach composed of innovative and conventional planning tools.
These tools entail mitigation, remediation, community building and training activities.
The solutions affect 5 topics:

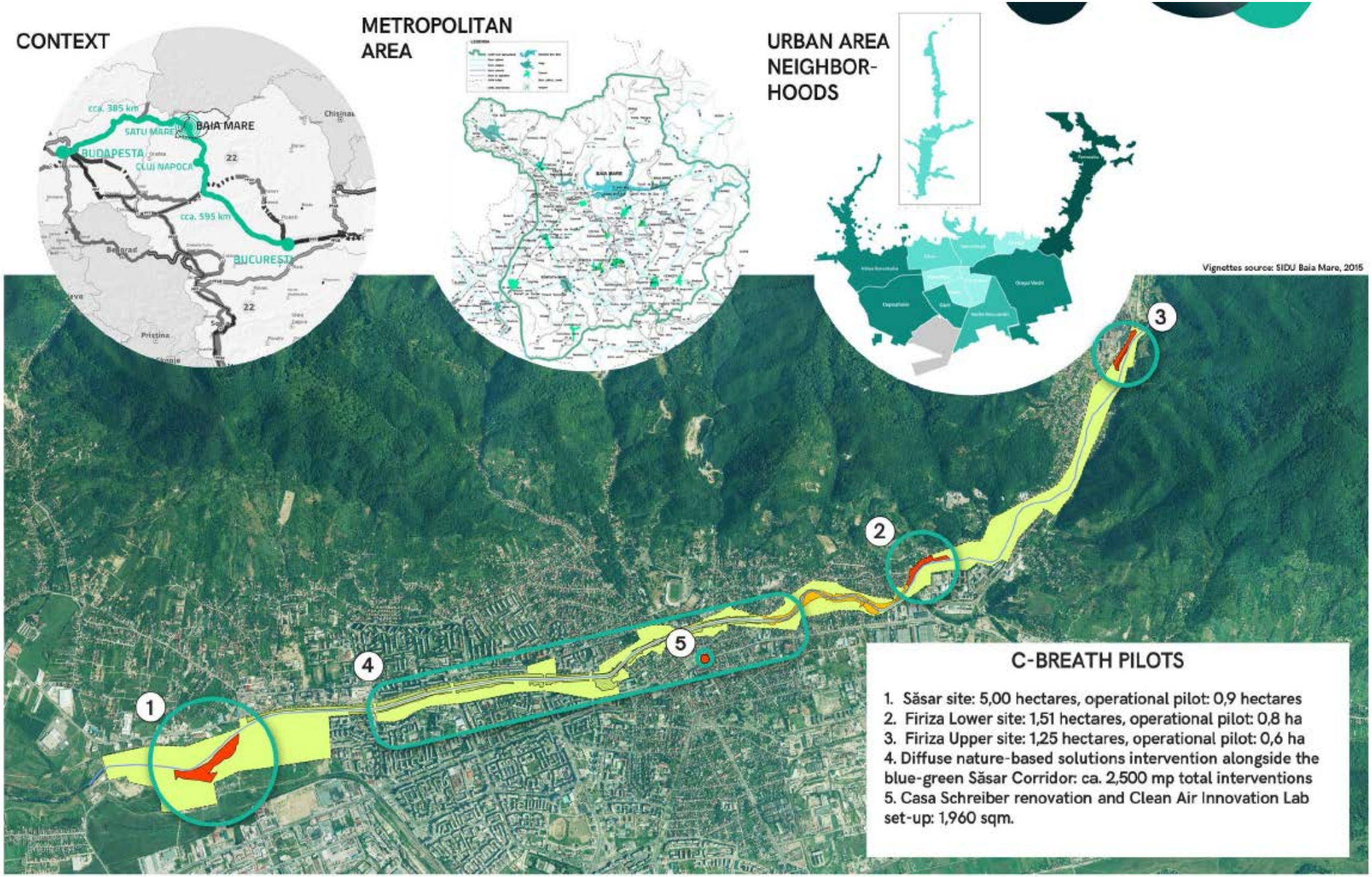
The 1st is related to mitigating the many environmental risks still affecting the city (e.g. air quality affected by presence of toxic dusts).

The 2nd is targeting the achievement of sustainable land use management (e.g. recovering highly contaminated soils and strategic land reserves for community use).

The 3rd is recreating landscape, environmental and public space quality in the city fabric.

The 4th is linked to active involvement of the local community actors towards comprehensive planning and economic process promoting use of a local currency.

The 5th is based on the decontamination of pilot public areas through use of innovative methodologies and techniques (e.g. bioremediation).



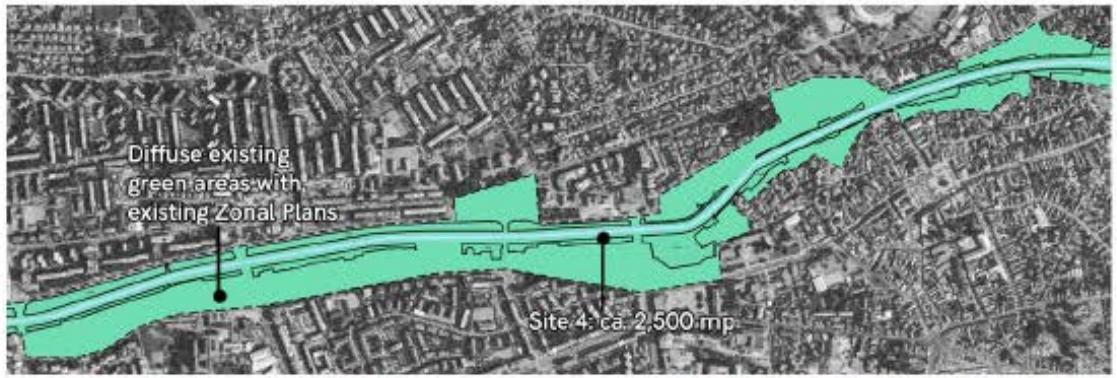
C-BREATH activates 5 pilot areas (1 in Sasar, 2 in Firiza, 1 in Center and along the Sasar River). The pilot areas, accounting for around 10 ha in total, are all in public property, and presentcontaminated soil with pollutant air resuspension risk, with exception of the one in the center (Historical House to refurbish for the BM Clean Air Urban Innovation Hub)

Piloting Site 1: SĂSAR

Piloting Site 2: Firiza Lower

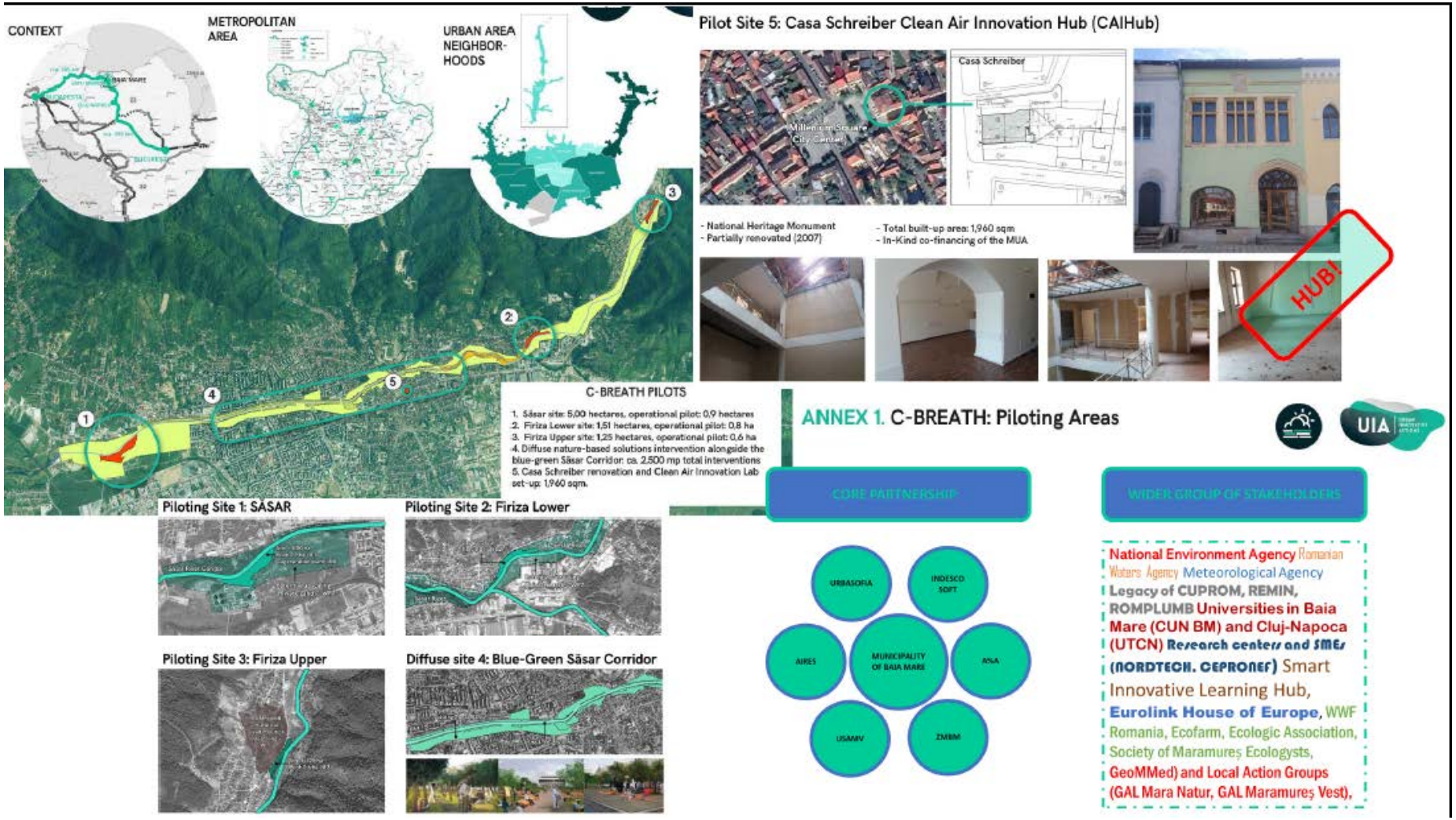
Piloting Site 3: Firiza Upper

Diffuse site 4: Blue-Green Săsar Corridor



CONCLUSIVE REMARKS

C-BREATH's will use an innovative and circular approach to brownfield management and decontamination, integrated planning and connected residential and mobility „0 cost" policy
packages supported by a local Environmental Currency (iLEU) to transform contaminated areas in a large scale green infrastructure, improving the quality of the air, of other key environmental assets and re-shaping the Baia Mare forma Urbis.



THANK YOU FOR YOUR TIME AND ATTENTION

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