



Compendium of good practices for a greener humanitarian response

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“Projects included in this compendium serve to inspire humanitarian organisations to design and undertake more sustainable humanitarian interventions, by providing actionable examples that have been proven to work in their specific context. The inclusion of these projects does not guarantee future funding for these or similar projects from the Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG ECHO), as all project proposals must be subject to the same evaluation procedure.”

Introduction

As the environmental crisis deepens, there is a growing consensus in the humanitarian community that addressing the environmental impacts of humanitarian aid is a collective responsibility. While the purpose of humanitarian assistance, by its very definition, is to provide relief to people affected by disasters or crises, adverse impacts on the environment have often been perceived as secondary to the humanitarian imperative.

As a key donor of humanitarian aid, and in contribution of the European Green Deal, DG ECHO acknowledges its imperative role in upholding the ‘Do No Harm’ principle in relation to the environment and those who depend on it. This commitment is enshrined in the newly adopted Communication on EU’s Humanitarian Action¹, wherein the Commission reiterates its support for the ‘greening’ of humanitarian aid.

Recognising the need for firm action, DG ECHO put forward an ambitious approach aimed at reducing the environmental footprint at operational and programmatic levels² in October 2020, which was underpinned by a study published in May 2020³. Through means of capacity building and technical support, DG ECHO intends to inspire and support its partners to adopt and implement more environmentally sustainable projects.

This compendium showcases 12 environmentally friendly and innovative projects that have been successfully implemented by various humanitarian organisations. In addition to indicating the technical and financial requirements, the compendium also assesses the advantages, challenges and lessons learned in the framework of each project. As such, the aim is to raise awareness of the existing tools and guidance, and of the numerous good practises that have been piloted by humanitarian organisations.

1 - https://ec.europa.eu/info/publications/communication-eus-humanitarian-action-new-challenges-same-principles_en

2 - DG ECHO’s approach to reducing the environmental footprint of humanitarian aid: <https://op.europa.eu/es/publication-detail/-/publication/d0d3395d-1e51-11eb-b57e-01aa75ed71a1>

3 - <https://www.urd.org/en/publication/report-on-environmental-footprint-of-humanitarian-assistance-for-dg-echo-2020/>

As illustrated by this compendium, top-down support is crucial to sustain these initiatives in the long term. Some of these initiatives have required investment, some have helped contribute to savings, while in some cases there were no financial implications. Technical expertise was sometimes needed but was not always necessary, for the implementation of the initiatives.

Considering the significant impact that the environmental and climate emergency will have on the planning and implementation of future projects, it is crucial for environmental protection and sustainability to become an inherent part of humanitarian responses. This requires cooperation, transparency, and the exchange of good practises.

With this publication, DG ECHO aspires to shed light on solutions and contribute to the collective learning of the humanitarian community.

I would like to express my gratitude to all the humanitarian organisations that contributed to the publication.

Ms Paraskevi Michou

Director General

DG ECHO





Female IDP cooking using biogas produced from anaerobic digestion of faecal sludge in Malakal PoC. © Oyugi Geophrey Owino/IOM

PROJECT INITIATIVES

WASH

Producing energy with a bio-digester system, IOM

What: Anaerobic bio-digesters to treat sludge and produce clean energy for IDPs

Who: The International Organization for Migration (IOM)

Where: Malakal Protection of Civilians Site, South Sudan

Duration: 1 year (started in 2019)

Total project cost: 22 800 € (construction and maintenance)

Introduction

The effective management of faecal sludge and energy provision continue to pose a significant challenge to humanitarian operators, particularly in displacement settings where these issues can have significant environmental implications.

Latrines require regular desludging and can cause significant soil and water contamination if not properly managed, which, in turn, can be harmful to human health and the environment. At the same time, refugees and internally-displaced persons (IDPs) often depend on firewood for cooking, boiling water lighting and heating which can lead to large-scale deforestation around camps¹.

1 - <https://www.unhcr.org/protection/environment/3b039f3c4/refugees-environment.html>



Female IDP cooking with biogas produced from treated faecal sludge in Malakal PoC. © Oyugi Geophrey Owino/IOM

The anaerobic bio-digester project implemented by IOM² in the second largest IDP camp in South Sudan³ addresses both WASH and energy issues in a challenging operational context. It uses an airtight chamber in which excreta are stored and treated. It also produces biogas, which can be burned to provide energy for cooking, lighting or electricity generation⁴.

Description

As is the case in many refugee and IDP camps around the world, efficient faecal sludge management quickly became a significant challenge in the Malakal Protection of Civilians (PoC) site. Initially, desludging tractors were used to collect untreated faecal sludge, which was then transported to

waste stabilization ponds located approximately four kilometers outside the PoC. Such a method involved serious health risks for the handlers, and was expensive, given the cost of transportation (estimated at 13 000 €/year).

Given the situation, IOM 's WASH Unit commissioned a pilot anaerobic bio-digester study in 2019. The primary objective of the study was to evaluate the feasibility of the technology and its benefits in terms of biogas production.

The anaerobic bio-digester now treats up to 214 litres of faecal sludge per day⁵, which represents the sludge production of 10 latrines used by 177 persons and approximately 0.6% of the total daily sludge produced in the whole camp. The bio-digester also produces 4m³

2 - IOM is not the only humanitarian actor to have run such a project. ACF and Solidarités International are among the organizations who have piloted this solution in other humanitarian contexts.

3 - 32 000 IDPs

4 - https://www.eawag.ch/fileadmin/Domain1/Abteilungen/sandec/schwerpunkte/sep/CLUES/Compendium_2nd_pdfs/Compendium_2nd_Ed_Lowres_1p.pdf

5 - It is projected that this biodigester will be able to treat 78,110 litres of sludge/year.

of biogas per day on average, which is then connected to nearby cooking stoves located in a small communal kitchen. The biogas that is generated meets the daily cooking needs of approximately 20-30 people⁶. The environmentally safe⁷, remaining effluent (treated faecal sludge) is then transported to the waste stabilization pond.

To increase the sustainability of the project, IOM recruited and trained two IDPs, and built local capacity by training women beneficiaries in bio-digester operation and maintenance⁸, thus creating work opportunities for the IDPs. The initiative has now proven to be effective and the plan is to replicate it in other parts of the PoC and outside the camp.

The project has numerous benefits:

- Reduced volume of sludge discharged into the waste stabilization pond and reduced associated greenhouse gas (GHG) emissions. The volume of sludge discharged per month was reduced by 67%. Besides, the waste stabilization pond is a significant source of GHG emissions, in the form of nitrous oxide and methane⁹. The impact of these gases on global warming is respectively 25 and 300 times greater than carbon dioxide¹⁰.
- Reduced deforestation and associated GHG emissions. It is estimated that using the biogas from a single anaerobic bio-digester for cooking will help to save 9.4 - 11.4 tonnes of firewood per year and will help reduce GHG emissions by 11.07 - 13.32 tonnes CO₂eq per year.
- Social benefits: it is estimated that using the biogas from a single anaerobic digester for cooking will save beneficiaries involved in the project a combined total of 16 - 20 hours of work per day, which otherwise would be spent collecting firewood¹¹. This leaves more time for education and general wellbeing, reducing the risk of gender-based violence for women and girls when collecting firewood.

- Less unpleasant to use: with the anaerobic/biogas technology, toilets no longer fill up as faecal sludge is treated separately and discharged into the digester's overflow chamber every day, allowing further sludge to flow from the toilets into the anaerobic digester.
- Health benefits: linked with reduced respiratory problems for IDPs as the smoke generated when cooking wood fuel is eliminated.
- Financial benefits for IOM: the system is relatively cheap to install. What is more, thanks to the biogas digester, the frequency of desludging has been reduced by 67% (from 625 to 209 litres per day) which represents a significant financial saving for IOM¹². The reduced frequency of desludging, from 52 to 17 times a year, has reduced transportation costs (fuel, equipment maintenance and staff wages) from approximately 13,000 € per year to 4,000 € per year.

Process

The feasibility study concluded that, in this context, anaerobic biodigesters would help to reduce chemical oxygen demand (COD) in the faecal sludge by between 75% and 90%¹³.

After an initial pilot phase of seven months (Feb-August 2019), during which the system did not produce enough gas, its performance was optimized with the help of an environmental engineer. The digester has now been operating at its maximum efficiency since May 2020. As opposed to what was originally envisaged, the system does not use food waste but only human excreta (see challenges below).

The project was funded by DFID, USAID's Bureau for Humanitarian Assistance and DG ECHO. NORCAP also deployed and financed the salary of an environmental engineer. The total yearly cost is estimated to be 201,000 €:

6 - 2 meals per day for 4-6 households.

7 - Disease-causing pathogens are inactivated through exposure to high temperatures in the digester.

8 - Female beneficiaries/users are trained in digester operation and maintenance on their designated cooking days. So far, 25 women from different households have been trained, with a further 55 female beneficiaries are due to be trained.

9 - Hernandez-Paniagua, I. et al., 2013. Greenhouse gas emissions from stabilization ponds in subtropical climate. *Environmental Technology*, 35(6), pp. 727-734.

10 - Daelman, M. R. et al., 2012. Methane emission during municipal waste water treatment. *Water research* 46, Volume 46, pp. 3657-3670.

11 - This represents 112-140 work hours saved per week and 5,840-7,300 hours saved per year. These work hour savings increase women's earning potential by 3100 - 3800€ per year.

12 - A toilet use survey established that 177 females using 10 latrine stances produced 616 litres of faecal sludge (pour flush water, cleaning water, faeces, and urine) per day. The volume of water was regulated (reduced?) to enhance the efficiency of the biogas digester, reducing the volume of sludge to 214 litres. After treatment, the conversion of organic matter in the faecal sludge into biogas further reduced the volume of faecal sludge to 209.5 litres per day. The desludging truck has a capacity of 5000 litres. The latrines initially received 616 litres of faecal sludge a day, and therefore were desludged once every eight days. The volume of effluent (treated faecal sludge) from the biogas chamber is 209.5 litres per day, so it is desludged from the overflow tank every 23 days.

13 - COD of effluent (treated wastewater) is widely used as an indicator of anaerobic system performance, but multiple parameters exist for determining wastewater quality.

- Staff¹⁴: 160,000 €
- Construction, operation and maintenance: 23,000 €¹⁵
- Support: 18,000 €

The project's total cost (design, construction, and operation) would be reduced by half (from 23,000 € to 11,200 €) if a cheaper polyethylene/PVC tank was used (instead of a concrete tank).

Despite initial reluctance, beneficiaries expressed their satisfaction with the biogas technology, given the direct concrete benefits including energy provision, improved safety and better access to sanitation.

Benefits linked to soil regeneration and improved soil fertilization are to be anticipated in the future, although it is not yet possible to reuse the digestate given the lack of local capacity to test contaminants. IOM is in the process of sending effluent samples to Kenya for further chemical analysis, due to the lack of capacity in South Sudan.

The idea of replicating the project both within the PoC and outside the camp for local South Sudanese communities is being explored, particularly as most South Sudanese citizens own cattle whose dung is a very rich feedstock for anaerobic digestion¹⁶. The expansion of the project outside the PoC should exploit the huge energy potential of cow dung in South Sudan.

Challenges

The main challenge was community scepticism due to a lack of awareness about the use of gas from faeces for cooking. As would have been the case in many other parts of the world, people initially rejected the technology. Numerous sensitization sessions, involving local and religious leaders, were organised to explain the project and its benefits. Developing a clear communication plan involving key stakeholders in the community was essential to ensure the success and sustainability of the project. Standard operating procedures (SOPs) were also developed to guide beneficiaries and operators in using and maintaining the biogas digester.

Two issues affected the anaerobic fermentation process and required close monitoring. The first was the use of food waste (which constitutes a significant part of the total waste generated in the camp). This idea was finally dropped due to the difficulty of collecting waste that was free of physical contaminants (such as plastic or other solid

waste). The second was the use of chlorinated water to clean the toilets, which ended up in the hydraulic chamber. The presence of chlorine negatively affects digestion as chlorine kills anaerobic microorganisms responsible for anaerobic digestion. This had not been foreseen, and the team therefore had to find a way to reduce the concentration of chlorine.

Generally speaking, the installation of anaerobic biodigesters requires a high level of biochemical expertise which is not always available in the humanitarian sector. This expertise is needed throughout the project to supervise the reactors and maximise gas production. The lack of expertise in this case was addressed by IOM's global Environmental Sustainability Programme through the recruitment of an environmental engineer from NORCAP.

The biogas digester produces highly flammable gases, and if it is not properly constructed or managed, these can harm users (leaks, explosions), and contribute to climate change. This should be anticipated in the biogas digester design and in maintenance activities.

Lessons Learnt

One of the main lessons learnt is that the sustainability of the project depends on having the appropriate technical capacity to design, build and maintain such a system. The fermentation process is quite sensitive and anaerobic biodigesters need to be closely monitored to optimize the production of gas. Expertise in these areas is rare in the humanitarian sector and needs to be developed. Local capacity building is also necessary to design and maintain the biogas digester and to ensure that it is sustainable in the long run.

Monitoring of the anaerobic fermentation process was key to the success of this project. A regular supervision system needs to be in place to collect data on the efficiency of gas production in order to make any necessary adjustments (adding faecal sludge/water, for instance). This needs to be anticipated if there is staff turnover to make sure there is no shortage of technical capacity.

The laboratory equipment that is needed to test the efficiency of the anaerobic process in removing pathogens and viruses is often expensive (1700€), but this is an essential investment. Another key lesson is that bacteria are very sensitive to fluctuations in temperature. As such, installing tanks below the ground, where the temperature is relatively stable, could help to maximize the efficiency of the system.

14 - Environmental engineer, community mobilisers

15 - Excavation and construction of brick and concrete digester (5500 €). Excavation and construction of one block of ten latrine stances (1300 €). Construction of the communal kitchen and piping (880 €). Purchase of laboratory equipment plus consumables (1500 €). Total labour cost (1600 €). Transport (5900 €). Operation and maintenance that include cost of dome repair, toilet repair, kitchen and laboratory consumables, valves and fittings replacement and staff operational cost (6000 €).

16 - The biogas produced by 177 IDPs could be produced by 3 or 4 cows weighing 400 kg.



Gas storage balloons filled with biogas produced from treated faecal sludge at biogas site. © Oyugi Geophrey Owino/IOM

This could also help to save space in humanitarian settings where there is a problem of population density and limited space (e.g. Cox's Bazar)¹⁷.

Safety concerns need to be anticipated and addressed as biogas is highly explosive and there is a risk of asphyxiation for users. This was addressed by designing the central kitchen in such a way that it was well ventilated¹⁸. Biogas operators are required to check for leakages every day with a multi-gas detector. IOM developed standard operating procedures (SOPs) that guide users on correction and safety measures to be implemented if leaks are detected in the kitchen. Excess methane is stored in two flexible plastic bags, each with a capacity of 2.5 m³, which is used in periods of high demand.

During the project, IOM learned lessons about how to increase acceptance of the project among the IDP residents.

As highlighted earlier, there was an initial reluctance to use the biogas for cooking. As it is an innovative process, the population knew very little about it and reacted negatively. Building awareness among the users and key stakeholders in the community throughout the duration of the project was essential.

Conclusion

IOM's experience in Malakal's PoC shows that biogas production from faecal sludge has numerous benefits for the environment, for communities and for humanitarian actors. On the one hand, it improves faecal sludge management by reducing the quantity of sludge that needs to be treated, and improving its quality by making it less harmful. On the other hand, the system allows safe energy to be produced in areas where there are very few alternatives to firewood.

17 - <https://wedc-knowledge.lboro.ac.uk/resources/conference/38/Eyrard-2116.pdf>

18 - Desulfurizer (equipment which removes sulphur components) is connected in line between the biogas inlet pipes into the kitchen and cookers to strip biogas of Hydrogen Sulphide gas which might cause asphyxiation in incomplete combustion.



Female IDP preparing meals using biogas. © Oyugi Geophrey Owino/IOM

Studies have shown that users usually enjoy cooking with biogas as it has a number of benefits (no need to gather wood, no smoke, and it can be switched on and off). However, it may not be appropriate in all cultural contexts, and always needs to be accompanied by a well-designed communication strategy.

The system is relatively cheap and easy to install and could be replicated in other contexts (it is particularly suited to rural and peri-urban areas)¹⁹. It is estimated that a system can be up and running in less than 6 months²⁰ if the appropriate technical capacity to support the project is anticipated. The technology has been successful in various contexts and could be used more widely in the sector.

Additional Information

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- UNEP 2020 'Greening the Blue' Report
- Compendium of Sanitation Systems and Technologies 2nd Edition <https://www.eawag.ch/en/department/sandec/publications/compendium/>

19 - https://www.eawag.ch/fileadmin/Domain1/Abteilungen/sandec/schwerpunkte/sesp/CLUES/Compendium_2nd_pdfs/Compendium_2nd_Ed_Lowres_1p.pdf

20 - It takes 90 days for the bacteria to be efficient.



Bangladesh. Safer, more sustainable fuel supply for Rohingya refugees. © UNHCR

PROJECT INITIATIVES

ENERGY

Using LPG (Liquid Petroleum Gas) for cooking in refugee camps, IOM – UNHCR

What: LPG project in Cox's Bazar

Who: IOM/UNHCR/WFP/FAO

Where: Cox's Bazar, Bangladesh

Duration: Phase I August 2018- August 2021 (3-year programme)

Total cost: approximately 13,6 million €/year (1M beneficiaries), multiple donors including DG ECHO

"LPG is not 'green' in the strictest sense as it is a fossil fuel, but it is cleaner, more energy efficient and produces less carbon dioxide during cooking when compared to more traditional fuels, and can have a significant impact on deforestation in locations where wood or charcoal is the primary cooking fuel." Global Plan of Action for Sustainable Energy Solutions in Displacement settings

Introduction

Energy Access is without doubt the weak link in the majority of aid operations involving refugees and Internally Displaced Persons (IDPs). Energy-related activities do exist but they are not systematically integrated into humanitarian responses,



UNHCR distributes Liquid Petroleum Gas (LPG) stoves and cylinders to refugees in Bangladesh. © UNHCR

especially energy for cooking since energy for lighting and heating are many times provided under shelter and non-food items interventions. More so despite the fact that wood is used to cook distributed food, to preserve foodstuffs, to purify water through boiling and is sold as an income-generating activity (Groupe URD, 2017).

Since 25 August 2017, more than 800 000 Rohingya refugees have arrived in Cox's Bazar, fleeing oppression in Myanmar. This sudden presence has placed enormous pressure on the surrounding natural resources, accelerating deforestation in the nature reserve nearby¹. As in many contexts, the deterioration of the forest cover has led to tensions between refugees and the host community, who also depend to a great extent on these resources. Both communities have also become more vulnerable to climatic hazards and risks, such as landslides and floods, as the soil-stabilising benefits of the vegetation was gone.

It was in this particularly difficult context that the 'Safe Access to Fuel and Energy', or 'SAFE PLUS', project took shape, the first large-scale humanitarian project involving LPG (liquid petroleum gas), reforestation and livelihoods². This is an innovative project, which has the potential to be replicated, and which provides new insight into the complexity of energy-related projects, how important they are, and the many benefits that they can bring.

Description

A few months after the beginning of the refugee crisis, in response to the 'cooking fuel crisis', UNHCR and IOM³, who are in charge of the 32 camps in Cox's Bazar, began to distribute cooking kits to both host communities and refugees. Today, almost four years since the beginning of the crisis, all refugees

1 - Nature reserve crossed by an elephant migration corridor.

2 - LPG in displacement settings has also been trialled in Niger, Tanzania, Myanmar and Jordan. Here is one of the earliest adaptation for example from Sudan: https://wedocs.unep.org/bitstream/handle/20.500.11822/22455/LPG_Sudan_workshop.pdf?sequence=1&isAllowed=y

3 - Complemented by WFP and FAO participation.

and around 75 000 host households are using this cooking method.

Each cooking kit includes the following: a stove, a regulator, a hose, a clamp and an LPG cylinder. Refills of 12 kg⁴ (costing 8,5 to 13 €) are then distributed each month to all beneficiaries. A trial project distributing 'pressure cookers' has just been launched by UNHCR and replicated by IOM in order to reduce the amount of LPG being used by households and, consequently, the monthly cost of refills and associated GHG emissions. During the pilot phase, introducing the pressure cookers helped to reduce the amount of LPG needed by 30%.

Process

The project began with a phase of about a year during which a feasibility study was carried out that compared different energy sources. This study, which was carried out by an energy expert, concluded that LPG was the best option for the humanitarian response in Cox's Bazar, from economic, social and environmental points of view. The preparatory phase was also necessary to draw up contracts with LPG suppliers and to gain the necessary authorisations from the government.

In 2018, in parallel to the initial distributions, workshops were run by firefighters to raise awareness amongst refugees on the risks linked with using LPG. Despite initial fears about these risks and about the possibility that beneficiaries might reject LPG⁵, the new cooking methods were very well received by the beneficiaries, and there were very few accidents.

A government agreement has helped significantly in making the project a success. This political backing, which may be due to the fact that LPG is already widely used in Bangladesh, has been particularly beneficial given the significant tension between the two communities.

Advantages

In the Cox's Bazar context, using LPG as a source of household energy has numerous advantages.

Environmental benefits

LPG has made it possible to considerably limit deforestation, which had reached a critical level, with some people even digging up roots to use as fuel. The introduction of LPG stoves thus helped to reduce households' dependency on wood fuel by 80%. What is more, the project was accompanied by a 600 ha reforestation programme, which has already had positive impacts on the vegetation around and in the camps and in the

nature reserve that surrounds Kutupalong. Reforestation also helps to reduce exposure in camps against bad weather by stabilising the soil to avoid landslides, promoting infiltration to slow drainage water, reducing silt flow and soil loss, for example.

It also appears that the host community uses different energy sources depending on what they are cooking (compressed rice, wood). The use of LPG within certain households has made it possible to modify cooking practices in a lasting manner (according to a study carried out within host communities which have benefited from distributions, 22% of households have durably changed their practices due to the use of LPG), therefore reducing the environmental footprint of the host community as well.

LPG cannot be considered as sustainable fuel as it is a fossil fuel. However, in the context of Cox's Bazar, its use has helped to significantly reduce deforestation and to limit CO₂ emissions caused by the burning of wood/coal⁶.

It should be noted however, that camps became less clean with the introduction of LPG. Until then, solid waste was used as fuel for cooking; when it became less pressingly needed, waste became increasingly more visible all over and actually became more of a problem for drainage with canals getting obstructed by various garbage.

Social benefits

The use of LPG stoves also has a positive effect on beneficiaries' health (host communities and refugees) as they are less exposed to the smoke generated by the other types of fuel (stoves generally being at the centre of a single living space). LPG is also much more energy efficient than burning wood, coal or 'compressed rice' which, in such a humid region, take longer to heat and burn more quickly⁷. By introducing LPG in host communities, the project is likely to have long term development benefits if host communities, have access to regular income and continue using this technique after the project stops.

Consequently, LPG removes the mental and physical burden of gathering wood. This particularly stressful and time-consuming task, which is often carried out by women and adolescent girls, involves protection risks (attacks, threats, etc.) especially considering the distances that were practiced by refugees in 2018, prior to the full scale up of program, with anecdotal reports of up to 10km.

By limiting the environmental footprint of large-scale displacement, and by targeting both host and refugee communities, the project has also helped to reduce inter-community tension.

4 - In this context, a 12 kg cylinder allows a household of 4 to cook for 4 weeks, but this depends a great deal on cooking habits, types of food, the climate, etc.

5 - Particularly the refugee population who were completely unfamiliar with LPG.

6 - LPG is not a carbon neutral source of energy if we consider its source and the emissions linked to its production.

7 - As for LPG, the humid climate has an impact on the corrosiveness of the cylinders.

Economic benefits

As LPG is already used in Bangladeshi households, a supply chain already existed and prices were relatively stable compared to the other energy sources that were explored. LPG refills and stoves can be found in local markets, one of the three private suppliers being from Bangladesh. As such, the UNHCR and IOM project has also considerably boosted the local economy and strengthened the interest of the private sector on the existence of new markets shares for LPG being expected that it will continue to have a growing impact over time.

The increased use of LPG has helped to create stable jobs, which have improved the living conditions of the host population⁸.

Summary of advantages:

- Energy efficiency and faster heating
- Less time-consuming and more efficient, leaving time for other activities (e.g., educational activities)
- Reduced exposure to combustion smoke
- Reduced risk of fire
- Protection against gender-based violence
- Reduced deforestation
- Reliability of the supply chain
- Job creation in the country
- It's portable, easy to transport

Challenges

Despite these different advantages, there were also numerous challenges, particularly due to the cost of such project, the lack of experience of the humanitarian sector in running projects of this kind, and on such a scale. The partnership with the private LPG suppliers and the drawing up of contracts proved to be particularly complex (see Lessons learned).

The main challenge of this type of project remains its cost⁹ and the difficulty for actors of mobilising humanitarian funds for what remains an 'unusual' intervention in the sector. As households' energy needs are not systematically taken into account in humanitarian responses, this project is therefore perceived as being extremely expensive despite the fact that gas is not more expensive than charcoal in the majority of contexts¹⁰. Beyond the initial distribution of the cooking kit, the monthly supply of refills to beneficiaries is only possible to the extent that there is funding available. The challenge of cost is all the more complex as there is little incentive for refugees to reduce the amount of LPG that they use.

The question of the sustainability of the activities could also be an issue when project funding ends. If LPG resources have to be paid for after the withdrawal of humanitarian actors, it is highly probable that beneficiaries (and particularly the refugees who cannot work) will once again turn to resources that are available for free nearby (such as wood)¹¹, unless they have access to income-generating activities. This issue of the sustainability of the project beyond the humanitarian intervention, is nevertheless not specific to this project, and concerns all kinds of humanitarian assistance (food aid, NFI, etc.).

Security issues related to using LPG were seen as a challenge by those behind the project, who were worried about whether households would implement security protocols properly. However, the risk of fire is not specific to the use of LPG but depends more on how users cook, despite being less propense to accidental spread than coal, rice husk or other flammable liquid fuels.

Lessons learned

This innovative project shows that carrying out initial assessments is crucial in order to identify the most suitable energy solution(s) for each context (depending on the local market, cultural norms, the environmental footprint, etc.). Indeed, in other contexts, LPG might be less reliable and less accessible. Though the Bangladeshi context helped to make the project a success, this might not be the case elsewhere. It is therefore very important to work together with the local and national authorities and to ensure that there is coherence with the national energy strategy. It is also necessary to have a certain minimum implementation time (1 year) in order to correctly analyse the market, train beneficiaries (when necessary) and combine the project with livelihoods activities so that they can buy refills (particularly for the host community). Otherwise there is a risk that the solution cannot be sustained in the long term. Also, one idea to explore in order to improve the efficiency of the programme might be to adjust the volume of the cylinders depending on the composition of the households and their consumption, considering that such may have considerable logistic impacts and create misperception among users that will need to be addressed.

It is also important to negotiate a solid, long-term contract with the suppliers, taking into account the flexibility of the price of LPG, which fell due to the global health crisis, to the advantage of IOM/UNHCR. The cooking kits should have

8 - "LPG generates 30 times more permanent jobs than the other fuels, a solution that benefits the host communities in the long term", Newsletter EETWG, February 2020.

9 - This very expensive project benefited from the unprecedented funding made available for the Rohingya crisis.

10 - In Tanzania, it is even less expensive.

11 - « Liquefied Petroleum Gas (LPG) is a clean source of energy for cooking of fossil origin. It is available and the government of Bangladesh supports its diffusion. However, the cost for refugees could be prohibitive leading them to depend solely on firewood and natural biomass of the area. » FAO Bangladesh



Bangladesh. Bottled gas scheme eases fuel crisis for Rohingya refugees. © UNHCR

at least a 3-year guarantee to ensure that they are of sufficient quality and durability, and to limit the production of waste after several years of use. Given the lack of technical expertise of humanitarian actors on this subject, it is essential to have a partner organisation that is in charge of the storage, transportation and distribution of LPG refills, and to include these points in the contract, because these steps can involve significant risks for unqualified staff. Examples of calls for tender were made available by IOM and UNHCR (see references).

This type of project becomes more sustainable when it is accompanied by an integrated and holistic approach, including complementary aspects, such as reforestation and the development of income-generating activities. This should also be accompanied by a cooperative approach with the other actors that are present, particularly in relation to the food that is distributed. The objective should be to explore the possibility of distributing items that need less cooking time or cooking solutions that are more efficient, like pressure cookers, which allow between 30 and 50% fuel savings. Introducing energy efficiency activities from the beginning of the programme could have potentially made it possible to reduce the monthly cost of refills. In contexts where it would be possible, unconditional cash transfers that take the energy needs of households into account would help to rationalise the consumption of LPG, and therefore costs.

A final lesson had to do with taking fire risks into account in planning. These are not necessarily higher than with wood, but as these are new techniques for most beneficiaries, the risks are nevertheless high. It is therefore crucial to set up awareness-raising workshops and training about risks for staff and beneficiaries. IOM and UNHCR organised reminder workshops with video presentations on security measures at each distribution.

Conclusion

The UNHCR and IOM programme intended to meet the energy needs of the most vulnerable people in Cox's Bazar and to provide environmental recovery is an innovative solution which has helped to considerably reduce deforestation around the camps and improve the daily lives of thousands of refugee families offering protection and better indoor air quality. What is more, it has the potential to be replicated in other contexts.

However, it is important to keep in mind that it requires significant initial investment from agencies and donors, and that this may not be the best solution in every context. Indeed, the best solution is the one that is the most adapted to the specific characteristics of the economic and social environment in which an intervention takes place. And we

must not forget that there is no single energy solution that can be adapted to all contexts, and that the best option is to establish mixed solutions.

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- GPA Webinar conducted in 2020: <https://youtu.be/F7uUEAR37M0>
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Eastern Chad © Urs Bloesch/SDC

PROJECT INITIATIVES

NATURAL RESOURCES

Assisted natural regeneration of degraded ecosystems

What: Community-based natural resource management

Who: UNHCR

Where: Eastern Chad

Duration: Phase 1: 1/05/2017 to 31/12/2018;
Phase 2: 01/01/2019 (ongoing)

Total cost: 176 000 €/year

Savings: 1,76 million €/year compared to reforestation projects

Introduction

Refugee camps undeniably have an impact on the environment, and more specifically on forest cover. Population displacement places 'additional'¹ pressure on natural resources: depletion of agricultural land, trees cut for fuel, for shelter construction or

for livelihood activities, such as charcoal production, the selling of wood to host communities, damage by livestock, etc.

The Sudanese refugee crisis² in eastern Chad is a good example of this problem. Several months after the beginning of the crisis in 2004, refugees had to go further and further from

1 - The host community and climatic hazards may already be exerting pressure on wood resources.

2 - Since 2004, around 300 000 refugees have been living in 12 camps.



Eastern Chad. © Urs Bloesch/SDC

the camps, up to 20 km, to find wood. The over-exploitation of natural resources led to tension and conflict between the host and refugee communities.

The humanitarian response to this problem, supported by the Chadian state, has often been to fund community-based reforestation operations³. But many of these projects, which are both expensive and logistically complex, have been unsuccessful due to a number of factors, such as constraints related to property law and the difficulty of maintaining new plantations beyond the duration of the project (e.g. lack of water in these semi-arid Sahelian ecosystems, or lack of protection against livestock grazing). It should be noted, on the other hand, that individual plantations in refugees' enclosed plots have often been successful.

The project described below is an example of rational natural resource management which has allowed the forest cover around the camps to be re-established, at low cost, and has helped to reinforce social cohesion between communities. Implemented initially by a humanitarian organisation (UNHCR), and then by a development organisation (GIZ), it is a good example of how the 'humanitarian-development-peace' nexus can be operationalised.

Description

The restoration of degraded environments by means of assisted natural regeneration and the protection of vegetation against grazing by livestock is not an approach that is very well known in the humanitarian sector.

Launched and funded by Swiss Cooperation, this project is an interesting alternative to reforestation, using a simple, inexpensive and sustainable community-based natural resource management approach (Farmer Managed Natural Regeneration – FMNR, developed by World Vision)⁴. It has allowed woodlands to be protected and restored in the area (*Acacia senegal* trees which produce 'gum arabic'), without needing external inputs (e.g. new plants) or a lot of equipment. The approach involves protecting and regenerating native species of trees that are adapted to the environment. Very little external intervention is needed and therefore investment is minimal (essentially human resources for maintenance).

The project has included five stages:

- The establishment of local agreements signed by representatives of the refugee population, the host population and the local authorities for the shared agro-sylvo-pastoral management of the areas to be restored. The agreements also included semi-nomadic herders who cross these areas.
- Surveillance of the areas to be restored by teams made up of members of the local and refugee populations to protect the vegetation (*Acacia senegal*) against goats and camels.
- The natural regeneration of protected vegetation can be accelerated by directly sowing certain native trees (broadcast sowing), combined with soil conservation work (e.g. half-moon terraces).

3 - Humanitarian operations have also included the distribution of wood (that is gathered locally) as fuel for heating.

4 - <https://fmnrhub.com.au/>. The Evergreening Alliance is committed to rolling out the approach <https://www.evergreening.org/evergreening/fmnr/>

- Monitoring of the development of vegetation and biomass via remote sensing⁵;
- The establishment of income-generating activities, particularly in relation to the production of gum arabic (though, it should be noted that there were problems finding commercial outlets to sell the gum, its sale having been interrupted by the Darfur crisis).

This approach has a number of advantages:

- 1) Environmental: particularly the restoration of natural capital (after two years, approximately 1000 hectares⁶ of tree cover had been rehabilitated, with improved soil protection).
- 2) Economic: for both the host and refugee populations, the sale of gum arabic helped to generate income for stakeholders.
- 3) Social: this approach, which aims to promote peaceful cohabitation between host and refugee populations, based on the shared rehabilitation of ecosystems in the areas where refugees are settled, has reduced the tension between the communities.
- 4) Financial, for humanitarian organisations: the annual cost of this kind of project is much lower than for reforestation projects – about 176 000 €/year for this project, compared to 1.8 million €/year on average for the reforestation projects implemented by UNHCR in the region. This is due to the fact that very little initial investment is needed (e.g. purchasing and transportation of new plants).

Process

Having already applied the assisted natural regeneration approach on a large scale in Niger, and convinced of its benefits (compared to reforestation), the environmental experts of the Swiss Agency for Development and Cooperation (SDC) initially provided technical and financial support for the implementation of the project by UNHCR and its local partners before accompanying the transition towards a development organisation (GIZ).

Funded by the humanitarian branch of the SDC, the project was initially implemented via a pilot phase by local NGOs⁷ supported by UNHCR (1 May 2017 – 31 December 2018) in three areas located near several Sudanese refugee camps (the Wadi Fira

area). Following this initial phase, the project was then transferred to the SDC's development branch in order to be integrated into a development project called, 'Managing Surface Water Runoff in the Sahel Region of Chad' (since 1 January 2019).

The project has also received support from local government technical services, as well as administrative and traditional authorities, which is an important asset in terms of sustainability.

Challenges

One of the main difficulties that the SDC encountered was convincing UNHCR to tackle ecosystem degradation by other means than reforestation. As the organisation was used to implementing reforestation programmes, and had the finances and equipment to do so, they needed to be accompanied to change their vision and practices in order to adopt the more long-term approach of ecosystem restoration.

Two major factors complicated the situation: the high staff turnover within UNHCR and the minimum duration required for a project of this kind (2 – 5 years)⁸ which is not really compatible with normal humanitarian funding cycles. It was also initially difficult to convince the Chadian government, and other donors, of the benefits of the approach.

A lack of technical skills in agroforestry and soil preservation within UNHCR was the last major obstacle. On the other hand, the project's main strong points were the continuous technical support that UNHCR received from SDC and the cost-efficiency of this approach compared to reforestation projects (10 times less expensive).

Lessons learned

One of the major lessons is that assisted natural regeneration and the shared management of the natural environment bring numerous benefits. This case study has shown the environmental, economic and social benefits of such an approach.

The lessons learned from SDC's experience in Chad concern primarily the role of donors in reducing the environmental footprint of aid. Convinced of the benefits of this approach, the SDC was able to promote, guide and finance the implementation of a refugee assistance programme, with a positive impact on the environment. This project also shows how the concept of the humanitarian-development-peace nexus can be operationalised. This requires synergy between humanitarian and development donors (and actors) in

5 - Analysis of satellite/aerial images.

6 - Cf. Progress in restoration of degraded ecosystems in the Sudanese refugee-hosting area in eastern Chad, CEE Newsletter, June 2020.

7 - ADES, APLFT, ECOCITOYEN and SECADEV

8 - It should be noted that the nursery projects that are run in connection with reforestation projects in Chad require a similar amount of time to be successful.



Eastern Chad. © Urs Bloesch/SDC

pursuing a long-term approach.

It is essential to raise awareness among humanitarian project staff and to accompany them in order to convince them that there is an alternative to reforestation, and skills in environmental sciences also need to be reinforced.

In order to ensure that the project was sustainable, it was crucial to involve communities already sensitised to environmental issues (via local agreements), and, above all, to identify direct benefits for both the host and refugee populations. As the sale of gum provided them with regular income, it was in the interest of the host and refugee populations to care for the trees and protect them from livestock. Improved cohesion and the easing of tension between the communities means that there is a solid foundation for the long-term sustainability of the project.

The success of this project was also due to UNHCR's overall approach to energy issues, which aimed to reduce demand for wood fuel among the host and refugee populations (e.g. through the distribution of improved/firewood-saving stoves). If they are unable to meet their demand for fuel, people are likely to turn to environmentally-harmful practices (e.g. cutting standing timber if there is no dead wood available).

Conclusion

Faced with deforestation in humanitarian crisis contexts, and the challenges brought by climate breakdown, international aid organisations have often engaged in reforestation activities. However, not only are these expensive and complex, but they also need to be accompanied in the long-term, beyond the duration of the project.

The assisted natural regeneration approach, on the other hand, has economic, environmental and social benefits, and has the potential to be replicated at different levels. It requires humanitarian practitioners and donors to adopt a new

perspective compared to the sector's usual responses.

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PROJECT INITIATIVES

ENERGY

Malakal Humanitarian Hub, South Sudan, IOM

What: Solarising a humanitarian hub in South Sudan

Who: International Organization for Migration (IOM)

Where: Malakal, South Sudan

Duration: 1,5 – 2 years (since 2020)

Total cost: initially 250,000 €¹

Savings: 300,000 € energy savings over 5 years²

Introduction

Interest in solarising humanitarian operations has increased within the sector over the past few years. Indeed, switching to solar makes sense given agencies' energy costs, budget shortages and the solar potential in many of the countries in which we operate. However, until now, to a great extent, the focus has been on increasing the quality and sustainability of programmes (solar water pumps, electricity for schools and

health centres, electricity in refugee camps, etc.) and very few organisations have taken the risk of investing in solar energy for their own offices and other facilities. There are a variety of reasons for this: uncertainty as regards to the length of stay in a country, difficulty in accessing funds for the initial investment, lack of technical expertise in the sector, focusing on delivering humanitarian services, or focusing on providing energy to the affected population, etc. While the solarisation of humanitarian offices needs to be carefully thought through, and is not

¹ - 250,000 € was the IOM/DFID investment in the initial hardware and installation costs. It is not the total cost. Additional costs include logistical support, investment in technical capacities, etc.

² - <https://www.iom.int/news/humanitarian-hub-malakal-south-sudan-goes-green>



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necessarily economically nor technically viable in all contexts, in others it can bring significant benefits (environmental, financial, well-being of staff, fewer power cuts...), provided that some initial conditions are met. The initiative described below, implemented by IOM South Sudan in Malakal, is a very good example of how humanitarian organisations can switch from being energy producers (i.e. through diesel generators) to purchasers of clean energy (i.e. via an energy company).

Description

In 2020, the Malakal Humanitarian Hub in South Sudan, which hosts 300 humanitarian workers from 34 humanitarian organisations, switched to solar energy to cover 80% of its energy needs (diesel generators are still used as a back-up for the remaining 20%)³. The plant has a solar PV capacity of 700 kWp, combined with a 1,368 kWh battery energy storage system.

As a result, energy costs linked to the purchase of diesel by IOM and all the other agencies located in the hub (approx. 215,000 €/year) have been reduced significantly. It is estimated that over the 5-year contract, 300,000 € will be saved (18% cost saving)⁴. It has also helped the hub to

become more autonomous in terms of its energy supply (diesel fuel is imported and this is particularly difficult and expensive given the remoteness of the location and the security situation).

From an environmental point of view, it is also estimated that 744tCO₂ will be saved each year, and noise and air pollution has been reduced significantly, improving the well-being of staff and the inhabitants of the neighbouring camp. While the humanitarian hub is run by IOM, who made the initial investment, other organisations who rent space within the hub also benefit from a cleaner environment and less noise pollution.

Process

A number of individuals at IOM, both at HQ and in the field, were convinced of the pertinence and the feasibility of the project despite the challenges involved (and which will be developed below). Their commitment and technical capacity⁵ were essential in bringing the project to fruition. The first step was to undertake an energy assessment which mapped out energy needs and the local energy market, and assessed the technical and economic feasibility of the project. This initial assessment was provided free of charge and was carried out externally by a private company (*Kube/Scatec*), which was then contracted to carry out the project.

This project is particularly innovative in terms of the contract that IOM signed with the private company providing the service: IOM rents the installation and pays for a guaranteed output (electricity) for a certain number of years (a leasing contract or a lease to own) rather than purchasing it. This allowed IOM to overcome both the difficulty of mobilising initial funds for the full capital investment (which can be very expensive), and the fact that it has limited in-house technical expertise in solar energy⁶. The maintenance of the system is therefore carried out by the service provider, which helps to reduce the risk of failure of the solar energy system due to low maintenance⁷. Maintenance costs (repairs, the replacement of parts, etc.) are included in the running costs of each project.

The contract, which required an initial down payment of 250,000 € (funded by DFID, now FCDO⁸), also included a termination clause allowing IOM to break the contract should they have to leave the country in the event of a funding shortfall, insecurity, or the end of the humanitarian crisis (i.e. people returning home before the end of the contract). Given the risks for the service provider, the fee for rental and supply is relatively high.

3 - <https://www.iom.int/news/solar-energy-power-humanitarian-hub-malakal-2020>

4 - Chatham House Report, "The Cost of Fuelling Humanitarian Aid", December 2018.

5 - Capacity to provide solutions from different technical areas (e.g. accounting, finance, procurement, legal, sustainability).

6 - IOM recruited an engineer on the ground in South Sudan to support this work.

7 - 80% of solar systems in Sub Saharan Africa fail within the first 12 months as a result of poor operation and maintenance.

8 - Foreign, Commonwealth and Development Office.

The process of solarising Malakal's humanitarian hub took over a year and a half from the initial energy assessment to the installation of the system. Despite the numerous concerns at the beginning, different departments within IOM gradually got on board. Key to the project's success was the significant support it received from IOM management and also from various departments who developed technical solutions in their respective areas (procurement, legal, finance etc.).

Challenges

Solarising humanitarian offices is not an easy task and can involve numerous challenges. The main difficulty was to gather sufficient funding to cover the initial capital investment given the usual humanitarian budgeting cycles. At first, IOM's donors were reluctant to invest in large solar systems for humanitarian offices or to commit to a long-term agreement.

Added to this was IOM's limited experience and technical expertise in developing solar projects of this kind, and working with the private sector. Given the novelty of the processes and issues involved, this initially brought several challenges internally, and different opinions about how to address these.

Another challenge was finding private companies who were willing to work in such a difficult operational context (remoteness, insecurity) and who accepted the uncertainty about the future of IOM's operations in Malakal.

Lessons learnt

This project was unprecedented both for the organisation and for the sector and, despite some difficulties, its success had a significant knock-on effect (within IOM and externally), inspiring others to explore cleaner energy options for their offices, using innovative contractual modalities.

One of the main lessons learnt is that an independent and unbiased energy assessment needs to be undertaken prior to any project to analyse which energy solution is the most adapted in a specific context (e.g. solar, wind, grid, etc.). The energy assessment needs to look at the technology (energy needs, energy market), as well as at the economic feasibility. Building on the success of the Malakal project, IOM is currently working with two NORCAP⁹ energy experts to set up standardized energy assessments for facilities as well as for projects that can be used by offices worldwide.

While solarising offices can be a very attractive solution for humanitarian actors (on average 25% savings on energy

costs/year, plus significant CO₂ savings depending on the context), it is not necessarily a viable option in all contexts. In countries where offices are connected to the grid/or where diesel is very cheap and easy to access, for instance, the success of such a project is not guaranteed (as initial investment is more difficult to find and to justify to donors). It is also to be noted that, in some contexts, a hybrid model should be explored to ensure that energy is supplied 24/7.

It is essential for humanitarian organisations to pool their resources (financial and technical). Partnerships should therefore be established between various organisations located in the same area, or between various offices within the same organisation. This would also help to have more leverage when negotiating with private companies for which the risks can be very high, as well as to share some of the initial capital investment.

Given current humanitarian funding cycles, gathering the initial capital investment for such projects will always be a problem. Establishing leasing contracts/lease to own/power purchase contracts with private companies, rather than purchasing the system can therefore help reduce the costs and the burden of maintenance. In this way, humanitarian organisations delegate the responsibility for installing and maintaining the system, for which they are generally not adequately equipped.

Switching to solar helps to reduce the carbon footprint of humanitarian organisations, who are often dependent on fossil fuels. It can also help reduce energy costs in the long run, and this can help to convince donors. The IOM case study suggests that break-even points are reached on average after 5 to 7 years (depending on the size of the office and the cost of fossil fuel supply) - long before the end of a humanitarian operation.

However, it is complex, and a lot of issues remain unresolved. The IOM case study has demonstrated that more work needs to be done and experience gathered to help organisations and their private partners manage the financial risks related to such projects. Extensive work has already been done by the Global Plan of Action for Sustainable Energy in Displacement Settings and its members in developing a de-risking mechanism¹⁰. The issue of batteries (which have a lifespan of approx. 5-6 years) is also unresolved as countries where humanitarian organisations operate often do not have the capacity to recycle or to manage hazardous waste, and international legislation (The Basel Convention¹¹) limits the cross-boundary transfer of waste. Having identified this as one of the key issues related to solarisation, IOM, with support from Innovation Norway, is also working to

9 - <https://www.nrc.no/expert-deployment/aboutnorcap/>

10 - <https://www.humanitarianenergy.org/news/latest/helping-the-un-cut-down-on-fossil-fuels-by-de-risking-energy-service-contracts>
<https://www.humanitarianenergy.org/news/latest/decarbonising-humanitarian-energy-infrastructure>

11 - <http://www.basel.int/default.aspx>



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find a sustainable model to recycle e-waste generated in displacement settings¹². More work needs to be done as a sector to support the supply chain in a shift towards more sustainable products (solar panels and batteries in this instance).

Conclusion

The solarisation of humanitarian offices is still a nascent process despite growing interest throughout the sector. While solutions can provide significant financial and CO₂ savings for humanitarians, they can be complex to set up, given the initial cost, the difficulty of working with the private sector whose interests are very different, and the overall lack of technical capacity to design and implement such projects. Technical capacities within the sector need to be strengthened¹³ and lessons shared. The implementation of such projects is nevertheless not possible without support from senior management as well as that of departments such as finance, accounting, energy/sustainability, and legal, whose expertise also needs to be built collectively.

More information on IOM's sustainability and clean energy initiatives

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- Chatham House Report, "[The Cost of Fuelling Humanitarian Aid](#)", décembre 2018.

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<https://www.humanitarianenergy.org/>

12 - <https://www.innovasjon Norge.no/no/subsites/hipnorway/innovation-projects2/tackling-the-issue-of-solar-waste-in-refugee-settings/>

13 - *Norcap has an energy expert roster/ GPA- Global Plan of Action.*



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PROJECT INITIATIVES

WASH

Faecal sludge management, Solidarités International

What: *Sludge Treatment System (STS)*

Who: *Solidarités International*

Where: *Sittwe, Myanmar*

Duration: *2014-today*

Total cost: *initial 200,000 € and 13,000 € operating costs per month*

Introduction

Sanitation is a key component of humanitarian WASH projects. However, humanitarian projects often do not have the budget and/or capacity to implement comprehensive sanitation solutions and are therefore limited to temporary, emergency sanitation infrastructure, despite it being common knowledge that humanitarian crises persist over time. In many countries, faecal sludge is dumped with little or no treatment, causing

significant contamination of the soil and water, which can have serious consequences for the environment and people's health.

Solidarités International's (SI) project in Sittwe¹, Myanmar, is an example of a responsible and long-term approach to sludge management in a complex humanitarian setting. It was made possible by motivated SI staff in Myanmar who wanted to encourage a shift towards sustainable sanitation, and thanks to multi-year funding received initially by the Myanmar

¹ - Implemented in partnership with Oxfam.



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Humanitarian Fund, and then by DFID's HARP fund². The project first stood out as a major site for faecal sludge treatment in a humanitarian context, and then later for its contaminant monitoring system.

Description

Launched in 2014, the Sludge Treatment System (STS) project was set up to meet the faecal sludge management needs of 80,500 forcibly-displaced Rohingya and Kaman in Sittwe Township in Rakhine State. Based on the DEWATS (Decentralized Wastewater Treatment³) method, designed by BORDA⁴, the system was adapted for centralized treatment of faecal sludge without having to use chemicals and with limited maintenance. The system helps minimize soil and water pollution and allows better water reuse (for groundwater recharge, for example) thus causing fewer environmental health problems for the refugees. In the future, as the STS is upgraded, its performance should improve even more and could allow water to be reused for irrigation⁵.

The faecal sludge is first transported by tractor to a collective treatment site. This is currently made up of a dumping station

that conveys the sludge to tanks and splits the process into two treatment chains: the liquid chain and the solid chain. In the liquid chain, the sludge is filtered by an anaerobic filter, and then by a subsurface horizontal constructed wetland. It is then disinfected in maturation ponds and finally discharged into an infiltration basin. In the solid chain, the sludge is sent to unplanted drying beds where the leachate is discharged into an infiltration trench after having been filtered in a subsurface horizontal construction wetland. The dried sludge is collected manually and incinerated.

In the future, two new ponds will be added to replace the subsurface horizontal construction wetland. Moreover, a parallel treatment process will be put in place to increase total capacity. This will be composed of planted drying beds followed by a subsurface horizontal constructed wetland and an infiltration basin. This will allow faecal sludge from 4000 latrines in 13 camps, with an average volume of 60m³ per day⁶, to be treated.

A distinctive feature of the project is its tailored system for monitoring contaminant levels, which was designed with the support of Veolia Foundation, which evaluates the effectiveness of the treatment process. This monitoring system helps to detect environmental problems associated with poor

2 - The Humanitarian and Resilience Programme (HARP) is an initiative of the United Kingdom's Department for International Development (DFID).

3 - https://www.borda.org/wp-content/uploads/2018/08/DEWATS_Inventory_2017_web.pdf

4 - <https://www.borda.org/>

5 - Suspended solids are reduced from 11,000 mg/l to less than 150 mg/l at the outlet of solid chain. The COD (Chemical oxygen demand) is also reduced from almost 12,000 mg/l to less than 800 mg/l for the 2 outlets. E.Coli (Escherichia Coli) at the beginning of the liquid chain are almost 7 million while at the end they are a little over 5,000 CFU-Colony Forming Units/100 ml.

6 - The current capacity is about 35 m³ of sludge per day.

management of faecal sludge, such as contamination of the water table, and helps to protect the health of the beneficiaries and the surrounding population.

Process

The main factors that led to the success of this project were the fact that the initiative was led by a curious and motivated individual (a WASH program manager) who managed to get his team involved, combined with relatively long-term humanitarian funding. Given its long-term benefits, the approach gradually became institutionalised within SI's Myanmar programme.

At the end of 2018, SI's staff received support from a Veolia Foundation team of experts to develop a monitoring system to improve the capacity and quality of sludge treatment and possibly find solutions for reusing the treated sludge. A field analysis laboratory was subsequently created. The Veolia Foundation provided the equipment and trained staff in analysis techniques to measure how effective the treatment was in eliminating pathogens. Though some chemical reagents needed for the analysis are difficult to transport by plane, most of the equipment and analytical devices are easily importable or are available in the local market.

The entire project is relatively cheap to implement in comparison to other sanitation solutions in humanitarian contexts (less than 13 € per cubic meter, including desludging and transport). The sludge treatment system costs can be separated into capital/ upgrade costs and operating costs, as shown in the two tables below.

Sludge Treatment System Capital and Upgrade Costs

Capital Cost	165,000 €
Upgrade Costs	34,000 €
Total Capital and Upgrade Costs	199,000 €

Sludge Treatment System Operating Costs

Latrine desludging	5,000 € per month
Sludge Treatment System Operating Materials	500 € per month
Sludge Treatment System Human Resource Costs	7,500 € per month
Total Sludge Treatment System Operating Costs	13,000 € per month

Other improvements to increase the STS capacity and the quality of the STS effluent are planned in 2021, with an estimated additional cost of 190,000 €.

Challenges

The main challenge in rolling out these solutions in humanitarian settings has to do with the need to rethink sanitation solutions and to consider their long-term environmental and health impacts. Projects such as the STS require financial investment and a longer-term vision than that of regular humanitarian responses (2 to 3 years, depending on the context).

Other challenges were related to technical capacity and cultural perception. In many countries, both local and international humanitarian staff tend to lack technical knowledge about how to manage faecal sludge. Nevertheless, the STS is a relatively easy tool to use, and thanks to the support from the Veolia Foundation, skills have been transferred effectively. Another challenge from a human resources point of view is the relative difficulty, in some contexts, of finding local staff with the appropriate expertise in sanitation and faecal sludge management.

Collaboration with the local authorities has also been a major challenge for the development of the STS given the specificities of the Myanmar context. Local authorities had to be convinced of the benefits and efficiency of this new project, in a country where faecal sludge treatment is not common or regulated. Their buy-in was crucial, and SI has continuously engaged with them and trained them in how to operate the STS with a view to a sustainable handover in the future. As is the case for many humanitarian projects, the system developed by SI is not yet economically sustainable, which is a challenge in the long run. The economic viability of the system will depend on the willingness and commitment of the authorities to eventually take over the STS, because the displaced population do not have the means to finance the infrastructure directly.

There is also a lack of specific standards for faecal sludge treatment interventions in humanitarian contexts. Some regulatory standards, such as concentrations of specific agents in treated sludge, are not necessarily applicable in humanitarian crisis contexts. In addition, there is a lack of indicators for faecal sludge, which is why work is currently underway in the WASH Cluster to define standards and objectives adapted to humanitarian contexts.

For these reasons, this project has not yet been fully replicated by SI in other contexts.



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Lessons learned

SI's experience in Myanmar illustrates once more that reducing the environmental impact of humanitarian assistance goes hand in hand with long-term planning and this can only be made possible for humanitarian actors if multi-year funding is available. It is now widely recognized that population displacement situations persist over time⁷, and as such, humanitarian interventions, and the related human and financial resources, need to be long-term.

Technically speaking, the designing of an STS also needs to anticipate how faecal sludge needs will evolve in the long run. As such, a sufficiently spacious site needs to be available to accommodate the possible future extension of the initial infrastructure in order to increase its capacity or quality. It is important to evaluate the sludge (type, volume...) during the design phase to understand the best treatment techniques and to set up a monitoring system as soon as possible.

Collaboration with private companies (and development actors) who are familiar with designing long-term solutions can help humanitarian organisations address the technical gap in developing sustainable sanitation systems. These collaborations could help the sector to think “out of the box” and develop solutions that might be increasingly needed given the nature of the global environmental crisis.

Conclusion

Designing appropriate sanitation solutions in humanitarian contexts is fundamental as it helps preserve local environments and avoid subsequent contamination. The methods used need to be adapted to the specific

characteristics of each context: the nature of the crisis and of the context (urban/rural), and any existing sanitation facilities in place. In-depth situation analysis is necessary in order to provide relevant and long-lasting solutions that avoid negative impacts on the population and their environment. SI's project in Myanmar has shown that sustainable sanitation is possible in humanitarian contexts and can have a number of health and environmental benefits in the long term. For this to happen, collaboration with the private sector and national/local governments is essential.

For more information

- Alberto ACQUISTAPACE, Solidarités International, WASH Technical Advisor (AAcquistapace@solidarites.org)
- Octopus platform is an operational collaborative tool for ongoing practices in urgent sanitation. The following link provides a description of the project's treatment process: <https://octopus.solidarites.org/2021-05-abr-constructed-wetland-drying-beds>
- Article from 'Défis humanitaires': <https://defishumanitaires.com/en/2019/05/13/humanitarian-innovation-one-of-the-first-sludge-treatment-analysis-laboratories-in-myanmar/>

⁷ - According to UNHCR, the average duration of refugee camps is about 15 years.



Life jackets in Lesbos, Greece © Low-tech Lab

PROJECT INITIATIVES

CROSS CUTTING

Using low-tech solutions in aid programmes for refugees, EKO!

What: *Low-tech with Refugees*

Who: *EKO!¹*

Where: *Greece (Lesbos)*

Duration: *since 2018*

Total cost: *50 000 €/year²*

Introduction

In humanitarian emergencies, organisations implement projects that can create aid dependency. The complexity of migratory problems means that implementing conventional humanitarian operations involving the distribution of blankets, food, and shelter, etc. is not enough. In addition to meeting their

immediate physiological needs, migrants also need to be agents of their own recovery and need to preserve their dignity. Both of these impacts can be achieved by reinforcing the low-tech skills that often already exist but are not sufficiently promoted.

Among the locations where the Low-tech with Refugees programme is being implemented by the international aid

¹ - The Low-tech & Refugees programme was started by Marjolaine Bert through the Low-tech Lab association, and is now implemented and funded by the EKO association. DG ECHO has phased out its presence in Greece/EU in 2018.

² - For 3 locations: Lesbos, Marseille and Briançon.



© Low-tech Lab

organisation EKO! is the island of Lesbos near the border between Greece and Turkey³, in the biggest asylum seekers' camp in the European Union⁴. Among the low-tech solutions that are promoted are: desert fridges made with plastic containers and sand, insulated mattresses made with foam from life jackets washed up on the island's beaches, wood-saving cookers, telephone and bicycle repairs, etc.

Low-tech solutions are very useful in complex humanitarian crisis contexts because they put into practice the principles of agility, resilience, participation and sustainability. They not only represent concrete solutions for day-to-day needs, but also a systemic approach for more responsible aid practices. The project described below aims to promote the solutions provided by the low-tech approach in order to inspire more 'conventional' humanitarian actors to think about the way their projects are designed and implemented, in keeping with the principle of aid localisation.

Description

Low-tech with Refugees set up a site on Lesbos, near the Moria camp, to provide new ways of meeting the basic needs of those on the island (asylum seekers, inhabitants). More specifically, the project aims to give the asylum seekers the means to meet their current and future needs, autonomously and sustainably.

From 2018, around twenty low-tech workshops have been run to build different items: improved wood-burning stoves to heat tents, insulating mattresses made with foam from life jackets, solar cookers⁵, desert fridges⁶ made with food drums, etc. A shared repair and construction workshop, known as the 'Low-tech Makerspace' has also been created to allow beneficiaries and inhabitants to repair different

items, such as mobile phones (essential for refugees to communicate with their families and follow up their administrative dossiers), bicycles (vital to be able to get from the camps to the neighbouring town), etc.

Process

Each low-tech system is developed in a participatory manner and includes five key phases:

1. The diagnostic and design phase to identify and confirm the needs and resources that exist. The diagnostic phase is carried out with asylum seekers so that they are able to establish their priority needs;
2. Materials search (e.g. tools to repair bicycles, materials to build solar cookers, etc.);
3. The construction of the system with the migrants, volunteers, inhabitants;
4. Use of the system by different users and feedback for continuous improvement;
5. Pooling of experiences in order to learn lessons and share and adapt them, if necessary. User guides and tutorials are freely accessible on the Low-tech Lab wiki platform in several languages (French, English, Arab, Dari, German, Urdu, Spanish, etc.).

The *Low-tech with Refugees* project is essentially based on voluntary resources (50% forecast for 2021) and in-kind donations or recuperated goods, such as bicycles, batteries or foodstuffs. Financial costs, which are a minor part of the overall resources, come from different types of private funding (individuals and foundations), public grants and subscriptions.

Low-tech systems are made by refugees and this participatory approach gives them a new position in the aid process. It is a form of empowerment allowing them to meet their own demands while developing useful skills for future jobs. The low-tech approach therefore helps to put into practice the principles of resilience and agility, as well as a cooperative approach between refugees, foreign volunteers and the inhabitants of the island. And, of course, using these materials helps to recycle a lot of waste that is present on the island, giving a second life to plastic bottles, tyres, cardboard, polystyrene, etc.

The *Low-tech with Refugees* programme on Lesbos therefore has numerous advantages:

3 - EKO!'s Low-tech & Refugees programme also has branches in France, in Marseille and Briançon.

4 - Formerly Moria camp, which burned down in September 2020.

5 - Solar cooker tutorial: [https://wiki.lowtechlab.org/wiki/Four_solaire_\(cuisseur_type_boîte\)/en](https://wiki.lowtechlab.org/wiki/Four_solaire_(cuisseur_type_boîte)/en)

6 - Desert fridge tutorial: https://wiki.lowtechlab.org/wiki/Frigo_du_désert_version_légère/en

- *Low-tech* solutions are based on the principles of the circular economy and sustainability: all the necessary inputs are available on site, recuperated, recycled or bought locally ; the activities have a weak carbon footprint and do not use a lot of energy.
- Participation of the asylum seekers in meeting needs in the camps: the asylum seekers take part in the response, their skills are promoted and reinforced. Low-tech solutions make use of their know-how, empower them and contribute to greater individual and collective resilience.
- A rapid response to the essential needs of migrants adapted to the specific characteristics of each context
- The development of income-generating activities or livelihoods (woodwork, ceramics, soldering, bicycle repair, market gardening, etc.).
- Low cost of projects
- Reduced tension between host communities and asylum seekers.

Challenges

The main challenges of implementing this kind of project concern the amount of work that is needed to carry out the situation assessment and to ensure that projects are adapted to the needs that exist and the resources that are available. This can be complicated for humanitarian actors in emergency situations who are used to repeating the same kind of operations from one context to the next. As they involve recuperated or recycled resources, these projects are based on a different type of supply chain. The low-tech approach also changes the role of beneficiaries in the 'aid' process by removing them from the relatively passive role that they usually occupy.

Another challenge concerns the fact that resources are sometimes limited. Indeed, as low-tech solutions are based on recycled waste, volunteers sometimes do not have enough resources. This is when it is necessary to show 'low-tech agility' and revise system designs with other resources that are available on site. What is more, over and above the fact that there may not be sufficient material resources, it is sometimes the volunteers, who currently allow the association to function, who are lacking.

Lessons learned

Even though the *Low-tech with Refugees* approach has been developed based on the EKO! association's specific focus on donations and voluntary action, it can inspire other humanitarian actors to make their projects more

participatory, useful and sustainable. This project shows the importance of a 'bottom up' approach where beneficiaries are not only passive, but are active participants in the humanitarian response.

The main investment for this approach is the time and energy that is required to design a project that is genuinely adapted to the local context (needs and resources).

The *Low-tech with Refugees* project is essentially based on the principles of the circular economy (recuperation, recycling) which can be replicated in other complex humanitarian contexts due to the relatively low cost of these operations and the environmental, economic and social benefits that they bring.

The *Low-tech with Refugees* project also raises questions about the relevance and quality of humanitarian interventions and how we approach failure in the international aid sector. By systematically pooling lessons from projects, the EKO! association adapts its interventions and improves the techniques that it uses. These lessons learned are available to all for free, whether professionals or the general public.

Conclusion

In emergencies, it is always simpler to make similar decisions to those made in the past, to stick to familiar routines, and to reproduce conventional solutions and behaviour. Organisations need to be provided with support to make the changes necessary to adopt low-tech solutions and a low-tech approach, and to overcome the different psychological and institutional obstacles that may exist. In order to do this, it may be useful to promote the advantages of a low-tech approach in terms of agility, transversality, and lower costs in the short term and the long term. It can also help in terms of fund-raising because it meets the needs of donors who are sensitive to environmental issues and the long-term impact of interventions.

A low-tech approach allows a rapid response, at low cost, economically and ecologically, to essential needs in degraded contexts, such as the refugee camps in Greece. Contrary to received wisdom, the *Low-tech with Refugees* project has shown that the investment required for an environmental approach involves more intellectual input and time, rather than finances. As such, the first step towards a more eco-friendly aid sector would, first of all, to rethink the foundations of its practices and its supply chains based on what is available, while keeping in mind that each response depends on the means available in each context, and a high level of resilience.

In a context where resources, and particularly financial resources, are being significantly limited, this raises

the issue of the efficiency of humanitarian response. Beyond technical systems, 'low-tech' refers above all to a philosophy and an approach that can be applied to all kinds of projects and organisations.

More information

- Marjolaine BERT, founder of the *Low-tech with Refugees* project and the EKO! association: <https://gr.linkedin.com/in/marjolainebert>
- The association's website: <https://asso-eko.org/low-tech-refugies/>
- "The 'Low-tech with Refugees' project in the degraded context of refugee camps", *Humanitarian Aid on the Move*, Groupe URD, 2020: https://www.urd.org/fr/revue_humanitaires/l'experience-de-low-tech-with-refugees-dans-le-contexte-degrade-des-camps-de-refugies/#easy-footnote-6-98658
- Open source platform of tutorials used by the *Low-tech with Refugees* project: https://wiki.lowtechlab.org/wiki/Group:Low-tech_with_Refugees



Reducing Poverty through Renewable Energy for Refugees (RE4R) Project, Solar Water Heater installation. © Shatha AbuOdeh/NRC

PROJECT INITIATIVES

SHELTER

Energy-efficient solutions in urban shelter renovation, Norwegian Refugee Council

What: *Urban Shelter Project*

Who: *NRC*

Where: *Irbid and Mafraq governorates, Jordan*

Duration: *2018-2020*

Total cost: *2100 EUR per shelter (1,220,000 € for 581 Households over 2 years)¹*

Introduction

It is increasingly common to integrate environmental issues into the design and implementation of shelter activities. The Shelter Cluster has had an environment community of practice² since 2011 and numerous guidelines, policies and studies have

been published highlighting the impacts of shelter activities on the environment and how to mitigate them. This can be explained by the fact that humanitarian shelter projects often have a significant and more visible impact on the environment and climate than other sectors (e.g. waste linked with plastic sheeting, wood used to fire bricks, etc.). Similarly, shelter

1 - Funded by the Ikea Foundation, BPRM, AFD, OCHA, Norway Ministry of Foreign Affairs

2 - <https://www.sheltercluster.org/community-of-practice/environment>



Reducing Poverty through Renewable Energy for Refugees (RE4R) Project, Solar Water Heater installation. © Shatha AbuOdeh/NRC

projects provide a number of opportunities to mainstream environmental and climate-related issues.

Crisis and post-crisis operations in urban contexts are particularly complex and increasingly frequent. Numerous crises, conflicts and disasters are now taking place in cities in many parts of the world, where services are impacted by the presence of displaced persons³. Humanitarian actors therefore have to adapt their programmes and operational methods to these complex contexts.

As the Syrian refugee crisis drags on and funding is running out, hosting refugees in camps is increasingly inappropriate. As such, innovative ways of providing sustainable shelter to affected people, while taking into account host communities, need to be pursued.

NRC has significant experience in designing and running shelter programmes throughout the world. An essential part of its strategy is to increase the sustainability of its programmes and to reduce their environmental footprint. Its Greening the Orange⁴, strategy aims to mainstream environmental and climate issues into every aspect of its work. As such, the organisation is adapting its way of working and is looking for entry points to green its existing activities.

The project described here represents an innovative response to Syrian refugees' shelter needs in a very challenging urban context (where there is high population density and the risk of tension with host communities). It provides an interesting example of how environmental considerations can be mainstreamed into an existing shelter project and how a humanitarian organisation can promote sustainable practices and therefore have a positive impact on the environment.

Description

The urban shelter programme in Jordan started in 2013 and has evolved to address contextual changes and the changing needs of Syrian refugees. It is designed to adjust to the specificities, vulnerabilities and needs of each household and currently includes various components (emergency cash-for rent, the installation of inclusion kits, shelter rehabilitation/upgrades, renewable energy interventions, and WASH rehabilitation). The project has helped more than 34,000 refugees to have access to suitable shelter, and has assisted them in paying all or part of their rent.

While the project's prime objective is not directly linked with the environment, since 2018, NRC has gradually adjusted its programme to take environmental issues into account. This has been done via various entry points, as part of their general approach to greening their existing programmes. Some examples are:

- NRC has installed individual solar water heaters for selected households. Based on NRC's monitoring reports, families have reported an average reduction of 29% on their fuel bills, and a reduction of 32% and 39% on their electricity bills respectively in summer and in winter. These savings are significant for families, given their general level of income⁵. From an environmental point of view, this reduction in the amount of energy used (oil is the main source of energy in Jordan), has helped save 272.1 teCO₂/annually⁶.
- The introduction of solar energy into the shelter programme was facilitated by Jordan's huge solar energy potential. The country lies within the world's solar belt, with average solar radiation that ranges between 5 and 7 kWh/m². Jordan also has major plans to increase the use of solar energy⁷ and the technical capacity for its installation and maintenance can be easily mobilised.
- The project also provides energy efficient lighting (LED⁸ which has helped refugees to cut down their energy use and has prolonged the lifespan of light bulbs.
- Energy efficiency issues have been taken into consideration during the rehabilitation and upgrading of properties to improve their thermal conditions. This has had an impact on the health, well-being and productivity of family members. The rehabilitation and upgrading has included insulating windows, installing protective curtains or shutters, providing carpets to improve thermal comfort during extreme temperatures, weather proofing roofs and walls, and providing advice on how to limit energy consumption. The works carried out have also had a significant impact on household energy consumption.

By addressing energy efficiency issues, NRC has helped beneficiaries cut down their monthly bills and, as such, has contributed to reducing tensions with landowners and the threat of being evicted. Energy bills are often very high and are considered one of the top 4 priorities by refugee families; the inability to pay bills exposes them to the risk of eviction, as does the non-payment of rent⁹.

3 - According to UNHCR, 60% percent of the world's refugees are in urban areas.

4 - <https://reliefweb.int/report/world/how-nrc-greening-its-humanitarian-aid>

5 - Average monthly income around 177JOD (~210€) for Syrian refugees living in Jordan (UNHCR, 2018) <https://www.unhcr.org/5bd01f7e4.pdf>

6 - NRC, Carbon Footprint Report: Carbon emission reduction calculations (November 2020)

7 - 20% of grid electricity is from renewable energy sources.

8 - This activity was in keeping with the government's strategy.

9 - 50% of families state that their relationship with their landowners is the main factor that will determine whether or not they will be able to stay in the same shelter after the end of the assistance.

- Families were also connected to the municipal water network. This helped to reduce the financial and environmental cost of water trucking (reduced CO₂ emissions linked to the transport + reduced risk of purchasing water from unregulated water sources¹⁰) and improved the quantity and quality of the water vulnerable families have access to. This is significant, given that Jordan is one of the most vulnerable countries in the world as regards water scarcity, and “the overall demand for water has increased by 40% in the Northern Governorates in the last few years, as a direct result of hosting Syrian refugees”¹¹. Families were also provided with a water meter allowing them to monitor their consumption. 89% of families reported that their water expenditure fell.

Given the focus on rehabilitation and on the completion of unfinished units, the project’s approach itself is environmentally-friendly as it has aimed to improve substandard units rather than expand the urban footprint. As such, the project has not contributed to ‘land take’ and its related environmental impacts.

By undertaking environmentally-friendly rehabilitation, the project has had a positive impact on NRC’s direct beneficiaries (thermal comfort and improved wellbeing, reduced bills, less risk of evictions), on the environment (CO₂ savings, reduced fossil fuel energy consumption) and on host communities in the long run (permanent benefits on the properties of the landowners).

Process

The integration of environmental and energy issues into NRC’s shelter activities in Jordan has been a gradual process, which is now gaining momentum. This project is in line with the organisation’s move towards increased consideration of environmental issues, and its environmental strategy. In Jordan, three main drivers have pushed this: first, the fact that solar energy is widely used, that there is in-country expertise available and that it is supported by the government; second, more than 94% of the fuel used in Jordan is imported, which means that the country and individuals are vulnerable to fuel price variations; lastly, the seriousness of the water situation is such that it has forced organisations working on Shelter- and WASH-related issues to address this issue.

In order to support the greening of existing shelter activities in Jordan, an energy expert was recruited and deployed by NORCAP for one year as part of NORCAP’s humanitarian energy capacity building with a focus on female inclusion. Shelter staff have also been trained internally to design

environmentally-friendly rehabilitation, energy efficiency aspects have been integrated into existing procedures, such as the Bill of Quantities, and technical guidance has been developed for contractors.

Challenges

A significant challenge related to the solar water heater component of the project was the fact that, given the high value of the heater (400 to 600 EUR each), families sometimes sold their heaters to obtain cash. This meant that this component of the project could only be proposed to families with a relatively stable economic situation, who were able to pay their rent/bills, who then benefitted from a reduction in their monthly expenditure. As a result, this component of the shelter programme has not always targeted the most vulnerable families, which could be seen as a problem by some humanitarian donors¹².

It is important to note that the solar water heater was installed in exchange for a reduction in the price of the rent. The project therefore included a significant component involving negotiations with landowners who, in some cases, were not be immediately convinced about the long-term benefits that this intervention would have for their properties.

This pilot project, funded by the IKEA Foundation¹³, was specifically aimed at supporting the rollout of renewable energy and therefore did not meet any financial constraints. Nevertheless, the relatively high cost/beneficiary of this kind of project makes it difficult to convince traditional humanitarian donors. This raises a significant issue in terms of finding the right balance between managing expectations to be more environmentally-friendly, and mobilising sufficient resources to do so.

Lessons learnt

NRC experience in upgrading shelters while taking into account environmental considerations has shown that an integrated approach is required involving various departments of an organisation. In order to be efficiently implemented, as well as the shelter design teams, the logistics and financial departments also have to be involved and aware of the different environmentally-friendly upgrade possibilities. Staff need to continuously be kept up to date about technological innovations and simultaneously trained.

As mentioned above, this project was facilitated by the fact that it was in line with the government’s strategy. The conformity of a humanitarian project to existing

10 - Unregulated/non-official boreholes are very common in Jordan

11 - <https://reliefweb.int/report/jordan/influx-syrian-refugees-jordan-effects-water-sector>

12 - This was not the case for the IKEA foundation, which never raised concerns regarding targeting criteria.

13 - And implemented in partnership with Practical Action.

governmental policies in renewable energy and energy efficiency, as well as in water management, is essential for its acceptance and success.

The promotion of energy literacy by helping beneficiaries to better understand the electricity usage of different appliances, the alternative and greener options available for heating and cooling, and the inclusion of communities in the decision-making process are also key elements to ensure that a project of this kind is sustainable.

In urban contexts, where tensions can arise between refugees and host communities, adopting an environmental approach by improving basic comfort and providing long-term upgrades to housing, can contribute to reducing tensions and maintaining good relationships between tenants and landlords (although this is only one aspect). This helps bring value to the project and increase its effectiveness and sustainability.

Conclusion

This project illustrates the way an organisation can make use of its role and influence in a challenging humanitarian context to spread environmentally-friendly practices. In this case, the environmental approach was made possible because it is part of NRC's global strategy to become carbon neutral and that of the shelter department to reduce its environmental impact. The project was therefore supported institutionally and NRC is increasingly gaining experience designing and implementing similar projects.

A gradual shift towards the inclusion of sustainable, clean energy in humanitarian projects is underway. Many organizations such as NRC are now piloting new ideas and approaches to limit the carbon and environmental footprint of their interventions, in line with national strategies. Nevertheless, a lot remains to be done to strengthen the humanitarian sector's capacity, willingness and resources to not only mainstream environmental issues, but also have a positive impact.

The complexity of humanitarian crises, particularly in urban areas, and the gravity of the current climate and environmental emergencies, are pushing humanitarian actors to continuously adapt their interventions and therefore be innovative in the way they work. Although this requires a cultural shift in the traditional humanitarian mindset, experiences such as NRC's show that it is possible and brings numerous benefits.

Access to energy for cooking, heating and lighting are aspects of the right to adequate housing¹⁴ which displaced



Reducing Poverty through Renewable Energy for Refugees (RE4R) Project, Solar Water Heater installation. © Shatha AbuOdeh/NRC

14 - https://www.ohchr.org/Documents/publications/Fs21_rev_1_Housing_en.pdf

people face particular obstacles to attain. Through the upgrading of shelters, NRC has improved access while, at the same time, reducing their carbon footprint. As environmental concerns escalate, NRC is continuing to look for ways to help people secure appropriate living conditions through different stages of displacement while integrating sustainable energy consumption criteria.

More information

- World Habitat Award, Project Description: <https://world-habitat.org/world-habitat-awards/winners-and-finalists/urban-shelter-project/#award-content>
- Jordan Times: <http://www.jordantimes.com/news/local/out-box-housing-solution-helps-both-syrian-refugees-and-jordanian-hosts>
- New Humanitarian: <https://www.thenewhumanitarian.org/analysis/2013/11/08/helping-host-communities-help-syrian-refugees>
- The Guardian: <https://www.theguardian.com/global-development-professionals-network/2016/jun/10/refugee-camps-urban-dadaab-kakuma-jordan>
- Myriam Lopez-Villegass, NRC's Global Shelter & Settlements Specialist (miriam.lopez@nrc.no)
- Nathalia Watanabe, Shelter and Settlements Specialist, Jordan (nathalia.watanabe@nrc.no)
- Nour Alnajjar, Energy Expert, NRC Jordan (nour.alnajjar@nrc.no)



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ORGANISATIONAL / CROSS-CUTTING INITIATIVES

WATER

Rehabilitating water infrastructure, ICRC

What: *Water service rehabilitation*

Who: *ICRC*

Where: *Middle East (Gaza & Jordan)*

Duration: *3 months - 1 year (on-going)*

Total cost: *50 000 € - 1 million €¹*

Introduction

Access to a sufficient quantity of clean water will be one of the major challenges of this century. Climate change is already having a significant impact on access to water throughout the world, and it is the most vulnerable people who are most affected. Humanitarian actors therefore need to adapt to these new challenges by preserving this precious resource

as much as possible and by anticipating the impacts of their operations.

The Middle East is one of the regions of the world that is the most affected by water stress. 14 of the 33 countries who are most likely to be in a state of water stress by 2040 are located within this region². Jordan, for example, is losing up to 2 metres of its groundwater per year³ while in Gaza, three

¹ - Depending on the type of rehabilitation.

² - World Resources Institute: <https://www.wri.org/blog/2015/08/ranking-world-s-most-water-stressed-countries-2040>

³ - ICRC Water and Habitat Coordinator, Jordan



© ICRC/Benjamin Moon

times as much water is being pumped from the aquifer as is produced naturally per year⁴. Both in Jordan and in Lebanon, water stress has been exacerbated due to the Syrian crisis and the significant increase in demand⁵.

Numerous geopolitical⁶, demographic and environmental/climatic factors have contributed to making this water stress worse, and global solutions will be required that go well beyond the operational scope of humanitarian actors. Nevertheless, the principle of 'do no harm' and current thinking about the positive impacts that humanitarian actors can have on the environment have encouraged certain actors to rethink their programmes in this domain.

What is more, the pertinence of water trucking⁷ and other solutions involving the digging of new water points, which

are widely used by humanitarian operators during crises, is being increasingly questioned. Indeed, while these are sometimes the only option possible to provide a sufficient quantity of clean water, they bring numerous challenges in terms of sustainability and cost⁸, and can accelerate groundwater depletion in certain contexts where there are a lot of illegal connections to the water network/well (specifically for water trucking).

Consequently, in its water interventions in conflict zones, the ICRC has made the strategic decision to focus on demand⁹ and prioritise actions that aim to improve services. As such, it rehabilitates existing water distribution infrastructure, rather than creating new wells or boreholes. This file presents a certain number of lessons learned by the ICRC in Jordan and Gaza.

4 - ICRC: <https://www.icrc.org/en/document/water-gaza-crisis-slow-motion>

5 - <https://reliefweb.int/report/jordan/influx-syrian-refugees-jordan-effects-water-sector>

6 - War situations have a particular effect: population displacement exerts additional pressure on demand for water in host countries and conflicts can lead to the destruction or damage of facilities.

7 - "Emergency Water Trucking has become an almost yearly humanitarian intervention among aid organizations" Technical Guidelines on Water Trucking in Drought Emergencies, 2011.

8 - In Syria, the water trucking market was worth 123 million Euro in 2018 (Water Under Fire report, UNICEF 2020: <https://www.unicef.org/reports/water-under-fire-volume-2>).

9 - See here the difference between demand and supply in the water management sector: <https://waterpartnership.org.au/understanding-supply-side-and-demand-side-to-support-water-management-in-the-asia-pacific/>

Description

In many Middle Eastern countries, water distribution infrastructure is old and leaky. The ICRC estimates, for example, that 40% of the water that is pumped in Jordan is wasted because of leaks¹⁰. In Lebanon, where 50% of the water network is outdated, this rate is also likely to be 40%¹¹. In addition, groundwater is overexploited due to numerous illegal/unofficial wells. It is estimated that in Gaza, almost half of all the wells have been dug unofficially and do not comply with regulations¹². In addition to numerous environmental impacts, this has a major effect on the price of water, which is felt by the population, as well as by humanitarian organisations, who pay to give the most vulnerable people access to water.

Whenever possible, the ICRC's operations in the Middle East therefore aim to rehabilitate existing infrastructure rather than dig new boreholes or wells. This, for example, involves improving the performance of installations by repairing leaks, rehabilitating wells, pumping stations and reservoirs, or optimising the functioning of pumps and improving the energetic performance of installations (e.g. increasing energy efficiency or installing solar panels).

These projects also involve providing the public authorities in charge of water, ministries and operators with technical support (e.g. training for the public authorities and technical services / monitoring of installations in Jordan) and strategic support (e.g. advocating in favour of water preservation policies in Gaza). In total, around forty projects to rehabilitate water services have been carried out in Jordan since 2014, and around fifty in Gaza. It should be pointed out that drinking water installations are protected by International Humanitarian Law (IHL), and therefore the ICRC is also defending IHL, and compliance with it.

As part of a holistic approach, these programmes are sometimes complemented with rainwater harvesting activities for agriculture which aim to limit the use of drinking water. Globally, agriculture uses the second largest amount of water after the energy sector¹³. In Gaza, for example, it represents between 60% and 65% of all the water that is used, with more than 4,600 agricultural wells¹⁴.

This approach has numerous other benefits. By sustainably improving access to water, it helps to reduce tension between host communities and refugees (Jordan). From

an environmental point of view, this type of activity also helps to preserve water resources by limiting leaks, reduce the significant fossil fuel use in these two contexts¹⁵, and reduce the urban footprint related to new installations.

Process

The approach promoted by ICRC's Water and Habitat Unit has been possible due to financial flexibility and the funding that the organisation receives year after year. This allows it to carry out medium-term projects beyond the traditional cycle of humanitarian projects and to adopt innovative approaches that are unusual for humanitarian actors. It is also a priority for ICRC to conduct operations that reinforce climate change adaptation, and it is committed to reinforcing existing public systems. Staff at the ICRC Water and Habitat Unit are encouraged to innovate and find sustainable solutions adapted to each context. The Unit's new strategy¹⁶ focuses on reinforcing services and water and sanitation operators.

Challenges

ICRC's activities in this area will only be beneficial if they are part of a sound overall groundwater management strategy. Despite growing awareness about the scarcity of water resources, the public authorities in Jordan and Gaza do not sufficiently regulate the exploitation of groundwater, for different reasons depending on the context. In Jordan, this is due to the limited budgetary resources of the Ministry for Water, the low price of water, and weak governance. In Gaza, income from water does not encourage the authorities to reduce its consumption, particularly due to the priority given to short-term economic benefits. The geopolitical situation in Gaza also tends to discourage the implementation of long-term strategies.

Lessons learned

The approach that is promoted by the ICRC, which aims to rehabilitate what already exists, rather than dig new water points, helps to improve access to water in crisis-affected countries in the long term. It also helps to preserve a scarce resource and reduce the energy used by water facilities.

The ICRC has dedicated a significant amount of resources to provide training and support to state water management services and operators as this is crucial to ensure the long-

10 - This rate is as high as 70% in certain parts of the north of the country.

11 - Baromètre de l'eau 2019: https://www.solidarites.org/wp-content/uploads/2019/03/barometre-de-leau-2019-solidarites_international.pdf

12 - ICRC: <https://www.icrc.org/en/document/water-gaza-crisis-slow-motion>

13 - Baromètre de l'eau 2019 : https://www.solidarites.org/wp-content/uploads/2019/03/barometre-de-leau-2019-solidarites_international.pdf

14 - World Bank

15 - It is estimated that pumps use almost 10% of all the electricity in the world, notably because many of them are inefficient.

16 - <https://shop.icrc.org/water-and-habitat-strategy-2020-2023-pdf-en>



© ICRC/Hisham Mhanna

term sustainability of installations. Needs and shortcomings were evaluated in order to adapt the support that was provided throughout the project. One of the lessons learned was that it is not enough to provide training, but that the right people need to be trained at the right time, and in the right way, and that they need to be given support in applying what they have learned.

One of the other lessons learned was the importance of preventing operational problems rather than simply maintaining the installations. It became clear that regular monitoring of the installations to detect and avoid potential breakages and problems is much more sustainable and cost-effective.

In water stress situations, humanitarian actors can and should invest in water services in a sustainable manner¹⁷. This is all the more true in urban conflict situations where essential public services – water distribution, electricity supply, sanitation, etc. – are complex and interconnected¹⁸. In order to do this, it is necessary to develop a general vision of the water cycle and how the groundwater functions. Hydrogeological expertise therefore probably needs to be reinforced within the humanitarian sector.

Urban crises are complex and humanitarian actors need to adapt to them. The need to innovate and to test new approaches or technologies is therefore essential, and should be anticipated in budgets. Improving the long-term impact of humanitarian actions depends on longer and more flexible funding cycles.

Conclusion

The tension between humanitarian needs and the preservation of resources is particularly strong in the water sector, and programmes may be oriented towards short-term

actions rather than towards actions that tackle the issues involved more structurally. And yet, due to the climatic and environmental emergency, we have to take into account the long-term impact of our actions and adapt our responses accordingly rather than simply reproducing approaches that have been used in other crises. UNICEF's report, *Wash Under Fire*, volume 2, underlines the urgent need for the WASH sector to drop 'business as usual' and to adapt, innovate and develop a more sustainable approach. In order to do this, more flexible, multi-year financial commitments need to be available in order to allow responses that adapt as these particularly complex urban crises evolve.

More information

- Water and Habitat Coordinator, Jordan: Imad Chiri (ichiri@icrc.org)
- Water and Habitat Coordinator, Gaza: Christophe (ccaen@icrc.org)
- Conseillère Environnement CICR: Kathrine Vad (kvad@icrc.org)
- Video: <https://www.icrc.org/en/document/jordan-rehabilitation-water-supply-systems-bani-kinana-district>
- ICRC 2015, [Urban services during protracted armed conflict](#): a call for a better approach to assisting affected people, International Committee of the Red Cross, Geneva
- ICRC 2021, [Joining forces to secure water and sanitation in protracted crises](#), International Committee of the Red Cross, Geneva

17 - *Water under fire report Volume 2*: <https://www.unicef.org/reports/water-under-fire-volume-2>

18 - ICRC, *Urban Services during Protracted Armed Conflict (2020)*: <https://shop.icrc.org/urban-services-during-protracted-armed-conflict-pdf-fr>



Uganda refugee camp 2019. © Mandy George/Joint Environment Unit (JEU)

ORGANISATIONAL / CROSS-CUTTING INITIATIVES

CROSS CUTTING NEAT+ Tool

What: *Nexus Environmental Assessment Tool*

Who: *Multiple organisations*

Where: *Any location*

Duration: *Not applicable*

Total cost: *No financial resources required*

Introduction

In order to avoid negative environmental impacts, which are sometimes irreversible, a shift needs to happen in the way that humanitarian responses are designed and run. The environmental fragilities of a given context, and the environmental implications of programmes, need to be considered by humanitarian actors more systematically.

Environmental and humanitarian specialists rarely work

hand in hand. The humanitarian sector generally lacks the environmental expertise to anticipate and adjust their responses to environmental issues. A number of environmental assessment tools have been developed¹, but these are not often used by humanitarian actors due to the time required, or the lack of technical expertise to analyse the information.

To overcome these issues, a simple and easy-to-use environmental assessment tool, the Nexus Environmental

1 - [CEDRIG, Environmental Stewardship Tool, Rapid Environmental Assessment, CVCA](#)

Assessment Tool (or NEAT+) was developed by a number of stakeholders² funded principally by USAID. This fiche first presents the tool and its characteristics, and then looks at some of the opportunities and challenges that it brings. It is based on the experiences of various organisations³ who have tested NEAT+, and highlights the collective lessons that have been learned.

This fiche helps make the case that mainstreaming environmental issues into humanitarian work is not necessarily about investing in green technologies, but is also about running humanitarian operations differently, by anticipating risks and adapting our response accordingly.

Description

Initially developed by the Norwegian Refugee Council (NRC) and then improved by the Joint Initiative, with the UNEP/OCHA Joint Environment Unit (JEU) acting as the custodian of the tool, NEAT+ was developed as a pragmatic tool intended to enhance the sustainability of humanitarian projects. It provides a snapshot of the current environmental sensitivity of a local environment, as well as the potential risks of specific humanitarian activities. It is organised into four different modules: 1) Sensitivity of the affected area; 2) Food security and Livelihoods; 3) WASH; and 4) Shelter. Each module consists of a series of voluntary sub-modules, each of around 15 questions, with each module totalling around 100 questions. The user chooses answers according to what is more relevant to the project. The questions are simple, and users can get more information to help with the answers (info tab). The sensitivity module aims to identify key environmental issues specific to the context in which the project will be run (e.g. topography of the area, the type of soil, the climate, the vegetation etc.). The activity modules aim to identify key environmental issues raised by the way that project activities have been planned (e.g. the shelter module includes questions about the materials that are going to be used, the location of the shelter, land rights etc.).

Once the assessment is complete, a report is then generated which categorises issues according to their level of concern (low, medium and high). The tool then suggests mitigation measures to help reduce the environmental risks. These mitigation measures are suggested according to the vulnerabilities identified in the first module.

The tool is currently available in English, French and Spanish⁴. LData is collected using KoBo Toolbox or Excel- which can therefore be done on a mobile phone, tablet or computer. It is currently designed to analyse the environmental sensitivity of a

project in a rural context, although an urban version of the tool is in the process of being developed, given the increasing number of urban humanitarian crises.

NEAT+ is used to screen projects and mitigate environmental impacts based on the environmental vulnerabilities in a given context. After providing a quick picture of the key environmental issues at stake, it suggests mitigation activities which can then be integrated into projects.

Processus

The best way to introduce/use NEAT+ depends on the organisation and the context. Organisations familiar with the tool highlight the following good practices:

- Prior to doing the assessment, there should be a discussion with those who will be involved (the project team and M&E staff, in most cases) to define the objectives of the assessment, why it is being carried out, and how the results will be used.
- The assessment takes approximately 1 to 2 hours for the 'Sensitivity' module and 1 hour for each activity module which are composed of various sub-modules. Nevertheless, this very much depends on the availability of data, staff knowledge/experience of working in the region, and the type of project that is envisaged (the more activities, the longer the assessment is going to take). The timing also depends on how the assessment is done (remotely or in the project location with beneficiaries).
- Assessments can be carried out collectively as a team as this can help develop a common understanding of the issues at stake. They can also be done by different organisations working in the same area.
- Once the report has been generated, the findings/mitigation measures can then be discussed collectively in a workshop. This can help with the analysis of the data, as well as with the prioritisation and the contextualisation of recommendations. Some organisations have prioritised recommendations in the following way 1) what is already being done by the organisation, 2) what can be done easily, 3) what cannot be done.
- Using the tool does not require financial resources. However, staff time and motivation is essential.

2 - United States Agency for International Development (USAID), The United Nations High Commissioner for Refugees (UNHCR), World Wildlife Fund (WWF), the UN Environment Programme/Office for Coordination of Humanitarian Affairs (OCHA) Joint Environment Unit (JEU), Norwegian Refugee Council (NRC), Swedish Civil Contingencies agency (MSB) and the International Union for the Conservation of Nature (IUCN). <https://www.eecentre.org/2017/01/01/the-joint-initiative>

3 - NRC, DRC, UNHCR, ACF, CARE France, Solidarités International, Première Urgence Internationale, Humanity & Inclusion.

4 - An Arabic version will soon be available.

Strengths

Tool

- Available in various languages (Fr, En, Spa) - Arabic version in progress
- An online version soon to be available which means that users will be able to adapt the tool according to their needs (context, specificities of the organisation, nature of the project).
- Free

Process

- Easy to use (Kobo)
- Quick (in comparison to other environmental assessment tools). On average, a maximum of 1 day is needed to fill in the sensitivity and activity modules. (more time might be needed for additional translation into a local language)
- Can be used at each stage of the project cycle.
- Can be used for any stage/type of humanitarian crisis.
- Can be used by non-environmental experts - no environmental background is required.
- Availability of JEU staff to support the process and provide technical backstopping.
- Participatory process: the process of filling in the modules encourages humanitarian actors to discuss environmental issues with local actors.
- Helps break the cycle of the same questions we usually ask when we carry out an assessment.
- Gathering of information from different sources can create synergy (with host communities, local authorities, development actors, etc.).

Use

- The tool helps to highlight context- or project-specific environmental issues that practitioners have not necessarily thought about.
- Helps practitioners make environmentally-informed decisions.
- The tool suggests a large number of mitigation activities, which can then be integrated into project proposals - for the most part, these are practical and do not necessarily cost money.
- Can be used as an awareness-raising tool as it helps ask the right questions. A great way to develop integrated programming: staff involved have the same understanding of the issues at stake. The results can be shared with the rest of the team and trigger a discussion on how mitigation activities can be prioritised and integrated into future programmes.
- It can be used independently - which is not necessarily the case for other tools.
- Assessments can be compared on Kobo (over time and between locations)

- A PowerBI snapshot has been developed and can be shared with NEAT users, allowing them to compare assessments between locations.

Weaknesses

Tool

- Limited to 3 sectors (WASH, Shelter and Food Security & Livelihoods)⁵
- No information about environmental legislation and the environmental framework - this is seen as a significant gap.
- Seasonality is not reflected
- The 'Sensitivity' module does not help to understand how climate change is affecting a context over time.
- The Excel version can be seen as difficult to use and not very user-friendly

Process

- For some organisations, it represents an additional screening tool on top of those that are currently being used and required by donors (e.g. gender, resilience)
- Can be seen by some as a 'box-ticking' exercise.
- In certain contexts, some information may not be available, may be out of date, or may be difficult to obtain, especially when the assessment is done remotely, or in contexts where the organisation has no previous experience, or the political situation is tense.
- (In these cases, the time needed to fill in the modules is much longer than a day)
- Complex to use for multi

Use

- The tool can be seen as too superficial for environmental experts. It does not help understand the root causes of environmental issues or how they evolve over time (e.g. how long has the deforestation been going on?, at what rate?, etc.). As such, it is a screening tool rather than a comprehensive environmental assessment tool.
- Mitigation measures/recommendations can be seen as too general or too obvious, or outside the scope of core humanitarian work (e.g. conducting a full environmental assessment).
- Although the tool categorises issues (issues of low, medium and high concern) users may need further guidance as to what to do as a priority and where to start.
- Further work is required to contextualise the results and humanitarian actors may not be equipped to do so.
- The tool does not help to design activities that have a positive impact of the environment (e.g. nature-based solutions - restoring wetlands, moving to greener agriculture, developing green recycling livelihoods etc.).

5 - Pending available financial and technical support, the JEU is open to developing additional modules (supply chains, logistics, etc.) and different "lenses" (cash, waste, protection) for the NEAT+. A Health module is currently under development.



Uganda refugee camp 2019. © Mandy George/Joint Environment Unit (JEU)

Lessons learnt

One of the lessons learnt from the organisations interviewed is that NEAT+ is more useful if it is used as part of a collective process whether it is amongst project staff, with local authorities/communities or amongst organisations working in the same area or on a similar project (e.g. consortium). The collective nature of the process helps raise awareness about more environmentally-friendly humanitarian practices. It also helps with the quality of the information collected and the relevance of the analysis (e.g. choosing recommendations adapted to the context and the organisation). Sharing the analysis and the results with the sector (through clusters or a global database platform, for instance) can help to develop a more sustainable response.

The phase prior to doing the assessment is essential. Identifying why the tool is being used, what the objectives are, and how the results/recommendations are going to be used (if that is the case), helps to reduce the risk of it becoming a 'box-ticking' exercise. A preparation workshop/training can be useful to take people through the process before starting the assessment. This helps to foster interest and motivation among project staff in contexts where workloads are heavy, and various project management tools are used. As such, support and guidance from management is essential. Including this as an activity in the project log frame can help limit resistance.

NEAT+ is an interesting tool as it helps to give a quick snapshot of environmental issues in a given context. The mitigation measures proposed can, when implemented, help reduce the environmental impacts caused by humanitarian responses. Nevertheless, using it as a stand-alone tool is not enough. Instead, it should be used as part of a more general environmental management approach that includes an environmental policy, environmental training for project staff, other environmental assessment tools, etc... Given the fact that it is an easy-to-use tool and that no specific environmental expertise is needed, NEAT+ can be rolled out more systematically in humanitarian programming. Nevertheless, it is important to keep in mind that it does not replace in-field environmental assessments. Rather, it signals the type of environmental assessments that would be most relevant in a specific context (biodiversity, water quality, agroforestry, chemicals, green livelihoods, etc.).

Conclusion

NEAT+ is a useful decision-making tool that can quickly provide a general snapshot of a situation and propose concrete actions even to non-specialists. By analysing the vulnerabilities of given contexts and anticipating the environmental risks of projects, it can help to reduce the humanitarian sector's environmental footprint. It has many benefits (free, easy to use, helps to raise awareness, etc.). As such, using NEAT+ can help to make humanitarian response greener. Nevertheless, on its own, it cannot make humanitarian programming more sustainable. To do this, it needs to be part of a more global and institutionalised environmental approach.

More information

- The tool and associated guidance is available here: <https://www.eecentre.org/resources/neat/>
Four videos on NEAT+ and its use are also available in [English](#), [French](#) et [Spanish](#) on the JEU YouTube channel. To find out more about how to use NEAT+, please refer to the guidance toolkit which provides thorough step-by-step guidance or watch our NEAT+ "how to" video [here](#).

Contact

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Environmental Assessment in Lebanon. © Amanda George

ORGANISATIONAL / CROSS-CUTTING INITIATIVES

CROSS CUTTING Green Response

What: *Green Response*

Who: *International Red Cross Red Crescent Movement*

Where: *Multiple countries*

Duration: *not applicable*

Total cost: *not applicable*

Introduction

Green initiatives are increasingly being rolled out in different sectors and contexts, and by different aid organisations. Very often, these are the result of motivated individuals driven by personal conviction that a shift needs to happen in the way humanitarian operations are run. This is the case for many of the initiatives described in this compendium.

While these stand-alone projects are essential to help trigger this shift, until now very few humanitarian organisations have adopted a systematic and integrated environmental approach to their way of working. Green Response provides a good example of how environmental considerations can be integrated into an organisation's processes, culture and vision.

Though Green Response is still in its early stages, and therefore its impact is not yet fully known, this fiche looks at the lessons that have been learned so far. It shows how a humanitarian organisation can change its approach in order to deal with the challenge of climate change and environmental degradation.

Description

Green Response is an approach which has gradually been rolled out throughout the International Red Cross Red Crescent Movement (since 2012) and which aims to mainstream environmental considerations into humanitarian responses, internal practices and policy work. The Green Response Working Group was first launched by the Swedish Red Cross and is currently led by the International Federation of Red Cross and Red Crescent Societies (IFRC). It is actively supported by the International Committee of the Red Cross (ICRC), the Australian and Canadian Red Cross Societies, as well as other National Societies, according to their specific areas of interest. Green Response has facilitated the implementation of key actions at different levels, and has therefore significantly contributed to bringing about change.



Figure 1: Entry points for an environmental approach

The Green Response approach includes the following ongoing activities (this list is not exhaustive):

- The elaboration of a climate and environmental strategy, which draws upon IFRC's Framework for Climate Action Towards 2020 and Strategy 2030, and ICRC's Strategy 2019-2022, and sets out the Movement's ambitions to address the climate crisis. IFRC's Strategy 2030 lists environmental degradation and the climate crisis as one of five urgent global challenges confronting the Red Cross Red Crescent network. It specifies that these issues need to be integrated into all areas of work, including emergency response and recovery. The high profile that they have been

given has been essential in building momentum across the Movement. In addition, in 2019 the IFRC Secretariat adopted its environmental policy, which sets a new, higher standard for monitoring and continually improving the IFRC Secretariat's environmental performance. These documents have helped to define the way forward within the Movement as well as prioritise areas of work, influencing and supporting National Societies in their own climate change and environmental strategy and policy development.

- Supporting green decision making through the development of sector-specific technical guidance notes (e.g. Environmental Checklist for Shelter Response¹ and guidelines on solid waste management²).
- The greening of existing policies and processes, specifying the Movement's positioning on certain issues and key action points (e.g. Green Supply Chain³).
- The development of response-specific guidance through environmental assessments (e.g. Bangladesh Cox's Bazar⁴).
- Improving the environmental competencies of staff through training adapted to the different functions within the organisation, and greening the job profiles and core competencies of surge personnel⁵.
- The integration of environmental considerations into emergency preparedness and response systems and tools, such as emergency needs assessments, appeals, and the profiles and core competencies of rapid response personnel (currently under development).
- Advocating and influencing the sector, via:
 - The Climate and Environment Charter, outlining clear commitments to address the climate and environmental crisis.
 - Publication of the *Red Goes Green* Report⁶ and a chapter on strengthening the environmental sustainability of humanitarian action in the 2020 IFRC World Disasters Report⁷.
 - Providing technical expertise during the 2018 revision of the Sphere Standards, working with the lead authors of the different chapters, and making sure that the environment was integrated. In 2019, a factsheet on reducing the environmental impact of humanitarian

1 - https://www.sheltercluster.org/sites/default/files/docs/2019.09.26_checklist_v1.4_0.pdf

2 - <https://resources.eecentre.org/resources/managing-solid-waste-sector-specific-guidelines-for-the-red-cross-red-crescent>

3 - https://media.ifrc.org/ifrc/wp-content/uploads/2018/08/CaseStudy_Greening-IFRC-Supply-chains.pdf

4 - https://media.ifrc.org/ifrc/wp-content/uploads/2018/08/CaseStudy_Environmental-Field-Advisor-IFRC-Bangladesh-Population-Movement-Operation.pdf

5 - https://media.ifrc.org/ifrc/wp-content/uploads/2018/08/CaseStudy_Environmental-Field-Advisor-IFRC-Bangladesh-Population-Movement-Operation.pdf

6 - <https://www.rodakorset.se/om-oss/fakta-och-standpunkter/rapporter/red-goes-green>

7 - <https://media.ifrc.org/ifrc/world-disaster-report-2020>

response was published by Sphere, with support from the Swedish Red Cross⁸.

Process

At the heart of this work lies the motivation of individuals interested in increasing the sustainability of the Movement's humanitarian work and limiting the environmental and climatic footprint of responses. A working group was set up in 2012 (the Green Response Working Group) and thematic workshops were organised to tailor specific action plans for each sector of intervention (WASH, Shelter, Logistics, etc.). Through these workshops and action plans, the Green Response Working Group has sought to actively support and enable motivated technical staff to lead the 'greening' process within their own thematic sector. The aim has been to facilitate ownership of the process and promote environmental mainstreaming through a bottom-up approach. Some of the initial activities were made possible thanks to funding received by the Swedish Red Cross for sustainable sanitation. Gradually, Green Response gained recognition and interest throughout the Movement, staff in different sectors became mobilised and a position was created specifically to oversee these issues⁹. Progress and success stories were shared on a global platform, which helped build momentum.

An important aspect of Green Response is the recognition that greening humanitarian response must reinforce, and not undermine, commitments to increase investment in the leadership, delivery and capacity of local actors. Stricter compliance requirements and standards must be accompanied by long-term support and predictable funding in order to strengthen policies and procedures for climate and environmental sustainability while also building and retaining local capacities. As such, a key objective of Green Response is to support smaller National Societies to strengthen their environmental sustainability and green their activities, establishing relevant partnerships with environmental actors and other partners in-country, as well as internationally.

Challenges

Despite the fact that the issue has been given a high profile, with clear and high ambitions, the lack of funding and human resources to drive activities forward in a meaningful way has been, and continues to be, a significant challenge.

Other challenges are due to the belief held by some in the Movement that there is a conflict between the humanitarian



© Peter Kuper / Cartoon Collections

imperative and environmental protection, which diverts funding and resources away from meeting humanitarian needs. Mainstreaming environmental issues is also often perceived as something to be "added on" to what humanitarian staff already do and therefore has to compete with other operational priorities.

Lessons learnt

The lessons that have been learnt so far in terms of advancing the green agenda within the International Red Cross and Red Crescent Movement are summarised in the *Red Goes Green* Report. The main lessons are outlined below. A checklist¹⁰ has also been published to help support organisations in how they can systematically strengthen their own environmental sustainability and green their practices.

While a number of isolated initiatives taking place within an organisation can go a long way towards building momentum and supporting a shift towards more sustainable programming¹¹, the experience of the Green Response has shown that a committed leadership which endorses and communicates a sustainable approach is key. Strong leadership allows for sufficient resources to be allocated and establishes where the organisation wants to go. This commitment needs to be reflected in the core business of an organisation (and not just in a stand-alone environmental policy). Linked to this is the definition of a sustainability strategy providing guidance to staff, partners and donors as to where the organisation is going, as well as setting specific goals and a timeline.

8 - <https://spherestandards.org/wp-content/uploads/Sphere-thematic-sheet-environment-EN.pdf>

9 - There are plans to hire someone in IFRC to implement the new Environment Policy.

10 - https://www.rodakorset.se/globalassets/rodakorset.se/dokument/om-oss/fakta-och-standpunkter/rapporter/red-goes-green_checklist.pdf

11 - <https://www.urd.org/fr/publication/la-prise-en-compte-des-enjeux-environnementaux-etude-des-pratiques-de-long-hi>

Organisations who are willing to embark on such a journey need to take stock of where they stand with regards to environmental issues (i.e. existing practices), and their main environmental impacts (e.g. carbon emissions, water pollution, deforestation, etc.). This can be done through a carbon footprint or a 'materiality' assessment¹². The materiality assessments that have been carried out within the Movement have shown that it is not just about carbon, and that the sector needs to adopt a broader vision of what the footprint of an organisation is, and take into account its impact on natural resources, biodiversity, waste, etc.

Humanitarian practitioners are not environmental experts. As such, there is a need for dedicated environmental expertise to maintain momentum, provide guidance and build competencies across the board. The issue of staffing needs to be carefully thought through and anticipated before engaging in a greening process. In order to facilitate organisational behaviour change, environmental responsibilities need to be included in job descriptions and environmental considerations included in existing training/induction materials for staff (admin, logistics, shelter, etc.). Experience has shown that building a network of 'champions' involved in different operations goes a long way¹³ towards promoting change.

Adjusting existing processes and policies to take into account environmental and climate considerations is essential. In this way, they are no longer seen as 'additional' considerations, but rather as an integral part of an organisation's way of working.

Adopting an environmental approach is a gradual process. The Green Response experience has shown that behaviour change is needed and this takes time. Exchanging and coordinating best practices within an organisation, and identifying gaps and new opportunities can also help build momentum.

Finally, while some actions do not need additional funding and can even help to make savings, funding needs to be made available and made predictable. The level of funding and its duration depends on an organisation's ambitions, its way of working and the type of programmes it runs, but without additional resources, it will not be possible to increase environmental sustainability, and this needs to be accepted by donors and leadership.

A real shift needs to take place, one that is equal to the challenge of the current climate and environmental crises. This will not happen without sufficient and continuous funding.

Conclusion

The Movement is fully committed to strengthening its environmental sustainability and scaling up activities to support communities in preparing for and coping with the consequences of the climate and environmental crises. The Green Response case study illustrates the fact that saving lives and addressing the needs of the most vulnerable people can be done in an environmentally sustainable way. Providing assistance to those in need as quickly and efficiently as possible, and improving standards and processes to limit the sector's footprint in the long run can be done simultaneously. The transition towards a greener humanitarian sector is a long process, which requires a strong vision from leadership, significant behaviour change and investment in policy, people and systems. The role of donor agencies and management is essential in driving this shift.

More information

- Richard CASAGRANDE – IFRC (richard.casagrande@ifrc.org)
- [Red Goes Green Report](#): Barriers and enablers for effectively greening practices and strengthening environmental sustainability across the International Red Cross Red Crescent Movement (2021)

12 - Various National Societies have carried out materiality assessments which identify an organisation's most significant environmental impacts (not just carbon) and help determine what should be addressed as a priority.

13 - For example, the ICRC has focal points/champions in most offices who spend 2 hours a month, on average, monitoring action plans and supporting the roll out of green practices.



Food distributions. © 2018 European Union/Dominique Catton

ORGANISATIONAL / CROSS-CUTTING INITIATIVES

CARBON ACCOUNTING

Carbon footprint assessment, ICRC

What: Conducting a carbon footprint assessment

Who: ICRC

Where: multi-country

Duration: 1 year (2020)

Total cost: 90 000 €

“Without a drastic reduction in greenhouse gas emissions and without ambitious measures to preserve and restore biodiversity, these crises will continue to have a major impact on humanitarian needs and the chances of vulnerable populations to sustainably improve their living conditions.”
[Declaration of Commitment on Climate by Humanitarian Organisations](#), Humanitarian Environment Network, December 2020.

Introduction

One of the first steps in the process of reducing the environmental footprint of aid is finding out how big an organisation’s footprint is, via, for example, a carbon footprint assessment. A carbon footprint assessment aims to determine the total greenhouse gas (GHG)¹ emissions that are produced by an organisation within a given timeframe. It is a key step

¹ - GHGs are considered to be the principal cause of global warming, the main contributors being CO₂ (carbon dioxide), methane and nitrous oxide.



© EC/ECHO/Anouk Delafortrie

in establishing precise objectives to reduce an organisation's footprint. A carbon footprint assessment can include three categories of GHG emissions (referred to as 'scopes'): scope 1 (e.g. an organisation's direct emissions, produced, for example, by its fleet of vehicles, or its generators); scope 2 (e.g. indirect emissions linked to the electricity used in offices); and scope 3 (e.g. indirect emissions, such as the emissions related to the production of goods and services that are purchased, staff travel, or the treatment of waste)². Though, in general, the first two scopes are systematically taken into account in the overall calculation, the third scope, which provides a more comprehensive analysis but is more complicated to carry out, is less systematically included.

Carrying out carbon footprint assessments can nevertheless be complicated in the international aid sector because few actors currently have the skills or resources that they need, and data collection can be time-consuming.

There are currently a lot of questions about the methods and scope that should be adopted to guarantee that the approach is relevant and sound. While recognizing that there is still a lot to learn collectively, this factsheet looks

at the issues at stake in carrying out a carbon footprint assessment. It focuses on the experience of the ICRC which, in 2020, calculated its carbon footprint for 2018-2019, and explores current thinking among member organisations of the Humanitarian Environment Network³ and signatories of the Letter of Commitment⁴.

Description

In 2020, as part of an initiative to improve its environmental footprint, the ICRC⁵ decided to calculate its carbon footprint and developed a carbon footprint assessment tool for all the activities of 70 field offices (delegations). The ICRC's approach is based on the [GHG protocol](#) which aims to measure, manage, monitor and reduce an organisation's emissions, and defines what is to be taken into account in calculating total emissions.

The ICRC's carbon footprint assessment concerns the 3 scopes thus giving an overall view of the organisation's carbon footprint: ranging from the supply chain for food distributions to the use of air conditioning in offices, via staff flights to crisis contexts.

2 - https://ghgprotocol.org/sites/default/files/standards_supporting/FAQ.pdf

3 - The [Humanitarian Environment Network \(REH\)](#) is made up of a number of francophone international aid organisations who share experiences, and discuss their priorities and expectations. The network is open to any organisation who wants to promote environmentally friendly practices.

4 - In December 2020, ten French humanitarian organisations made a commitment to reduce their environmental footprint by signing the REH's letter: https://www.urd.org/wp-content/uploads/2020/12/DeclarationEngagementONGClimat_2020-1.pdf

5 - <https://www.icrc.org/en/document/sustainable-development-icrc-0>

The assessment covered data for 2018 and 2019, with the help of a specialist service provider ([EcoAct](#)). It led to the creation of a measurement tool, that can be updated annually, along with a roadmap towards decarbonising the organisation and its activities.

Process

Funded by ICRC's innovation fund, the carbon footprint assessment took the organisation a year and cost 90,000 EUR⁶ in addition to the human resources who organised the work and collected the data. This amount of time was necessary to create a measurement tool adapted to the different types of intervention carried out by the ICRC, and to collect the initial data, which is the majority of the work. The tool is now functional.

Carrying out a carbon footprint assessment for an organisation like the ICRC involves making an initial series of decisions about the scale of the exercise and the subsequent methodology.

The main steps are as follows:

1. A review of the information available within the organisation (physical and financial flows) on which the carbon footprint assessment is based;
2. Defining the perimeter to be covered by the carbon footprint assessment (headquarters, field missions, scopes) – As mentioned above, the ICRC decided that their assessment would cover all three scopes of the GHG methodology;
3. The choice of a measurement and monitoring tool for centralised/decentralised data – the ICRC decided to use a centralised measurement tool because a certain amount of data was already available (or was rapidly going to be available) at the headquarters (e.g. purchasing of supplies, consumption of electricity, etc.) and in order to avoid giving field staff too much work;
4. The choice of whether to use financial data or physical data – Physical data allows a more precise measurement of emissions and also better monitoring of emission reductions (this point will be further developed below), but financial data is often the most accessible. The decision was made to use a mixture of both types of data because a certain amount of physical data was not available, while all the financial data was already available;
5. The choice of whether to subcontract the work or to carry it out internally – given the complexity of ICRC's activities and operational contexts, and the lack of the relevant competencies internally, ICRC chose to subcontract this work;

6. Data collection and establishing emission conversion factors based on physical or financial flows;
7. Adapting existing information systems to make data collection easier for subsequent updates of the tool;
8. Drawing up an emission reduction roadmap by fixing precise objectives;
9. Updating the carbon footprint assessment. The ICRC decided to update it every year⁷.

Challenges

Carrying out a carbon footprint assessment for an international aid organisation brings methodological challenges. Humanitarian actors do not necessarily have the competencies that are needed, and therefore often have to be accompanied.

Defining the perimeter of the carbon footprint assessment is a major issue as it affects the accuracy of the assessment, and therefore the soundness of the approach. Some of the data that is needed to calculate scope 3 emissions are particularly complex to collect (e.g. distance covered by products during their transportation, the carbon footprint from manufacturing the items that are distributed). But this is also the biggest part of an organisation's carbon footprint. For example, scope 3 represents 93% of the ICRC's carbon footprint (62% comes from the purchasing of products and food).

Data collection was sometimes difficult, particularly for data that was not centralised at headquarters (e.g. plane tickets are bought in the delegations), and the assessment was carried out in a context where field staff were already overloaded with work.

What is more, using financial data is often simpler because the data is easily available in an organisations' accounting data bases (e.g. the amount spent on paper in an office is easier to obtain than the quantity of paper bought in kg). But using financial data can be misleading and less reliable than physical data (e.g. km travelled by car, the quantity of soap bought). Calculating an emission factor based on a cheap plane ticket, for example, can hide a flight that produces more CO₂ (cheaper flights often have several stopovers and therefore produce more emissions than direct flights). Comparing carbon footprints from one year to the next essentially on the basis of financial data can also be misleading, given that prices fluctuate. What could be interpreted as a drop in emissions related to the consumption of electricity, for example, might simply be the result of a drop in the price of electricity. A balance between financial data and physical data is essential in order to ensure that the calculation is sound. Thus, ICRC hopes to gradually

6 - Which represents 0.01 % of the ICRC's total budget in 2019 (1,792 million Euros).

7 - It is estimated that updating takes 2 weeks of work spread over a period of 3 months.

improve the quality of the data bases used by centralising a certain number of physical flows.

The definition of emission factors⁸ was particularly time-consuming and drawn out due to the diversity of programmes (medical, construction, NFI, etc.), the products distributed, and the variety of places where items are produced or bought (e.g. plastic sheeting made in Kenya, syringes bought in Sri Lanka). The assessment therefore involved calculating 630 emission factors in 100 countries. As such, sub-contracting this exercise to a specialized company was very useful. For certain categories of products, such as certain medical items that are bought in small quantities and have a minimal impact on the overall footprint, ICRC decided to use an average per category based on the items that are bought most.

What is more, updating these emission factors is a major challenge as they evolve with time and can become obsolete (e.g. an electricity supplier who increases their quota of renewable energy sources from one year to the next). The updating of emission factors therefore raises new questions, such as: how often should they be updated? By whom and how? These questions about the monitoring phase are all the more crucial as the data base is complex and very dense. The ICRC decided to update them every 3 to 5 years.

Certain emissions are particularly difficult to integrate into calculations. This is the case for the emissions produced by unconditional cash transfer (UCT) programmes, which are increasingly being used by the organization. Despite the difficulty of calculating the carbon impact of UCT programmes, ICRC chose to include them in its carbon accounting for greater integrity⁹. In order to do this, it developed a specific calculation method which can be summarized as follows:

$$\text{Emissions related to cash} = \frac{\text{emissions per inhabitant calculated on the basis of national consumption}}{\text{average income per inhabitant}} \times \text{cash distributed by the ICRC in the country}$$

To calculate the greenhouse gas emissions of a household, the ICRC uses the emissions per inhabitant calculated on the basis of national consumption (rather than the emissions related to national production, which are usually used), combined with the statistics for average income, to calculate an average level of GHG emissions per income per country¹⁰. This is a pilot calculation method and may have certain limits¹¹.

In order to help other organisations who want to calculate and reduce their footprint, and also to overcome certain challenges mentioned above, ICRC is planning initially to share its emission factors file, and then the tool as a whole, at a later stage, once it has adapted it so that it can be used by other international aid organisations.

Lessons learned

Carrying out a carbon footprint assessment allows an organisation to know where they stand in terms of CO₂ emissions, giving them an objective foundation on which to base their action plan for reducing emissions. In ICRC's case, the carbon footprint assessment helped to identify that, contrary to what might have been expected, 70% of the organisation's emissions were linked to the supply chain and that goods such as mattresses or hygiene kits, or food, particularly rice, had a very significant carbon impact. This meant that the road map for reducing emissions could then be oriented towards the areas of activity that produced the most emissions.

The diversity and complexity of humanitarian projects means that a certain degree of expertise in using carbon footprint tools is required, but this is often not possible in the humanitarian sector. There are a number of companies who specialise in carrying out carbon footprint assessments who can help organisations. Despite a significant initial investment to create a tool, the updating of data by the organisation itself is easy and does not require a lot of resources. If the carbon footprint assessment is externalised, it is important, for reasons of integrity, that organisations define the methodology and approach that they want in advance (for example, the scopes), and should not delegate this to the service provider as the latter will always adapt to what their client wants.

As mentioned above, the methodology of carbon footprint assessments involves a certain number of challenges, particularly in terms of the perimeter to be covered. On the one hand, certain sources of emissions have to be taken into account to ensure that the approach is sound (e.g. the supply chain). On the other hand, it is perhaps not necessary to try to calculate everything immediately (e.g. certain items that are only bought in a small quantity, or sources of emissions over which we have not control). The most important issue is to be able to get an accurate picture of the emissions factors

8 - An emission factor is a formula that is used to calculate the carbon footprint of an organisation's activities when the CO₂ data for these activities is not available: "An emission factor is the ratio between the quantity of greenhouse gas emitted by an object or a substance, and the characteristic value of the object or substance, measured in the most appropriate unit, for example in grammes of CO₂ per kilometre". It is the value that allows physical and financial flows to be converted into CO₂ equivalent. (https://fr.wikipedia.org/wiki/Facteur_d%27%C3%A9mission).

9 - Indeed, it would be misleading to exclude UCT from the footprint given its increasing use in humanitarian aid programmes.

10 - The ICRC considers that the cash that is distributed is part of households' total income. Therefore, it is responsible for part of the greenhouse gas emissions of assisted households – this part corresponds to the proportion of household income that they provide.

11 - Using average income could lead to an overestimation of emissions because the income of those who receive cash assistance is often well below the average income in their country. Many studies have shown that the lower an individual's income, the smaller their carbon footprint.

for products/services that make up a significant part of the footprint and on which the organisation will want to focus its reduction efforts (in the case of the ICRC, rice for example).

The experience of the ICRC shows that the aid sector is not yet very comfortable conducting this kind of assessment and that there are still a number of things to learn collectively. Organisations are involved in a process of continuous improvement and it is perhaps useful to recognise that it is not possible to cover all emissions straight away. In order to help aid organisations to define the perimeters of the exercise, it might be useful to collectively define a non-negotiable set of emission sources (or categories of sources) to be covered in the calculation. Another lesson from the ICRC's experience would be to encourage the use of data based on financial flows (while recognising the limits involved) when there is no physical data, and to gradually refine calculation methods rather than exclude financial data from calculation¹².

The ICRC's experience shows that carrying out a carbon footprint assessment is a continual process, based on the elaboration of a roadmap for reducing and monitoring emissions rather than on the initial calculation in itself. The frequency of updates depends on the resources that are available within the organisation, the ease with which data can be mobilised¹³ and how the volume of activities evolves. As such, reducing emissions from one year to the next is complex given the increase in humanitarian needs, and consequently the volume of organisations' activities.

An important lesson is that the carbon footprint assessment is an exercise that mobilises a whole organisation. It is essential that management supports the exercise as it requires significant investment (time and money). Different departments (e.g. purchasing, accounting, logistics, programmes, etc.) need to be involved in data collection. As staff already have a heavy workload, great care needs to be taken in explaining the approach and its objective throughout the process.

Conclusion

A carbon footprint assessment is an essential tool that allows an organisation to establish the volume and distribution of the emissions it produces via its activities at different levels. It initially requires a certain level of investment and the adaptation of existing data systems. It involves a certain number of challenges, and solutions have not yet been found for all of them.

It is important to note that the main aim of the carbon footprint assessment is to identify the principal sources of emissions where there are opportunities for reduction, such as



Flooding in Madagascar. © EU/ECHO/Maria Olsen

air transport and purchasing. The aim should therefore be to establish levels of magnitude rather than to go into too much detail. The right balance needs to be found between aiming for the most precise data and accepting that there can be a certain margin of error.

It is also important to keep in mind that GHG emissions are only part of the environmental footprint of an organisation, and that monitoring emissions should not preclude the reduction of other environmental impacts (plastic and electronic waste, soil and water pollution, and deforestation and their impact on biodiversity, the availability of natural resources, etc.).

A carbon footprint assessment is above all a tool for managing emissions, and is only one building block of a more general strategy to decarbonise an organisation. It only makes sense if clear objectives and a timeframe for reducing emissions are established by the organisation, with a quantified target that is consistent with the issues at stake. Carbon offsetting is an interesting funding tool for projects that have a positive environmental impact at the global level, but cannot be

12 - Because once a baseline has been established and a reduction target has been adopted, it is very difficult to accept to increase emissions by including additional activities.

13 - It is important that most emissions are calculated automatically, and that the number that need to be entered manually is reduced.

considered a way of directly deducting the emissions produced by the organisation itself. It is important to be collectively vigilant about the use of carbon offsetting as a way to avoid all reduction efforts. It can be considered as a last resort to compensate for the harmful effects of emissions that have been reduced as much as possible, to the extent that they are genuinely 'incompressible'.

Including cash transfer programmes in the calculation of an organisation's emissions remains a complex issue. On the one hand, there are more and more cash programmes in humanitarian operations, and therefore, they cannot be left out of carbon footprint calculations. On the other hand, their inclusion raises fundamental questions about the methodology that should be used. It would be useful for actors to continue exploring this issue collectively and to agree to a common calculation methodology.

Finally, humanitarian actors have a lot to learn collectively from each other's experiences in this area. Their approaches and references need to be harmonised in order to have a real impact.

For more information

- Kathrine Vad, Environment and Climate Change Advisor - ICRC (kvad@icrc.org)
- [Climate Action Accelerator](#) (CAA): non-profit initiative providing personalised specialist support to aid organisations to help them half their emissions by 2030 and eventually achieve the objective of Net-Zero. The accelerator aims to mobilise a critical mass of intermediary organisations in order to scale up the implementation of solutions for the climate, keep global warming under 2°C and avoid the risk of dangerous climate breakdown.
- [GHG Protocole](#): Carbon methodology protocol that provides standards, advice, tools and training to help organisations and governments to measure and manage greenhouse gas emissions.
- [ADEME](#): The French Environment and Energy Management Agency has produced resources of different kinds and provides training on Carbon Footprint Assessments.



E-waste management. © Emanuela CATTANEO

ORGANISATIONAL / CROSS-CUTTING INITIATIVES

SOLID WASTE MANAGEMENT

Partnerships with recycling firms, WFP

What: *Setting up partnerships with waste recyclers*

Who: *WFP*

Where: *Multiple countries*

Duration: *Since 2017*

Total cost: *not applicable*

Introduction

Waste management issues, globally and in the humanitarian sector, attract a lot of attention. Humanitarian actors are increasingly interested in reducing the amount of waste that they produce and in working downstream to improve their collection and recycling rates. The USAID funded [Joint](#)

[Initiative](#)¹ and the 2020-2030 [UN sustainability strategy](#)², both with a strong focus on waste management, have also contributed greatly to creating this momentum.

Managing humanitarian waste in a sustainable way can nonetheless be very challenging, given the lack of proper waste management infrastructure in countries where programmes

1 - Joint Initiative on Sustainable Humanitarian Packaging Waste Management: <https://eecentre.org/2019/07/15/https-www-eecentre-org-2019-07-15-sustainable-humanitarian-packaging-waste-management/>

2 - https://unemq.org/wp-content/uploads/2019/09/INF_3_Strategy-for-Sustainability-Management-in-the-UN-System.pdf



Palettes en polyéthylène haute densité (PEHD). © Emanuela CATTANEO

are run. Solutions are context-specific and differ greatly per type of waste (e.g. plastic, cardboard, metal or e-waste). However, opportunities for recycling waste produced by humanitarian actors do exist via formal and informal waste collection networks that provide many people in developing countries with a source of income.

An evolving international approach has also encouraged humanitarian organisations to rethink the way that they manage their waste. In 2019, 170 countries signed a pledge to significantly reduce their use of single use plastics, more than 50% of them developing countries³. China, which was until 2014 the main recipient of recyclable waste in the world, has now closed its borders to imports of other nations' plastic waste⁴. Finally, the [Basel convention](#)⁵ regulates the trans-boundary movement of hazardous waste (and, since 2019, also some types of plastic⁶), and therefore imposes restrictions as to how waste can be managed.

WFP's food assistance programmes use 40,000 tons of packaging materials per year on average, 40 per cent of

which is plastic⁷. Over the years, WFP has set up a number of partnerships with waste recyclers throughout the world⁸. This case study presents the main lessons learned from these experiences.

Description

WFP began measuring its environmental footprint in 2008, along with other UN agencies. Since the publication of WFP's [environnemental policy](#)⁹ in 2017, there has been a more sustained push to reduce the organisation's footprint and increase the sustainability of its programmes.

With regard to waste, WFP has worked upstream to reduce the quantity of waste that it produces¹⁰ and has redesigned its packaging¹¹, which has helped to improve the recycling process and reduce the organisation's environmental footprint. For example, in 2018 they switched from bleached to untreated cartons, limiting the use of chemicals and avoiding the contamination of water during the recycling process. They have also been working with a manufacturer of machines for making woven plastic packaging to improve polypropylene (PP)¹² woven bags¹³ (e.g. switching from cotton sewing yarn to PP sewing yarn) and thus limit potential downstream contamination during the recycling process.

In parallel, WFP has done a considerable amount of work downstream to increase waste recycling rates during its field operations. It has developed a wide range of partnerships with private and non-profit organisations for a variety of recyclables: PET¹⁴, polypropylene, metal, cardboard, multilayer metalized flexible packaging, high density polyethylene (HDPE). Below are a number of examples:

Ethiopia - recycling of broken plastic pallets¹⁵

Pallets are used extensively in WFP programmes for transportation and handling. In 2019, in Addis Ababa, WFP set up a partnership with a recycler who shreds broken pallets, mixes the material with virgin plastic and then creates injection-moulded beverage crates. Nine thousand pallets have been recycled so far.

3 - See: [Which countries have bans on single-use plastics? | World Economic Forum](#) (weforum.org)

4 - <https://advances.sciencemag.org/content/4/6/eaat0131>

5 - <http://www.basel.int/default.aspx>

6 - 2019 Amendment: [Overview](#) (basel.int)

7 - Source: Joint Initiative. Based on 2019 packaging data.

8 - With a particular focus in east Africa and southern Africa, where WFP has two environmental advisors in the field who can directly support Country Offices.

9 - <https://www.wfp.org/publications/2017-wfp-environment-policy>

10 - <https://www.wfp.org/stories/rethinking-packaging-reducing-waste>

11 - <https://www.wfp.org/stories/rethinking-packaging-reducing-waste>

12 - Polypropylene bags used to store large amounts of staple food.

13 - WFP also partners with ICRC and UNHCR to explore more sustainable alternatives to current PP woven bags.

14 - Polyethylene terephthalate, commonly used for containers of liquids.

15 - https://twitter.com/wfp_africa/status/1268837465147625478

Kenya - recycling of PP (Polypropylene) bags ¹⁶

In Kenya, WFP has an agreement with a firm that recycles WFP PP bags into new unbranded bags, composed of 50% recycled material, for use in the local market. Since the beginning of the project in 2019, 135 metric tons of PP bags (1 million bags¹⁷) have been sold for recycling. The partnership has successfully demonstrated that recycling surplus PP bags is technically viable, can reduce negative environmental impacts, and can produce economic benefits. The next steps planned are:

- To extend the process to more field locations and to other packaging types (cartons, jerrycans)
- To scale up the process regionally and globally
- To incentivise beneficiaries to return packaging
- To broaden the scope of the project to incorporate livelihood generating activities.

Djibouti

In Djibouti, WFP is in the process of establishing a partnership with an ocean clean-up organisation that has a global network of recyclers that could turn WFP plastic waste, stored in locations where no local, large-scale recycling solutions exist, into long-lasting, valuable items. This potential partnership will not only benefit Djibouti, but many other WFP sites throughout the world, given that the recycling network involved has global outreach. WFP is also looking into developing livelihood/capacity building activities involving a local women's organisation that repurposes surplus PP bags into supermarket bags.

WFP Global Fleet waste management initiative

WFP operates a fleet of 850 trucks and 3000 light vehicles. In its biggest fleet operations, it also runs 30 fleet workshops. While WFP trucks are key for delivering food to the most remote locations where no commercial service is available, the large number of assets also has an environmental impact in terms of the (hazardous) waste they generate – e.g. tyres, engine oil, spare parts. The Global Fleet team is investing in identifying and implementing sustainable local waste management and recycling solutions, with the help of specialized stand-by partners and by teaming up with other organisations who face similar challenges, such as the ICRC and MSF.

Process

WFP developed an environmental policy in 2017 and is now rolling out an environmental management system at HQ and

in field operations. A team of environmental specialists¹⁸ was established in 2008 and has grown over the years to support this work globally. The process for developing partnerships with recycling companies is context-specific and depends on the nature of the partnership. Some common key steps are:

- The quantification of recycling needs. The first step for an evidence-based approach is to identify and keep records of how many items need to be recycled. This step informs what type of recyclers will be needed, if any minimum capacity requirements will apply, and what transport arrangements will be the most efficient. It also informs upstream decision making on the design and procurement of packaging material.
- The mapping of existing recycling opportunities in country. This mapping can be done using various sources, such as the internet, or by consulting environment ministries, environmental associations, other humanitarian agencies, etc. Market research can also be done by asking procurement units to share their database of suppliers, as companies that recycle are very often the same companies that supply items or services. For example, packaging suppliers, waste management contractors, engineering and construction companies can be very useful sources for identifying who the players are in a given context.
- If a market and recycling companies exist, a tender for recycling services is then released with a list of specifications and criteria (e.g. financial information, relevant permits and environmental licences to carry out recycling, description of the recycling processes in line with best practices, type of waste processed, capacity constraints, range of end products, due diligence on subcontractors, access to appropriate facilities, etc.). For WFP, some tenders have concerned a variety of items, including pallets, jerrycans, tins, cartons, sachets, etc., while others have only concerned specific materials, e.g. plastic pallets. Depending on country-specific procurement processes, WFP then receives offers from vetted recyclers on specific waste streams and locations.
- The next step is the in-person assessment of companies, using a screening tool (checklist developed by WFP). This checklist is composed of approximately 30 questions and looks at issues such as financial stability, health and safety of workers, ability to transport recyclables, and the process that is used to recycle items. The recycling process is particularly important: companies who add value to the waste and prolong its lifespan are favoured over companies who create a single-use item (e.g. pallets or stadium seats rather than plastic cutlery).

16 - <https://www.linkedin.com/feed/update/urn:li:activity:6525987888545570816>

17 - Refers to damaged or unusable bags (e.g. with specific/outdated donor markings). Empty bags in good condition are generally distributed by programme staff to beneficiaries.

18 - Currently composed of 7 staff at HQ, plus the recruitment of a packaging expert at HQ and environmental experts in regional teams to support country teams.

- The establishment of long-term agreements with recycling companies (on average, for 2 years, with the possibility of renewing the contract for an additional 2 years). These contracts are based on a fixed price in order to overcome the issue of the fluctuating value of recyclables on the global market.
- Depending on the local market and global raw material prices, recyclable waste is then sold to the companies. However, in some instances, where a specific type of waste is difficult to recycle (e.g. multilayer flexible packaging), the recycler may ask WFP to pay for its recycling (as a waste disposal service).

Challenges

Lack of government incentives

One of the main challenges for humanitarian agencies wishing to recycle their items is linked with the lack of government incentives and supportive legal frameworks (e.g. incentives for take-back systems and Extended Producer Responsibility laws). This hinders the development of a strong private sector specialised in recycling, which, in turn, makes it difficult for humanitarian agencies to find adequate waste management partners and establish recycling agreements. In many of the countries where humanitarian agencies operate, there is no waste management or recycling infrastructure in place, and only a limited number of local, large-scale recyclers that can turn the waste into durable and valuable items.

Lack of dedicated donor support

Another major challenge in relation to setting up humanitarian recycling systems is the limited resources allocated by donors to specifically support responsible waste management. As a result, it is difficult for humanitarian agencies who want to implement improved waste management systems to engage in comprehensive, large scale and long-term initiatives due to limited available budgets.

Waste Management Supply Chain

Setting up a recycling process can be logistically complicated. Waste collection needs to be organised and waste recyclables stored under cover to prevent UV damage and, in some cases, for a long period of time. Warehouse teams need to be involved and mobilised. Transporting items to the recycling companies can be particularly challenging; when recycling opportunities exist, they are usually in capital cities, away from WFP field operations. Transportation costs have an impact on the overall recycling economic model; if the waste has to be

collected from remote locations, the model becomes less profitable for the recycler.

Recycling items, such as food packaging, after food distributions is another challenge. To date, most recycling projects have been implemented for items stored in WFP warehouses. Collecting waste after food distributions is not always practical and requires additional resources that are not always available. Incentive systems are being explored to facilitate waste collection from non-warehouse contexts.

In countries where the recycling market is non-existent, opportunities to export recyclables to a neighbouring country can be explored, although these need to comply with the Basel Convention¹⁹. However, moving waste over borders is a major challenge; when legal frameworks are not harmonised, it is difficult, if not impossible, to obtain the relevant importing/exporting clearances from the countries involved, and opportunities for recycling are therefore lost due to restrictions.

Mismatch between local recycling markets and procurement processes

The recycling sector is made up of a variety of different stakeholders: informal collectors, cartels, semi-informal aggregators, vendors, waste processors, exporters, etc. The waste recycling market is fast changing as recycling opportunities depend on the market price of recycling items, such as plastic, which is closely linked to the price of oil. The complexity of the sector and its interconnected stakeholders make it difficult for international organisations (for which this area of work is very new) to understand and develop partnerships. As such, it can be difficult to establish formal contracts with some recyclers and do full due diligence on their practices. Developing partnerships with recycling firms is a long process involving a number of steps (assessing, visiting, writing tenders, establishing contracts, etc.), which takes around 6 months, depending on the context. This raises the question of how appropriate international aid organisations' procurement requirements, which can be very strict, are in relation to an often unstructured and developing recycling market.

As the recycling market in developing countries is still nascent, recycling companies do not always have the financial and technical capacity to honour their contracts. One way WFP tackles this is to develop partnerships with various recyclers (when possible) in order to have back-up options. It also works hand in hand with companies to improve their practices and standards²⁰.

Technical challenges

Finally, some types of waste, such as e-waste, or flexible multilayer packaging, are very difficult to manage and

19 - The Basel Convention controls cross boundary movement of hazardous waste and, more recently, of non-hazardous waste, such as unsorted plastic.

20 - See also Quality, Social, and Environmental (QSE) interagency working group.

recycle²¹ in developing countries as there are very limited recycling processes available, even in developed countries. This issue remains unsolved for the humanitarian sector for the time being.

Lessons learnt

WFP's experience in exploring recycling solutions has underlined the importance of the government's role in creating an enabling legal and political environment which can stimulate the development of a local recycling private sector. In Kenya, for instance, the implementation of Extended Producer Responsibility legislation, and an upcoming sustainable waste management bill, have encouraged the development of the recycling sector, and there are now more recyclers than a few years ago. Where governments are less committed to sustainable waste management, it becomes more challenging for humanitarian agencies to set up recycling partnerships.

Donors could also play a greater role in supporting sustainable waste management by availing additional resources to humanitarian agencies that are specifically dedicated to the setting up and implementation of waste management initiatives. Otherwise, it is difficult for humanitarian agencies to fund large-scale, innovative and sustainable recycling systems.

WFP's experience has shown that recycling solutions are context specific and that proper analysis of the local market and the legal framework needs to be done in advance. As such, partnerships need to be established on the basis of specific contextual characteristics – although standardized tools (tenders, contracts, and checklists to assess recycling firms), and processes developed at the organizational level, can help.

The transportation of recyclables is the most significant cost of the recycling process, and this therefore needs to be anticipated in budgets. When companies are unable to cover transportation costs (either as a result of the remoteness of the field location, insufficient quantities of recyclables or the high cost of fuel in comparison to the cost of the recyclables²²), humanitarian agencies need to consider covering these costs in keeping with the 'do no harm' principle. In some cases, it is also possible to envisage a take-back process²³ when suppliers are also recyclers. Improving transport efficiency is fundamental to optimise the economic potential (e.g. ensuring proper loading and baling where possible to maximise the

use of the cargo space, transporting only full truckloads, connecting with other co-located agencies to carry out joint transportation, and using reverse logistics).

The recycling market is complex and volatile, and is in its early stages of development. Existing procurement procedures need to be adjusted to fit the purpose of this sector and adequate resources need to be dedicated to it to be done effectively. WFP's experience has shown that having more than one partner dealing with each waste stream (when available), in order to have back-up options, is essential. At the same time, in some locations, it might be useful to establish a single contract with one aggregator. WFP is currently exploring partnerships with global recycling networks. This allows WFP to 'outsource' the establishment of individual partnerships with different actors and just partner with one 'aggregator'. This system helps to scale up WFP's local initiatives as it makes the process of developing a partnership much faster and more efficient.

Developing a recycling approach is a collaborative effort. Internally, linkages need to be strengthened with warehouse teams (to ensure that recyclables are separated and stored properly), with supply chain teams, given that recyclers are very often suppliers, and with HQ procurement teams, in order to reduce the amount of waste and adapt the nature of packaging to facilitate the recycling process. It is important for an organisation to connect downstream recycling experiences with upstream procurement and packaging design processes, and to encourage the purchasing of items that are "designed for recycling".

Externally, pooling efforts with other humanitarian organisations located in the same area can help to achieve economies of scale and make transportation, and the recycling of items in general, more financially sustainable. Agencies can share their recycling database and experience of working with specific recycling companies.

Finally, it is important to keep in mind that the recycling of humanitarian waste can only be done at scale if the local industry/market is already available. The more humanitarian agencies partner with private sector recycling/waste management companies, the more they can incentivize and support the creation of local recycling ecosystems, leading to job creation and the development of specialized skills, all of which contribute to the implementation of sustainable development trajectories. The more competitive the market is in country, the more room for manoeuvre agencies have to influence the processes and standards of existing companies. The goal is

21 - The WFP Somalia Office has an ongoing tender for responsible recycling and safe disposal of e-waste accumulated in Somalia and Kenya. The tender is aimed at well-established, fully-qualified and licensed companies with solid local and regional experience and proven financial capacity to re-process e-waste, ensuring application of the highest environmental and social standards in order to achieve responsible and documented 'end to end' e-waste handling through to final disposal. The tender will result in long-term agreements (LTA) with one or more companies providing on-demand recycling and disposal services for e-waste in order to prevent accumulation at WFP premises.

22 - In Kenya there is a company that offers used engine oil recycling services but the collection fee from remote operations such as Kakuma and Dadaab is disproportionate vis a vis the amount of spent oil that WFP generates.

23 - Where products are taken back by the manufacturers or suppliers at the end of the items' life. This can be arranged when the contract is drawn up.

therefore not only to establish recycling partnerships, but also to consider how to bring added value to an item. Agencies should aim not only to manage recyclables adequately but to increase the life span of an item in the long run (principle of upcycling), or, where possible, to purchase items that inherently last longer, even if that means spending more money up front (i.e. consider full life-cycle costing).

Conclusion

Recycling humanitarian waste can be very challenging. Solutions are context specific and need to be analysed with economic, social and environmental lenses. The role of governments in creating an enabling environment through policies and legislation for a thriving sustainable waste management private sector is fundamental to allow humanitarian agencies to implement recycling practices. While efforts are underway to increase recycling rates across the world, this only makes sense if it is part of a global strategy to reduce the amount of waste which the humanitarian sector produces.

Waste management has become a pressing challenge for developing countries; if not tackled now, this will have devastating consequences for future generations. Humanitarian agencies can have a positive impact in the countries where they operate, by promoting sustainable practices. However, without dedicated support from donors, waste management initiatives will remain small-scale and intermittent, and humanitarian agencies will leave behind an unwanted legacy of pollution.

As with many other issues, a lot is currently happening in this area, and collective lessons need to be learned as the humanitarian sector moves forward and recycling markets develop.

More information

- Emanuela Cattaneo, Regional Environmental Adviser (Emanuela.cattaneo@wfp.org)
- WFP Environment team (wfp.sustainability@wfp.org)
- Video of PP bags recycling in Kenya: <https://www.linkedin.com/feed/update/urn:li:activity:6525987888545570816>
- Video of pallet recycling Ethiopia: https://twitter.com/wfp_africa/status/1268837465147625478
- Food Safety and Quality website: [Food Quality and Safety - Home \(wfp.org\)](https://www.wfp.org/stories/protect-and-preserve-how-packaging-can-help-prevent-food-loss-and-waste)
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