

Refugee Camp Fire Disasters

Executive Summary by:

Wachira Chotirosserane
Patricia Cosulich
Carly Lutz
Brittney Ochira
Erica Wright

I vividly remember the fires. I have to stand and see these refugees crying in front of me. I can only instruct the camp committee to give fire warnings every day and urge refugees to be careful when using fire. The fires happen all the time. Then I have to ask everyone for donations and quickly drive my truck 1,000 miles down to Bangkok and ChiangMai in order to collect the clothes, blankets, and food for the survivors. Then it happens again next year. It's because the cause is right there in the refugee camp. Every year I tell myself that we definitely need a better solution to tackle this issue, shifting it from emergency relief assistance to a better emergency response practice.

~Wachira Chotirosserane, Chief of Refugee Affairs, Thailand (2018)

Problem Landscape

The protracted conflict between the government of Myanmar and some ethnic minority groups has resulted in mass violations of human rights with no sign of peace in sight, stranding refugees in Thailand for three decades (Vungsiriphisal et al., 2014). There are 99,000 refugees in these nine refugee camps, causing overpopulation (UNHCR, 2015). One pernicious problem is the frequent destructive fires that break out in the refugee camps. According to Thai official

records, shelter fires occur every year (Chotirosseranee, 2018). Between 2012 and 2016, there were 8,906 victims affected, 38 deaths, and five people injured (DOPA, 2016). Over those five years, 2,010 refugee houses and 11 NGO facilities were destroyed (DOPA, 2016). The worst of these fires occurred in 2013 in the Bae Mae Surin camp, which caused a massive displacement of people and a humanitarian crisis (Tan, 2013).

Given the lack of stability in Myanmar, repatriation is unlikely, making the need to provide appropriate services to the refugees along the Thailand/Myanmar border a long-term need (Human Rights Watch, 2012). A lack of funding, planning, and organization has left refugees and the patchwork of government and non-governmental organizations (NGOs) scrambling for resources (Corben, 2017). Treating the camps as a temporary emergency situation has led to sparse funding and has limited NGOs to provide locally-sourced building materials like bamboo and thatch (Chotirosseranee, 2018). These remote camps also lack electricity, meaning that refugees rely on small improvised stoves for cooking and candles for lighting (Chotirosseranee, 2018).

These fire sources, combined with the highly flammable building materials of the homes creates a dangerous combination for small sparks to catch and create deadly flames. The camps are not organized on a grid, and the shelters have been assembled in an ad hoc, tightly packed arrangement (Chotirosseranee, 2018). This disordered layout has become an obstacle, making it difficult and time-consuming for emergency response teams to locate the fire (Chotirosseranee, 2018). Though there have been talks of minimizing these risks by using fire-resistant building materials such as brick and zinc roofing, or bringing electricity to the camps, these plans have been repeatedly delayed due to dwindling resources (Chotirosseranee, 2018). Donors' fatigue has become a serious

challenge, for many cannot continuously support as they did for more than 30 years prior (Corben, 2017). Therefore, the frequent fires that ruin refugees' lives and homes will remain a serious threat.

In addition to the technical problems exacerbating fire disasters in Thailand's refugee camps, the socio-psychological perception of the fires is an adaptive challenge. In general, people in the camps view disasters they encounter, such as fires and flash flooding as natural events that cannot be controlled or avoided. Since many people believe that disasters are caused by fate, or even by a curse, they do not see that catastrophic fires are preventable (Chotirosseranee, 2018). The lack of education and the mythology surrounding the fires is a major hurdle, but could be an opportunity through which to generate solutions.

Solutions Landscape

The problem of annual fires in Thailand's refugee camps requires a full fire management approach involving prevention and response. The actors already taking steps to combat the problem include: The Royal Thai Government (RTG), The Border Consortium (TBC), several humanitarian agencies, and researchers running analyses about the current situation and humanitarian guidelines. The first three mentioned above coordinate their efforts to provide assistance to the refugees in the nine camps along the Thailand/Myanmar border while the researchers evaluate how the current efforts are unfolding (TBC, 2016). TBC and other NGOs coordinate with The United Nations High Commissioner for Refugees (UNHCR) to provide humanitarian services and guidance for fire prevention (TBC, 2016).

The first aspect of fire management is prevention. The primary methods are fire drills, a fire curfew, and volunteer fire patrols. Annually, the Thai camps hold an emergency fire drill with cooperation from the Thai authorities, camp committees, and NGOs. They educate refugees on fire safety, prevention, and response (COERR, 2018). At night, visibility poses a problem for response teams. Therefore, the camps prohibit fire use after 9 P.M. (Chotirosseranee, 2018). Volunteers patrol the camps and remind the residents to extinguish their flames (Chotirosseranee, 2018). Some active flames may not be visible due to the dense layout and size of the camps.

In case of fire, refugees knock on bamboo sticks and shout to alert others. The section leader, who is appointed as the on-scene commander in fire situations, notifies the camp committee and Thai authorities by radio (Chotirosseranee, 2018). Without reliable electric power, the camps cannot establish a camp-wide fire alarm system. Schools and some camp committee offices have access to generators during the day, but they only use these generators for their specific area. They do not have the capacity to generate electricity for the entire camp (Chotirosseranee, 2018). The first sign of fire is the appearance of smoke clouds in the sky, so by the time residents locate the source it is too late.

Solar-powered cooking stoves are being explored as an alternative to charcoal stoves, but they are not widely implemented (TBC, 2015, p. 26). TBC provides technical support for community-led Shelter Working Groups that conduct kitchen safety and fuel-use surveys for The Shelter Programme's Community Driven Natural Resource Management. They are working to develop "...fuel-efficient stoves and communication campaigns on fuel efficient cooking techniques" (TBC, 2015, p. 28). After reviewing

literature on fires in refugee camps and humanitarian agencies' guidelines, the research team (Kazerooni et al., 2015, p. 1044) suggested that agencies look into technical solutions such as solar powered stoves and LED lanterns. These initiatives would require significant funding and buy-in from the refugees who reside there, both of which have not been sufficient for these projects to gain momentum (Chotirosseranee, 2018).

Some of the recommendations provided by refugee agencies and researchers focus on the layout of the camps. The UNHCR guidelines suggest a minimum distance of two meters between structures and a thirty meter firebreak area every three hundred meters (UNHCR, 2018). Refugees built camp structures before a planned camp design could be implemented (Kazerooni et al., 2015, p. 1044). It would be cost-prohibitive to disassemble the existing structures of the camp and reassemble them according to the recommendations (Chotirosseranee, 2018). If more refugees move into these camps, it would be strategic to design new spaces accordingly. However, no new refugees from Myanmar are currently fleeing to this area of Thailand.

Other humanitarian agencies like The Sphere Project, USAID, and the Norwegian Refugee Council recommend putting candles in glass jars, teaching 'Stop, Drop and Roll,' and installing fire stations with fire extinguishers (Kazerooni et al., 2015, p. 1041). In the Thai camps, refugees store plastic bags of water and sand for the purpose of extinguishing fires (Chotirosseranee, 2018). Tossing these bags onto fires has been somewhat effective, but a flame retardant substance would be more effective. For example, in some places mono ammonium phosphate powder balls are thrown onto fires as a makeshift fire extinguisher (Manley, 2018). These recommendations alone would not be enough to fully address the problem, but could be integrated into Thailand's fire response measures.

Running water is scarce during the dry season. The fastest way to stop the fire is to quickly dismantle the burning house and surrounding houses to create a fire-break. Volunteer firefighters pull down the buildings with long-handled hooks. They use large rubber pads to beat the flames out on the ground (Chotirosseranee, 2018). The camps do not have a system for detecting wind direction, which makes it difficult to determine which way the fire will spread. In other fire-prone places, such as California, airplanes with thermal imaging cameras evaluate wind and wildfire direction and communicate to firefighters on the ground (Snibbe, 2017). This allows firefighters to strategically create a fire-break. In Thailand's camps, predicting wind direction could improve response time.

Lessons and Levers of Change

The context of these fires is unique; the camps have a densely populated, difficult-to-navigate layout. Without electricity, people rely on flammable methods of lighting and cooking. Further, an electric fire system is implausible. Therefore, we explored battery-powered and transportable options. There is potential to use drones for prevention and/or response. We explored the possibility of using a thermal scanning drone at night to detect controlled fires, so that people could be asked to extinguish their candles or cookstoves to prevent accidents. We found, however, that the long-range infrared technology currently available picks up all heat, including human heat (Daley, 2018). This poses a potential issue with invasion of privacy. If the

technology was developed for infrared scanning that can selectively pick up higher temperatures at long-range distances, this could help prevent nighttime fires.

We also considered a fire response drone that would coordinate faster response efforts, and thereby reduce the damage caused by fires. For example, when there is a burning house in a refugee community, the section leader could radio to notify the drone operator at the Fire Response Center. The drone operator could fly the camera-equipped drone over the section to locate the fire-affected area. As the drone hovers over the exact location of the fire, the alarm on the drone could alert the refugee community of the fire and its location, thus shortening the response time.

The drone could also help identify the direction the fire is spreading so that a fire break is placed strategically. Fire extinguisher quadcopters could be a potential solution (Manimaraboopathy, 2017). However, could this technology be feasibly implemented in Thai refugee camps?

A major gap in the solutions landscape that we found was the social and psychological element of fire prevention and response. As mentioned above, there is a common feeling of resignation about fires and their perceived inevitability among refugees. This attitude leads to reduced fire safety practices and lack of interest in pursuing solutions. An area of exploration aim to change the common perception about fires and involve the community in solution-finding and implementation. Though an adaptive solution like a campaign could be a stand-alone project, it would likely be more effective in conjunction with a technical solution that is implemented with full community participation. Being part of an applied-peace initiative and having their

feedback sought-after and valued will start to erode the feeling of helplessness many refugees express about fires in the camps.

Many suggestions for solving this problem, proposed by experts and students in both Engineering and Peace Studies, have assumed that ample funding or infrastructure possibilities is available. These suggestions included changing the building materials for all homes in the refugee camps and equipping everyone with electricity or water pipes. While those would be ideal, the financial and political capital for such solutions does not exist, so our research, brainstorming and analysis of solutions were oriented toward those variables we found to be plausible and within the realm of change. It was a process of knocking down each idea proposed because of some logistical constraint. However, because of these challenges, it spurred us to be creative and think in a more socially innovative way.

Bibliography

Anglia Ruskin University. 2017. Guide to Harvard Style of Referencing. University Library. Version 6.1. [pdf] Available at: <https://libweb.anglia.ac.uk/referencing/files/QuickHarvardGuide2018.pdf>. [Accessed 15 February 2018].

Anglia Ruskin University. 2017. Quick Guide to Harvard Referencing. [pdf] Available at: <https://libweb.anglia.ac.uk/referencing/files/QuickHarvardGuide2018.pdf>. [Accessed 15 February 2018].

Chotirosseranee, W. 2018. *Complex Issues Facing Refugees in Thailand*. Interviewed by Erica Wright. Interviewed at the Institute for Peace & Justice, 14 February.

Chotirosseranee, W. 2018. *Constraints & Limitations to Responding to Fires in Refugee Camps*. Interviewed by Patricia Cosulich. Interviewed at the Institute for Peace & Justice, 14 February.

COERR Foundation. 2018. Our Programmes. *COERR Foundation*. [online]. Available at: <https://www.coerr.org/Eng/project.html>. [Accessed 14 February 2018].

Corben, R. 2017. Myanmar Refugees in Thai Camps Face Repatriation Challenges. *Voice of America*. [online]. Available at: <https://www.voanews.com/a/myanmar-refugees-thai-camps-repatriation-challenges/3847329.html>. [Accessed 31 January 2018].

Daley, S. (2018). *Flir Thermal Imaging*. Interviewed by Patricia Cosulich. Phone Interview, 12 February.

Department of Provincial Administration (DOPA) of Thailand. 2016. “Het Aukee PhaiNaiPhenTeePakPing” [The fire disasters in the temporary shelters]. *DOPA*.

Handicap International. 2017. Refugees in Thailand. *Reliefweb*. [online]. Available at: <https://reliefweb.int/report/thailand/refugees-thailand>. [Accessed 31 January 2018].

Human Rights Watch. 2012. Ad Hoc and Inadequate: Thailand’s Treatment of Refugees and Asylum Seekers. *Human Rights Watch*. [online]. Available at: <https://reliefweb.int/report/thailand/refugees-thailand>. [Accessed 31 January 2018].

Kazerooni, Y., Gyedu, A., Burnham, G., Nwomeh, B., Charles, A., Mishra, B., Kuah, S., Kushner, A., Stewart, B. 2015. *Fires in refugee and displaced persons settlements: The current situation and opportunities to improve fire prevention and control*. Elsevier Ltd. [e-journal]. Available through: Science Direct website <https://0-www.sciencedirect.com.sally.sandiego.edu/science/article/pii/S0305417915003861?rdoc=1&fmt=high&origin=gateway&docanchor=&md5=b8429449ccfc9c30159a5f9aeaa92ffb>. [Accessed 10 February 2018]

Manimaraboopathy, M., Christopher, H., Vignesh, S. & Selvan, P. 2017. *Unmanned Fire Extinguisher Using Quadcopter*. [e-journal]. Vol. 10, pp 471-481. Available through: International Journal On Smart Sensing & Intelligent Systems Complementary Index <http://0-search.ebscohost.com.sally.sandiego.edu/login.aspx?direct=true&db=edb&AN=124759639&site=eds-live>. [Accessed 31 January 2018].

Manley, J. 2018. The Comeback of Fire Extinguishing Balls and their Benefits. *Fire Extinguisher: 101*. Available at: <http://www.fire-extinguisher101.com/article1108-fire-extinguishing-ball.html>. [Accessed 14 February 2018].

Snibbe, K. 2017. How California's Aerial Firefighters are Handling 1,000 more Fires than Last Fire Season. *The Orange County Register*, [online]. Available at: <https://www.ocregister.com/2017/08/27/how-californias-aerial-firefighters-are-handling-1000-more-fires-than-last-fire-season/> [Accessed 15 Feb. 2018].

Tan, V. 2013. *Death toll in Thailand refugee camp fire reaches 37; UNHCR aids victims*. [online] Available at: <<http://www.unhcr.org/en-us/news/latest/2013/3/51517c9e9/death-toll-thailand-refugee-camp-fire-reaches-37-unhcr-aids-victims.html>>. [Accessed 30 January 2018].

The Border Consortium. 2015. The Border Consortium Annual Report. Bangkok.[pdf] Available at: <http://www.theborderconsortium.org/media/67600/2015-Annual-Report-Jan-Dec.pdf>. [Accessed 10 February 2018].

UN Refugee Agency. 2015. UNHCR Thailand. *UN High Commissioner for Refugees*. [online] Available at: <https://www.unhcr.or.th/en>. [Accessed 31 January 2018].

UN Refugee Agency. 2018. UNHCR Thailand. *High Commissioner for Refugees*. [online] Available at: <https://www.unhcr.or.th/en>. [Accessed 31 January 2018].

UN Refugee Age. 2018. UNHCR Emergency Handbook: Camp planning standards (planned settlements). *UN High Commissioner for Refugees, Geneva*. 4th ed. [online] Available at: <https://emergency.unhcr.org/entry/45582/camp-planning-standards-planned-settlements>. [Accessed 31 January 2018].

Vungsiriphisal, P., Chusri, D. 2014. *Humanitarian Assistance from Displaced Persons in Myanmar: Royal Thai Government Policy and Donor, INGO, NGO and UN Agency Delivery*. Bangkok: Springer. Available through: SpringerBriefs in Environment, Security, Development and Peace website <http://www.springer.com/us/book/9783319027944>. [Accessed 10 February 2018].