Ukraine Shelter Cluster

Winterization Recommendations 2024-2025

UKRAINE SHELTER CLUSTER
Coordinating Humanitarian Shelter and Settlements

Version 1.5

Photo credit: Solid fuel distribution by org. CORE

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2 Context

It is estimated[1] that since February 2022, close to 2 million housing units have been damaged, with over one-fourth of the damaged units being destroyed, while three-fourths are partially damaged. In the housing sector, of the 11 percent increase in the cost of damage since RDNA2, approximately a fifth can be attributed to the damage caused by the breakage of the Kakhovka Dam and the subsequent flooding (primarily in the Khersonska oblast). Beyond official estimates, the first half of 2024 saw significant damage to housing in the country's east, south, and northern parts, further deteriorating the situation and increasing the number of persons uprooted from their homes. The upcoming winter of 2024-2025 will be detrimental to various groups of people, including internally displaced persons (IDPs), those not displaced in conflict-affected areas, returnees, and host communities. Despite the launch of Resolution #930 in September 2023, which identified minimum standards for Collective Sites, many still need to be equipped and require regular maintenance. Additionally, IDPs are frequently housed in privately rented or substandard houses that, like most of the housing in Ukraine, may lack adequate insulation. Returnees and non-displaced individuals also face similar insulation challenges in their homes, and the situation is worsened by conflict-related damages such as leaking roofs, broken windows, and damaged perimeter walls, which compromise the thermal integrity of the houses. This is particularly relevant to the areas within or close to the front line. However, even in larger cities, targeted attacks on energy infrastructure will lead to increased power cuts and reduced heating capacity.

Furthermore, damage or a lack of maintenance has also affected the heating systems in collective sites and individual houses and apartments. In many cases, these systems, including water heaters, electricity grids, gas and hot water pipelines, internal pipes, radiators, and stoves, must be reactivated, repaired, or replaced. Portable heating appliances should be provided in cases where the heating system is non-existent or cannot be restored before the upcoming winter season. Solid fuel and stoves (including fittings and installation equipment) should also be supplied, even in cases where access to coal or firewood markets is restricted or regular suppliers refuse to deliver. The damage to collective heating systems, electricity facilities, and the grid will result in households and communities relying on solid fuel as an alternative option, regardless of price increases. The destruction of the Nova Kakhovka hydropower plant and other hydropower plants will considerably impact energy coverage during winter. Even with full access to functioning heating systems, many families will need help paying for heating due to the rising cost of living, loss of income, and depletion of savings during displacement.

In addition to addressing heating issues, essential household items such as warm winter clothing, thermal underwear, blankets, and quilts are needed for displaced individuals, returnees, and all those affected by the conflict who have lost their belongings, lack access to markets, or cannot afford to purchase essential winter items. While many have been provided with these items in the previous year, the Shelter Cluster realizes that daily shelling incidents are still occurring in addition to newly evacuated persons. These persons may need such items, and interventions should be based on a sex and age-disaggregated household needs assessment according to the vulnerability criteria found in the Shelter Cluster HNRP 2024 Activities Handbook. These provisions can be made either in-kind or through cash assistance, specifically for winter preparations.

Assistance was guided by the principle of deduplication, where partners were encouraged to confirm whether beneficiaries were already receiving state subsidies and assess whether the amount received was sufficient to meet their needs. The Shelter Cluster has consistently worked to minimize duplication in winter activities both within and between clusters through traditional coordination mechanisms. Partners should refer to the deduplication section for each winter support activity in the abovementioned Activities Handbook.

The 2024-2025 Winterization plan builds on last year's experiences, lessons learned[2], and stakeholders' feedback. These activities and the associated procurement chains will require considerable time and financial resources. The Government of Ukraine (GoU) is taking the lead in preparing and implementing Winterization initiatives, while humanitarian agencies will also play a complementary role.

1 Ukraine Rapid Damage and Needs Assessment February 2024 (RDNA3). It is important to note that some changes in damage (increase or decrease) compared to RDNA2 are linked to the inclusion of new or improved data, changes in subsector classification, or adjustments in methodology and assumptions.

2 Shelter Cluster Lessons Learned for Winterization 2023-24

3 Cluster Objective Two (CO2)

For HNRP 2024, of overall three cluster objectives the Shelter Cluster has dedicated a single objective solely to Winterization.

"CO2 is to deliver emergency shelter and NFI assistance mitigating the impacts of harsh winter weather for internally displaced people, returnees, and non-displaced people while minimizing environmental impact." [3]

Winterization for the Shelter Cluster refers mainly to life-saving activities that deliver essential relief to the vulnerable population, ensuring they receive necessary assistance and protection during harsh winter conditions.

4 Winter Objectives

Although there are dedicated winter activities, other regular cluster activities can also contribute to resilience against winter. Therefore, in this document, activities are categorized according to the three following winter objectives (WO) to clarify their winter purposes.

Winter Objective 1: **Personal Insulation**

Maintaining core body temperature through various personal non-food items, including winter clothing, winterization kits, blankets, etc.

Winter Objective 2: **Heating**

To raise and maintain core body temperature. The heating type varies by building type and location, including using the gas central heating system, electric heater, coal, and wood. Understanding the heating type and related expenditure (utility bills or solid fuel) by location, by household and market assessment is vital to identifying the most appropriate modality of assistance.

Winter Objective 3: **Shelter Insulation**

To protect from the elements and provide essential insulation (shelter should have at least one warm room and, depending on the number of inhabitants, at least heated sleeping spaces). Interventions can also seek to close the house's thermal envelope in winter and improve substandard housing to improve insulation and heating rates.

[3] Please see Shelter Cluster section in HNRP 2024.

5 Activity Reports

5.1 Winter Duration

The duration of one winter season refers to the six-month period from the 16th of October until the 15th of April each year (see annex 12.1).
The duration of the winter reporting period is from the beginning of October till the end of April.

5.2 Reporting Mechanism

Table 1 - Reporting

WO	Activity	Status	Ideal Implementation	When to report as a completed activity
WO1: **Personal Insulation**	1. Winter Clothing	Specific Winter activity	August to October to prepare pre-identified households for winter. From October to March to support newly displaced or evacuated persons or most recent victims of shelling with basic items for maintaining core body temperature	Following the distribution and reconciliation of beneficiary lists, the deadline for the entire winterization and winter period is April reporting, which will take place at the beginning of May.
	2. NFI for Winter	Specific Winter activity	August to October to prepare pre-identified households for winter. From October to March to support newly displaced or evacuated persons or recent victims of shelling with the most basic items for maintaining core body temperature	Following the distribution and reconciliation of beneficiary lists –the deadline for the entire winterization and winter period April reporting, which will take place at the beginning of May.
	3. NFI for Households	Regular or Emergency Response Programming	Shelling victims were informed by a SADDD-based household needs assessment based on vulnerability criteria in the Shelter Cluster Activities Handbook for newly displaced or evacuated persons.	Following distribution and reconciliation of beneficiary lists – This activity can be reported ideally the month following the distribution – it won't be tagged as a winterization activity outright.
	4.Invincibility Kits (non-HNRP activity)	Specific Winterization Activity		Activity considered non-HNRP
WO2: **Heating**	1. Winter Energy (cash or in-kind)	Specific Winter Activity	August to October to prepare pre-identified households for winter, with the latest distributions occurring in November	At the subnational level, as soon as initial distribution is complete. For Activity Info, pay close attention to the distribution date, which should align with the actual distribution date. The deadline for reporting to Activity Info will be January reporting will be done in February. Fuel distributed from March onward could be considered a

WO	Activity	Status	Ideal Implementation	When to report as a completed activity
				failure to cover the winter energy needs of the winter season and could be excluded from the Cluster's reporting.
	2. Winter Cash for Utilities	Specific Winter Activity	October to April to prepare pre-identified (August – September) households for winter	April reporting during the month of Mays
	3. Heating Appliances	Specific winter Activity	August to October to prepare pre-identified households for winter, with the latest distributions in November.	For Activity Info, pay close attention to the fact that the activity date is in line with the actual date of finalization of the installation or distribution. The recommended deadline for reporting to Activity Info will be January reporting will be done in February.
WO3: Shelter Insulation	1. Insulation of Substandard Houses	Specific Winter activity	Year-round (May-May)	For Activity info, this activity is reported ideally in the month following the completion of the works.
	2. Humanitarian Light and Medium repairs of conflict-damaged housing (to close the thermal envelope)	Regular Programming	Year-round	For SIDAR, as soon as the address is enrolled in agency programming (see SOP on emergency response for guidance on enrolment) upon completion of works, complete the checklist in SIDAR and ensure that the thermal envelope is checked for all works that complete that standard. For Activity Info RMM, the month after the completion of works
	3. Refurbishment of Collective Sites	Regular Programming	Year-round	Ahead of the work, inform the subnational coordinator and the CCCM Cluster which collective sites have been selected for repairs. For Activity Info, reporting on the completion of works is ideally done in the month following the completion of repairs.

6 Winter Response Strategy

6.1 Modalities of Assistance

For winterization 2024-2025, the Shelter Cluster is building on its experiences from the previous winter season regarding which modalities would be appropriate where and for whom.

Cash is one of several modalities through which Shelter objectives can be achieved and shall be recommended as the preferred response option whenever feasible and aligning with beneficiary choice. Programming for cash-based assistance for fuel/utilities requires evidence, tools, guidance, and capacity to meet shelter outcomes (refer to the Shelter Cluster's HNRP 2024 Activities Handbook and this technical guidance). Humanitarian organizations should conduct responsible programming by ensuring that the cash modality is assessed, used, and monitored effectively and potentially switch modalities if required. This provides greater assurance that the activity has the desired outcome (more detailed 8.1.4).

Depending on the context, please refer to the recommendations in the following ground rules:

- It is crucial to always consult the relevant subnational Shelter Cluster coordinator before planning the intervention to receive the best possible advice regarding the modality of response. For contact information of sub-national coordinators, please visit the Shelter Cluster website.

- Partners are encouraged to use the JMMI dashboard to analyze market functionality. The dashboard is updated monthly.
- Along the frontline, authorities have begun suggesting **cash** or **voucher** assistance because frontline residents can often travel to markets outside the 15 km buffer zone.
- Vulnerabilities and capabilities are specific to individual households; partners are reminded to select the best modalities based on beneficiary presence, vulnerabilities, and market capacity to provide for the intended beneficiaries at an appropriate scale and quality.
- It is important for each agency to conduct its own needs and market assessments to support various winterization activities.
- If the local markets have the capacity and the targeted population does not belong to any vulnerable categories unable to reach the local market, **cash** is the preferred modality. It provides recipients with flexibility and choice and stimulates the local economy, among other benefits.

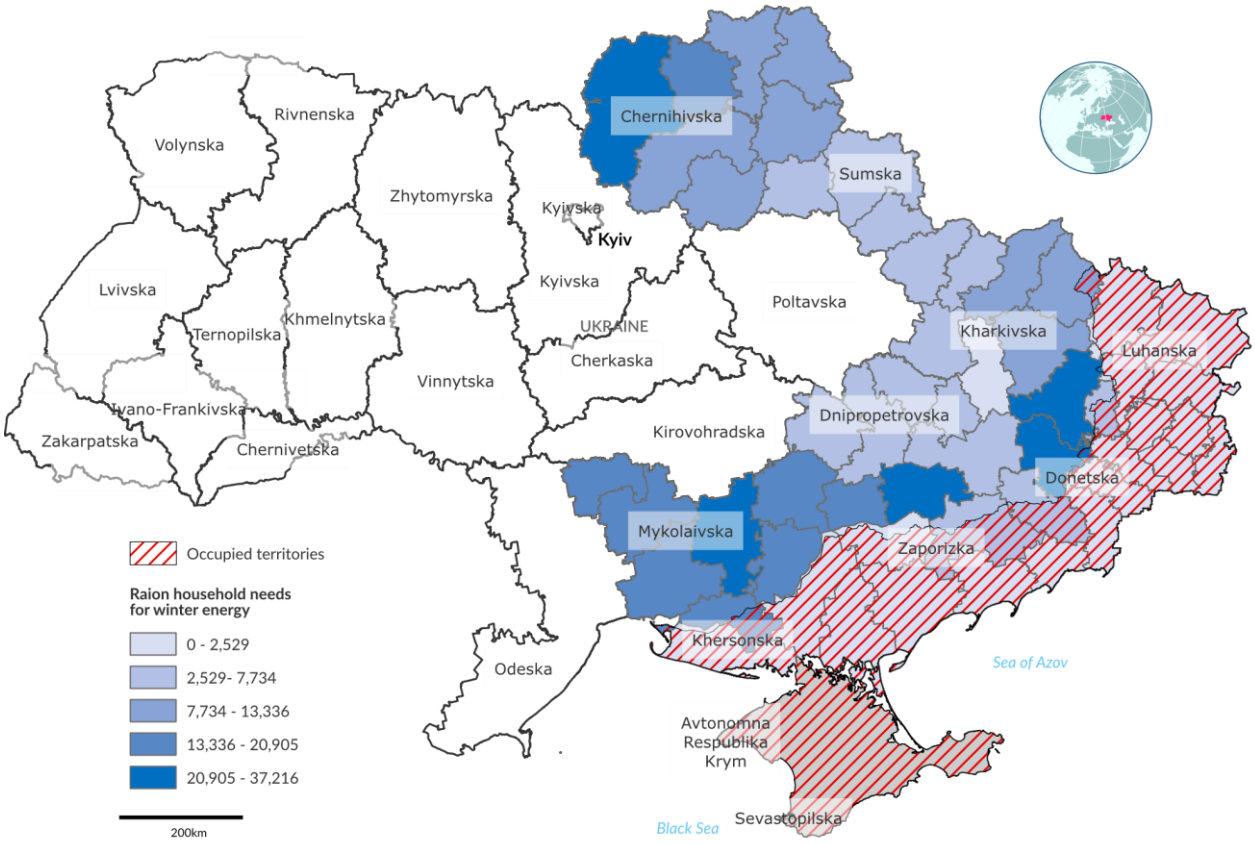
- In areas where markets are unavailable, lack capacity and the target population cannot access markets elsewhere or belongs to vulnerable categories unable to access nearby markets, **in-kind** assistance is recommended. These areas are mainly around the front-line oblasts within the 15 km buffer zone, newly accessible areas.
- Please see the modality section per activity in Shelter Cluster HNRP 2024 Activities Handbook.

In 2024, the Ministry of Reintegration and the Shelter Cluster decided to expand the vulnerability criteria needed to identify the most vulnerable populations in need of solid fuel assistance. In June, local administrations collected data. The solid fuel needs of the most vulnerable populations were divided by modalities.

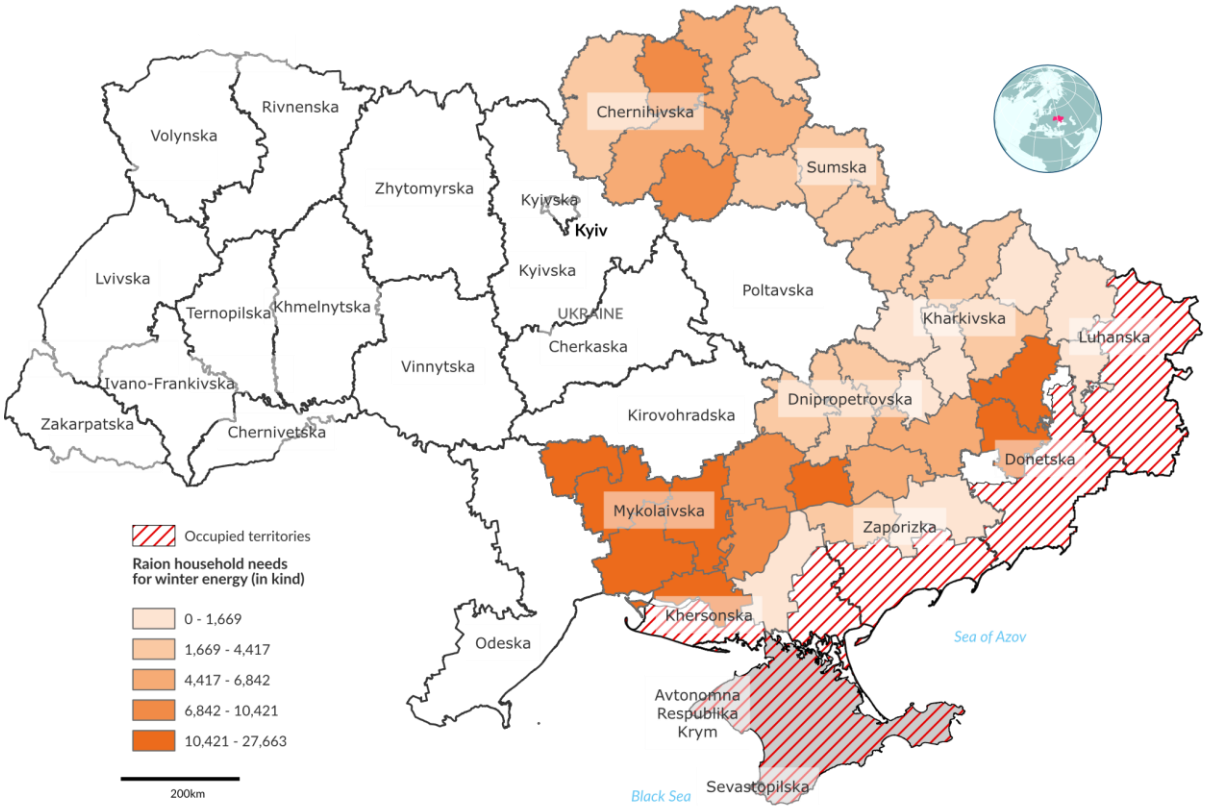
Currently, the Shelter Cluster is finalizing a dashboard that will serve as an effective tool for coordinating the actions of the Cluster and the authorities in providing the population with solid fuel in the winter season of 2024-2025. The dashboard should be used by partners when planning solid fuel distribution.

The following maps are excerpts of Government collected data on the dashboard:

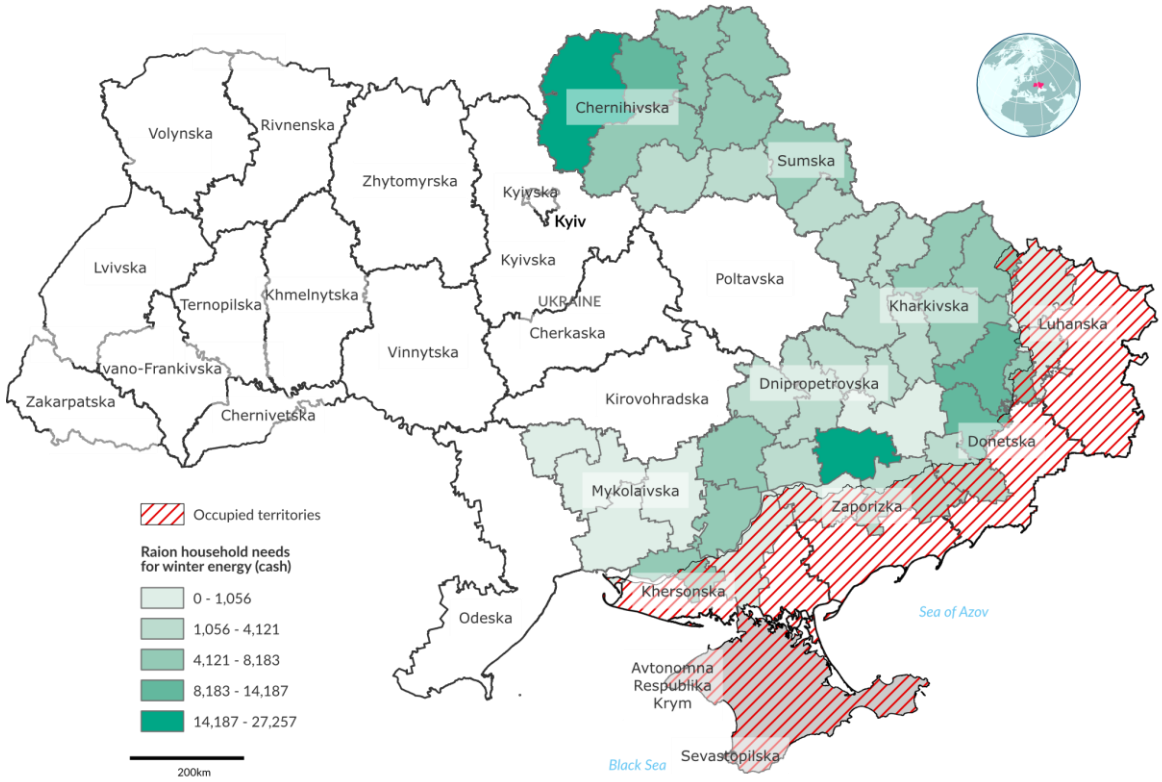
All solid fuel needs



In-kind solid fuel needs



Cash for solid fuel needs



6.2 Cold Spot Analysis 2024/25

The key findings of REACH are following:

- The Cold Spot Index (CSI)[4] for winter 2024/25 identified Kharkivskyi, Bohodukhivskyi and Chuhuivskyi (Kharkivska oblast) and Sumskyi (Sumska oblast) as the raions with the highest winter-related risks due to a combination of severe winter conditions, high levels of vulnerability (significant presence of internally displaced persons (IDPs) and elderly populations), and significant conflict-related damage.
- Conflict-related damage has significantly impacted Ukraine's energy generation and distribution infrastructure, exacerbating populations' vulnerability to winter conditions through frequent power outages disrupting essential services like heating and water supply. The winterization response should remain flexible and adaptable to address the potential further degradation of the energy infrastructure.

6.3 Targeting, Prioritization & Vulnerabilities

Before starting any activity, partners should ensure that Shelter Cluster Activities Handbook recommendations have been addressed. The Handbook chapter "Targeting, Prioritization and Vulnerabilities," together with "Preconditions" and "Activity-specific vulnerabilities" sections for each activity, provides instructions that help to reach and assess the most vulnerable households and individuals. When prioritizing one area over another, Shelter Cluster strongly recommends coordinating with Shelter Cluster sub-national coordinators and engaging with the affected community and local authorities. The prioritized target groups within these regions are the following:

- Displaced families.
- Non-displaced families affected by war or living in substandard houses.
- Returnee families.

Following Ministry of Reintegration Order No. 309 dated 22.12.2022, nine regions were identified as priorities for assisting with solid fuel: Dnipropetrovska, Donetska, Zaporizka, Kharkivska, Luhanska, Mykolaivska, Khersonska, Sumska, and Chernihivska oblasts. Since Luhanska oblast is almost totally occupied, the donors' focus has shifted to Odeska oblast.

Consistently with the role of complementarity with State's initiatives, the focus of shelter and NFI humanitarian agencies' winterization programs should be all families who:

[4] Please consider the results of Cold Spot Risk Assessment Winterization 2024/2025 (REACH)

Table 2 - Beneficiary selection

1. **in general, they will have their winterization needs unmet because:**

- they do not have the capacity
- not receiving winterization-related state support (state subsidies or other winterization programs; see Chapter about Engagement with government in this document)

and, at the same time,

and more specifically

2. **live in the areas identified as priority areas for winterization assistance:**

Shelter cluster activity plans in HNRP 2024 focus mostly on areas known as the Crescent[5] zone which is highly targeted by the continuous Russian attacks. The Crescent currently includes areas in Southern, Northern, and Eastern oblasts and prioritization inside this zone is for:

- areas with high concentrations of collective sites
- areas with difficult access to services and markets
- frontline and isolated areas
- areas with a concentration of damaged houses and apartments

Or,

Aside from the possibility of sudden spontaneous Russian attacks, the Central and Western oblasts are not as critical as the Crescent zone. Activity prioritization should be considered in case of emergency crisis for:

- areas with high concentrations of collective sites
- areas with a high concentration of IDPs renting accommodation or being hosted

and, at the same time,

3. **belong to one of the prioritized target groups:**

- displaced families in collective sites
- non-displaced families in war-damaged areas
- non-displaced and returnee families in damaged houses
- displaced, non-displaced, and returnee families in substandard houses
- displaced, hosting, non-displaced, and returnee families not able to pay utility bills

and, at the same time,

4. **belong to one or more of the vulnerability groups.** Please use Chapter 5 and related annexes in the HNRP 2024 Activities Handbook v.1.2 to identify the most vulnerable people.

- persons with disabilities
- older persons (60+)
- single-headed households and/or women who are the main caregivers for the family
- families with three or more children (under 18 or 23 years if they are studying)
- pregnant women and families with children under three years old
- persons with chronic illness and serious medical conditions (including mental health issues)

etc.

[5] **The crescent:** As of July 2024, this term pertains to the regions, or oblasts, where the front line of the ongoing conflict passes through directly. As of now, this includes Odeska, Kharkivska, Dnipropetrovska, Khersonska, Zaporizka, Donetska, and Luhanska, where the front line lies within the borders of these oblasts. Additionally, Kharkiv (some areas), Sumska and Chernihivska are included, as the front line aligns along the border with the Russian Federation in these areas.

7 Winterization Objective 1:
Personal heating - maintaining core body temperature

An assessment of local markets' feasibility must always inform the provision of winterization NFIs. This can help to choose the implementation modality (in-kind vs. cash) with a preference for using cash to ensure people's choice and priorities as non-food items, winter clothes, and other HHs items are quite available in most of the country except frontline areas.

Furthermore, given the provision of many NFI kits during the first 2.5 years of the crisis, the Shelter Cluster recommends using household needs assessments informed by sex, age, and disability disaggregated household needs assessments.

Items listed in sub-chapters 7.1.1 and 7.1.2 are not to be considered (procured, distributed, and reported) as a kit. It is anticipated that for winterization 2024-25, the primary persons needing these items will be newly evacuated or displaced persons and victims of shelling incidents. Therefore, it is recommended that the person receive only the items they need to avoid accumulating solid waste in locations struggling with limited waste management services. For more information on reporting, please seek guidance by contacting the Shelter Cluster.

Quality Control for In-Kind Assistance
This is essential to ensuring the efficacy and integrity of in-kind assistance within the shelter cluster. Each participating organization is mandated to adhere to its internal quality control procedures, encompassing various dimensions of aid provision. This comprehensive approach not only upholds the dignity of beneficiaries but also fosters their well-being while maintaining harmony with aid efforts from other organizations. To fortify this commitment, the cluster technical coordination is a resource for partners requiring additional guidance or direction. This collaborative framework reinforces the seamless coordination and delivery of aid, affirming the cluster's overarching goal of providing effective and dignified support to those in need.

About Recommended Prices in This Document
All prices indicated in the document are in US dollars. Please ensure that you consider the rate when reviewing the costs.
The prices listed are for materials only and do not include installation costs.
The recommended prices provided by the Shelter Cluster are intended as general guidelines and are subject to fluctuations influenced by inflation and market dynamics. These prices are meant to give partners a general idea of the price range for calculating their winter planning. It is important to note that larger organizations often engage in bulk purchases from international suppliers under pre-negotiated contracts, which can result in more favorable pricing. To calculate the Humanitarian Needs and Response Plan (HNRP) budget, updated price information will be utilized, which might deviate from the prices presented in this document. Should further clarifications be required, we encourage you to contact the Shelter Cluster for consultation and additional information.

Note: The Shelter Cluster's approach to winterization non-food items (NFI) remains the same as for all other Shelter Cluster NFI kits:

- on one side, the Cluster acknowledges the different capacities, approaches, and strategies that different partners have in this response, which will necessarily result in differences in the composition of the winterization NFI they will choose to distribute.
- on the other side, the Cluster promotes the harmonization of the response as a way to make sure that (a) winterization assistance received by anyone in need is complete, sufficient, and up to the agreed standards and (b) Social cohesion: minimize the risk that differences in type and amount of assistance received by communities living in similar contexts but covered by different agencies lead to tensions with beneficiaries, authorities, donors, etc.

If necessary, partners are expected to coordinate with the relevant sub-national shelter cluster coordinator to achieve a degree of flexibility in designing their response, including the possibility of adding winterization items to the list recommended in this document, based on their own strategy, assessment, and capacity and with a needs-driven, context-tailored approach; they will be requested to comply with the principles of harmonized assistance mentioned above.

7.1.1 NFI for Winter (SN110)
(Distribution of NFIs to increase individual thermal comfort)

This activity covers the distribution of winterization items not already included in other sections (see 7.1.2 and 7.1.3).

Table 3 – NFI for Winter

NFi kit for Winter* Composition and indicative prices 2024-2025 **(1 USD = 39.5 UAH)**			
Item	**Cost**	**Item**	**Cost**
▪ mattresses	20-30 USD	▪ rescue blanket foils[6]	4-6 USD
▪ sleeping bags	15-20 USD	▪ thermos flasks	15-20 USD
▪ high thermal blankets	15-20 USD	▪ portable stove + dry fuel (or candles)	10-15 USD

*Quantity of each item is 1 piece for 1 person

7.1.2 Invincibility Kits (Non-HNRP)
(Distribution of NFIs to increase collective thermal comfort)

The Shelter Cluster introduced an "invincibility kit" in Ukraine in 2023 to prepare and equip invincibility points and bomb shelters, which are spaces designed to protect the civilian population during acts of aggression from the Russian Federation and provide a warm space where users may rest, recharge mobile phones and power banks whilst also having access to facilities to heat food and water. The government has reported that these points have been identified as potentially under-equipped and needing humanitarian assistance.

The "invincibility kit" accommodates more prominent groups, up to 20 individuals. Its purpose is to ensure the protection and resilience of more people during Russian attacks and maintain the preparedness for the shelters for a more extended period.

Kit includes winterization items, such as sleeping items, kettles, emergency generators, etc., to equip invincibility points and bomb shelters for individuals and collective use (see annex 12.2).

7.1.3 Winter Clothing (SN 109)
(Distribution of warm clothes to increase individual thermal comfort)

Items in the list are not to be considered (procured, distributed, and reported) as a kit. At the same time, the Shelter/NFI Cluster does not encourage partners to provide partial assistance to families. The Shelter Cluster anticipates that since winterization clothing was distributed to many frontline, border, and displaced persons in the first 2.5 years of the crisis, the primary persons needing this assistance will be newly displaced and evacuated persons and new shelling victims. The selection of persons for this type of assistance should be informed by a household needs assessment based on the vulnerability criteria found in the Shelter Cluster HNRP 2024 Handbook. Where markets are available and functioning, the Shelter Cluster encourages cash approaches to enable beneficiaries to choose and select items in correspondence with their preferred sizes and quality.

6 Items like rescue blankets should be accompanied by a user manual that clearly explains how to use them to the intended beneficiaries.

Table 4 - Winter clothing set

Winter Clothing set* Composition and indicative prices 2024-2025 **(1 USD = 39.5 UAH)**					
Item	**Cost**		**Item**	**Cost**	
Winter jacket	75.0	USD	Winter hat	6.0	USD
Winter boots	50.0	USD	Winter scarf	6.0	USD
Thick socks	3.0	USD	Thermal underwear	20.0	USD

*A one-person set is indicated.

8 Winterization Objective 2:
Heating: Raising and Maintaining core body temperature

8.1.1 Winter Heating Appliances (SN 107)
(Distribution of heaters to increase living spaces' thermal comfort)

Home heating appliances include solid fuel stoves, electric heaters, gas heaters, and other heating appliances to heat home rooms.

Solid fuel heaters

Due to electric outages, Shelter Cluster will prioritize solid fuel heaters (instead of electric ones) this winter season. Solid fuel stoves are energy-sufficient/economical and can be used during the disruption of electricity and gas. At the same time, this type of heating appliance requires loading of solid fuel and cleaning from ash. A dry place for solid fuel storage is also needed. These appliances are less safe than other options because of the risk of fire, the risk of Carbon Monoxide (CO) poisoning (see Annex 12.3), and the risk to child safety.

Note: Shelter Cluster strongly recommends providing solid fuel stoves as a kit with accessories and installation services.

Stove heating is allowed to be used in residential buildings with **no more than two floors** without considering the basement[7] due to the safety concerns associated with storing solid fuel, among other things.

Table 5 - Solid fuel heaters - Home kit

Solid fuel heaters - Home kit Recommended quantities (per HH) and indicative prices 2024-2025 **(1 USD = 39.5 UAH)**				
Item	**Qty**	**Unit cost**	**Subtotal**	**Specifications**
OPTION 1 Solid fuel heater - Burzhuika stove	1 pc	200-400* USD	200-400 USD	Material: cast iron or steel. Heating area = up to 35 m^2 Applicable solid fuel: firewood and briquettes (not coal-based)
OPTION 2 Solid fuel heater - Buleryan stove	1 pc	400 USD	400 USD	Material: steel (classic). Heating area = 40 m^2 Some types have a cooking surface. Applicable solid fuel: firewood and briquettes. **For coal or coal-based briquettes the stove could require special design and furnace material**

[7] Table P.1 of Annex T in DBN V.2.5-67:2013 "Heating, ventilation and air conditioning")

Solid fuel heaters - Home kit Recommended quantities (per HH) and indicative prices 2024-2025 **(1 USD = 39.5 UAH)**						
Item	**Qty**	**Unit cost**		**Subtotal**		**Specifications**
Chimney with accessories	1 set	252	USD	252	USD	List of items: • Double-walled pipe in galvanized steel casing (diameter 120**/180 mm, thickness – 0.5/0.55 mm). Material: main pipe - stainless steel (e.g., AISI 304). Casing - galvanized steel. Thermal insulation: basalt fiber/wool. Length of the vertical chimney – min 5 m ([8]). • Fittings (tee and others). • Mounts. • Bracket. • Fire-resistant collar and heat insulation (wall penetration) • Condensation drain. • Unloading platform. **Important: The use of stainless steel chimneys for coal-burning stoves is not allowed[9].**
Stainless steel sheet	1 pc	20	USD	20	USD	1,18m x 0.85m x 0.5mm With crimped or hemmed edges (prefabricated or custom-made)
Basalt heat-insulating cardboard	1 pc	18.9	USD	18.9	USD	Size: 1180x850 mm (1 sheet) 10 mm thickness
Foiled polyethylene foam canvas	4 m^2	22	USD	22	USD	Reflector for internal wall and/or ceiling. 8 mm thickness (+screws +batons)
Windows acrylic sealant	3 pcs	3	USD	9	USD	300 ml tube with operating temperature range: -20 °C…+75 °C
CO detector	1 pc	40	USD	40	USD	Portable CO detector with instructions for use
TOTAL FOR OPTION 1 (Minimum*):**				**561.9**	**USD**	

*A specific type of Burzhuika is suitable for enclosed spaces and can be used for cooking. We recommend these for smaller enclosed housing units. The latest reported price is around $200. The $400 Burzhuika may need the cooking option, which is more suitable for larger areas and open spaces.

**Depends on the type of stove. See section 6.8.9 DBN V.2.5-67:2013 "Heating, ventilation and air conditioning" for recommendations on chimney diameter selection based on stove heat power (kW).

***The cost of the solid fuel heater was assumed to be USD 200.

As per the past years' experience with winterization support, the provision of solid fuel stoves - like the locally manufactured *Burzhuika*[10] or the popular product *Buleryan (a type of Burzhuika)*— proves to be an adequate response in case of disruption of gas and electricity supplies, as is often the case in the aftermath of damages to civilian infrastructure.

The distribution of solid fuel heaters should be limited to areas where the purchase and delivery of coal, firewood, pellets, etc., are feasible. They should always be complemented by providing the recommended amount of solid fuel (see chapter 8.1.2 "Winter energy").

8 Section 6.8.11 DBN V.2.5-67:2013 "Heating, ventilation and air conditioning"

9 Section 6.8.12 DBN V.2.5-67:2013 "Heating, ventilation and air conditioning"

10 For instructions and the safety manual, please refer to the safety manual prepared by PIN via this LINK.

Electric heaters are safe and easy to use and, therefore, preferable to solid fuel heaters, especially for older persons and people with disabilities. Please note that the downside of this type of heating appliance is the **power outages during the winter**.

Table 6 - Electric heating - Home kit

Electric heaters - Home kit Recommended quantities (per HH) and indicative prices 2024-2025 **(1 USD = 39.5 UAH)**						
Item	**Qty**	**Unit cost**		**Subtotal**		**Specifications**
Electric heater convector or Oil-filled radiator	1 pc	100	USD	100	USD	Power: max 1.5 kW **Heating area = 15 m²** Wall-mounted and self-standing. Option A: convector with steel or ceramic surface Or Option B: Oil-filled radiator
Thermal fuse (cut-off)	1 pc	3	USD	3	USD	16A. Option
Cable	5 m	0.9	USD	4.5	USD	5 meters of cable (3 x 2.5 mm)
Foamed polyethylene canvas with a foil film	10 m²	3	USD	30	USD	Reflector. Thickness: 4 mm (min)
Mounting foam	1 pc	7.3	USD	7.3	USD	750 ml tube
Windows acrylic sealant	3 pcs	3	USD	9	USD	300 ml tube operating temperature range: -20 °C / +75 °C
			TOTAL	**153.8**	**USD**	

However, as local administrations pointed out in several coordination meetings, humanitarian agencies planning large distributions of electric heaters in the same apartment building also ensure that the wiring is adequate to support the increased load and replace it whenever needed. This may prove expensive and time-consuming, so the recommendation is to stick to the Shelter Cluster principle of targeted winterization assistance.

Gas heater kits (Liquified propane-butane gas) are considered an effective alternative to electric and solid fuel heating options.
There are two main types of gas heaters: open-type and closed-type. Open-type gas heaters have an exposed flame and draw air from the surrounding environment, making them less safe for indoor use due to potential Carbon Monoxide buildup. Catalytic heaters are a safer version of open-type heaters. For open-type heaters, adequate natural or mechanical ventilation of the rooms is required, with additional CO control in the heated place. When distributing gas heaters and gas cylinders, agencies should include CO detectors and IEC materials to inform householders about the need for ventilation.
Closed-type gas heaters have a sealed combustion chamber and vent exhaust gases outside (chimney), making them safer and more efficient for indoor heating.

Important[11]: Shelter Cluster recommends LPG heaters **only for private (detached) houses**, given the limitations of existing regulations due to the strict storage standards for gas cylinders and installation of gas-using equipment.

The installation of gas cylinders in living rooms **is not permitted**. Exceptions can only be made on a case-by-case basis, subject to appropriate technical justification and compliance with all safety standards.
Gas cylinders must be stored in rooms with proper ventilation and an alarm system that warns of dangerous gas concentrations.

11 See sections 9 and 12 of DBN B.2.5-20:2018 "Gas supply"

Cylinders are subject to periodic technical inspection to ensure their safety. Cylinders with corrosive gases (such as butane-propane and propane-butane) are inspected at least once every two years.

Table 7 - Gas Heater Kit

Gas heater – home kit Recommended quantities (per HH) and indicative prices 2024-2025 (**1 USD = 39.5 UAH)**						
Item	**Qty**	**Unit cost**		**Subtotal**		**Specifications**
Autonomous catalytic **open-type** gas heater	1 pc	95	USD	95	USD	Maximum power: 4.2 kW Minimum power: 1.7 kW Gas type: liquefied butane-propane or propane-butane. Gas consumption at maximum power: 0.305 kg/h. Heating area = 40 m^2 Built-in gas control system
Gas reducer	1 pc	10	USD	10	USD	The reducer connects gas appliances, heaters, and stoves. Its outlet gas pressure can be manually adjusted from 22 to 70 bar. Gas inlet pressure: 0.3 - 7.5 bar. The kit includes a wrench for installing and removing the gearbox.
Gas cylinder	2 pcs	55	USD	110	USD	Volume: 27 liters with a valve and the possibility of connecting a reducer. Material: steel
Worm-drive clamp, perforated W1	6 pcs	1.1	USD	1.1	USD	Material: rubber Diameter: ½ inch
Gasket	6 pcs	0.1	USD	0.1	USD	Material: rubber Diameter: ½ inch
Gas rubber hose	1 pc	1.5	USD	1.5	USD	Length: 2 meters Material: rubber Diameter: ½ inch
CO detector	1 pc	40	USD	40	USD	Portable CO detector with instructions for use
Basalt heat-insulating cardboard with foil	1 pc	22.8	USD	22.8	USD	Size: 1180x850 mm (1 sheet) 5 mm thickness
			TOTAL	**280.5**	**USD**	

The distributing partner must ensure the client is aware and instructed on safely using the gas heater kit, its limits, turning it on and off, and refuelling. Refueling services should be provided to people with disabilities, older persons, and those who are not capable of doing it on their own. Before distributing gas heater kits, it is recommended to check the availability of gas stations in the area of intervention or other gas providers.

Safety consideration

Agencies distributing heaters and stoves should also ensure that beneficiaries receive adequate information on how to operate them safely and are aware of potential risks, including those associated with using materials containing asbestos. Agencies distributing heating appliances—repairing or connecting to existing heating and hot water systems—must be aware that asbestos was only outlawed in Ukraine in September 2021. As such, asbestos has been extensively used as insulation inside boilers and heaters and as lagging to insulate pipes and reinforcements in cement piping[12].

12 For Information regarding asbestos and associated guidelines, please refer to Shelter Cluster Ukraine website.

8.1.2 Winter Energy (SN 108)

(Distribution of heating sources: solid fuel and liquefied gas)

The distribution of solid fuel will be prioritized in isolated locations where solid fuel heaters are used. Due to conflict, access to the market (including logistics) is difficult, dangerous, or expensive in such areas. Therefore, cash approaches do not meet local needs, and the only available implementation modality is in-kind distribution.

More than in the past, Shelter Cluster partners are highly recommended, in the coming winterization, to consider working in close cooperation with state actors, as opposed to the usual procurement through commercial companies. Preference for this approach comes as a clear and frequent request from local authorities and ministries, and it applies to firewood procurement. The State Forest Resources Agency also acts as a producer and supplier and has offered to provide all the quantities humanitarian agencies need for their winterization programs in the country at state-regulated prices (generally lower than market prices). At the regional level, Hub Coordinators will lead Shelter Cluster meetings with Oblast authorities to regularly ensure clarity on who is working where, when, how, and in what capacity. Please be informed that prices and stock availability can vary significantly based on region.

Note: The Shelter Cluster strongly recommends that partners arrange solid fuel delivery directly to beneficiaries' homes.
The Shelter Cluster recommends combining the activity "Insulation of substandard houses" with this one for a greater impact.

Reference amount of heat required for heating of household:

According to Resolution #1173, "On the implementation of a pilot project during the heating season 2023-2024 to provide additional support to the population for the purchase of solid household heating fuel" (November 7, 2023), the calculated amount of heat for one winter season for one household is 14367096 kcal (14.37 Gcal). *"One season"* refers to the duration of the heating season from October 16 to April 15.

Note: Shelter Cluster calculation is based on the amount of heat provided by the Ministry of Social Policy.
There are more ways of calculating the amount of heat required which are more complicated. Just as an example, the partners can focus on the housing type, size of the living rooms, the number of household members in the house, and the ability of the house to heat only a small area suitable for critical functionalities (cooking, sleeping, etc.), in addition to the type of energy-efficient windows, ceiling/roof insulation, etc. Furthermore, for households that have not done any repairs, the model should consider any potential heating loss if the thermal envelope is not closed.

The table "Heating sources" compares the costs of different heating sources; its purpose is to provide guidance when choosing the type of intervention. The suggested quantity refers to the minimal quantity necessary for each source type to produce 14.37 gigacalories for the heating of the average household (family with 3 persons, according to RDNA3).

Calculation of solid fuel reference amount:

The table "Heating sources" contains a precalculated reference amount of **high-quality** solid fuel. The approach for calculating the amount of solid fuel for **your particular case** is the following:

1) check the supplier certificate (test report) for information on the lower (working) mass or volumetric (for firewood only) calorific value of solid fuel.

If the certificate is not provided, ask the supplier for valid information on the type of solid fuel (firewood species and type, coal type, etc.) and its moisture content. See "Criteria for Quality Assessment" for instructions on identifying the moisture content.

Use these and other parameters you can receive to identify the lower (working) calorific value. For instructions, see Annex 12.4.

2) based on the recommended amount of heat (14.37 Gcal), calculate the reference amount of solid fuel for one winter season. Before calculating, ensure that the appropriate units of measure are used. For example:

$$\text{Amount of firewood } (\text{m}^3) = \frac{\text{Amount of heat for the season (Gcal)}}{\text{Working (lower) volumetric calorific value } (\text{Gcal}/\text{m}^3)}$$

If relevant, use the precalculated working volumetric calorific values from the table in Annex 12.4.

3) For firewood, the calculated amount is presented in cubic meters. Virtually all suppliers measure firewood in stacked m3. To simplify the approach, Shelter Cluster recommends partners use an average conversion factor of 0.7.

The formula for the conversion of cubic meters to stacked cubic meters is following:

$$\text{Quantity of firewood in stacked } \text{m}^3 = \frac{\text{Amount of firewood } (\text{m}^3)}{0.7}$$

For more details, see Annex 12.5.

Quality control of solid fuel

In order to ensure proper quality, firewood, briquettes, pellets and charcoal must come from tested and certified sources. It is important that these materials are accompanied by a certificate (test report) from the supplier, whether it is a state forestry enterprise or a private organization.

Note: The Shelter Cluster strongly recommends that the following standards guide the distribution and quality control of solid fuel:

- DSTU EN 15234-5:2018 (EN 15234-5:2012, IDT) "Solid biofuels – Fuel quality assurance – Part 5: Firewood for non-industrial use".
- DSTU 8358:2015 "Fuel briquettes and pellets from wood raw materials. Technical specifications."
- DSTU 7146:2010 "Bituminous coal and anthracite for domestic use. Technical conditions."

Criteria for Quality Assessment:

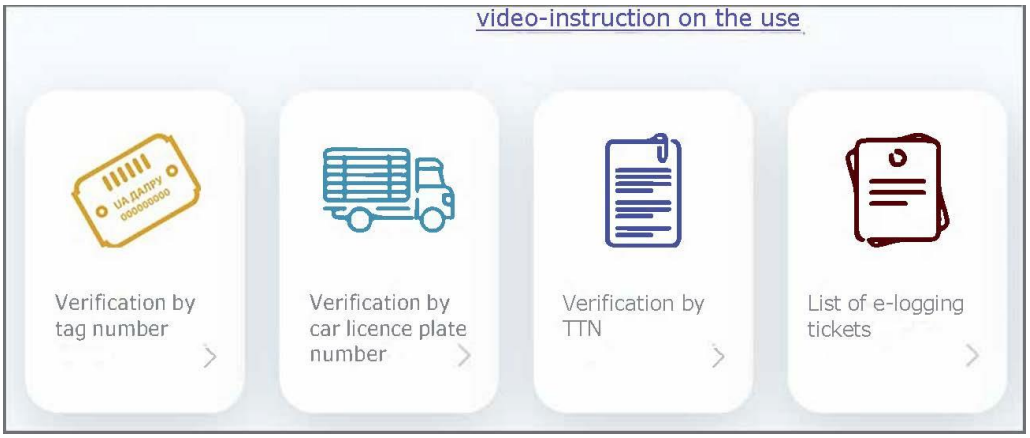
- *Calorific value*: Please ensure that the supplier provides you with the appropriate certificate, which contains information on the calorific value determined in accordance with DSTU ISO 1928:2006.
- *Moisture Content*: For optimal burning efficiency, firewood should have a moisture content of 30% or less. Test method: Use a moisture meter to check the moisture content. The probe should be inserted into the log at various points to get an average reading.
- *Dimensions:* Logs and chopped wood should conform to standard dimensions or the specification in the contract (if in-kind modality).
- *Defects:* Firewood should be free from excessive rot, mold, and insect infestation. Visual inspection is used to check for visual signs of defects.

Verification of the legality of the firewood origin

There are numerous cases where some suppliers engage in illegal and uncontrolled logging for the sake of excessive profits. Therefore, partners should ensure that their contracted suppliers use wood of legal origin.

For this purpose, it is recommended to check whether the supplier has TTN-lis (for logs) and 1-TN (for chopped firewood) consignment notes, guaranteeing that the timber is harvested in compliance with environmental and legal standards. Templates of consignment notes are presented in Annex 12.6. The video instruction for using the service for verification of the legality of wood origin is available on the website of the State Enterprise "Forestry Innovation and Analytical Center" at the LINK.

TTN-lis (as well as a photo of the cargo) is stored in an open electronic database and, among other things, confirms the volume of wood (logs) in the consignment. 1-TNs does not have an electronic version and does not confirm the volume of wood (chopped firewood) in the consignment. However, in this case, it is possible to request a TTN-lis from the supplier, according to which the supplier purchased the logs before chopping. In this case, the volume of chopped firewood will be the volume of logs multiplied by a factor of 0.9.



The availability of a special permit for the use of forest resources (e-logging ticket) for a particular forestry enterprise can be checked by the LINK.

Recommendations for Storage

Proper storage of firewood is essential to ensure it remains dry and ready for use. Firewood should be stacked off the ground on pallets or a similar base to prevent moisture absorption from the soil. It's important to cover the top of the stack with a tarp or roof, leaving the sides exposed for adequate air circulation. The firewood should be stored in a well-ventilated area, away from residential buildings to reduce the risk of pests and fire hazards.

Table 8 - Heating sources

Heating sources - Equivalence table Quantities for one HH for one season and indicative prices 2024-2025 (**1 USD = 40 UAH)***							
Heat amount for the winter season:	**Type**	**Lower (working) calorific value**	**Reference amount**		**Unit price** (USD)	**Tot cost** (USD/ season)	**Notes**
			Unit	**Qty****			
14.37 Gcal	**Firewood**	2.73 Gcal/m^3	m^3 / stacked m^3 ***	5.26 / **7.51**	- / **69.9**	- / **525.0**	**Hardwood specie** (oak) chopped logs****. Wood moisture content is 20%. Generally, Burzhuika or Buleryan stoves are used.
	Briquettes	4.2 Gcal/ton	MT (metric ton)	3.42	287.5	**983.3**	High-quality wood briquettes, group I (oak-based) The fragility of the briquettes should be considered during transportation and loading/offloading. **Special stoves are required for coal briquettes.**
	Pellets	4.2 Gcal/ton	MT	3.42	287.5	**983.3**	High-quality wood pellets, group I (oak-based). Easier to handle than firewood. **Requires special stoves or loading device for existing stove.**
	Coal	5.7 Gcal/ton	MT	2.52	293.4	**738.4**	High-quality coal (gas coal grade "H"). Total moisture – 14%. **Requires special stoves**.
	Liquefied propane-butane gas	-	L	483.00	0.67	**323.7**	UAH 26.60 per liter.

*Unit price DOES NOT include the transportation cost. The exchange rate at the time of calculation.
Quantity depends on a particular fuel type's calorific value and quality. Generally, the calorific value per unit is **listed on the certificate (test report). For calculation - Annex 12.4
***The conversion factor of stacked wood to solid content was assumed to be 0.7. **Stacked m3 = m3 / 0.7.** For the approach, see Annex 12.5.
****In this table, the calculation focuses on the chopped wood, as most of the assistance is provided in chopped form. For information about round logs VS chopped logs, please refer to State Agency Forest Resources of Ukraine website. LINK

Unified cash for solid fuel transfer value is 21,000 UAH* (excluding transportation cost). The reference cost used was firewood, as this is the most used solid fuel.**

*This transfer value (cash modality) must be used for each type of projected solid fuel procured by the beneficiary. As mentioned above, this amount of firewood was taken as the most commonly used type of solid fuel in Ukraine, considering the social cohesion aspects and alignment beyond humanitarian assistance.

**Based on feedback from partners, the Cluster considers that an estimated 10% of the unified cash value may be needed for transportation costs. Cluster recommends that the needs and market assessment document variations in specific geographic locations, especially in hard-to-reach areas, where there may be exceptions to this amount.

8.1.3 Winter Cash for Utilities (SN 106)

(Provision of grants for heating bills)

This activity aims to provide timely and adequate financial support to the groups listed in Chapter "Targeting, Prioritization & Vulnerabilities" of the Activities Handbook; the grant will cover the heating utility costs that vulnerable groups face during the winter months.
In some cases, the HHs are dealing with utility debts from the previous year. In highly vulnerable cases, we recommend covering the debts as part of this activity.

Table 9 - Heating utility bills

Heating utility bills Quantities for one HH for one season and indicative prices 2024-2025* (**1 USD = 40 UAH**)					
Type	**Reference amount**		**Unit price** (USD)	**Tot cost** (USD/ season)	**Notes**
	Unit	**Qty**			
Electricity[13]	kWh	6,480	0.07	**453.6**	UAH 2.64 per kWh (for consumption up to 2,000 kWh/month) if electricity is a primary heating source (buildings with electric heating systems[14])
	kWh	6,480	0.11	**712.8**	UAH 4.32 per kWh for electricity as a reserve heating source (mobile electric heaters) when the primary source is unfunctional
Centralized gas	m^3	1,840	0.20	**368.0**	UAH 8.00[15] per m^3 of natural gas
Centralized heating	Gcal	7	41.36	**289.5**	UAH 1,654.41 per 1 Gcal[16]. For multistorey apartment buildings

8.1.4 Interlinkage of Activities

In response to the challenges faced by households during the winter months, the following interlinked activities (cash modality) have been developed to provide targeted support for winterization needs:

- Cash modality of the Winter Energy: Provided to households to cover the cost of solid fuels required for heating during the winter months.
- Winter Cash for Utilities: Provided to assist households with their winter utility expenses, such as gas or central heating bills, etc.

Important:

- The abovementioned initiatives are specifically developed to address winter heating requirements. Cash for solid fuel or utilities activities requires an assessment of households' fuel/energy type and needs and confirmation of the availability of solid fuels in the local market, as outlined in the Shelter Cluster's HNRP 2024 Activities Handbook.

They are separate from the Multi-Purpose Cash Assistance (MPCA), which addresses basic needs. Cash for winter energy or utilities is not intended for other sector-specific objectives or to reach multi-sectoral needs. However, they could be used alongside other complementary sectoral or multi-sectoral interventions, including MPCA.

13 The new prices are approved starting from 01.06.2024 and will be applied during the coming winter season according to the Resolution No. 632 dated 31.05.2024: https://www.kmu.gov.ua/npas/pro-vnesennia-zmin-do-postanovy-kabinetu-ministriv-ukrainy-vid-5-chervnia-2019-r-t310524

14 List of heating systems here: https://www.dtek-kem.com.ua/ua/file/vOk5ImP17H9nI?inline=1

15 https://www.kmu.gov.ua/storage/app/uploads/public/665/a09/a6e/665a09a6e2921507983719.pdf

16 https://index.minfin.com.ua/ua/tariff/kiev/warm/

- A household should not receive Cash for Winter Energy, Winter Cash for Utilities, and In-kind Winter Energy at the same time.
- The transfer value for Cash for Winter Energy is **21,000 UAH** per household covering the winter period, regardless of the heating type used or the household size.
- The amount of Winter Cash for Utilities varies based on the heating method (see Table 9).

8.1.5 Provision of Sustainable Energy (SN 111)

(Provision of sustainable off-grid energy systems)

The activity aims to reduce energy dependency and solid fuel consumption to be implemented in properly insulated buildings. It includes solar energy (thermal and photovoltaic), wind energy, heat exchange, etc. It must be sufficient to meet humanitarian needs Tier 3 (min 200W, 8h per day) without intending to be a substitute but a complement for other energy systems. Due to the low energy cost in Ukraine, this activity does not represent an economic advantage (the payback period is very long), and it aims to increase households' resilience to energy supply interruptions.
Projects intending to install sustainable energy systems must consider the regulatory and legal frameworks at the local, regional, and national levels. This activity entails regulatory and economic risks and is only advisable after a detailed feasibility study.

9 Winterization Objective 3:
Shelter Insulation – Repairs were done to secure the thermal envelope of residential units where people are residing

9.1.1 Refurbishment of Collective Sites (SN 205)

(Critical shelter interventions to guarantee minimum heat retention and winter efficiency)

Repairs in CSs include "regular" works (not classifiable as "winterization") like fixing leaking roofs, replacing inefficient windows, and sealing gaps to assure minimum insulation standards (restoration of the "thermal envelope," similar to the scope of light and medium repairs of houses and apartments).

For more information, please refer to Activities Handbook.

9.1.2 Insulation of Substandard Houses (SN 105)

(Shelter interventions to improve heat retention and winter efficiency)

Works recommended under this activity are not part of "regular" emergency house repairs; they include instead works - like the replacement of old windows and external doors with new ones, more energy-efficient, and the installation of ceiling insulation panels - that can be considered as a "top-up" to regular light, medium and heavy repairs. Asbestos guidelines must be considered when selecting insulation materials in the market, as some products may potentially contain asbestos[17].

Unlike regular home repairs, the target population is not limited to houses damaged by military activities and can include:

(a) Houses were recently allocated to displaced families who were not part of the government program of thermal upgrades or required complementary interventions. The house should be provided for use for at least 6 months from the moment of insulation in case of risk of eviction and, as a result - misuse of assistance.
(b) substandard houses where a hosting family hosts IDPs.
(c) substandard houses inhabited by their non-displaced owners.

Similarly, regarding the distribution of solid fuel, priority areas for this activity will be isolated or newly accessible. For this document, we consider "substandard" a house which - despite a functioning heating system and no damages to the "thermal envelope" - has minimal energy efficiency. This limited energy efficiency - a consequence of poor design, low-quality construction material, and lack of maintenance - results in the thermal envelope's insufficient capacity to maintain the indoor temperature to an acceptable minimum.

The materials in Tables 10 and 11 were calculated using the house 36 m^2 living area[18]. Considering Ukraine's harsh winter climate, interventions for individually occupied homes seek to create one warm room during winter where the occupants can sleep, cook, and carry out basic living functions.

Table 10 - Home ceiling insulation kit

Home ceiling* insulation kit Quantities for one HH and indicative prices 2024-2025 **(1 USD = 39.5 UAH)**				
Item	**Qty**	**Unit cost**	**Subtotal**	**Specifications**
OPTION 1 Basalt wool panels or rolls	40 m^2	5 USD	200 USD	Thickness: 100 mm. Density: 30 kg/m^3 or more. Dimensions: depends on the type (plates/rolls)

17 For Information regarding asbestos and associated guidelines, please refer to Shelter Cluster Ukraine website.
18 For more details see p.16 of Cluster Guidelines on Structural Repairs and Reconstruction

Home ceiling* insulation kit Quantities for one HH and indicative prices 2024-2025 **(1 USD = 39.5 UAH)**				
Item	**Qty**	**Unit cost**	**Subtotal**	**Specifications**
OPTION 2 Extruded polystyrene foam panels	40 m^2	11.35 USD	454 USD	Thickness: 100 mm Density: 25 kg/m^3 or more Size: e.g., 1180 x 580 mm (1 sheet)
Vapor barrier film	40 m^2	0.32 USD	12.8 USD	Installation under the insulation panels. Material: polyethylene or others. Density: 100 g/m^2 or more. Water vapor diffusion resistance: 5 m and more. Operating temperature: from -30 °C to +70 °C. Roll 1,5x50 m.
Waterproof breathable membrane	40 m^2	0.2 USD	8 USD	Installation on top of the insulation panels. Material: polypropylene or others. Density: 96 g/m^2 or more Operating temperature: from -40 °C to +80 °C.
Other complementary materials			40 USD	Screws, lath, staples, and other complementary material needed for the installation of the insulation
Insulation foam	1 pc	7.3 USD	7.3 USD	750 ml tube
TOTAL option 1			**268.1 USD**	
TOTAL option 2			**522.1 USD**	**!!! Please be aware that Polystyrene is flammable and can catch fire easily.**

*Attic flooring

Table 11 - Windows replacement

Windows replacement Quantities for one HH and indicative prices 2024-2025 **(1 USD = 39.5 UAH)**				
Item	**Qty**	**Unit cost**	**Subtotal**	**Specifications**
Prefabricated metal-plastic (PVC) windows	up to 5 pcs*	200 USD	1000 USD	Prefab window unit (double-glazed with one chamber)[19]. One unit contains the frame, glazing, and internal and external windowsill. Glass thickness: no less than 4 mm. Class of glazing[20]: at least M1. Inter-pane spacing: no less than 16 mm. Chamber filled with air or inert gas. The profile width of the PVC window frame: not less than 60 mm (4 chambers)
Extruded polystyrene foam panels	10 m^2	1.5 USD		Thickness: 10 mm Density: 30 kg/m^3 or more For internal and/or external (greater thickness is needed) use.

19 Based on DBN V.2.6-31:2021 "Thermal Insulation and Energy Efficiency of Buildings." The norms on minimum requirements for energy efficiency of buildings do not apply to construction works on the restoration of individual building structures in order to eliminate the consequences of emergencies (clause 1.4, section "Scope of use"). In this case, these are the requirements for the thermal resistance coefficient of translucent enclosing structures.

20 DSTU 2.7-122:2009 Sheet glass - Technical specifications (link [UA]); DSTU 2.7-107:2008 Glass packages (link [UA]).

Windows replacement Quantities for one HH and indicative prices 2024-2025 **(1 USD = 39.5 UAH)**				
Item	**Qty**	**Unit cost**	**Subtotal**	**Specifications**
Plasterboard (drywall)	10 m^2	10 USD		Type: moisture resistant. Thickness: 12.5 mm Size: 1200x2500 mm (1 sheet) For internal use.
Plastic slopes	20 Lm	25.8 USD	516 USD	Width up to 0.5 Sandwich panels with F-shaped PVC profile. For internal use.
Plaster for slopes	250 kg	3.3 USD		Type: cement-limestone base Operating temperature: from -30 °C to +70 °C Crack resistance: certified for cracks with a total thickness of layers of 20 mm. For internal and/or external use.
Paint	2 L	3.5 USD	7 USD	Type: acrylic or water emulsion
Insulation foam	3 pcs	7.3 USD	22 USD	750 ml tube
Windows acrylic sealant	1 pc	28 USD	28 USD	7 kg pack. Exterior window joint sealant. Operating temperature: from -10 °C to +40 °C
		TOTAL**	**1573 USD**	

*For the window size: width - 1,2 m; height - 1,4 m.
**The price differs depending on the type of materials used for window slopes.

9.1.3 Rental Support (SN 204) (Provision of grants to cover rental costs)

The winterization component of the broader rental market initiative is designed to mitigate the impact of and facilitate the decongestion of Collective Sites and ensure beneficiaries have secured accommodation over the winter period. This effort targets the challenges that arise during the peak period in September, coinciding with the start of the new school year.

For full details see the Rental Assistance Recommendations and Guidelines for Ukraine.

10 Engagement with the Government of Ukraine

Recommendations and insights gained from the cooperation between the Shelter Cluster and the Government of Ukraine are presented in Lessons Learned For Winterization 2023-24.

Since 2014, Shelter and NFI agencies have supported the central government and local authorities' efforts to provide winterization assistance. The humanitarian winterization assistance reached the most vulnerable people who resided in hard-to-reach areas. During the response, humanitarian agencies' role became increasingly attentive and complementary to authorities' programs. Coordination with authorities was critical in developing and delivering feasible and effective winterization support.

In designing their programs and implementing their winterization activities, humanitarian actors will:

- Make sure that information on their winterization programs is timely shared with central and local authorities, and support provided for targeted and effective activities.
- Make sure procurement plans for winterization non-food items — for immediate distribution or emergency stockpiling — are also shared with central and local authorities. Strategic locations selected in partnership with the government will improve responsiveness. With the unpredictable, dynamic nature of the conflict, affected populations are being subjected to multiple rounds of displacement, and humanitarian preparedness plans need to consider the dynamics of conflict sensitivity in terms of contingency quantities and partnership arrangements.
- Gather information on any central or local authorities' winterization initiatives and ensure that their organizations' activities complement and don't overlap with existing similar government programs (for example, winterization subsidies and social benefits).

11 Winterization post-distribution monitoring

It is strongly recommended that all agencies include a post-distribution monitoring (PDM) component in the implementation cycle of their winterization programs.
Central to the winter response plan is consistent and coordinated consideration of such complex needs based on age, gender and disability. Data disaggregated by gender, age and disability will be collected, analysed and reported on to inform evidence-based vulnerability targeting, tailored assistance, and monitoring.
The Shelter Cluster promoted the compilation of a shared list of questions that all Cluster partners agreed to include in their PDM questionnaire. Please use the developed KOBO form.
Adopting a shared list of core questions by all partners will harmonize the collection of data and feedback regarding the quality, effectiveness, and appreciation of the winterization response. This will ensure consistent and standardized information is gathered and shared among all stakeholders.

12 ANNEXES

12.1 Average monthly temperatures 2015 – 2024

The table below represents the maximum and minimum temperatures for each specified location.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Kyiv	-1	2	7	17	21	25	27	28	23	12	6	3
	-8	-5	-1	5	9	14	15	15	11	3	0	-2
Odesa	2	5	10	15	21	27	31	31	26	15	11	7
	-5	-2	1	6	12	17	18	19	14	7	3	-1
Lviv	0	4	8	15	20	24	26	28	22	12	7	4
	-7	-3	-1	4	9	13	13	13	10	4	0	-2
Vinnytsia	-1	3	8	16	21	24	26	27	23	12	7	3
	-10	-6	-2	4	8	13	15	14	11	3	-1	-4
Sevastopol	6	8	10	13	17	23	26	28	25	16	12	8
	2	4	6	8	13	19	21	23	19	13	9	5
Dnipro	-1	3	8	17	22	26	30	31	27	13	8	4
	-8	-5	-1	5	10	15	16	17	11	3	0	-3
Kryvyi Rih	-1	4	9	17	22	27	30	31	27	14	9	5
	-9	-5	-2	5	10	15	15	17	11	3	1	-3
Makiivka	-1	3	9	18	23	28	30	32	25	13	7	3
	-8	-5	-1	5	10	15	17	18	12	2	-1	-4
Horlivka	-2	2	8	17	23	28	30	32	25	12	7	2
	-8	-5	-2	5	10	15	17	18	11	1	-1	-4
Kharkiv	-2	0	6	16	21	25	29	30	24	12	6	2
	-9	-6	-2	5	10	14	16	16	10	2	-1	-3

Courtesy of hikersbay.com

12.2 The Content for the Invincibility Kit (Non-HNRP)

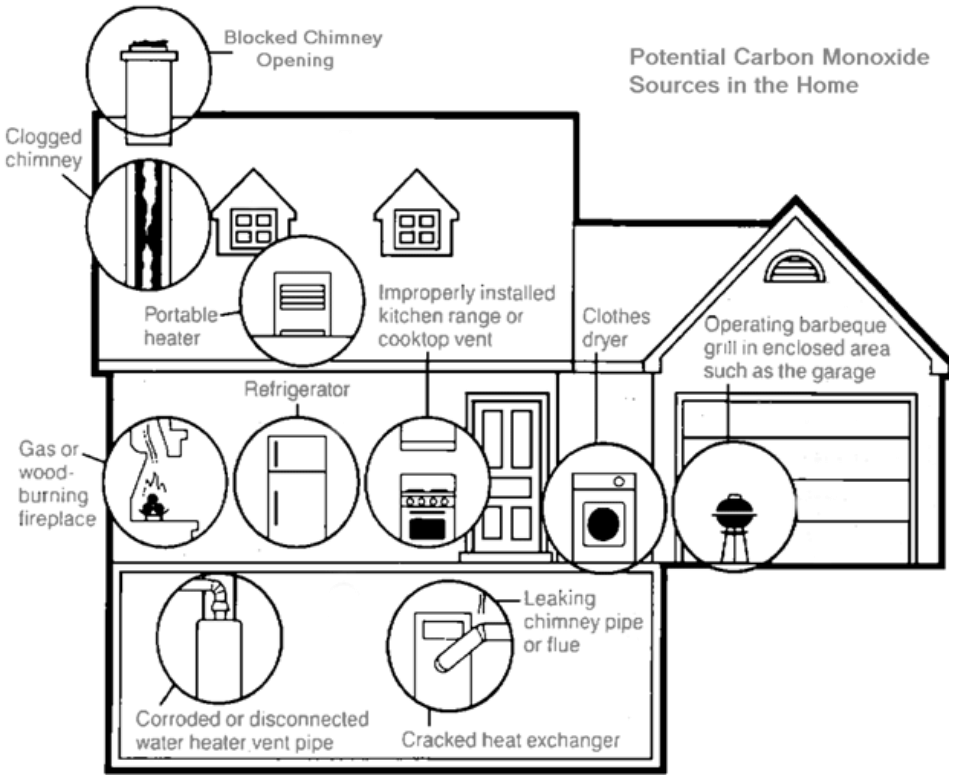
This table is provided only as a guide and suggestion in case organizations are planning to assist the invincibility points. The prices may not reflect the latest change, therefore organizations have make their own assessment.

Invincibility Kit (displaced, non-displaced) (for 20 individuals)							
No	**Item**	**Qty**	**Size**	**Technical Specifications**	**Comments**	**Unit cost**	**Subtotal cost**
1	Insulating floor mat	20	1.8m x 0.9m	Three layers:1 - on the ground side, a plastic mat, double weave. 2 - an aluminized canvas, aluminum face upward. 3 - on the upper side, a fleece blanket.	Bedding	30 USD	600 USD
2	Mattress	4	0.9m x 1.9m 0.15m	High-density polyurethane foam, in one piece, no glue assembled piece. 35kg/m³ +/- 5%.	Bedding	46-60 USD	184-240 USD
3	Sleeping bags	20	0.7 x 1.9m	A thick, non-woven synthetic material is covered with a synthetic/cotton sheet on both sides. 100% synthetic filling is recommended to avoid being rotted by moisture. Inner and outer lining: minimum cotton/polyester mix, 100g/m². Filling: 100% polyester fibers	Bedding	35-50 USD	700-1000 USD
4	Folding chairs/benches	20				18 USD	360 USD
5	Jerrycan (optional)	2	10 L	Type: Complete with screw cap and molded carry handle of a minimum of 9 cm long. The inner diameter of the cap is a minimum of 30 mm. Drop test: can withstand a drop of 2,5 m at total capacity. Material: Non-collapsible Polyethylene plastic. Though flexible, it is food-grade low-density polyethylene (LDPE) and UV stabilized, with no sharp edges. Size: 10 L Weight: 455 grams minimum Color: Light color (yellow, white)	Water storage	5 USD	10 USD
6	Bucket	4	10 L	Metal bucket Outer diameter (up) 298 mm Outer diameter (down) 275 mm Inner diameter (up) 286 mm Inner diameter (down) 263 mm Height 371 mm Empty weight 1,5 kg	Water storage	4 USD	16 USD
7	Power bank lamps	4		Lamps do not necessarily need to be "solar lamps." The importance of the "power bank" function is instead confirmed as essential	A source of light and charging the phone	24 USD	96 USD
8	Electric Heater	3	1500W	1500W, 230V, Infrared, with thermostat (consider 100W/m² to cover poorly insulated locals)		100 USD	300 USD
9	Emergency generator*	1	4-5kW	4 KW is preferable (a typical socket can take up to 16 amps, which translates to 4,000 W)		600 USD	600 USD
10	Fuel Storage	2		Steel 2x20 liters jerrycan	Gener. fuel storage	20 USD	40 USD
11	Kettle	2	1.2 L			15 USD	30 USD
12	Water Storage			2x100 liter drums + 2x10 liters Jerrycans	Water storage	70 +5 USD	150 USD
13	Kitchen set	5	20 people			20 USD	100 USD
14	Fire extinguisher	1	9 L	Foam		35 USD	35 USD
Total cost							3221-3577 USD

* Incorporating generators into this kit is a strategic approach to maintaining the functionality of invincibility points and bomb shelters, ensuring they remain heated even during power outages. These generators' size and power specifications depend on the dimensions of the spaces they intend to warm, optimizing their effectiveness. However, it's important to note that these generators often have distinct wiring requirements in contrast to the existing infrastructure of the shelters. They aren't plug-and-play devices. Consequently, it is strongly advised that partner organizations coordinating the delivery of generators engage in dialogue with the designated electrician for the shelter space or other relevant experts.

12.3 Awareness of Carbon Monoxide Poisoning

Carbon Monoxide is a gas produced whenever a material is burnt. During winter, beneficiaries must recognize the risk that they and their households could become exposed to carbon monoxide poisoning. Houses with functioning chimneys are better able to mitigate this risk. In contrast, those who do not have chimneys should be encouraged to regulate and ventilate their homes (opening windows and other openings to allow fresh air. The risks of carbon monoxide poisoning are high without regular ventilation because the gas is odorless and non-visible. Symptoms are like the flu. Beneficiaries should also have proper information about the physical symptoms of carbon monoxide poisoning, including headaches, weakness, skin appearing 'cherry red', dizziness, nausea or vomiting, shortness of breath, blurred vision, or loss of consciousness. [21]



21 For more information regarding Carbon Monoxide poisoning please visit: Link.

12.4 Solid Fuel Calorific Values

Important note: First, please search for the solid fuel calorific value in the certificate (test report) from the supplier.

Firewood: Manufacturers of modern heating equipment recommend using air-dry wood with moisture not more than 30% as solid fuel for heating. The ideal option for wood heating is to use firewood in a room-dry state (moisture 7-18 %). Such firewood gives the maximum amount of heat. However, since drying wood to this state involves additional energy costs, the best option for heating is to use air-dry wood (moisture 20-30 %). It is relatively easy to make firewood air-dry. For this purpose, it is enough to prepare them in advance and store them in a dry, ventilated place.

Working (lower) mass calorific value Q is determined by Nadezhdin's formula and is dependent on the moisture content of firewood:
for room-dry wood, moisture 7…18%
Q = 4600 - 50 x W = 4600 - 50 x (7…18) = 4,250...3,700 kcal/kg
for air-dry wood, moisture 20…30%
Q = 4370 - 50 x W = 4370 - 50 x (20...30) = 3,370...2,870 kcal/kg
for freshly cut wood, moisture 50…70%
Q = 3870 – 45 x W = 3870 – 45 x (50…70) = 1,620…720 kcal/kg
where W – is the relative wood moisture content in percent;
4600, 4370, 3870 – values of absolute (higher) calorific value of wood, calculated individually for each sample, based on the percentage ratio of absolutely dry wood substance and moisture contained in it.
The working (lower) volumetric calorific value of wood is calculated as the product of the mass calorific value of wood and its density.
For example, for ash (moisture 12 %): 4000 kcal/kg x 0.750 kg/dm^3 = 3,000 kcal/dm^3 = **3.0 Gcal/m^3**

Table[22] - Specific calorific value of different wood species (**12% and 20% - moisture content)**

Wood species	Absolute (higher) calorific value, kcal/kg	Working (lower) mass calorific value Q, kcal/kg		Working (lower) volumetric calorific value, Gcal/m^3		Wood density, kg/dm^3	Wood density limit, kg/dm^3
		12%	20%	12%	20%		
Hardwood							
Oak	4,753	**4,000**	**3,370**	**3.240**	**2.730**	0.810	0.690-1.030
Ash	″	″	″	**3.000**	**2.528**	0.750	0.520-0.950
Beech	″	″	″	**2.720**	**2.292**	0.680	0.620-0.820
Birch	″	″	″	**2.600**	**2.191**	0.650	0.510-0.770
Alder	″	″	″	**2.000**	**1.685**	0.500	0.470-0.580
Softwood							
Pine	4,753	**4,000**	**3,370**	**2.080**	**1.752**	0.520	0.310-0.760
Aspen	″	″	″	**1.880**	**1.583**	0.470	0.460-0.550
Spruce	″	″	″	**1.800**	**1.517**	0.450	0.370-0.750
Fir	″	″	″	**1.640**	**1.382**	0.410	0.350-0.600
Poplar	″	″	″	**1.600**	**1.348**	0.400	0.390-0.590

The formula for determining the amount of firewood in m^3 for one winter season:

$$\text{Amount of firewood (m}^3\text{)} = \frac{\text{Amount of heat for the season (Gcal)}}{\text{Working (lower) volumetric calorific value (Gcal/m}^3\text{)}}$$

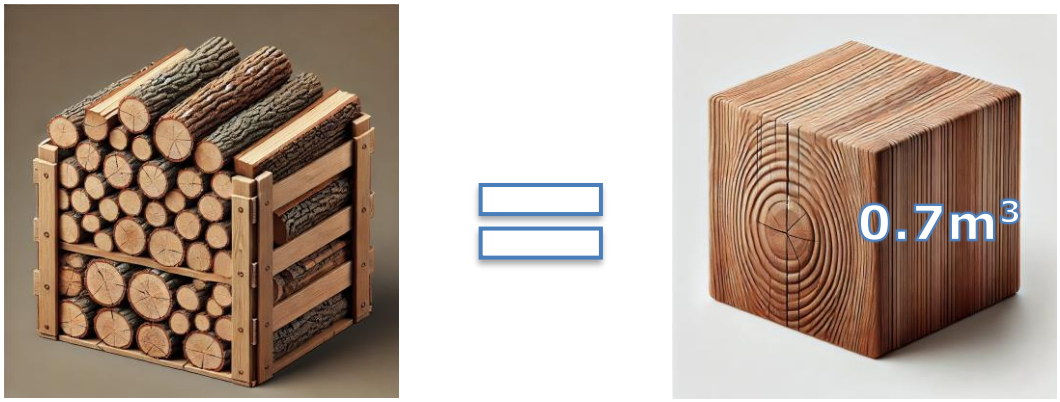
Briquettes and pellets:
For the lower calorific value of the working mass, please use values for quality groups in DSTU 8358:2015 "Fuel briquettes and pellets from wood raw materials. Technical specifications." (conversion from MJ/kg to Gcal/ton is needed).

Coal and coal briquettes:
For the lower calorific value of the working mass, please use values in Table 1 of DSTU 7146:2010 "Bituminous coal and anthracite for domestic use. Technical conditions."
(conversion from kcal/kg to Gcal/ton is needed).

22 http://www.biowatt.com.ua/informatsiya/harakteristika-ta-osoblivosti-drov-yak-paliva/

12.5 Conversion factor of stacked wood to solid content

The **stacked cubic meter** is an intermediate auxiliary unit of measurement, which is elevated to the category of the main unit of measurement when accounting for the volume of firewood. Firewood is usually not accounted for by the piece but in stacks made during the harvesting period and is accounted for in m^3 with bark. A stacked m^3 is determined by multiplying the length (L) of the stack by its height (H) and width (W). The width of the stack is the length of the logs. The density of the stack depends on the wood species (hardwood, coniferous), the type and shape of the logs (round, chopped), and their length and thickness (thick, medium, thin). Since a stack always has voids, the stacked m^3 is multiplied by the full-wood conversion factor to convert the stacked wood to **solid content** (**dense m^3**) measure.
In current recommendations, the average conversion factor was assumed as 0.7.
For example: 1 stacked m^3 x 0.7 = 0.7 m^3



For comprehensive instructions on conversion, please refer to drovae.gov.ua.
Please watch the video made by the State Agency Forest Resources of Ukraine on measuring and converting a stack of wood: LINK

Note:

- When formulating a contract with a supplier, it is imperative for partners to clearly specify the conversion factor. This ensures uniformity and clarity in measurement standards, thereby avoiding potential disputes and misunderstandings related to quantity and volume throughout the contract's execution.

- It is important to distinguish between stacked firewood and loose firewood. This distinction can be easily identified visually in the bed of a truck. Stacked firewood is neatly arranged in an orderly manner, whereas loose firewood is randomly piled, resulting in noticeable gaps and an uneven surface.

12.6 Documents to verify the legality of the firewood origin

Додаток 6
до Інструкції з ведення
електронного обліку деревини
(пункт 9.6)

Форма ЕО-6

Вантажовідправник:
Підприємство/установа/організація
Код за ЄДРПОУ/Ідентифікаційний код _____

==========

ТОВАРНО-ТРАНСПОРТНА НАКЛАДНА (ЛІС)
серія _____ № _____ від _____ року

Перевізник: _____
Автомобіль:_____, держ. №: _____
Причіп держ. №: _____
Водій: _____
Прізвище, власне ім'я, по батькові (за наявності)

==========

Пункт навантаження:
_____, _____
(назва структурного підрозділу)
Квартал №_____, виділ №_____, ділянка №_____
Лісорубний квиток № _____,
Вид рубки: _____
Пункт розвантаження:_____
Вантажоодержувач:_____
(найменування (прізвище, власне ім'я, по батькові (за наявності))
Умови відвантаження: _____

==========

ВІДОМОСТІ ПРО ВАНТАЖ

==========

при відпуску сортиментів:
Вид деревини, Порода, L:___,___м

Група діам.	Клас якості	К-сть, шт	V,м³	Ціна за м³, (без ПДВ)	Сума, грн.
			,___		
Вид деревини, Порода, L:___,___м					
Група діам.	Клас якості	К-сть, шт	V,м³	Ціна за м³, (без ПДВ)	Сума, грн.

при відпуску штабелів:
Вид деревини, Порода

Н: м,	L: м,	W: м,	К:,	V,м³	Ціна за м³, (без ПДВ)	Сума грн.
___,___	__,__	___,__	_,__	__,___	_____	_____

Разом: __шт., V: __,___м³

==========

Всього відпущено: ___шт., V: ___,____м³
на суму: _____грн (без ПДВ), ПДВ: ____грн., разом _____грн
_____гривень ___копійок

(сума словами)

==========

Деревину відпустив:_____
(посада)
_____/_____/
Прізвище, власне ім'я, по батькові (за наявності) (підпис)

Прийняв до перевезення

Водій та/або експедитор
_____/_____/
Прізвище, власне ім'я, по батькові (за наявності) (підпис)

Деревину одержав:
за дорученням від ____.____.20____ року № _____
_____

_____/_____/
Прізвище, власне ім'я, по батькові (за наявності) (підпис)

Додаток до ТТН-ліс серія _____ № _____ від _____року

Пункт навантаження:
_____
(назва структурного підрозділу)
Вантажоодержувач:
_____
Вид рубки: _____
Умови відвантаження: _____

==========

ПЕРЕЛІК ДЕРЕВИНИ
при відпуску _____:

==========

Вид деревини, Порода, L:___,___м

Діаметр.	Клас як.	К-сть	V,м³
_____	_____	____	__,____
____	____	____	__,____
Вид деревини, Порода, L: , м			
Діаметр.	Клас як.	К-сть	V,м³
_____	_____	____	__,____
			,

Вид деревини, Порода
Н: ___,___ м, L: ___,___м, W: ___,___м, К: __,___, V,м³__,____
Разом: ___шт., V: __,___м³

==========

Всього по документу: ___шт., V: __,___м³
Використано бирок для маркування: ____шт.
_____

Додаток 7
до Правил перевезень вантажів
автомобільним транспортом в Україні

Форма № 1-ТН

ТОВАРНО-ТРАНСПОРТНА НАКЛАДНА
№_____ „___” _____ 20__ р.

Автомобіль _____/_____ Причіп/напівпричіп _____ Вид перевезень _____
(марка, модель, тип, реєстраційний номер) (марка, модель, тип, реєстраційний номер)

Автомобільний перевізник _____ Водій _____/_____
(найменування/П.І.Б.) (П.І.Б., номер посвідчення водія)

Замовник _____
(найменування/ П.І.Б.)

Вантажовідправник _____
(повне найменування, місцезнаходження /П.І.Б., місце проживання)

Вантажоодержувач _____
(повне найменування, місцезнаходження /П.І.Б., місце проживання)

Пункт навантаження _____ Пункт розвантаження _____
(місцезнаходження) (місцезнаходження)

Переадресування вантажу _____,
(найменування, місцезнаходження /П.І.Б., місце проживання нового вантажоодержувача; П.І.Б., посада та підпис відповідальної особи)
відпуск за довіреністю вантажоодержувача: серія _____ № _____ від „_____” _____20___р., виданою _____

Вантаж наданий для перевезення у стані, що _____ правилам перевезень відповідних вантажів, номер пломби (за наявності) _____,
(відповідає/не відповідає)
кількість місць _____, масою брутто, т_____, отримав водій/експедитор _____
(словами) (словами) (П.І.Б., посада, підпис)

Бухгалтер (відповідальна особа вантажовідправника) _____ Відпуск дозволив _____
(П.І.Б., посада, підпис) (П.І.Б., посада, підпис, печатка)

Усього відпущено на загальну суму _____, у т.ч. ПДВ _____
(словами, з урахуванням ПДВ)

Супровідні документи на вантаж _____

_____

Транспортні послуги, які надаються автомобільним перевізником: _____

_____

2

Продовження додатка 7

Зворотний бік

ВІДОМОСТІ ПРО ВАНТАЖ

№ з/п	Найменування вантажу (номер контейнера), у разі перевезення небезпечних вантажів: клас небезпечних речовин, до якого віднесено вантаж	Одиниця виміру	Кількість місць	Ціна без ПДВ за одиницю, грн	Загальна сума з ПДВ, грн	Вид пакування	Документи з вантажем	Маса брутто, т
1	2	3	4	5	6	7	8	9
Всього:								

Здав (відповідальна особа вантажовідправника)

(П.І.Б., посада, підпис, печатка)

Прийняв водій/експедитор

(П.І.Б., посада, підпис)

Здав водій/експедитор

(П.І.Б., посада, підпис)

Прийняв (відповідальна особа вантажоодержувача)

(П.І.Б., посада, підпис, печатка)

ВАНТАЖНО-РОЗВАНТАЖУВАЛЬНІ ОПЕРАЦІЇ

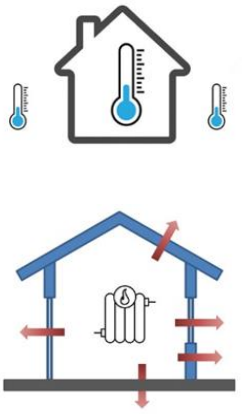
Операція	Маса брутто, т	Час (год., хв.)			Підпис відповідальної особи
		прибуття	вибуття	простою	
10	11	12	13	14	15
Навантаження					
Розвантаження					

12.7 The Thermal Envelope

What is the building envelope?

Includes all building components that separate the inside from the outside. The building envelope comprises the external walls, foundations, roof, windows, and doors. The building envelope should keep out the following:

- moisture, in vapour or liquid
- dust
- wind
- heat



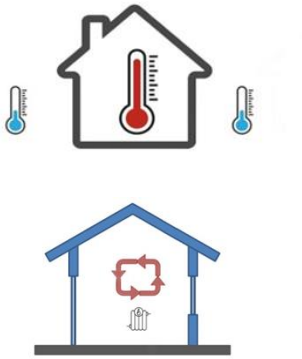
What is the thermal envelope?

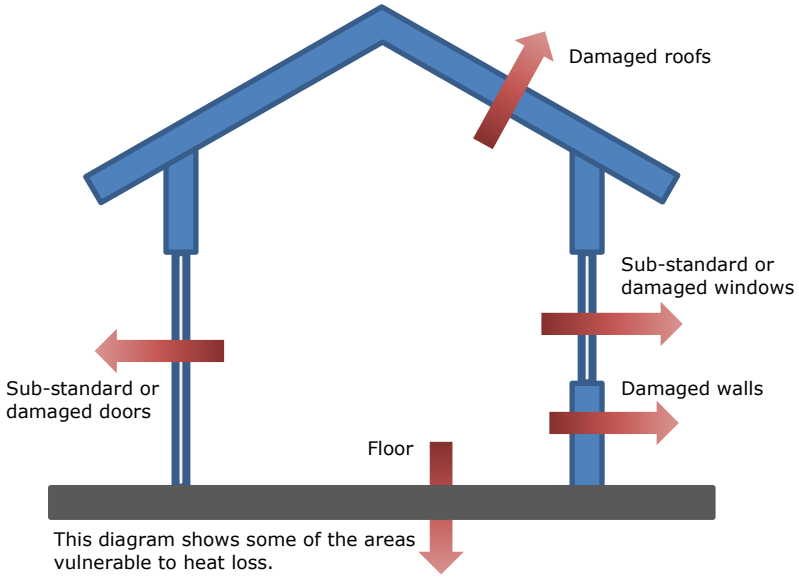
Refers to the minimum boundary or enclosure within a shelter that helps regulate heat transfer between the interior and exterior environments.

It is a critical aspect of the shelter cluster's response, particularly in emergency response during the winter when people need protection from the extreme cold. The thermal envelope is designed to minimize heat exchange and maintain a comfortable and safe living environment inside the shelter.

The components that form the thermal envelope are:

- walls and roofs and their insulation:
- doors and windows





13 Revision History

Version	Status	Date	Description	Comments
v1.0	Published	2024/07/05	Approved by SC SAG	
v1.1	Published	2024/07/09	Approved by SC SAG	typos fixed
v1.2	Published	2024/08/02		- tables 1, 3-6, 9, 10 were updated. - more accurate explanation for solid fuel transfer value (cash modality) was added.
v1.3	Published	2024/08/20		- section 6.1 was updated. - section 8.1.4 was added. - section "Verification of the legality of the firewood origin" and the corresponding Annex 12.6 were added. - clarification on the solid fuel transportation cost for cash modality was made.
v1.4	Published	2024/09/04		The currency of solid fuel transfer value (cash modality) changed from US dollars to hryvnia
V1.5	Published	2024/10/22		- clarifications have been made regarding the exchange rate in Table 8. All such references to the dollar rate in the document should be read as "exchange rate at the time of calculation". - The important note in the "Gas heater kits" section has been updated. - added footnote 14, which provides clarification on types of primary electric heating systems. - the term "secondary heating source" was changed to "reserve" and broader description for this option was added. - section 8.1.5 was updated. - the important note in Chapter 12.4 was updated.