



MOSTAR GREEN DESIGN BIENNALE

october 2017

Vital Cities and Reversible Buildings

In partnership with EU Horizon 2020 Building as Material Banks project

**Publisher**

Sarajevo Green Design Foundation
University of Twente

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Printed in The Netherlands





SARA IYOB
CREATIVE DESIGN

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Background Sarajevo Green Design Biennale

President of Sarajevo Green Design Foundation
Elma Durmisevic

SARAJEVO GREEN DESIGN FOUNDATION

Sarajevo Green Design Foundation aims at broadening the awareness related to the global environmental problems that affect every country and every citizen in the world. It focuses spatially on the role that creative industry can play in solving these problems and necessity of closer collaboration between designers and production industry. The objectives of this International initiative are:

- Highlight the role of a product added value by quality design in the modern world
- Bring focus to sustainability and green design issues as a key indicators of good quality design in the modern world
- Bring together designers, academic institutions and manufacturers in order to redefine value systems and set guidelines for implementation of green design principles on all scales of design
- Inspire new types of collaboration that will provide more intelligent and green design solutions
- Develop broad platform for collaboration between the industry, knowledge institutions & designers

At the times of global climate crises and when natural materials supplies are gradually depleting and becoming increasingly expensive the durability of products is becoming a major issue. Issues as livability, adaptability, reuse and recycling are critical to the product value in the future. In other words effective use of materials through the intelligent and good quality design is a receipt for sustainability. Gradually, the business focus of product manufacturing should be switched from the production of tonnes of material to the design of its end performance. This is where design and manufacturing need to join their forces. One of the tools to achieve this is through the organization of Sarajevo Green Design Festival. Considering the over whelming size of the problem related to the recourse use in the future Sarajevo Green Design Foundation involves all scales of and making things from urban scale to product scale. Number of exhibitions, lectures, panel discussions and workshops were organized that address the state of the art in green design and dilemmas that product design, interior, graphic design, architecture and urban design are facing in the 21st century. Green Design Festival in Sarajevo has become a platform for the promotion of innovative ideas as for example the first B&H electric car, presentation of the first B&H national report on climate change, First large scale green building project in Bosnia and Herzegovina“ Cultural and Sport center in Mostar”, book presentation on B&H architecture in last 15 years, new educational programs at the University of Sarajevo, promotion of Eco /slow food concept, but also a platform for industry meetings and promotion of green products and systems.

Hrvatski dom herceg Stjepan Kosača

**MOSTAR
GREEN DESIGN
BIENNALE**

04-07/10/2017

www.sarajevogreendesign.com

MOSTAR GREEN DESIGN BIENNALE 2017

After five Green Design Festivals in a row, Sarajevo Green Design Foundation has introduced a biennale format in 2015.

The aim of Biennale is to capture the trends and realizations of innovative sustainable solutions and investigate their further evolution.

Some of previous speaker at Green Design Biennale were: Ken Yeang (London), Hana Tümertekin (Istanbul), Michael Braungart (Hamburg), Michael McDonough (New York), Bert Gregory (San Francisco), Jan Brouwer (Den Haag), Marcel Vrom (Rotterdam), Ashok Bhalotra (Rotterdam), David King (Washington) and many others.

This year's Green Design Biennale will take place in Mostar from 04th -07th October and is supported by City of Mostar and University of Mostar, University of Dzemal Bjedic and Association of Architectural Dialog. The focus of this year's 7th International Green Design Days is on vital sites and reversible design of buildings and produces that will support transition to circular economy and relevant design and construction solutions. This is also an emphasis of 3rd International Green Design Conference organized in collaboration with EU Horizon 2020 Buildings as Material Banks project and University of Twente, University of Dzemal Bjedic, University of Mostar, University of applied science ZUYD.

The concept of Green Design of sites, buildings and products will be elaborated by designers, contractors, policymakers, researchers from leading EU design offices, research institutions and corporate world as University of Twente, IBM, Keio University from Japan, SGDF, BAM UK, University of Munich, Green Vilige The Netherlands, University of Zagreb, Paris-Est University, Eco-Challenge in Jerusalem. Program includes evening lectures, exhibitions, urban food market and international student's workshop and offers inspiration to designers, planners, engineers, students, industry and policymakers in a search for the new generation of architecture and construction.

Exhibitions present innovative green design ideas in urban planning, architecture, product design, urban food, mobility, as well as 3D printed connections designed for disassembly and real life assembly of Japanese pavilion showcasing potentials of dry Japanese connections in wood. Besides lectures and exhibition two expert and industry meeting address different financial approaches to circular economy in construction and challenges ahead for new policy and standards identifying policy implications behinds circular construction.

Dynamic and Circular buildings key drivers behind Buildings as Material Banks

Concept Introduction –background

Elma Durmisevic

Dynamic and Circular buildings key drivers behind Buildings as Material Banks

Concept introduction – background

Two years ago Sarajevo Green Design Foundation joined European Consortium in European Horizon 2020 project “Buildings as Material Banks”. After the final acceptance of the project by the EU, official project’s kick off sessions took place during the Green Design Biennale 2015 hosting 16 European partners among which UK, Dutch, Belgium, German, Portuguese and Swedish national research centers, universities and public bodies. All of them acting on the front-lines of transformation towards new generation of buildings. The aim of the project is to propose new design protocols, building standards and regulations based on introduction of Material Passports and Reversible Building Design as two pillars of the new concept. Sarajevo Green Design Foundation initiated research, development and demonstration projects that will give a view on potentials for the implementation of this new building strategy in the region.

The vision of SGDF has been organized around the transition towards more dynamic building structures that will enable circularity material and upgradability of buildings without waste creation.

One long-standing conviction held by many is that

buildings last longer when made of more durable materials. However, everyday demolition practice proves the opposite. Buildings are designed to last 150-300 years yet, today parts of the building or the whole buildings with an age of 15 years are demolished to give a way to new construction. Developers and real estate managers warn that there is a mismatch between the existing building stock and the dynamic and changing demands with respect to the use of buildings. 50% of investments in building construction in the Netherlands are spent on adaptation and 42% of new construction is due to the replacement of demolished buildings. Besides, European building industry accounts for 40% of the waste production 40% of the energy consumption and CO2 emissions and 50% of material resources taken from the nature are building related (CSB 2009).

One can argue that conventional construction methods are in large part responsible for the above figures and degradation of the living environment, due to the tons of waste materials that become burdens to society and increasing material scarcity. Demolition in general can be defined as the process whereby the building is broken up, with little or no attempt to re-

cover any of the constituent parts for reuse. Most buildings are designed for such end-of-life scenario. They are designed for assembly but not for disassembly and recovery of components. Different functions and materials comprising a building system are integrated (during construction) in one closed and dependent structure that does not allow alterations and disassembly.

The inability to remove and exchange building systems and their components results not only in significant material consumption and waste, but also in the lack of spatial adaptability and technical serviceability of the building.

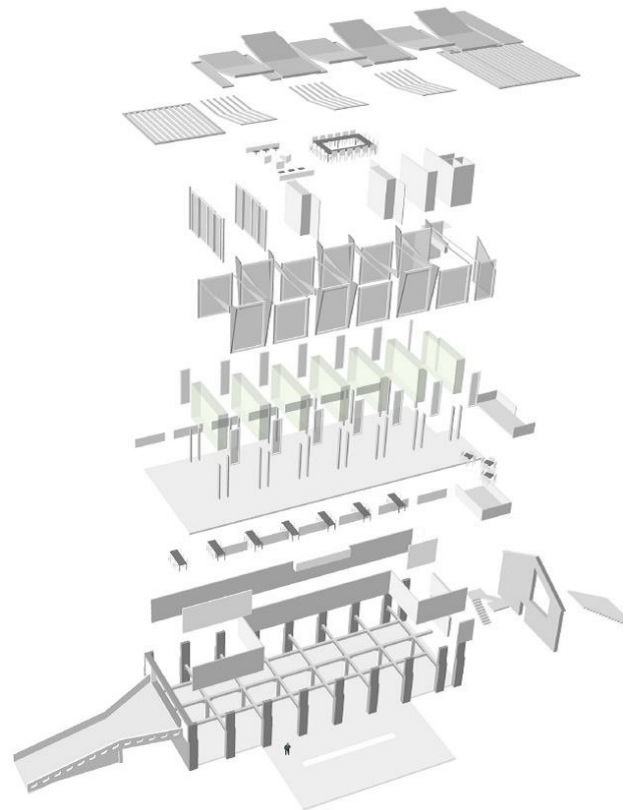
Emerging whole Life Cycle Design imposed on building design requires fundamentally different way of design and construction in the future. Buildings should be seen more as open upgradable platforms, where new technologies and requirements can easily be integrated, and adopted. In order to keep buildings and materials in an economic loop through their whole life cycle, three levels of building will need to be designed with high transformation and reuse capacity: building level – adaptable spaces, structural level-reusable/upgradeable systems and material level-recyclable materials. (Durmisevic 2006)

Rather than destroying structures and systems while adapting building to fit into new requirements, it should be possible to disassemble sections back into components and to reassemble them in new combinations. This means that we must consider how we can access and replace parts of existing building systems and components, and accordingly, how we can design and integrate building systems and components in order to be able to replace, reuse them later on. This process involves understanding certain level of reversibility of design and manufacturing processes.

Buildings whose structures and construction/manufacturing processes can be reversed back to the basic elements which are then put back into a use loop through creation of new compositions with the same set off elements, (answering new requirements) would eliminate concept of waste and give a boost to circularity of building materials and circular economy in construction.

Reversible Building Design can therefore be seen as a new philosophy where waste is considered a design error. The intention of such design is designing for circular value chains so that buildings and their elements will continuously increase their value. These

dynamically and flexibly designed buildings are the key to a circular economy. Instead of being to-be waste, buildings would function as banks of valuable materials once designed as such. This years Biennale will discuss new design methodology and tools that will support transformation and reuse potential of buildings and its components and enhance new value propositions. As a part of EU Buildings as Material Banks project the paper will elaborate the role of reversible design within Buildings as Material Banks concept.



Exploded view of Green Design Center in Mostar
(Architect: Elma Durmisevic, 4D archietcts/SGDF)

Green Design Center for South East Europe

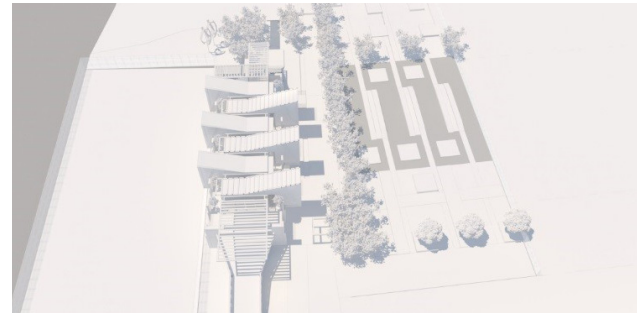
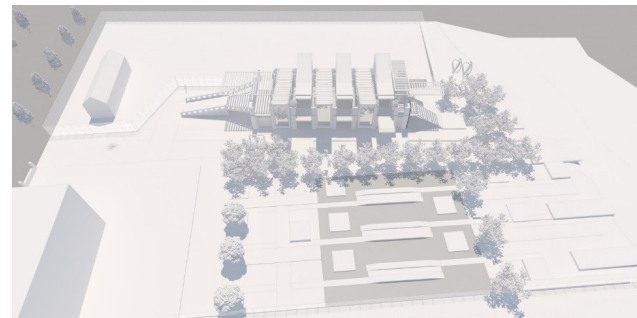
Green Design Center for South East Europe



Architect: Elma Durmisevic, 4D architects/SGDF, Structure: Erwin ten Brincke, ABT, Installation: Andre Meijer ABT, Structure: Vlaho Akmadzic, University of Mostar, Installation: Robert Kreso, Alfatherm.
Project is supported by EU H2020 BAMB project and City of Mostar



Green Design Biennale integrated developed international networks and knowledge in the field of green design into a unique multidisciplinary, multi-layered and creative events. This has resulted into organization of a network around green design Biennale that is actively working on developing a green road map for the region and construction of Green Design Center for South East Europe in Mostar. Green Design Centre is to become educative public information center showcasing new concepts and technical solutions for the realization of Dynamic and Circular building concepts and circular use of materials and energy within built environment. Green Design Centre is envisioned as a location that will be showcasing principles of circular buildings. It is also place for development of new reversible concepts with the local industry. GDC is open to the public and has educational purposes, at the same time the center will be offering informing the public about the potentials of new approaches in circular use of resources in construction. As such, it will be a part of a new innovation park in Mostar, where different aspects of sustainable living will be integrated such as urban farming, wind mills, open workplaces for disabled children and open expo



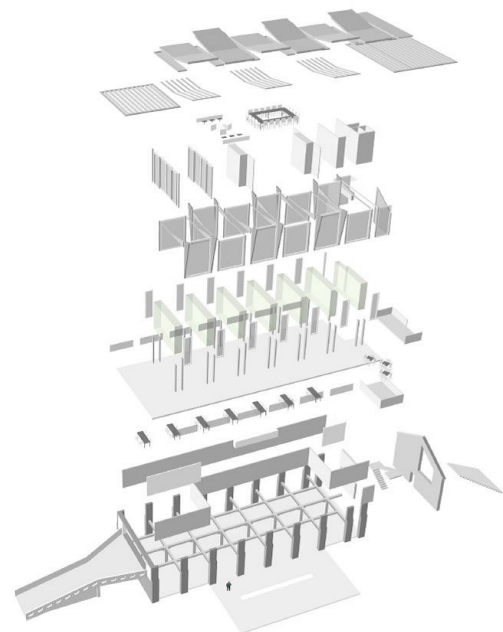
exhibiting innovation sustainable concepts. The city of Mostar has dedicated a plot of ca 4000m² for development of GDC, 2km south of the city center. The plot was a former military building site with storage building originating from end of



19th century). This is desolated area at the moment, along the riverside Neretva, and the former military storage building has been destroyed during the last war. This area along the riverside will be transformed into a recreation zone of the city along the river site according the city planning. This would allow continue walk through, of the inhabitants of the city form the city center to the innovation park area around GDC. GDC itself will reuse parts of the existing structure of former military building that has a footprint of 380m2. The space around the building will be developed as Innovation Park with green terraces for food production, platforms for temporally positioning of experimental structures, windmill, terraces for experiment with Mediterranean plants etc. GDC will collaborate with school for children with disorder and provide a space for their activities.

In collaboration with the city of Mostar and the Mayor of the city of Mostar, SGDF has set up a consortium for the development of the Green Design Centre (GDC). Consortium is formed by two representatives from the two Universities in Mostar (University of Dzemal Bijedic and University of Mostar). Consortium is formed by representatives from the Municipality of

Mostar, local NGO called Architectural Dialog Association and representatives of SGDF. Besides the public consortium, a cluster of local industry has been made. The cluster includes: wooden cluster, energy consortium, and local aluminum, glass and steel industry.



3rd Green Design Conference

Green Design Biennale in Mostar will host third Green Design Conference in Mostar Conference organized in Collaboration with EU BAMB and aims at addressing the many inter-related aspects of green design of cities, buildings and products, from urban strategies to social cohesion, design for reconfiguration and reuse design for change, sustainable energy strategies.

3rd Green Design Conference

Emphasis of the conference

While there is an exponential growth in population, there is decline in the resources necessary to sustain this population due to the existing global industrial systems. The emphasis of the conference is on innovative design and engineering methods that will contribute to the process of redefining the quality of life in cities and rethinking the way we create, make and use artifacts and resources that will enable circular economy and circular built environment.

This subject integrates issues from green cities, transformation of cities, mobility to spatial adaptability and flexibility of building systems, heritage and transformation of existing urban fabric, up to material productivity, bio based construction and energy saving. As such, this is a concept that can integrate research themes from transformation of cities and buildings “function neutral buildings”, flexibility, “customization of industry”, “supply driven design” to “design for reconfiguration, reuse and disassembly”, development of policy regulations and standards aiming at reducing use of virgin materials and, development of circular business models and assessment tools and methods, that will support recovery and reuse of materials.

Development of the research agenda with respect to

this topic deals with issues such as, life cycle performance of buildings, design methodology and protocols for reversible buildings / buildings as material banks, systems development, reuse, renewable materials, 3D manufacturing, and development of performance measurement tools.

This subject integrates issues that range across green city design, models of mobility and infrastructure that will reduce emissions of greenhouse gases, noise and pollution, adaptability and flexibility of buildings and building systems to extend their life cycle and recover materials for reuse, C2C (Cradle to Cradle), green products, material stewardship through design for re-manufacturing, up-cycling and energy saving.

Conference Themes:

1. Reversible Buildings
2. Green Materials and Technologies
3. Transformable and Green Buildings
4. Green Cities
5. Building Information Modeling
6. Social Cohesion and Cultural Continuity
7. Mobility and Infrastructure
8. Urban Landscaping and Farming
9. Smart Energy Solutions
10. Green Financial, Policy and Regulatory Standards



Reversible Buildings

The conventional way of construction has become a burden to the dynamic and changing society of the 21st century. Developers and real estate managers warn that there is a mismatch between the existing building stock and the dynamic and changing demands with respect to the use of buildings and their systems.

The physical impact of increasing building mass in industrialized nations and developing world has become undeniable in 21st century. The appetite for raw materials and landfill sites, as well as acceleration of the changing demands by users clearly indicates that a fundamental change in the way buildings are designed and constructed is needed.

- Strategies for design of reversible buildings
- Design for disassembly strategies;
- Design support tools for design of reversible buildings and systems
- New value proposition of design for reversibility, presented through case studies
- Environmental and economic impacts of design for high reuse potential



Green Materials and Technologies

When developing specifications, building or product descriptions and standards a broad range of environmental factors should be considered by architects and designers such as: waste prevention, recyclability, the use of recycled content, the use of environmentally preferable and bio-based products, life-cycle cost, and ultimate disposal.

- Design for reuse of existing buildings, products, and equipment
- Design for zero waste
- Design for high reuse potential of buildings and building elements
- Innovative business models around circularity of resources
- Design for reconfiguration of buildings and building systems
- Environmental assessment and measurement tools for green buildings and products
- Life cycle design strategies
- Reversed logistics
- C2C strategies
- Green manufacturing processes
- Management mechanisms that support system, component and material reuse



Transformable Buildings

Very often buildings are seen as finished and permanent structures. They are carefully designed around short-term predictions of building use. As a result those buildings have a long physical lifespan, but do not offer the flexibility to maximize their functional lifespan. For that reason, parts of such fixed building structures or whole buildings have to be broken down, in order to be changed, adapted, upgraded, or replaced (Durmisevic, 2006). Some buildings are demolished because their technical characteristics have deteriorated. Most buildings, however, are demolished because they do not satisfy the needs of their users. Conventionally, the technical and functional service life of a modern building is approximately 50-75 years. Yet, today buildings with an age of 20 years are demolished to give way to new construction.

- Transformable and Flexible Buildings
- Design for Adaptability
- Design for Reconfiguration of Buildings and Systems
- Case Projects and Pilots
- Assessment Transformation Models



Energy solutions

The risks of worldwide climate change are forcing new challenges upon our society, arguably the most important being to reconceive the way we consume and produce the energy that we need. These challenges can only be met by radical innovations in the field of research and technology. In the context of ongoing population growth and urbanization, the integration of renewable energy sources into urban energy networks and the increase in energy efficiency of cities are the key challenges that need to be addressed in the near future.

- Renewable Energy Systems
- Sustainable Energy and the City
- Intelligent Environments and Emerging Technologies
- Smart Grids
- Green Energy Concepts
- Case Projects



Urban landscaping

Urban landscaping will play a key role towards reintegration of human settlements within a logical framework of natural eco systems. It will deal with issues as reducing heat island effects, quick water absorption during heavy rain showers to prevent immediate flooding, more localized food production in built up areas, absorption of CO₂, and cleaning of wastewater within the urban parks and improvement of the micro climate and air quality in general within cities.

- Urban Landscape Planning and Design
- Urban Farming
- Microclimate Design in Cities
- Case Studies
- Integration of Elements of Urban Landscaping into Building Systems



Green Buildings and Architecture

Building sector accounts for about 50% of global greenhouse gas emissions (UNEP-IETC, 2002). That makes it the largest single contributor to greenhouse gas emissions globally. In many countries the construction industry accounts for up to 40% of materials entering the global economy (CIWMB 2000), 50% of waste production, and 40 % of energy consumption.

Green buildings need to employ concepts and technologies that will increase their future value and require special, products, materials, and energy systems. Furthermore, a symbiotic relationship between buildings and the urban fabric they create and occupy is an essential condition for a green architecture.

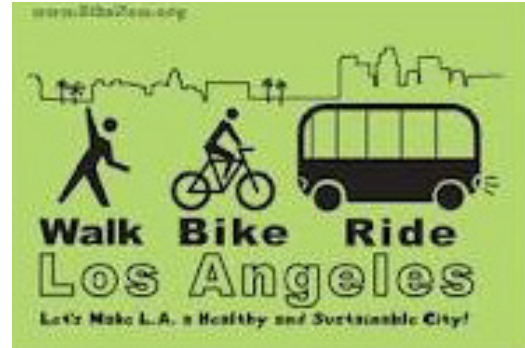
- CO₂-balanced Buildings
- Bio based buildings
- Bioclimatic Architecture
- C2C Building Strategies
- Life Cycle Design of Building
- Case Studies



Social Cohesion & Cultural Continuity

Social cohesion and cultural continuity are an important part of contemporary city planning, architecture and engineering and in a broader sense deepen the issues related to the interaction and interdependence between Green Design and people. Social and cultural awareness needs to be recognized and incorporated on all levels of creativity and drive a truly multidisciplinary approach with a human; the consumer; the occupant, always being the central focus of design development. The question is how and by what means city planning and architecture that form an envelope for humans can give an answer to the challenges that contemporary multilayered, multifunctional societies meet?

- Cultural Continuity
- Cultural Heritage
- Community Involvement
- Environment-Behavior Interaction
- Quality of Life
- Inclusive Design
- Behavioral Sciences
- Community and City
- Sustainable Urban Tourism



Mobility & Infrastructure

Movement and communication in contemporary society has become increasingly complex. Demand is more diverse and the infrastructure, both hardware and software, is also in a state of hectic development. Integration, privatization, deregulation and pricing are all affecting our understanding of and our capacity to plan the cities for these dynamic transport and mobility markets. The key questions are how to: Improve customer service; Improve fuel efficiency; Reduce emissions of greenhouse gases; Reduce noise pollutions; Reduce congestion; Reduce environmental impact, Improve efficiency; Enhance vehicle and infrastructure utilization; Minimize driver distraction and Improve safety?

- Alternative Transport Modes
- Cars and Renewable Energy
- Smart Grid
- Fossil Fuel Free Transport
- Virtualized Intersection Intelligence Adaptive
- Situational Adaptive Traffic Signaling
- Cooperative Traffic Signal Control
- Traffic-adaptive Demand Management
- Demand-responsive Parking Management



Financial, policy and regulatory standards that can stimulate development and implementation of buildings as material banks concepts and techniques

The emphasis in economics, policy and regulations is on the dynamic nature of a sustainable development where both goals and means are constantly moving. This requires a dynamic, multi-player environment that can react to the latest developments in a timely manner and provide prompt stimulating financial, policy and regulatory models for the implementation of green solutions technologies.

- Politics and Sustainability
- Real Estate Management and Sustainability
- Planning, Development and Management
- Green Growth
- Case Studies of Green Business Models
- Impact Assessment of Green Benchmarking

ORGANIZATION

Conference organization committee

Elma Durmišević, Conference Chair, SGDF (BH), University of Twente (NL)
Maja Popovac, Conference Co-Chair, Džemal Bijedić University, Mostar (BH)
Vlaho Akmadžić, Conference Co-Chair, University of Mostar (BH)
Gilli Hobbs, BRE (UK)
Senada Demirović, ADA (BH)
Sanela Klarić, Green Council (BH)
Dragan Katić, University of Mostar (BH)
Vlaho Akmadžić, University of Mostar (BH)
Renata Androšević, SGDF (BH)
Pieter Beurskens, University of Twente (NL)
Patrick de Laat, University of Twente (NL)
Maja Prskalo, University of Mostar (BH)
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Biljana Ščepanović, University of Podgorica, Montenegro (MN)
Elma Krasny, Green Council (BH)
Alisa Hadžiabulić, Džemal Bijedić University, Mostar (BH)
Suad Špago, Džemal Bijedić University, Mostar (BH)
Ahmed Džubur, Džemal Bijedić University, Mostar (BH)

DAY ONE – 04.10.17. OPENING MGDB

09:00 -16:00 WORKSHOP

University of Mostar International workshop
"Green Transferral" at the University of Mostar

17:30 PROMOTIONS: BAMB movie

18:00 OPENING of Green Design Biennale and Conference 2017:

Cultural Hall Herceg Stjepan Kosaca

Elma Durmisevic, President of Sarajevo Green
Design Foundation

Ljubo Beslic, Mayor of City of Mostar

David King, USA

Japanese Ambassador

Rector of the University of Mostar

Rector of the University of Dzemal Bjedic

18:20 LECTURES VISION 2030

Elma Durmisevic, 4D architects, University of
Twente, The Netherlands "Envision the world..."

Hiroto Kobayashi, Kobayashi Maki Design

Workshop, Keio University Graduate School of
Media and Governance "Resilient Responsive
Re-design of Place"

Jad Oseyran, IBM Global Center of Competence
(CoC) for Circular Economy, The Netherlands "
Circular Economy in construction and cities: A
needed transformation"

20:00

Green reception and urban farming presenta-
tion

DAY TWO – 05.10.17. ARCHITECTURE AND TECHNOLOGY

09:00 -16:00 WORKSHOP

University of Mostar International workshop
"Green Transferral" at the University of Mostar

09:00 - 16:00 CONFERENCE

University of Mostar

3rd Green Design Conference, parallel sessions

12:30 - 14:00 EXPERT MEETING ON NEW POLICY AND STANDARDS: Town hall

14:00 - 16:00 Old vine road tour

17:30 PROMOTIONS

18:00 LECTURES: Cultural Hall Herceg Stjepan Kosaca

Werner Lang, University of Munich Green De-
sign, Germany

"Totally Green: Sustainable Design at all Scales"

Wart Luscuere, Green Village, The Netherlands
"New form of Sustainable Communities"

Jan Brouwer, Sustainable infrastructure, The
Netherlands

Boris Koruznjak, University of Zagreb, Croatia

20:00 Green Design Conference and VIP Dinner

DAY THREE– 06.10.17. GREEN CITIES AND ECONOMY

09:00 -16:00 WORKSHOP

University of Mostar International workshop
"Green Transferal" at the University of Mostar

09:00 - 16:00 CONFERENCE University of Mostar
3rd Green Design Conference, parallel sessions

14:00 - 16:00 INDUSTRY EXPERT SESSION ON
CIRCULAR BUSINESS MODELS: Town Hall

Wim Sturris, Director of De Groot Vroomshoop.
The Netherlands, Circular business model for
wood construction companies

Ron Jacobs, ODS/kloeckner, part of Janssen
group the Netherlands, Circular business model
for producers of steel profiles

17:30 PROMOTIONS

18:00 LECTURES: Cultural Hall Herceg Stjepan
Kosaca

Gil Peled, eco-challenges, Jerusalem Perspec-
tives, Israel

Nitesh Magdani Royal BAM, United Kingdom
"Circular Building Construction"

Maurizio Brocato, GSA laboratory, ENSA Paris
Malaquais, Paris-Est University, France
"Some ideas for the sustainability of cities
presented through the example of the Liv-Lib
pavilion"

20:00 Multilayered theater performance
Poetry and architecture
Green Design Conference and VIP Dinner

DAY FOUR – 07.10.17. ARCHITECTURE AND TECHNOLOGY

08:00 - 21:00 Field Trip and guiding tour to
Dubrovnik Including lunch

18:00 - 19:30 Closing dinner

GREEN DESIGN BIENNALE CHAIRS



Elma
Durmisevic

Chair of the green design Biennale



Sanela
Klarić

Co-Chair



Maja
Popovac

Co-Chair



Senada
Demirović

Co-Chair cultural continuity
and social sustainability



Renata
Androšević

SGDF Coordinator



Boran
Pikula

Co-Chair Chair Mobility and Labeling



Vila
Sutović

Industry Co-chair



Vlaho
Akmadić

Technical university coordination



Dragan
Katić

Technical and University support

SPEAKERS **and** **LECTURES**



Elma **Durmisevic**

Founder of Sarajevo Green Design Foundation

DAY 01

Green Design Overview

The exponential increase in population and contemporaneous increase in standard of living for many, will mean that the demand for essential goods & services (transportation, cars, planes, but also housing, materials, water, food) will increase by at least a factor 2 in the next few decades. If the need to support an additional 3 billion people and effect of increase per capita consumption is added it is clear that the linear material flow (from excavation to disposal) present in the existing industrial systems is not sustainable. Many scientists speculate that if 9 billion people have a western life style in 2050 we would need 6 Earth's to provide the necessary resources to sustain a population. A point has been reached when search for sustainable solutions for the resource feedback loops has become unavoidable. At the times of global climate crises and when natural materials supplies are gradually depleting

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and becoming increasingly expensive the durability of buildings and products is becoming a major issue. Issues as adaptability, reconfigurability, reuse and recycling will be critical to the building and product value in the future.

Some have suggested that industrial systems could use the metaphor and behavior of biological systems as guidance for sustainable design.

In an ideal case one can adopt as a goal that every molecule that enters a specific manufacturing process should leave as part of a saleable products; that the materials and components in every product should be used to create other useful products at the end of product life; (Greadel and Allenby), and that the main structure of every building can accommodate different use patterns during its total life.

The aim of green design is to close the loop of industrial processes and bring material and energy back into a industrial cycle while eliminating the concept of waste. Unlike car and product design where concept of industrial ecology (closed life cycle of products) has been investigated and applied in the past, this approach is revolutionary when it comes to the building design.

Considering the fact that the modern economic systems relay on ever increasing consumption of products, that product and building use cycle is becoming ever shorter and that most end of life scenarios for buildings and products is waste disposal, there is huge task put in front of designers and production industry. The main question put in front of designers in 21st century is how to design and produce zero waste and carbon neutral products and buildings? This question can be successfully answered only by joint efforts of designers and industry and a more analytical design approach that is integrating the requirements of all life cycle phases of an artifact from the beginning of a design process.



Hiroto Kobayashi

DAY 01



Lecture: Resilient Responsive Re-design of Place

18:00 Cultural Hall Herceg Stjepan Kosaca

Day one, Wednesday 04 October 2017

The Veneer House Project will be introduced. VHP pursues to revitalize and enforce communities and to create new value in the environment involved in communication-based social, cultural, and spatial design stemming from the micro-culture of an area and the traits that compose its rich sense of place in local society.

ABOUT

Hiroto Kobayashi studied architecture and urban design at Kyoto University and the Harvard Graduate School of Design (GSD). He worked with Nikken Sekkei and Norman Foster and Partners as an architect. Kobayashi is a founding partner of Kobayashi Maki Design Workshop (KMDW) since 2003. He also represents Skidmore Owings and Merrill LLP (SOM) in Japan. He served as Visiting Associate at the GSD through 2003-2005. He was a Visiting Associate Professor at MIT in 2001 and 2002, and a Visiting Scholar at the Center for Japan Studies at UC Berkeley in 2012 and 2013.

He completed his doctoral dissertation on the traditional Japanese community form, 'Cho', and received a Doctor of Design degree from the GSD. Projects include works for cities and communities domestically and abroad. Most recently Kobayashi has been developing a self-build methodology using plywood, Veneer House, and studying a new method of inheriting sustainable community; this approach was inspired and initiated by the East Japan Disaster of 2011.



Jad Oseyran

DAY 01

Lecture: Circular Economy in construction and cities and needed transformation

18:20 Cultural Hall Herceg Stjepan Kosaca

Day one, Wednesday 04 October 2017

The lecture will mainly tackle how business model innovation and digital solutions are critical to meet the challenges and requirements of construction and cities in the (near) future. A transition to a circular economy will address these challenges and create new business models. Few concrete examples on working with some of IBM clients on these challenges will be presented.

ABOUT

Jad Oseyran is leading the IBM Global Center of Competence (CoC) for Circular Economy (CE).

He is also a member of the IBM Industry Academy, a select group at IBM recognized for shaping global industry agendas.

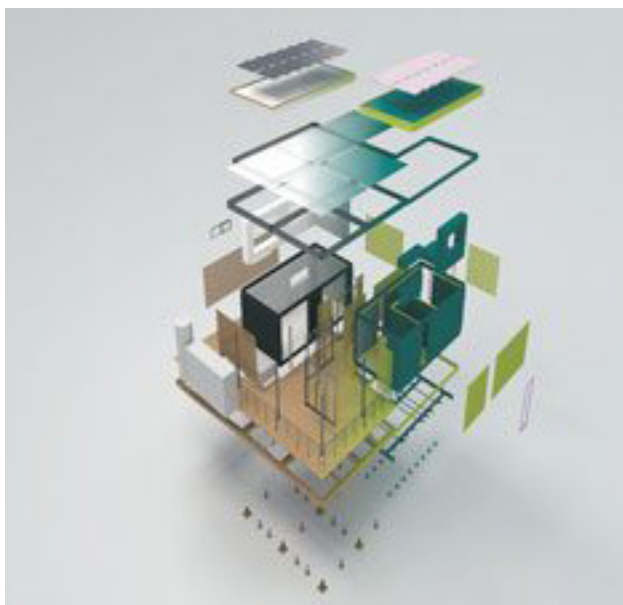
The CoC is working closely with the IBM Global Asset Recovery Services (GARS) to offer business and technology solutions towards a CE Transformation.

Jad has strategy and operational experience in manufacturing industries (Axel Christiernsson, Philips Semi Conductors, Johnson Controls Inc) and later joined IBM as a consultant advising various multi-nationals around ecosystem and business transformations. He holds a BE degree in Industrial Engineering and a MSc in Supply Chain Design and Management from Chalmers University of Technology in Sweden. He's also a Cradle to Cradle certified consultant.



Warner Lang

DAY 02



Lecture: Totally Green: Sustainable Design at all Scales

18:00 Cultural Hall Herceg Stjepan Kosaca

Day two, Thursday 05 October 2017

Resource depletion, its environmental impacts and the related climate change are some of the largest challenges, mankind is facing today. In the light of

our rapidly growing population and increasing demands with regard to food, comfort, mobility, space and well-being of our world's population, rapid action is required to ensure a sustainable approach towards our built environment on all scales, including the regional-, urban-, neighborhood-, and building scale. The presentation will demonstrate, how green design affects all these different scales in a positive way, and how synergies between these scales can help to secure a sustainable future.

ABOUT

Werner Lang, PhD, is Professor of Energy-Efficient and Sustainable Design and Building at the Technische Universität München (TUM). He is also coordinator of the Center for Energy-Efficient and Sustainable Design and Building (ENPB) at TUM, which is part of the Munich School of Engineering and its research initiative 'TUM Energy'. Until 2010, he had been Associate Professor at the University of Texas at Austin School of Architecture (UTSOA) and Director of the Center for Sustainable Development (CSD). His focus in research is the energy performance of buildings and urban environments and the relationship between energy and architectural design. He is the author of numerous articles and gave many presentations on energy-efficient building at national and international events. He is co-author of the 'Façade Construction Manual', which was translated into four languages. In addition to his commitment to teaching and research at the TUM, he is the Director of the Oskar von Miller Forum in Munich, which is an independent educational initiative dedicated to enhance the image of construction engineering in wider society. Furthermore he is co-director of the architectural firm 'Lang Hugger Rampp Architects'



Wart Luscuere

DAY 02

Lecture: New form of Sustainable Communities

18:00 Cultural Hall Herceg Stjepan Kosaca

Day two, Thursday 05 October 2017

Inclusive productivity is based on a holistic vision 'Beyond Sustainability' in which all natural resources (energy, air, water, materials and top soil) are confronted with basic value areas: ecology, economy and equity. In this vision, all natural resources are defined to have a positive footprint. Too often social aspects are subordinated to the ecological and economical ones. The value of this social proposition is proven to be getting more important in obtaining a renewable, resilient, resource based and inclusive society.

The (re)production of all natural resources is enabled through inclusiveness; the future of renewable productivity is necessarily inclusive.

ABOUT

Throughout the years Wart has been involved in multiple projects, feeding his interests and expertise in sustainability and the related planet's challenges. He is able to organize and oversee activities on site, as well as participate in conceptual design discussions concerning sustainability, C2C® and Circular Economy issues. He is working part time with Inspired Ambitions since 2011 as a technology researcher and consultant, involved in projects on sustainability in the built environment in Europe and China. After some years of study at The Hague University of Applied Sciences, Wart became member of the team who built up 'The Ocean Cleanup' Foundation. After the initial set-up he became active as a field researcher within this volunteer's organisation. In this function he co-developed new research instruments. He also supervised ocean expeditions and experiments on, amongst other places, the Azores, where the first full-scale research and experiments were conducted. In 2016 he was secretary of the working group Circular Economy for the Metropolitan Region Rotterdam-The Hague (MRDH) to identify a feasible transition pathway together with Jeremy Rifkin and his team in the project called: 'Roadmap Next Economy'. In 2016 the foundation was laid to start up a consultancy business named 'Beyond Sustainability' where the aim is to create a renewable and inclusive marketplace in our society. Since end of 2016 he is involved as lead researcher in the ReGenVillages project, which will see its first self-sufficient village being built in Almere, The Netherlands early next year.



Jan Brouwer

Architect and designer

DAY 02

Lecture: Sustainable infrastructure

18:00 Cultural Hall Herceg Stjepan Kosaca

Day two, Thursday 05 October 2017

The Art of Sustainability

My contribution is a non scientific description of the approach of the inhabitants of planet Earth with the result that lots of things are going wrong.

1. Analysis.

As a result of human actions, a great deal has gone wrong in this world.

We have built too many cities in a poor way.

We have built many unnecessary buildings.

We have taken too much agricultural land from nature.

We have surrounded ourselves with too many 'things'.

We produce too much waste.

We emit too much CO2.

We... etc. etc. etc.

2. What to do.

The approach to the new build of a city and buildings must be drastically reformulated.

The flexibility of the physical world must be optimized.

Recycling of components will be necessary.

The technology of transition must be optimized.

This also applies to the everyday 'things'.

Design them in a way that they can be repaired and dismantled. They can always be disposed of later if

necessary. Include this technology in the training courses for designers.

3. Creativity.

An urgent request will be made to the designer world. This not only applies to architects, urban planners and landscape architects, but also to designers and industrial designers.

Extensive forms of collaboration and the development of integral design processes must be promoted.

However, this will lead to fantastic opportunities for the designer's field.

ABOUT

Founder of Jan Brouwer Associates, architects and planners. Chief Government Advisor on Infrastructure. member of the Board of Government Advisors (CRA) which advises the central government on spatial and architecture issues. Several symposiums were organized for discussions on town planning and other spatial en architectural subjects. Advisor to the Chief Government Architect. Workshop Series Master Designing Randstad 2040. Atelier for furniture design Brouhaus. Technical University Delft developing master studies Building Technology vice-dean for 3 years member of several scientific committees.



Boris **Koruznjak**

DAY 02

Lecture: Sustainability of sports facilities **18:00 Cultural Hall Herceg Stjepan Kosaca** **Day two, Thursday 05 October 2017**

Sports facilities are the basic assumption and the most visible part of every sports activity. With its position, formatting, construction technology, used materials and processes of action and use, they are important element in the impact on the environmental sustainability as well as energy efficiency. Comparative analysis of several specific sports halls in Croatia based on a critical review of the project programs, urban, economic and environmental indicators on the reality of purpose and capacity, with consideration of possibility of investors staffing and financial resources in optimal management shows all the disproportion in the application of the principles of sustainability.

It is suggested, with the application of the required legislation (standards – yesterday, nowadays, tomorrow), multidisciplinary-integrated approach to planning (development studies – Sport and Terri-

tory, Sport and Health, Sport and Education, Sport and Nature, Sport and Renewal of Society, Sport and City), design and implementation of sports infrastructure on the principles of sustainable development (costs in correlation with the material, time and energy while increasing safety and quality).

ABOUT

Born 1955 in Zagrebu. He graduated at the Faculty of Architecture in Zagreb in 1979 and since then has been continuously employed there. In 2000 he received a master degree with thesis "Residences for Senior Citizens Analyzing the Examples of the Retirement Homes in Zagreb". In 1989, 1992 and 1993 he worked in Vienna (bureau ILBAU – G.m.b.H.) and Stuttgart (bureau Laage & Partner and Behnisch & Parner). In 1993 he opened an architectural design studio, ARK, with Gordana Domić. Member of HKAIG since 1999 (since 2008. Croatian Chamber of Architects). An associate professor at the Faculty of Architecture in Zagreb since 2008.

Member of the Committee for the registration of architects in Croatian Chamber of Architects from 2007 to 2008.

Assistant dean for financial administration at the Faculty of Architecture from 2003 to 2007.

From 2007 to 2011 – Head of Department of Architecture at the Faculty of Architecture.

From 2011 to 2016 – Dean at the Faculty of Architecture University of Zagreb. Since 2013 professor at the Faculty of Architecture in Zagreb.

From 2014 to 2016 -President of the Commission for the Sports Construction and Environment at Croatian Olympic Committee. Since 2014 – Member – visiting professor of the International Committee UAUIM for the graduation exams at Ion Mincu, University of Architecture and Urbanism, Faculty of Architecture, Bucharest



Nitesh Magdani

DAY 03

Lecture: Circular Economy in practice: Delivering value

18:00 Cultural Hall Herceg Stjepan Kosaca
Day three, Friday 06 October 2017

The lecture will focus on BAM's experience in leading many circular economy led projects and how it engages with stakeholders to generate long term value.

BAM have recently announced ambitious targets to embed circular economic thinking across its business by 2020. Through project and research experiments, Nitesh will demonstrate how to generate added value for the client, and also provide some practical insights of how to incentivise the value chain to incorporate circular economic business models.

ABOUT

Nitesh is driven to ensure that BAM is recognised as a leader in sustainable built environments. His 13 years in architectural practice leading numerous sustainability-led high-profile projects has focused his commitment to designing for efficiency. Nitesh's focus is on strategic thinking, reinforcing business cases, and looking at the influence of sustainability through all key stages of a development.

BAM are the only major contractor member of Ellen MacArthur Foundation's CE100. In conjunction with the CE100, BAM actively participate to scale up circular economy thinking within the built environment.

Nitesh strives to exceed customer expectations by delivering value over the life cycle of their assets. He is involved in several circular economy projects, as well as advising the Green Construction Board and LWARB on government policies. Nitesh co-authored a Circular Business Models in the Built Environment publication, together with Arup and the Ellen MacArthur Foundation



Maurizio Brocato

DAY 03



Lecture: Some ideas for the sustainability of cities presented through the example of the Liv-Lib pavilion

18:00 Cultural Hall Herceg Stjepan Kosaca
Day three, Friday 06 October 2017

Costs and good policies for the development of a sustainable city are tightly linked, especially in dense areas, but a home can be separated from most of the elements that make it costly, by including them into

a collective—perhaps public—facility. The idea put forward is the creation of a network of urban vertical infrastructures, called ‘hubs’, designed to convert and manage energy, to collect and handle food losses, wastes, and rainwaters, to control air and create comfort, to link people to each other on their living site and to the rest of the city. Each hub has several ‘ports’ where ‘capsules’, are plugged. Each capsule is a house, but possibly also a different place to work, study, or enjoy, that can be designed to be energetically efficient, economically accessible, modular, and movable. The ‘plug’, obeying a standard, is the place of all the energetic and material exchanges between the capsule and the hub, which can thus be controlled by the user and by the community. Standardization of the plugs makes capsules movable from hub to hub, within a network extended to several places around the city and in the country. Both capsule and hub need not be the issue of a single project. A diversified offer for both should naturally appear on a market that will only be constrained by the standardization of plugs. Hence, hubs can be the answer to the needs expressed by different real estate developers, reflected into different rental conditions, and capsules can accommodate everyone’s needs and affordability. If the hub can be compared with the well-known communicating device, the plug-and- port system linking capsules into hubs can be seen as a USB port, allowing many different devices to communicate and get or supply power. Liv-Lib’, a pavillon built at Solar Decathlon Europe 2014, was based on these ideas and will give here a useful example.



Gil Peled

DAY 03



Lecture: Jerusalem Perspectives

18:00 Cultural Hall Herceg Stjepan Kosaca

Day three, Friday 06 October 2017

New challenges and opportunities for the Old and New City The Old and New City of Jerusalem are undergoing profound changes due to the pressures of population, tourism and economic growth.

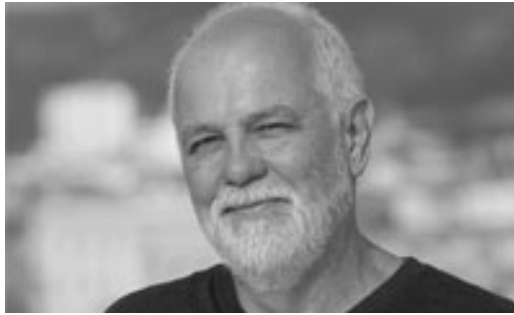
The challenges and opportunities of transformations in and around the Old City of Jerusalem – a World Heritage Site in Danger – may provide us with perspectives and insights relevant to World Heritage sites elsewhere.

ABOUT

Eco-architect and community urban planner, team member of a leading hi-tech company. Founder of Eco-Challenges Sustainable Design & Consultancy.

Gil has initiated and participated in several pioneering green initiatives including green retrofits of existing buildings, design of sustainable and affordable neighborhoods, public green spaces, urban parks and community gardens.

He is currently working towards a research degree (PhD.) at the University of Twente on Sustainable Transformations of the Holy Sites in Jerusalem.



Darko Radović

DAY 03

Lecture: Towards the Culture of Environmental and Cultural Responsibility

The lecture will present some of the results of Measuring the non-Measurable, the major investigation of the quality of everyday life and sustainable urban practices in diverse cultural contexts, with an emphasis on fieldwork (Urban Research Pavilion) methodology and the ways of its contextualisation. Focus is on situations where public and private realms, and culturally nuanced commons seek their own spatial expressions. The presentation is deliberately polemological, in hope to “force theory to recognise its own limits” (de Certeau) and make it resonate with the needs and imperatives of Mostar.

ABOUT

Darko Radović is Professor of Architecture and Urban design at Keio University and Visiting Professor at the United Nations University. His investigations of urbanity and sustainable development focus at culturally and environmentally diverse contexts, with specific emphasis on interfaces between public and private, and inside and outside realms.

His publications of direct relevance for this presentation include Another Tokyo (2008); small Tokyo (with Boontharm, 2011); Intensities in Ten Cities (2013); Tokyo dérive: (2013); Subjectivities in Investigations of the Urban, (2014); In Search of Urban Quality (with Boontharm; 2014); “On Mapping Subjectivities in Urban Research” (City, Culture and Society, Cultural Mapping; 2016) and “The street and democracy, Japanese style” (Contesti, 2016).



Davisi **Boontharm**

DAY 03

Lecture: Requalification and Cultural Sustainability

Ecological and cultural dimensions of sustainability, “reuse” and “requalification” of urban form and space, with an emphasis on cultural sustainability.

ABOUT

Davisi is an architect-urbanist, affiliated to the International Program in Architecture and Urban Design (I-AUD), Meiji University, Tokyo.

Her international academic employments stretch from France, via Thailand, Singapore and Australia, to Japan. Davisi’s research and teaching field is interdisciplinary and cross-cultural, with strong emphasis on environmental and cultural sustainability. Her research interests focus on urban regeneration/requalification and the concept of creative milieu. She has published several research books and a number of papers. Her passion for cities also finds its expression in creative work. She has exhibited her drawings and paintings in Japan, Italy and Croatia.

EXHIBITIONS

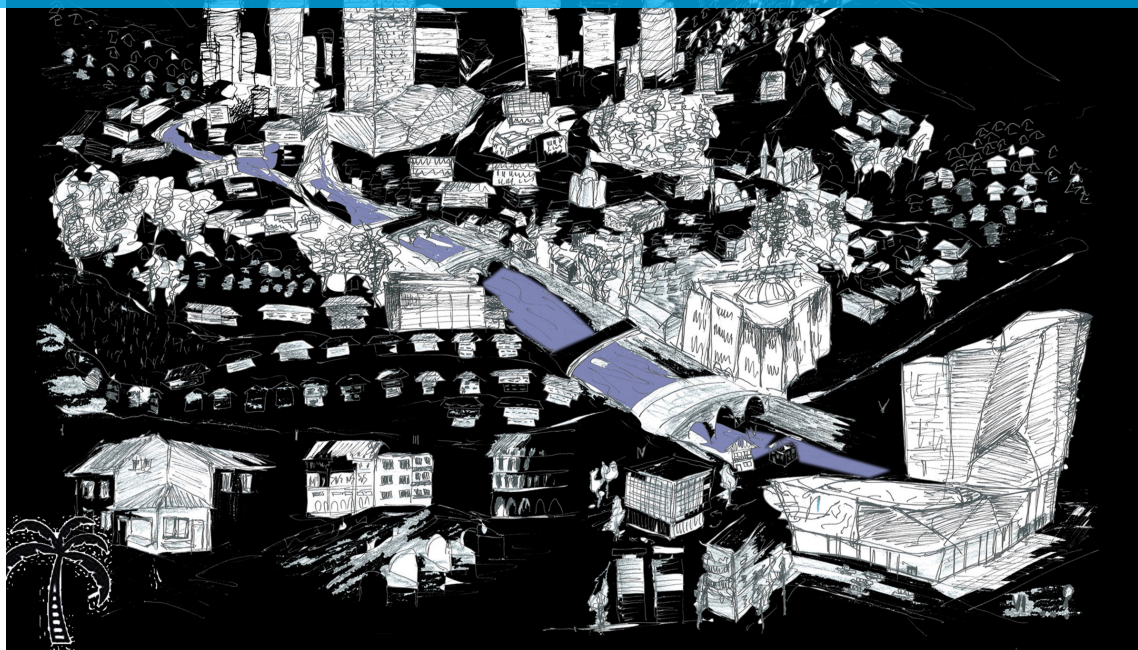
CONNECT. DESIGN. REBUILD. RESILIENCE.



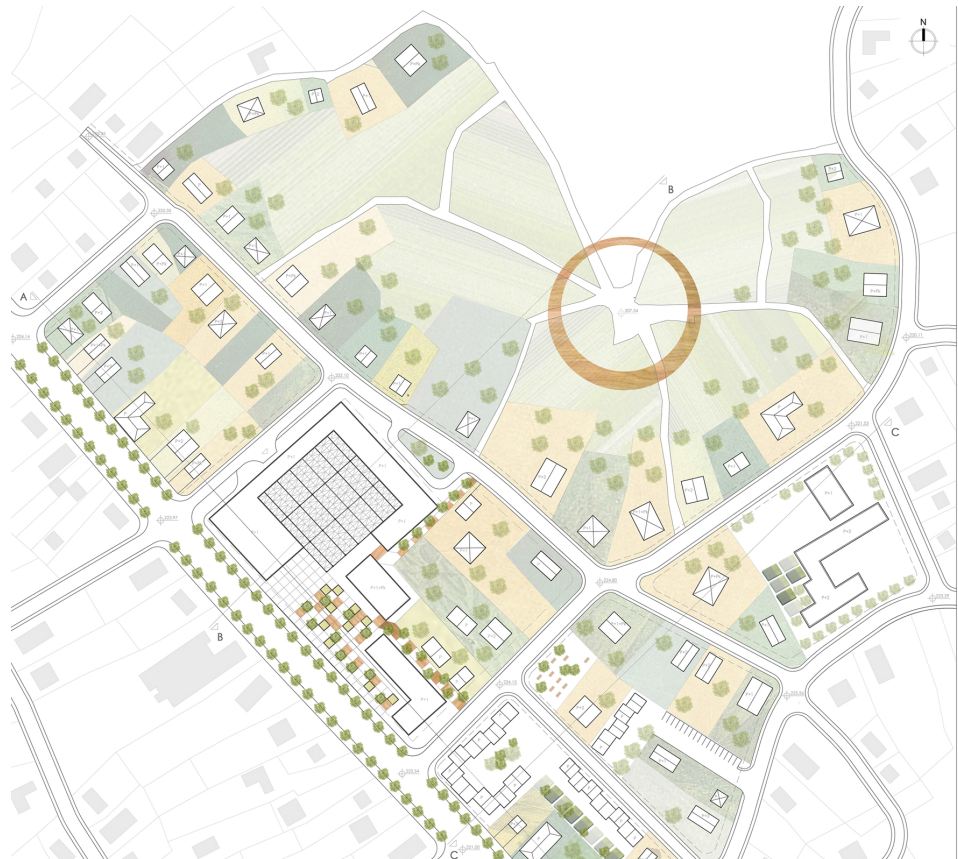
Connect.Design.Rebuild.Resilience

Emina Čmdžić

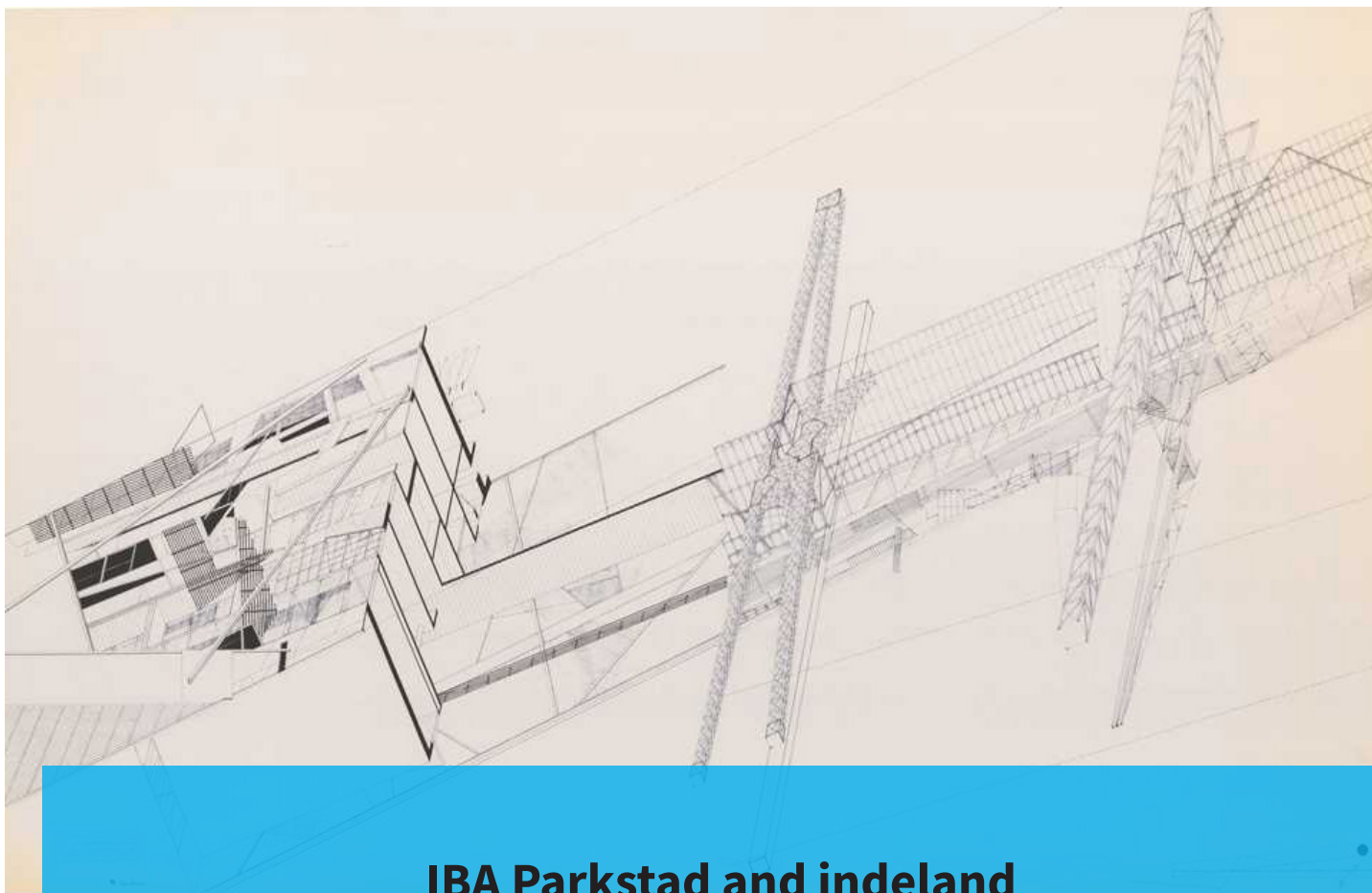
BH



FUTURE. INNOVATION. TECHNOLOGY.

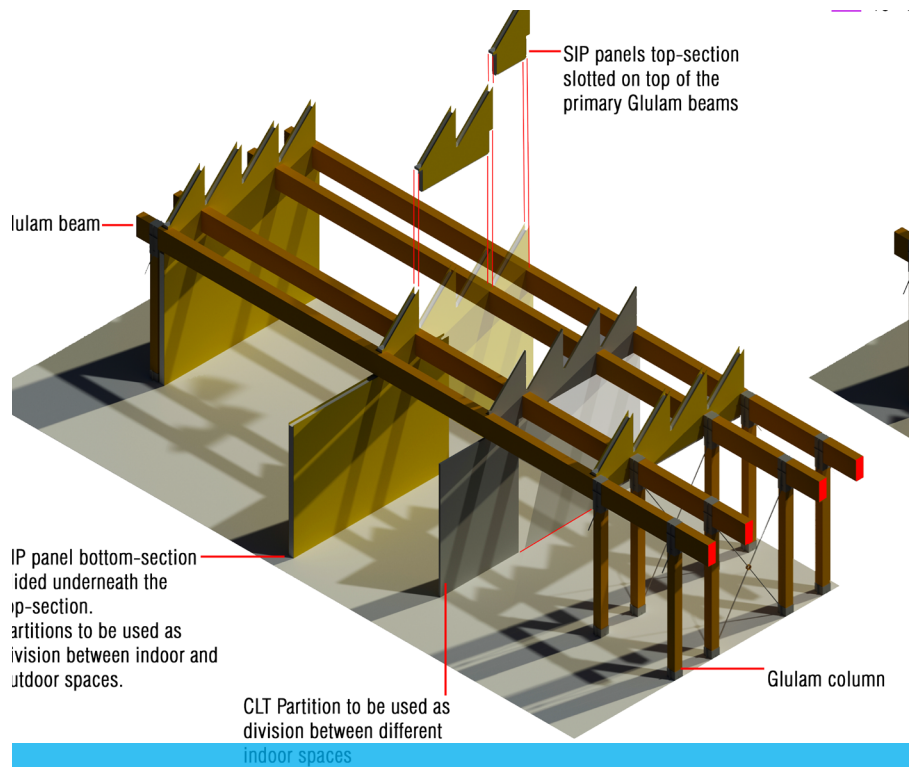


Aleksandra Đorđević, Tihomir Dičić Serbia



IBA Parkstad and inland Netherlands

Hiroto Kobayashi
Japan



Kent School of Architecture
UK

International House Mostar Germany



Green Design Center Mostar BH



BAMB PARTNERS POSTERS



Green Design Center Mostar

Innovation platform for green and reversible buildings

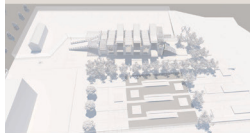
Green Design Centre in Mostar

is educative public information center showcasing new concepts and technical solutions for the realization of Dynamic and Circular building concepts and circular use of materials and energy within built environment.

The GDC EU BAMB pilot project will be a creative hub bringing creative and production industries together around Reversible Building Design concepts and the use of Materials Passport, and it will be used for educational purposes and as a construction innovation platform.

Location

The city of Mostar has dedicated a plot of ca 4000m² for development of GDC, 2km south of the city center. The plot was a former military building site with storage building originating from end of 19th century).



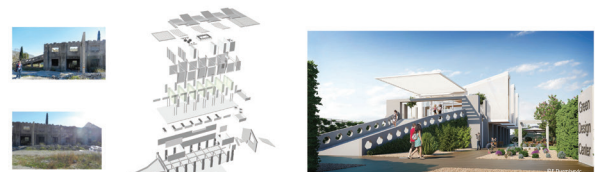
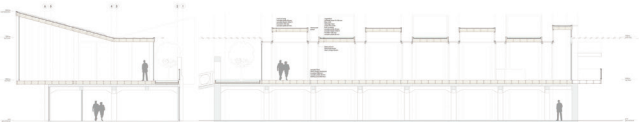
GDC itself will reuse parts of the existing structure of former military building that has a footprint of 380m². The center is designed with the capacity to illustrate functional change from exhibition, workshop space to office concepts. The experiments will showcase reversible building design approach and its materialization through development of integrated architectural spatial and technical solutions that support reversibility of the building function and accordingly structural configuration without waste generation.

The space around the building will be developed as innovation park with green terraces for food production, platforms for temporally positioning of experimental structures, windmill, terraces for experiment with Mediterranean plants etc.

Design and development team

Architect: Elma Durmisevic, 4D architects/SGDF
 Structure: Erwin ten Brincke, ABT
 Installation: Andre Meijer ABT
 Structure: Vlaho Akmadzic, University of Mostar
 Installation: Robert Kreso, Alfathern

Technical support:
 Renata Andreosevic, SGDF
 Senada Demirovic, City of Mostar
 Maja Popovac, University of Dzemal Bjedac
 Drakan Katic, University of Mostar



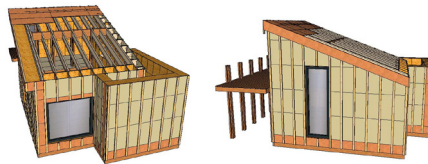


TEACHING MODULE TO STIMULATE CIRCULAR ECONOMY

Brussels Environment | October 2017

OBJECTIVES

The aim of the BRIC project, "Build Reversible In Conception", is to educate future contractors about circular economy. Over the course of 4 year period, the sustainable, revolutionary and reversible module will be built and deconstructed three times. The design integrates reclaimed materials to achieve closed loops.

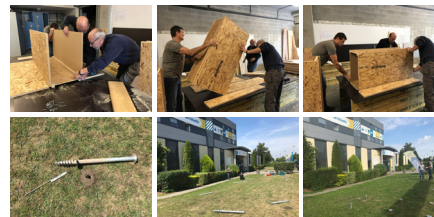


STAKEHOLDERS

Collaborating with more than 25 partners, the project reaches a broad audience in the Brussels Capital Region. Different interactions have been set up to strengthen the local circular economy network.

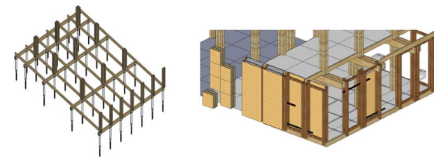
START CONSTRUCTION

During the summer of 2017, the first steps were taken to start construction. Prototyping of the prefabricated boxes took place and the first screwable foundations were installed.



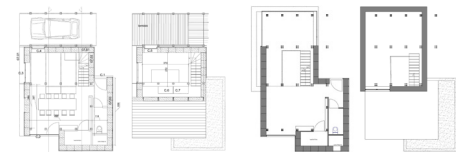
DESIGN

The module is designed as a kit-of-parts building. The walls, the roof and the floor consist of standardized prefabricated elements. Four specific design choices were made to guarantee the reversibility of the module: the use of a systemized structural grid; a wood skeleton structure consisting of 4 square shaped columns that enable easily adapting the direction of the supporting beams; prefab and standardized panel boxes with insulation to build up the walls, roof and floor; and the use of a screw foundation.



SCENARIOS

BRIC 1 will contain a reception desk and office space + meeting room and carport. BRIC 2 will have a reception desk and office space + shop / exhibition space. BRIC 3 will consist of a reception desk and office space + bar/restaurant and terrace.



BRIC 1

BRIC 2

MORE INFORMATION

<http://www.bric-efp.be/>



Co-funded by the Horizon 2020 Framework Programme of the European Union

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BUILDINGS AS MATERIAL BANKS WITH MATERIALS PASSPORTS AND REVERSIBLE BUILDING DESIGN

ENABLING A SYSTEMIC SHIFT

The EU funded BAMB project brings 15 parties throughout Europe together for one mission - enabling a systemic shift in the building sector by creating circular solutions.



Structure of BAMB Pilot Circular Retrofit Lab

BAMB is creating ways to increase the value of building materials. Reversible and transformable designed buildings can be incorporated into a circular economy - where materials in buildings sustain their value. This will lead to waste reduction and the use of fewer virgin resources.

TOOLS, METHODS AND PILOTS

The project is developing and integrating tools that will enable the shift to a circular building sector:

- Electronic Materials Passports
- Reversible Building Design tools
- supported by new business models, policy propositions and management and decision-making methods including BIM.

During the course of the project these new approaches will be demonstrated and refined with input from 6 pilots.

The BAMB project started in September 2015 and will progress for 3 and a half years as an innovation action within the EU funded Horizon 2020 program.

PROJECT PARTNERS:

Brussels Environment,	Sunda Hus i Linköping AB,
EPEA Netherlands,	Ronneby Municipality,
Vrije Universiteit Brussels,	Technical University of Munich,
Flemish Institute for	University of Twente,
Technological Research,	University of Minho,
BRE,	Sarajevo Green Design
Zuyd University,	Foundation,
IBM Netherlands,	Drees & Sommer.

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www.bamb2020.eu

Brussels Environment

Brussels Environment is the environment and energy administration of the Brussels-Capital Region. Active in many areas - nature and biodiversity, noise, air quality, soil, water, energy, waste, climate change, circular economy and sustainable construction -, Brussels Environment assists citizens and professionals renovating or constructing buildings in a sustainable way.

			CALLS FOR PROPOSALS Brussels Environment stimulates the market for sustainable buildings through calls for proposals like BatEx – Exemplary Buildings, Be.Exemplary, and Be Circular. More than 260 laureates have received grants.	
	TECHNICAL SUPPORT Technical support helps to limit environmental impact. More than 71,000 users consulted Brussels Environment's Sustainable Building Guide in 2016, and the Sustainable Building Facilitator received 3299 requests for help.			
			SEMINARS AND TRAINING Topics like circular construction, sustainable materials, and energy are part of Brussels Environment's seminars and training programs. 330 specialists were trained and 657 participants attended seminars in 2016.	
	FINANCIAL INCENTIVES In 2016, 135 'Green Loans' were approved and €15,868,296 were delivered to citizens via 10,925 energy premiums, helping to finance projects to improve energy efficiency in Brussels' buildings and homes.			

Brussels Environment is the Project Coordinator of the EU H2020 project BAMB – Buildings as Material Banks.

www.environnement.brussels





REVERSIBLE URBAN PIXEL

DESIGNING BUILDINGS AS MATERIAL BANKS.

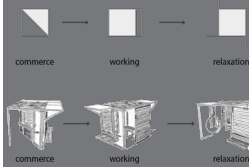
THE DESIGN CHALLENGE:

"TO DESIGN A REVERSIBLE MODEL FOR A BUILDING MODULE THAT CAN BE TRANSFORMED INTO DIFFERENT FORMS AND FUNCTIONS BY REUSING THE SAME SET OF ELEMENTS."

DESIGN STUDENTS FROM SIX DIFFERENT UNIVERSITIES PARTICIPATED IN WORKSHOPS ABOUT REVERSIBLE BUILDING DESIGN, INTERNATIONAL DESIGN STUDIOS.

THE STUDENTS INVESTIGATED DESIGN AND APPROACH FOR TRANSFORMABLE BUILDINGS. OVER 70 STUDENTS WITH DIFFERENT DISCIPLINES (ARCHITECTURE, STRUCTURAL DESIGN, INDUSTRIAL DESIGN, CIVIL ENGINEERING AND INTERIOR DESIGN) FROM SIX UNIVERSITIES COLLABORATED, IN ORDER TO INVESTIGATE AND UNDERSTAND THE COMPLEXITY BEHIND REUSING EXISTING BUILDING MATERIALS IN THE DEVELOPMENT OF NEW STRUCTURES AS THE CASE OF REVERSIBLE URBAN PIXEL.

REVERSIBILITY:



REUSED & ADDED MATERIALS:

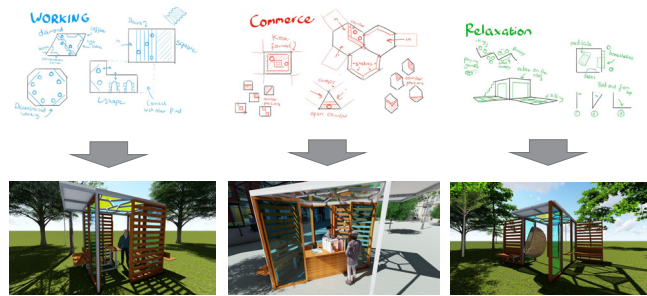
A MAJOR CHALLENGE OF THIS PROJECT WAS TO KEEP THE NEWLY ADDED MATERIALS WITHIN 30% OF THE TOTAL USED MATERIALS. AS PRESENTED IN THE FIGURE 26,6% OF THE TOTAL NUMBER OF ALL USED ELEMENTS WERE DUE TO ADDED ELEMENTS.

	Number of elements	Share (%)
Total reused materials	142,5	73,4
Total added materials	51,5	26,6
Total amount of elements	194	100

INVOLVED UNIVERSITIES:

- HOGESCHOOL ZUYD, BUILT ENVIRONMENT THE NETHERLANDS
- UNIVERSITY OF TWENTE, THE NETHERLANDS
- BURCH UNIVERSITY, BOSNIA & HERCEGOVINA
- DZENAL BUJICIC UNIVERSITY, BOSNIA & HERCEGOVINA
- SVEUCILISTE MOSTAR, BOSNIA & HERCEGOVINA
- ISTANBUL TECHNICAL UNIVERSITY, TURKEY

FINAL DESIGN:



THE WORKING PIXEL:

THE COMMERCIAL SCENARIO, IN WHICH THE PIXEL FUNCTIONS AS A KIOSK. IN THIS SETTING, THE PIXEL OFFERS SPACE TO STORE AND SELL PRODUCTS.

THE COMMERCIAL PIXEL:

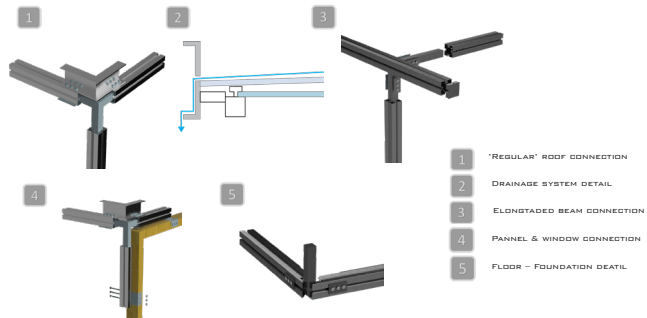
THE WORKING SCENARIO, IN WHICH THE PIXEL FUNCTIONS AS A WORKING PLACE. THE PIXEL HAS ROOM FOR ABOUT 6 PERSONS SO THAT THEY CAN WORK IN A SEMI-OUTDOOR SPACE, WHILE STILL BEING SOMEWHAT PROTECTED AGAINST WEATHER CONDITIONS.

THE RELAXATION PIXEL:

THE RELAXING SCENARIO, WHICH ALLOWS THE USERS TO REST OR "LOAF" IN A PEACEFUL SPOT. THE SWING, HANGING CHAIR AND OPEN SPACES SHOULD ALLOW THIS. THE HANGING FURNITURE GIVES USERS A FEELING OF FLUTATION, MAKING THEM TOTALLY RELAXED IN AN OPEN ENVIRONMENT.

TECHNICAL ENGINEERING:

All connections in the concept have been designed especially for this product. However, some of these connections are based on existing elements. For the entire frame the provided steel profiles were used. In this profile there is an existing slot, which can be easily used to attach panels or other elements onto the frame. Whilst designing connections, the most important factors that were taken into consideration are reversibility, transformability, and transportability (e.g. in all three scenarios the same coloured panel) (so called funky panel because of all the random angles and odd measurements) is used as a roof-element. Therefore it does not need to be reversed, nor transformed. Thus a permanent (adhesive) connection could be used to attach the acrylic drainage panel to the coloured panel, which reduced the need for extra elements for fixation and waterproofing. Large parts of the frame are also identical throughout the scenario's. However, for the sake of transportability (and reversibility), the frame is constructed with completely reversible connections.



Zuyd Hogeschool **ZU YD**



We have been providing structured material information management within the construction industry in Sweden for over a decade. Our experience from over 1,500 real-world construction projects is a natural fit within BAMB.

SundaHus will primarily focus on:

Establishing new circular value chains by developing the materials passports framework.

Integrating decisional support and assessment models for management in buildings.

www.sundahus.se



University of Minho
School of Engineering

The University of Minho (UMinho) is located in the Minho region of Northern Portugal. The internationalization of UMinho's research is shown by the rapid evolution in the number of ISI publications, in the increasing number of funded research projects, in doctoral and Masters' programs developed within the context of international partnerships and the significant implantation of international knowledge networks in European, North American and Iberian American countries. UMinho collaborates with 5 Associate Laboratories in the areas of nanostructures, nanomodelling and nanofabrication, biomaterials, biotechnology and bioengineering, health and IT technologies. Since June 2009, UMinho has been working in collaboration with the European Institute of Excellence in Tissue Engineering and Regenerative Medicine.



The Sustainable Construction group (SC) of UMinho is a unit of the Territory, Environment and Construction research center. The SC research areas include the development of sustainable, innovative and more suitable construction products; Development of methods and tools to assess building sustainability; Life-cycle analysis; Non-structural rehabilitation of buildings; Nearly-zero energy and nearly-zero emissions buildings; Design for climate changes; Design for disassembly and reuse of buildings; Assessment and prediction of the indoor environmental quality; Integration of passive and active solar systems; Thermal comfort evaluation; Energy efficiency; Hydrothermal behavior of buildings; Lighting; Evaluation of buildings performance and acoustics. The SC research is also



focused on construction quality; Safety and environmental issues within the construction sector; Construction planning and control; Environmental management of construction sites; Economics and management of building projects; Management of construction processes and investment analysis.

SC main funded research projects (last 5 years):

- BAMB - Buildings As Material Banks: Integrating Materials passports and Reversible Building Design for Circular Industrial Value Chains, <http://www.bamb2020.eu/>
- MORE-CONNECT: Development and advanced prefabrication of innovative, multifunctional building envelope elements for modular Retrofitting and Smart Connections, <http://www.more-connect.eu/>
- INPATH-TES - Innovation Pathways for Thermal Energy Storage, <http://www.inpathtes.eu/>
- SouthZEB - Towards near Zero-Energy Buildings (nZEB) Training in the Southern EU countries, <http://www.southzeb.eu/>
- Developing and Adapting Professional Programs for Energy Efficiency in the Western Balkans, <http://www.eewb.org/>
- URBENERE - Ibero-American thematic network on Energy-efficient Urban Communities, <http://civil.uminho.pt/urbanere/>
- IEA ECB Annex 57 – Evaluation of Embodied Energy and CO₂eq for Building Constructions, <http://www.annex57.org/>
- IEA ECB Annex 56 - Cost Effective Energy and Carbon Emissions Optimization in Building Renovation, <http://www.iea-annex56.org/>
- IDES-EDU: Master and Post-graduate Education and Training in Multi-disciplinary Teams implementing EPBD and beyond
- LEGOUSE - Modular Prefabrication in Low Cost Buildings
- SB_Steel - Sustainable Building Project in Steel



C-TAC Sustainable Construction Group
University of Minho – Department of Civil Engineering
Alameda da Universidade

<http://ctac.uminho.pt/>
lfc@civil.uminho.pt

H2020 BAMB

BAMB
Consortium Introduction

BAMB partners

Bruxelles Environnement,
EPEA,
VITO,
BRE,
ZUYD,
IBM,
VUBrussel,
Ronneby kommun,
Sunda Hus i linköping,
TU München,
UTwente,
University of Minho
Sarajevo Green Design Founda-
tion,
Drees & Sommer,
BAM,

BRUSSELS ENVIRONMENT (BE)

Brussels Environment (BE) is the Brussels public administration tackling Environment and Energy issues within the Brussels Region. Brussels Environment's main mission are quality survey in the field of air, water, soil, waste, noise and nature. Brussels Environment is also responsible for defining strategic management plan for improving quality in the fields mentioned above and for launching awareness campaign for citizens. Brussels Environment is also participating and influencing international debate at international and EU levels. Brussels Environment has a strong and recognized expertise in Building (Energy and materials). About 100 people are currently working on this topic inside Brussels Environment which represent about 1/10 of the whole staff.



EPEA Nederland B.V.



EPEA Environmental Protection and Encouragement Agency, situated in Hamburg (Germany), was founded by Prof. Dr. Michael Braungart in 1987. EPEA Nederland BV is a private limited company (B.V.) and a daughter enterprise of EPEA International Umweltforschung GmbH. EPEA Nederland is the official BAMB project beneficiary, while EPEA International Umweltforschung GmbH is a linked third party to EPEA Nederland in the BAMB project. EPEA develops ecological optimized products and production systems. It evaluates and improves materials, products and systems so that they are of human, environmental and economic benefit. By material flow management it is possible to identify and avoid harmful substances in biological and technical nutrient cycles. EPEA supports companies, institutions and local authorities who are willing to Eco effectively design their products and systems. In addition, EPEA offers a Cradle to Cradle®- certificate to products and systems that pass their design criteria.

VITO



VITO (Flemish Institute for Technological Research) is a leading European independent research and consultancy center in the areas of clean-tech and sustainable development, elaborating solutions for the large societal challenges of today. Sustainable chemistry, energy, health, materials management and land use: these are the five topics VITO focuses on. These topics have been set out in five research programs. They offer an answer to the challenges that mankind and society are confronted with today and in the future. Each program builds up a strong base of knowledge and skill, with added value for industry and society. The result is new and innovative research and a comprehensive range of scientific services. In VITO's five areas of expertise, a societal transition is taking place or is urgently needed. Smart grids, intensive reuse of resources, a bio-based economy, all these developments require new and better sustainable technologies, as well as a change in mindset. That's why VITO is working hard on sustainability and transition thinking as binding factors between the five research programs. VITO supplies innovative and high-quality solutions.

Building research establishment (BRE global limited)



BRE have been working in the area of Construction Resource Efficiency for over 40 years, with rapid improvements taking place over the last 5 to 10 years. This is particularly evident in the decreasing levels of landfill and disposal for construction related waste in many EU countries today. Instruments such as disposal taxes and bans on recyclables at landfill sites have been very effective in shifting the economic and technical viability towards recycling, to the point that 95%+ recycling rates for demolition waste is fairly typical in countries such as UK, Netherlands and Germany.

Less well developed is the drive to reduce primary material requirements for construction. For example, in the UK, around 350 MT of materials are needed to sustain the built environment, with around 90 MT of waste still being produced. Much of this will go back into construction applications, but often in applications that could be supplied by lower quality materials from other sectors. There are many approaches that could be deployed to reduce material consumption, including increasing the reuse of components and materially efficient design.

ZUYD



ZU
YD

Zuyd is a regional institution of higher education, which aims at the development and transfer of high-quality and practically-oriented knowledge, for the development of professions and our region. With approximately 50 bachelor and master programs, 15,000 students and 1,550 staff, Zuyd University is one of the largest universities of applied sciences in the Netherlands. Zuyd University is an important partner for Euregional businesses and organizations as far as business courses, applied research, work placements and (graduation) projects are concerned. Through the University's Research Centers, knowledge flows out of the University into the (Eu) region and vice versa. The University has locations in Heerlen, Maastricht and Sittard-Geleen. Its strategic location in the Meuse-Rhine Euregion, a dynamic region in the heart of Europe, offers unique opportunities. Big cities like Aachen, Cologne, Liege, Brussels and Antwerp are close by. Abroad is only a stone's throw away, for example during work placements at one of the numerous international businesses or exchange programs with partner universities in the Euregion. It aims to be a Euregional Gateway to Knowledge, bringing together students and staff, businesses and government institutions. It focuses on circulating knowledge, since "sharing knowledge" means "multiplying knowledge".

IBM



IBM is the largest information technology firm in the world. It has offices in more than 70 countries and employs more than 350.000 people. IBM delivers products and services for customers in 174 countries. IBM Netherlands B.V. is part of this multinational and will participate in BAMB on behalf of IBM Global. Only personnel located in the Netherlands (employed under the IBM Netherlands B.V. organization) will participate in the BAMB activities. Participating department IBM Global Services is the world's largest business and technology services provider. IBM Global Services started in the spring of 1991, with the aim towards helping companies manage their IT operations and resources. Global Services has two major divisions: Global Business Services (GBS) and Global Technology Services (GTS). IBM Global Business Services (GBS) is the professional services arm of Global Services, including management consulting, systems integration, and application management services. Revenues from the Global Business Services were \$18.6 billion, down 4 percent in 2012 compared with 2011. Global Business Services (GBS) Global Business Services (GBS) stands for the whole range of advice to final implementation and possibly outsourcing of business processes. Our consultancy is an exceptional combination of far-reaching knowledge of industries and business processes with technological market leadership. Business Consulting Services is divided into several specializations and the public sector, financial services providers, telecom and distribution.

RONNEBY KOMMUN

is a locality and the seat of Ronneby Municipality in Blekinge County, Sweden. The Center for research and development in Ronneby (Cefur) is a part of the municipality leadership function and is tasked with “being a globally renowned innovative engine for sustainable development of business and society with Cradle to Cradle® in specific focus” [Town Board 2011]. Ronneby/Cefur chiefly works with informing, inspiring and educating public officials, companies, students and general public about sustainability and Cradle to Cradle®.



SUNDAHUS I LINKÖPING AB

SundaHus i Linköping AB (publ) is an SME registered in Sweden as a public limited liability company. SundaHus have an extensive experience from over a decade of structuring, normalizing and provide easy access to information similar to the one in the BAMB project and for the same context that the project is targeting. We have been doing that in well over 1.400 real-world construction projects which have resulted in a system with documentation, assessment and in depth information about chemical content and other quantifiable properties of over 30.000 unique construction products available in over 82.000 “flavors”, i.e. sizes, colors and so on. The “easy access” we provide includes web interfaces but also APIs for linking to external systems, like other database and BIM tools. Projects Sundahus that relates to the BAMB project C2C Preschools: Ronneby municipality builds healthy preschools, inspired by Cradle to Cradle®.



TECHNISCHE UNIVERSITÄT MÜNCHEN



TUM is consistently ranked the leading technical university in Germany.

The School of Architecture at TUM is recognized as one of the advanced architecture schools in Europe. The annual yearbook of the School carries diverse examples of building construction and materials science connected to modularity and new materials. In 2013 the Faculty co-sponsored the annual international PLEA conference on sustainability in architecture which resulted in dozens of papers published under PLEA proceedings, including the extensive role of atria and other building-integrated structures for integrated heating and cooling of buildings. The Horizon 2020 work will investigate the modularity aspects of some of these structures and determine the applicability of materials passports to elements of the structures.

UNIVERSITY OF TWENTE

UNIVERSITEIT TWENTE.

The University of Twente is a higher education establishment and research organization and is one of the three leading Universities of the Netherlands. Together, 3,300 scientists and professionals carry out groundbreaking research, bring about socially relevant innovation, and provide inspiring teaching for more than 9,000 students. In this non-profit establishment study and research areas at the University are divided on Behavioral Sciences, Management and Governance, Engineering Technology, Electrical Engineering, Mathematics and Computer Science, Science and Technology, International Institute for Geo-Information Science and Earth Observation (ITC).

VRIJE UNIVERSITEIT BRUSSEL



One of the remarkable things about the main campus of the Vrije Universiteit Brussel is the clusters of student housing in the middle of its central green space. Although these 352 student rooms were built as a temporary solution in 1973, they are still in use today and have become a cherished icon of the university. The student housing units were designed by Belgian architect Willy Van Der Meeren, who rationalized the construction process by using prefabricated concrete support modules and compatible infill components for exterior and interior walls. Arranging these standard modules in different ways resulted in a variety of room, unit, and cluster configurations.

UNIVERSITY OF MINHO



The University of Minho (UMinho) is located in the Minho region of Northern Portugal, a region with an extremely strong tradition of vibrant enterprise, essentially of small and medium-sized businesses. UMinho collaborates with 5 Associate Laboratories in the areas of nanostructures, nano modelling and nanofabrication, biomaterials, biotechnology and bioengineering, health and software. From June 2009, UMinho has been working in collaboration with the European Institute of Excellence in Tissue Engineering and Regenerative Medicine. The successful internationalization of UMinho's research is shown by the rapid evolution in the number of ISI publications, in the increasing number of European projects, in the doctoral and Masters' programs developed within the context of international partnerships and the significant implantation of international knowledge networks in European, North American and Iberian American spaces.

SARAJEVO GREEN DESIGN FOUNDATION



Sarajevo Green Design Foundation , As a research organization by law, SGDF aims at broadening the awareness related to the global environmental problems that affect every country and every citizen in the world. It focuses spatially on the role that creative industry can play in solving these problems and necessity of closer collaboration between designers and production industry. Considering the overwhelming size of the problem related to the recourse use in the future Sarajevo Green Design Festival involves all scales of and making things from urban scale to product scale. A number of exhibitions, lectures, panel discussions and workshops will be organized that will address the state of the art in green design and dilemmas that product-design; interior, graphic design, architecture and urban design are facing in the 21st century. SGDF has been founded by Elma Durmisevic with aim to:

- Highlight the role of a product added value by quality design in the modern world;
- Bring focus to sustainability and green design issues as a key indicators of good quality design in the modern world;
- Bring together designers, academic institutions and manufacturers in order to redefine value systems and set guidelines for implementation of green design principles on all scales of design;
- Inspire new types of collaboration that will provide more intelligent and green design solutions;
- Develop broad platform for collaboration between the industry, knowledge institutions and designers in the region;

DREES & SOMMER

**DREES &
SOMMER**

Drees & Sommer AG is an international consulting company working in the building and real estate sector with head office in Germany. The key services provided by the company are development and process consulting, infrastructure consulting, project management and engineering as well as real estate consulting. Drees & Sommer accompanies building construction and infrastructure projects of all types and sizes for nearly all branches from the initial idea to implementation and operation. According to the corporate philosophy “the blue way” the aspects of economic efficiency and sustainability are always seen in context. Sarajevo Green Design Biennale Program

BAM Construct UK Ltd



BAM Construct UK Ltd is a top three UK contractor and has an integrated business comprising property development, sustainable design, construction, service engineering and facilities management. BAM is one of the largest Construction Groups in Europe and the only major construction member of the Ellen MacArthur Foundation's CE100 Program. They actively work with clients to develop business models for 'circular buildings', including the recently completed Brummen Town Hall project in the Netherlands. BAM also have a strategic partnership with Autodesk and are actively involved in developing Building Information Modelling (BIM) applications to help manage the life cycle of buildings.

- In the UK, work closely with WRAP, both as advocates of their Designing Out Waste program, and as one of the first signatories of the Halving Waste to Landfill commitment
- Are working with WRAP to collaborate on their REBus project to develop resource efficient (circular) business models. The aim is to implement these in BAM's own developments, beginning with two commercial properties being built in the UK during 2015/16.
- Are on the committee for the Designing Out Waste standard

GALLERY

DAY ONE















Resilient Responsive Re-design of Place



Hiroto Kobayashi
Kobayashi Maki Design Workshop (KMDW)
Keio University Graduate School of Media and Governance







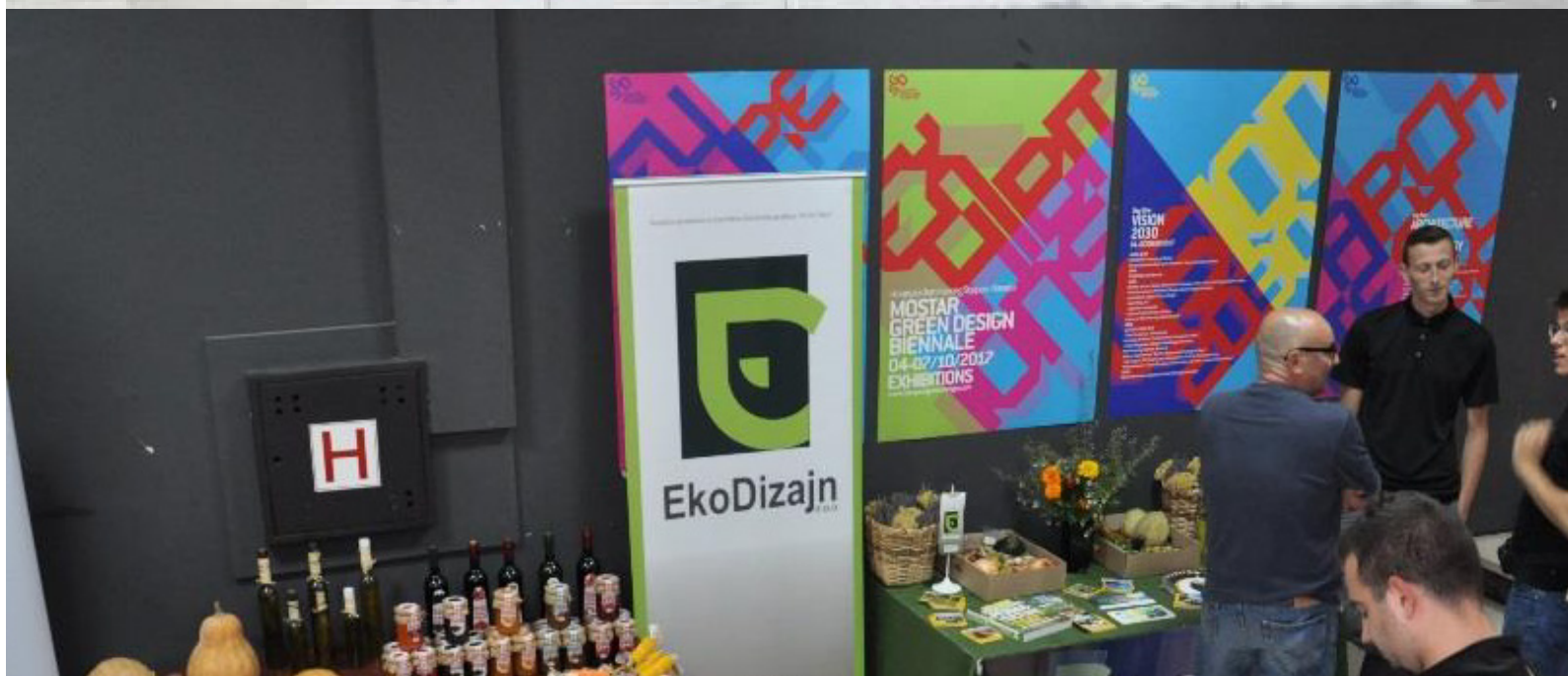
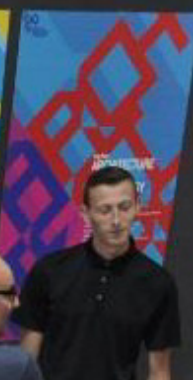
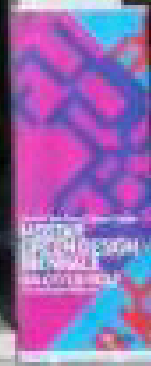
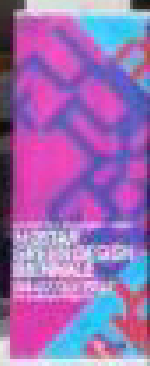




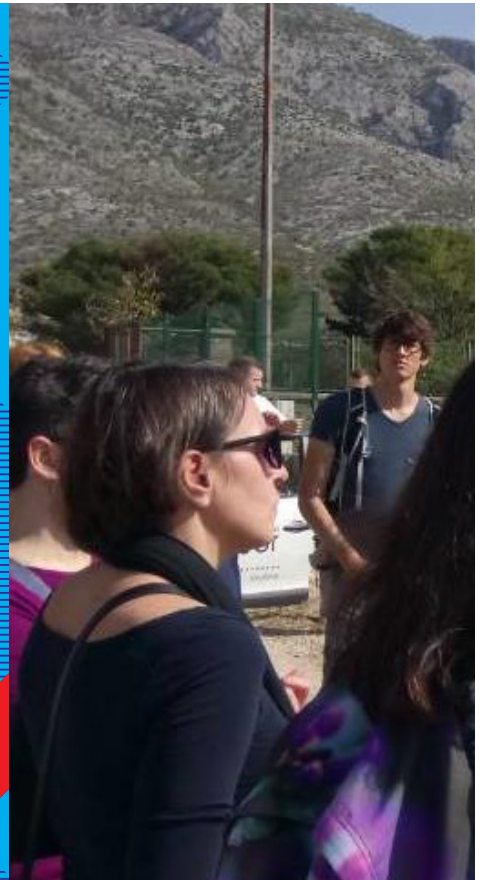
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STJEPAN
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KOSACA
КОСАЧА



DAY TWO















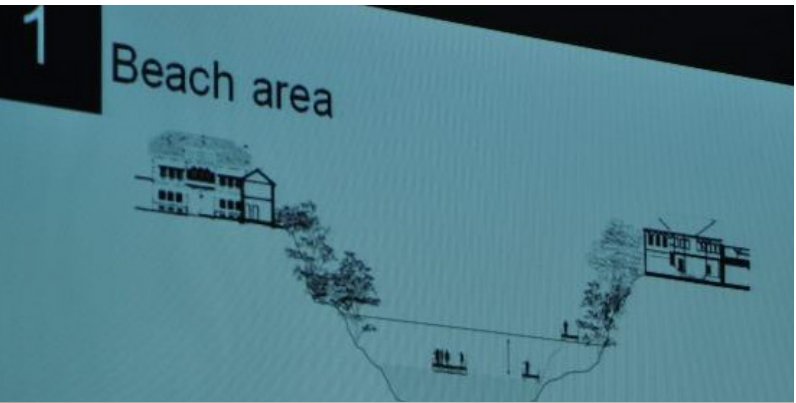


DAY THREE



























SARA IYOB
CREATIVE DESIGN

