

表 5 - 6 代替案 4 / 5

Environmental Disadvantages of Each Alternative

Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Anhui Tongdu Copper Limited Company				
Continued fines.	Minor short-term impacts to air quality and noise levels during construction.	High costs and loss of economic base for the area.	High costs. No SO ₂ reduction. Minor short-term impacts to air quality and noise levels during construction.	Higher project cost. Lower air quality in workshop. Minor short-term impacts to air quality and noise levels during construction.
Continued elevated sodium dioxide emissions and large volume of wastewater discharge.	Increased noise levels during operation.			
Chizhou Non-Ferrous Metals Group Company				
Continued elevated SO ₂ emissions and large volume of wastewater discharge	Minor short-term impacts to air quality and noise levels during construction. More solid waste generated.	High costs and loss of economic base for the area.	High costs. No SO ₂ reduction. Minor short-term impacts to air quality and noise levels during construction.	Higher project cost. Lower air quality in workshop. Minor short-term impacts to air quality and noise levels during construction.
Wuhu Felying Wood Chemicals Limited Company				
Continued organic wastewater discharge, SO ₂ emissions, and fines.	Minor short-term impacts to air quality and noise levels during construction, higher project cost.	Minor short-term impacts to air quality and noise levels during construction, high project cost, not reach maximum wastewater discharge and SO ₂ emission reductions.	Minor short-term impacts to air quality and noise levels during construction, lower project cost, less economic benefit for the future plant operation, not reach maximum wastewater discharge and SO ₂ emission reductions.	
Wuhu Hengxin Copper Group Company				
Continued elevated SO ₂ emissions and large volume of wastewater discharge.	Minor short-term impacts to air quality and noise levels during construction.	High costs and loss of economic base for the area.	High costs. No SO ₂ reduction. Minor short-term impacts to air quality and noise levels during construction.	Higher project cost. Lower air quality in workshop. Minor short-term impacts to air quality and noise levels during construction.
Wuhu Shanjiang Chemicals Limited Company				
Continued elevated SO ₂ emission, and large volume of wastewater discharge.	Very minor short-term impacts to air quality and noise levels during construction since it is in industrial development zone.	Very minor short-term impacts to air quality and noise levels during construction. Need large supply of electric power and process steam.		
Wuhu Zhengxing Materials Limited Company				
Continued	Minor short-term impacts to air quality	Minor short-	Minor short-term	

出所：ADB (2001a) p. 12

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Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
elevated SO ₂ , NO _x and total suspended particulates emissions and large volume of wastewater discharge.	and noise levels during construction. Wastewater discharge upstream of the city water intake.	term impacts to air quality and noise levels during construction. Air pollution caused by combustible gas emission from iron furnace. Energy consumption is high. Wastewater discharge upstream of the city water intake.	impacts to air quality and noise levels during construction, air pollution caused by combustible gas emission from iron furnace. Energy consumption is high. Wastewater discharge upstream of the city water intake.	
Huangshan Tourist Group Limited Company				
Continued air pollution from burning gas. Continued discharge of untreated wastewater.	Disruption to tourism during construction of dams and wastewater plants. Minor short-term impacts to air quality and noise levels during construction. Must treat waste gas. Cost of burners high.	Greater visual impacts due to multiple reservoirs and lots of piping. Thermal stockpile requires moderate land area. Odor. May contaminate water bodies. Cost of stockpile moderate.	Groundwater supply is questionable. High drilling costs. Landfill requires large land area and volume of waste does not decrease very much. Odor and possible contamination of water bodies.	
Jihua Tourism Group Company				
Continued degradation of Jihua River. Continued degradation of water quality in Minguan Reservoir	Disruption to tourism during construction of water plant, reservoirs, and wastewater plants. Minor short-term impacts to air quality and noise levels during construction. Incinerator has high energy consumption. Lower cost.	Reservoir outside of the protected area would require additional pump stations and piping to serve purpose and a net larger area of land would be impacted. Wastewater treatment in Jihua requires more land area and water quality is not as high as Alt. 2. Landfill requires large land area and volume of waste does not decrease very much. Odor and possible contamination of water bodies.	Groundwater supply is periodically contaminated in Kecun area. Large land area required for oxidation ditch technology. Composting requires moderate land area. Odor. May contaminate water bodies. Cost of stockpile moderate	

NO_x= nitrogen oxides; SO₂=sulfur dioxide
Source: Consultants (Ecology and Environment, Inc., United States)

出所： ADB (2001a) p. 13

表 5 - 8 影響とミティゲーション 1 / 5

Adverse Impacts and Mitigation Measures

Impacts			Mitigation Measures
A. Anhui Tongdu Copper Limited Company			
1. During Construction			
Fugitive dust emission during construction.			Construction sites will be sprayed with water.
Solid waste from building demolition and waste soil.			Send to landfill.
Disruption of factory appearance and vegetation.			Plant native trees and other plants resistant to SO ₂ and dust.
Influence on transportation inside the smelter.			Add a new paved 4.5 m wide, 400 m long road.
2. During Operations			
Item	Source	Waste	
Waste Gas	Smelting Furnaces	Flue gas containing SO ₂ , dust	Electrostatic precipitators for dust removal, double conversion and double absorption process for SO ₂ , gas collection hoods, double conversion and double absorption process for SO ₂ .
	Feed port, slag Port, copper Drainage spout	Flue gas containing SO ₂ , dust	
	Acid making Equipment	SO ₂	Double conversion and double absorption process
	Feed port and belt Transfer station	Dust	Bag house
	Waste Water	Acid making Equipment	Waste acid
Solid Waste	Wastewater	Arsenic	Double neutralization to remove arsenic
	Settling furnace	Slag containing silicon dioxide and iron	Sold after hardened, or dried
	Wastewater and waste acid treatment	Sulfur residue and neutralization residue	Store in warehouse, solidify pollutants in slag, recover metals
Noise	Noisy equipment		Sound insulating and noise absorption material to be used in construction
B. Chizhou Non-Ferrous Metals Group Company			
1. During Construction			
Fugitive dust emission during construction.			Construction sites will be sprayed with water and surrounded with fences to prevent the spread of dust.
Noise disturbance during construction.			Building insulation can decrease the influence of noise to the outer environment.
Disruption of city appearance and vegetation.			During renovation, attention will be paid to the protection of existing planted area.
Disruption of factory traffic.			Pipeline laying should be undertaken in sections.
2. During Operations			
Item	Source	Waste	
Waste Gas	Smelting furnace and converter	Waste gas containing dust and SO ₂	Dust removal and produce sulfuric acid double conversion and double absorption unit
	Refining furnace	Dust	Dedusted in Venturi scrubber
Waste Water	Acid-Manufacturing System	Acid wastewater and waste acid containing sulfuric acid, arsenic, fluoride and SS.	Treated at new wastewater treatment plant
Solid Waste	Impoverished Electrical furnace	Water-granulated slag Gypsum	For sale For sale
	Wastewater and waste acid treating process.	Sulfured slag Neutralized slag	Recover Arsenic Piled

出所：ADB (2001a) p. 23

表 5 - 9 影響とミティゲーション 2 / 5

Impacts		Mitigation Measures
Noise	Noisy equipment	Muffler will be installed. Soundproof cover, blower house, and air compressor will be built.
C. Wuhu Felying Wood Chemicals Limited Company		
1. During Construction		
Fugitive dust emission during construction.		Construction sites will be sprayed with water.
Noise disturbance during construction.		Construction will be conducted during daylight hours.
Influence on traffic.		Transportation should avoid rush hour.
Construction waste.		Send to landfill.
Disruption of factory appearance and vegetation.		Trees will be planted along roads and grass in the empty land between production houses. Special vegetation will be planted in the front of the plant
Impacts During Operations		Mitigation Measures
Item	Source	Waste
Waste Gas	Formaldehyde Workshop	Tail gas containing methane, carbon monoxide, methanol, hydrogen, formaldehyde, oxygen, etc.
		Tail gas will be used as fuel in boiler.
Waste Water	ACR Sanitary waste ACR and Formaldehyde workshop	ACR dust COD, BOD Polymers
		Spray drying process and high efficiency bag deduster Treated at wastewater treatment plant Pretreated with flocculent and then treated at wastewater treatment plant
Solid Waste	Domestic Waste Sludge	Waste catalyst Phenols, aldehydes, esters
		Recovered and reused Landfilled Stored on-site temporarily in lined and covered area and landfill at hazardous waste landfill
Noise	Noisy equipment	Low noise equipment, vibration isolation pad, mufflers on air compressors, noise protection equipment, and vegetation around the facility
D. Wuhu Hengxin Copper Group Company		
1. During Construction		
Fugitive dust emission during construction.		Construction sites will be sprayed with water and surrounded with fences to prevent the spread of dust.
Noise during construction.		Construction will be undertaken during daylight hours.
Influence on transportation inside the factory.		New road with 6 m wide surface should be added.
2. During Operations		
Item	Source	Waste
Waste Gas	Offgas from Kaldofurnace	SO ₂ , arsenic, dust
	Offgas from anode furnace	SO ₂ , arsenic, dust
	Offgas from boiler	SO ₂ , dust
	Acid gas in the purification	Acid gas
		Electrostatic precipitator Bag filter Quick lime, water for absorption, water film scrubber Acid absorption tower
Waste Water	Domestic and Industrial wastewater	COD, BOD, waste oil, phenol, lubricant, and emulsion liquid
		Biochemical treatment and discharge to Yangtze River after treatment
Solid Waste	Slag and residues from sewage treatment	Slag for sale; metals recovered, or copper-rich residues will be reused in smelter
Noise	Oxygen making unit, air compressor, centrifugal ventilator, exhaust fan, etc.	Mufflers and use of sound insulating materials

出所：ADB (2001a) p. 24