
BubbleBox

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SciencesPo

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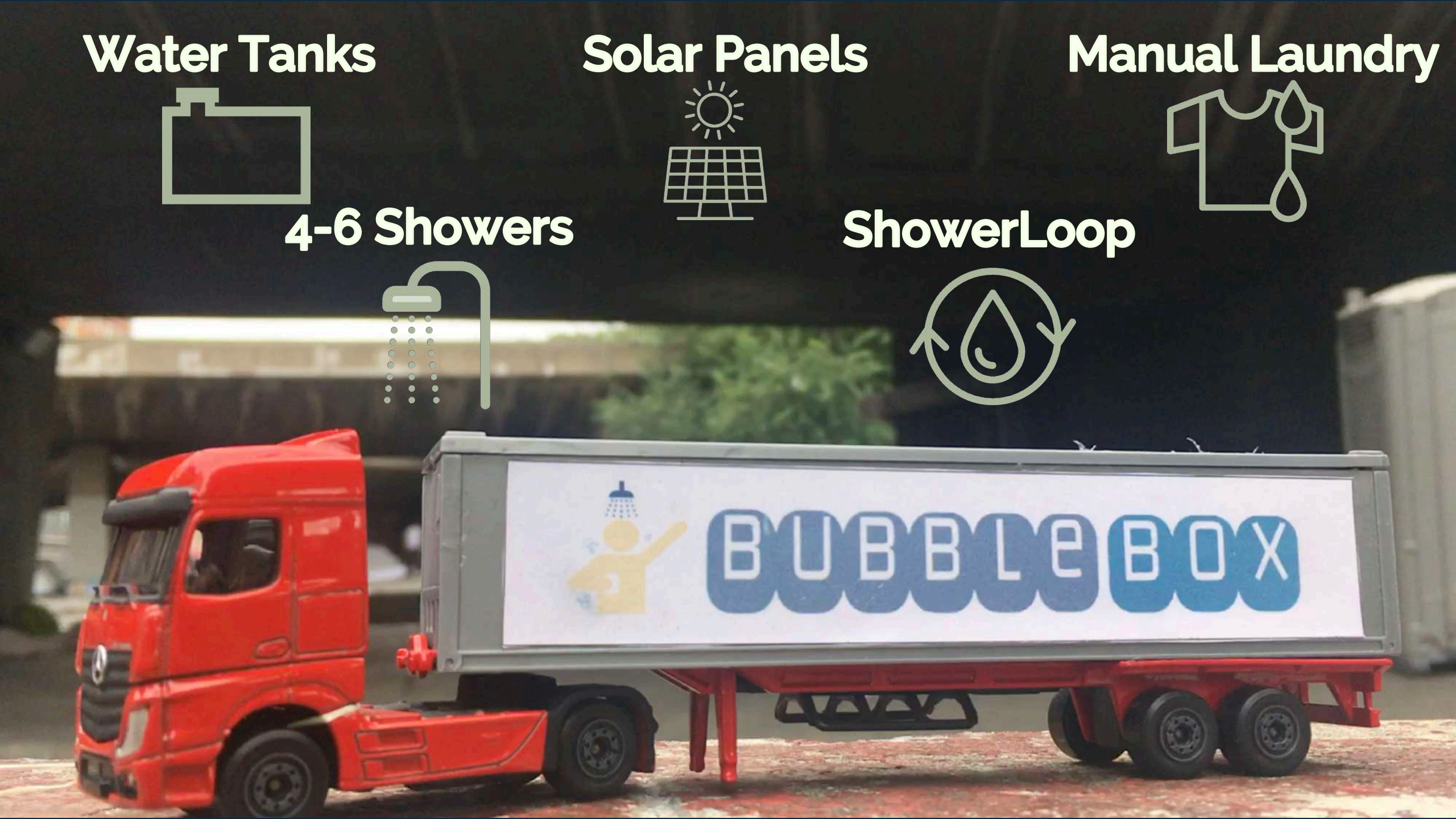


Driven away from their homes by war, oppression, persecution, and climate change, hundreds of migrants and refugees arrive to Paris every month. The less fortunate have to live in the streets for several weeks. Unfortunately, migrants in these illegal settlements have no access to proper hygiene. This emergency poses a serious threat to the migrants' well-being and to public health. We believe every human being has the right to have access to basic hygiene standards, including showering and washing their clothes.

The Problem

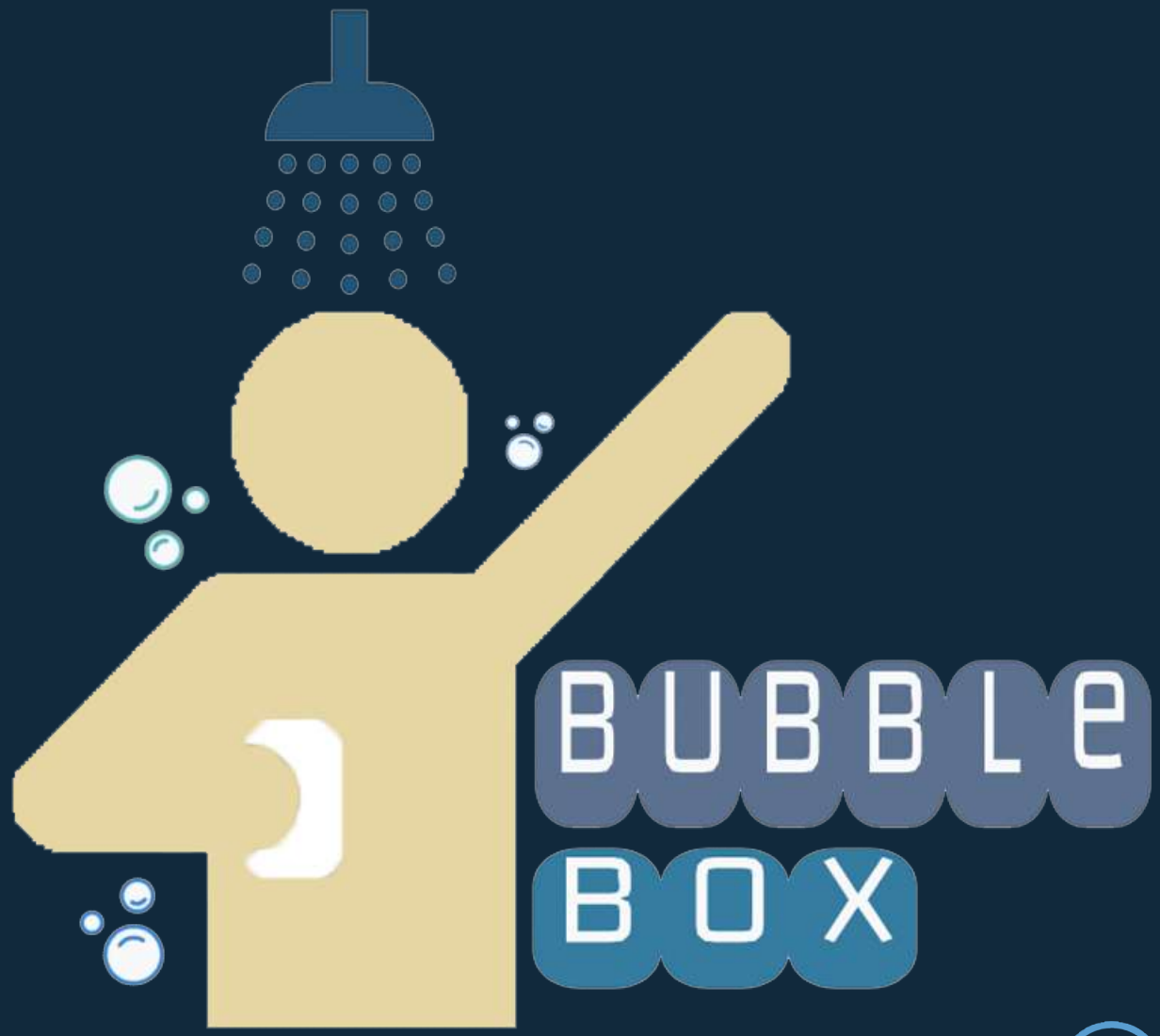
The Solution

BubbleBox is a mobile and autonomous hygiene module that will be accessible to migrants, refugees, and homeless people for free. BubbleBox can rotate through several locations or provide its services in the same location to satisfy longer-term needs. Its compact, efficient, and resilient structure allows it to function with or without being connected to the public water or electricity delivery grids.

BubbleBox provides emergency hygiene services to vulnerable human beings while helping to restore their dignity.

Why is BubbleBox Valuable?

Not only does BubbleBox address an important humanitarian issue but it also achieves an unparalleled degree of sustainability and eco-friendliness. BubbleBox incorporates several groundbreaking technologies that enable it to accomplish this. It is compliant with government policy for land permits and is produced at a low cost. BubbleBox helps to decrease health risks and inconveniences, not only among the direct beneficiaries – refugees, homeless, and migrants - but also among the general public. To reduce costs, the module will use solar panels, water turbines, and a filtration system. The output water of showers and laundry will be used for other eco-friendly purposes.



"We must act fast, for there is a humanitarian emergency. The [migrant] crisis will last so we better organize it, together, across all parties, rather than letting chaos take over."

Anne Hidalgo,
Mayor of Paris

Presenting a bill for the welcome and integration of migrants, July 6th, 2017

Framing

Background

According to the International Organization for Migration and the United Nations High Commissioner for Refugees, over one million migrants crossed the Mediterranean Sea to reach the European coasts in 2015 alone.

The magnitude of this migration flow, which is the biggest since the Second World War, is mainly due to the confluence of war, conflicts, and persecution in the Middle East (Afghanistan, Iraq, Syria) and in Sub-Saharan Africa (Sudan, Eritrea) as well as economic and climatic factors.

For many of the migrants, the coasts of Greece, Spain, and Italy are only the beginning.

France has the third most asylum applications in Europe, behind Germany and Sweden. In 2016, more than 85,726 migrants have applied to asylum during 2016 - nearly 50% more than in 2011.

However, the actual figures to quantify the influx are difficult to compute precisely because of the distinction between migrants in general and refugees – the latter are fleeing their countries due to a major political crisis posing a threat to their existence, such as war or ethnic violence.

Only refugees are eligible for asylum and international protection in all countries.

Arriving with little to no resources after a dangerous and costly trip, migrants tend to gather in urban centers where they can access administrative services, informal sources of revenue, and humanitarian help.

In France, Paris and Calais are the main destinations for migrants. The frequent dismantling of the “jungle”, the self-organized camps near the northern city of Calais, has pushed the inflow towards the capital, creating a complex humanitarian and sanitary crisis.

In response to the ~3,000 migrants settled, Paris built a temporary humanitarian welcome center at Porte de la Chapelle.

The Hygiene Situation

The migrants live in the illegal settlements around the center, under the bridges of the Peripherique, on the sidewalk of Boulevard de la Chapelle, or between the massive rocks laid on the median strip of Boulevard Ney. None of them have direct access to basic hygiene services.

They rely mostly on the public "bains-douches" for hygiene needs, but even if those public institutions are free and open to everyone, they require visitors to bring their own towel and soap — items that are rarely available to migrants. Additionally, even if one public bath is in walking distance from the settlements, its opening hours as well as the fear of being rejected, losing a spot in the asylum line, and abandoning their belongings greatly deters migrants from using the baths.

With less than a shower per week, just four faucets set up by the city services, and almost no solution to wash clothes, the lack of accessible, free hygiene facilities has heavy consequences on the migrants' health.

Alongside the social stigma and the well-being issues of having no access to showers, a scabies outbreak affects the migrants with over 164 cases diagnosed by Doctors Without Borders, in roughly 1300 consultations.

Scabies itself is not deadly, but it leads to terrible itching that can pose threats of infection. The contagiousness of scabies highlights the potential risk of deadlier epidemics stemming from the hygiene and sanitary situation of the migrants.

"They scratch their entire body, especially at night, until they bleed. […] It drives them crazy."

Mondane Berthault, M.D.
Franceinfo

Porte de la Chapelle Humanitarian Center

The humanitarian center is designed to welcome up to 400 male adult refugees for five to ten days to start the administrative application process, for asylum, and to provide medical assistance before redirecting migrants towards longer term housing solutions.

10,000 migrants hosted in 6 months....

For more than 1,300 sleeping around the center

With the limited capacity of the center, migrants waiting to get inside or for the administrative procedures to be processed have started settling in informal camps around the center, relying on the help of NGOs for access to basic goods such as food, tents, sleeping bags.

The resources are insufficient

In Paris

130 to 160 Liters

Average daily water consumption per person
(Eau de Paris)

In the migrant camp

1 faucet
For 693 people
(Le Monde)

Existing Approaches

Les Bains-Douches

The public “bains-douches” are free but require visitors to bring a towel and soap and stand in line for hours. Even if bains-douches facilities are in walking distance from the settlements, bathing has a great opportunity cost for the refugees, who are afraid of being rejected and losing valuable time to try and wash.

Outdoor faucets and taps

The city of Paris has placed outdoor water sources in the temporary settlements. Though accessible, these apparatuses do not fulfill the needs of the target population because there is insufficient quantity as well as an impossibility for refugees to wash their full bodies, have privacy, or wash their clothes.

Portable shower kits

Non-profits and design schools, such as the Dublin National College of Art and Design, are distributing portable shower kits to refugees that include a small tank and hygiene supplies. Because there are not enough kits, this approach can create competition and even a black market for the kits instead of ameliorating the situation.

Vulnerability and Public Health

Currently, there are no comprehensive studies on the health issues of migrants or on the impact of improvised settlements on public health in Paris.

According to Dr. Georges Salines, head of the Environmental Health Service of the City of Paris, migrating populations often create a position of strong medical vulnerability both for themselves and the surrounding public.

These health concerns are often multifaceted. Besides issues connected to current life conditions, such as fatigue and malnutrition, many individuals coming from Sub-Saharan regions may have been exposed to tuberculosis or AIDS. In addition, there is an abundance of pests in rats in the camp. All of these health risks threaten migrant and public health.

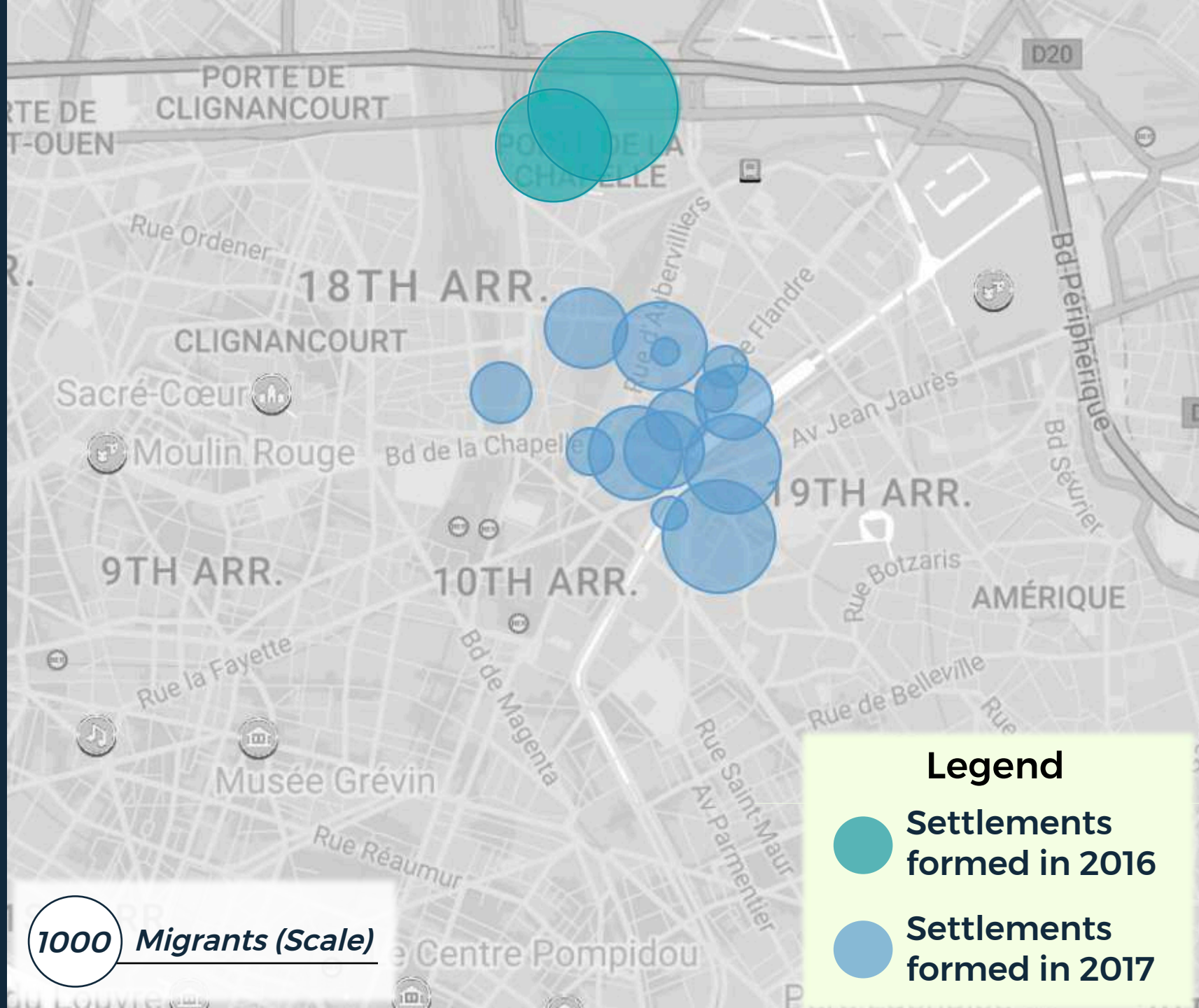
Access to basic hygiene facilities will yield strong positive effects on both public and migrant health. Interestingly, the camps are frequently evacuated to prevent safety and sanitary issues, such as the scabies outbreak, from pervading. On July 7th, 2017, 2,771 migrants were evacuated at Porte de la Chapelle, a number exceeding the estimations of the police and NGOs, which shows the gravity of potential health risks and the lengths that the city of Paris will go to prevent them.

Immediately after the evacuation, the Environmental Health Service Fauna and Sanitation Team of Paris, which is responsible for the extermination of pests, was deployed in the empty camps to destroy remaining tents, belongings, and clothes to prevent scabies propagation.

A shelter was temporarily provided to every single migrant evacuated. Yet, two weeks later, NGOs were already counting more than 1,000 migrants and refugees on the previously evacuated area, either newcomers or returning ones, all back in the same drastic sanitary situation: with no proper access to hygiene.

Map of Unofficial Refugee and Migrant Settlements

The truck will travel to these settlements to provide hygiene services.



For every $1 invested in sanitation, an average of at least $5.50 is returned in benefit.

World Health Organization, 2012

Goals

Sustainable Development Goals

Per the United Nations, 2.4 billion people globally do not use an improved sanitation facility, and "A major risk factor for infectious diseases and mortality is the lack of safe water, sanitation and hygiene (WASH) services". For migrants, suboptimal hygiene makes them prone to respiratory infections, gastrointestinal illnesses, and skin infections, including scabies. Our project is motivated by the fact that "Hygiene promotion is the most cost effective health intervention." (*World Bank*).

The success of existing approaches to SDGs 3 and 6 is limited by their accessibility and ability to serve the needs of the entire target population, as previously discussed. Our hygiene module provides an adequate, accessible, and adaptable solution to improve the health, well-being, and integration of the city's refugees. BubbleBox will result in a myriad of positive externalities for the health and hygiene of the people of Paris and surrounding communities.

SDGs on a Broader Scale

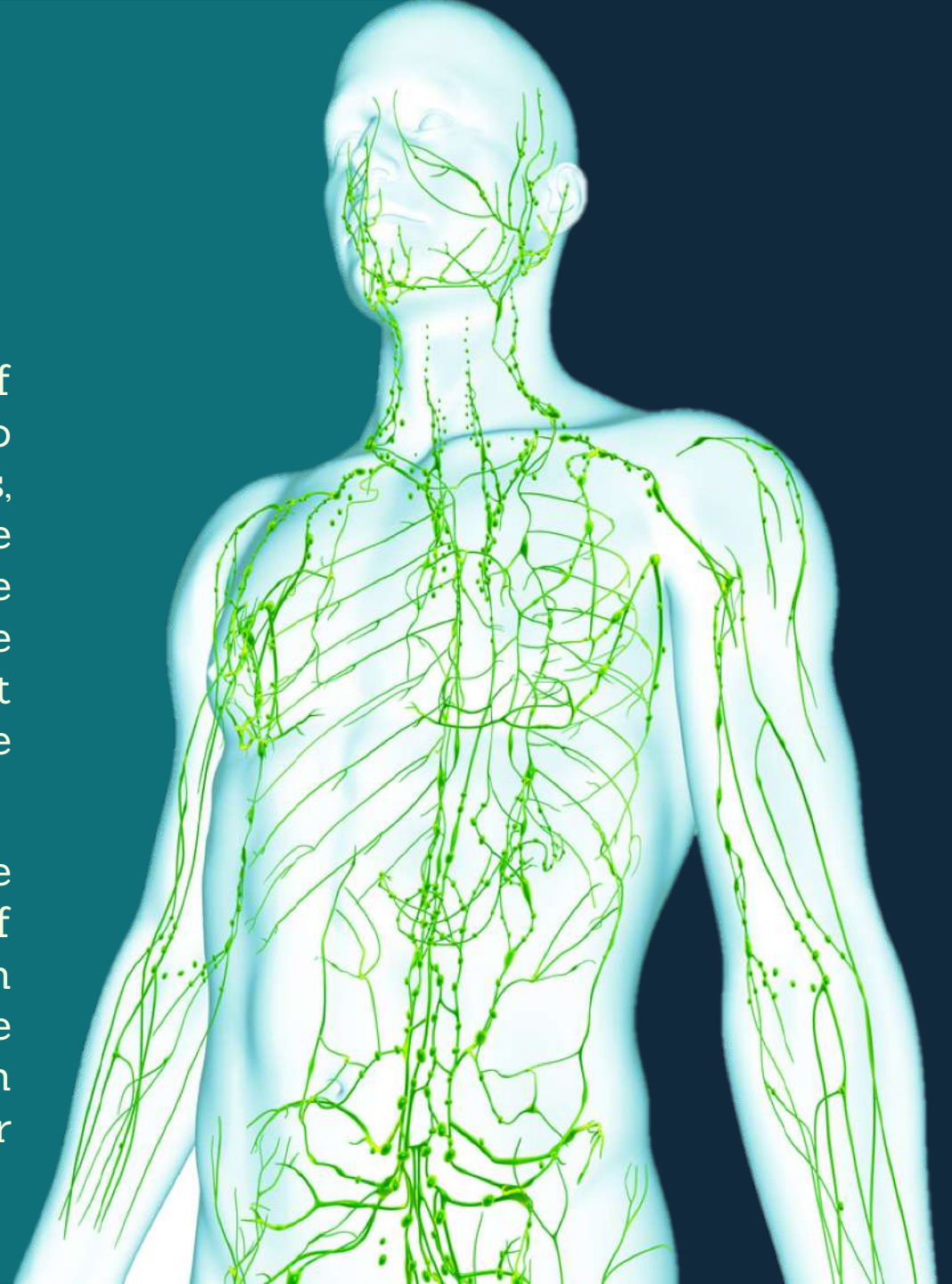
Regarding SDG 17, an integral part of our project is the collaboration, lines of communication, and network between our customer segments and key players. The implementation of our module requires an immense amount of cooperation and commitment from our partners and our target audience. By addressing these SDGs, we lay a broad network of connected vessels for the city of Paris for achieving the other Sustainable Development Goals.

Biology Analogy

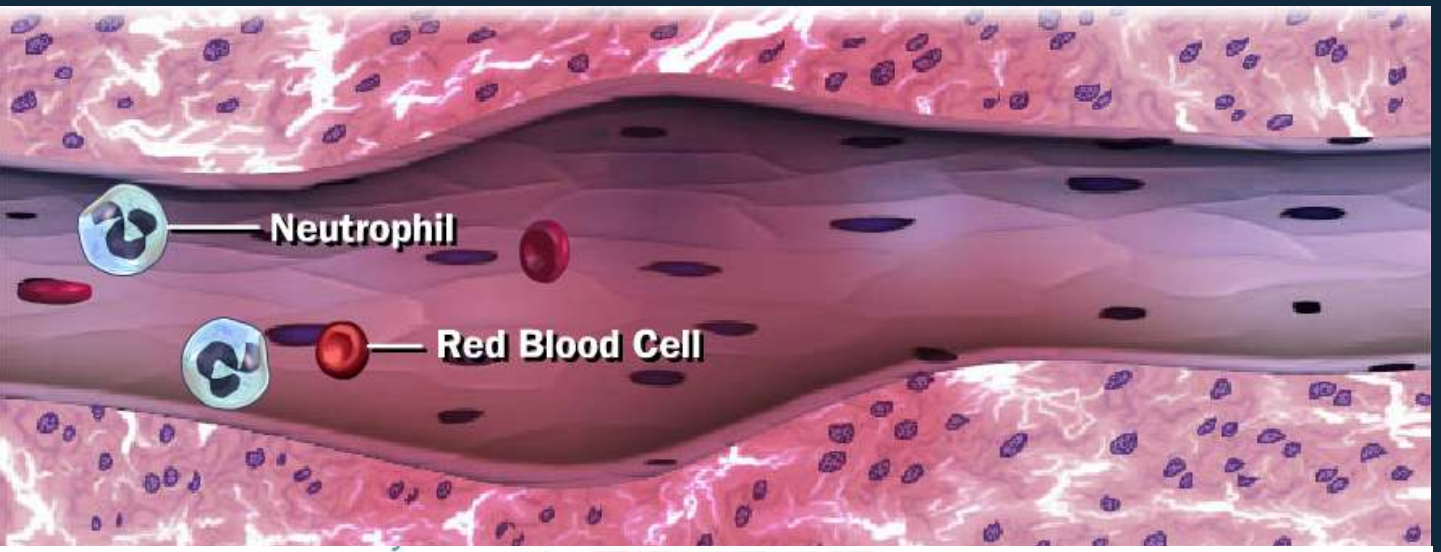
An Analogy to the Immune System

The human body comprises of an elaborate network of cells and tissue, called the immune system, that works to protect the body. The immune system has specific centers, known as nodes, where its constituent cells, called white blood cells, are concentrated, as shown on the right. The white blood cell, the constituent component of the immune system, rolls around the blood vessels until it comes upon a region needing aid and then enters the corresponding tissues to provide aid.

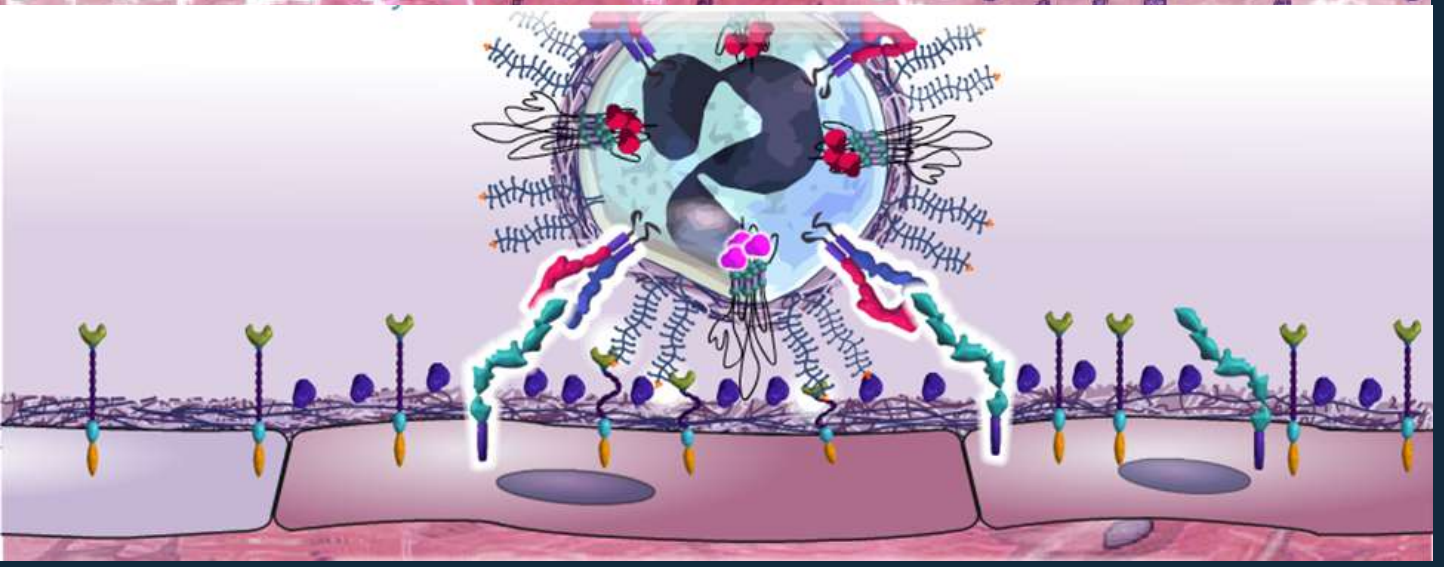
Similarly, our envisioned shower truck will traverse the vast network of streets and roads in Paris to provide relief in the form of hygienic services to specific areas with high concentrations of migrants and homeless. These areas are shown on the previous map of refugee settlements on page 18. In essence, our shower truck has a similar function to that of a white blood cell.



Recruitment of White Blood Cells to Damaged Areas



The white blood cells, the basic elements of the immune system, roll slowly on the inner layer of blood vessels until they reach a site that needs assistance. Similarly BubbleBox will roam around the roads, analogous to blood vessels of Paris, to reach specific migrant sites that require assistance.

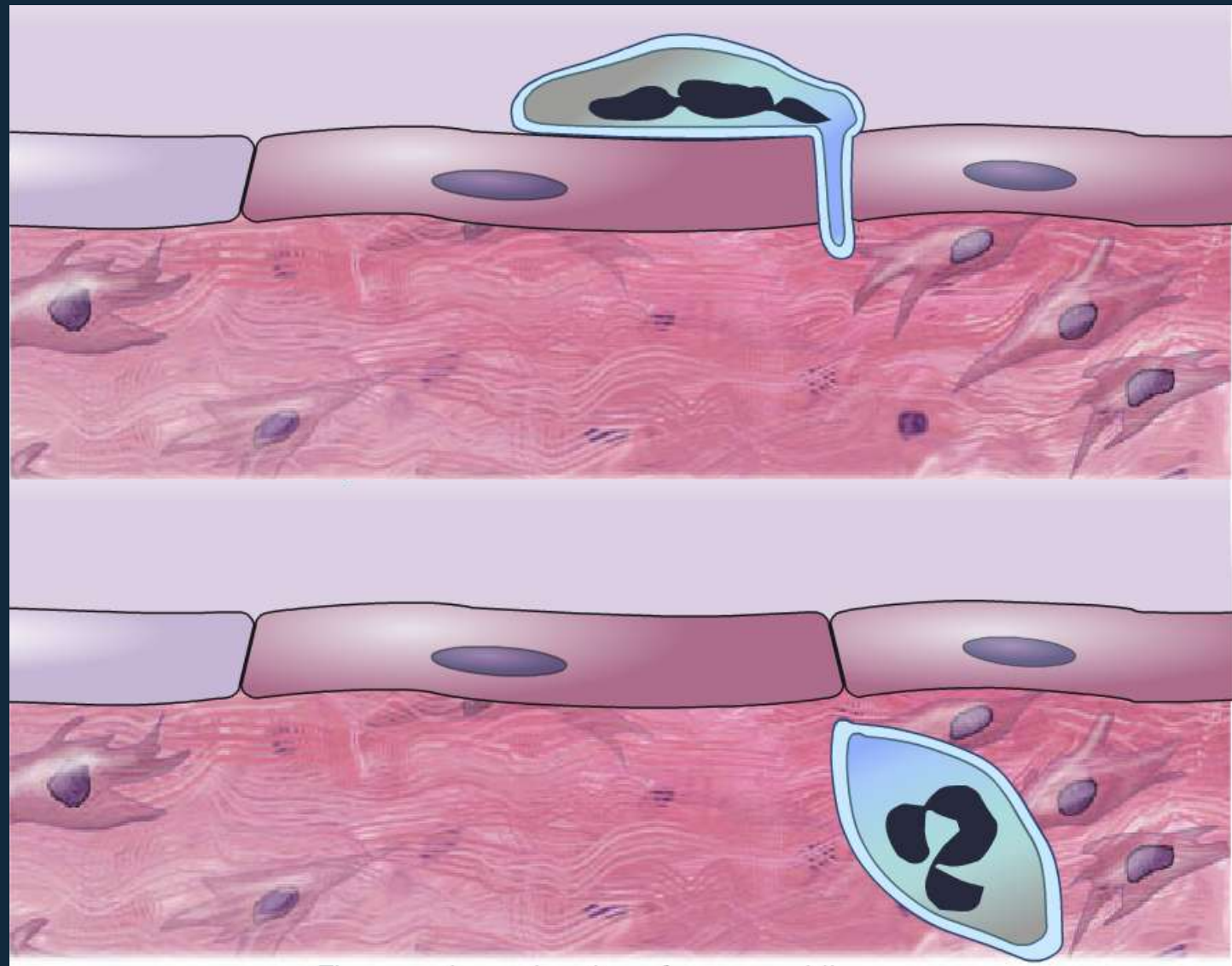


When a tissue region needs assistance, its nearby blood vessels release receptors, which signal to the white blood cells to stop and enter. Likewise, our module will stop where there are indications of high concentrations of migrants.

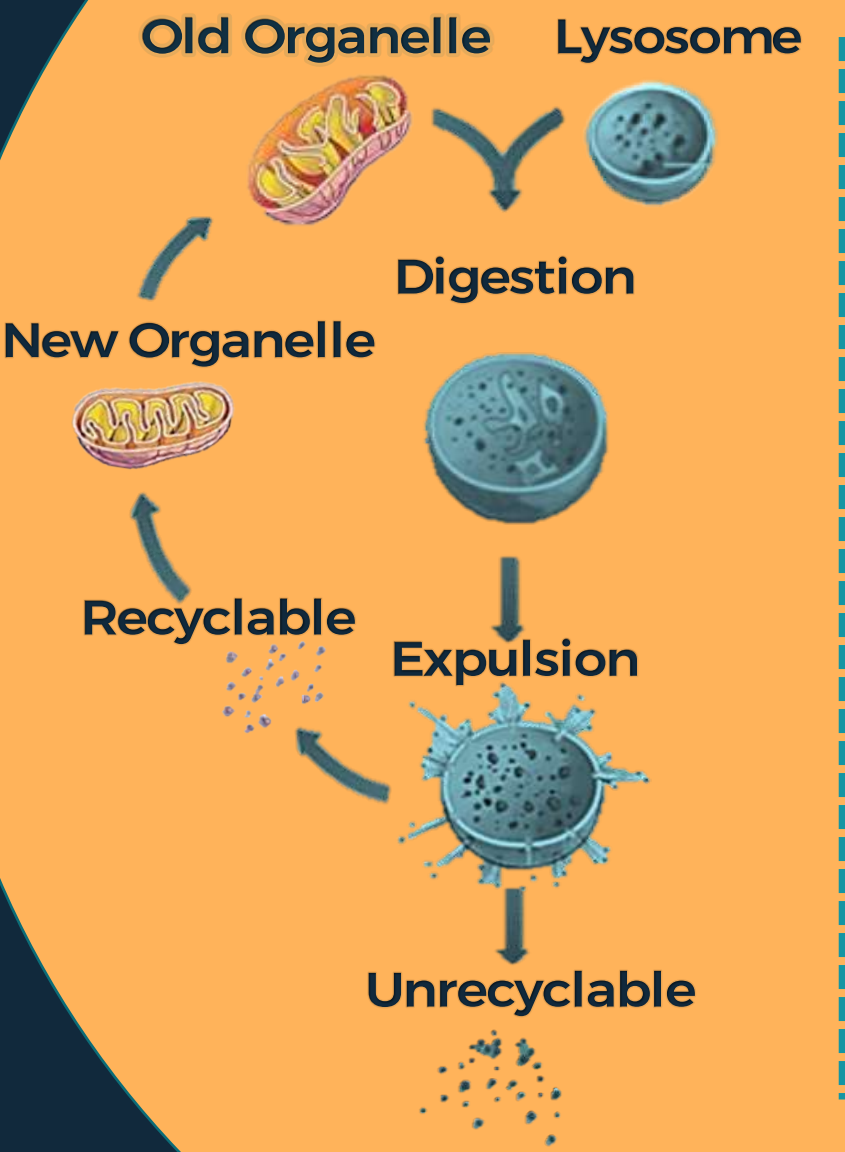
Recruitment of White Blood Cells to Damaged Areas

Consequently, the white blood cell is allowed to leak through, leaving the bloodstream and entering the damaged tissue. Similarly, the BubbleBox will work to find locations to enter and stay at for the convenience of migrants.

Once inside the afflicted tissue, the white blood cell is allowed to combat the arising issue. Likewise, this final step is how we envision our BubbleBox will function, settling at an accessible location for migrants to satisfy long-term needs.



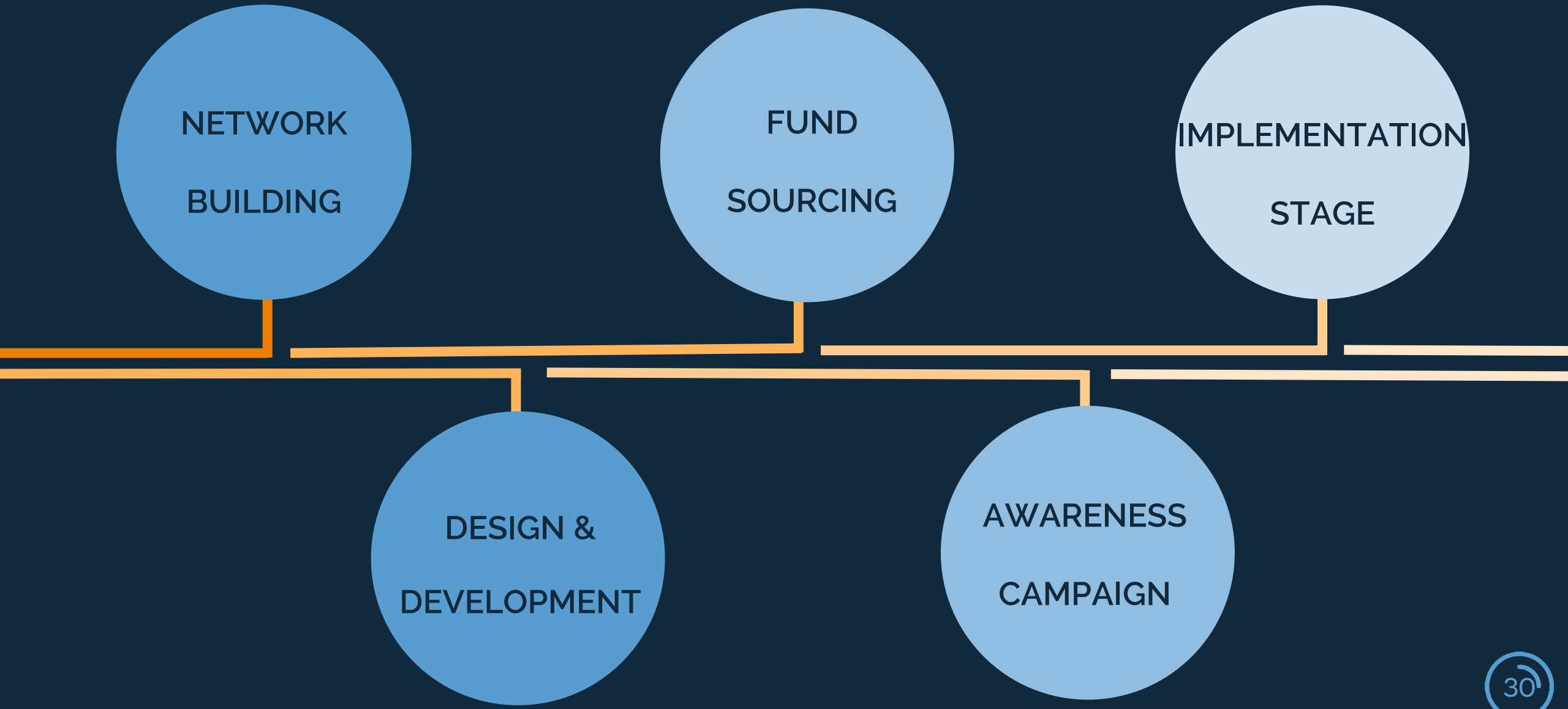
Recycling Element



The cell comprises of several different compartments that are dedicated to specific functions. One of these compartments is the lysosome, which serves as the recycling center of the cell. It works to break down old cellular molecules and food into basic units so that the digested parts may be reused to create more cellular parts. Similarly, BubbleBox comprises of an analogous water recycling system using ShowerLoop technology. **Showerloop allows the module to recycle about 90% of the water; meanwhile all of the output of the shower functions as greywater, an ecofriendly and reusable resource.**

Business Plan

Our Five Steps to Success



Our Network

- Paris government
- Migrants
- People of Paris
- Muslim communities
- NGOs

Who Benefits?

People of Paris would benefit from the social welfare benefits that would emerge from the reduction of epidemic threats and inconveniences, such as smell.

Migrants, refugees, and homeless people are our primary target group. The shower module will provide them with free and easily accessible hygiene services.

Muslims would receive the effective reallocation of charity funds, which would serve the greater good of people in need.

Government will benefit from the efficient low cost solution to meet the demands of public.

NGOs are seeking the mutually beneficial cooperative relationships that would allow BubbleBox and the NGOs to provide service to the locations otherwise not covered.

Festivalgoers and Campers as the target group of the BubbleBox spinoff , benefit from the hygienic facilities at the site for a moderate cost and a humanistic satisfaction.

Network Building

The primary step in the full project implementation is to establish trust relationships and a cooperative network with our stakeholders. This includes refugees and the wide network of local, regional, international partners such as governmental and non-govern-mental organizations (NGOs).

Partnering with NGOs would be mutually beneficial for all involved. NGOs can use the BubbleBox idea and technology to provide hygienic services with low costs and high efficiency for locations with no access to running water, which is often the case in illegal refugee camps.

On the other hand, BubbleBox will get access to all the NGO's facilities and resources including information and experts.

At the same time, BubbleBox will also seek to collaborate with governmental structures, such as Eau de Paris, as their resources, knowledge, and reputation would ease the process of development and ensure its success.

However, the most crucial link will be with our direct client: refugees and migrants. Relationships founded on trust and mutual recognition will poise BubbleBox to have positive outcomes and provide more future opportunities for growth and improvement.

Our team has already met with several NGOs active in and around the Humanitarian Center, such as Emmaus Solidarité, who manages the center, Utopia 56, which is deeply involved in the surrounding settlements We have also met with several officials from the city of Paris, most of whom are part of the Direction of the Social Action, Childhood and Health, such as the Environmental Health Service, the Prevention and Fight against Exclusions Services, and the General Secretariat.

Non-Governmental Organizations

Emmaus Solidarité

Emmaus Solidarité aims to give to every marginalized individual, whether migrant or homeless, access to decent care and services. Emmaus took part in the creation of the humanitarian refugee center and is currently running it. Because of their volunteering, lobbying, and on-the-ground action, Emmaus' cooperation is central to our project. We will greatly benefit from its expertise, reputation, and leverage with the media, the migrants, and the city.

Utopia 56

Utopia 56's network of volunteers is active in Calais and Paris to provide assistance to migrants and to organize distributions of clothes and food. Their knowledge of the camps around the humanitarian center and their reputation among the migrants is paramount to implement our project and earn the trust of our users. We hope to collaborate with Utopia 56 and its volunteers to create the module, staff it, and distribute towels and clothes inside it.

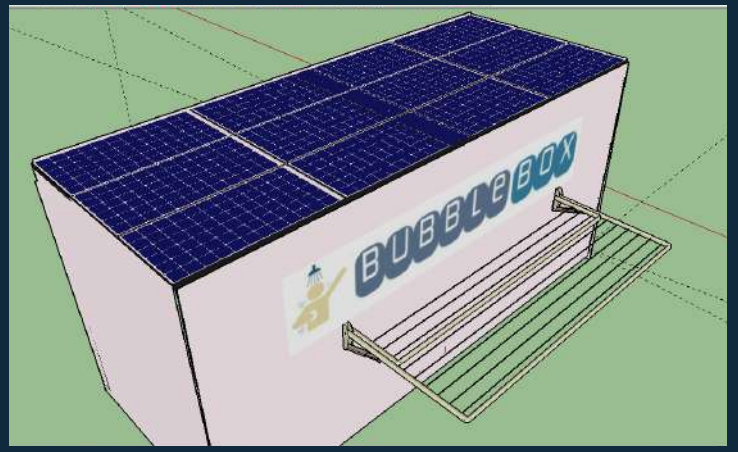
NGOs for Logistics

A21 is an NGO committed to fight human trafficking internationally. During the first peak of the migrant crisis, they used their presence in Greece to conceive, design, and build more than 20 basic sanitation modules for migrants. These "Freedom Containers" have significantly improved life conditions in their migrant camps; our module is inspired by their design. Their insights and design plans have greatly helped the conception of our project.

Design & Development

Design and development are the core steps in the project. This stage includes researching and designing the dimensions and intricate details of the hygiene module. As the shower module aims for maximum efficiency and eco-friendliness, it will include several innovative components: solar panels, a unique filtering system known as ShowerLoop, water turbines, and portable water tanks. Even though the idea of shower trucks already exists and some modules have been constructed in Greece, these approaches have never been combined to achieve optimal water and energy usage as well as mobility. Basing our draft module design on the already-projected modules of international NGOs, such as A21, we can significantly **improve upon the quality of mobility and autonomy as well as optimize usage of our inputs of water and electricity**.

Similar modules to those at left but with minor adjustments should be created to satisfy the needs of the festivalgoers/ campers to create a revenue source for BubbleBox.



Inspirations

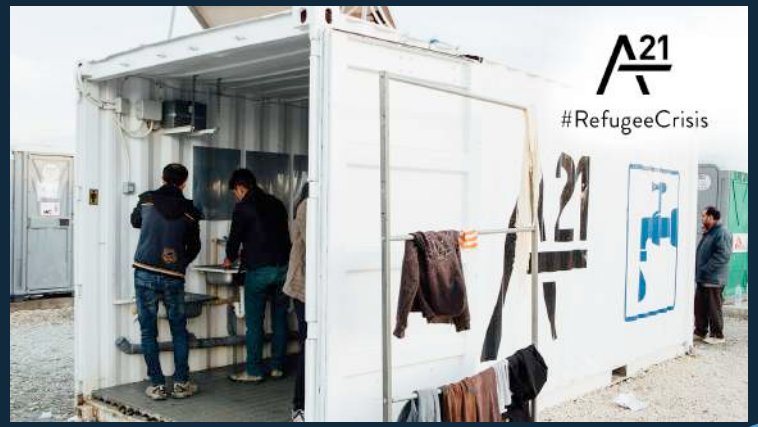
We were greatly inspired by the work of two NGOs which have managed to provide basic hygiene services to migrants or homeless without any engineering experience.

Mobil'douche is a non-profit active around and in Paris that uses campers to connect with homeless people and bring hygiene directly to them. Besides hygiene services, the NGO also distributes clean clothes, warm coffee, and social interactions to help marginalized populations reintegrate into society.

A21 has been strongly involved in the management of the refugee crisis, especially on the Greek territory. Philip Hyldgaard, A21's executive director, witnessed in 2015 the first peak of the crisis: "up to 15,000 refugee's were arriving daily. It was through this experience that I designed the first water container and later our shower containers, which we built 12 of."

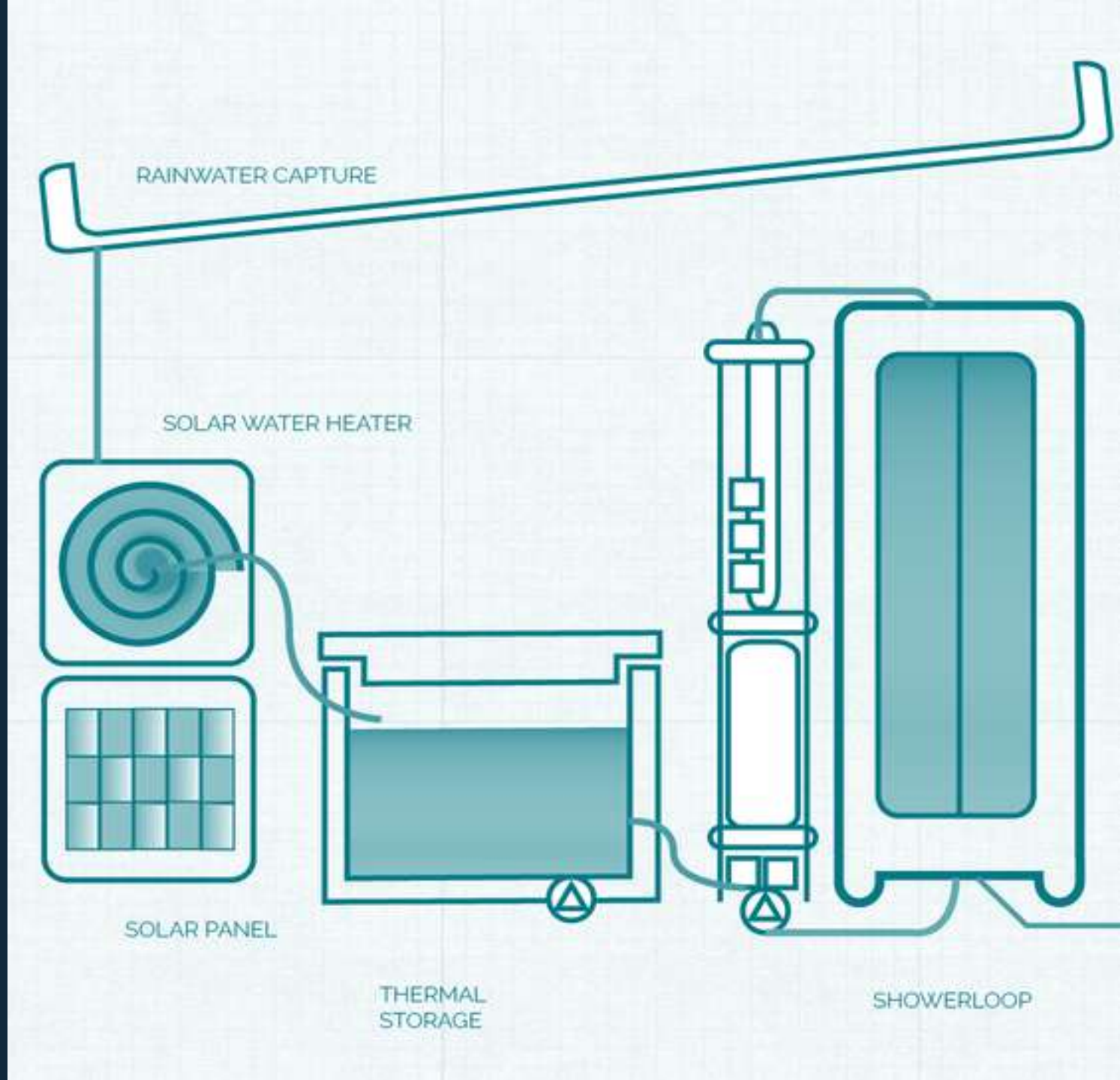
The "Freedom Containers" were built on the ground at a low cost. Each 20' container includes 6 showers, 10 sinks, and solar panels to heat the water and power ventilation, pumps, and lighting.

"To date, our containers have provided 14,5 million portions of water through the sinks and provided 675,000 warm showers. So it's been really successful."
-Philip Hyldgaard



Showerloop

On average an individual uses 120 liters/day for showering. However, technology from Showerloop, a Norwegian startup, only requires 10 to 20 liters for a single shower. This innovative technology utilizes a series of filtration systems to create an almost endless loop of reusable water and heat. With a Do-It-Yourself version of the technology already available to the public, we plan to incorporate this technology into all of our showers to minimize the amount of water and heat used to keep our hygiene unit as sustainable as possible. The diagram on the left explains the cycle of water and heat through the Showerloop.



Biodegradable Soap

For our objective of staying eco-friendly and being able to to filter the water to reuse it, we have identified a hygiene product that would respond to our requirements. The preferred option is Dr. Bronner's All-in-One biodegradable soap. It is made with pure organic and fair-trade ingredients, as well as no synthetic preservatives or foaming agents. It is one product that can be used for body, hair, face, mouth and teeth as well as washing food, dishes, laundry, mopping, and pets. The product is highly effective: it is 3x more concentrated than most liquid soaps on the market, which means more soap per bottle and less waste in packaging materials. In addition, the packaging bottle is biodegradable itself.

Laundry Utilities

To provide a holistic hygiene solution, we propose using portable non-electric washing machines, which are economical and eco-friendly.

The WonderWash™ ($35-$45) portable washer was invented as a practical product for large, low income households lacking access to running water and electricity, and who wanted a better alternative to hand washing.

These machines are capable of washing 10 kilograms of clothes, which is equivalent to 7-8 dress shirts, 10 t-shirts, or 3 pairs of jeans. With about two liters of water used in each two-minute cycle, this machine is a perfect solution for migrants.

Our contact with the manufacturer told us that Wonderwash can also be produced on a larger scale, so groups of migrants can share one washer unit to save on water and soap.

To dry clothes, there are two steps: the first is by cloth wringers and the second is hanging clothes on the racks on the sides of the truck.

Initially, the devices will be stored with the truck and distributed to the refugees, and collected once the BubbleBox is packing up or changing location. The migrants will also be able to use the recycled water from the Showerloop to clean their clothes.

To assure that BubbleBox is an ”improved sanitation facility”, its maintenance is paramount. A manual cleaning of the unit after every use would be an ineffective allocation of time and resources. Hence, the module must employ thorough self-cleaning mechanisms. Drawing inspiration from Paris’ self-cleaning Sanisette toilets, we plan to integrate technology that uses strong disinfecting chemicals to destroy bacteria, bugs, and other health hazards.

Fund Sourcing

After the module has been designed and is ready for production, the funding campaign becomes the main objective. Considering several options, the main funding channels would be divided between four different sources.

The first source is NGOs, their resources, and their network to locate funding for hardware construction and logistics of running the truck. We also value the expertise of NGOs regarding grants and crowdsourcing.

Secondly, we will apply for several levels of governmental grants and funding in the framework of the refugee support programs. We will work with grant writers and our network to write proposals that satisfies each party's desires.

The third source will be the local Muslim communities and mosques. The project would propose a reallocation of Zakat, the annual charity donation fund, to support the refugee hygiene needs.

In the middle to long term future of BubbleBox, potential funds for improving and expanding our project can come from the revenue from the renting out of our modules for use at festivals and campgrounds.

NGOs

Government Funds

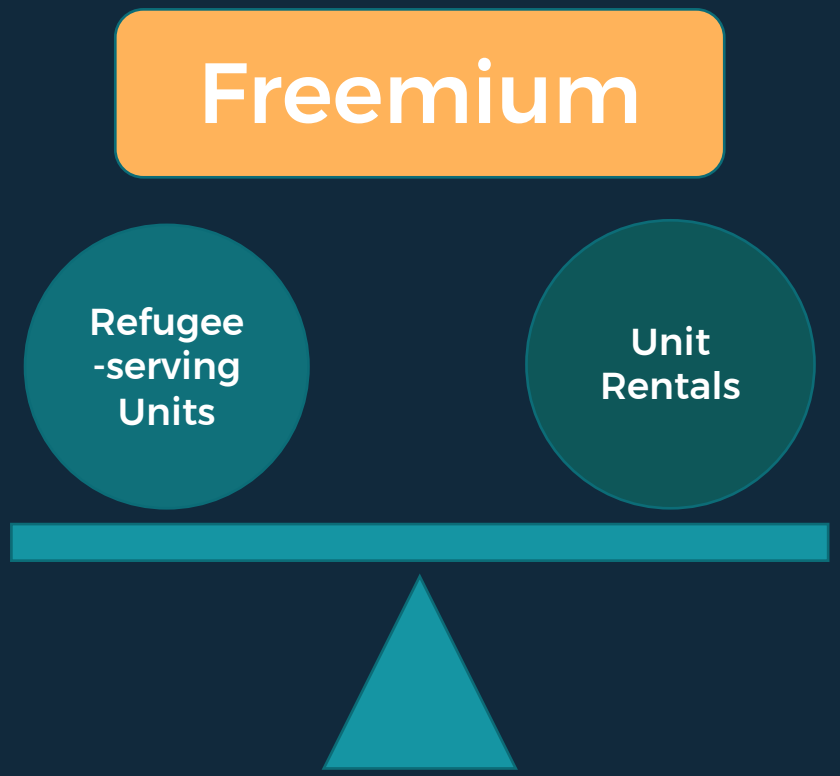
Zakat

Revenue Spinoff

Zakat and Sadaqah

The Muslim community is a pivotal partner in refugee aid efforts as they provide food on a regular basis to camps be Porte de la Chapelle. We believe that the Muslim communities can also be instrumental for procuring funds. Not only do they collect Sadaqah, which is regular charity donations that local Muslim communities allocate to causes they see fit, but they also annually collect a mandatory charity called Zakat. One of the five pillars of Islam, Zakat is strictly meant to be used for homeless, migrants, and other destitute populations. The BubbleBox effectively fulfills the requirements of Zakat usage and enables the Muslim community to better help refugees. We believe that currently Zakat is not being effectively allocated to best help the causes it is meant to serve. Hence, by funding projects like BubbleBox, we believe that Muslim communities will be able to make better use of this charity money.

Business Model Spinoff : Unit Rentals



To continually improve and grow BubbleBox, we have created a revenue-generating spinoff for our project. The idea consists of providing hygienic services at locations, such as campgrounds, sports events, or music festivals that usually have no built-in sanitary facilities, at a moderate cost of use. By renting out units, collecting small fees for showers, and charging for towels and soap, we will be able to maintain existing modules and provide funds to build new ones for the Paris-based business model.

This business model would correspond to FREEMIUM business model, where a certain portion of customers pay a fee for services while the rest can use it for free.

Awareness Campaign

To spread the word and get information to our target audience, we will launch a multimedia awareness campaign. The campaign will have several segments oriented towards each of the target groups. For migrants and refugees, the information will be spread through these various channels:

- Government/Official
- NGOs
- Information on the sides of the truck

These channels of publicizing take place at vastly different locations: the sides of BubbleBox, community centers, and humanitarian centers; if permitted, we will use public advertising areas, such as billboards.

The information will primarily focus on the availability and accessibility of BubbleBox's services. NGO resources such as volunteer power and funds will be used for media campaigns and print. Media campaigns will include radio, TV, and an emphasis on social media.

We aim to use a social media awareness campaign to create a deep sense of empathy for the the migrants by introducing their personal stories and encouraging the audience to engage and support initiatives like BubbleBox. Meanwhile the print-based campaign will be mostly posters displaying visual graphics that relay statistics regarding the devastating hygiene crisis that refugees are currently facing and BubbleBox will be presented as the most effective solution.

Implementation

We envision the truck stopping at locations where there are high concentrations of migrants to provide showering and laundry services. Depending on the location and on the degree of government cooperation, we anticipate specific modes of operation depending on the permitted mobility of the module.

Accordingly, the module will either remain on the transporting truck or be dropped off at specific sites to meet more long term needs.

Also, depending on the accessibility of water hydrants, the module will operate either on running water or its removable water storage tanks.

Lastly, the output water from the Showerloop and laundry machines will function as greywater, which is reusable but not drinkable. The greywater can serve several eco-friendly functions as an tradable commodity as well as an input for our laundry facilities.

Water & Electricity

The two key elements for the module's function are electricity and water connections. To get water, BubbleBox can connect to hydrants or the truck's portable water tanks, depending on location and mobility of the truck.

The area and volume of the tanks will correspond to the size of the container and will be specified during the design stage. As the water will be reused with the Showerloop filtration system, the amount of water should be calculated accordingly.

The heating of the water, running of Showerloop, ventilating, and lighting the module are dependent on the electricity supply. We plan to install solar panels on the exterior top part of the container. The surface area of the solar panels will be determined during design stage accounting for size of the container and amount of power needed. When set down, BubbleBox will be able to connect to the city's electricity grid.

As a supplementary power source for the lights and ventilation, water turbines will be set up to use the force of water coming out of the showerhead going down the drain to create kinetic energy.

The combination of such innovative technologies will result in the increased sustainability of the module.

Driver and Permits

The BubbleBox is designed to operate in two different mobility modes: as a moving truck that stops at specific locations or as a stand-alone container that is dropped off in longer-term regions. These two modes require flexible maintenance of the modul,e as well as variable roles for the driver and the volunteers. The mobile mode is greatly dependent on the governmental cooperation and permits. If the local authorities oppose even the temporary installation of the container, the module has to stay on the truck to remain mobile. If the authorities give their permission for short-term placement of the shower module, then the truck can leave after to deliver other modules; as the project expands, we plan for multiple modules to be circulating the city.

Permits are also crucial for the water access. If the location has hydrants but there is no authorization from the responsible institution to connect to BubbleBox, the module has to utilize the portable water tanks. Thanks to its mobility and adaptability, the BubbleBox can adapt to different scenarios and still provide adequate services.

The functions of the driver would also be adapted to the situation. First of all, the driver can be a full time or part time employee or a volunteer from NGO. The working time would depend on whether the container is placed or remains on the truck, which would require respectively different roles. In order to make BubbleBox a reality, we have to involve NGOs and volunteers to organize, clean, and distribute clean towels and clothes for migrants using the shower module.

Greywater

Reducing input and maximizing each input's use is at the core of the design of BubbleBox, as we highly value sustainability, efficiency, and cost minimization. With this in mind, we plan for the module to maximize the utility produced by its major output: greywater. Greywater refers to the used water generated by human daily washing activities. Unlike blackwater, it does not come into contact with any kind of feces or chemicals and can be reused without further treatment.

As described previously, the Showerloop filtration system allows us to greatly reduce the production of greywater per shower. The remaining greywater, particularly enriched with the nutrients during the washing process (traces of fat, sweat, dead skins, and dirt), can be reused as a naturally fertilizing watering resource, especially if the soap used is biodegradable and does not represent a threat for the watered vegetation.

Another potential reuse for the greywater is cleaning of the streets and sidewalks. According to previous experiments conducted by the Environmental Health Service of the city of Paris, this use of greywater does not present a threat to the health of the urban population or fauna and is another way to reduce waste of greywater.

The detachable greywater tanks can be obtained by the city of Paris or local communities.

In exchange for those tanks of greywater, the communities and cities can contribute to BubbleBox by refilling it with clean water or, by allowing BubbleBox to be plugged to the water delivery system. The greywater reuse compensate for the access to this water grid. This greywater reuse can also fill a symbolic dimension for the people of Paris, by creating a notion of "greenspaces nourished by refugees"; using the greywater from BubbleBox in these ways will give visibility to the migrant situation and the city's actions to help them.

Assessment

Assessment via SDGs

To assess our project's success in addressing SDG 3, we will have varying indicative measurements of different health risks for both the migrants and the general population, such as skin diseases, scabies outbreaks, and respiratory diseases

Regarding SDG 6, the United Nations' suggests to use the "Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water," (UN) to determine the success of hygiene infrastructure improvements

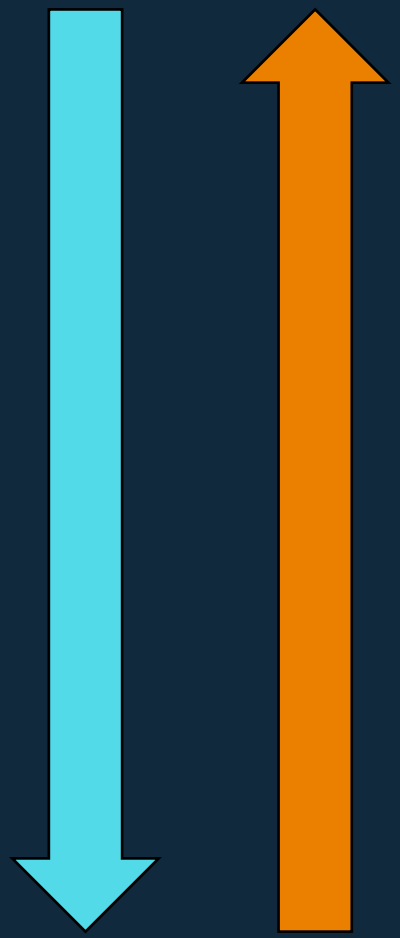
The assessment for SDG 17 is abstract, but we plan to use feedback surveys to analyze the partnerships for our project by looking at the openness of communication lines, the consideration of other parties' concerns, and mutual respect for other parties.

Assessment via Data Collection

Top-Down

The first type of data collection will be from BubbleBox's end. It consists of driver or volunteers observing the number of the people using the facility, amount of water/electricity/soap used, and the outcomes both in resource optimization and efficiency of the BubbleBox.

We also plan to collect data from the **French Agency for Food, Environmental and Occupational Health & Safety as well as epidemiological control services** in Paris to determine the module efficiency in improving health and hygiene and whether there has been any impact on the scabies epidemics (or other hygiene connected issue) at the locations where the BubbleBox has been operating.



Bottom-Up

We also plan to have a "bottom up" approach to collecting data and assessing our project. This data will come from a multifaceted response system which will include surveys and evaluation rankings as well as comments and complaints conveyed by the migrants that use the module. The ratings will use smiley faces and the questions will be translated into several most common among migrants languages. " It is important to receive the feedback from the direct customer segment in order to implement changes that would maximize the utility as well as satisfy physical and religious requirements of the migrants.

Conclusion

Moving Forward

In less than two months, we had the privilege to meet with many NGOs that are helping migrants and refugees in Paris, France, and Europe, as well as with heads of health, water, and hygiene services of the city of Paris. In attempts to understand the migrant crisis and the strife of instability for basic human needs such as hygiene, we have met with migrants and refugees around the humanitarian center. We all agree that now is the time to act.

We hope this plan reflects the seriousness of the current crisis, the complexity of the situation, and our enthusiasm to improve it.

BubbleBox is a crisis management solution. Its simple design serves efficiency and resiliency purposes but also intends to avoid reducing incentives for long term public intervention, especially housing. We are now moving on to create partnerships with engineering and design schools as well as sponsoring companies to finalize the design in order to start building the first modules.

If you want to help us or partner with us, comment it or just say hi, let's get in touch.

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