SOLID FUEL ASSESSMENT IOM UKRAINE | JANUARY 2024



OVERVIEW

IOM Ukraine's Solid Fuel Assessment (SFA) is a monitoring tool which tracks the type, availability and pricing of solid fuels employed for heating in Ukrainian households. The SFA also serves to identify the primary winter needs of households, with the overarching objective of supporting humanitarian winterization operations. It also investigates the expected future demand, supply, and prices of essential solid fuel products.

Between 2 and 11 January 2024, the Data and Analytics (D&A) team implemented Round 7 of the SFA. It surveyed 287 markets at 47 locations across all 23 oblasts and Kyiv City in Ukraine, conducting face-to-face and remote interviews with both local vendors and community focal points (CFPs). In each oblast, data was collected in at least two locations, one urban and one rural and/or near the frontline, where applicable. In each location, a minimum of two vendors and two CFPs (non-vendors) were surveyed. CFPs were chosen based on their familiarity with the subject matter and knowledge of winterization preparation at the community level.

IOM is committed to providing humanitarian and recovery partners in Ukraine with timely, relevant, and high-quality data. Please contact us if you have further questions on the methodology or key findings at DTMUkraine@iom.int

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Map 1: Locations assessed in January 2024 Rivnenska Volynska Chernihivska Sumska Kyiv city Zhytomyrska Lvivska Khmelnytska Kyiyska Poltavska Kharkivska Ternopilska Cherkaska Luhanska Ivano-Frankivska Vinnytska Zakarpatska Chernivetska Kirovohradska Dnipropetrovska Donetska Mykolaivska Zaporizka Locations assessed during Round 7 Khersonska of the Solid Fuel Assessment Jany. Assessed locations Odeska Oblast boundaries Areas occupied by the Russian Federation Autonomous Republic of Crimea This map is for illustration purposes only. The boundaries and names shown and the designations used on this map do not imply official endorsement or









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KEY FINDINGS



Most vendors did not anticipate any change in either supply, demand or price of solid fuels in the month following the survey, with the exception of vendors in frontline areas, who expected increases in prices and declining supply of solid fuels, potentially compounding the vulnerabilities faced by populations in these areas.



With respect to specific solid fuels, a relatively greater share of Kls expect increases in the price, demand and supply of firewood, compared to coal, briquettes and pellets.



Since August 2023, key informants have reported that the price of coal has increased, driven by growth in demand for coal across the country. At the same time, median prices in firewood, briquettes and pellets witnessed a decline between August 2023 and January 2024.



Populations in rural and frontline areas were more likely to purchase solid fuel as needed, exposing them more greatly to price increases and changes in the supply of solid fuels. Sourcing of solid fuels was reported to be primarily done once, at the beginning of the heating season in urban and non-frontline areas.



Over a quarter of vendors in frontline areas indicated that populations relied on aid distribution for solid fuel. Across most location types, however, vendors indicated that individual distributors were the main source of solid fuels, with the exception of frontline areas, where direct manufacture markets were the main purchase point for solid fuel.



KIs indicated that only few residents had access to solid fuel heating appliances in Cherkaska, Chernihivska, Chernivetska, Ivano-Frankiska, Kharkivska, Khersonska, Odeska. Rivnenska, Ternopilska, Volynska, Zakarpatska and Zaporizka Oblasts. Furthermore, vendors in every oblast but six reported that few residents used solid fuels as a heating modality, leaving populations vulnerable in the face of deteriorating security or infrastructure damage.



In Chernihivska, Khersonska, Odeska and Volynska Oblasts the majority of Kls reported that few or no residents had access to gas heating systems. By contrast, few residents reportedly had access to electric heating systems in 18 oblasts. The lack of secondary or tertiary heating methods may compromise the resilience of households during ongoing winter challenges.



Key informants reported residential insulation as the primary winter need in the country (mentioned by 57% of Kls), with especially high needs in Chernivetska, Khmelnytska, Odeska and Poltavska Oblasts. Other significant winter needs included affordability of central heating sources (45%), distribution of solid fuels (38%) and access to heating appliances (33%).

PRICE OVERVIEW

Table 1: Median price per unit of solid fuels, as of January 2024

Fuel	Median price per unit (not including transportation)
Firewood	1,522 UAH/stacked m³
Coal	9,960 UAH/ton
Briquettes	7 UAH/kg
Pellets	7 UAH/kg

- 1. For the purpose of this assessment, markets are defined as shops or vendors which supply solid fuel items. More information regarding the different market types surveyed in this assessment may be found on page 12 (Methodological Note).
- 2. Urban and rural areas are distinguished based on population estimates, with rural areas having <20,000 estimated residents. The categorization of frontline and non-frontline locations applies solely to oblasts near the frontline (i.e., Chernihivska, Donetska, Dnipropetrovska, Kharkivska, Khersonska, Mykolaivska, and Sumska Oblasts). Frontline and near-frontline locations encompass areas previously occupied or currently experiencing regular direct attacks due to their geographic proximity. These four classifications are not mutually exclusive, meaning that rural and urban areas can include both frontline and non-frontline locations.
- 3. Key informants (KIs) interviewed for the purpose of this assessment included both local vendors and community focal points (CFPs), notably public officials, community leaders, teachers, healthcare workers and members of civil society.
- 4. Median pricing estimates are utilised across the report. Median rates control for outlier prices to provide humanitarian partners with more accurate cost estimates.



VENDOR EXPECTATIONS

Figure 1a: Expectations of changes in the demand, sourcing and price of solid fuels over the month following the interview in urban and rural locations (% of vendors)

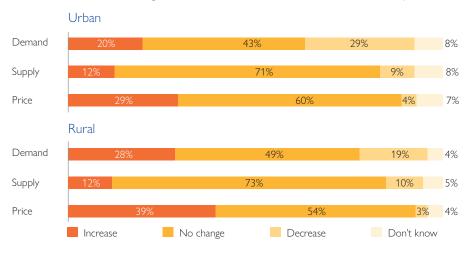
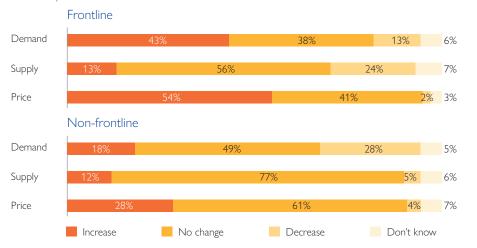
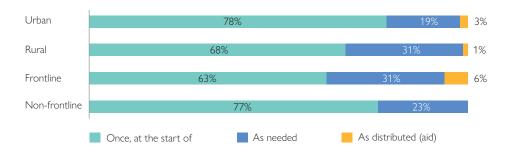


Figure 1b: Expectations of changes in the demand, sourcing and price of solid fuels over the month following the interview in frontline and non-frontline locations (% of vendors)



FREQUENCY OF SOURCING



METHOD OF SOURCING

Table 2: Means by which populations source solid fuels, by location type (% of vendors)*

Method of sourcing	Urban	Rural	Frontline	Non-frontline
Individual Distributor	56%	55%	38%	63%
Direct Manufacture Market	48%	48%	40%	52%
Wholesale Point	39%	11%	23%	26%
Large Trading Network	15%	1%	6%	9%
Aid Distribution	9%	12%	27%	4%
Local Shop	3%	12%	8%	7%
Community Self-Organization	3%	12%	2%	10%
Other	1%	6%	2%	4%

^{*} Questions regarding frequency and method of sourcing were only posed to community focal points (CFPs), as representatives of the communities assessed, with the goal of capturing communities' sourcing behaviour, and are indicative of community trends.



FIREWOOD

Table 3: Median price of firewood according to Kls, by vendor location, vendor type, and quality

Median price per unit	1,522 UAH per stacked m ³
Median price per unit	by vendor location
Urban	1,455 UAH per stacked m³
Rural	1,413 UAH per stacked m³
Frontline	1,455 UAH per stacked m³
Non-frontline	1,413 UAH per stacked m ³

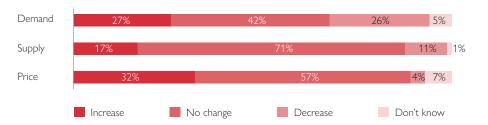
Median price per unit by vendor type		
Direct manufacture market	1,080 UAH per stacked m ³	
Individual distributor	1,150 UAH per stacked m³	
Large trading network	1,500 UAH per stacked m ³	
Local shop	2,175 UAH per stacked m ³	
Wholesale point	1,800 UAH per stacked m ³	
Other	1,800 UAH per stacked m ³	

Median price per unit by quality		
Low	725 UAH per stacked m³	
High	1,560 UAH per stacked m ³	

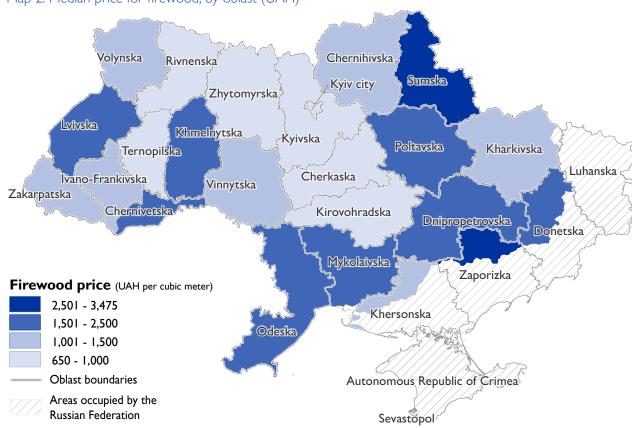
Hardwood (high quality): derives from trees that are slower growing and has a high thermal conductivity. It is therefore a slow burning and efficient solid fuel source.

Softwood (low quality): typically derives from conifer or 'evergreen' trees and has a comparative low thermal conductivity. It therefore burns faster than hardwood and produces more smoke and ash.

Figure 3: Key informant expectations of changes in the demand, supply and price of firewood over the month following the interview, by location type (% of KIs)



Map 2: Median price for firewood, by oblast (UAH)





COAL

Table 4: Median price of coal according to Kls, by vendor location, vendor type, and quality

Median price per unit	9,960 UAH per ton
Median price per u	nit by vendor location
Urban	11,250 UAH per ton
Rural	10,000 UAH per ton
Frontline	11,000 UAH per ton
Non-frontline	10,000 UAH per ton

Median price per unit by vendor type		
Direct manufacture market	10,000 UAH per ton	
Individual distributor	10,000 UAH per ton	
Large trading network	12,000 UAH per ton	
Local shop	13,000 UAH per ton	
Wholesale point	12,000 UAH per ton	
Other	10,000 UAH per ton	

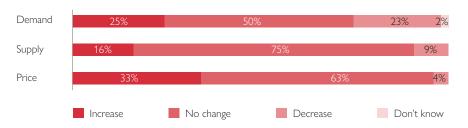
Median price per unit by quality		
Low	7,900 UAH per ton	
High	12,000 UAH per ton	

Anthracite (high quality): Anthracite is a high-quality coal, which has a high thermal conductivity and a long combustion time.

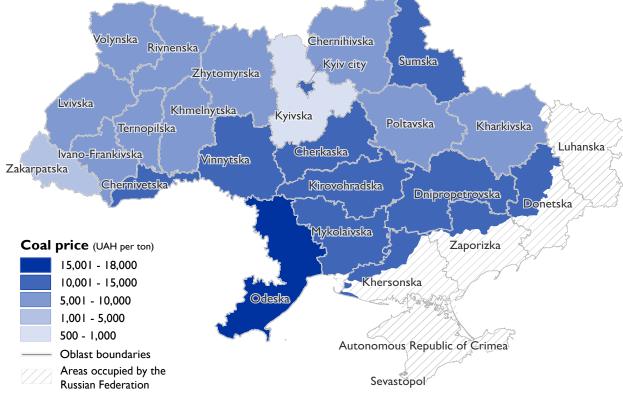
 $\label{eq:Gascoal} \begin{tabular}{l} Gas coal \begin{tabular}{l} (high quality): A type of coal with a thermal conductivity and combustion time between that of anthracite and brown coal. \end{tabular}$

Brown coal (low quality): Brown coal is "immature" hard coal. Among all types of coal, it is considered the lowest quality fuel, as it emits much less heat.

Figure 4: Key informant expectations of changes in the demand, supply and price of coal over the month following the interview, by location type (% of KIs)



Map 3: Median price for coal, by oblast (UAH)





BRIQUETTES

Table 5: Median price of briquettes according to Kls, by vendor location, vendor type, and quality

Median price per unit	7 UAH per kg
Median price per ui	nit by vendor location
Urban	7 UAH per kg
Rural	7 UAH per kg
Frontline	6 UAH per kg
Non-frontline	7 UAH per kg

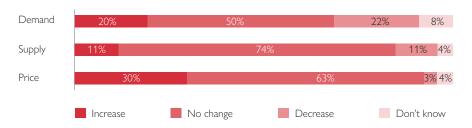
Median price per unit by vendor type		
Direct manufacture market	7 UAH per kg	
Individual distributor	7 UAH per kg	
Large trading network	11 UAH per kg	
Local shop	6 UAH per kg	
Wholesale point	7 UAH per kg	
Other	7 UAH per kg	

Median price p	per unit by quality
Low	6 UAH per kg
High	7 UAH per kg

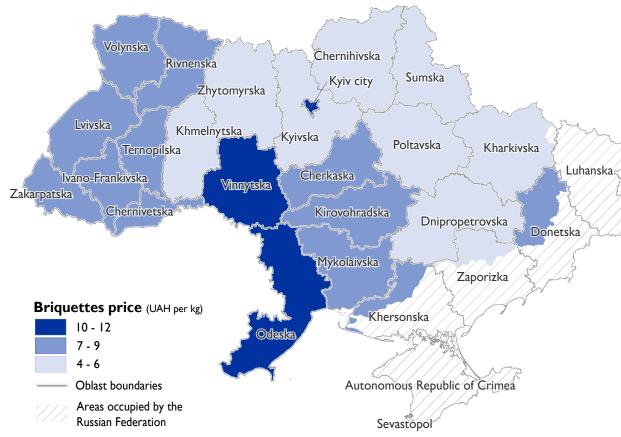
Peat briquettes (high quality): Consist of shredded peat, compressed to form a virtually smokeless, slow-burning, easily stored and transported fuel. Often used as the sole fuel for a fire, they are also used to light a coal fire quickly and easily.

Wood briquettes (high quality): Wood briquettes are a fuel source made out of dried, compacted wood. They are made from wood waste or by-products and machine-compressed into a log or block shape. Sunflower husk briquettes (low quality): Composed ofcompressed sunflower husks, the briquettes have moderate thermal conductivity but produce significant amounts of ash and have ash low moisture resistance.

Figure 5: Key informant expectations of changes in the demand, supply and price of briquettes over the month following the interview, by location type (% of KIs)



Map 4: Median price for briquettes, by oblast (UAH)





PELLETS

Table 6: Median price of pellets according to Kls, by vendor

Median price per unit	7 UAH per kg
Median price per u	nit by vendor location
Urban	7 UAH per kg
Rural	7 UAH per kg
Frontline	6 UAH per kg
Non-frontline	7 UAH per kg

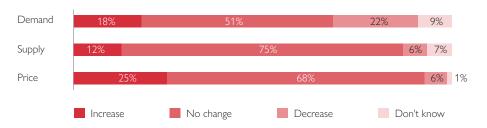
Median price per	unit by vendor type
Direct manufacture market	6 UAH per kg
Individual distributor	7 UAH per kg
Large trading network	7 UAH per kg
Local shop	8 UAH per kg
Wholesale point	7 UAH per kg
Other	8 UAH per kg

Median price per unit by quality							
Low	6 UAH per kg						
High	7 UAH per kg						

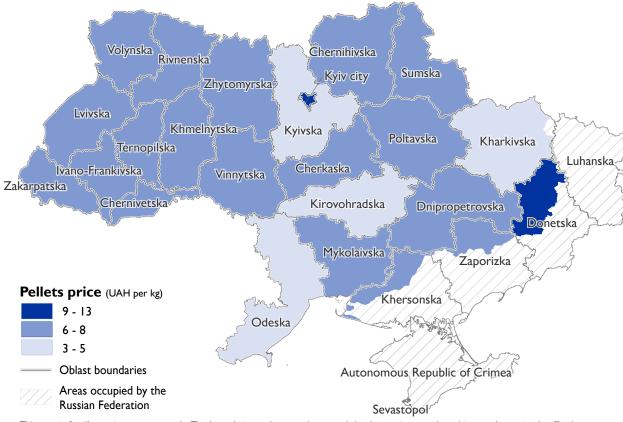
Wood pellets: (high quality): Wood pellets have high calorific value, low ash content, and burn without visible smoke.

Straw pellets (high quality): Small, compressed bale of straw that can be burned in a stove or furnace. Sunflower husk pellets (low quality): Small, compressed husks of sunflower seeds with a higher ash content (compared to wood pellets).

Figure 6: Key informant expectations of changes in the demand, supply and price of pellets over the month following the interview, by location type (% of KIs)



Map 5: Median price for pellets, by oblast (UAH)





WINTERIZATION NEEDS OVERVIEW

Oblast	Residential insulation	Affordability of central heating sources	Solid fuel distribution	Solid fuel heating appliances	Shelter repair	Sufficient supply of central heating	Access to stable power supply	Connection to central heating lines	Electrical heating appliances	Access to shelter	Financial support to pay for solid fuel	Winter clothing	Access to points of invincibility	Don't know	Other
Cherkaska	79%	43%	21%	43%	36%	14%	<1%	7%	7%	14%	<1%	<1%	<1%	<1%	<1%
Chernihivska	27%	45%	45%	36%	18%	18%	36%	<1%	<1%	<1%	18%	<1%	<1%	45%	<1%
Chernivetska	100%	9%	<1%	45%	9%	<1%	<1%	<1%	<1%	<1%	9%	<1%	<1%	<1%	36%
Dnipropetrovska	79%	21%	<1%	29%	<1%	14%	86%	<1%	7%	14%	7%	14%	<1%	<1%	7%
Donetska	<1%	80%	100%	<1%	<1%	100%	<1%	20%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Ivano-Frankivska	60%	30%	<1%	10%	<1%	<1%	10%	<1%	<1%	<1%	60%	<1%	<1%	<1%	10%
Kharkivska	61%	43%	22%	30%	70%	30%	22%	30%	9%	57%	<1%	35%	4%	<1%	<1%
Khersonska	75%	50%	63%	63%	88%	50%	75%	50%	38%	<1%	<1%	38%	<1%	<1%	<1%
Khmelnytska	100%	60%	40%	80%	90%	20%	<1%	30%	10%	90%	<1%	<1%	<1%	<1%	<1%
Kirovohradska	20%	60%	60%	13%	<1%	53%	100%	33%	20%	<1%	<1%	<1%	67%	<1%	<1%
Kyiv city	60%	40%	20%	<1%	20%	20%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	20%	20%
Kyivska	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	100%	<1%
Lvivska	90%	30%	<1%	10%	<1%	40%	80%	10%	<1%	10%	<1%	<1%	<1%	<1%	<1%
Mykolaivska	40%	80%	80%	70%	<1%	60%	30%	<1%	20%	<1%	<1%	10%	<1%	<1%	<1%
Odeska	100%	33%	22%	11%	33%	11%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Poltavska	100%	100%	50%	83%	<1%	100%	<1%	8%	17%	<1%	<1%	25%	25%	<1%	<1%
Rivnenska	33%	50%	8%	33%	8%	<1%	25%	<1%	8%	<1%	<1%	<1%	<1%	25%	8%
Sumska	30%	70%	90%	20%	40%	<1%	30%	<1%	50%	<1%	<1%	90%	<1%	<1%	<1%
Ternopilska	<1%	9%	27%	36%	91%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	18%
Vinnytska	42%	45%	81%	6%	<1%	6%	6%	<1%	<1%	<1%	55%	<1%	<1%	<1%	<1%
Volynska	85%	31%	8%	31%	<1%	8%	38%	8%	15%	<1%	<1%	<1%	<1%	<1%	<1%
Zakarpatska	67%	8%	<1%	33%	67%	<1%	<1%	<1%	8%	<1%	<1%	<1%	<1%	<1%	50%
Zaporizka	50%	38%	100%	50%	<1%	13%	<1%	13%	25%	<1%	<1%	<1%	<1%	<1%	<1%
Zhytomyrska	57%	79%	29%	79%	21%	36%	14%	43%	21%	14%	7%	<1%	<1%	<1%	<1%
Rural	62%	38%	39%	41%	29%	15%	20%	8%	9%	12%	10%	10%	6%	4%	4%
Urban	52%	53%	34%	26%	20%	34%	28%	14%	11%	8%	10%	8%	3%	5%	1%
Frontline	43%	53%	60%	31%	41%	34%	26%	20%	17%	19%	3%	29%	1%	7%	<1%
Non-Frontline	61%	43%	29%	34%	19%	21%	24%	8%	8%	7%	12%	3%	6%	4%	4%



METHOD OF SOURCING OVERVIEW

Oblast	Individual distributor	Direct manufacture market	Wholesale point	Aid distribution	Large trading network	Local shop	Community self-organization	Other types of private entrepreneur and markets that do not fit into the above categories	Self preparation and unofficial sale	Other
Cherkaska	88%	13%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Chernihivska	100%	75%	<1%	<1%	<1%	50%	<1%	<1%	<1%	<1%
Chernivetska	25%	100%	50%	<1%	<1%	<1%	50%	<1%	<1%	<1%
Dnipropetrovska	56%	78%	22%	22%	11%	11%	11%	<1%	<1%	<1%
Donetska	75%	50%	63%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Ivano-Frankivska	83%	83%	17%	<1%	<1%	<1%	<1%	<1%	<1%	22%
Kharkivska	20%	40%	<1%	60%	7%	<1%	<1%	<1%	<1%	6%
Khersonska	13%	<1%	38%	<1%	<1%	25%	13%	13%	12%	<1%
Khmelnytska	100%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Kirovohradska	92%	62%	8%	<1%	23%	<1%	<1%	<1%	<1%	<1%
Kyiv city	<1%	<1%	100%	<1%	<1%	<1%	<1%	<1%	25%	<1%
Kyivska	75%	50%	<1%	25%	<1%	25%	50%	<1%	<1%	<1%
Lvivska	50%	83%	17%	<1%	17%	<1%	<1%	<1%	<1%	<1%
Mykolaivska	<1%	<1%	56%	22%	11%	22%	11%	22%	8%	<1%
Odeska	100%	14%	71%	<1%	<1%	14%	<1%	14%	<1%	<1%
Poltavska	100%	100%	67%	<1%	<1%	33%	<1%	<1%	29%	<1%
Rivnenska	100%	50%	<1%	<1%	25%	13%	25%	<1%	<1%	<1%
Sumska	25%	63%	<1%	50%	<1%	<1%	<1%	<1%	<1%	<1%
Ternopilska	<1%	100%	50%	<1%	50%	<1%	25%	<1%	28%	<1%
Vinnytska	40%	80%	40%	<1%	<1%	<1%	<1%	20%	<1%	<1%
Volynska	50%	90%	10%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Zakarpatska	<1%	75%	25%	<1%	25%	25%	50%	25%	<1%	25%
Zaporizka	40%	20%	60%	<1%	40%	<1%	<1%	<1%	<1%	<1%
Zhytomyrska	60%	<1%	20%	<1%	<1%	<1%	20%	<1%	<1%	<1%



Table 9: Estimated proportion of the population with access to heating systems, by oblast

Oblast	Estimated max. total population present*	Share of residents with access to gas as a heating modality	Share of residents with access electricity as a heating modality	Share of residents utilising solid fuel as a heating modality	Share of residents with access to solid fuel burning appliances
Cherkaska	1,330,000	Most (51-75%)	Few (1-25%)	Few (1-25%)	Few (1-25%)
Chernihivska	1,187,000	Few (1-25%)	Few (1-25%)	Few (1-25%)	Few (1-25%)
Chernivetska	849,000	Most (51-75%)	Few (1-25%)	Few (1-25%)	Few (1-25%)
Onipropetrovska	4,272,000	Some (26-50%)	Majority/All (76-100%)	Some (26-50%)	Most (51-75%)
Donetska	1,296,000	Most (51-75%)	Some (26-50%)	Most (51-75%)	Most (51-75%)
vano-Frankivska	2,978,000	Majority/All (76-100%)	Majority/All (76-100%)	Few (1-25%)	Few (1-25%)
(harkivska	1,250,000	Most (51-75%)	Few (1-25%)	Few (1-25%)	Few (1-25%)
(hersonska	1,148,000	Few (1-25%)	Few (1-25%)	Few (1-25%)	Few (1-25%)
Khmelnytska	3,853,000	Most (51-75%)	Few (1-25%)	Few (1-25%)	Some (26-50%)
Kirovohradska	3,229,000	Most (51-75%)	Majority/All (76-100%)	Some (26-50%)	Some (26-50%)
(yiv city	2,640,000	Most (51-75%)	Few (1-25%)	Few (1-25%)	Some (26-50%)
Zyivska	1,320,000	Some (26-50%)	Few (1-25%)	Most (51-75%)	Most (51-75%)
vivska	2,581,000	Most (51-75%)	Most (51-75%)	Some (26-50%)	Most (51-75%)
1ykolaivska	1,701,000	Some (26-50%)	Few (1-25%)	Most (51-75%)	Most (51-75%)
Odeska	1,088,000	Few (1-25%)	Few (1-25%)	Few (1-25%)	Few (1-25%)
Poltavska	1,125,000	Most (51-75%)	Most (51-75%)	Some (26-50%)	Some (26-50%)
Rivnenska	894,000	Majority/All (76-100%)	Few (1-25%)	Few (1-25%)	Few (1-25%)
iumska	1,794,000	Majority/All (76-100%)	Few (1-25%)	Most (51-75%)	Most (51-75%)
- Ternopilska	1,109,000	Majority/All (76-100%)	Few (1-25%)	Few (1-25%)	Few (1-25%)
/innytska	900,000	Some (26-50%)	Few (1-25%)	Most (51-75%)	Most (51-75%)
/olynska	1,349,000	None	Few (1-25%)	Few (1-25%)	Few (1-25%)
Zakarpatska	726,000	Majority/All (76-100%)	Few (1-25%)	Few (1-25%)	Few (1-25%)
Zaporizka	433,000	Some (26-50%)	Few (1-25%)	Some (26-50%)	Few (1-25%)
Zhytomyrska	1,261,000	Most (51-75%)	Few (1-25%)	Some (26-50%)	Most (51-75%)
Rural		Most (51-75%)	Few (1-25%)	Most (51-75%)	Most (51-75%)
Jrban		Most (51-75%)	Few (1-25%)	Few (1-25%)	Few (1-25%)
rontline		Most (51-75%)	Few (1-25%)	Few (1-25%)	Few (1-25%)
Von-frontline		Most (51-75%)	Few (1-25%)	Few (1-25%)	Few (1-25%)

^{*}The data presented in this table is taken from IOM's General Population Survey (GPS), itself derived using UNFPA's revised total population baseline, dated October 2022. Reference to 'maximum total population' reflects the margin of error within the GPS. Population estimates in Donetska, Zaporizka and Khersonska Oblasts are under-represented due to coverage of government-controlled areas only, as well as the limited number of respondents reached through the random digit dial of the General Population Survey



METHODOLOGICAL NOTE

The Solid Fuel Assessment is a bi-monthly product developed by the Data and Analytics (D&A) programme to supporting humanitarian winterization operations. The data collection serves to identify the needs and supply of solid fuels for Ukrainian households across the country. Additionally, it seeks to estimate the prices of solid fuel items. The tool investigates the supply, demand and price of essential solid fuel products at the time of the assessment, also acquiring information from key informants on the forecasted prices and availability for the upcoming month, as well as the sources and needs of local populations. Data collection takes place over a 10-day period, every two months across all 23 oblasts and Kyiv City.

Successive rounds aim to monitor trends to highlight changes in prices or disruptions within the supply chain over the winter season. The assessment involves the active participation of vendors and community focal points (CFPs) who serve as primary sources of information on the main types of solid fuels in Ukraine. At least two locations per oblast are assessed, including the main urban centre and a rural and/or near frontline area. Within each of these locations, a minimum of two vendors and two CFPs are assessed through face-to-face or remote interviews. The introduction of CFPs was undertaken to facilitate a more comprehensive analysis of supply dynamics at the household level within each location. In cases where it is not possible to interview vendors for all fuel types, markets in nearby locations are assessed to integrate missing information. Beyond these general indications, locations, vendors and CFPs are selected through purposive sampling. The results reported, therefore cannot be considered as representative – they do, however, provide snapshot examples of the solid fuel market in different areas of the country.

For the purpose of this assessment, urban and rural locations are distinguished based on population estimates, with rural localities having <20,000 persons present. While prewar definitions identified rural locations as those hosting <10,000 residents, the Solid Fuel Assessment identifies rural locations as those hosting <20,000 residents, so as to include locations large enough to comprise solid fuel marketplaces. Furthermore, in Chernihivska, Donetska, Dnipropetrovska, Kharkivska, Khersonska, Mykolaivska and Sumska Oblasts, locations

were further classified as near the frontline to support humanitarian understanding on the extent to which frontline proximity may influence supply, demand, price of solid fuel items and other winterization needs.

To partially address quality variations in solid fuel sold in different markets, the assessment distinguishes between high and low quality for each item. While these categories do not fully account for all available products, they are generally recognised as having clearly distinguishable quality which may impact the heat generation. For instance, hardwood is considered of higher quality than softwood due to its high heat transfer. Similarly, dark coal is deemed of higher quality than brown coal.

PRIMARY SOLID FUEL MARKETPLACE TYPES:

- Direct solid fuel manufacturer: market where the manufacturer sells the product directly to the final customer. Direct manufacture market is where the manufacturer sells the product directly to the final customer.
- Individual distributor: retailer/reseller who sales solid fuel in insignificant amount (private entrepreneur).
- Wholesale point: market for retailers, industrial, commercial, institutional, or professional users or other wholesalers.
- Local shop: market where solid fuel retail sales take place (e.g., small stores, local markets, unauthorized markets).
- Large trading network: marketplace with mixed assortment specializing in the retail trade of various goods, including solid fuel. Has a wide range of different goods (Epicentr, large warehouses etc.).

























