CASE STUDY

NEBULA

PROJECT NAME:	NEW EUROPEAN BAUHAUS CIRCULAR HOUSING IN UKRAINE
PROJECT IMPLEMENTER:	NGO RO3KVIT
WEBSITE:	https://ro3kvit.com/projects#pilot-projects

PROJECT OBJECTIVES:

AS OF 8 SEPT 2022 AT LEAST 15,300 HIGH-RISE BUILDINGS, 115,900 PRIVATE HOUSES, 44 SOCIAL CENTERS, 1,118 EDUCATIONAL INSTITUTIONS HAVE BEEN DAMAGED IN UKRAINE DUE TO THE WAR.
RE-BUILDING OF UKRAINE SHOULD BE DONE AS CARBON NEUTRAL AS POSSIBLE. UKRAINE HAS ALREADY TAKEN COURSES ON THE GREEN RECOVERY (LUGANO, BERLIN) AND SHOULD CONTINUE.
CIRCULAR CONSTRUCTION MEANS TO DEVELOP, USE, AND RE-USE BUILDINGS, SITES AND INFRASTRUCTURE WITHOUT UNNECESSARILY EXPLOITING NATURAL RESOURCES, POLLUTING THE ENVIRONMENT AND DAMAGING ECOSYSTEMS.
BUILDING IN A WAY THAT IS ECONOMICALLY SOUND AND CONTRIBUTES TO THE WELL-BEING OF PEOPLE, ANIMALS, NATURE AND THE EARTH.

OBJECTIVE: TO CONTRIBUTE TO THE PREPARATION OF SUSTAINABLE DESIGN AND ENGINEERING IN RECONSTRUCTING UKRAINE BY
1) COLLECTING POTENTIAL SOLUTIONS FOR RECYCLING AND RE-USING DEMOLISHED BUILDINGS AND INFRASTRUCTURE AND
2) RESEARCHING CIRCULAR CONSTRUCTION METHODS USING UKRAINIAN RESOURCES.

PROJECT RECIPIENTS:

KEY STAKEHOLDERS THAT CAN DRIVE THE TRANSITION TO CIRCULARITY ARE INVESTORS, DEVELOPERS AND POLICYMAKERS. POLICYMAKERS NEED EVIDENCE BASE (IMPLEMENTED CIRCULAR PROJECTS), INVESTORS AND
DEVELOPERS TO CREATE AN EVIDENCE BASE TO MAKE THE COMMERCIAL POTENTIAL IN IT EVIDENT.

PROJECT RESULTS:

DEVELOPMENT AND SET OF RECOMMENDATIONS FOR THE INTRODUCTION OF NEW TECHNOLOGIES FOR CONSTRUCTION, TAKING INTO ACCOUNT EXPERIENCE OF NEW EUROPEAN BAUHAUS

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CALENDAR/ACTIVITIES

STARTING FROM SEPT 2022 THERE WAS A SERIES OF ONLINE AND OFFLINE NETWORKING EVENTS FOR MUNICIPALITIES, PROFESSIONALS IN THE FIELDS OF WASTE MANAGEMENT, ECOLOGY AND ENVIRONMENT AND ACTORS IN THE FIELD OF RECONSTRUCTION.
PILOT PROJECT FOR RECONSTRUCTION OF BUILDINGS USING THE DEMOLITION DEBRIS IN THE CITY OF HOSTOMELIS BEING DEVELOPED BY NEO ECO COMPANY SUPPORTED BY THE FRENCH GOVERNMENT.
POTENTIAL COOPERATION BETWEEN UA GOVERNMENT AND GREENMIX COMPANY (ISRAEL) TO BUILD A FIRST RA PRODUCING PLANT IN UA WAS ANNOUNCED IN AUG 2022 THOUGH THERE ARE NO RECENT DEVELOPMENTS IN THE NEWS.
PILOT PROJECT FOR HOUSING USING THE DEMOLITION DEBRIS IN KHARKIV IS BEING DEVELOPED BY NORMAN FOSTER FOUNDATION AND ARUP BERLIN IN COOPERATION WITH LOCAL ARCHITECTS AND CITY ADMINISTRATION.

DETERMINE FACTORS

POTENTIALS:
AFTER THE FULL SCALE INVASION AND AFTER UKRAINE BECAME A CANDIDATE TO EU MEMBER, THE STATE REGULATION OF CONSTRUCTION INDUSTRY IS CHANGING
RAPIDLY TO BECOME HARMONIZED WITH EU REGULATIONS.
MOST PROGRESS IS HAPPENING IN THE FIELD OF WASTE MANAGEMENT AND ENERGY-EFFICIENCY OF BUILDINGS.
UKRAINE HAS COMMUNICATED STRONG INTENTION TO GREEN RECOVERY AND SUSTAINABLE DEVELOPMENT IN THE LAST MONTHS
CHALLENGES
• NO NATIONAL STRATEGY FOR CIRCULARITY IN THE CONSTRUCTION INDUSTRY.
• NEW LAWS ARE “MODERATE” AND HAVE RECOMMENDATION CHARACTER RATHER THAN PRESCRIPTIVE. CONTROL MECHANISMS ARE NOT
DEFINED OR NOT WORKING.
• URGENT NEED FOR NATIONAL STANDARDS FOR SECONDARY AND RECYCLED BUILDING MATERIALS SETTING REQUIREMENTS AND MAKING THEM MARKETABLE PRODUCTS.

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BUSINESS MODELS

FOR BUSINESS, THIS IS OF INTEREST IN THE REUSE OF MATERIALS.

- APPX. 30% OF ELEMENTS FROM THE MASS HOUSING PANEL BUILDINGS CAN BE REUSED AS STRUCTURAL ELEMENTS, THAT IS ACCORDING TO GERMAN EXPERIENCE WITH GDR LEGACY; IN UA NO CASE STUDIES OF SUCH REUSE EXIST SO FAR, BUT THERE IS A BIG INTEREST TO THIS, GIVEN THE AMOUNT OF SUCH BUILDINGS
- ELEMENTS WITH HIGHEST REUSABILITY POTENTIAL ARE SLABS AND INTERNAL WALLS
- STANDARD PANELS ALLOW FOR EASY TO ACHIEVE REUSE
- APPLICATION OF PANELS FOR SINGLE-FAMILY HOUSES WAS PROVED FEASIBLE (PANELS CAN BE CUT INTO PIECES)
- DATABASE OF AVAILABLE COMPONENTS COULD SUPPORT SCALING UP

POTENTIAL LOCATIONS: CITIES OF ZAPORIZHYA, MYKOLAIV, BUCHA AND RIVNE. IN THESE CITIES A LOT OF DEMOLITION TOOK PLACE AND THE NEED FOR NEW HOUSING IS VERY HIGH.

BUSINESS PERSPECTIVE

THE WAR HAS CREATED A UNIQUE SITUATION WHERE THE INTERNAL NEED FOR DEVELOPMENT IS COMBINED WITH A POTENTIAL WILLINGNESS OF FOREIGN INVESTORS (PUBLIC AND PRIVATE) TO INVEST IN PILOT PROJECTS ON CIRCULARITY. THE RESULTING PROJECTS CAN BE SIGNIFICANT INTERNATIONALLY.

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SUSTAINABILITY PERSPECTIVE

"CARBONATED RECYCLED CONCRETE" IS PRODUCED FROM CARBONATED RECYCLED AGGREGATES: THE CO2 SEQUESTERED BY AGGREGATES IS STORED IN THE CONCRETE. CARBONIZATION CREATES NEGATIVE CARBON EMISSIONS UP TO 10%.
DURING THE PRODUCTION PROCESS OF CARBONATED CONCRETE MORE CARBON IS CAPTURED THAN IS EMITTED MAKING THE RESULTING CONCRETE CARBON-NEGATIVE.
CARBONIZATION REQUIRES CO2 IN LIQUID FORM; CO2 IS A COMMON BY-PRODUCT OF MANY PLANTS: BIOGAS, WATER TREATMENT, CEMENT PRODUCTION, ETC CO2 IS CAPTURED AND LIQUIFIED; RECYCLED AGGREGATES ARE COMBINED WITH LIQUID CO2 IN SPECIAL AUTOCLAVES TO PRODUCE CARBONATED RECYCLED AGGREGATES; THESE AGGREGATES CAN FURTHER BE USED TO PRODUCE CARBON NEGATIVE CONCRETE.

CULTURAL VALUE

RENOVATION OF RURAL HOUSING STOCK IN UA

ACCORDING TO NATIONAL STATISTICS (SOURCE: SSSU, 2017) FROM 1990 TO 2017 ABOUT 3.8 MIO PEOPLE MOVED FROM COUNTRYSIDE TO CITIES; THIS PROCESS RESULTED IN LARGE NUMBERS OF ABANDONED RURAL HOUSES;

- THESE ABANDONED RURAL HOUSES, ARE IN BIG PART THE SO-CALLED "SOVIET RURAL HOUSES" BUILT DURING 1950-1980S
- REVITALIZATION OF HOUSES WOULD AFFECT THE REVITALIZATION OF COUNTRYSIDE
- BUILDINGS CAN BE REFITTED BY USING TRADITIONAL MATERIALS AND WITH LITTLE CONSTRUCTION SKILLS
- THE COUNTRYSIDE IN UKRAINE TODAY IS NOT WELL DEVELOPED: POOR TRANSPORTATION, POOR PUBLIC AND SERVICE INFRASTRUCTURE, LOW LIVING STANDARDS, ABSENCE OF A BUSINESS SECTOR.
- RENOVATION OF RURAL HOUSES OFFERS BIG POTENTIAL FOR IDPS AND THE PROCESS HAS ALREADY STARTED, BUT STATISTICS ARE NOT YET AVAILABLE.

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