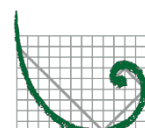


**Kazakhstan Renewable Energy
Financing Facility (KazREFF) - Strategic Environmental
Review**

**Appendix D - Compliance of the KazREFF Renewable Energy
Scenarios against the SER Objectives**









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Table D-1: Compliance of the KazREFF 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			
Significant negative performance against SER Objective		Significant positive performance against SER Objective	
Insignificant negative performance against SER Objective		Insignificant positive performance against SER Objective	
No Effects		Uncertain	

Environmental Topic	SER Objective : Does the proposed development of the KAZREF F renewable scenario ...	Receptors	Wind	Small hydro	Solar Photovoltaic	Biogas
Climate and air quality	Contribute to reduction of GHG emission	Climate	 Reduction of GHG emission can be achieved through replacement of fossil fuel related energy by renewable energy	 Reduction of GHG emission can be achieved through replacement of fossil fuel related energy by renewable energy	 Reduction of GHG emission can be achieved through replacement of fossil fuel related energy by renewable energy	 Capping/covering existing open landfills can significantly decrease methane emissions. Reduction of GHG emission can be achieved through replacement of fossil fuel related energy by renewable energy
	Contribute to improved air quality	Air quality	 Improvement of air quality can be achieved through replacement of fossil fuel related energy by renewable	 Improvement of air quality can be achieved through replacement of fossil fuel related energy by renewable	 Improvement of air quality can be achieved through replacement of fossil fuel related energy by renewable	 Capping/covering existing open landfills can significantly air quality. Improvement of air quality can

Environmental Topic	SER Objective : Does the proposed development of the KAZREF F renewable scenario ...	Receptors	Wind	Small hydro	Solar Photovoltaic	Biogas
			energy	energy	energy	<p>be achieved through replacement of fossil fuel related energy by renewable energy.</p> <p>Design modifications can mitigate potential emissions of hazardous air pollutants.</p>
	Comply with EU and Kazakh air quality regulations	Air quality	○ Compliance of air quality regulation can be achieved as practice is established.	○ Compliance of air quality regulation can be achieved as practice is established.	○ Compliance of air quality regulation can be achieved as practice is established.	○ Compliance of air quality regulation can be achieved as practice is established.
Surface water and groundwater	Minimize adverse impacts to surface/groundwater quality	Surface Water quality Groundwater quality	○ Pollution prevention, erosion control measures, and siting constraints will avoid adverse effects on surface and groundwater quality.	○ Pollution prevention, erosion control measures, and siting constraints will avoid adverse effects on surface and groundwater quality.	○ Pollution prevention, erosion control measures, and siting constraints will avoid adverse effects on surface and groundwater quality.	○ Pollution prevention, erosion control measures, and siting constraints will avoid adverse effects on surface and groundwater quality.
	Minimize adverse impacts to water resource	Surface Water Resource Groundwater	○ Pollution prevention, erosion control measures, and	○ or ● Even with successful implementation of mitigation	○ Pollution prevention, erosion control measures, and	○ Pollution prevention, erosion control measures, and

Environmental Topic	SER Objective : Does the proposed development of the KAZREF F renewable scenario ...	Receptors	Wind	Small hydro	Solar Photovoltaic	Biogas
	s	Resource	siting constraints will avoid adverse effects on surface and groundwater resource.	measures, there will be potential to change to surface water resource at impoundment or between intake and outflow of run-of-river systems.	siting constraints will avoid adverse effects on surface and groundwater resource.	siting constraints will avoid adverse effects on surface and groundwater resource.
	Maintain ecologically-viable base flows in waterways	Surface Water Resource Aquatic species	○ Projects will not impact aquatic species.	○ or ● Lengths of river at structure or downstream may be affected by low flows with effects on fisheries and other uses.	○ Projects will not impact aquatic species.	○ Projects will not impact aquatic species.
Geology and soils	Minimize loss of use of high quality arable soils and impacts of soil nutrient depletion	High value soil	○ or ● Application of siting constraints and mitigation measures should minimize loss of high value soils.	○ or ● Application of siting constraints and mitigation measures should minimize loss of high value soils.	○ or ● Application of siting constraints and mitigation measures should minimize loss of high value soils.	○ Candidate development landfills are already degraded with little to no high value soils.
	Avoid the weakening of soil/streambanks resulting in mudflow	Various receptors in Mudflow Hazard Areas	○ Siting constraints will avoid placing facilities in mudflow prone areas	○ or ● Application of siting constraints and mitigation measures should minimize loss of	○ Siting constraints will avoid placing facilities in mudflow prone areas	○ Siting constraints will avoid placing facilities in mudflow prone areas

Environmental Topic	SER Objective : Does the proposed development of the KAZREF F renewable scenario ...	Receptors	Wind	Small hydro	Solar Photovoltaic	Biogas
	ws			high value soils		
Landscape and biodiversity	Minimise adverse impacts to wildlife, protected species, and their habitat	Protected areas Bird and bat Important terrestrial species Important Aquatic species Unprotected natural ecosystems	○ or ● Application of siting constraints and mitigation measures should significantly minimise impacts to wildlife, and protected species, and their habitat.	○ or ● Application of siting constraints and mitigation measures should significantly minimise impacts to wildlife, and protected species, and their habitat	○ or ● Application of siting constraints and mitigation measures should significantly minimise impacts to wildlife, and protected species, and their habitat	○ Candidate development landfills are already degraded with little to no wildlife and habitat area.
	Avoid adverse impacts to designated conservation sites	Protected areas IBA	○ Application of siting constraints and mitigation measures should avoid impact on designated conservation sites.	○ Application of siting constraints and mitigation measures should avoid impact on designated conservation sites.	○ Application of siting constraints and mitigation measures should avoid impact on designated conservation sites	○ Candidate development landfills are already degraded and would not be designated as conservation sites
	Avoid impacts to scenic/aesthetic areas	High quality landscape value	● Due to the scenario scale and the area of land-take it is not likely to be possible to fully mitigate/offset for the landscape & visual effects of	○ or ● Application of siting constraints and mitigation measures should avoid or significantly minimise impact on landscape & visually	○ or ● Due to the scenario scale and the area of land-take it is not likely to be possible to completely mitigate/offset for the landscape &	○ or ● Candidate development landfills are already degraded areas with little to no scenic/aesthetic value. However, capping/coveri

Environmental Topic	SER Objective : Does the proposed development of the KAZREF F renewable scenario ...	Receptors	Wind	Small hydro	Solar Photovoltaic	Biogas
			large wind farms.	aesthetic areas	visual effects of large solar PV facilities; however, some visual screening will minimise these impacts. .	ng existing open landfills can improve the aesthetics of the area. .
Community and socio-economics.	Minimise the physical displacement of people	Demographics	○ or ● Application of siting constraints and mitigation measures should avoid displacement. However, if unavoidable, impacts will be minimised by mitigation measures	○ Application of siting constraints and mitigation measures should avoid displacement.	○ or ● Application of siting constraints and mitigation measures should avoid displacement. However, if unavoidable, impacts will be minimised by mitigation measures	○ Candidate development landfills are already degraded areas and are unlikely to provide living areas for people.
	Minimise impacts to important areas for hunting, fishing, tourism, and recreation	Tourism	○ or ● Application mitigation measures should avoid impact to the areas. There might be positive effect on environmental image and ecotourism potential through improved energy reliability for economic	○ or ● Careful siting of project could avoid impact to the areas. There might be positive effect on environmental image and ecotourism potential through improved energy reliability for economic development.	○ or ● Careful siting of project could avoid impact to the areas. There might be positive effect on environmental image and ecotourism potential through improved energy reliability for economic development.	○ or ● Candidate development landfills are not likely to be tourist areas or have significant recreational value. However, capping/covering existing open landfills can improve the tourism potential of the surrounding areas. There might be positive effect

Environmental Topic	SER Objective : Does the proposed development of the KAZREF F renewable scenario ...	Receptors	Wind	Small hydro	Solar Photovoltaic	Biogas
			development.			on environmental image and ecotourism potential through improved energy reliability for economic development.
Minimise impacts to human health from noise, vibrations, odour, lighting, or sanitation	Human Health	○ or ●	Application of siting constraints and mitigation measures should avoid impacts from noise and vibration. However, if unavoidable, impacts will be minimised by mitigation measures.	Application of siting constraints and mitigation measures should avoid impacts from noise and vibration. However, if unavoidable, impacts will be minimised by mitigation measures.	Application of siting constraints and mitigation measures should avoid impacts from reflections. However, if unavoidable, impacts will be minimised by mitigation measures.	● Capping/covering existing open landfills can decrease odours and improve the sanitation of the surrounding areas.
Improve employment and standard of living	Employment Economy	●	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.
Avoid impacts to water supply	Employment Economy	○	Application of siting	○ or ● Application of siting	○ Application of siting	○ Application of siting

Environmental Topic	SER Objective : Does the proposed development of the KAZREF F renewable scenario ...	Receptors	Wind	Small hydro	Solar Photovoltaic	Biogas
	for potable use, fisheries , and irrigation	y	constraints and mitigation measures should avoid impacts to water supply, fisheries and irrigation.	constraints and mitigation measures should avoid impacts from noise and vibration. However, if unavoidable, impacts will be minimised by mitigation measures	constraints and mitigation measures should avoid impacts to water supply, fisheries and irrigation.	constraints and mitigation measures should avoid impacts to water supply, fisheries and irrigation.
Material Assets	Avoid impacts to existing infrastructure	Infrastructure	○ or ● New development might require improvements to existing transportation infrastructure. Can provide increased reliability for electricity in remote area.	○ or ● New development would require improving existing transportation infrastructure. Can provide increased reliability for electricity in remote area.	○ or ● New development would require improving existing transportation infrastructure. Can provide increased reliability for electricity in remote area.	○ or ● New development would require improving existing transportation infrastructure.
	Avoid impacts resulting from increased vehicular traffic		○ or ● Minor increases in traffic would be limited to construction period. Impact will be minimised through mitigation measures.	○ or ● Minor increases in traffic would be limited to construction period. Impact will be minimised through mitigation measures.	○ or ● Minor increases in traffic would be limited to construction period. Impact will be minimised through mitigation measures.	○ or ● Minor increases in traffic would be limited to construction period. Impact will be minimised through mitigation measures.

Environmental Topic	SER Objective : Does the proposed development of the KAZREF F renewable scenario ...	Receptors	Wind	Small hydro	Solar Photovoltaic	Biogas
Cultural heritage	Avoid impacts to cultural and archaeologically important areas	<p>UNESCO World Heritage Sites and sites on the UNESCO Tentative List</p> <p>Registered cultural heritage sites.</p> <p>Unregistered or unknown cultural heritage sites</p>	<p>○ or ● ?</p> <p>Application of siting constraints and mitigation measures should avoid impact on known sites.</p> <p>However, it may not be possible to completely some vial impacts are placed close to sites.</p> <p>Chance finds protocols will mitigate impacts at unknown or unregistered sites; however, any effects on these areas would need to be determined at the project level and may not be possible to effectively mitigate.</p>	<p>○ or ● ?</p> <p>Application of siting constraints and mitigation measures should avoid impact on known sites.</p> <p>However, it may not be possible to completely some vial impacts are placed close to sites.</p> <p>Chance finds protocols will mitigate impacts at unknown or unregistered sites; however, any effects on these areas would need to be determined at the project level and may not be possible to effectively mitigate.</p>	<p>○ or ● ?</p> <p>Application of siting constraints and mitigation measures should avoid impact on known sites.</p> <p>However, it may not be possible to completely some vial impacts are placed close to sites.</p> <p>Chance finds protocols will mitigate impacts at unknown or unregistered sites; however, any effects on these areas would need to be determined at the project level and may not be possible to effectively mitigate.</p>	<p>○</p> <p>Due to location at existing landfill, effects on intangible cultural heritage are unlikely.</p>