



**FINAL Environmental and Social Impact Assessment Report for the Yara Dallol Potash Project**

Yara Dallol Potash Project, Danakil Depression, Ethiopia

March 2015

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Yara Dallol BV

**FINAL Environmental and Social Impact  
Assessment Report for the Yara Dallol  
Potash Project**

March 2015

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## LIST OF ACRONYMS

Abbreviation	Full Definition
°C	Degrees Celsius
<sup>18</sup> O	Oxygen Isotope
<sup>2</sup> H or D	Hydrogen Isotope Deuterium
AB	Anhydrite Bed
ABL	Assessment Background Level
AD	Anno Domini
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
Al	Aluminum
ALARP	As low as Reasonably Practicable
AMREF	African Medical Research and Education Foundation
ANRS	Afar National Regional State
AoI	Areas of Influence
ARCCH	Authority for Research and Conversation of Cultural Heritage
ARVs	Antiretrovirals
AQMP	Air Quality Management Plan
AQP	Air Quality Monitoring point
AQS	Air Quality Standard
As	Arsenic
B	Boron
BBOP	Business and Biodiversity Offsets Programme
BC	Before Christ
BDL	Below Laboratory Detection Limit
BID	Background Information Document
BOD	Biological Oxygen Demand
BOMP	Biodiversity Offset Management Plan
Ca	Calcium
CaCO <sub>3</sub>	Carbonate Alkalinity
CaCO <sub>3</sub>	Bicarbonate Alkalinity
CaCO <sub>3</sub>	Total Alkalinity
Ca-HCO <sub>3</sub>	Calcium Bicarbonate
Ca-SO <sub>4</sub>	Calcium Sulphate
CAPEX	Capital Expenditure
CBD	Convention on Biological Diversity
CBE	Charge Balance Error
Cd	Cadmium
CHMP	Cultural Heritage Management Plan
CHPs	Certified Health Professionals
CI	Conservation Important
CITES	Convention on International Trade in Endangered Species
CLO	Community Liaison Officer
CN	Cyanide
Co	Cobalt
COD	Chemical Oxygen Demand
CO <sub>2</sub>	Carbon Dioxide
Cr(VI)	Chrome 6
CSA	Central Statistics Agency of Ethiopia
Cu	Copper
dB	Decibels
DOH	Depth of Borehole/Well
DTW	Dallol Test Well
DUP	Duplicate sample
DMRB	Design Manual for Roads and Bridges
EA	Environmental Assessment
EC	Electrical Conductivity



Abbreviation	Full Definition
EEP	Ethiopian Electric Power
EGSECE	Ethiopian General Secondary Education Certificate Examination
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EITI	Extractive Industries Transparency Initiative
EMP	Environmental Management Plan
EN	Endangered with Extinction
ERP	Emergency Response Plan
EPA	Environmental Protection Authority
EPFIs	Equator Principle Financial Institutions
EPRDF	Ethiopian People's Revolutionary Democratic Front
EPs	Equator Principles
ERA	Ethiopian Road Authority
ERM	Environmental Resources Management Southern Africa (Pty) Ltd.
ESDPRP	Ethiopian Sustainable Development & Poverty Reduction Programme
ESIA	Environmental and Social Impact Assessment
ES-MS	Environmental and Social Management System
ESSD	Environmental and Social Studies Consultant
EWCA	Ethiopian Wildlife Conservation Authority
F	Fluoride
FDRE	Federal Democratic Republic of Ethiopia
Fe	Iron
FGC	Female Genital Cutting
FGD	Focus Group Discussions
FHH	Female Headed Households
FPIC	Free, Prior, and Informed Consent
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GIS	Geographic Information System
GMWL	Global Meteoric Water Line
GNI	Gross National Income
GNIP	Global Network of Isotopes in Precipitation
GoE	Government of Ethiopia
GPS	Global Positioning System
GRI	Global Reporting Initiative
GTP	Growth and Transformation Plan (2010/11 to 2014/15)
HCO <sub>3</sub>	Hydrogen Carbonate
HEW	Health Extension Worker
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immune Deficiency Syndrome
Hf	Halite Formation
Hg	Mercury
HR	Human Resources
HSE	Health & Safety and Environment
IA	Impact Assessment
IAEA	International Atomic Energy Agency
ICP	Informed Consultation and Participation
IFC	International Financing Corporation
ILO	Internal Labour Organisations
IPCC	Intergovernmental Panel on Climate Change
ISL	<i>In-situ</i> Leaching
ISR	<i>In-situ</i> Recovery
IT	Information Technology
ITCZ	Intertropical Convergence Zone
K	Potassium
K <sub>2</sub> SO <sub>4</sub>	Sulphate of Potash
KA	Kebele Administration
KCl	Potassium Chloride
KII	Key Informant Interviews



Abbreviation	Full Definition
KOPs	Key Observation Points
KPIs	Key Performance Indicators
Ktpa	Kilo-tons per annum
LAeq	Equivalent Continuous Level
LC	Least Concern
LMWL	Local Meteoric Water Line
LRF	Livelihood Restoration Framework
LRP	Livelihood Restoration Plan
mamsl	Meters above mean sea level
MAP	Mean Annual Precipitation
m bgl	Meters Below Ground Level
mbrp	Meters Below Reference Point (top of casing)
MDG	Millennium Development Goal
Mg	Magnesium
M <sub>g</sub> SO <sub>4</sub>	Sulphate of Potash
M <sub>g</sub> Cl <sub>2</sub>	Magnesium Chloride
Mn	Manganese
Mo	Molybdenum
MoEF	Ministry of Environment and Forestry
MoM	The Ethiopian Ministry of Mines
MOP	Muriate of Potash
mtph	Metric Tons Per Hour
mV	Milli-Volts
mS/m	Milli-Siemens per Meter
MWL	Meteoric Water Line
Na	Sodium
NA	Not Analysed
NA	Not Applicable
NaCl	Sodium Chloride
NASA	National Aeronautics and Space Agency
Na-SO <sub>4</sub>	Sodium Sulphate
NGOs	Non-Governmental Organizations
NM	Not Measured
NMP	Noise Management Plan
N2	Ethiopian National Highway 2
Ni	Nickel
NO <sub>2</sub>	Nitrous Dioxide
NO <sub>3</sub>	Nitrate
NO <sub>x</sub>	Oxides of Nitrogen
NPi	National Pollutant Inventory
NPK	Nitrogen Phosphate and Potassium
NS	No Health-based guideline value is proposed
NSR's	Noise Sensitive Receptors
NT	Near Threatened
NTFPs	Non-timber Forest Products
NTO	National Tourism Operator and Travel Agency
NTS	Non-technical Summary
OHS	Occupational Health & Safety
OHTL	Electrical Overhead Transmission Line
OPEX	Operational Expenditure
ORP	Oxidation - Reduction Potential
PASDEP	Plan for Accelerated and Sustained Development to End Poverty (from 2005/06 to 2009/10)
Pb	Lead
PC	Process Contribution
PEC	Predicted Environmental Concentration
pH	Power of Hydrogen
PIIM	Project Induced In-Migration
PLA	Participatory Learning and Action
pMC	Radiocarbon Age (fraction modern)

Abbreviation	Full Definition
PM	Particulate Matter
PM <sub>2.5</sub>	Particulate matter which passes through a size-selective inlet with a 50% efficiency cut-off at 2.5 µm aerodynamic diameter
PM <sub>10</sub>	Particulate matter which passes through a size-selective inlet with a 50% efficiency cut-off at 10 µm aerodynamic diameter
PNL	Predicted Project Noise Levels
PO4	Ortho phosphate
PPE	Personal Protective Equipment
PPV	Peak Particle Velocity
PRA	Participatory Rural Appraisal
PSLCE	Primary School Leaving Certification Examination
PSNC	Project Specific Noise Criteria
PSNP	Productive Safety Net Program
PSs	Performance Standards
Qaf1	Quaternary Alluvial Fan 1
Qaf2	Quaternary Alluvial Fan 2
Qb	Quaternary Basalt
QC	Quality control
Qs	Mudflat Sediment
RCYBP	Radiocarbon Years Before Present
RPDs	Relative percentage differences
RTAs	Road Traffic Accidents
SDPASE	Sustainable Development of the Protected Areas System of Ethiopia
Se	Selenium
SEP	Stakeholder Engagement Plan
SIA	Social Impact Assessment
SLM	Sound Level Meter
SME	Small Medium Enterprise
SMOW	Standard Mean Ocean Water
SO <sub>2</sub>	Sulphur Dioxide
SOP	Sulphate of Potash
Sp	Solfatra
SPCCP	Spill Prevention, Control and Containment Plan
SSA	Socio-Economic Study Area
STIs	Sexually Transmitted Infections
SWL	Static Water Level
T	Temperature
TB	Tuberculosis
TDR	Time Domain Reflectometry
TDS	Total Dissolved Solids
TMA	Tailings Management Area
ToR	Terms of Reference
TSP	Total Suspended Particulates
TSS	Total Suspended Solids
TU	Tritium Units
TVET	Technical and Vocational Education and Training
U	Uranium
UNDP	United Nations Development Programme
UNHCR	United Nations High Commissioner for Refugees
URI	Upper Respiratory Infection
USEPA	United States Environmental Protection agency
USGS	United States Geological Survey
V	Vanadium
VP	Viewpoints
VSP	Vertical Seismic Profiling
VU	Vulnerable to Extinction
WAD	Weak Acid Dissociable
WHO	World Health Organization
WMO	World Meteorological Organization
WMP	Waste Management Plan

Abbreviation	Full Definition
WWDSE	Water Works Design and Supervision Enterprise
Zn	Zinc
ZTV	Zone of Theoretical Visibility