

# BEIRUT RIVERLESS

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Beirut RiverLESS aims to address the deterioration of the Beirut River and its negative impact on the surrounding communities and environment, by developing a holistic response plan for the Beirut River Watershed. The goal is to bring Beirut River back to life by following a Landscape Ecology approach and by enabling local governance, leading to innovative and ecological interventions.

Beirut River, the city's largest open river, originates 30 kilometers inland at an altitude of around 1900 meters, from two springs in Hammana and Tarchiche.

Back in 50 B.C., the Romans diverted some of its water to the Roman city of Berytus through a system of dams, canals, aqueducts and tunnels. Due to human intervention that began in 1934, the flow of the water was interrupted and the ecological system started to break down quickly.

In 1968 the river was transformed from a natural, healthy and functioning ecosystem to a canalized infrastructure, becoming an open sewer for domestic and industrial wastewater that posed numerous health risks to its neighbors.

This resulted in "killing" the river by disconnecting it from its larger natural ecosystem, and "killing" it again by disconnecting it from the human communities that used to enjoy it and care for it.

The river thus became a no-man's-land and a dumping ground affected by every crisis the city has gone through: the dumping of slaughterhouse waste when the illegal slaughterhouses scandal came to light; the dumping of garbage during the nine-month long garbage crisis; a regular dumping ground for textile dyes, which turn the river bright red; even an unloved crocodile pet was dumped and found living there. Not to mention the raw sewage infrastructure that is directly connected to the river. (Figure 1)

After passing through and affecting the urban neighborhoods downstream, all of this pollution is dumped into the Mediterranean Sea, making it a local problem with a major global impact.

In 2013, theOtherDada initiated Beirut RiverLESS with the purpose of identifying the challenges facing Beirut River, and developing a bottom-up plan to bring it back to life.

## ECOLOGY OF THE RIVER: WHY IS THE RIVER IMPORTANT?

Naturally, Beirut River has played an important role in providing ecological and social values. In the natural section upstream, the watershed incorporates a functional ecosystem that provides benefits called "ecosystem services"<sup>1</sup>. These services include:

- Provisioning Services, where the river provides fresh water for irrigation in the area of Daychounieh and potable water to the city through the Roman aqueducts, as well as transporting sediments, organisms and nutrients.
- Regulating Services, where the basin treats and stores water, controls erosion to mitigate the impact of floods and storms, and filters waste through natural processes.
- Supporting Services, where the river offers food, shelter, and water to living organisms, and also acts as a vital migratory path for more than 70,000 soaring birds, not to mention that its valley is officially listed as an Important Bird Area [IBA]<sup>2</sup>.
- Cultural Services, where the river provides a space for recreation and cultural activities for local communities, such as the renowned water festival "Vardavar" during which Armenians traditionally gathered around the river and drenched themselves in water.

## CURRENTLY, THE SYSTEM IS BROKEN

Over the years, human interventions have interrupted the natural flow of water from the mountains to the Mediterranean Sea. Once it reaches the urban section, the river no longer functions as a healthy water body; it does not provide clean water, a space for flood retention, or a habitat for biodiversity, and most importantly it prevents cultural and social activities. People no longer have access to the river, and it also lost its recreational and social function.

We witness the degradation of the Beirut River and connected infrastructure, resulting in a negative impact on the surrounding communities and environment. After studying the urban section of the river we noticed three major problems:

- High population density: Over time, the riverbanks became increasingly densely populated and the area has also witnessed a growing presence of migrant workers. Lately, it has become the destination of some 20,000 Syrian refugees, thus increasing the neighborhood density by an estimated 40% since 2011.
- Illegal dumping of waste and raw sewage into the river basin.
- Loss of ecosystem services due to canalization and the dam upstream.

To identify the roots of the problems, we laid down the challenges facing the river, its current status, the living conditions in its surrounding neighborhoods and transgressions to its environment<sup>3</sup>. All the challenges lead back to the following:

- Poor governance due to poor communication between communities and local authorities, a social disconnect between the Badawi Neighborhood and Bourj Hammoud,

The degradation of the Beirut River and connected infrastructure, results in a negative impact on the surrounding communities and environment.

### CHALLENGES



- ILLEGAL DUMPING OF WASTES
- LOSS OF ECOSYSTEM SERVICES
- HIGH POPULATION DENSITY



## LET'S BRING BEIRUT RIVER BACK TO LIFE!

Beirut RiverLESS aims at **Bringing Beirut River Back to Life** through a Human and Nature-Centered perspective >

- ENVIRONMENTAL: STORM WATER MANAGEMENT AND FLOW RESTORATION
- SOCIAL: COMMUNITY ENGAGEMENT
- ECONOMIC: COLLABORATIVE PARTNERSHIPS

Figure 1

and a lack of rehabilitation projects concerning public spaces and existing infrastructure.

- A degraded environment because of air pollution from intense traffic on the highways, odor pollution from the sewage in the water, noise pollution from cars, a degraded habitat, and an absence of green spaces and plants that absorb pollution.
- A dilapidated public space and poor accessibility due to the absence of sidewalks, footbridges to cross the river, open public spaces, and the physical disconnection between both sides of the river due to different obstacles.

## BRINGING BEIRUT RIVER BACK TO LIFE (FIGURE 3)

Beirut RiverLESS offers a set of locally adapted replicable interventions, which function as new sustainable systems. This project is a serious attempt at bringing Beirut's only river back to life. Our goal is to restore the lost ecosystem services, in order to improve the living conditions and quality of life of urban dwellers alongside the river, and to bring back lost habitats and restore the once rich biodiversity of the area.

## APPROACH

1- To achieve sustainable cities, one of our approaches is Biophilia, a hypothesis that argues that people have an innate need to be close to nature. This philosophy is applied in the overall approach of the project, seeking to promote new thinking on how to respond

to the challenges that the Beirut River and surrounding areas face. A biophilic city works hard to restore lost or degraded ecosystems, and to integrate new forms of nature into the design of spaces, structures or built projects (Beatley, 2011: 45)<sup>4</sup>.

2- Biomimicry<sup>5</sup> is another scientific approach that emulates nature's time-tested patterns and strategies, so that the proposed solutions will be inspired by nature in order to create new ways of living well adapted to life on earth. Using biomimicry at the systems level and developing the Beirut River "Genius of Place", we can bring back its Ecosystem Services to improve the city's resilience and the living conditions of the communities nearby.

3- Positioning the river on a worldwide scale from artificial to natural (refer to Figure 2). The transformation of the Beirut River and its watershed follows the history of numerous other rivers in the world that flow through large urban agglomerations. theOtherDada developed a comparative table measuring the environmental performance and ecosystem of several international rivers. Those case studies were examined showing how restorative interventions transformed rivers from artificial to natural stream waterways, such as the Cheonggyecheon stream in Seoul<sup>6</sup>, which was once buried and covered by a freeway, and the Wadi Hanifa Project<sup>7</sup> in Saudi Arabia where the sewage and waste water of the city of Riyadh used to flow.

4- Breaking down the project into manageable parts: the river and watershed are divided into sections, to be implemented in different phases. The different interventions are tested and readapted following

performance and feedback of the communities, and thereby assuring the resilience, flexibility and adaptability of the project.

## CHALLENGES AND INTERVENTIONS

Beirut RiverLESS aims at bringing Beirut River back to life through a human-centered process, while engaging local communities and authorities in planning and implementation:

theOtherDada finds itself in a challenging local and regional context where political and social institutions are nothing short of simply corrupt. For the past few years, Beirut's residents have been dealing with a garbage crisis for which there is seemingly no solution in sight, especially with the dumping of some of the Karantina trash mountain into the sea at the mouth of the river. Though this situation has initiated a larger conversation around environmental issues, unfortunately the local context still lacks interest in and awareness of greater ecological concerns.

One way to go against the current lack of ecological engagement is to collaborate with a number of like-minded individuals, firms, art centers and NGOs. This helps to collectively shift the way people think, and for "making public" shared concerns by insisting that small, bottom-up projects, when interconnected with different socio-environmental layers, can have a positive impact on the people and their surroundings.

theOtherDada has been working on a pilot project and has partnered with local and regional stakeholders such as Made For Brands, TandemWorks, Lebanese Center for Energy Conservation and UN Habitat. tOD started implementing their strategy by raising awareness and engaging local communities through several competitions and hands-on workshops, and presented the project during international events such as the South by Southwest Eco Conference in the United States, the EOCity World Summit in the United Arab Emirates, and the Build It Green conference in Lebanon.

We collaborated with TandemWorks, an arts non-profit focusing on social and environmental issues, and engaged several artists to create site-specific interventions that raised awareness on the importance of reviving the river. These interventions included a banner by Omar Fakhoury that highlighted the sewage contamination of the river basin, and a sound installation by artist Vartan Avakian that transmitted the sounds of the river to revive the city's memory. Artist Jessica Khazrik is planning a live dance performance in the bed of the river. A special publication in Arabic and Armenian was commissioned by TW, with contributions of artists, curators, urban planners and architects. 17,000 copies were printed and distributed by the Al Safir newspaper. We also partnered with Made For Brands, whose mission is to narrate the story of the

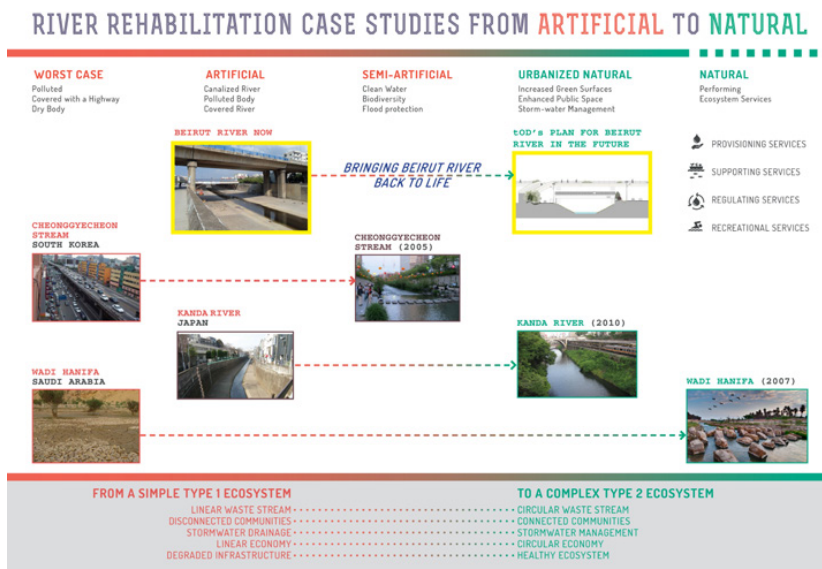


Figure 2

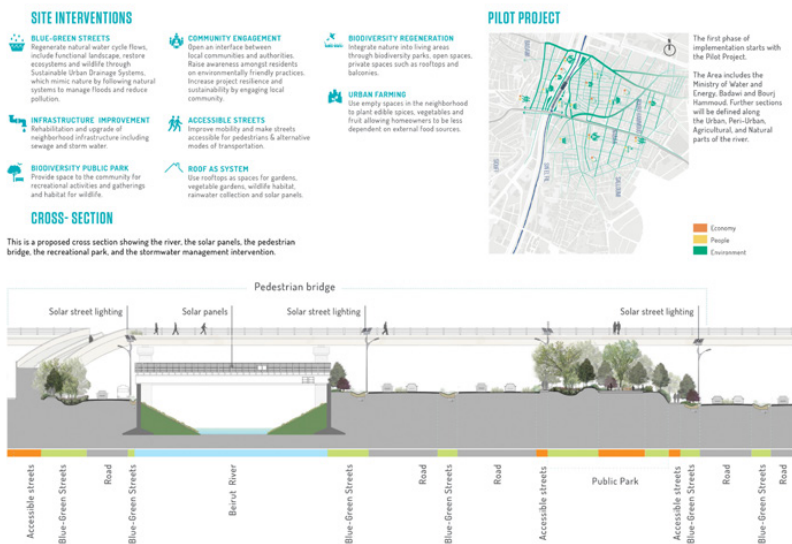


Figure 3

Beirut River project in the most effective and impactful way through visuals, animations, and printed leaflets.

As part of the Beirut Design Week 2016, theOtherDada gathered more than twenty volunteers to create an installation on a site that used to serve as an informal dumping ground next to Beirut River. They worked for ten consecutive days to translate the proposed interventions into site-specific solutions, and were able to clean the lot and collect soil that they used to plant around 400 native species, breathing life into a barren land and providing a much-needed and engaging public space.

On the environmental level, the project proposes small-scale urban interventions such as Blue-Green streets, to reduce pollution and manage floods affecting the nearby economic hub; utilizing rooftops for rainwater collection and solar energy; and providing public parks for recreational activities, all while engaging the local community in the process.

## NEXT STEPS

Considering the urban environment of Beirut River's flood plains, we recognize that we cannot re-naturalize the urban section of the river; hence our approach is to bring back the lost ecosystem services by increasing green surfaces for a biodiversity habitat, enhancing public spaces for the communities, and managing storm water to relieve pressure on ageing infrastructure and recharge groundwater.

Currently, our goal is to reach out to stakeholders, talent and resources, and to develop a watershed management and maintenance plan based on a landscape ecology

approach. This sets a framework specifying the responsibilities of the different consultants and stakeholders and insuring the environmental stewardship for the overall project development.

Beirut RiverLESS promotes a set of interventions that will require the emergence of community responsibility and small-scale green entrepreneurship, and facilitate the potential participation of parts of the informal economy. Although it is not seen as strategic for the national economy, the informal economy ensures the income and market participation of many poor communities. In these neighborhoods, which suffer from weak governance at the national and a level of "neglect" by local authorities in cases where the neighborhoods are informal, local authorities will be better equipped to tackle challenges of service provision, and demand will be reduced through interlinked and holistic solutions responding to their mandate area.

Based on collaborations with local small businesses, NGOs, artists and practices, and applying soft green interventions, the project will bring social, environmental and economic resilience to the neighborhoods along Beirut River.

## FOOTNOTES

1. Ecosystem Services (2015). The economics of ecosystems & biodiversity. Available at: <http://www.teebweb.org/resources/ecosystem-services/> (accessed 8 September 2015).
2. BirdLife International (2015). Important Bird Areas factsheet: Beirut River Valley. Available at: <http://www.birdlife.org> (accessed 26 June 2015).
3. Challenges recorded through field observations and interviews conducted on October 9 and 23, 2014; December 16 and 22, 2014; and February 2, 2015.
4. T. Beatley, *Biophilic Cities: Integrated Nature into Urban Design and Planning*. USA, Island Press, 2011, p. 45.
5. Biomimicry Institute (2015). What is biomimicry? Available at: <http://biomimicry.org/what-is-biomimicry/> (accessed 8 September 2015).
6. The Preservation Institute (2007). Removing freeways - restoring cities. Available at: <http://www.preservenet.com/freeways/FreewaysCheonggye.html> (accessed 15 December 2014).
7. Inhabitat (2010). Aga Khan Award for Architecture: Wadi Hanifa Wetlands. Available at: <https://inhabitat.com/aga-khan-award-for-architecture-wadi-hanifa-wetlands/> (accessed 16 December 2014).

## FIGURES

Figure 1. Challenges

Figure 2. Case Studies Diagrams

Figure 3. Interventions

## BIBLIOGRAPHY

Beatley, T. (2011). *Biophilic Cities: Integrating Nature into Urban Design and Planning*. Washington DC: Island Press.

## AUTHOR

**Adib DADA** is the founder of theOtherDada [tOD] Integrated Architecture Lab. Adib earned a Bachelor in Architecture at the American University of Beirut, a Master's Degree in the Interactive Telecommunications Program at New York University, and completed a Biomimicry Graduate Certificate from the Biomimicry 3.8 Institute and Arizona State University. Based on Biomimicry, tOD's work promotes a symbiotic relationship between nature and the built environment by exploring new ways of creating generous and regenerative buildings and projects; in essence developing creative solutions with a positive impact. As a fervent supporter of Beirut's art scene, Adib serves on the Supporting Committee of the Beirut Art Center, sits on the Board of Tandem Works and was recognized in GOOD Magazine's GOOD 100 for 2016. Adib is a Fellow of the fifth class of the Middle East Leadership Initiative and a member of the Aspen Global Leadership Network.