AMERICAN UNIVERSITY OF BEIRUT

NATURE CONSERVATION CENTER

ENVIRONMENT ACADEMY

EA CYCLE II OVERVIEW:

SUSTAINABLE SOLUTIONS FOR LOCAL ENVIRONMENTAL CHALLENGES


ENVIRONMENT
ACADEMY

CONTENT

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A THANK YOU NOTE TO OUR DONORS

For your unwavering and generous support, which surely made a real and positive impact on the lives of the communities.

Shining the light on our donors, hereunder listed in alphabetical order:

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Embassy of Japan

Embassy of Switzerland to Lebanon and Syria

L'Oreal Foundation

UK anonymous private donor

Van Tienhoven Foundation

ABOUT US

WHY WAS EA CREATED?

Lebanon has known environmental challenges throughout its modern history. Yet, this has been severely felt since 2019. Its economy has collapsed, leading to widespread distrust in the government's ability to meet basic needs. Public sector employees are abandoning their jobs, leaving residents to fend for themselves. This breakdown has also resulted in alarming levels of pollution in the air, water, and soil, leading to outbreaks of diseases like cholera and accelerating the onset of cancer and heart conditions by twelve years compared to global average age. This dire situation has created deep environmental injustice and has severely affected public health.

While certain foreign aid organizations provided assistance to local communities in addressing the crisis, their efforts encountered challenges due to a top-down approach. Initiatives were executed without a thorough understanding of the unique needs and priorities of the communities, leading to unsustainable interventions, and undermining the effectiveness of the support. As scholar activists, believing in the power of the commons, we could not remain passive observers. Instead, we chose to leverage our expertise by collaborating closely with the community to devise solutions to the rapid deterioration of our environment.

In 2019, the Environment Academy (EA) was established as a program within the American University of Beirut (AUB) Nature Conservation Center (NCC) specifically in response to Lebanon's ongoing crisis. Its core mission is to foster collaboration between academia and the community, transcending university boundaries. The EA serves as a platform for local communities to voice their environmental concerns, collaborate in designing and implementing solutions alongside the EA team and expert mentors from the diaspora, and in jointly seeking funding for sustainable initiatives to tackle their environmental challenges.

OUR MISSION

OUR MISSION IS TO CULTIVATE TRANSFORMATIVE ACTION AMONG COMMUNITY MEMBERS AFFECTED BY ENVIRONMENTAL CHALLENGES THROUGH COLLABORATION BETWEEN ACADEMIA AND THE COMMUNITY. EMPLOYING DESIGN THINKING METHODOLOGIES, WE PROMOTE INNOVATION, MENTORSHIP, AND ONGOING ENGAGEMENT TO ASSIST COMMUNITIES IN REALIZING A HEALTHY, PRODUCTIVE, AND SUSTAINABLE FUTURE FOR ALL.

OUR VISION

OUR VISION IS TO CATALYZE TRANSFORMATIVE CHANGE THROUGH GRASSROOTS ACTION AIMED AT PRIORITIZING ENVIRONMENTAL RESTORATION EFFORTS TO UPHOLD THE FUNDAMENTAL ELEMENTS NECESSARY FOR A HEALTHY LIFE.

TRANSITION FROM NATIONWIDE ENVIRONMENTAL PROBLEMS TO LOCAL LEVEL SOLUTIONS

Addressing the needs of the communities at nation level, the EA has proactively embarked on localized initiatives. These efforts target specific community-level issues, aiming to enforce tangible improvements in areas where action is urgently required. By providing support to communities on a village-by-village basis, the EA endeavors to catalyze transformative change within these communities. This approach serves a dual purpose: firstly, it facilitates the resolution of immediate local challenges, demonstrating the potential for addressing basic needs at the grassroots level. Secondly, it empowers communities to evaluate and hold local authorities accountable for their actions or inaction.

EA CYCLE I & EA CYCLE II PROJECT LOCATIONS

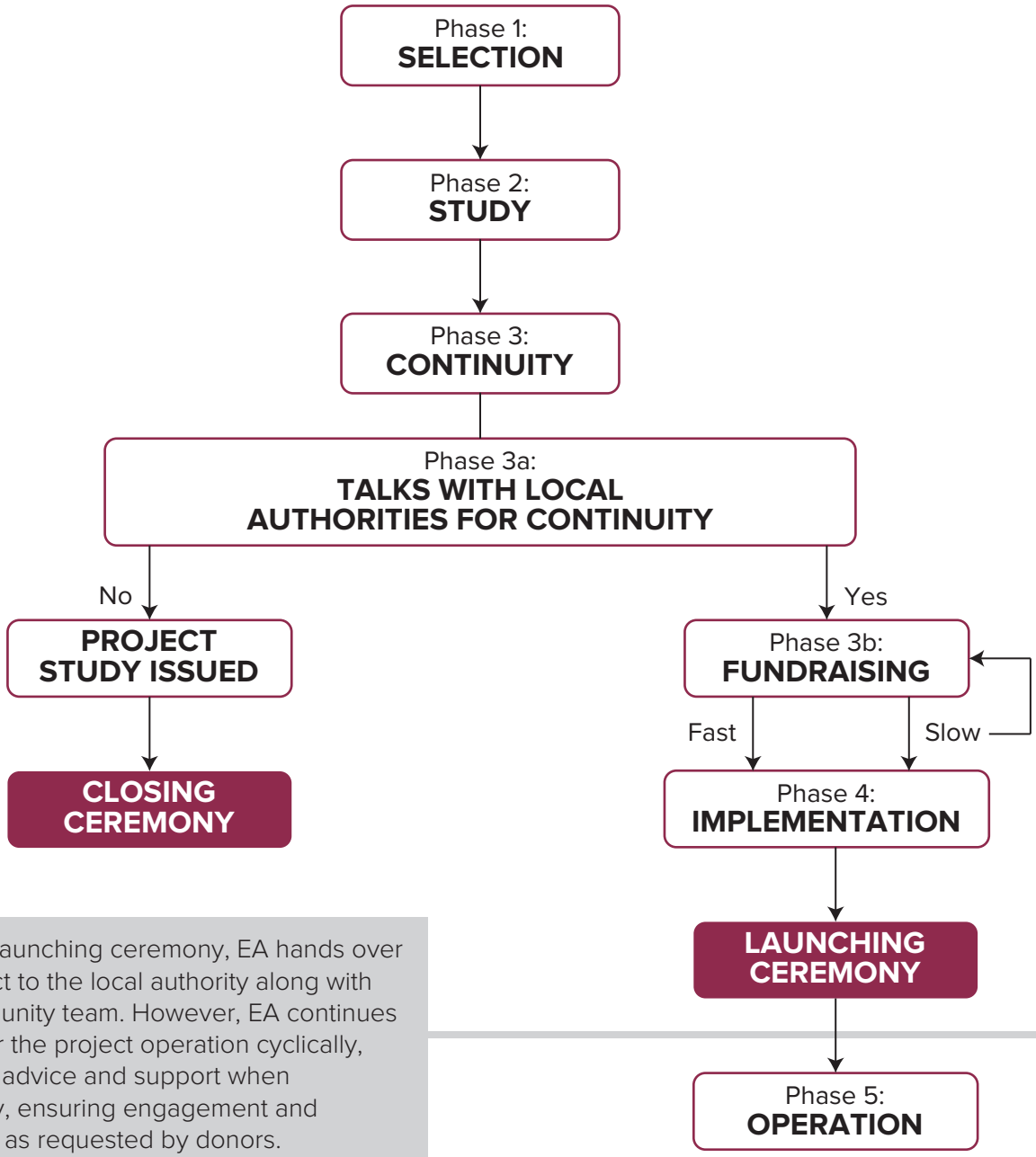
EA I PROJECTS

Achrafieh
Ain Al Kharroubeh
Beirut
Bourjein
Btebyet
Damour
Ebba
Fanar
Mazraat Yachouh
Selaata

EA II PROJECTS

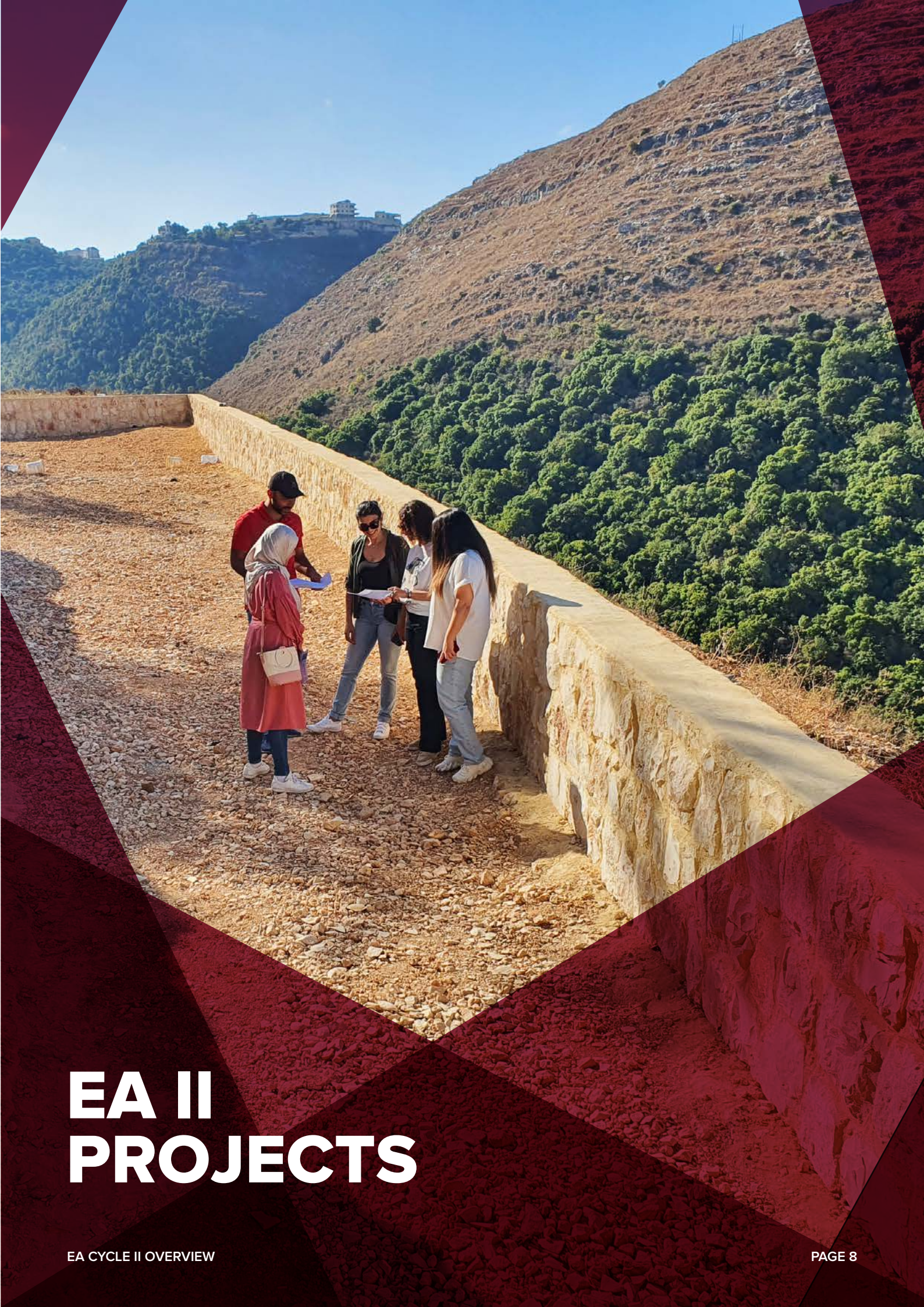
Abadiyeh
Akkar El Atiqa
Baalchmay
Barja
Bedghane
Btekhnay x2
Bqerqasha
Bouaida
Harf Beit Hasna
Rmaych
Tripoli

PROJECT PROCESS - PHASES 1 TO 5



After the launching ceremony, EA hands over the project to the local authority along with the community team. However, EA continues to monitor the project operation cyclically, providing advice and support when necessary, ensuring engagement and continuity as requested by donors.

Projects Progress Unveiled: EA II Community Teams gather at AUB-NCC, reporting advancements - October 27, 2022.



EA II PROJECTS

On April 23, 2021, the EA launched its second cycle, as an open call for community members across Lebanon to propose local environmental solutions to local environmental problems in their villages.

Through an administrative process, individuals who responded formed their community team and followed the due process to present the identified environmental challenge and its correspondent proposed solution.

Applications were thoroughly reviewed by a panel of experts from Lebanon and the diaspora resulting in the selection of 12 projects for its cycle.

On July 24, 2021, the selection was made public, moving the projects to phase 2 of the process and matching every community team with their mentors.

EA II PROJECT CATEGORIES

RENEWABLE ENERGY HARVESTING

Baalchmay
Bedghane

BIODIVERSITY

Akkar El Atiqa

GREEN SPACES CREATION AND PRESERVATION

Barja
Btekhnay
Rmaych

SOLID WASTE MANAGEMENT

Abadiyeh
Btekhnay
Bqerqasha
Rawdat El Fayhaa High School Tripoli

DRINKING WATER SUPPLY

Harf Beit Hasna

WASTEWATER MANAGEMENT

Bouaida

RENEWABLE ENERGY

HARVESTING THE SUN FOR WATER

BEDGHANE

ALEY

1183 METERS

1850 INHABITANTS

PROJECT OVERVIEW

16 MONTHS

35000 USD

L'OREAL FOUNDATION

Bedghane is famed for the enchanting beauty of its pine forests, while the majority of its agricultural lands are dedicated to the cultivation of olives, grapes, and apples. The community team identified a pressing water and energy supply crisis and diligently collaborated with their mentor and intern to drive the project forward, receiving support from the local authority.

During the project's study phase, the community team, alongside their mentor and intern, identified and assessed three potential solar system solutions. After careful consideration, they selected the most feasible option and proposed a tailored solution perfectly suited to Bedghane's needs: A solar-powered water pumping system.

The municipality played a crucial role at various levels, offering land for the construction of the solar-powered water pumping system, assigning a municipal employee to provide essential data to the team, and providing technical support for project implementation.

Despite facing challenges, particularly in securing funding, the project persevered. Nine months later, funding was secured from the L'Oréal Foundation, shifting the project into implementation. Following AUB's procurement process, potential equipment suppliers applied in response to the bidding documents of the project, and MetaSol s.a.l. won the bid.

Once MetaSol successfully completed installation and good functioning checks, the system now being fully operational, the municipality set out in collaboration with the community team, on a community outreach venture to secure donations covering future operation and maintenance costs.

After the installation of the solar-powered water pumping system, a tele-survey was designed and conducted to assess the villagers' expectations and evaluate the impact of the new solution on their daily lives.

This survey involved phone interviews with a randomly selected group of 60 households. 42 responders answered all questions of the survey representing 70% of the initial sample. Responses were collected and analyzed. 39 of the 42 responders permanently reside in Bedghane (92.9%) and 3 of the 42 responders are summertime residents (7.1%). Responders reported living in a 4-person household as an average.

The system had a transformative impact on the household. The responders highlighted its positive outcome and potential for further improvement in water resource management. They described the system as highly effective, alleviating water shortage and eliminating the financial burden of water trucking remediation. This project has guaranteed daily access to clean water for 1850 residents, enhanced irrigation for local farmers, minimized air pollution, and raised awareness of sustainable solutions.

PEOPLE INVOLVED

COMMUNITY TEAM:
Mr. Samer Bou Ammar
Ms. Nirmeen El Kakoun
Mr. Nour Shayya
Mr. Ali Bou Ammar
Mr. Eyad Shayya

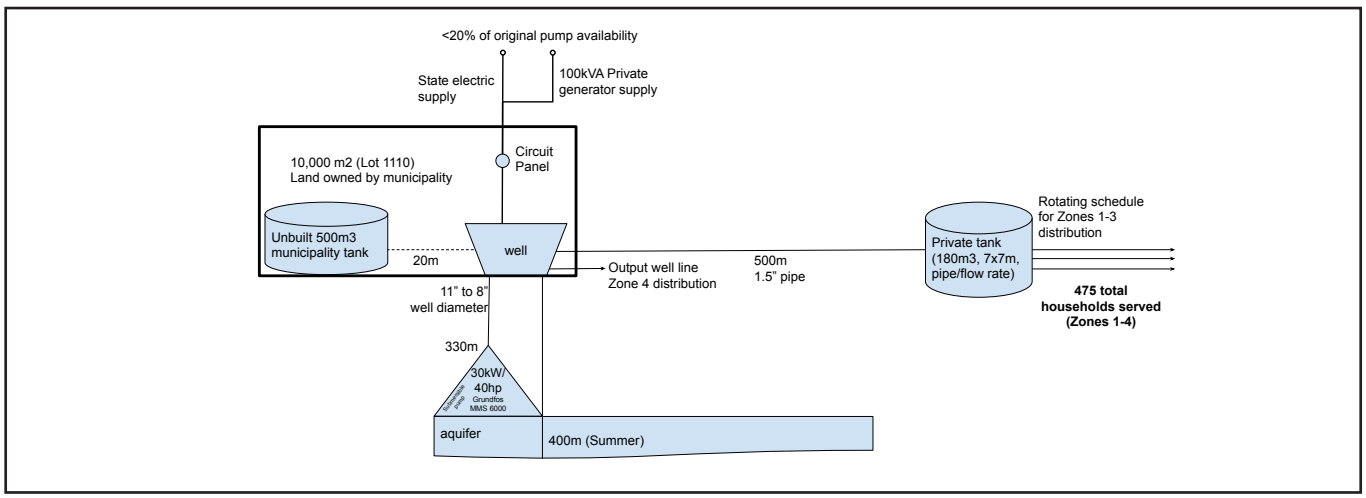
MENTOR:
Dr. Rami Ariss
PhD Civil and Environmental Engineer with expertise in sustainable energy and electrification

INTERN:
Mr. Kassem Al Houssaini
AUB chemical engineering student

LOCAL AUTHORITY MEMBERS:
Head of the municipality: Dr. Zaher Shaya
Mukhtar: Mr. Ghaleb Fayyad
Mr. Wajdi Shayya
Mr. Tarek Shayya

Gathering for Progress: Town hall Meeting to update locals on project progress and to strengthen community awareness - October 9, 2022.

Bird's Eye View: Solar-Powered Water Pumping System in operation - December 18, 2022.



Visualizing Essential Infrastructure: Schematic diagram of community well, electric supply, and water distribution system - October 20, 2021.

RENEWABLE ENERGY

HARVESTING THE SUN FOR WATER

BAALCHMAY

BAABDA

834 METERS

3500 INHABITANTS

PROJECT OVERVIEW

29 MONTHS

104000 USD

EMBASSY OF JAPAN

BAALCHMAY MUNICIPALITY CONTRIBUTION 15000 USD

BAALCHMAY DIASPORA AND COMMUNITY MEMBERS CONTRIBUTION 1500 USD

Nestled amidst the scenic hills of the Mount Lebanon region, Baalchmay is renowned for its abundant natural springs, serving as a lifeline for its residents. The community, alongside their dedicated mentor and intern, embarked on a mission to address the pressing water and energy crisis, forging a close partnership with the local authority.

Following meticulous assessment, the decision was made to install a solar-powered water pumping system to ensure a sustainable water supply to the Ras el Jabal tank. However, the substantive project cost estimate proved to be a challenge for the EA core team and the prospective donors alike. Despite obstacles, the EA core team initiated the funding application process in April 2022, and secured a grant of 104000 USD from the Embassy of Japan who believed and supported the goals of the project, in alignment with their own strategy in offering Grant Assistance for Grassroots Human Security Projects (GGP).

Under the AUB procurement process, seven suppliers responded to the request for quotation according to the technical specifications outlined in the project bidding documents. MetaSol s.a.l. were awarded the project as the best quality-to-price bidder.

The piece of land originally destined for the project was found to be insufficient after completing a thorough topographic survey. Undeterred, the municipality rallied its resources to overcome these challenges, demonstrating their commitment to the project's success.

By December 2023, implementation was completed and rigorous testing and final inspection were conducted to ensure the system's seamless integration as per the contractual terms.

The never-failing support of the diaspora to their hometown and the enthusiasm of the community vis-à-vis the project, resulted in providing the cost for a backup power system for essential lighting and surveillance features installed on-site.

This collaborative endeavor has not only guaranteed equitable access to clean water for every household in Baalchmay but also symbolizes a remarkable milestone in elevating the overall quality of life for its residents.

PEOPLE INVOLVED

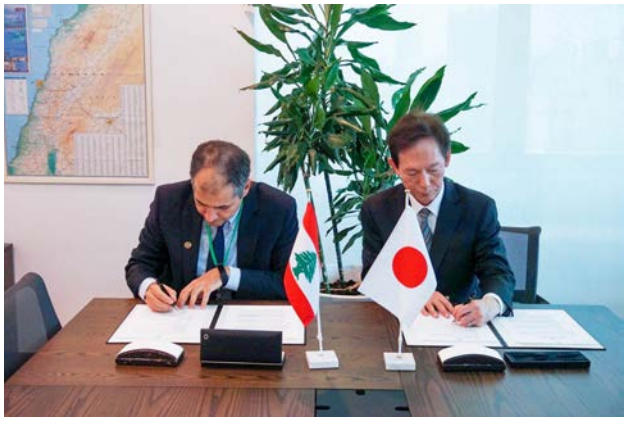
COMMUNITY TEAM:
Ms. Marwa Abi Faraj
Mr. Moufid Abi Farraj
Ms. Nagham Shaaban Abi Farraj
Mr. Rabih Abi Farraj
Mr. Bassel Al Danaf
Dr. Najib Abi Farraj

MENTOR:
Mr. Tarek Amine
Chief Procurement Officer of Bechtel Corporation

INTERN:
Ms. Aya El Hashimi
AUB chemical engineering student

LOCAL AUTHORITY MEMBERS:
Head of the municipality: Mr. Adham Al Danaf
Mr. Salam Abi Farraj
Mr. Jamil Al Danaf

On the Ground: EA Core Team's initial field visit for environmental assessment and collaboration - September 25, 2021.



Solidifying Support: HE. Mr. Magoshi Masayuki, Ambassador of Japan to Lebanon, and Mr. Zaher Dawy, AUB Provost, signing the grant contract - February 27, 2023.

Site Inspection: Mr. Adham Al Danaf, Head of the Municipality of Baalchmay, overseeing operations - July 11, 2023.

BIODIVERSITY: SPECIES CONSERVATION

SAVE BAMBI... SAVE HIS FOREST.
ADAPTED FROM "STEPHEN KING"

AKKAR EL ATIQA

AKKAR

700 TO 1600
METERS

18000
INHABITANTS

PROJECT OVERVIEW

28
MONTHS

10240
USD

VAN TIENHOVEN

Akkar El Atiqa, this ancient village of springs, majestic waterfall, ancient citadel, and history all around, welcomes you to breathe in the scent of its Cilician Fir forests (or Shouh in Arabic), home of a complex ecosystem of globally and locally threatened species including animals such as squirrels, foxes, hyenas, and golden jackals. The Cilician Fir stands as Near Threatened on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species of 2011. With a deep sense of responsibility, the community team assessed the critical endangerment facing the regeneration of the fir forest. Supported by their mentors and intern, they embarked on numerous field visits to understand the intricate relationship between locals and the forest, studying the trees themselves with care.

An Ecosystem Management Plan (EMP) emerged, crafted by agricultural sciences researcher Nivine Nasrallah. This EMP integrates sustainable practices, harmonizing ecological, social, and economic aspects of forest management, in an attempt to preserve the fir forests and their ecosystem, while positively impacting the livelihoods of the community.

Thanks to the dedication of the EA core team, a grant of 10240 USD from the Van Tienhoven Foundation For International Nature Protection was secured, enabling the implementation of part of the EMP.

To ensure effective implementation of the EMP, a committee comprising forest guards, shepherds, school directors, and civil defense officials was established. This committee plays a crucial role in facilitating communication, fostering collaboration, and coordinating unified efforts.

One of the highlights of the EMP was the school awareness campaign, engaging 465 students and 14 teachers from 4 different schools. This campaign underscored the vital significance of forests and trees, highlighting the challenges they face and the environmental consequences of improper grazing practices.

The ultimate objective is to designate the cherished forest as a nature reserve. This endeavor required extensive efforts, including numerous meetings with the Minister of Environment, Dr. Nasser Yassin, to present the project and submit the application. The community team continues to coordinate with the Ministry of Environment to fulfill the necessary documentation for the reserve application.

PEOPLE INVOLVED

COMMUNITY TEAM:
Dr. Ahmad Moustafa
Mr. Taha Al Ali
Ms. Rihab Khaddouj
Ms. Fatima Zahraa Slayman
Ms. Fatima Slayman

MENTORS:
Ms. Maya Abdul Latif
Landscape architect, professional experience in public realm, master planning, and urban design

Mr. Mustafa Itani
Ecosystem Management and Pasture Ecology specialist

INTERN:
Ms. Aya Al Hashimi
AUB chemical engineering student

LOCAL AUTHORITY MEMBERS:
Head of the municipality: Dr. Mohammad Khalil

On the Ground: EA Core Team's initial field visit for environmental assessment and collaboration - September 18, 2021.

Growing Together: Akkar students planting 200 Fir trees for reforestation - December 3, 2023.

Community Team in Action: Engaging in activities within the Fir forest - October 22, 2021.

GREEN SPACES:
CREATION AND PRESERVATION

LIGHT YOUR PASSION, NOT YOUR FIRE,
FOR YOUR GREEN LUNGS!

BTEKHNAY

BAABDA

950
METERS

2100
INHABITANTS

PROJECT OVERVIEW

22
MONTHS

4617
USD

UK PRIVATE DONOR

A diamond in its green velvet case, this is what best describes Btekhnay, surrounded by the tall pines of Baabda district. However, behind this idyllic setting looms a significant risk, as it finds itself situated in one of Lebanon's most wildfire-prone regions.

Recognizing the imminent threat, the proactive local community had already embarked on extensive forest cleaning efforts, months prior to responding to the call for participation from EA. With the guidance of their mentor and intern, they meticulously crafted a comprehensive forest fire management system, bearing in mind both social and technical considerations.

Their strategy, thoroughly designed and executed, encompassed four distinct axes: Prevention, Readiness, Intervention, and Rehabilitation. Prevention focuses on implementing measures to mitigate the risk of fire and enhance community resilience. Readiness involves preparatory measures taken prior to fire occurrence. Intervention centers on swift and effective fire suppression and containment. Finally, rehabilitation is dedicated to restoring the forest ecosystem and ensuring long-term sustainability.

To inform their strategy, the Btekhnay team conducted extensive mapping exercises, diligently charting the forest, adjacent residential areas, and vital local features such as water sources and roads. This thorough understanding laid the foundation for their proactive approach to forest fire management.

The proactive efforts to protect the forest and safeguard the environment started with community-funded endeavors prior to the engagement with EA. In addition to contributions from Btekhnay inhabitants, a generous donation of 4617 USD from an anonymous UK benefactor provided essential funding for purchasing necessary equipment for prevention and firefighting basic intervention.

Furthermore, to ensure the project's continuity and success, a Memorandum Of Understanding (MOU) was signed between AUB and the Abulhosn Family Endowment, owners of a significant portion of the Btekhnay forest. This partnership underscores the collaborative effort to protect and preserve the forest for future generations.

The community of Btekhnay is not only protecting their natural heritage but also setting a shining example of environmental stewardship for communities elsewhere.

PEOPLE INVOLVED

COMMUNITY TEAM:
Mr. Walid Abulhosn
Mr. Salim Abulhosn
Ms. Sanaa Abulhosn

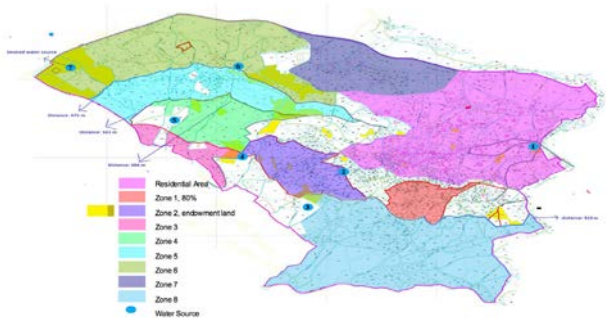
MENTOR:
Dr. George Mitri
Professor of Environmental Sciences at the Department of Environmental Sciences and Director of the Land and Natural Resources Program at the Institute of the Environment, University of Balamand

INTERN:
Ms. Myriam Maamari
AUB chemical engineering student

LOCAL AUTHORITY MEMBERS:
Head of the municipality: Mr. Hamad Abulhosn

ABULHOSN FAMILY ENDOWMENT:
President Mr. Marwan Abulhosn

Teamwork in Action: Dedicated efforts to zone the forest - November 01, 2021.



Zoning for Protection: 8-zone map for better management - November 26, 2021.

On the Ground: EA Core Team's initial field visit for environmental assessment and collaboration - September 19, 2021.

GREEN SPACES: CREATION AND PRESERVATION

LIGHT YOUR PASSION, NOT YOUR FIRE, FOR YOUR GREEN LUNGS!

RMAYCH

BINT JBEIL

570 METERS

12000 INHABITANTS

PROJECT OVERVIEW

22 MONTHS

9950 USD

EMBASSY OF SWITZERLAND TO LEBANON AND SYRIA

Just a stone-throw away from the southern border, hilly Rmaych stands as a guardian of the "Al Waara" forest, one of South Lebanon's last remaining green havens. The community team, recognizing the imminent threat of wildfires, embarked on a thorough risk assessment and mitigation journey, supported by their mentors, intern, and guest experts.

The project aimed to bolster the resilience of the Rmaych community against catastrophic wildfires in the "Al Waara" forest by addressing the identified risk factors: historical solid waste dump and forest floor litter, human-sparked wildfires, and individual uninformed firefighting efforts. Given the limited capacities of the Lebanese Civil Defense and other firefighting entities in terms of equipment and geographic distribution, the community faces significant challenges where individuals often attempted to extinguish fires themselves, while lacking both equipment and training.

To mitigate the dangers of individual firefighting intervention and to ensure the village ability to protect itself, two seasoned firefighters Gregory Wild and Matthew Mason from Australia provided invaluable advice on effective firefighting mechanisms and fire prevention strategies. Drawing on their expertise, a firefighting skid, inspired by the Australian model, was proposed, as a technical part to the integral forest and fire management plan which also included cleaning up the solid waste dump and forest floor litter.

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Embassy of Switzerland to Lebanon and Syria

The EA core team initiated the process of grant application. Among these efforts, a response to an open call by the Embassy of Switzerland to Lebanon and Syria proved fruitful, ultimately securing the necessary funds amounting to 9950 USD, in addition to the municipality contribution of machinery, and dedicating a truck for the firefighting skid.

To ensure the continuity and success of the project, a Memorandum Of Understanding (MOU) was signed between AUB and the Rmaych municipality, solidifying their commitment to collaboration and effective forest management. Rmaych, with its strategic location and dedicated community, stands poised, with comprehensive plans, expert guidance, and crucial funding, to protect and preserve the "Al Waara" forest, transforming a pit into a recreational green jewel.

PEOPLE INVOLVED

COMMUNITY TEAM:
Mr. Nader Alam
Mr. Najib Al Amil
Mr. Edgard Al Hajj
Ms. Gladis Al Alam
Ms. Layla Youssef
Mr. Wael Al Amil
Mr. Ghassan Al Hajj

MENTORS:
Ms. Therese Rbeiz
Senior expert in garden design

Mr. Joseph Bechara
Member of the Lebanese Reforestation Initiative (LRI), with extensive experience in managing forest fire plans in Lebanon

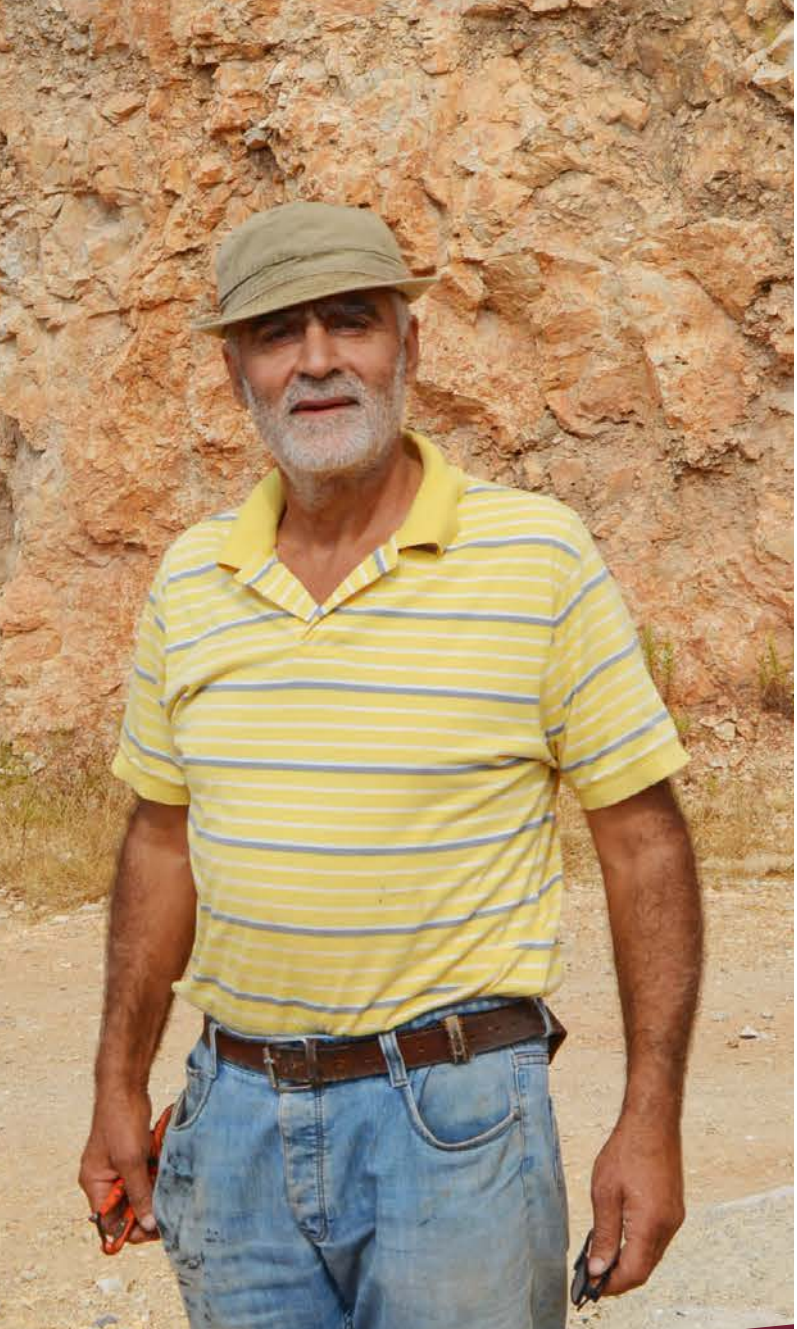
INTERN:
Mr. Marc Merhej
AUB chemical engineering student

LOCAL AUTHORITY MEMBERS:
Head of the municipality: Mr. Miled El Alam

On the Ground: EA Core Team's initial field visit for environmental assessment and collaboration - October 16, 2021.

Empowering Our Community: Custom-built firefighting skid for trained local members - March 17, 2023.

Unifying Forces: EA Core and Community Teams, Lebanese Army Civil-Military Cooperation (CIMIC) Team, UNIFIL Team, and Rmaych Scout joined "Al Waara" Forest Cleaning Day - March 19, 2022.



GREEN SPACES: CREATION AND PRESERVATION

LIGHT YOUR PASSION, NOT YOUR FIRE, FOR YOUR GREEN LUNGS!

BARJA

CHOUF

310 METERS

23000 INHABITANTS

PROJECT OVERVIEW

28 MONTHS

10447 USD

UK PRIVATE DONOR

Barja, celebrated for its fertile lands, pristine spring waters, rugged limestone formations, and rich historical sites, including numerous caves and ancient burial grounds, found itself grappling with the pervasive issue of air pollution emanating from 13 private generator service providers. These generators, operational for an average of 20 hours daily, emit pollutants, impacting the health and well-being of the community.

The complex status quo of generator owners and service providers does not leave room for drastic improvement to the living and health conditions of the residents, not only of Barja, as tackling this chronic issue of power supply is a country-wide problem necessitating governmental measures and law enforcement intervention.

Realizing the urgency of addressing this environmental challenge from a different angle, the community team, alongside mentors and interns, embarked on a comprehensive assessment of the situation. It was agreed, according to a community survey which returned an overwhelming 97% consensus among participants, to mitigate the adverse effects of the generator pollution by greening Barja.

This marked the inception of a collaborative effort aimed at creating a green public space that would not only serve as a sanctuary from pollution but also enhance the overall quality of life for Barja's 23000 residents.

Recognizing the importance of this initiative, the municipality generously offered a parcel of land exceeding 8000 square meters for the project, to be greened progressively.

With the guidance of mentors and experts, a meticulous design for the community green space was crafted. Phase one of the project, covering approximately 500 square meters of land, focused on the implementation of essential infrastructure and landscaping elements. Thanks to the generous support of an anonymous private donor from the UK, who contributed a total of 10447 USD, critical hardscape features such as walls, fences, and planters were erected, along with the planting of indigenous trees and shrubs.

To ensure the sustainability and longevity of the project, a memorandum of understanding (MOU) was established between the AUB and the Barja municipality. This MOU delineated the long-term responsibilities for site maintenance, including irrigation, pruning, cleaning, and ensuring ongoing accessibility for community members. The creation of this green space in Barja stands as a testament to the power of collective action and community-driven initiatives in addressing environmental challenges. It not only provides a refuge from air pollution but also serves as a symbol of resilience and hope, enriching the lives of residents and fostering a sense of stewardship towards the environment.

PEOPLE INVOLVED

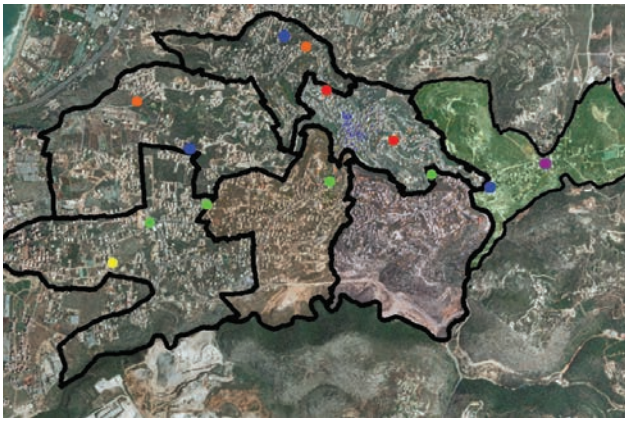
COMMUNITY TEAM:
Ms. Amina Hamieh
Ms. Tala Hariri
Ms. Rawan Zein
Ms. Arij Hamieh

MENTOR:
Dr. Lubna Dada
Ph.D. in Atmospheric Sciences

INTERN:
Ms. Chrystel Melhem
AUB chemical engineering student

LOCAL AUTHORITY MEMBERS:
Previous head of the municipality:
Dr. Raymond Hamieh

Current head of the municipality:
Mr. Hassan Saad



Mapping Barja's Energy: Diesel generators distributed with color-coded ownership/operation - October 5, 2021.

On the Ground: EA Core Team's initial field visit for environmental assessment and collaboration - October 23, 2021.

Green Space Planting Day: Cultivating a greener tomorrow - December 21, 2023.

SOLID WASTE MANAGEMENT

FROM TRASH TO GREEN

BTEKHNAY

BAABDA

950
METERS

2100
INHABITANTS

PROJECT OVERVIEW

10
MONTHS

6536
USD

EA CONTRIBUTION 3836 USD
MUNICIPALITY CONTRIBUTION 1400 USD
DIASPORA AND COMMUNITY MEMBERS CONTRIBUTION 1300 USD

While the first community team members have their minds set out at protecting the Btekhnay forest, their fellows in the second community team are driven by a shared commitment to preserve their idyllic surroundings, working on embellishing their town by addressing the solid waste issue.

Alongside their mentor and interns, a transformative journey towards sustainable waste management took sail for the second Btekhnay community team.

The project's inception saw a rigorous study phase, wherein data collection and analysis provided crucial insights into the waste management challenge. Armed with this knowledge, the community developed a comprehensive waste management plan tailored to Btekhnay's unique needs.

Key strategies included geographical zoning of Btekhnay to optimize waste collection efforts and chart households with composting production and usage possibility for their own gardens. Collaborating with Green Mount Recycling, a secondary sorting facility and the local authority, the community team forged partnerships to ensure the plan's successful implementation. 50 households formed the initial pilot program to test custom-made composting bins and usage as natural soil fertilizers, prior to spreading the practice across the village at a later stage.

Multiple households went a step further in sorting green household waste by producing their own animal food for their chicken and livestock.

Post-launch, an extensive awareness campaign engaged residents in waste reduction practices through informative workshops. Residents were educated on the principles of "Reduce, Reuse, and Upcycle," empowering them to minimize waste generation and maximize resource efficiency in their daily lives.

Green Mount managed recyclable collection, while the municipality handled rejects. The community team played a pivotal role in overseeing these processes and fostering community participation.

Together, the residents of Btekhnay stand united in their commitment to preserving their beloved landscapes and exemplary town, leaving a lasting legacy of environmental stewardship for future generations to cherish.

PEOPLE INVOLVED

COMMUNITY TEAM:
Dr. Jamal Abulhosn
Ms. Nibal Hatoum
Ms. Mira Abulhosn
Ms. Majida Abulhosn
Ms. Joumana Abulhosn
Ms. Sanaa Abulhosn
Ms. Sanaa Sayour
Ms. Sally Abulhosn

MENTOR:
Dr. Majdi Abou Najm
Associate professor of soil biophysics at UCDavis, USA

INTERN:
Mr. Marc Merhej
AUB chemical engineering student

LOCAL AUTHORITY MEMBERS:
Head of the municipality: Mr. Hamad Abulhosn

On the Ground: EA Core Team's initial field visit for environmental assessment and collaboration - September 19, 2021.

Gathering Insights: Mentor in-person meeting with the community team - December 20, 2021.

Community Team at Work: Preparing color-coded sorting bins for distribution - June 08, 2022.

SOLID WASTE MANAGEMENT

FROM TRASH TO GREEN

BQERQASHA

BCHARRE

3000 METERS

4500 INHABITANTS

PROJECT OVERVIEW

PHASE 1	PHASE 2
11 MONTHS	**7** MONTHS
3663 USD	**11558** USD
EA	**ADDAX AND ORYX FOUNDATION**

Perched at 3000 meters above sea level and offering breathtaking views of the Holy Valley of Qadisha, Bqerqasha earns its name from the Syriac term "B'qar Qosho," meaning "severe cold," owing to its ethereal beauty in white. Collaborating with a mentor and an intern, the community team devised a comprehensive plan comprising two phases. The initial phase focused on waste sorting, segregating recyclables from rejects, while the subsequent phase targeted household-level composting of organic waste. The first phase commenced with a meticulous waste characterization exercise, assessing the quantity and types of waste generated by each household. Based on this data, color-coded bins were distributed across the village, strategically placed for accessibility to collection trucks. The municipality played a crucial role, demonstrating its commitment by donating land for recyclable storage.

To ensure effective monitoring, the team established a WhatsApp group as a hotline for resident inquiries and conducted door-to-door visits. Close coordination with the municipality and secondary storing facility facilitated the successful collection of recyclables, marking a significant achievement for the project.

With the completion of the first phase, the team transitioned to the second phase: household-level composting. Securing a grant of 11558 USD from the Addax and Oryx Foundation was instrumental, enabling the implementation of an awareness campaign on composting.

Educational materials, including videos and brochures, were distributed, and street signs were installed to encourage community participation. Custom-made household compost bins were crafted, creating short-term employment opportunities using locally available materials. Monthly household visits ensured effective composting practices and provided ongoing support to residents.

To ensure continuity, the members of the community team entrusted the full project to the capable hands of the municipality leaders who pledged to integrate the project into their yearly budget planning.

PEOPLE INVOLVED

COMMUNITY TEAM:
Mr. Antonio Bouty
Ms. Tania Bouty
Mr. Charbel Bouty

MENTOR:
Ms. Celine El Khouri
Environmental engineer

INTERN:
Ms. Myriam Maamari
AUB chemical engineering student

LOCAL AUTHORITY MEMBERS:
Head of the municipality:
Mr. Georges Youssef Bouty

Children Pitching In: Turning education into daily habit - July 07, 2022.

Spreading the Green: Distributing household composting bins in phase 2 launching ceremony - August 3rd, 2023.

On the Ground: EA Core Team's initial field visit for environmental assessment and collaboration - October 23, 2021.

SOLID WASTE MANAGEMENT

FROM TRASH TO GREEN

ABADIYEH

BAABDA

780
METERS

14000
INHABITANTS

PROJECT OVERVIEW

AUGUST 2021
TO DATE

2304
USD

EA

Perched amidst the rolling hills above Beirut, Abadiyeh emerges as a village of undeniable charm and historical significance. Serving as a gateway to captivating hiking trails adorned with remnants of the Ottoman period, Abadiyeh beckons adventurers and history enthusiasts alike.

With the guidance of mentors and interns, the community team embarked on a mission to address the pressing issue of debris accumulation in the village river. They meticulously evaluated debris-capturing devices based on various characteristics such as capacity, debris size, cost, and operation method.

Over the course of a month, the team conducted multiple field visits to assess the river's water level during winter and gathered data on precipitation in the area. This research enabled them to design a capturing device inspired by the roots of trees found in the riverbed.
This device works in the form of a set of poles that catch waste passing with the river water, fixed to a cement base, consisting of sixteen spikes each.

The characteristic of this device is that it can catch different types of waste without disrupting the flow of water in the river in any way.

The output will be collected in the vicinity of the site and the waste will be bagged and transported to nearby recycling centers.

After obtaining approval from the Minister of Water and Energy, a pilot project was proposed and allocated a budget of 2304 USD by the EA. On December 5, 2023, the team assessed the river's water level and determined the location for the installation of the pilot project.

The pilot design uses a checkered alignment for the poles, theoretically allowing the circulation of small to medium sized river animals. This safety factor is yet to be tested in the evaluation phase. A public safety and awareness campaign is planned to go hand in hand with the implementation of the pilot, foreseen in the second half of 2024.

Moving forward, the community team aims to collaborate with neighboring villages to address the source of contamination. With the necessary funds in place, Abadiyeh is well set to continue its journey towards environmental sustainability.

PEOPLE INVOLVED

COMMUNITY TEAM:
Mr. Samer Hassan
Mr. Samer Abu Hamzeh
Mr. Nazih Al Andary
Ms. Hanadi Al Hani
Ms. Farah Sadek
Mr. Vadim Abou Habib

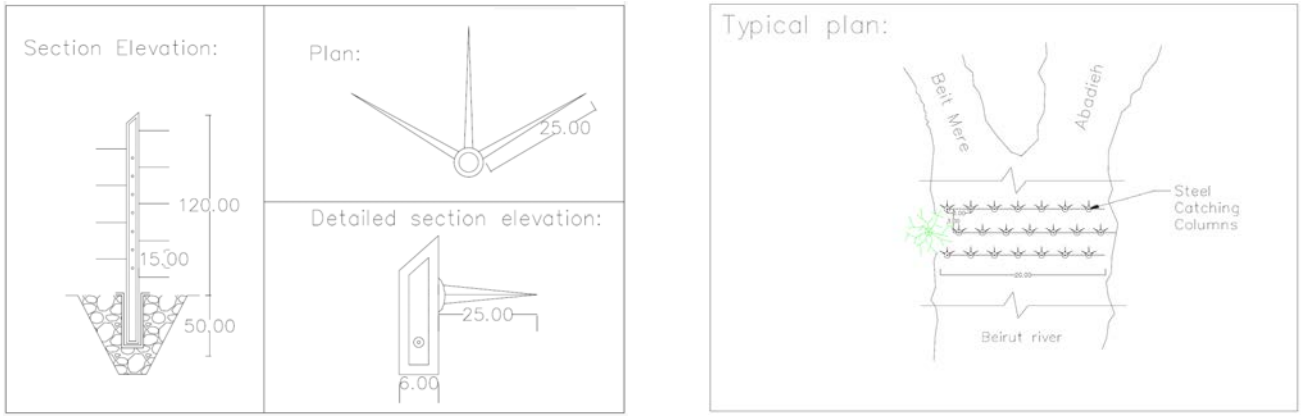
MENTOR:
Mr. Jad Habib
Solid waste management expert

INTERN:
Mr. Kassem Al Houssaini
AUB chemical engineering student

LOCAL AUTHORITY MEMBERS:
Head of the municipality: Mr. Adel Najd

On the Ground: EA Core Team's initial field visit for environmental assessment and collaboration - October 10, 2021.

Pollution Alert: Beirut river bed contaminated by single-use plastics - October 10, 2021.



Community Design: Sketches of the capturing device - March 31, 2022.

SOLID WASTE MANAGEMENT

FROM TRASH TO GREEN

RAWDAT EL FAYHAA HIGH SCHOOL TRIPOLI

TRIPOLI

MEDITERRANEAN COAST

1500
STUDENTS ENGAGED

PROJECT OVERVIEW

9
MONTHS

1383
USD

EA

Situated along the scenic Mediterranean coast, Tripoli stands as a testament to Lebanon's rich cultural heritage, where traces of antiquity harmonize with the vibrancy of modern life. Rawdat El Fayhaa High School (RFHS), home to about 4000 students, struggles with the adverse effects of the proximity to the near-by landfill on the well-being of its students and staff. The persistent challenges posed by waste management cast a shadow over the educational environment, prompting a call to action.

Since landfills and their management represent a nationwide crisis falling under national authorities' jurisdictions, EA and RFHS decided to tackle the problem in the way they know and can best: EDUCATION.

In response to this imperative, RFHS has risen to the occasion, propelled by the proactive efforts of its Eco Club. Established as a voluntary society by passionate teachers and students, the Eco Club has emerged as a guiding light of environmental consciousness, spearheading initiatives to raise awareness and instigate change.

Following numerous consultations with the mentor and intern, the school team embarked on a transformative journey, opting to implement the Solid Waste and Water-Quality Action program for schools (SAWA). This comprehensive program, meticulously tailored for Lebanese students by industry professionals, garnered support from esteemed organizations such as the World Health Organization (WHO) and the EA core team.

SAWA serves as a dynamic platform, engaging students in an immersive learning experience focused on solid waste management, reduction, and recycling. Through a diverse array of activities ranging from informative videos to interactive puzzles and infographics, students are equipped with practical strategies tailored to their respective academic cycles.

After weeks of dedicated preparation, the school team, mentors, and teachers collaborated to launch the SAWA program, marking a significant milestone in the school's environmental journey. With 1530 students organized into groups to facilitate effective communication and a dedicated "Green Team of Teachers" comprising 13 educators, the implementation of SAWA gained
further momentum.

Thanks to the generous support of EA, the SAWA program received a much-needed financial boost, enabling the school to realize its vision of fostering a culture of environmental responsibility. Through collective efforts and unwavering dedication, Rawdat El Fayhaa High School is not only driving positive change within its walls but also inspiring a broader movement toward sustainability within the community and beyond.

PEOPLE INVOLVED

EA II SCHOOL TEAM:
TEACHERS
Ms. Rania Al Jamal
Ms. Mona Beirouty
Ms. Maha Al Beb
STUDENTS:
Mr. Fawzi Afiouni
Mr. Abdallah Maassarani
Mr. Mohamad Al Set
Ms. Inas Maarabany

SAWA TEACHERS GREEN TEAM
Ms. Noha Ajaj
Ms. Marwa Tabikh
Ms. Dima Kalouch
Ms. Safa Amam
Ms. Hala El Ahdab
Ms. Dalia Safa
Ms. Rana El Danawy
Ms. Aicha El Kadiry

MENTOR:
Ms. Ghinwa el Tayyar
Environmental Chemist

INTERN:
Ms. Vanessa Bou Zeid
AUB Chemical Engineering student

On the Ground: EA Core Team's initial field visit for environmental assessment and collaboration - October 10, 2021.

Green Team Collaboration: Implementing the SAWA program with teachers' assistance - February 16, 2022.

DRINKING WATER SUPPLY

WATER FOR LIFE

HARF BEIT HASNA

DANNIYEH

762 METERS

3500 INHABITANTS

PROJECT OVERVIEW

17 MONTHS

FUNDING NOT SECURED

Harf Beit Hasna (HBH), an uncharted community overpowering the unforgiving rugged relief of the Dannieh mountainous chain, harvests the rain for irrigation while household water supply is scarce.

The ambition of the community team to find a permanent and sustainable solution to the water supply dilemma in the village, was met with the enthusiasm of the EA mentors and intern, and the support of the municipality of Izal, Mr. Ahmad Radwan, and the officials of the North Lebanon Water Establishment (NLWE) who entered in extensive consultations with the community team to chart the problem in a proper scientific way. The community team also embarked on the daunting task of developing a plan that would address water supply to their village, and later on, to the neighboring communities.

In the following stage, the community team focused on understanding the multifaceted aspects of the water supply challenge: From the source to the tap. While research was conducted on the NLWE system to better comprehend its role in providing water to HBH, a village-wide survey was completed to assess the end-user's struggle with water shortages, as well as to gather data on water consumption, management, and sources.

Analysis revealed that 55% of the village households are connected to NLWE's system distribution network, while the remaining 45% rely on water trucking. These overwhelming numbers inform of the severity of the need: where water trucking is internationally defined as an emergency temporary method of supplying water, it is for HBH their daily constant.

With this understanding, the community team and mentors explored four plausible solution scenarios, ultimately shortlisting two for further study. After thorough evaluation, it was decided that digging a new well with a solar-powered water pump was the optimal solution, along with a Water Watch Voluntary Group (WWVG) in the

Hrouf Area comprising HBH and the neighboring communities, in line with NLWE and UNICEF's Communications, Advocacy, and Community Engagement Program (CACEP), to monitor and control the water supply.

The overall project cost was estimated at 2066180 USD. This major investment could benefit HBH and the neighboring communities suffering from the same water shortage, they could profit from the same water well in an equitable water distribution pattern, reducing the project cost per capita.

Despite the team's diligent efforts, securing funding for the proposed technical solution proved challenging. Following discussions between the EA core team and the community team, a decision was made to put the project on hold. The full project proposal was published with the hope HBH would be able to secure funding in the future.

A matter of time and a matter of funding, or maybe that of a basic human right for access to clean water?

PEOPLE INVOLVED

COMMUNITY TEAM:
Mr. Mohammad Sabra
Mr. Ammar Sabra - Mukhtar of HBH
Mr. Fawaz Dala
Mr. Fayez Sabra
Ms. Nisreen Deeb
Ms. Sara Sabra

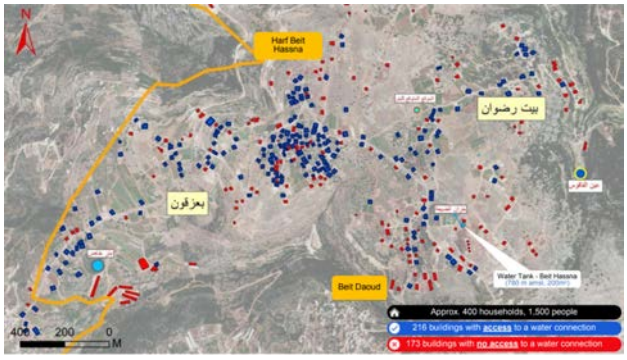
MENTORS:
Mr. George Mikhael
Water and waste engineering specialist

Ms. Naila Khairallah
Senior environmental consultant

INTERN:
Ms. Mira Juvulekian
AUB chemical engineering student

LOCAL AUTHORITY MEMBERS:
Mukhtar: Mr. Ammar Sabra

Harvesting Nature's Gift: Rainwater ponds employed for irrigation - September 18, 2021.



Connecting Communities: Map showing households linked and unlinked to NLWE's water network - October 26, 2021.

On the Ground: EA Core Team's initial field visit for environmental assessment and collaboration - September 18, 2021.

WASTEWATER MANAGEMENT

FROM WASTEWATER TO ROOT WATER

BOUAIDA

MARJEYOUN

735
METERS

300
INHABITANTS

PROJECT OVERVIEW

AUGUST 2021
TO DATE

PROJECT ON HOLD

Cradled within the scenic Marjeyoun district, Bouaida exudes a tranquil charm, enchanting visitors with its lush valley, historic allure, and the refreshing melodies of its numerous watersprings. Amidst this idyllic backdrop, a close-knit community of 300 residents thrives, their lives intricately intertwined with the land they call home.

Recognizing the need to safeguard Bouaida's natural treasures and bolster its resilience, the community, in collaboration with mentors and an intern, embarked on a journey to address the thorn in their eye: Wastewater management in their village.

Some of Bouaida's households still rely on septic tanks for their wastewater, while another portion of the village uses an elementary sewage network with open dumping. Septic tanks being expensive to empty and open dumping of course a disaster to nature, Bouaida community team set their minds on addressing this issue. Their bold vision: Establishment of sustainable eco-friendly wastewater treatment plant.

The community team started off with mapping the existing sewage network, then performing a door-to-door household interview to determine wastewater available facilities.

Then, detailed maps were crafted to navigate the village's terrain and minimize disruption to privately owned lands when and if further infrastructure must be constructed. Expert consultations with seasoned professionals and civil engineers lent invaluable insights.

Conventional wastewater management facilities being both legally complex and financially out of scope on one hand, and did not echo with the wish for an environmentally friendly and sustainable solution cutout to the size of Bouaida, on the other hand, the community team looked at the success stories of Remhala and Bcharre pilot programs. Both implemented reed bed treatment systems in an attempt to tackle

their wastewater issues. The Bouaida community team sought recourse from the experts of Remhala and Bcharre pilot programs who enthusiastically offered their wealth of experience and knowledge.

A reed bed is a natural eco-friendly filtration system that can be used to treat and improve water quality prior to discharging into the environment. Reed beds work by allowing bacteria, fungi and microorganisms to breakdown, digest and clean wastewater to the point where it can be safely discharged into collector tanks for tree irrigation.

As the community forged ahead with determination, engaging local officials and seeking support from regional authorities became paramount. The community team, accompanied by Mr. Tohme Makrous, the Mukhtar of Bouaida, convened with Mr. Wissam Hayek, the Qaem Maqam of Marjeyoun, and Mr. Amal Hourani, the head of Marjeyoun municipality, presented the project and sought their endorsement.

The project momentum faced an halting wall: the escalation of conflict at the southern border of Lebanon since October 2023 cast a shadow over Bouaida's aspirations. With security concerns mounting, the project was reluctantly placed on hold, its progress impeded by forces beyond the community's control.

PEOPLE INVOLVED

COMMUNITY TEAM:
Ms. Nour Al Kesserwany
Mr. Elias Al Kesserwany
Ms. Lama Fakhoury
Mr. Firas El Hachem
Mr. Hanna Chahine
Ms. Shawk Fakhoury

MENTORS:
Mr. Michele Citton
Coordinator in the Lebanese water sector

Mr. Jules Hatem
Expert in water and wastewater treatment

INTERN:
Ms. Chrystel Melhem
AUB Chemical Engineering student

LOCAL AUTHORITY MEMBERS:
Mukhtar: Mr. Tohme Makrous

Evaluating Contamination: Wastewater sampling at the open dumping site - May 31, 2022.

Learning from Experience: Visiting the Bcharre reedbed facility - July 9, 2022.

STAKEHOLDERS

EA CORE TEAM

Dr Najat A. Saliba
Co-founder and Executive Director

Sammy Kayed
Co-founder and Managing Director

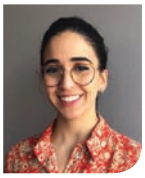
Justine Bou Rjeily
Field Director

Dr. Lina Tannir
Financial Strategy Advisor

Arminé Seferian
Communication Director

Allegra Brogard
Research Associate on Community Knowledge

MENTORS



Celine El-Khouri
Environmental Engineer

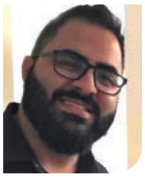
George Mikhael
Expert in Water and Waste Engineering

Dr. George Mitri
Professor of Environmental Sciences at University of Balamand

Ghinwa el Tayyar
Environmental Chemist

Jad Habib
Expert in Solid Waste Management

Joseph Bechara
Expert in Forest and Wildfire Management



Jules Hatem
Water and wastewater Treatment Expert

Dr. Lubna Dada
PhD in Atmospheric Sciences

Dr. Majdi Abou Najm
Associate Professor of Soil Biophysics UCDAVIS, USA

Maya Abdul Latif
Senior Expert in Landscape and Urban Design

Michele Citton
Water Sector Coordinator

Moustapha Itani
Ecosystem Management and Pasture Ecology Specialist

Naila Khairallah
EA Fellow on M&E

Dr. Rami Ariss
PhD Civil and Environmental Engineer

Tarek Amin
Chief Procurement Bechtel Corporation Officer (CPO),

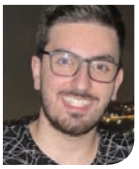
Therese Rbeiz
Senior Expert in Garden Design

INTERNS

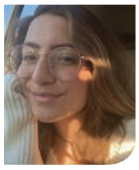
Aya Al Hashimi
3rd year Chemical Engineering

Chrystel Melhem
3rd year Chemical Engineering

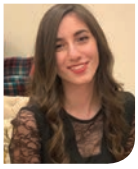
Kassem Al Houssaini
3rd year Chemical Engineering



Marc Merhej
3rd year Chemical Engineering



Mira Juvelekian
3rd year Chemical Engineering



Myriam Maamari
3rd year Chemical Engineering

Vanessa Bou Zeid
3rd year Chemical Engineering

SUPPORTERS

Anna Hourani
AUB-NCC Operations Manager

Chawk Chamoun
Project Researcher & Field Officer

Layla Khuri
Research Associate in Middle East Studies

Naila Khairallah
EA Fellow on M&E

Rhea Haddad
Research Associate in Social Psychology

Waleed Khoury
Fellow on Strategy and Member

PARTNERS

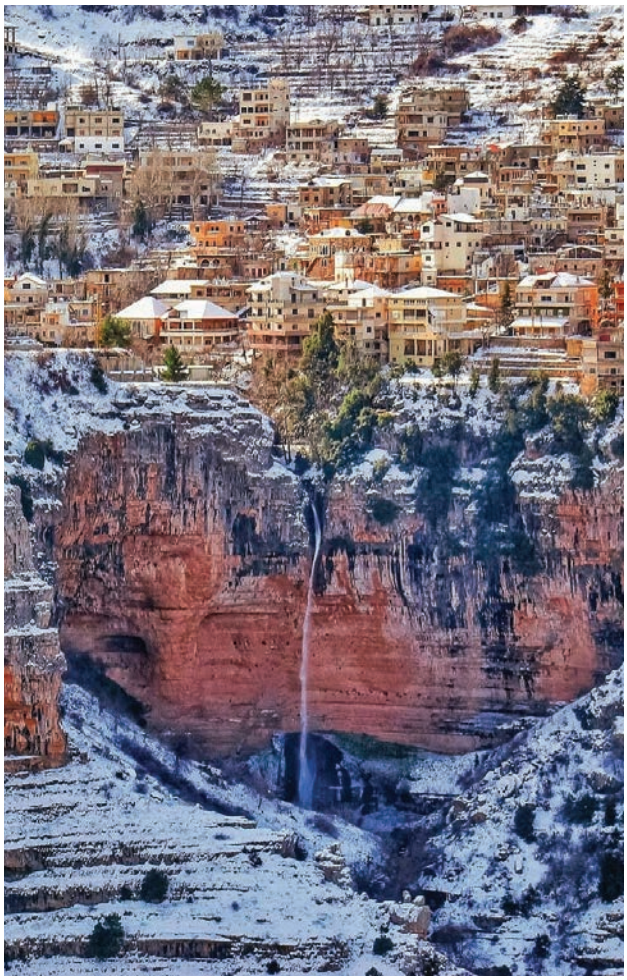
صار الوقت
IT'S ABOUT TIME

IMPACT LEBANON

THE WAY FORWARD

Working at the Environment Academy has been incredibly fulfilling, offering us a firsthand glimpse into the positive spirit and collaborative efforts within the community. Engaging in the design thinking process alongside community members has been particularly rewarding, with the majority expressing genuine enjoyment and sustained enthusiasm over several months. As the Environment Academy remains committed to partnering with the community for environmental improvement, recognizing it as fundamental to life itself, we've identified several stakeholders crucial to project success, including the broader community, mentors, local authorities, and expatriate supporters.

Moreover, we've taken note of various social, political, and economic factors that wield significant influence over project outcomes. Sustainability has remained a persistent concern, acknowledging its pivotal role in the success or failure of initiatives. Moving forward, we've begun to meticulously assess and address these factors to ensure project success and achieve our overarching goal of fostering transformative action within the community while safeguarding the environment.



At the date of publication of EA Cycle II Overview in May 2024, one project is currently underway (Abadiyeh), two others are temporarily on hold (HBH and Bouaida), awaiting the pertinent opportunity to be completed. We encourage you to join us on this journey by staying connected through our communication platforms and through your generous donations to our EA funds for community projects and operational costs.
Every little dime makes a huge difference!
Together, let's build a thriving future for our communities.

AMERICAN UNIVERSITY OF BEIRUT
NATURE CONSERVATION CENTER

ENVIRONMENT ACADEMY

As we continue to forge ahead with our village projects, we are reminded of the power of unity and progress. We celebrate Academia and Community, as we celebrate AUB-NCC and AUB Administration Departments, the backbone to EA.

Date of Publication: May 2024

American University of Beirut | P.O.Box 11-0236 / Nature Conservation Center | Riad El-Solh / Beirut 1107 2020 | Lebanon

Environment Academy (aub.edu.lb)
961-1-350 000 EXT 2699
ea@aub.edu.lb
Environment Academy