

APPENDIX D – SER OBJECTIVES COMPLIANCE ASSESSMENT



This assignment was contracted by the European Bank for Reconstruction and Development (EBRD) financed using grant funds provided by the Global Environment Facility (GEF).

Table C1 Compliance of the USELF Renewable Energy Scenarios against the SER Objectives

Key

Performance is based on the number or proportion of receptors linked to each SER Objective for which significant effects have been predicted			
Major negative performance against SER Objective		Major positive performance against SER Objective	
Minor negative performance against SER Objective		Minor positive performance against SER Objective	
No Effects		Uncertain	

Environmental Topic	SER Objective: Does the proposed development of the USELF renewable scenario...	Receptors	USELF Renewable Energy Scenarios						
			Onshore wind	Small hydro	Solar Photovoltaic	Biomass		Biogas	
						Wood residues	Agricultural residues	Landfill gas	Animal manure
Climate and air quality	Lead to reductions in greenhouse gases or progress toward Ukrainian greenhouse gas emission targets?	Climate							
	Minimise the risk of potential effect on air quality?	Air quality Soils and vegetation Human health, Other- noise and odour							
Surface water and	Avoid adverse effects upon surface water and groundwater	Surface Water Resource							

Environmental Topic	SER Objective: Does the proposed development of the USELF renewable scenario...	Receptors	USELF Renewable Energy Scenarios						
			Onshore wind	Small hydro	Solar Photovoltaic	Biomass		Biogas	
						Wood residues	Agricultural residues	Landfill gas	Animal manure
groundwater	resource?	Groundwater Resource	No long term effects predicted on surface and groundwater resources.	Changes to surface water resource during construction and operation may not be possible to fully mitigate through management of flow.	No long term effects predicted on surface and groundwater resources.	May be some effects on surface water resources if used for cooling and lost through evaporation.	May be some effects on surface water resources if used for cooling and lost through evaporation.	No long term effects predicted on surface and groundwater resources.	No long term effects predicted on surface and groundwater resources.
	Minimise adverse effects upon fisheries, water quality, recreation, and commerce associated with rivers and lakes?	Surface water quality Groundwater quality Flooding regime (Surface Water Resource Groundwater Resource to a lesser extent)	○ Use of construction and operational pollution prevention and abatement plans and other controls should avoid adverse effects.	● Lengths of river at structure or downstream may be affected by low flows with effects on fisheries and other uses.	○ Use of construction and operational pollution prevention and abatement plans and other controls should avoid adverse effects.	○ or ● Use of construction and operational pollution prevention and abatement plans and other controls should avoid adverse effects. Surface water quality may be affected by high temperatures of returned cooling water.	○ or ● Use of construction and operational pollution prevention and abatement plans and other controls should largely avoid adverse effects. Surface water quality may be affected by high temperatures of returned cooling water.	○ Use of construction and operational pollution prevention and abatement plans and other controls should avoid adverse effects.	○ Use of construction and operational pollution prevention and abatement plans and other controls should avoid adverse effects, including spread of liquid soil fertiliser.
Geology and soils	Minimise adverse effects upon soils?	Soils Bedrock Geology	● Some residual loss of bedrock geology and soil compaction during construction.	● Some residual loss of bedrock geology and soil compaction during construction.	● Some residual loss of bedrock geology and soil compaction during construction.	● Some residual loss of bedrock geology and soil compaction during construction.	● Some residual loss of bedrock geology and soil compaction during construction.	● Some residual loss of bedrock geology and soil compaction during construction.	● Some residual loss of bedrock geology and soil compaction during construction.
	Minimise adverse effects to land and infrastructure from erosion and from landslides in high slope areas?	Landslide Hazard Areas	○ No schemes anticipated to be constructed in landslide hazard areas	● Mitigation through siting and land grading will minimise risks to landslide hazard areas.	○ No schemes anticipated to be constructed in landslide hazard areas	○ No schemes anticipated to be constructed in landslide hazard areas	○ No schemes anticipated to be constructed in landslide hazard areas	○ No schemes anticipated to be constructed in landslide hazard areas.	○ No schemes anticipated to be constructed in landslide hazard areas
	Minimise the risk of potential mobilisation of anthropogenic contaminants during construction?	Contaminated land	○ Pollution prevention and control measures and waste management should avoid contamination.	○ Pollution prevention and control measures and waste management should avoid contamination.	● Pollution prevention and control measures and waste management should largely avoid contamination, although application of cleaning chemicals during operation may	● Pollution prevention and control measures and waste management should avoid largely avoid contamination during construction, although some risk of leachate from storage and	● Pollution prevention and control measures and waste management should avoid contamination during construction, although some risk of leachate from storage and disposal of	○ Pollution prevention and control measures and waste management should avoid contamination.	● Pollution prevention and control measures and waste management should avoid contamination, although increased risk of leachate from animal waste.

Environmental Topic	SER Objective: Does the proposed development of the USELF renewable scenario...	Receptors	USELF Renewable Energy Scenarios						
			Onshore wind	Small hydro	Solar Photovoltaic	Biomass		Biogas	
						Wood residues	Agricultural residues	Landfill gas	Animal manure
					cause some contamination	disposal of biomass combustion by-products	biomass combustion by-products		
	Avoid the removal of high value soils (Mollisols) from productive use?	High value soils	● Some loss of high value soils from structures including access roads and transmission lines although spacing of towers may allow continued land use.	● Some loss of high value soils from structures including access roads and transmission lines and impoundment areas.	●● Greater loss of high value soils from large areas of solar panels in addition to access roads and transmission lines.	● Some loss of high value soils from areas of fuel supply and structures including access roads and transmission lines	● Some loss of high value soils from areas of fuel supply and structures including access roads and transmission lines and impoundment areas.	○ Areas of high value soils unlikely to coincide with existing landfill.	● Some loss of high value soils from structures including access roads and transmission lines.
Landscape and biodiversity	Minimise the risk of potential effects on landscape character and visual amenity of the Ukrainian landscape?	Protected landscapes High quality unregulated landscapes Low quality landscapes	●● Due to the scenario scale, the area of land-take, height of turbines, position on ridges, and other structures mitigation/offsetting is unlikely to be effective in most landscapes.	● It is not likely to be possible to fully mitigate/offset for landscape & visual effects of large impoundment structures and other scheme elements.	●● Due to the scenario scale and the area of land-take it is not likely to be possible to fully mitigate/offset for landscape & visual effects of large areas of photovoltaic and other scheme elements.	● It is not likely to be possible to fully mitigate/offset for landscape & visual effects of tall industrial buildings and other structures.	● It is not likely to be possible to fully mitigate/offset for landscape & visual effects tall industrial buildings and other structures.	○ or ● Protected and high quality landscape unlikely to be affected. May not always be possible to fully mitigate/offset for visual amenity near large centres of population.	○ or ● May be possible to avoid/mitigate/offset for landscape & visual effects due to small scale of development, but will depend on receiving landscape.
	Avoid adverse effects upon internationally designated nature conservation sites?	Protected biodiversity areas	○ or ● If sites can be avoided, then there would be no effects. Where sites can't be avoided, effective mitigation/offsetting would depend on habitat type. Some residual negative effects on birds/bats are likely if flight routes can't be avoided.	○ or ● If sites can be avoided, then there would be no effect. Where sites can't be avoided, effective mitigation/offsetting would depend on habitat type. May be some residual effects on aquatic ecosystems.	○ or ● If sites can be avoided, then there would be no effect. Where sites can't be avoided, effective mitigation/offsetting would depend on habitat type.	○ or ● If sites can be avoided, then there would be no effect. Where sites can't be avoided, effective mitigation/offsetting would depend on habitat type.	○ or ● If sites can be avoided, then there would be no effect. Where sites can't be avoided, effective mitigation/offsetting would depend on habitat type.	○ Should be able to avoid sites or effects within sites due to small scale of development and use of effective mitigation/offsetting.	○ Should be able to avoid sites or effects within sites due to small scale of development and use of effective mitigation/offsetting.
	Avoid adverse effects upon nationally designated nature conservation sites?	Protected biodiversity areas	○ or ● If sites can be avoided,	○ or ● If sites can be avoided,	○ or ● If sites can be avoided,	○ or ● If sites can be avoided,	○ or ● If sites can be avoided,	○ Should be able to avoid sites or effects within	○ Should be able to avoid sites or effects within sites

Environmental Topic	SER Objective: Does the proposed development of the USELF renewable scenario...	Receptors	USELF Renewable Energy Scenarios						
			Onshore wind	Small hydro	Solar Photovoltaic	Biomass		Biogas	
						Wood residues	Agricultural residues	Landfill gas	Animal manure
			then there would be no effects. Where sites can't be avoided, effective mitigation would depend on habitat type. Some residual negative effects on birds/bats are likely if flight routes can't be avoided.	then there would be no effect. Where sites can't be avoided, effective mitigation/offsetting would depend on habitat type. May be some residual effects on aquatic ecosystems.	then there would be no effect. Where sites can't be avoided, effective mitigation/offsetting would depend on habitat type.	then there would be no effect. Where sites can't be avoided, effective mitigation/offsetting would depend on habitat type.	then there would be no effect. Where sites can't be avoided, effective mitigation/offsetting would depend on habitat type.	sites due to small scale of development and use of effective mitigation/offsetting.	due to small scale of development and use of effective mitigation/offsetting.
	Minimise adverse effects upon important habitats and species?	Protected species Aquatic habitats Unprotected remnant natural ecosystems Unprotected adapted ecosystems	● Due to the scenario scale, the area of land-take, height of turbines, position on ridges, and other structures mitigation/offsetting is unlikely to be fully effective, in particular for effects upon birds, bats and habitats.	○ or ● Mitigation unlikely to avoid all effects on aquatic ecosystems.	● Due to the scenario scale and the area of land-take it is not likely to be possible to fully mitigate/offset for all adverse effects, in particular upon habitats.	○ or ● Mitigation should avoid effects on protected species but may be some residual effects on habitats, depending on type of habitat affected and opportunities for offsetting.	○ or ● Mitigation should avoid effects on protected species but may be some residual effects on habitats, depending on type of habitat affected and opportunities for offsetting.	○ Should be able to avoid effects on habitats and species due to small scale of development and use of effective mitigation/offsetting. May be opportunities for habitat enhancement.	○ Should be able to avoid effects on habitats and species due to small scale of development and use of effective mitigation/offsetting. May be opportunities for habitat enhancement.
Community and socio-economics.	Minimise the involuntary economic or physical displacement of people?	Demographics	○ or ● Careful siting of project should avoid displacement.	○ or ● Careful siting of project should avoid displacement.	○ or ● Careful siting of project should avoid displacement.	○ or ● Careful siting of project should avoid displacement.	○ or ● Careful siting of project should avoid displacement.	○ Careful siting of project should avoid displacement.	○ Careful siting of project should avoid displacement.
	Minimise adverse effects upon the health and well being of human communities?	Health	○ Controls during construction should avoid noise, dust, health and safety hazards. Very low noise and electromagnetic field of transmission lines during operation depends on proximity.	● Controls during construction should avoid noise, dust, health and safety hazards. Possible benefits from reduced risk of flooding.	○ Controls during construction should avoid noise, dust, health and safety hazards. None predicted during operation.	○ Controls during construction and operation should avoid noise, dust, air quality and health and safety hazards	○ Controls during construction should avoid noise, dust, air quality and health and safety hazards	○ Controls during construction should avoid noise, dust, air quality and health and safety hazards, although some residual odour possible.	○ Controls during construction should avoid noise, dust, air quality and health and safety hazards although some residual odour possible.

Environmental Topic	SER Objective: Does the proposed development of the USELF renewable scenario...	Receptors	USELF Renewable Energy Scenarios						
			Onshore wind	Small hydro	Solar Photovoltaic	Biomass		Biogas	
						Wood residues	Agricultural residues	Landfill gas	Animal manure
	Have the potential to contribute towards direct or indirect employment?	Employment/ earnings	● Increased local employment opportunities can be maximised, mainly during construction but also operation.	● Increased local employment opportunities can be maximised, mainly during construction.	● Increased local employment opportunities can be maximised, mainly during construction.	● Increased local employment opportunities can be maximised, mainly during construction but also operation.	● Increased local employment opportunities can be maximised, mainly during construction but also operation.	● Increased local employment opportunities can be maximised, mainly during construction but also operation.	● Increased local employment opportunities can be maximised, mainly during construction but also operation.
	Minimise the risk of potential adverse effect on other sectors (conventional tourism, hunting, eco-tourism, etc.).	Economic sectors Tourism and environmental amenities	● Improved energy reliability for economic development. Improved eco-tourism potential.	● Improved energy reliability for economic development. Improved eco-tourism potential. Possible opportunities for recreation and fishing	● Improved energy reliability for economic development. Improved eco-tourism potential. Potential for disruption to hunting areas due to large land-take required.	● Improved energy reliability for economic development. Improved eco-tourism potential.	● Improved energy reliability for economic development. Improved eco-tourism potential.	● Improved energy reliability for economic development. Improved eco-tourism potential.	● Improved energy reliability for economic development. Improved eco-tourism potential.
	Minimise adverse effects upon existing land uses such as agriculture and forestry?	Economic Sectors	● or ● Due to the scenario scale and the area of land-take, loss of productive land is anticipated; although some combined agricultural use may be possible.	● Regulation of flow should avoid downstream effects of flooding, although downstream land uses may be affected by low flows during construction and operation	● Due to the scenario scale and the area of land-take, some loss of agricultural land is anticipated which compensation can't fully mitigate; although some combined use possible.	● Some loss of economically and agriculturally productive land which compensation may not be able to fully mitigate.	● Some loss of economically and agriculturally productive land which compensation may not be able to fully mitigate.	○ Due to location at existing landfill, effects on other land uses are unlikely.	○ Due to location at existing farms, effects on other land uses are unlikely.
	Minimise adverse effects upon important material assets and infrastructure?	Infrastructure	● Requirement for strengthening transportation networks and transmission system is beneficial, as well as improved access to electricity in remote areas.	● Requirement for strengthening transportation networks and transmission system is beneficial, as well as improved access to electricity in remote areas.	● Requirement for strengthening transportation networks and transmission system is beneficial, as well as improved access to electricity in remote areas.	● Requirement for strengthening transportation networks and transmission system is beneficial, as well as improved access to electricity in remote areas. Traffic management cannot fully mitigate effect on	● Requirement for strengthening transportation networks and transmission system is beneficial, as well as improved access to electricity in remote areas. Traffic management cannot fully mitigate effect on	● Requirement for strengthening transportation networks and transmission system is beneficial.	● Requirement for strengthening transportation networks and transmission system is beneficial, as well as improved access to electricity in remote areas. Traffic management cannot fully mitigate effect on road network.

Environmental Topic	SER Objective: Does the proposed development of the USELF renewable scenario...	Receptors	USELF Renewable Energy Scenarios						
			Onshore wind	Small hydro	Solar Photovoltaic	Biomass		Biogas	
						Wood residues	Agricultural residues	Landfill gas	Animal manure
						road network.	road network.		
Cultural heritage	Avoid adverse effects upon Ukrainian and World Cultural Heritage sites?	UNESCO World Heritage Sites, Registered cultural heritage sites.	○ or ● Should be possible to avoid effects on these sites through careful location of development, although it may not be possible to avoid some landscape effects due to size of turbines.	○ Should be possible to avoid effects on these sites through careful location of development.	○ or ● Should be possible to avoid effects on these sites through careful location of development, although it may not be possible to avoid some landscape effects due to areas covered by photovoltaics.	○ or ● Should be possible to avoid effects on these sites through careful location of development, although it may not be possible to avoid some landscape effects due to size of some structures.	○ or ● Should be possible to avoid effects on these sites through careful location of development, although it may not be possible to avoid some landscape effects due to size of some structures.	○ Should be possible to avoid effects on these sites through careful location of development.	○ Should be possible to avoid effects on these sites through careful location of development.
	Minimise adverse effects on unknown cultural heritage sites	Unknown or unregistered cultural heritage sites	● Due to the scenario scale and the area of land-take, some loss of heritage features is possible; although a staged approach to investigation of unknown cultural heritage would enable identification and study of new sites.	🇩🇪? A staged approach to investigation of unknown cultural heritage would enable identification and study of new sites, although some loss of heritage features is also possible.	● Due to the scenario scale and the area of land-take, some loss of heritage features is possible; although a staged approach to investigation of unknown cultural heritage would enable identification and study of new sites.	🇩🇪? A staged approach to investigation of unknown cultural heritage would enable identification and study of new sites, although some loss of heritage features is also possible.	🇩🇪? A staged approach to investigation of unknown cultural heritage would enable identification and study of new sites, although some loss of heritage features is also possible.	🇩🇪? A staged approach to investigation of unknown cultural heritage would enable identification and study of new sites, although some loss of heritage features is also possible.	🇩🇪? A staged approach to investigation of unknown cultural heritage would enable identification and study of new sites, although some loss of heritage features is also possible.
	Minimise adverse effects on intangible cultural heritage	Intangible cultural heritage	○ or ●? Any effects on intangible cultural heritage would need to be determined at a project level and may not be possible to effectively mitigate.	○ or ●? Any effects on intangible cultural heritage would need to be determined at a project level and may not be possible to effectively mitigate.	○ or ●? Any effects on intangible cultural heritage would need to be determined at a project level and may not be possible to effectively mitigate.	○ or ●? Any effects on intangible cultural heritage would need to be determined at a project level and may not be possible to effectively mitigate.	○ or ●? Any effects on intangible cultural heritage would need to be determined at a project level and may not be possible to effectively mitigate.	○? Due to location at existing landfill, effects on intangible cultural heritage are unlikely.	○? Due to location on existing farms, effects on intangible cultural heritage are unlikely.