

## 20 | Relocation and buffer zones

Environmental impact	1/3
Risk protection	3/3
Durability	3/3
Affordability	1/3

### Intro

#### Relocation

One of the four main strategy types for flood risk mitigation (see 1.2) is the partial or full relocation of the refugee settlement. If the flood risk or (expected) damages turn unmanageable, a settlement or parts thereof can be shifted to another location. This strategy implies a long process of securing adequate land, equipping it, and organizing the move of population. When planning new zones or settlement, refer to the principles and guidance described in UNHCR's Masterplan approach. While planning the relocation, a possible intervention for limiting flood risk on the new location is to add buffer zones along the areas at flood risk.

#### Buffer Zones

Buffer zones designate protective areas between particularly flood-prone locations and the refugee settlement. These buffers should be based on comprehensive flood risk assessments, the local topography, and climatic conditions. Usually, the designated areas prohibit any form of (residential) buildings. They foster the absorption or diversion of floodwaters and can include measures like floodplains, wetlands, flood resilient agriculture or tree planting (see Measures [16-19]); bioswales and infiltration basins, or permeable pavements (see Measures [08,10]); as well as engineered barriers such as dikes and levees (see Measure [01]).

Programming the area with activities and informing the population about the risk are crucial to avoid that the planned buffer zones are used for construction at a later stage. Awareness raising campaigns (see Measures [21] and [22]) should be repeated regularly for newcomers to be informed as well.

### Benefits and Risk

The relocation of an entire settlement increases the overall safety and well-being of the inhabitants and can reduce or avoid significant damage to the built and technical infrastructure. Selecting a new location provides the opportunity to prioritize long-term safety based on comprehensive site and risk assessments in advance. Moreover, the new site can support improved sanitation and shelter structures.

However, relocations involve the repeated displacement of already displaced communities. The change of location might harm established social networks, the loss of livelihoods, and can lead to negative psychological and emotional consequences. The inhabitants of the affected refugee settlement should be comprehensively informed and involved in the relocation process.

Moreover, identifying a new area for the humanitarian settlement can take a lot of time and include a complex process and logistics, including negotiations with local authorities. The relocation can also lead to the (short-term) disruption of essential services (e.g., healthcare, education). Lastly, the environmental impact of relocations and setting up new settlements can be significant.





Fig. 20 and 21: Buffer Zones in Cox's Bazar. Nadia Carlevaro, UNHCR n.d.

## Good practice

### Relocation of settlements in a flood - prone area in the Leitchuor refugee camp, Ethiopia.

The “Leitchuor” refugee camp in the Ethiopian Gambella region opened in late 2013 to host South Sudanese people fleeing from the violence in their country. Situated in a flood-prone area, the camp was severely flooded during the next rainy season in 2014. The only suitable solution was a permanent relocation of the people. A safer location was identified several kilometers away and refugees were relocated to the new settlement named “Jewi”.

### Buffer zones in Cox's bazar refugee settlement, Bangladesh.

Cox's Bazar hosts over 800'000 Rohingya refugees in the highly-dense settlement of Kutupalong, comprising 26 camps. The camps are located on hilly terrain prone to high risks of flooding and landslides. To mitigate the impact of floods, the lowlands most at risk of flooding were redefined as buffer zones and for agricultural use. In some planned camps (e.g. Camp 4 Ext.) steep terrain has been consolidated with nature-based solutions to create slow drains and outline buffer zones from living areas (UNHCR n.d).

## Overview of Criteria

### Type of Intervention:

Non-structural.

### Scale of Intervention:

Shelter-Plot-Block, Settlement

### Materials:

NA.

### Environmental Impact:

Depending on the local context, the relocation of a refugee camp due to flooding can include land clearances, excavations, leveling, or deforestation. This process can lead to the loss or disruption of the local biodiversity, wildlife habitats and ecosystems, while invasive species might occur. Setting up a new settlement requires also more water and energy resources and can lead to increased amounts of waste and the contamination of the surrounding nature. Relocation processes should always be based on comprehensive environmental impact assessments prior to selecting the new location and setting up the settlement.

### Targeted Natural Hazard:

Pluvial Flood, Coastal/Riverine Flood.

### Targeted Vulnerable Assets:

Buildings, Transport, Technical Infrastructure.

### Strategy Type:

Relocate, Reduce Asset Vulnerability.

### Implementation Time:

Medium (1 month - 1 year), Long (> 1 year).

### Effect Duration:

Short - term (<1 year), Medium - term (1 year to 10 years), Long - term (>10 years).

### Investment Costs:

High.

### Maintenance Costs (yearly):

NA.



## **Flood Risk in Humanitarian Settlements: Compendium of Mitigation Measures**

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