# Emergency Shelter Kit Workshop

Gaza Emergency Shelter Response,
TSA TWG
13-15 November 2024

- TSA TWG on ESK

a) Basic ESK
b) Expanded ESK with timber sheeting

- TOR: Purpose and outcomes

- Key messages from workshop

- Advocacy for ESK

- Next steps

**ESK =**

**Timber framing kit**
**+**
**Sealing off kit**
**+**
**Toolkit**

**ESK =**

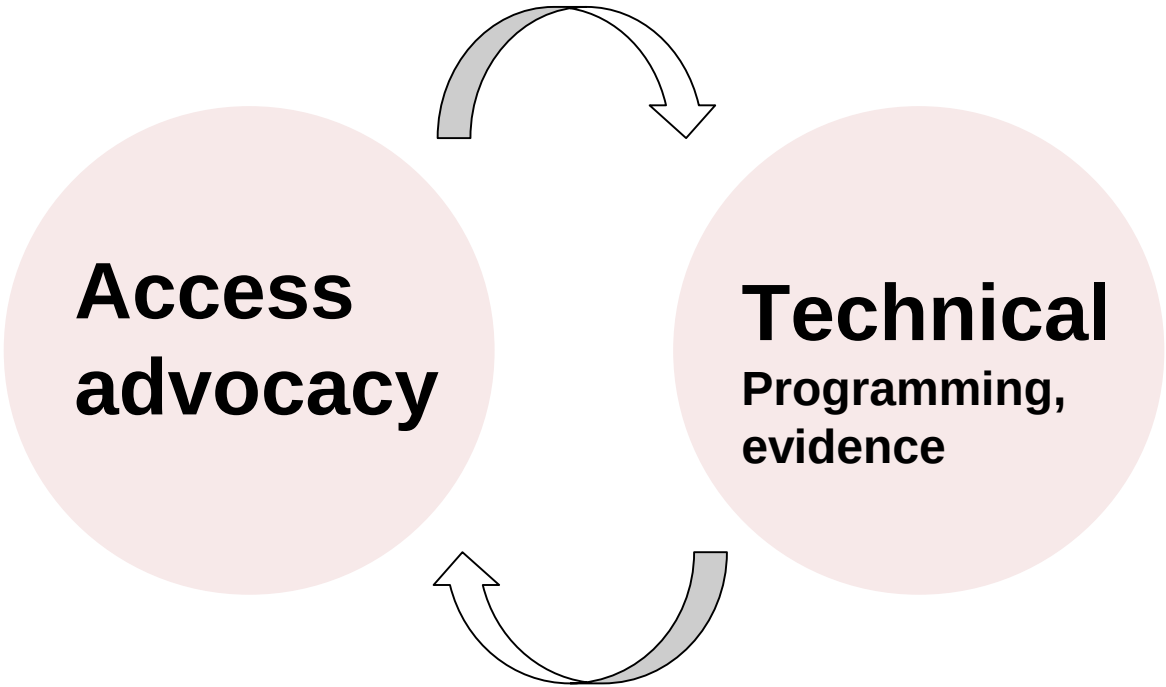
**Timber framing kit**

**+**

**Sealing off kit**

**+**

**Toolkit**


Access advocacy
Technical
Programming, evidence

# a) Basic ESK

## Basic Emergency Shelter Kit (BESK)

The Basic Emergency Shelter Kit (BESK) combines the **Sealing Off Kits** and the **Framing Kits** to construct an emergency shelter. It should be accompanied by a **Tool kits** that can be used by multiple households (5 households per kit is an appropriate figure if they are located at a reasonable distance from each other and belong to the same community).

| Basic Emergency Shelter Kit (BESK) | | | | | | |
|---|---|---|---|---|---|---|
| # | Item | Description | Unit | Qty | Ut. Cost USD | Total Cost USD |
| 1 | SoK | Sealing-off kit | kit | 1 | 65.3 | 65.3 |
| 2 | Framing kit | Framing kit | kit | 1 | 136 | 136 |
| 3 | Toolkit* | Toolkit | kit | 0.2 | 76.1 | 15.22 |
| | | | | | | $ 217 |

# a) Basic ESK

Framing kits

| Framing Kit | | | | | | |
|---|---|---|---|---|---|---|
| # | Item | Description | Unit | Qty | Ut. Cost USD | Total Cost USD |
| 1 | Batten 50 x 50 | 3m long*. Pine or fir tree wood of class C16 | piece | 22 | 5.5 | 121 |
| 3 | 40mm Timber Nails | Hot galvanised iron, for wood, 40mm, (1.1/2") | kg | 0.5 | 2.9 | 1.45 |
| 4 | 75mm Timber nails | Hot galvanised iron, for wood, 7.5cm (3") | kg | 0.5 | 3.7 | 1.85 |
| 5 | 3mm Rope | Polypropylene, diam. 3mm, minimum 3 strands, twisted | m | 30 | 0.2 | 6 |
| 6 | 6mm Rope | Polypropylene, diam. 6mm, minimum 3 strands, twisted | m | 30 | 0.2 | 6 |
| | | | | | | $ 136 |

*Dimensions are indicative and can be modified to suit logistical requirements and market availability.

# b) **Expanded ESK (with OSB and additional fixtures)**

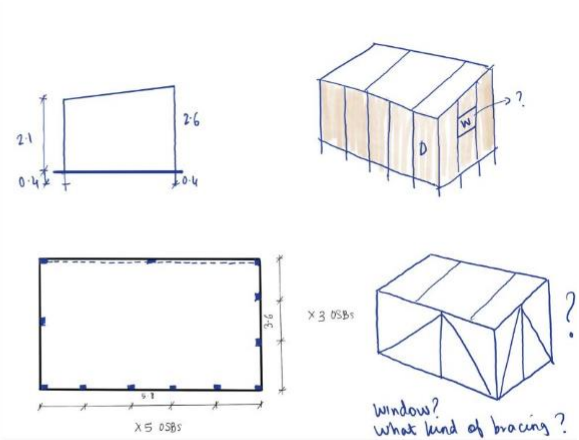
| Expanded ESK | | | | | |
|---|---|---|---|---|---|
| # | Item and Description | Unit | Qunatity | Use | Image |
| | Timber-Square | | | | |
| 1 | Timber 50x50 mm section. Length= 2.8-3 m. Class C16 *based on market availability and access constraints | piece | 20 to 22 | For emergency shelter support as timber framing |  |
| EXTERIOR GRADE PLYWOOD SHEETING | | | | | |
| 2 | Oriented Strand Board (OSB/3 for use in humid conditions). Dimensions 120 x 240 mm, thickness 9mm | sheet | 9 | For emergency shelter support |  |
| TARPAULIN | | | | | |
| 3 | Tarpaulin with reinforced bands 4*6M, white colour. | piece | 3 | https://emergencymanual.iom.int/sheet-tarpaulin-4mx6m-reinforcement-bands | |
| FIXINGS AND ROPE | | | | | |
| 4 | Clout Nail Pack 40mm, 2.8 mm x 40mm, Galvanized, high quality low carbon steel Q195 or Q215 or Q235 | kg | 1 | For fixing OSB and metal strapping to frames. Not suitable for fixing timber together. |   |
| 5 | 75mm Galvanized Steel Common Nail - 8D 3 mm x 75 mm, High quality low carbon steel Q195 or Q215 or Q235 | kg | 2 | Fixing timber together | |
| 6 | Nails with Washer Head / Roofing nail with umbrella head - Electrogalvanised / twist shank with washer. Size: 2.70mm × 40mm | kg | 1 | For fixing plastic sheeting/tarpaulins (washer prevents tearing) | |
| 7 | Screws for Wood - Gauge 4 x 30 'pozidrive' #2 heads | kg | 0.25 | For securely fixing framing and metal straps, angles and hinges together | |

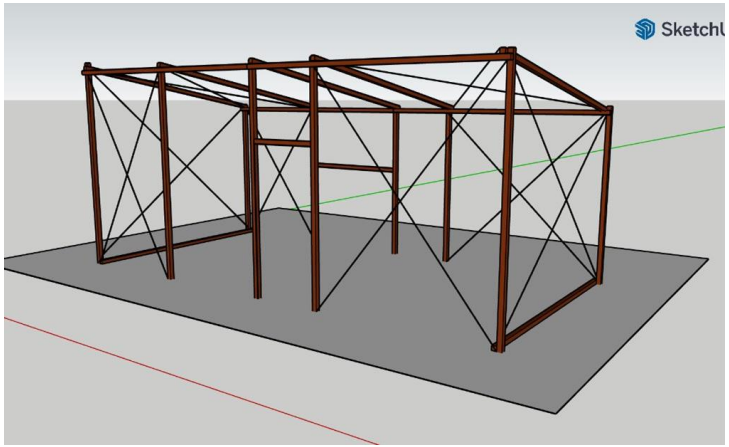
# OSB - Oriented Strand Board

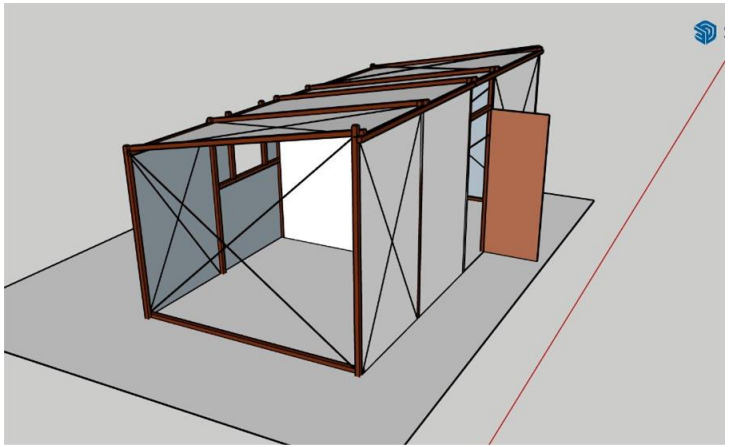
# TSA TWG on ESK

**ESK**

Finalizing kit, making assumptions, testing ideas, bringing key TWG contributors on the same page



# ESK workshop TOR

**Incremental and household-led ESK assistance.**

Purpose of workshop was to inform ESK programming on the following

- Provide safe and durable construction
- Identify priority materials and tools (validation / recommendations for ESK)
- Optimize the use of materials
  - Minimize waste
  - Maximize space with materials provided
- Minimize skill requirement

# Feedback on workshop TOR by Shelter Cluster/TWG members

## Contextual Considerations

- Access issues
- Winterization, summarization
- Land constraints: density, congestion
- Return to damaged dwellings
- Limited tools in Gaza
- Transport of materials from distribution sites

## Technical Considerations

- Isolating shelter from ground
- Anchoring
- Use of ESK for damaged dwellings
- Lengthening of beams with small section timber
- “Keeping it Simple”
- Focus on minimum-sized shelter, incremental approach
- Alternatives, such as connections in absence of nails

# Key messages

**1) Timber lengths must be minimum 2.4m**

This is because 2.4m lengths or longer can be used to create adequate covered living area, and smaller lengths cannot be joined together as the joints are too weak.

## Key messages

### 2) Smaller section timber 5cm x 2.5 cm is recommended as an option

The workshop recommends 5 x 2.5 cm section timber but 5 x 5 cm is acceptable. The reason for this is that if the 5 x 2.5 cm timber is used, less volume of material is needed to create the same covered area, and the construction is stronger and more resilient

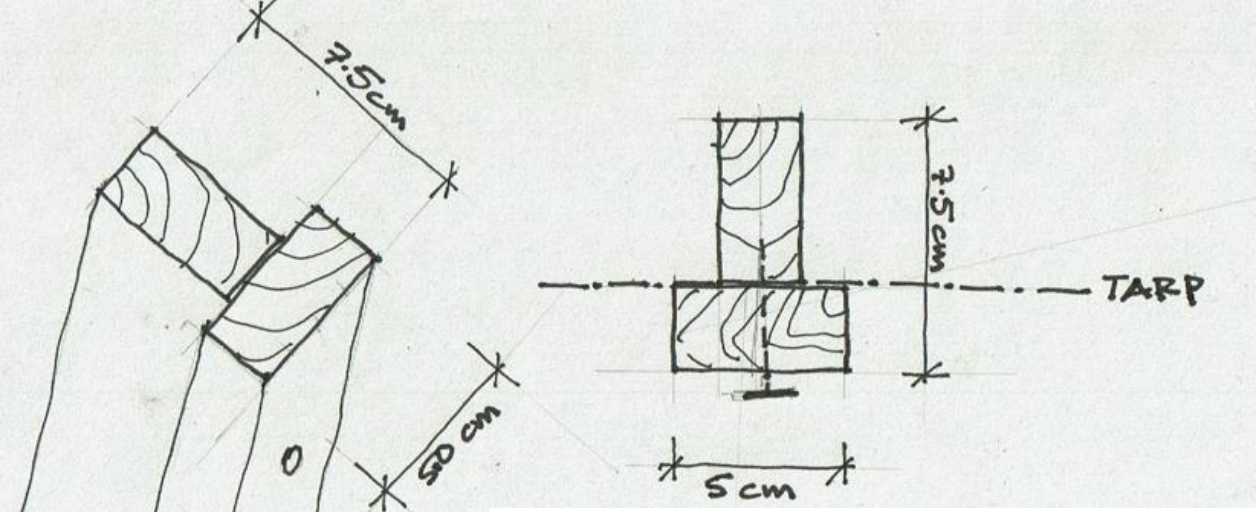
Less volume of material per shelter means that more shelters can be built for each load of materials.

## Key messages

**2) Smaller section timber 5cm x 2.5cm is recommended as an option**

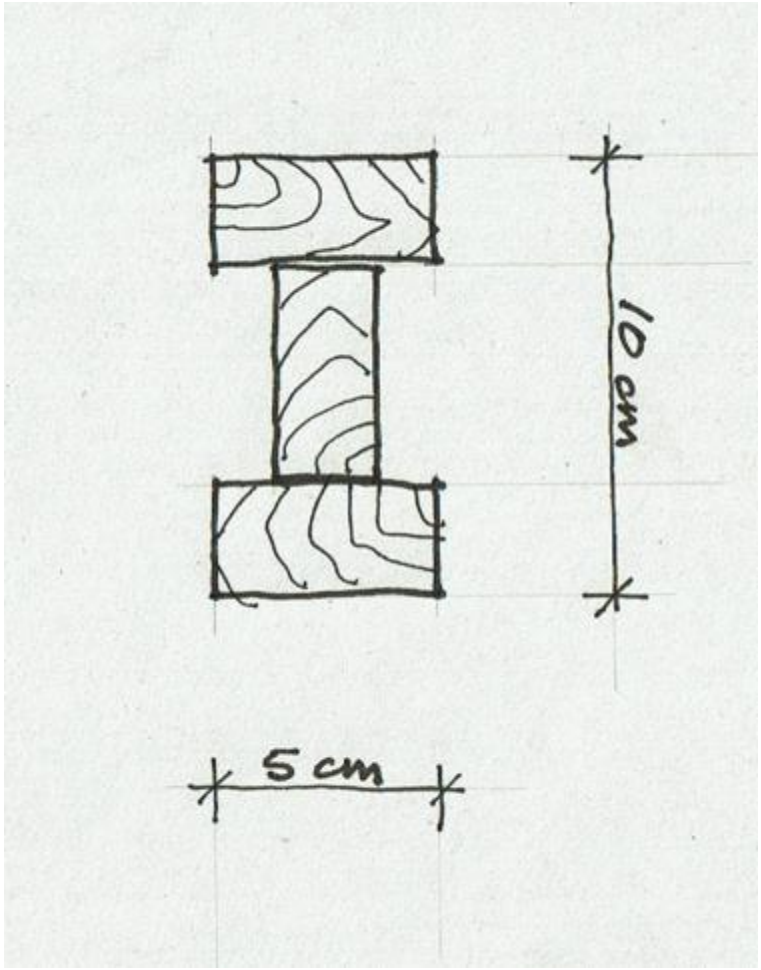
The 5 x 2.5 cm timber is joined together in a T-section to make a stronger frame and fixing for the tarpaulin at the same time

Smaller nails (40-50mm) can be used to make the construction. Smaller nails are easier to construct with and more cost effective as there are more nails in each kilogramme.




Why we recommend 5 x 2.5 cm (2 x 1 inches) timber.

- The T-column has an effective section equivalent to 7.5 x 5 cm but uses less timber.
- It can also be used to connect the tarpaulin securely.
- The tarp also creates a diaphragm that braces the frame.




The I-beam is made of three lengths of 5x2.5cm timber. It has an effective depth of 10cm and can span the 4m width of a T-shelter. It is only suitable for supporting tarpaulin or very light-weight material.

## Key messages

### 3) Frame construction method is recommended

Frame construction is recommended as the frames are constructed on the ground before being raised and joined together to form a structure.

There is no working at height. The frames can be constructed remotely in a production line in an temporary workshop.

Skill level is less than for a structure where posts are inset into the ground.

Frame construction is suitable for both hard and soft surfaces and there are anchoring options for each surface

# Key messages

## 3) Frame construction method is recommended

# Key messages

## 4) Minimum toolkit needed for ESK: Hammer, wood saw, tape measure, and nails.

**Nails**
Smaller nails (40-50mm) can be used to make the construction. Smaller nails are more cost effective as there are more nails in each kilogramme.

Nail recommendation:

- If 5x5 timber then: 75mm nails for fixing timber and 30mm clout (large head) nails for fixing tarpaulins
- If 5x2.5 timber then: 40-50mm nails and 30mm clout nails for fixing tarpaulins and nail plates.

# Key messages

**5) Using 2.4m and 1.2m modules to optimize use of ESK materials**

Minimum wastage to optimize available material

Ease of construction to simplify construction techniques

Panels combined in different configurations

Additional key messages: on various structural uses of OSB/timber sheeting and small section timber to create trusses and long beams: this will be introduced incrementally - first step to bring in timber.

## Advocacy for ESK: access to timber and toolkits

- Partners submitting COGAT list for preclearance
- Rejections being recorded by Shelter Cluster for advocacy
- Partners and Cluster coordinating with donors for advocacy - especially on timber

The immediate priority is to ensure supplies of:

- Timber - untreated timber is strongly recommended
- Timber sheet
- Tarpaulin
- Nails (sizes depending on timber size)
- Hammer
- Wood saw
- Tape measure (if really necessary this can be omitted)

## Next Steps by TSA TWG for ESK

- Incorporate feedback from Cluster partners into ESK key messages
- Develop ESK technical guidance and IEC materials
- Support partners to carry out ESK pilot
- Continue to inform advocacy needs for ESK
- ESK with timber is one solution: to continue to develop other solutions to meet scale of emergency needs.