

Ukraine Shelter/NFI Cluster Winterisation Recommendations 2016-2017

Objectives:

Ahead of winter 2016-2017, the Shelter/NFI Cluster in Ukraine will coordinate among Shelter/NFI actors to:

- Identify and **prioritise winterisation needs** of most vulnerable populations
- **Harmonise or standardise modalities** of assistance as possible
- Ensure geographical **coverage of interventions and non-duplication** of beneficiaries
- Facilitate cooperation with local authorities and partner agencies to facilitate future preparedness for winterization

Climate

Eastern Ukraine experiences long, harsh winters. Average temperatures drop below 10° C between mid-October and mid-April, and below 0°C from the end of November to mid-March, with an average low of -10°C and down to -20°C in the colder areas. Rainfall is consistent throughout the year. Rural villages, especially those with already restricted access, may be at risk of having road access further limited or cut off during periods of heavy snow fall.

Population of concern

The population of concern can be divided broadly into two categories, experiencing different needs and requiring differing assistance. For 2016-2017, needs differ according to these two broad categories

- **Internally displaced persons:** likely displaced for a period between several months and over a year, often with limited access to income, and exhausting coping mechanisms
- **Most vulnerable non-displaced conflict-affected population:** those residing near the line of contact, experiencing ongoing damage to shelter and infrastructure and/or restricted access to markets (fuel, NFIs)

For this year, the estimated target population for winterized assistance is the following:

Categories of Affected Population	a) Personal Items	b) Coal/Fuel/Energy	c) Shelter Insulation	d) Collective Centres, others
IDP Northern Donbas	15,620 ind ¹	4,870 HH ¹	1,500 HH	860 ind
<i>Non displaced buffer zone-Northern Donbas</i>	6,550 ind ¹	4,000 HH ¹		
IDP Southern Donbas	6,520 ind ¹	2,050 HH ¹	1,000 HH	910 ind
<i>Non displaced buffer zone - Southern Donbas</i>	1,975 ind ¹	600 HH ¹		
Luhansk NGCA	5,000 ind ²	200 HH ²	1,000 HH ²	200 ind
Donetsk NGCA	7,500 ind ²	4,000 HH ²	1,000 HH ²	1,600 ind
Sub total	43,165 ind	11,520 HH	4,500 HH	3,570 ind
Estimated Costs of Assistance	USD 4,316,500	USD 2,304,000	USD 1,080,000	USD 107,100

¹ Theoretical calculation based on REACH 2015- 2016 Assessment

² Calculation based on the capacity of mobilized partners in these locations- Due to humanitarian access constraints, the appeal for funding reflects available information from agencies mobilized on the ground.

The “do no harm” approach shall be adopted and seriously considered when planning and delivering assistance, especially in communities that have populations with different profiles (non-displaced population, hosting communities, IDPs, and returnees) in order to avoid the creation of tensions.

Access to essential winter items varies by item and is influenced by displacement status and whether one is residing in rural or urban contexts.

Targeting & vulnerability criteria

There are many factors impacting an individual’s preparedness for winter. Identification of the most appropriate winter assistance should therefore be based on **observed need** of the household. Criteria for assistance include location, housing, and specific personal vulnerabilities.

Location Factors	Housing Factors	Specific Vulnerabilities
Urban/rural/frontline location	Rental/Private house/collective centre/hosted, etc.	E.g. persons with disabilities, elderly persons, persons with chronic illnesses, large families
Government Controlled vs. Non-government controlled location	Damaged or non-damaged	Very low or no income
	Number of rooms and individuals	Unemployed
Market Access	Fuel/Stove type	







Moreover, the **Guidance of the Ukraine Protection Cluster** on [gender and protection issues](#) and [prioritizing the most vulnerable](#) in Ukraine should inform target beneficiaries for winter humanitarian assistance.

Modalities

Given the need for targeted assistance, partners working in government controlled areas will prioritize monetized solutions where markets are accessible and where beneficiaries are able to purchase life-saving goods at these markets. **When opting for vouchers and cash as a modality**, market access for beneficiaries shall be seriously considered; based on Winter 2014-15 experience, if items are not locally available, provision of transportation to the nearest suitable store could be considered as an option. In-kind provision will remain the recommended modality for frontline areas with restricted market access and non-government controlled areas where there are complications with the financial system. Regardless of modality, it is recommended to provide assistance according to the targeting and vulnerability criteria which will be informed by a careful assessment of beneficiaries’ needs.

Principles of winterisation assistance

Winter assistance should be prioritised to achieve maintenance of core body temperature. Shelter and heating interventions will aim for the ‘**One Warm Room**’ principle especially in newly damaged affected houses. However, for 2016-2017, this one warm room policy will be expanded to account for persons found in protracted situations heading into their **third** winter without adequate access to heating. This **expanded one warm room policy** will account for accommodation type, size, and number of intended beneficiaries to maximize insulation efficiencies.³

Number of Persons	Expanded One Warm Room Policy
  1 or 2 individuals	1 warm room policy
    3 or more	1 warm room policy Full house

A. Personal insulation: to keep immediate space around bodies warm to maintain core body temperature. Maintenance of core body temperature through keeping immediate space around a person primarily through warm clothes and blankets.

B. Heating: to raise and maintain core body temperature. Heating type varies by building type and location, including use of gas central heating system, electric heater, coal, wood. Understanding of heating type and related expenditure (utility bills or solid fuel) by location and by household is vital in order to identify the most appropriate modality of assistance.⁴ In general, and for multi-storey buildings and Collective Centres in particular, capacity of electricity networks should be taken into consideration before providing electric heaters.

C. Shelter: to provide protection from the elements and basic insulation (One Warm Room)

a. Water- and wind-proofing

Most relevant to households with damaged shelters, the main priority is to provide protection from the elements through water- and wind-proofing, i.e. repair or temporary fixing of damaged roofing, walls, and windows. Given some restrictions on repair of housing due to exposure to ongoing shelling or time constraints in winter, temporary fixes including use of plastic sheeting and tarpaulin are recommended. For displaced persons, facilitation of access to an adequate standard of shelter is recommended through other modalities of assistance, including Cash for Rent.

b. Shelter insulation

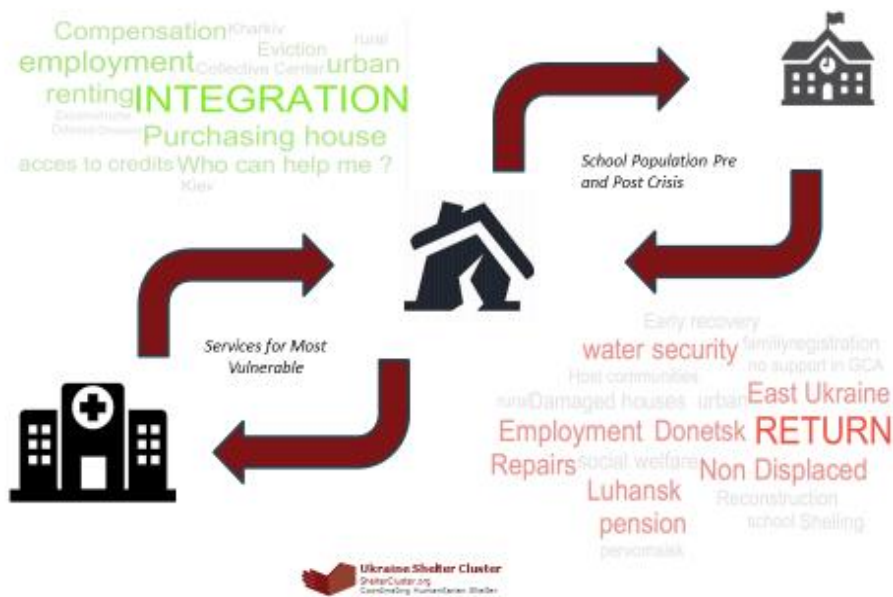
Installation of additional items to improve insulation in a shelter is recommended for actors already undertaking shelter repairs, with the technical capacity to evaluate needs and advise on proper installation of items. Given openings (doors and windows) are the principle location of heat loss, insulation should be accompanied by emergency repairs and window replacement when needed.

³ 1 person in an 80 square meters’ house would require a one warm room policy, but in the case where there are more individuals

⁴ Access to hot water is also of concern, for maintenance of personal hygiene

D. Communal Facilities and Infrastructure

Public institutions such as schools, hospitals, collective centres, and social institutions require special attention for winterization as negligence of the building’s central heating system increases the risk of fire or floods. Similarly, damage sustained by the crisis also impacts these buildings’ use during the winter, increasing the risk of **further displacement**. Winterization activities should improve the conditions for those using or residing in communal facilities and infrastructure to enhance durable shelter solutions for permanent stay. A house in itself is not the only thing to satisfy a person’s needs post-crisis needs, services also need to be maintained to meet the needs of the crisis affected.



Coordination

In addition to monthly 5W reporting of activities, Cluster members will continue to coordinate through the mechanisms in Sloviansk and Sievierodonetsk, and on a bilateral basis depending on areas of intervention, ensuring complementarity of assistance, or non-duplication through either geographical division of areas of intervention, or e.g. comparison of beneficiary lists as appropriate. While assistance is again anticipated by LNGOs and volunteer organisations for Winter 2016/17, scale of coverage is dependent on donations and cannot be projected. The Subnational Cluster will ensure to coordinate assistance and referrals with local actors as best as possible through its referral mechanism. This will require regular liaison at **inter-cluster level** with **Education** and **Health Clusters** for damaged institutions in addition to bilateral cooperation with the **Protection Cluster** and **Cash Working Group** to ensure complimentary of interventions benefitting the most vulnerable through the winter months. The Shelter Cluster will also work to ensure synergies in approaches with other winterisation programming carried out by the **Food** and **WASH Clusters**.

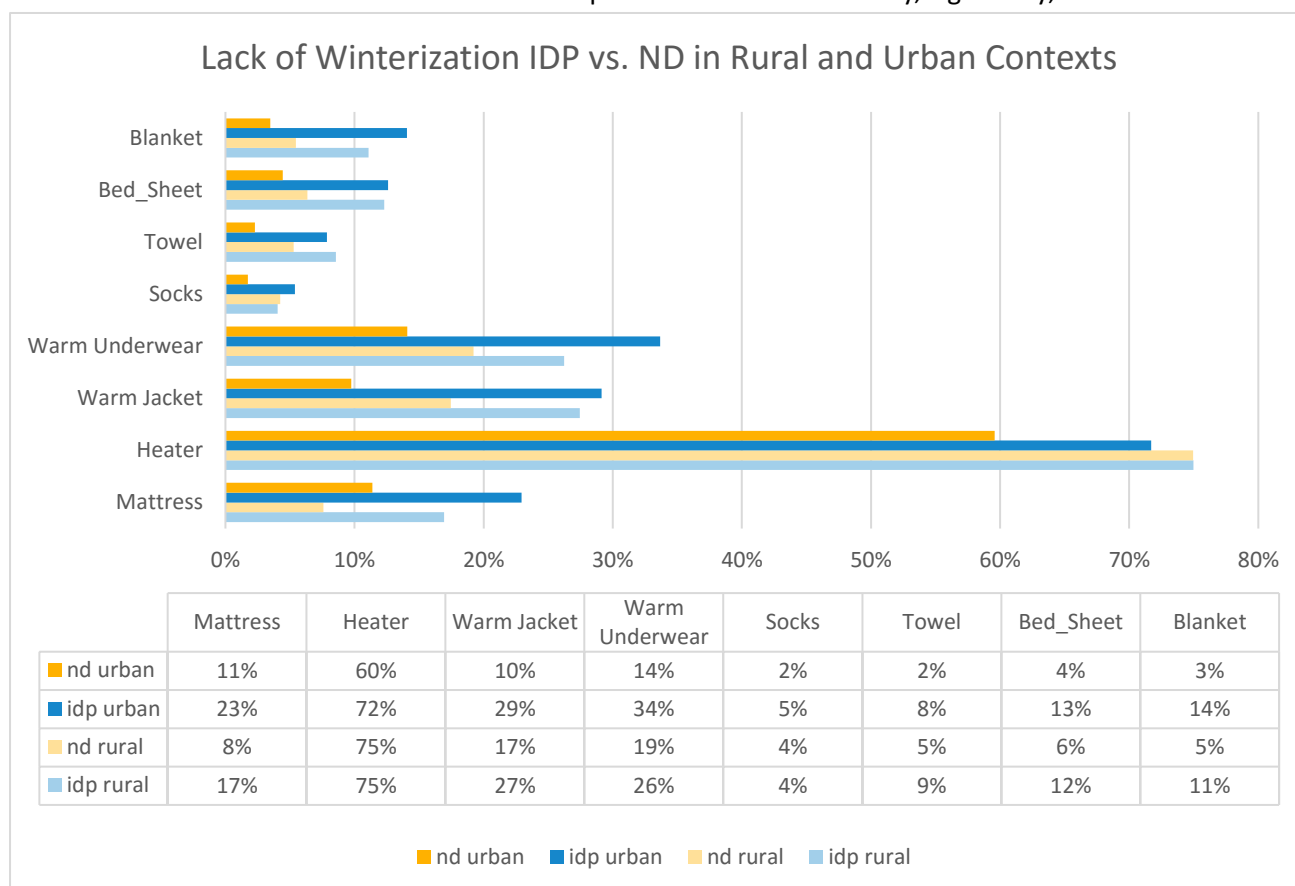
Standardisation & technical recommendations

A. Personal insulation – core NFIs

Access to core non-food-items for winter require assistance should be based on **observed need** rather than blanket provision. During the 2015-16 winter period, 123,619 individuals received blankets, bedding, candles, clothing or tarpaulin, and kitchen sets, while a shift to monetized assistance was made with 24,963 households receiving winterization cash grants. For 2016-17, monetary and voucher programs should be preferred to NFIs in government controlled areas especially when markets are accessible. Nevertheless, not all beneficiaries have regular access to markets or the ability to purchase the appropriate items for winter at their local market. Therefore, market assessments and availability of goods should inform any cash intervention. Further, ensuring access to basic NFIs should also be considered a priority alongside the provision of winterisation-specific assistance. Priority needs are often determined by whether one is residing in rural or urban areas or whether the household is displaced or non-displaced.

Clothing must be suitable for winter, clean, and appropriate for age/size and gender. Special attention **should be paid to children, especially with regard to clothing, where renewable clothing is required** (size changes as a child grows fast). With clothing retailers available in most urban areas, voucher or conditional cash can be an option for ensuring that people are able to select clothing that corresponds with their size and comfort preference.

High-quality **high-thermal blankets** (50% wool or equivalent synthetic insulation) or quilts should be used, and it should be ensured that persons have access to mattresses for insulation from the ground, especially if floors are not covered. An additional blanket is recommended for persons with limited mobility, e.g. elderly, disabilities.



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⁵ Refined extraction from REACH 2016 data survey Please note that heater and heating might be understood as one thing: the device and the concept.

B. Heating and Fuel

B.1. Stove and Fuel

The harsh winter climate requires access to primary and secondary sources of heat. **Primary sources** of heat are the **first priority** and additional electrical heaters could be distributed as a secondary heating source.

Heating systems should be implemented according to the accommodation type and heating system (gas network, municipal heating system, individual solid fuel stove). Each house and residence should be assessed to see which heating system would be the most appropriate:

1. Communal heating system
2. Electrical heater
3. Coal stove
4. Briquette/pellet

Wood stoves may be used in only very rare and particular cases due to the high level risks of fire. Certain categories of vulnerabilities are not as easily able to operate these stoves. In case of traditional individual solid fuel stove, increasing the thermic inertia with burn brick masonry could be considered. Possibility of further deterioration of security context or roads becoming blocked due to snowfall is a further concern, requiring upfront delivery of solid fuel to remote or frontline areas. Those with the most concern with respect to access to fuel needs are IDPs residing in collective centres. Similarly, those renting apartments and owning their own home may have difficulty to heat their home due to the size of their living space.

B.2. Affordability of Heating and Utilities

For winterization 2016-2017, the rising prices of utilities and heating makes housing affordability more arduous and possible cut-off from vital electricity and heating in the case of being unable to pay.

Number of Rooms ⁶	Rural Non Displaced		Urban Non Displaced	
	Average Utilities	Average of Heating	Average Utilities	Average of Heating
1	257 UAH	1505 UAH	308 UAH	535 UAH
2	305 UAH	1303 UAH	439 UAH	764 UAH
3+	410 UAH	1082 UAH	586 UAH	1118 UAH

Number of Rooms ⁷	Rural IDP		Urban IDP	
	Average Utilities	Average Heating	Average Utilities	Average Heating
1	262 UAH	483 UAH	316 UAH	492 UAH
2	313 UAH	799 UAH	372 UAH	679 UAH
3+	348 UAH	821 UAH	391 UAH	760 UAH

⁶ This data is extracted from the REACH 2016 dataset as an average regardless of accommodation type.

⁷ Ibid.

Fuel prices – rising fuel prices, in particular gas, in Ukraine is of concern, and risk of gas and electricity disruptions during the winter is deemed to be high. Support for diversification of heating type is recommended for extremely vulnerable families. Given concern about price increase over the winter period, the Shelter Cluster and its partners will monitor prices and supply for both utilities and solid fuel.

Government subsidies for utility bills are available for certain categories of vulnerable households. Utility subsidies based on household income, size, and utility cost can be calculated here:

<http://www.kmu.gov.ua/control/calculator>

This year, the Shelter Cluster will facilitate communication of these subsidies to target beneficiaries.

Provision of assistance should be based on observed need in each locality / by household and take account of other types of assistance and/or subsidies already provided. By September, Oblast authorities are hoping to provide a realistic overview of what their coverage of subsidies will be at the settlement level.

Utilities: it is recommended that utility bills, as a recurrent cost to the household, be included in ongoing assistance, e.g. provision of unconditional cash grants, i.e. government assistance.

It is suggested for 50% of cost to be covered for heating access (e.g. of provision of coal). For extremely vulnerable caseload e.g. protection trigger, proximity to frontline and associated very restricted market access, % coverage to be determined by individual organisations' policy based on need.

Electricity is quite an important part of utilities and its presence contributes greatly to permanent stay. If it is to be replaced, the network will be grounded with a box and a meter plus a switch board. Fuses have to be considered for isolating each room independently. 2 sockets are required in each room and 3 are required for the kitchen. When working on an electrical connection for a single plot, the electrical connection should only be considered till the plot edge or the nearest electrical pole (not more than 50 meters from plot edge).

C. Shelter

C.1. Basic shelter – emergency repair & window replacement

Repair of damaged housing along the old and current frontlines in eastern Ukraine is a matter of priority for shelter actors ahead of the winter months, with light and medium repairs underway in government-controlled Donetsk and Luhansk.

Window repair or replacement is often needed in locations subject to conflict-related damages, even where other physical damages have not occurred. Shelter actors will continue to conduct repairs as best as possible during the winter months, with provision of **acute emergency shelter materials** (including tarpaulin, plastic sheeting, wooden battens) immediately after damage has occurred a necessity.

Openings in the shelter, especially **windows**, are the primary point of heat loss. Even if undamaged, double glazed windows of poorly heated premises could be upgraded by adding an extra layer(s) of transparent plastic sheeting. If existing windows are single glazed or directly damaged by blast and glass cannot be immediately replaced, setting up a light wooden frame with double layer of transparent plastic sheet as a temporary mitigating measure can be considered.

Particular attention should be paid to **closing all interstitial spaces** (gaps) between wall/window frame and also between window leaf and window frame, to eliminate drafts. This is particularly important if re-using previous materials or frames. Insulation foam and insulation tape are usually adequate.

For double-layered temporary plastic sheeting improvement, estimated cost could be **10-15 USD per room**.

Existence of broken windows in unoccupied apartments in otherwise occupied multi-storey apartment buildings in specific frontline communities is anticipated to impede switching-on of communal heating systems by local authorities for these buildings. Boarding-up of these windows in unoccupied apartments can be made using plywood, Rockwool panel, and insulation foam, to allow heating systems to be activated.

C.2 Shelter insulation

Insulation should be installed in the walls and upper surfaces (roof or ceiling) of all rehabilitated living areas or bedrooms, in addition to the bathroom and kitchen in order to avoid pipes freezing during the winter and exploding, causing subsequent flooding or other interior household damage. During 2014-2015, repair programming often neglected to add insulation as it was commonly associated with being a winterization activity, leaving many crisis-damaged houses without adequate insulation for the winter months. It is recommended to provide insulation as an **essential** part of the repair process.

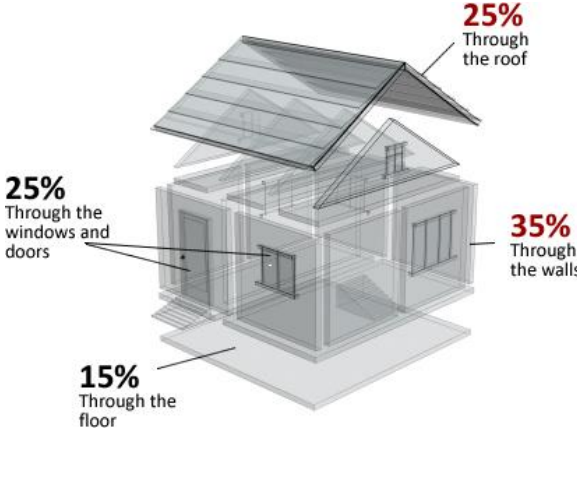
More detailed than the general recommendation on windows, this approach requires sufficient technical expertise and directly aims to reduce the heat loss not only from openings but also by improving the insulation of a selected space in the house. Usually the technical team is proceeding with a visual inspection to identify particular needs according to each case and type of accommodation (individual houses, apartments etc.). If the walls have a good thermal insulation coefficient, which can be provided through foam or concrete blocks or straw bale techniques⁸ any complimentary installation of insulation panels can be minimum. If the techniques create a cavity wall from burnt brick or masonry from concrete block, an equivalent of 100mm rock or glass wool has to be installed on each facade.

If the entire house area will not be fully repaired, it is recommended that the insulation for the upper part of the house should be on the ceiling level and not under the roof slope. If the area of the house is pretty small and beneficiaries are topping up the house with insulation materials for other rooms of the house or the gable wall, insulation should then be installed under the roof slope.

If beneficiaries do not foresee much use of the attic, the best location for insulation is within the ceiling, which will also benefit from the volume of the attic itself. If the Attic is fully accessible and in used by beneficiaries, insulation will have to be set up under the roof slope with proper vapour barrier and vapour permeable foil.

⁸ Please refer to [Ukraine Shelter Cluster Structural Repairs Guidelines p.46](#)

Recommendations for any appropriate insulation of pipe networks will be made as necessary in cooperation with the WASH Cluster.

Diagram	Element	Heat loss	Recommendation
 <p><i>Diagram only for individual house. Heat loss could significantly change according design premises (multi-storey etc.)</i></p>	Windows & opening [priority]	25-35% ⁹	<i>Previously detailed</i>
	Draft [priority]	15-25%	<i>Insulation foam or tape</i>
	Roof [optional]	25-35%	<i>If existing draft, glass or rock wool panels on ceiling.</i>
	Floor [optional]	10-20%	<i>If ground floor or without wooden/linoleum cladding, matt or carpet like material could improve.</i>
	Wall (external)	10 - 20%	<i>Usually too expensive for humanitarian intervention</i>

For easy programming of activities with not all items/elements to be improved, an average insulation solution for a 1 room **could be estimated between 50 to 60 USD** depending on the nature and scope of work (estimation for work on either floor or ceiling).

Cost for room improvement including basic insulation (ceiling or floor) and windows is 60-80 USD, excluding works and transportation (est. 20-25% additional cost) as usual practices. Intervention should be made using the humanitarian approach of focusing on few elements of one room ('One Warm Room' principle) and not a complete building improvement.

C3. Repairs to Heating through Structural Repairs and Reconstruction

Depending on if the house is connected or not to the main utilities network the choice of the heating system may vary significantly. In case of multi-storeyed buildings, central heating system repairs could be fully considered. In case of solid fuel stoves, particular attention will be paid to fire security and safety especially with smoke pipes and proper stovepipe wall outlets. If including this in a budget for heavy repairs, the estimated cost for such work depending on household details is up to \$240 USD. In urban environments, the failure of the main heating supplies may create secondary challenges endangering the transformer and electrical network.

D. Communal Facilities and Infrastructure

Communal facilities including schools require winterization support to remain functional during the winter months. In these facilities, generators and stoves are fed by automatic chargers. In the case that the heating system is neglected, it runs a grave risk of deteriorating and of causing fire or other form of damage to the building. As mentioned earlier, proper insulation of the building should ensure that pipes are protected to prevent them from bursting due to frozen temperatures. Radiators in these spaces also require repairs, but when broken, the liquid coolant can freeze within the radiator preventing any repairs until warmer weather allows. It is recommended to implement such works well in advance of the winter months.

⁹ Heat loss estimation where windows are undamaged

Northern Donbass: Kramatorsk, Slovyansk, Sievierodonetsk

Priorities:	Personal Insulation NFIs	* * *	87.5 USD/ind
	Heater & fuel	**	167.50 USD /HH
	Social Institutions	*	

This is the third winter in which partners will implement activities concentrated in Northern Donbass. In communities found in frontline regions such as Artemivskiyi, Toretske, in Donetsk and Stanitsa Luhanska, Popasna, Trohizbinka among others electricity cuts and emergency winter support are still required. While the most vulnerable residing in Collective Centres and further away from the contact line require monetized winterization and heater and fuel assistance to fulfil the requirement for personal and shelter insulation.

A. Personal insulation Core NFIs

The most vulnerable lack essential items needed for personal warmth during the winter months. In areas where markets are accessible, partners working in government controlled areas of Donetsk and Luhansk Oblasts are encouraged to implement conditional cash or voucher programming to meet these needs. Prices and types of items are estimated according to their item and transfer value:

#	Item	Cost UAH	Cost USD
<i>Clothing</i>			
1	Winter jacket	1150 UAH	45 USD
2	Winter shoes/boots	950 UAH	38 USD
3	Thick socks	60 UAH	2.5 USD
<i>Core items</i>			
1	High-thermal Blanket or Quilt	250 UAH	9 USD
Suggested additional NFIs, dependent on need			
<i>Possible additional NFIs, suitable for locations with restricted fuel/electricity access, e.g.</i>			
1	Flashlight/candles - (depending on availability of electricity)	50 UAH	2 USD

B. Heating and Fuel

Fuel poses two challenges for Northern Donbass: access and affordability.

The access question can be facilitated by distribution of a fuel source: either coal or through energy efficient briquettes. Coal and wood remain the most commonly used form of fuel due to the nature of houses' heating systems and their affordability and practice of wide use. Similarly, coal remains an economic efficient resource to procure due to the fact that the region is home to a number of coal mines¹⁰, however conflict-related market distortions remain in effect. Where possible, environmental friendly forms of fuel are encouraged, though their supply remains limited in Ukraine. For heavily conflict-affected communities, especially those found in front line areas, lack of electricity poses a challenge for heating, and the distribution of electric radiators or *burzhuikas* is encouraged.

¹⁰ Please see *Annex IV Lessons Learned on Coal Distribution by NRC* for more information on 2015-2016 coal distribution experience.

Ukraine's humanitarian crisis has further stimulated fiscal challenges with a direct consequence on utilities and heating prices. In July 2016, utility rates in Ukraine increased by 1.7% m/m with an increase in heating rates of +8.1% m/m.¹¹ In Donetsk, the Department of Social Protection is administering subsidies for heating that as of June 2016 covered 1637.9 UAH per household. In Luhansk, this subsidy is 2252.7 UAH per household. As of the date of the release of these guidelines, it has not yet been decided whether the subsidies will be in the form of an energy credit to the suppliers or a reimbursement based on a bill.

Item	Primary location	Expenditure	Average consumption/winter	Cost/unit	Total cost for season
Communal heating system	Urban	Utility bills	400m ³ gas / month to heat small house	Without subsidies: 6.879 UAH/m ³	<i>Prior to subsidies, cost is est.</i> 2,752 UAH/month 13,760 UAH / season = 550 USD
Coal stove	Rural	Coal + kindling wood	2 tons / HH / winter (3 tons high quality) coal + 3m ³ wood	2,000 UAH medium quality, 2,800 UAH high + 350 UAH/m ³	8,000 + 700 = 8,700 UAH = 390 USD
Wood stove	Rural	Wood	10m ³ if no coal	350 UAH / m ³	3,500 UAH = 160 USD
Electric heater	Urban/rural	Heater + utility bills	2,000W heater	kWh domestic rate varies depending on central heating & gas access. Subsidies are available	<i>Prior to subsidies, cost is est.</i>
			At 20hours/day = 1200kW/month		4,375 UAH = 175 USD if no gas / central heating 860 UAH for heater = 35 USD 210 USD
Eco Fuel	Urban/rural	Fuel	1 house may require 3-4 tons depending on size	1300 UAH per ton	May not be conducive for all heating systems and must be stored in dry place
Coal Dust Briquettes	Urban/rural	Fuel	Similar to coal 2 tons per household	1800 UAH per ton	Special furnace with net and storage to prevent exposure to dampness

¹¹ <http://www.intellinews.com/ukraine-cpi-falls-slightly-by-0-1-m-m-in-july-103757/>

C. Shelter repairs

As funding becomes more limited for operations in the Northern Donbass, shelter repairs can be a durable solution to damaged impacted houses as this may be the final winter of this humanitarian response. Insulation for damaged houses can be installed as a part of regular repairs in addition to glazing to seal off any openings. Moreover, those elderly and disabled may require additional assistance in preparing their homes for winter.

D. Communal Facilities and Infrastructure

27 Collective Centres are operational in northern Donetsk Oblast leaving an estimated 734¹² IDPs (59% Female and 41% Male) vulnerable for the winter months. In Luhansk Oblast, 27 IDPs in a dormitory in Schedrischevo are facing eviction threats, and management of the resort would not be able to support IDPs living there this year due to utility debts and the difficulty of supporting heating. Due to the fact that collective centres have poorly maintained central heating systems, personal insulation and access to heating are primary concerns in the absence of durable shelter solutions. As mentioned earlier, regular maintenance of schools and other social institutions are also required to protect those utilizing the buildings from further deterioration. Those IDPs residing in social institutions are the most vulnerable; however, in a protracted conflict situation, partners' and local authorities' capacity to respond to their needs is limited.

¹² Shelter Cluster Collective Centre Monitoring- due to the fact that 46% of current population figures are missing, an average of known population weighted by average of unknown produces overall estimates.

Southern Donbass: Mariupol, Volnovaha, Adiiivka

Priorities:	Heater & fuel	* * * *	167.50 USD average price/household
	Shelter insulation	* * *	388 USD/household
	Social Institution	*	

With continued shelling in southern Donetsk and damage to infrastructure, Avdiivka, Mariupol, and Volnovakha regions require urgent response prior to winter to address shelter needs of the affected population.

A. Heating and Fuel

Coal and wood remain the most commonly used form of coal due to the nature of houses' heating systems and their affordability and practice of wide use. Similarly, coal remains an economic efficient resource to procure due to the fact that the region is home to a number of coal mines, while conflict-related market distortions remain in effect. Where possible, environmental friendly forms of fuel are encouraged, though their supply remains limited in Ukraine. For heavily conflict-affected communities, especially those found in front line areas, lack of electricity poses a challenge for heating, and the distribution of electric radiators or *burzhuikas* is encouraged.

Ukraine's humanitarian crisis has further stimulated fiscal challenges with a direct consequence on utilities and heating prices. In July 2016, utility rates in Ukraine increased by 1.7% m/m with an increase in heating rates of +8.1% m/m.¹³ Monetized shelter solutions in addition to support from state programs for subsidies can assist with such expenses.

B. Shelter insulation

Shelter repairs seeking to insulate the house and seal off openings are encouraged as a sustainable winterization activity for conflict affected households. Glazing especially when other shelter repairs are not feasible is a way to ensure proper heating during the winter months. Repairs often present an opportunity to install insulation and this would be a sustainable intervention that could top up interventions done in 2014-15 and compliment activities implemented in 2016.

Glazing			
#	Item	Quantity	Price est.
1	Windows complete	2 m ² to 4 m ² according house and family composition	66 USD/m ² Up to 264 USD for large house/family
<i>or</i>	<i>Individual house with double glazing replacement and insulation all around opening perimeters</i>	<i>Up to 7 or 8 windows per individual house</i>	<i>Around 35 USD/ m² Up to 265 USD/house</i>
2	Glazing only -6mm preferably-	80 m ²	6.6 USD/ m ²
3	Insulation tape (by linear metre, LM)	20 LM according to # and size of opening	10 UAH/LM 10 USD/room
4	Insulation foam	0.5 can / window	70 UAH/can 1.5 USD/room

¹³ <http://www.intellinews.com/ukraine-cpi-falls-slightly-by-0-1-m-m-in-july-103757/>

Roofing insulation, example			
#	Item	Quantity	Price est.
1	Glass wool roll 100mm 6 m ² each	80 m ²	176 USD/house
2	Vapour barrier	80 m ²	36 SD/house

C. Communal facilities and infrastructure

In Southern Donetsk, 12 Collective Centres are hosting 788 IDPs (59% female and 41% male). Due to the fact that these centres have poorly maintained central heating systems, personal insulation and access to heating are primary concerns in the absence of durable shelter solutions. As mentioned earlier, regular maintenance of schools and other social institutions are also required to protect those utilizing the buildings from further deterioration. Those IDPs residing in social institutions are the most vulnerable; however, in a protracted conflict situation, partners' and local authorities' capacity to respond to their needs is limited.

Luhansk NGCA

Priorities:	Personal Insulation	****	103 USD/ind.
	Shelter insulation	***	212 to 265 USD/HH
	Communal	*	
	Heater & fuel		

Without the support of a competitive banking system, the main assistance in Luhansk Non-Government Controlled Area will be through in kind assistance. As such the supply could be VAT free for many items with outsourced production.

A. Personal insulation

The most vulnerable require the following NFIs:

Core NFI, <i>PER PERSON</i> ¹⁴			
#	Item	Qty	Cost
<i>Clothing</i>			
1	Winter jacket	1	49 USD
2	'Valienke' felt boots	1	6 to 12 USD
3	Thick socks	2	2 USD
4	Woollen Hat	1	4 USD
5	Woollen scarf	1	4 USD
6	Thermal underwear	1	13 USD
Suggested additional NFIs, dependent on need			
<i>Possible additional NFIs, suitable for locations with restricted fuel/electricity access, e.g.</i>			
7	Hand cranked torchlight	1/family	5 USD
8	Candles-	1/family	2 USD

In exceptional cases, it may be necessary to distribute the following NFIs for collective centre residents, those residing in specialised institution or extremely vulnerable Individuals

<i>Additional core NFIs, verified on a case-by-case basis</i>		
Mattress	1/person or couple	200 UAH / 9 USD
Bedding	1/person or couple	260 UAH / 11 USD

¹⁴ Indicative prices, estimating for bulk procurements, inclusive of VAT

B. Heating and Fuel

Luhansk NGCA is a large producer and consumer of coal, with several mines in operation. Heating support for winterisation will be targeting a limited number of apartments in urban residential areas using electricity unless such a service is interrupted. Houses receiving recent repairs could benefit from solid fuel stove distribution. However, this should be done in a very limited manner according to observed need and very critical cases.

C. Shelter

Repairs to damaged houses presents an opportunity for installing insulation, and can be completed in addition to donation of materials or repairs that are planned for 2016 activities.

For a full house, insulation should be covering 80 to 100 m².¹⁵ In case the full house will not be covered, the upper face of the ceiling should be prioritized.

Roofing insulation, example			
#	Item	Quantity	Price est.
1	Glass wool roll 100mm 6 m ² each	80 m ²	176 USD/house
2	Vapour barrier	80 m ²	36 USD/house

D. Communal facilities & infrastructures

A minimum of stock related to bedding and mattresses could be recommended to support special institutions (i.e. personal insulation).

¹⁵ This is particularly the case for large rural privately owned households.

Donetsk NGCA

Priorities:	Heater & fuel	* * *	103 USD/ind.
	Shelter insulation	* *	212 to 265 USD/HH
	Personal Insulation	* *	47 USD/ind.
	Communal	*	

With Donetsk, Horlivka, Yanakove, this area is often perceived as urban with access to services and markets. The 4 districts of the south present a different context and require access to solid fuel.

1. Personal insulation

The following personal items were identified as critical for winterisation especially for the most vulnerable.

Core NFI, PER PERSON ¹⁶			
#	Item	Qty	Cost
<i>Clothing</i>			
1	Winter jacket	1	20 USD
3	Thick socks	2	3 USD
4	Woollen Hat	1	4 USD
5	Thermal underwear	1	13 USD
Suggested additional NFIs, dependent on need			
<i>Possible additional NFIs, suitable for locations with restricted fuel/electricity access, e.g.</i>			
6	Candles bundle-	1/family	50 UAH / 2 USD
7	Hand cranked torch light	1/family	125 UAH/ 5 USD

2. Heating, stoves, and fuel

Distribution of solid fuel, mainly coal, should take account of the existing social subsidies system. The normal consumption rate is 3 tons of quality coal per season for one house. The geographic distribution of coal mines is largely concentrated in the northern portion of non-government controlled areas of Donetsk Oblast, therefore the 4 southern districts are particularly in need due to the lack of supply chain. For a winter coping mechanism, vulnerable populations may resort to gathering firewood in minefields or other dangerous areas. De facto authorities are providing subsidies up to 7,500 roubles to facilitate coal purchases. If the rack price is 3000 roubles per ton, this could cover the equivalent of 12,000 people per season. While many vulnerable categories are included in this program, families with new born babies or IDPs are not included.

¹⁶ Indicative prices, estimating for bulk procurements, inclusive of VAT

3. Shelter

Repairs to damaged houses presents an opportunity for installing insulation, and can be completed in addition to donation of materials or repairs that are planned for 2016 activities. For a full house, insulation should be covering 80 to 100 m².¹⁷ In case the full house will not be covered, the upper face of the ceiling should be prioritized.

Roofing insulation, example			
#	Item	Quantity	Price est.
1	Glass wool roll 100mm 6 m ² each	80 m ²	176 USD/house
2	Vapour barrier	80 m ²	36 USD/house

Or

Damaged houses in Donetsk NGCA have used plywood boards to cover areas where windows were shattered due to shelling. Prone to rot caused by rain, snow, and humidity, these coverings prevent proper ventilation to the house and may have to be replaced several times in the winter. The full replacement or re-glazing of the windows could be included as a part of regular shelter intervention. When changing the full window, a limited surface of this opening could be repaired usually equivalent to 1 room and/or kitchen according to the size of the opening. In case of simply re-glazing the windows, the investment could allow repairs to all the openings (up to 7.5 m²).

Glazing			
#	Item	Quantity	Price est.
1	Windows complete	2 m ² to 4 m ² according house and family composition	66 USD/m ² Up to 264 USD for large house/family
<i>or</i>	<i>Individual house with double glazing replacement and insulation all around opening perimeters</i>	<i>Up to 7 or 8 windows per individual house</i>	<i>Around 35 USD/ m² Up to 265 USD/house</i>
2	Glazing only -6mm preferably-	80 m ²	6.6 USD/ m ²
3	Insulation tape (by linear metre, LM)	20 LM according to # and size of opening	10 UAH/LM 10 USD/room
4	Insulation foam	0.5 can / window	70 UAH/can 1.5 USD/room

4. Communal facilities & infrastructures

A minimum of stock related to bedding and mattresses could be recommended to support special institutions.

<i>Additional core NFIs, verified on a case-by-case basis</i>		
Mattress	1/person or couple	200 UAH / 9 USD
Bedding	1/person or couple	260 UAH / 11 USD

¹⁷ This is particularly the case for large rural privately owned households.

Annex I

Methodology for Compiling Winterisation Guidelines

This year's winterization guidelines for 2016-2017 were compiled through a series of consultations with Shelter/NFI partners and government stakeholders:

- 23rd June 2016 Subnational Shelter/NFI Cluster Meeting in Severodonetsk
- 1st of July 2016 Subnational Shelter/NFI Cluster Meeting in Kramatorsk
- 18th of July 2016 Meeting with Donetsk Oblast Administration
- 18th of July 2016 Meeting with Luhansk Oblast Administration
- 27th July 2016 Subnational Shelter/NFI Cluster Meeting in Kramatorsk
- 28th July 2016 Subnational Shelter/NFI Cluster Meeting in Severodonetsk
- 9th-10th July 2016 Cluster Coordinator Field Visit to LPR
- 11th August 2016 Cluster Shelter Working Group in Volnovakha

Annex II

Lessons Learned from 2015-2016

Lessons learned from the Winter 2015-2016 response in Ukraine include the importance of proper targeting in communities, and communication with communities on targeting criteria and selection process, especially in areas where all households have restricted access to their usual primary fuel type.

Specific recommendations included:

Lessons Learned from 2015-2016 Period	Experience from last year	Response
Advanced Planning	While last year's planning started in July, procurement delays were still experienced causing delay of delivery of NFIs.	Winter planning began in June this year.
Stock for Emergency Referral	Despite a relatively mild winter, cold snaps occurring later in the winter months (March/April) still created humanitarian challenges for affected vulnerable communities. Stock to address these needs was not always in place.	Partners are reminded where possible the importance of preparedness in case of intensifying impacts of conflict and winter combined. This is more difficult this year than last with decline in funding.
NFIs	Essential items for winter delivery were refined according to post distribution monitoring and beneficiary feedback through NGO hotlines. These included hot water bottles and electric blankets.	Hot water bottles would not be distributed. Blankets are still a priority, but the electrical variety should be avoided.
	Last year beneficiaries had many complaints about clothing sizes and colours.	As winter clothing (warm jacket, socks, warm underwear, and winter boots) is still a priority, where market conditions permit, partners will use voucher or conditional cash for winterization programs.
Fuel	Coal and wood had been distributed at a rate of 2 tons per household.	Partners this year considered increasing the tons of coal and wood distributed per household to 2.5 or 3 depending on housing type.
	Procurement of charcoal at local level had been a challenge. Environmental friendly forms of fuel were also encouraged at donor level.	Accommodation and stove type were important factors in the equation as well. Coal pellets could be proposed, provided protective items were in place to store and protect fuel source from moisture and that beneficiaries had the appropriate stoves.
	Some households in frontline areas didn't have access to electricity.	<i>Burzhuika</i> stoves/electrical radiators could be appropriate to distribute to this type of household.
Monetization	Cash for NFI programming was successful with people purchasing winter items and covering utility and rent costs in addition to medicine.	Cash programming especially in areas where markets were more developed could be encouraged this year. Information about support with fuel and utility assistance could also be provided.

Annex III

Price of electricity and calculation

Translation extracted from official website of the national commission on Energy of Ukraine.

<http://www.nerc.gov.ua/?id=15012>

Categories of population	Rate, in centile of UAH, in kWh/hour, including VAT
1. Electricity for usage of:	
1.1. Population (including those living in houses equipped with electric cooks)	
up to 100 kWh/h used during 1 month	71,4
from 100 to 600 kWh/h used during 1 month	129
more than 600 kWh/h used during 1 month	163,8
1.2. Population living in rural area (including houses equipped with electric cooks)	
up to 150 kWh/h used during 1 month	71,4
from 150 to 600 kWh/h used during 1 month	129
more than 600 kWh/h used during 1 month	163,8
1.3. Population living in houses (including residential houses of hotel type, flats and dormitories) equipped with authorized electric heating systems (including rural areas)	
1.3.1. From 1 September 2016 to 30 September 2016: according to 1.1 and 1.2	
1.3.2. From 1 October 2016 to 28 February 2017:	
up to 3,600 kWh/h used during month	71,4
more than 3,600 kWh/h used during month	163,8
1.4. Population living in multistorey buildings without gasification and without central heating (including rural areas)	
1.4.1. From 1 September 2016 to 30 September 2016: according to 1.1 and 1.2	
1.4.2. From 1 October 2016 to 28 February 2017:	
up to 3,600 kWh/h used during 1 month	71,4
more than 3,600 kWh/h used during 1 month	163,8
1.5. For large families, foster families, foster homes (regardless volume used)	71,4

Annex IV

Lessons Learned on coal distribution by NRC

The below document kindly shared by the Norwegian Refugee Council, details more specifically technical information collected during 2015-16 coal distribution. It is published as such with the permission of NRC.



NORWEGIAN
REFUGEE COUNCIL

Ukraine Country Program Coal Distribution Report

(An Analysis & Documentation based on report notes from the NRC Logistics Team)

Contact NRC, Robert Reece, Logistic/ICT Manager, robert.reece@nrc.no

NRC COAL REPORT AND ANALYSIS (based on 2015 distribution notes)

I. General

For the local communities it is preferable to have coal suitable for residential purposes. Furnaces are usually found in basements or adjacent structures. The below information is based on notes from NRC logistics staff, internet / Ukraine economic research and experience gained from NRC procurement and distribution staff during the winterization program in 2015.

Environmental impact: As coal is “burned”, carbon dioxide is released into the atmosphere. Therefore, coal is not necessarily a clean method of energy production. Though modern processes have been developed to reduce the negative atmospheric pollution – these methods are not known to be widely used in Eastern Ukraine (but may be under development). NRC has no clear information on this aspect as of the date this report was written. As such, it is difficult to compare the overall environmental impact or impact from pollution produced as a result of burning coal – and this is not a consideration or expert analysis used as a basis for NRC procurement processes.

In considering procurement of coal fuel, Anthracite (and to a lesser extent Gas Flame) coal creates a steady and clean flame and is preferred for domestic heating. Anthracite burns longer with more heat than the other types. The type called “Gas Flame” (in Ukraine) is a bit lower in quality and cost, but a very familiar type & grade of coal that communities can easily use and burn for heat. In some countries this is called semi-anthracite.

The information contained in this report is generalized and not to be taken as an expert opinion on coal quality, production or use in Ukraine – rather information based on NRC’s specific notes and reports gained during program activities.

II. Types & Rank of Coal / Availability (S.P.)

Definitions used by NRC when selecting coal. Note that local source, cost, delivery and “acceptable” quality were considerations in the tendering process.

Facts: Anthracite is a somewhat shiny, hard black stone and is nearly pure carbon and burns with great heat and little smoke. Gas Flame is similar to anthracite but has a somewhat lower heat output and/or lesser quality. The look and feel of gas flame coal may sometimes have a charcoal appearance and easily broken / sorted (easily found open source information)

Anthracite & Flame Coal are the main type of coal mined and used in the Donetsk / Luhansk regions for domestic & commercial use. Coal ranks, classes and grades are based on a number of factors including ash, humidity content, volatility (particle substances), heat (power) output etc. Fracture (size) - is important when used residentially or in small furnaces.

1. Characteristics of Anthracite Coal

- A high amount of fixed carbon (80 to 95 %) and very low sulfur and nitrogen, less than 1 percent each. Volatile matter is low at approximately 5 percent, with 10 to 20 percent ash possible.
- Moisture (humidity) content is roughly 5 to 15 percent. The coal is slow-burning and difficult to ignite because of its high density, so few pulverized, coal-fired plants burn it. Domestically, another quicker burning source is used first (wood or fast burn charcoal).
- Heating value: Anthracite burns the hottest among coal types (roughly 900 degrees or higher) and typically produces a greater amount of heat.
- Anthracite has a carbon content of over 87% and generally has the highest heating value per ton on a mineral-matter-free basis. It is often subdivided into semi-anthracite, anthracite, and meta-anthracite on the basis of carbon content. Anthracite is often referred to as "hard coal"; however, this is a layman's term and has little to do with the hardness of the rock.

2. Characteristics of Gas Flame Coal;

- A lower grade/class (similar to anthracite but Grade + A/H/V %'s graded lower according to Ukraine Coal standards). The G/A/H/V may be at a higher percentage, but generally, gas flame is less expensive and readily available.
- Gas Flame Coal may be considered a “semi-anthracite”, with mixed variants of mined coal. Hardness & appearance may vary.
- Also, gas flame may have a higher burn rate and have a lower heat output than anthracite (but is accepted domestically). **Traditionally used for municipal lighting and heating before the advent of industrial-scale production of natural gas. Primarily for electricity generation (and in coal gasification).*
- In many cases; firewood (high burn rate) is used to start the burning process in domestic / residential homes, with coal added gradually to increase to a slower/longer burn and thus a lasting heat output.
- Additionally, we found that that “gas flame coal” is stored for long periods and sold competitively over the open local market via PE's (private entrepreneurs / brokers). Coal Brokers / PE's may work for a specific mine or coal trader of several mines. *Whether owned by a private / national conglomerate, with a state affiliation and control.*

3. Flame Coal: No information added here (not considered useful by NRC).

- ### 4. Mixed Coal: usually a mixture of anthracite, semi-anthracite and/or gas flame. Variations of grade, rankings, A/H/V - usually mixed and burned with some low efficiency, energy output (rating depending on mix). *Many unreliable information and sources will need to gather further information for mixed coal variants not included here.*

5. **Availability:** Coal is abundant throughout eastern Ukraine and continues to be a source for jobs and industry. The recent war and division of the oblast has greatly affected mine operations and transportation lines used by the coal industry. There is a great deal of information and media publications in reference to the Ukrainian coal industry and the effects the recent conflict has had on the coal industry (Not covered in this report).
6. Waste coal discarded during mining (called culm in the United States) is commonly seen throughout the area as “waste cones” or mounds

III. Inspections / Implementation / Quality Requirements

1. Coal Inspections occur during mixing & loading area (before delivery). Inspections are made by taking samples at the separating and mixing site and sent to laboratory for evaluation on A/H/V chemical aspects of the purchased coal.
2. Implementation; currently distribution is planned based on community needs and NRC’s internal “Logs Winterization SOP”, with one logistics POC and team members from the NFI (shelter) section (coordination and liaison with local communities and authorities). * Plan, locations, points of contact on separate document.
3. NRC 2015 Requirements for quality - according to DSTU 7146:2010.
 - Coal, grade G,
 - Fracture / size LG 13-100,
 - Ash: 15 to 25%,
 - Humidity: +/- 5-10%
 - Volatility: > 42 – 45 %
4. NRC’s guidelines in the 2016 Tendering Process (added to report – changed AUG2016) Requirements for quality - according to DSTU 7146:2010.
 - Type & Fracture: Gas Flame & 13-100mm.
 - Ash: no more than 25%,
 - Humidity: no more than 10%; for domestic use.
 - Volatile Substances: amount of particles in gas flame (quality less than anthracite) but should be as little as possible.
 - Delivery to designated communities (of every batch) till 11:00 hours.
 - Price should include delivery.

IV. Power Grid / Schastia energy plant.

- a. The power grid in the Luhansk region is supplied with energy from the Schastia power plant located in eastern Luhansk region, just north of the LoC¹⁸.
- b. The Luhansk Oblast (region) continues to have a significant reliance on coal as energy fuel for the region’s power supply. The Schastia power plant is the main source of power in Luhansk for both GCA and NGCA stakeholders
- c. Coal, in general has a long history of use in Luhansk and continues to be a major source of income / jobs. Pensions from working in many state affiliated coal mines or processing plants account for a considerable number of retirement pensions (reportedly at least 1/3).

V. Corruption / Lessons Learned

Corruption can be rampant in the region with the highest probability occurring initially during the RFQ / tender process. Subsequently, NRC has found evidence of document and waybill tampering

¹⁸ Line of Contact

during loading and delivery of coal. Daily inspections and follow-up must be carried out through the entire process (from mixing / storage facility, weighing station, to loading & unloading).

Facts: coal, in various forms and fracture, can be purchased throughout the year in Ukraine. The coal mining industry is well established, continuous and storage facilities are abundant in the Donbas Region. This includes the mixing and separation of mined coal.

1. Tendering Process (Notes from 1 of 3 NRC Committee discussions in 2015)
 - a. Local information from received 2015 RFQ's; 4 offers were received for the second round of RFQ's (remaining winterization funds). Bid Analysis Committee notes:
 - Coal Analysis (A/H/V/F) table was presented during this meeting to all the committee members.
 - Supplier #1 proposed the best price but for poor quality of coal.
 - Supplier #2 proposed second best price but they had low capacity in distribution and could not deliver coal in short period.
 - Supplier #3 proposed high price but for coal with best grade of quality. It was decided to award #3 to supply the coal on conditions that NRC would negotiate price.
 - On 15.12.2015 after negotiation with #3 we did not get the desired price.
 - After refusal from #3 to send new offer with cheaper price for coal with lower quality there was a second discussion on 16.12.2015. Bid committee agreed to accept delivery time January 2016.
 - Therefore it was decided to choose #2 as supplier of full amount of coal.
 - b. From; Logistics and ICT Manger, Robert Reece Date; 25 November 2015. Reference PR808, Changing of parties in contract # 0808 dd. 26.10.2015 on supplying Coal.
 - Based on letter received from #2 , #150 dd. 19.11.2015, #2 met a difficulty to continue fulfilment obligations under signed with NRC contract because of imperfection of TAX regulation system in Ukraine. Therefore, #2 asks to change parties and sign Amendment to **contract # 0808 dd. 26.10.2015** where name of supplier is structural unit of Association of Coal Enterprises, the company #4.
 - NOTE, this changing will not affect the schedule and other conditions settled in the contract # 0808 dd. 26.10.2015 signed with #2 and new party will continue to perform obligations under agreed contract on Coal supplying.
2. **Between October 2015 & March 2016 (reported or discovered on over than 40 distributions)**
 - One known tampering of waybills by transport company subcontracted by our Coal Supplier,
 - One known local administrator falsely accounting for amount of coal received,
 - Two cases where concrete blocks & other debris were loaded onto trucks (loaded in bottom and covered with good coal) which in turn gave a resulting false weight of actual coal.
 - One reported (verbally) case of a broker (PE) leveraging position to gain better price from mines / storage locations (after contract was signed), then 'pocketing' gained profit without informing NRC (unable to investigate fully, thus considered a possible rumor).

3. Considerations

There are considerable stockpiles of coal (gas flame coal) in the Luhansk / Donetsk region. When working with PE's or brokers, which have access to several stockpiles OR in some cases they may not have access to any specific stockpile, but rather have knowledge, associations and informal verbal agreements). In reference to the latter, the broker will understand the market and with extensive knowledge of the market value – which in turns helps when making an offer. Then once a contract is signed the PE / broker will use the contract (with amounts & price) to;

- purchase from various stockpiles, with location and mine affiliation
- rent a mixing loading area for subsequent delivery according to the agreement.
- Transport agreements and available / suitable & reliable trucking firms
- In these cases, there is a great deal of room for mistakes, misunderstandings, delays or even corruption to take place.
- In many cases the bidders are waiting for the first payment installment to enable them to be able to proceed with coal purchase, and transport (unless they have made agreements in advance).
- Note; NRC has learned many lessons (OJT) in this regard during our initial winterization program & delivery. To precluded future problems, extensive notes and SOP updates were continuous during the process.
- NOTE; overall, NRC logistics has generally good terms with most suppliers and the abundance of gas flame coal has made the tendering process and availability of sources or information easily accessed.

4. Need to Know Information & Final Comments

- It is always best to ask for and obtain proof of association with a governed mine, legitimate state license as a PE and/or Coal Broker agent.
- In many cases contracts with NGOs can be very lucrative as a PE or broker can purchase from many stockpiles or residual coal that has been sitting for a while or from a small mine/facility that has not been able to move product and needs funds to continue operations / pay employees / make repairs.
- Often coal is mixed and quality testing needs to take place for every stockpile that has been allocated for loading and delivery.
- Additionally it is best to have a preapproved delivery location in each community with a designated POC to provide oversight, check delivery documents and sign goods received notes (with beneficiary signatures).
- In the past and current experience of NRC logistics, all the above have had occurred in some form and an effect on operations at various periods.
- To mitigate problems and corruption, NRC has trained & dedicated staff specifically assigned to the winterization (coal / firewood) program, updated SOP's and checklists in place and local market knowledge of coal industry & specifications needed to implement.

All information contained in the report / analysis will be used to ensure a better understanding of NRC's 2015 coal distribution efforts and improve the 2016 process. Information is not considered an overall detailed analysis on the chemical aspects of coal, but rather a consolidated report / opinion by NRC logs manager based on reports and experience gained during procurement processes and delivery of coal fuel to beneficiaries. Overall, NRC's efforts were successful with supported communities receiving heating fuel and generally satisfied with NRC's response. The contents of this report are shared with the Shelter Cluster in Ukraine for informing 2016-2017 winterization programming.
