

## Attachment WP 1: Reconstruction and housing

<b>Evaluation of international examples of resilient reconstruction</b>	
<b>Disaster Refuge and Relief Urban Park System, Japan</b>	<p>Over the past 100 years, Japan has been exposed to several devastating earthquakes, which have triggered tsunamis and fires and claimed a large number of lives. In response to these disasters, the principle of Disaster Prevention Parks was initiated in 1978 and has been continuously developed to this day - a systematic establishment of open space systems that function primarily as evacuation sites and routes, firebreaks and bases for recovery and reconstruction in the event of a disaster.</p> <p>The parks are equipped with disaster prevention facilities such as solar-powered lighting, seating that can be converted into ovens and water pumps. Helipads are located on sports fields and designated path networks in the parks are dimensioned so that emergency vehicles can drive on them and evacuation routes can be set up.</p> <p>In addition to disaster prevention, the Disaster Prevention Parks are intended to maintain a collective memory of the disruptive event and thus raise risk awareness in society through local evacuation drills or visits to disaster prevention facilities. The parks thus combine places for recreation and leisure activities with planning safety standards in order to establish multifunctionally effective places of refuge.</p>
<b>Helsinki Underground Masterplan</b>	<p>The development of the Underground Masterplan in Helsinki is characterized by the threat to Finland from the Soviet Union in the 20th century. Nuclear threats during the Cold War led to the creation of the first underground facilities and shelters, which have been continuously expanded in recent decades.</p> <p>Due to its geological properties, the city's underground is ideally suited for civil defense. The underground facilities are used for various purposes and can be quickly converted into shelters in the event of an emergency. These include a church, an indoor swimming pool, play and sports facilities and a museum. A further aspect is the traffic development by roads and subway railroad, which on the one hand lead to traffic calming above ground and on the other hand ensure underground networking of the infrastructure. The Underground Master Plan comprises the planning of the underground city, including the transportation systems and the associated 5,500 protective facilities. The master plan also includes measures to develop the geothermal energy supply. Geothermal energy and constant underground temperatures help to promote Helsinki's climate neutrality in the energy sector.</p>

	<p>With regard to security, there is a broad acceptance of the construction of bunker facilities in Helsinki as well as the participation of the population in national and regional civil defense courses, which illustrates the awareness of the increased threat situation since the Russian war of aggression against Ukraine.</p>
<b>Kibbutzim in Israel</b>	<p>The terrorist attack by Hamas on October 7, 2023 poses great challenges and dangers, especially for the civilian population in Israel near the Gaza Strip. The kibbutzim, which have been threatened by rocket fire since then, are Jewish communal settlements in which daily life is organized collectively. Originally socialist and Zionist in character, the kibbutzim played an important role in the settlement and cultivation of the desert at the beginning of the Israeli state in 1948. Through communal living, villages developed with stable and resilient infrastructures, stores, schools and agricultural self-sufficiency.</p> <p>Today's 268 kibbutzim, in which a total of 117,000 people live, are mostly similarly structured and built. They are usually only accessible via a road that leads to the center. The fenced or walled village has a fortified checkpoint at the entrance and is clearly demarcated from the outside. Inside the kibbutz, the center has all public functions such as the administration, bus stop, supermarket, common dining room and public shelter. Furthermore, living space and industry or commerce as well as infrastructure such as water supply and electricity generation are separated from each other.</p> <p>Kibbutzim are particularly resilient in terms of civil defense. The settlement is particularly well protected due to an access road and the checkpoint as well as the walled area. Furthermore, infrastructure such as kindergartens and schools are well protected from rocket attacks and shrapnel by, for example, concrete slabs on the roof and bulletproof glass windows. Other aspects of resilience in the community are small groups of civilians who provide a voluntary defense force within the kibbutz.</p>
<b>Rotterdam</b>	
<b>Sendai</b>	

<b>Examples of resilient neighbourhood centres with (transitional) housing, shelters, infrastructure</b>	
<b>Quinta Monroy Housing and Villa Verde (Chile) by Elemental Studio</b>	<p>Providing rapid accommodation as a respond to the earthquake 2010 by adjusting building-standards and using the “core-plus-method”: Inhabiting half of a house with a basic standard and the opportunity to extend it when needed.</p>

	<p><b>Conclusions</b> <i>Redundancy: Suitable development areas for the new neighborhood have to be identified. Efficiency: Low costs because of modular and scalable system and local materials like wood (7500 \$ per unit in the case of Quinta Monroy Housing). Flexibility on expanding on long-term after the immediate accommodation of the people (from temporary to permanent housing).</i></p>
<p><b>Stuttgart: Refugee Housing Strategy due to migration flows in 2015</b></p>	<p>Decentralized accommodation of 8.000 refugees on 70 system buildings: systematized, open-system residential buildings with the same structure, max. 240 people/building and max. 3 buildings/location. Modular, convertible, deconstructible with a simple and temporary construction (within 11-13 weeks). The system buildings are complemented by parking spaces, bicycle parking, garbage boxes, stroller boxes, outdoor lighting, playground.</p> <p><b>Conclusions</b> <i>Efficient system, because reusable. Diverse usages within the building provided. Flexible because of the modular system, the decentralized distribution and limited cluster of buildings to avoid “shelter-ghettos”.</i></p>
<p><b>Munich: Refugee Housing Strategy due to migration flows in 2015</b></p>	<p>Decentralized accommodation of refugees, which is divided into four phases: (1) Central initial reception and registration; (2) Short-term reception for medical examination and distribution to other accommodation; (3) Immediate programme: Accommodation in lightweight halls, barracks / standard programme: Accommodation in fixed buildings / system buildings; (4) Accommodation in apartments in urban areas</p> <p><u>Example immediate program:</u> 20 lightweight halls distributed throughout the city, in which different uses are integrated, limited to 2 years, internally divided by wooden modules (Max-Pröbstl-Straße)</p> <p><u>Example standard program:</u> Modular buildings made of prefabricated wooden components that can be assembled quickly, are cost-effective and can be reused. A useful life of 7-10 years is intended.</p> <p><b>Conclusions</b> <i>The modular design enables refugees to be accommodated quickly and flexibly. After short-term accommodation, the four-phase strategy enables the decentralized distribution of refugees and long-term integration into existing neighborhoods (robustness).</i></p>
<p><b>Altenhagener Weg, Hamburg</b></p>	<p>Renovation and densification of a residential area from the 1950s. The housing stock was adapted to today's requirements and new housing was created through additional densification.</p>

	<p><b>Conclusion</b> <i>The modernization and densification of existing building structures is very <u>efficient</u> and integrates the architectural heritage. The existing row buildings are further developed into a <u>robust</u> structure of the neighborhood through new additions.</i></p>
<p><b>Municipality building Weltquartier Wilhelmsburg, Hamburg</b></p>	<p>In 1930, the Hamburg-Wilhelmsburg neighborhood, now known as „Weltquartier“, was largely built. The neighborhood was twice structurally severely damaged by World War II and a flood in 1962. In 1962, Hamburg wanted to abandon the neighborhood and therefore hardly invested in it - Thus, there was an high need for renovation. In the context of IBA Hamburg the goal was redeveloping Wilhelmsburg in favor of environmentally compatible growth without displacing local businesses and the population. In an innovative participatory process, the “Weltquartier” neighborhood with 770 residential units (existing and new buildings) and 46 commercial units was created by 2015. Since the beginning of 2013, renewable heating has been supplied by the neighboring energy bunker.</p> <p><b>Conclusions</b> <i>Long-term upgrading to a <u>robust</u> district, <u>efficient</u> creation of subsidized/affordable living space through redensification of existing buildings, <u>robustness</u> through energy bunkers</i></p>