

ANNEXES - CHAPTER 7

Annexe 7-4 Impacts Calculation Table

Description of Impact							Zone			Phase		POTENTIAL IMPACT	RESIDUAL IMPACT	
#	Valued Ecosystem Component (VEC)	Sub-Component	Source of Impact 1	Source of Impact 2	Description of Impact	Positive / Negative	ZONE 1 - Mine	ZONE 2 - Plant & Port	ZONE 3 - Railroad	Construction	Operations	Level of Impact	Positive / Negative	Level of Impact
DDS1	Demographics and social structure	Migration	Increase in pit area	Increase in bauxite extraction rate	Rural exodus of farmers and herders whose land is taken for bauxite mining. Movement of people in search of land in other villages outside the area.	Negative	x			x	x	High	Negative	Medium
DDS2	Demographics and social structure	Migration	Temporary job creation	Increase in pit area	Migration to towns by job seekers (Sangarédi, Kamsar and outside project area)	Negative	x	x		x	x	High	Negative	Medium
DDS2	Demographics and social structure	Migration	Temporary job creation	Increase in pit area	Migration to towns by job seekers (Sangarédi, Kamsar and outside project area)	Negative			x	x	x	Medium	Negative	Low
DDS3	Demographics and social structure	Family and social structure	Job creation	Increase in pit area	Changes to social and family structure (i.e., children supporting their parents), people (essentially women) abandoning higher education, divorce, families compensated with CBG salaries.	Negative	x			x	x	High	Negative	Medium
DDS3	Demographics and social structure	Family and social structure	Job creation	Increase in pit area	Changes to social and family structure (i.e., children supporting their parents), people (essentially women) abandoning higher education, divorce, families compensated with CBG salaries.	Negative		x		x	x	Medium	Negative	Low

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SS1	Public health and safety	Sanitary conditions	Increase in bauxite extraction rate	Increased train traffic	Degradation of sanitary conditions: pressure on basic services, more fertile ground for spread of disease	Negative	x	x		x	x	High	Negative	Medium
SS1	Public health and safety	Sanitary conditions	Increase in bauxite extraction rate	Increased train traffic	Degradation of sanitary conditions: pressure on basic services; more fertile ground for spread of disease	Negative			x	x	x	Low	Positive	Low
SS2	Public health and safety	Public health	Increase in bauxite extraction rate	Increased train traffic	Degradation of sanitary conditions: Increase in sources of pollution (dust, mud, waste, diesel fuel, etc.) promoting spread of disease.	Negative	x			x	x	High	Negative	Medium
SS2	Public health and safety	Public health	Increase in bauxite extraction rate	Increased train traffic	Degradation of sanitary conditions: Increase in sources of pollution (dust, mud, waste, diesel fuel, etc.) promoting spread of disease.	Negative		x		x	x	Medium	Negative	Low
SS2	Public health and safety	Public health	Increase in bauxite extraction rate	Increased train traffic	Degradation of sanitary conditions: increase in sources of pollution (dust, mud, waste, diesel fuel, etc.) promoting spread of disease	Negative			x	x	x	Low	Negative	Low

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#	Valued Ecosystem Component (VEC)	Sub-Component	Source of Impact 1	Source of Impact 2	Description of Impact	Positive / Negative	ZONE 1 - Mine	ZONE 2 - Plant & Port	ZONE 3 - Railroad	Construction	Operations	Level of Impact	Positive / Negative	Level of Impact
SS3	Public health and safety	Rail accidents	Increased train traffic	Increased length of trains	Train-related accidents. Many people living near the railroad tracks walk along the tracks and/or cross the tracks on foot to get to other villages, school, etc. Level crossings, bridges and lighting on the tracks are rarely available. There will be an increased risk of train-related accidents with the increase in train traffic (round the clock).	Negative	x	x	x	x		Low	Negative	Low
SS3	Public health and safety	Rail accidents	Increased train traffic	Increased length of trains	Train-related accidents. Many people living near the railroad tracks walk along the tracks and/or cross the tracks on foot to get to other villages, school, etc. Level crossings, bridges and lighting on the tracks are rarely available. There will be an increased risk of train-related accidents with the increase in train traffic (round the clock).	Negative	x	x	x		x	High	Negative	Medium
SS4	Public health and safety	Road accidents	Construction of new access roads	Increase in pit area	Risk of road accidents in project area/ changes to roads and redefinition of local road traffic / use of mine roads by local people / risk of collisions with mine machinery.	Negative	x			x	x	Medium	Negative	Medium

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SS4	Public health and safety	Road accidents	Construction of new access roads	Increase in pit area	Risk of road accidents in town of Kamsar / construction equipment traffic (construction camp, housing, plant)	Negative		x		x		Medium	Negative	Medium
SS4	Public health and safety	Road accidents	Construction of new access roads	Increase in pit area	Risk of road accidents in the town of Kamsar	Negative		x			x	Low	Negative	Low
SS4	Public health and safety	Road accidents	Construction of new access roads	Increase in pit area	Risk of road accidents in the project area near jobsite at KP 14 / general traffic in area	Negative			x	x	x	Low	Negative	Low
SS5	Public health and safety	Maritime accidents	Increase in bauxite processing rate at plant	Increased number of boats	Maritime accident risk: accidents with fishermen's and passenger pirogues	Negative			x	x		Low	Negative	Low
SS5	Public health and safety	Maritime accidents	Increase in bauxite processing rate at plant	Increased number of boats	Maritime accident risk: accidents with fishermen's and passenger pirogues	Negative			x		x	High	Negative	Medium
SS6	Public health and safety	Accidents in and near pits	Increase in pit area	Increase in bauxite extraction rate	Risk of accidents in and near pits / projectiles triggered by blasting	Negative	x			x	x	High	Negative	Medium
SS7	Public health and safety	Public safety	Presence of foreign workers	Temporary job creation	Degradation in public safety owing to overpopulated urban areas and increased unemployment (increase in crime and infractions)	Negative	x	x		x	x	Medium	Negative	Low

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SS7	Public health and safety	Public safety	Presence of foreign workers	Temporary job creation	Degradation in public safety owing to overpopulated urban areas and increased unemployment (increase in crime and infractions)	Negative			x	x	x	Low	Negative	Low
IS1	Infrastructure and basic services	Access to water (infrastructure)	Increase in pit area	Increase in bauxite extraction rate	Degradation in access to adequate water resources and sanitation facilities (more so in some urban districts than others / degradation of existing pumps and wells (decreased water quality and quantity)	Negative	x			x	x	High	Negative	Medium
IS1	Infrastructure and basic services	Access to water (infrastructure)	Temporary job creation	Job creation	Degradation in quantity and quality of natural water sources (ponds, springs, rivers) - impact on current consumption, agriculture and herding.	Negative		x		x	x	High	Negative	Medium
IS1	Infrastructure and basic services	Access to water (infrastructure)	Construction of sidings	Temporary job creation	Degradation in access to adequate water resources and sanitation facilities (more so in some urban districts than others) / degradation in existing pumps and wells (decreased water quality and quantity)	Negative			x	x	x	Low	Negative	Low
IS2	Infrastructure and basic services	Electricity	Increase in bauxite extraction rate	Job creation	Degradation in access to electricity / population increase / increased expectations as regards access to services in towns / potential degradation in access	Negative	x	x		x	x	Medium	Negative	Low

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IS2	Infrastructure and basic services	Electricity	Increase in bauxite extraction rate	Job creation	Degradation in access to electricity / population increase / increased expectations as regards access to services in towns / potential degradation in access	Negative			x	x	x	Low	Negative	Low
IS3	Infrastructure and basic services	Education/training	Increase in bauxite extraction rate	Job creation	Degradation in access to education / existing services already inadequate / pressure on services owing to population growth and migration / high cost of higher education	Negative	x	x		x	x	Medium	Positive	Low
IS3	Infrastructure and basic services	Education/training	Increase in bauxite extraction rate	Job creation	Degradation in access to education / existing services already inadequate / pressure on services owing to population growth and migration / high cost of higher education	Negative			x	x	x	Low	Positive	Low
IS4	Infrastructure and basic services	Access to health services	Increase in bauxite extraction rate		Degradation in access to health services/existing services already inadequate / high cost of health care in CBG facilities / pressure on services owing to population growth	Negative	x	x		x	x	High	Negative	Low

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IS4	Infrastructure and basic services	Access to health services	Increase in bauxite extraction rate		Degradation in access to health services /existing services already inadequate / high cost of health care in CBG facilities / pressure on services owing to population growth	Negative			x	x	x	Low	Positive	Low
IS5	Infrastructure and basic services	Recreation and culture	Increase in bauxite extraction rate	Job creation	Degradation in access to recreational and cultural facilities / existing recreational and cultural facilities already inadequate / pressure on services owing to population growth	Negative	x			x	x	Medium	Positive	Medium
IS5	Infrastructure and basic services	Recreation and culture	Increase in bauxite extraction rate	Job creation	Degradation in access to recreational and cultural facilities /existing recreational and cultural facilities already inadequate pressure on services owing to population growth	Negative		x		x	x	Low	Positive	Medium
IS6	Infrastructure and basic services	Construction of employee housing/const ruction camp in Kamsar and Sangarédi	Constructio n camp (Sangarédi)	Construction of new houses	Improvement in access to housing for CBG employees (about 388 houses in Sangarédi and Kamsar and construction camp)	Positive	x	x			x	Medium	Positive	Medium

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F1	Land	Loss of cropland and pastureland	Increase in pit area	Construction associated with the new sorting yard in Parawi (bridge, yard, roads, tracks)	Loss in large tracts of permanent cropland, seasonal cropland and pastureland (cropland, fallow land, and pastureland on bowés) / displacement anticipated in rural areas / potential relocation to Sangarédi	Negative	x			x	x	High	Negative	High
F1	Land	Loss of cropland	Increase in pit area	Construction of new houses	Reduced cropland in rail loop / loss of rice fields in Kamsar area / displacement of local people for construction of workers' housing (275 units in Bas Fond and Balanta sectors)	Negative		x		x		Medium	Negative	Medium
F1	Land	Loss of cropland	Increase in pit area	Construction of new houses	Reduced cropland / anticipated relocation of some houses	Negative			x	x		Low	Negative	Low
F2	Land	Changes to land tenure (individualization)	Increase in pit area	Construction of new houses	Weakening of traditional land management approach / process of individualization of land management (land titles) and marking of village boundaries as part of compensation / erosion of traditional management methods (for example, tutor villages)	Negative	x			x	x	High	Negative	High

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F2	Land	Changes to land tenure (individualization)	Construction of new access roads	Construction of new houses	Weakening of traditional land management approach / process of individualization of land management (land titles) and marking of village boundaries as part of compensation / erosion of traditional management methods (for example, tutor villages)	Negative		x		x	x	Medium	Negative	Medium
F2	Land	Changes to land tenure (individualization)	Construction of sidings	Construction of new access roads	Weakening of traditional land management approach / process of individualization of land management (land titles) and marking of village boundaries as part of compensation / erosion of traditional management methods (for example, tutor villages)	Negative			x	x	x	Low	Negative	Low
F3	Land	Potential displacement	Increase in pit area	Construction associated with the new sorting yard in Parawi (bridge, yard, roads, tracks)	Anticipated displacement of houses and villages, as specified in mine plan.	Negative	x			x	x	High	Negative	High
F3	Land	Potential displacement	Construction of new houses	Construction camp (Kamsar)	Anticipated displacement of houses and infrastructure: housing construction area and construction camp	Negative		x		x		High	Negative	High

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F3	Land	Potential displacement	Construction of sidings	Construction of new access roads	Anticipated displacement of houses and infrastructure:	Negative			x	x		Medium	Negative	Medium
EE1	Economic environment and household strategy	Increase in social inequities – impoverishment of rural and urban areas	Increase in pit area	Increase in bauxite extraction rate	Increase in social inequities: Loss of land and property, hence sources of income; isolation of villages resulting in difficulty moving local products and difficulty securing supply of goods from urban centres. Inflation. Risk of loss of food autonomy. Migration to towns without any real new economic opportunities / degradation in access to basic services / inflation / increased unemployment / precarious jobs in commerce and service sectors / little job creation by CBG and through indirect jobs	Negative	x	x		x	x	High	Negative	Medium

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EE1	Economic environment and household strategy	Increase in social inequities – impoverishment of rural and urban areas	Increase in pit area	Job creation	Increase in social inequities: Loss of land and property, hence sources of income; isolation of villages resulting in difficulty moving local products and difficulty securing supply of goods from urban centres. Inflation. Risk of loss of food autonomy. Migration to towns without any real new economic opportunities / degradation in access to basic services / inflation / increased unemployment / precarious jobs in commerce and service sectors / little job creation by CBG and through indirect jobs	Negative			x	x	x	Low	Negative	Low
EE2	Economic environment and household strategy	Job creation	Increase in pit area	Job creation	Creation of about 176 permanent direct jobs in the mine zone (27.5 MPTA in 2022)	Positive	x				x	Medium	Positive	Medium
EE2	Economic environment and household strategy	Job creation	Increase in pit area	Job creation	Creation of about 348 permanent direct jobs in the plant and port zone (27.5 MPTA in 2022)	Positive		x			x	Medium	Positive	Medium

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EE2	Economic environment and household strategy	Job creation	Increase in pit area	Job creation	Creation of essentially 0 permanent direct jobs (27.5 MPTA in 2022)	Positive			x		x	0	Positive	0
EE2	Economic environment and household strategy	Job creation	Increase in pit area	Temporary job creation	Creation of 120 indirect and temporary jobs in the mine zone	Positive	x			x		Low	Positive	Low
EE2	Economic environment and household strategy	Job creation	Construction of new facilities at Kamsar plant	Temporary job creation	Creation of 1,000 indirect and temporary jobs in the plant and port zone	Positive		x		x		Low	Positive	Low
EE2	Economic environment and household strategy	Job creation	Increased train traffic	Temporary job creation	Creation of indirect and temporary jobs in the rail zone - no information available	Positive			x	x		0	Positive	0
EE3	Economic environment and household strategy	Disruption of the fishing economy	Extension of wharf	Dredging of turning and holding basin	Disruption to maritime traffic / increase in carrier traffic / disturbance of artisanal fisheries	Negative		x		x		Medium	Negative	Low

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EE3	Economic environment and household strategy	Disruption of the fishing economy	Extension of wharf	Dredging of turning and holding basin	Disruption to maritime traffic / increase in carrier traffic / disturbance of artisanal fisheries	Negative		x			x	High	Negative	Medium
EE3	Economic environment and household strategy	Community development	Increase in pit area	Increase in bauxite extraction rate	Support for community development projects and construction of basic infrastructure / funds allocated to business revenue taxes and equiting funding largely inadequate	Positive	x	x	x	x	x	Low	Positive	Medium
FC1	Flow and circulation	Destruction of roads resulting in isolation	Increase in pit area	Construction associated with the new sorting yard in Parawi (bridge, yard, roads, tracks)	Destruction of village roads / isolation of villages	Negative	x			x	x	High	Negative	Medium
FC1	Flow and circulation	Destruction of roads resulting in isolation	Construction of sidings		Destruction of village roads / isolation of villages	Negative			x	x		Low	Negative	Low
FC2	Flow and circulation	Opening of mine roads resulting in improved access	Increase in pit area	Construction of new access roads	Opening of new mine roads / improved access for villages	Positive	x			x	x	Low	Positive	Medium

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FC2	Flow and circulation	Opening up mine roads resulting in improved access	Construction of sidings	Construction of new access roads	Opening of new mine roads / improved access for villages	Positive			x	x		Low	Positive	Low
FC3	Flow and circulation	Flow and circulation conditions /people and herds	Increased train traffic	Increased length of trains	Disruption of traffic and transportation: traffic disrupted or blocked by passing and/or stopped trains	Negative	x	x	x		x	High	Negative	Medium
FC4	Flow and circulation	Passenger train conditions	Increased train traffic	Increased length of trains	Frequency of passenger trains: increased waiting time for passenger trains owing to mine trains having priority on the line. Increase in length of trips. Even elimination of passenger trains.	Negative	x	x	x	x	x	Medium	Negative	Medium
FC5	Flow and circulation	Traffic conditions in the estuary	Dredging of turning and holding basin	Increased number of boats	Degradation of traffic conditions for boats in the estuary.	Negative		x		x		Medium	Negative	Low
FC5	Flow and circulation	Traffic conditions in the estuary	Dredging of turning and holding basin	Increased number of boats	Degradation in traffic conditions for boats in the estuary.	Negative		x			x	High	Negative	High

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GCS-1	Governance and social cohesion	Local governance	Increase in pit area	Increase in bauxite extraction rate	Tension with respect to methods of local governance: increased expectations among local people and pressure on local authorities who are faced with a chronic lack of human/technical and financial resources.	Negative	x	x		x	x	High	Negative	Medium
GCS1	Governance and social cohesion	Local governance	Increase in pit area	Increase in bauxite extraction rate	Tension with respect to methods of local governance: increased expectations among local people and pressure on local authorities who are faced with an ongoing lack of human/technical and financial resources.	Negative			x	x	x	Medium	Negative	Low
GCS2	Governance and social cohesion	CBG governance	Increase in pit area	Increase in bauxite extraction rate	Community development expectations: increased expectations among local people to benefit from the project.	Negative	x	x		x	x	High	Positive	Medium
GCS2	Governance and social cohesion	CBG governance	Increase in pit area	Increase in bauxite extraction rate	Community development expectations: increased expectations among local people to benefit from the project.	Negative			x	x	x	Medium	Positive	Medium

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GCS3	Governance and social cohesion	Potential conflict	Increase in pit area	Job creation	Potential conflict related to high expectations among local populations as regards jobs, access to basic services, loss of land, and the implementation of compensation; interpopulation conflict: competition for access to jobs, land boundaries, pressure on natural resources. Conflict with host populations in the event of displacement.	Negative	x	x		x	x	High	Negative	Medium
GCS3	Governance and social cohesion	Potential conflict	Job creation	Increase in bauxite processing rate at plant	Potential conflict between the local population and CBG: connected with the high expectations among the local people as regards jobs, access to basic services, impacts of train traffic on flow of traffic in the villages/towns. Interpopulation conflict: competition for access to jobs.	Negative			x	x	x	Medium	Negative	Low

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68	Governance and social cohesion	Communication and information	Increase in pit area	Increase in bauxite extraction rate	Impacts associated with communication and information: increased expectation among local people for a CBG strategy based on information, communication and consultation. Risk of frustration, misunderstandings and conflict.	Negative	x	x		x	x	High	Positive	High
69	Governance and social cohesion	Communication and information	Increase in pit area	Increase in bauxite extraction rate	Impacts associated with communication and information: increased expectation among local people for a CBG strategy based on information, communication and consultation. Risk of frustration, misunderstandings and conflict.	Negative			x	x	x	High	Positive	High
PC1	Cultural heritage	Sacred sites / intangible heritage	Increase in pit area	Increase in bauxite extraction rate	Risk that sacred sites will be destroyed and ritual practices disrupted / risk of conflict	Negative	x			x	x	High	Negative	Medium
PC1	Cultural heritage	Sacred sites / intangible heritage	Construction of sidings	Construction of new houses	Risk that sacred sites will be destroyed and ritual practices disrupted / risk of conflict	Negative		x	x	x		Low	Negative	Low
PC2	Cultural heritage	Archeological sites	Increase in pit area	Construction associated with the new sorting yard in Parawi (bridge, yard, roads, tracks)	Risk that archeological sites will be destroyed/transformed.	Negative	x			x	x	High	Positive	High

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PC2	Cultural heritage	Sacred sites / intangible heritage	Construction of sidings	Construction of new houses	Risk that archeological sites will be destroyed/transformed.	Negative		x	x	x		Low	Negative	Low
CV1	Lifestyle and landscape	Noise	Increase in pit area	Increased train traffic	Increased noise levels / noise pollution	Negative	x			x	x	High	Negative	High
CV1	Lifestyle and landscape	Noise	Construction of sidings	Increased train traffic	Increased noise levels / noise pollution	Negative		x		x	x	Medium	Negative	Medium
CV1	Lifestyle and landscape	Noise	Construction of new facilities at Kamsar plant	Increase in bauxite processing rate at plant	Increased noise levels / noise pollution	Negative			x	x	x	Medium	Negative	Medium
CV2	Lifestyle and landscape	Dust	Construction associated with the new sorting yard in Parawi (bridge, yard, roads, tracks)	Increase in pit area	Increased dust levels	Negative	x			x	x	High	Negative	Medium
CV2	Lifestyle and landscape	Dust	Increase in pit area	Increase in bauxite processing rate at plant	Increased dust volume (rail and plant)	Negative		x		x	x	Medium	Negative	Low
CV2	Lifestyle and landscape	Dust	Increased length of trains	Increased train traffic	Increased dust volume (rail)	Negative			x	x	x	Medium	Negative	Low

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CV3	Lifestyle and landscape	Vibration	Construction of new access roads	Increase in pit area	Increased vibration (mine/blasting and machinery)	Negative	x			x	x	High	Negative	Medium
CV3	Lifestyle and landscape	Vibration	Construction of new facilities at Kamsar plant	Increased train traffic	Increased vibrations (rail - plant, port)	Negative		x	x	x	x	Low	Negative	Low
CV4	Lifestyle and landscape	Visual impacts	Increase in pit area	Use of surface miners	Degradation of landscape: destruction of forests and plantations / opening of pits and roads /destruction of landscape	Negative	x			x	x	High	Negative	Medium
CV4	Lifestyle and landscape	Visual impacts	Increased number of boats	Construction of new facilities at Kamsar plant	Degradation of landscape: Increase in the number of boats in estuary, construction of camp and work at the plant, increased train traffic, construction of workers' housing.	Negative		x		x	x	Medium	Negative	Medium