MYANMAR GREEN START ENERGY COMPANY LIMITED

INITIAL ENVIRONMENTAL EXAMINATION

MANUFACTURING OF SOLAR PRODUCTS ON CMP BASIS

Prepared by:

MYANWEI ENVIRONMENTAL SOLUTIONS COMPANY LIMITED

15-Feb-24

MYANWEI
ENVIRONMENTAL SOLUTIONS

No. (28), Myay Nu Street, Sanchaung Township, Yangon Region, The Republic of the Union of Myanmar.

Office: (+95) 9777922169, (+95) 9777929885 Mobile: (+95) 9421137569; Website: www.myanweiconsulting .com

Date: 15.2.2024

Initial Environmental Examination (IEE) Report in respect of the Manufacturing of Solar Products on CMP Basis by Myanmar Green Start Energy Company Limited.

IEE report describes the environmental condition of a project, including significant impact, formulation of mitigation measures and preparation of institutional requirements and environmental monitoring.

Myanwei Environmental Solutions Company Limited has prepared this report with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking into account of the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above. This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

We strongly commit that this report was prepared in compliance with Myanmar Environmental Laws and Regulations.

Myanmar Green Start Energy Co.,Ltd.
No.63, Yaw Ah Twin Win U PhoeHlaing Street, Dagon Seikkan Industrial Zone (1),Dagon Seikkan,Yangon.
GS-HR@nbrilin.com, Phone :09786577514

Date: 15. 2. 2024

Commitment of Myanmar Green Start Energy Company Limited

We refer to the captioned EMP report, which has been prepared by Myanwei Environmental Solutions Co., Ltd. (Third-Party Consultant) in compliance with EIA procedure (2015) and other related laws/rules.

We believe, to the best of our knowledge at the time of writing, that;

- The EMP report is accurate and complete
- The EMP report has been prepared in strict compliance with all applicable laws, rules, regulations and procedures in force.
- The existing law of the Union Republic; regulations, Procedures, Environmental protection law, Rules, Producers, Environmental Impact Assessment Producers and National Environmental Quality (Emissions) Guideline will be followed.
- Myanmar Green Start Energy Company Limited will at all times comply fully with all commitment and obligations in the EMP report, and also environmental conservation law, environmental conservation rules, environmental impact assessment procedure, instructions to be issued from time to time, including business-related law, rules and procedure. If Myanmar Green Start Energy Company Limited fails to comply with the law and regulations, we promise to accept actions in accordance with the existing law and rules.

We acknowledge and understand that

Jiang Lu

Ms. Jiang Lu
Managing Director
Myanmar Green Start Energy Co., Ltd.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

Lists of Abbreviation

1. CEMP = Construction Environmental Management Plan
2. CSR = Corporate Social Responsibility
3. EMP = Environmental Management Plan
4. EIA = Environmental Impact Assessment
5. ECD = Environmental Conservation Department
6. ECC = Environmental Compliance Certificate
7. EMOP = Environmental Monitoring Plan
8. GIIP = Good International Industry Practices
9. HSE = Health, Safety and Environment
10. IEE = Initial Environmental Examination
11. IFC = International Finance Corporation
12. NEQG = National Environmental Quality (Emission) Guidelines
13. MIC = Myanmar Investment Commission
14. MOECAF = Ministry of Environmental Conservation and Forestry
15. MONREC = Ministry of Natural Resources and Environmental Conservation
16. OEMP = Operation Environmental Management Plan
17. OSHA = Occupational Safety and Health Administration
18. PPE = Personal Protective Equipment
19. WHO = World Health Organization
20. YCDC = Yangon City Development Committee
21. YESB = Yangon City Electricity Supply Board
22. YCDC = Yangon City Development Committee
23. ENV Team = Environmental Team
24. IND Team = Industrial Solution Team
25. Sq meter = Square meter
26. % = Percentage
27. ˚C = Degree Celsius
28. BOD = Biochemical Oxygen Demand
29. COD = Chemical Oxygen Demand
30. CO = Carbon Monoxide
31. CO_2 = Carbon Dioxide
32. NO_2 = Nitrogen Dioxide
33. VOC = Volatile Organic Compound
34. O_3 = Ozone
35. dB (A) = Decibel Unit
36. MT = Metric Ton
37. Kt = Kilo Ton
38. kWh = Kilo Watt Hour
39. km = Kilo Meter
40. PM = Particulate Matter
41. ppm = Part Per Million

အစီရင်ခံစာအကျဉ်းချုပ်

နိဒါန်း

ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းဆိုင်ရာအစီရင်ခံစာသည် Myanmar Green Start Energy Company Limitedမှ ဆိုလာပစ္စည်းအမျိုးမျိုးထုတ်လုပ်ခြင်းလုပ်ငန်းလည်ပတ်ခြင်းကြောင့် ဖြစ်ပေါ်လာနိုင်သော ပတ်ဝန်းကျင်အပေါ်အဓိကထိခိုက်မှုများကို လေ့လာဆန်းစစ်ပြီး လျော့ချရေးအစီအစဉ်များ၊ ကာကွယ်ထိန်းသိမ်းရေး အစီအစဉ်များကို သတ်မှတ်ထားခြင်း ဖြစ်သည်။

စီမံကိန်းနောက်ခံအကြောင်းအရာ

Myanmar Green Start Energy Company Limited သည် မြေကွက်အမှတ် (၆၃)၊ ယောအတွင်းဝန်ဦးဖိုးလှိုင်လမ်း၊ ဒဂုံဆိပ်ကမ်းစက်မှုဇုန်(၁)၊ ဒဂုံမြို့သစ်(ဆိပ်ကမ်း)မြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီးတွင် CMP စနစ်ဖြင့် ဆိုလာပစ္စည်းအမျိုးမျိုး ထုတ်လုပ်ခြင်းလုပ်ငန်းအား ရန်ကုန်တိုင်းဒေသကြီးရင်း နှီးမြှုပ်နှံမှု ကော်မတီ မှ ၂၀၁၈ ခုနှစ်၊ နိုဝင်ဘာလ၊ ၃၀ ရက်နေ့တွင် (အတည်ပြုမိန့်အမှတ် ရကတ - ၀၉၇/၂၀၁၈)ဖြင့် ရရှိပြီးဖြစ်ပါသည်။ လုပ်ငန်းလည်ပတ်ရန်အတွက် မြန်မာနိုင်ငံသယံဇာတနှင့် သဘာဝပတ်ဝန်း ကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန (MONREC) ၏ အတည်ပြုချက် ရယူရန်လိုအပ်ကြောင်း ကော်မရှင်မှ မှာကြားခဲ့ပါသည်။ ထို့ကြောင့် မြန်မာနိုင်ငံပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဥပဒေ (၂၀၁၂)အရ၊ ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း Initial Environmental Examination (IEE) ပြုလုပ်ရန် လိုအပ်ကြောင်း ၂၀၁၉ ခုနှစ်၊ ဖေဖော်ဝါရီလ၊ ၂၅ ရက်နေ့ရက်စွဲပါ စာအမှတ်၊ ရက-၁/၃/၄ (အီးအိုင်အေ) (၃၂၉/၂၀၁၉) ဖြင့် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန ရန်ကုန်တိုင်းဒေသကြီးမှ သဘောထားမှတ်ချက် ရရှိပြီးဖြစ်ပါသည်။ ထို့ကြောင့် သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်း ရေးဝန်ကြီးဌာန (MONREC) ပတ်ဝန်းကျင် ထိန်းသိမ်းရေးဦးစီးဌာန (ECD)၏ ထုတ်ပြန်ထားသော ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း လုပ်ထုံးလုပ်နည်း (EIA Procedure) ၂၀၁၅ အတိုင်း Myanmar Green Start Energy Company Limited စက်ရုံအတွက် IEE အစီအရင်ခံစာရေးဆွဲခဲ့ပါသည်။ IEE အစီအရင်ခံစာရေးဆွဲရန် တတိယအဖွဲ့အစည်း ဖြစ်သော Myanwei Consulting Company Limited (Myanwei)မှ တာဝန်ယူရေးဆွဲခဲ့ပါသည်။ စက်ရုံတွင် ကျန်းမာရေး၊ ဘေးအန္တရာယ်ကင်းရှင်းရေးနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာ အဖွဲ့အစည်းတစ်ခုထားရှိပြီး လျော့ချရေး၊ စီမံခန့်ခွဲရေးနှင့် စောင့်ကြပ်ကြည့်ရှုရေး အစီအစဉ်များကို အကောင်အထည်ဖော်သွားမည်ဖြစ်သည်။

စီမံကိန်းအဆိုပြုသူ၏အချက်အလက်

ရင်းနှီးမြှုပ်နှံသူ၏အမည်	Ms. Jiang Lu
နိုင်ငံသား	Chinese
Company ID No./ Passport No	ED3452112

မှတ်ပုံတင်သွင်းသည့်လိပ်စာ	Dudu Motain No.1, No.1604, Office Building Guandu District, Kunming City, Yunnan Province, China.

အဆိုပြုထားသောစီမံကိန်း၏ အဓိကလက္ခဏာများ

လုပ်ငန်းအမျိုးအစား	ဆိုလာပစ္စည်းအမျိုးမျိုးထုတ်လုပ်ခြင်းလုပ်ငန်း
ရင်းနှီးမြှုပ်နှံမှုအမျိုးအစား	၁၀၀ ရာခိုင်နှုန်း နိုင်ငံခြားသားရင်းနှီးမြှုပ်နှံမှု
အစုရှယ်ယာအမျိုးအစား	ရိုးရိုး
မြေအမျိုးအစား	စက်မှုဇုန်မြေ
အကျယ်အဝန်း	၂ ဧက
အဆောက်အဦဧရိယာ	စက်ရုံအဆောက်အဦ (၆၉၆၀ စတုရန်းမီတာ)
မြေငှာရမ်းမှု	၂၅ နှစ်
တည်ဆောက်ရေးကာလ	တစ်နှစ် နဲ့ ခြောက်လ
လိပ်စာ	မြေကွက်အမှတ်-၆၃၊ ယောအတွင်းဝန်ဦးဖိုးလိုင်လမ်း၊ ဒဂုံဆိပ်ကမ်းစက်မှုဇုန်(၁)၊ ဒဂုံမြို့သစ်ဆိပ်ကမ်းမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး။
ဆက်သွယ်ရန်	၀၉-၇၈၆၅၇၇၅၁၄

ဥပဒေနှင့် မူဝါဒဆိုင်ရာ အချက်အလက်များ

စက်ရုံနှင့် ဆက်စပ်သက်ဆိုင်နေပြီး လိုက်နာရမည့် ဥပဒေနှင့် နည်းဥပဒေများ၊ MONREC မှ ထုတ်ပြန်ထားသည့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းများ၊ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ၊ စက်ရုံနှင့်သက်ဆိုင်သည့် ဒေသတွင်း သို့မဟုတ် အပြည်ပြည်ဆိုင်ရာ သဘာဝပတ်ဝန်းကျင်နှင့် လူမှုပတ်ဝန်းကျင်ဆိုင်ရာ မူဝါဒများ၊ ဆက်စပ်နေသည့် နိုင်ငံတကာသဘောတူချက်များကို အကျဉ်းချုပ်ရေးသားဖော်ပြထားပါသည်။

- The Constitution Law, 2008
- The Environmental Conservation Law, 2012
- The Environmental Conservation Rule, 2014
- Environmental Impact Assessment Procedure, 2015
- National Environmental Quality (Emission) Guideline, 2015
- National Myanmar Environmental Policy, 2019
- Foreign Investment Law, 2012
- Foreign Investment Rule, 2013
- Myanmar Investment Rule, 2017

- Myanmar Insurance Law, 1993
- Payment of Wages Law, 2016
- The Payment of Wages Act, 1936
- Yangon City Development Committee Law, 2018
- The Amended Law for Factories Act, 1951 (2016)
- The Private Industrial Enterprise Law
- The Export and Import Law, 2012
- The Prevention of Hazard from Chemical and Related Substances Law, 2013
- The Underground Water Act
- Myanmar Fire Brigade Law, 2015
- Fire Safety Procedure
- The Electricity Law, 2014
- Labor Dispute Settlement Law, 2012
- The Law Amending the Settlement of Labor Dispute Law, 2019
- The Social Security Law, 2012
- The Employment and Skill Development, 2013
- The Worker's Compensation Act, 1923
- The Leave and Holidays Act (1951, partially reused in 2014)
- The Minimum Wage Law, 2013
- Public Health Law, 1972
- Prevention and Control of Communicable Disease Law (1995 Amendment in 2011)
- Occupational Safety and Health Law, 2019
- The Law on Standardization
- လုပ်ငန်းခွင်သုံးပေါက်ကွဲစေတက်သော ဝတ္ထုပစ္စည်းများဆိုင်ရာ ဥပဒေ၊ (2018)
- The Motor Vehicles Law, 2015
- The Conservation of Water Resources and River Law, 2006
- The Commercial Tax Law (1990 Amended 2014)

စီမံကိန်းအကြောင်းအရာဖော်ပြချက်

Myanmar Green Start Energy Company Limited စက်ရုံသည် ခန့်မှန်းခြေ အမေရိကန် ဒေါ်လာ ၀.၅၉၅ သန်းခန့် ခွင့်ပြုမတည်ရင်းငွေဖြင့် ဆိုလာပစ္စည်းအမျိုးမျိုးထုတ်လုပ်သည့် လုပ်ငန်းဖြစ်ပါသည်။ စက်ရုံသည် ၁၀၀% နိုင်ငံခြားသား ရင်းနှီးမြှုပ်နှံမှုဖြင့် အကောင်အထည်ဖော် ဆောင်ရွက်လျက် ရှိပါသည်။

စက်ရုံသည် မြေကွက်အမှတ်-၆၃၊ ယောအတွင်းဝန်ဦးဖိုးလိုင်လမ်း၊ ဒဂုံဆိပ်ကမ်းစက်ဇုန်(၁)၊ ဒဂုံမြို့သစ်ဆိပ်ကမ်းမြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီးတွင်တည်ရှိပါသည်။ စက်ရုံအကျယ်အဝန်းမှာ မြေဧရိယာ ၂ ဧက (၈,၀၉၃.၇၁၃ စတုရန်းမီတာ) ပေါ်တွင် (ပေ၁၀၀ × ပေ၂၀၀) စတုရန်းပေ (၆,၀၉၆စတုရန်းမီတာ) ပတ်လည်ရှိသော စက်ရုံအဆောက်အဦး(၁) လုံးအားဆောက်လုပ်၍လုပ်ငန်းဆောင်ရွက်မည်ဖြစ်သည်။ တည်ဆောက်ပြုပြင်မွန်းမံချိန်(Construction phase)ကို နိုဝင်ဘာလ၊ ၂၀၁၈ ခုနှစ် တွင် စတင်ခဲ့ပြီး စီးပွါးဖြစ်စတင်ချိန် (Commercial Running Stage) မှာ ၂၀၂၀ ခုနှစ်၊ မေလ တွင် စတင်မည်ဖြစ်သည်။ ရင်းနှီးမြုပ်နှံမှုကာလမှာ (၂၅) နှစ် သက်တမ်းဖြစ်ပြီး ကနဦးရင်းနှီးမြုပ်နှံမှုကာလမှာ(၅)နှစ် နှင့် သက်တမ်းတိုး(၁၀)နှစ် နှစ်ကြိမ်သက်တမ်း တိုးခွင့် သတ်မှတ်ထားပါသည်။ ကနဦးပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာအတွက် စက်ရုံကွင်းဆင်း လေ့လာချိန်တွင် ကုန်ထုတ်လုပ်မှု စတင်ချိန် (Operation phase) စတင်နေပြီ ဖြစ်ပါသည်။ စက်ရုံလည်ပတ်ရန်အတွက် မြေနေရာအား ဦးကျော်ဆန်းလွင်၏ထံမှငှားရမ်းပြီး ကနဦးနှစ် ၅နှစ် စာချုပ်ဖြင့် ၁၀ နှစ် နှစ်ကြိမ်သက်တမ်းတိုးငှားရမ်းအသုံးပြုနိုင်မည်ဖြစ်သည်။ အဓိကထုတ်ကုန်မှာ ဆိုလာပစ္စည်းအမျိုးမျိုး ထုတ်လုပ်ခြင်း ဖြစ်ပါသည်။ ထုတ်လုပ်မှု လုပ်ငန်းအတွက် automatic စက်ပစ္စည်းများကို အသုံးပြုပြီး လူစွမ်းအားကို စက်လည်ပတ်ခြင်းကို ထိန်းညှိပေးခြင်း၊ အရည်အသွေးစစ်ဆေးခြင်းများတွင် အသုံးပြုပြီးလုပ်သော လုပ်ငန်းမျိုးဖြစ်ပါသည်။ အဓိက စက်ရုံအတွက်အသုံးပြုမှုများမှာ လျှပ်စစ်စွမ်းအင်၊ အရေးပေါ်ဓာတ်အား ပျက်တောက်မှု အတွက် ဒီဇယ်ဆီသုံး ဂျင်နရေတာနှင့် ဝန်ထမ်းများအတွက် သောက်သုံးရေ အသုံးပြုမှု တို့ဖြစ်သည်။ လျှပ်စစ်စွမ်းအင်အားသုံးစွဲမှုသည် စက်ကိရိယာများ လည်ပတ်နိုင်ရန်၊ အလင်းရောင်ရရှိရန်ဖြစ်သည်။

<u>တည်ဆောက်ပြုပြင်ဆဲကာလ (Construction Phase)</u>

တည်ဆောက်ပြုပြင်ဆဲကာလဆိုသည်မှာ ကုန်ထုတ်လုပ်မှုအတွက် လိုအပ်သော စက်နှင့်စက်ပစ္စည်း အမျိုးမျိုးအားတပ်ဆင်ခြင်းကာလကိုဆိုလိုသည်။ စက်ရုံလည်ပတ်ရန်အတွက် မြေငှားရမ်းခြင်းတွင် ဂိုဒေါင်အဆောက်အဦးတခု ပါရှိပါသည်။ စက်နှင့် စက်ပစ္စည်း တပ်ဆင်ခြင်းအား ၂၀၁၈ ခုနှစ် နိုဝင်ဘာလတွင် စတင်ခဲ့သည်။ ၂၀၂၀ ခုနှစ် မေလ ပထမပတ်တွင် တည်ဆောက်ပြုပြင်ဆဲကာလ ပြီးဆုံးစေခဲ့သည်။

<u>ကုန်ထုတ်လုပ်မှုစတင်ချိန် (Operation Phase)</u>

Myanmar Green Start Energy Company Limited သည် ဆိုလာပစ္စည်းအမျိုးမျိုးထုတ်လုပ်ခြင်း လုပ်ငန်းအတွက် လုပ်သားဦးရေ စုစုပေါင်း (၁၁၂) ဦးဖြင့် လည်ပတ်သွားမည်ဖြစ်ပါသည်။ အဓိကကုန်ထုတ်လုပ်မှုအတွက် စက်ရုံအဆောက်အဦး ဧရိယာအကျယ်အဝန်း (၆,၀၉၆ စတုရန်းမီတာ) ရှိပါသည်။ လုပ်သားများအတွက် ကန်တင်းအား သီးသန့်အဆောင်တစ်လုံးထားရှိပြီး သက်ဆိုင်ရာ မီးစက်ခန်း အစရှိသည်တို့အားသီးသန့်တည်ဆောက်ပေးထားပါသည်။ တစ်နှစ်ထုတ်လုပ်မှုမှာ (၁၁၂,၅၀၀)အစုံ

ထုတ်လုပ်လျက်ရှိပါသည်။ လျှပ်စစ်အသုံးပြုမှုမှာ စက်ရုံလည်ပတ်ရန်နှင့် အလင်းရောင်ရရှိ ရေးအတွက်ဖြစ်ပြီး အထွေထွေအသုံးပြုမှုအတွက် ရေသုံးစွဲမှုရှိပါသည်။

ပိတ်သိမ်းခြင်းကာလ

မြန်မာနိုင်ငံရင်နှီးမြှုပ်နှံမှုအဆိုပြုချက်အရ ၂၅နှစ် ရင်းနှီးမြှုပ်နှံမှုကာလအပြီးတွင် လုပ်ငန်းပိတ်သိမ်းခြင်း ကာလ ကိုဆိုလိုသည်။

အဆိုပြုလုပ်ငန်း၏ ပတ်ဝန်းကျင်ဆိုင်ရာအချက်အလက်အများ

ကနဦးစစ်တမ်းကောက်ယူခြင်းနှင့် ဒေသဆိုင်ရာမှ အချက်အလက်များရယူခြင်းသည် အလွန်အရေးကြီးပါသည်။ ပတ်ဝန်းကျင်အရည်အသွေး တိုင်းတာခြင်းကဲ့သို့သော ကနဦး စစ်တမ်း ကောက်ယူခြင်းသည် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီရင်ခံစာတွင် အရေးပါသောအခန်းအဖြစ် တည်ရှိနေသည်။ ကွင်းဆင်းလေ့လာထားသည် အချက်အလက်များကို သက်ဆိုင်ရာခေါင်းစဉ်အလိုက် အမျိုးသား ပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များနှင့် နှိုင်းယှဉ်၍ ဖော်ပြထားပါသည်။ ထိုနည်းတူ လျော့ချရမည့်နည်းလမ်းများကိုလဲ ထည့်သွင်းဖော်ပြထားပါသည်။ စီမံကိန်းတည်ရှိရာဒေသရှိ ရာသီဥတု၊ မိုးရေချိန်၊ လူမှုစီးပွားရေးဆိုင်ရာအချက်အလက်များကိုလဲ ထည့်သွင်းဖော်ပြထားပါသည်။

အခြေခံစစ်တမ်းများကောက်ယူခြင်းကို ၁၂ ရက်၊ စက်တင်ဘာလ၊ ၂၀၁၉ ခုနှစ် တွင်ဆောင်ရွက်ခဲ့၍ လေအရေအသွေး၊ အပူချိန်၊ စိုထိုင်းဆ၊ ဆူညံသံ နှင့် ညစ်ညမ်းမှုကို တိုင်းတာ ၍ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး ထုတ်လွှတ်မှု လမ်းညွှန်ချက်များ နှင့် နှိုင်းယှဉ်ဖော်ပြထားပါသည်။ စီမံကိန်းကြောင့် သက်ရောက်မှုများကို လျော့ချရန် နှင့် ထိန်းသိမ်းရေးများပြုလုပ်ရန် ဖော်ပြထားပါသည်။ လေအရည်အသွေး၊ အလင်းရောင် နှင့် ဆူညံသံများ၏ အခြေအနေ အကျဉ်းချုပ်ကိုလည်း ဖော်ပြထားပါသည်။

အမျိုးအမည်	တိုင်းတာမှုများ
လေထု	(1) PM2.5, (2) PM10
ဆူညံသံ	ဆူညံမှု အတိုင်းအတာ
အလင်းရောင်	အလင်းရောင်ရရှိမှုတိုင်းတာခြင်း

တိုင်းတာတွေ့ရှိချက်အရ PM2.5, PM10 တို့သည် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာထုတ်လွှတ်မှု အရည်အသွေး လမ်းညွှန်မှု လမ်းညွှန်မှုအောက်တွင်ရှိကြောင်းတွေ့ရသည်။ ဆူညံသံသည်လည်း အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ ထုတ်လွှတ်မှု အရည်အသွေး လမ်းညွှန်မှု နှင့် ကိုက်ညီမှုရှိနေကြောင်း တွေ့ရသည်။ အလင်းရောင်တိုင်းတာမှုသည် လည်း ကောင်းမွန်ကြောင်းတွေ့ရသည်။

လူမှုစီးပွားအခြေအနေ၊ ရုပ်ပတ်ဝန်းကျင်နှင့် ဇီဝပတ်ဝန်းကျင်ဆိုင်ရာ အချက်အလက်များ၊ ရာသီဥတုအခြေအနေစသည့် ဒဏ်မြို့သစ်ဆိပ်ကမ်းမြို့နယ်ဆိုင်ရာ အစိုးရဌာနမှ တင်ပြထားသည့်

အချက်အလက်များမှ ရယူ၍ ထည့်သွင်းထားပါသည်။ အဆိုပြုစီမံကိန်းမြေသည် စက်မှုဇုန်ဇရိယာအတွင်းတွင်တည်ရှိပါသည်။ ၂၀၁၇ခုနှစ် စစ်တမ်း အရ ဒဂုံမြို့သစ်ဆိပ်ကမ်းမြို့နယ်၏ လူဦးရေမှာ ၁၇၉၁၂၁ ဖြစ်ပါသည်။

ပတ်ဝန်းကျင်ထိခိုက်မှုနှင့်လျော့ချရေး အစီအစဉ်

စက်ရုံအကောင်အထည်ဖော်မှုကြောင့် ပတ်ဝန်းကျင်နှင့်လူမှုဘဝအပေါ် ပြောင်းလဲစေနိုင်သော ကောင်းကျိုးနှင့်ဆိုးကျိုးများကို သိရှိစေရန် စက်ရုံအတွင်းကွင်းဆင်းလေ့လာခြင်း၊ သက်ဆိုင်ရာစက်ရုံ တာဝန်ခံများနှင့် ဆွေးနွေးတိုင်ပင်ခြင်းများအပြင် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း အတွက်လေ့လာရေးအဖွဲ့မှ ပတ်ဝန်းကျင်အခြေအနေများကို စစ်တမ်းကောက်ယူခြင်းများ ပြုလုပ်ပြီး ပတ်ဝန်းကျင်အခြေအနေများအပေါ် ဆိုးကျိုးထိခိုက်မှုများကို လျော့ချနိုင်ရန် လေ့လာခဲ့ပါသည်။

ပတ်ဝန်းကျင်လက္ခဏာ	လုပ်ငန်းလုပ်ဆောင်မှု	ထိခိုက်မှုအဆင့်	လျော့ချရေးနှင့် ထိန်းချုပ်မှု
တည်ဆောက်ရေးကာလ။ ။ပတ်ဝန်းကျင်ထိခိုက်မှုလေ့လာချိန်တွင် စက်ရုံတည်ဆောက်ပြီး လုပ်ငန်းလည်ပတ်နေချိန်ဖြစ်သော်ကြောင့် ဤကာလကိုထည့်သွင်း မစဉ်းစားတော့ပါ။			
လုပ်ငန်းလည်ပတ်ခြင်းကာလ			
လေထုညစ်ညမ်းမှု	• သယ်ယူပို့ဆောင်ရေးသုံး မော်တော်ယာဉ်တို့ကြောင့် ဖုန်မှုန့်ဖန်လုံအိမ်ဓါတ်ငွေ့ထွက်ခြင်း • လုပ်ငန်းခွင်အတွင်းဖုန်မှုထွက်ခြင်း • မီးဖိုမှ မီးခိုးထွက်ခြင်း • အရေးပေါ်သုံးမီးစက်မှာ စွန့်ထုတ်အခိုးအငွေ့ထွက်ခြင်း • ခဲတို့ရာမှ ညှော်နုံ့နှင့် မီးခိုးထွက်ခြင်း	အသင့်တင့်	• မီးစက် တို့တွင် မီးခိုးခေါင်းတိုင် တပ်ဆင်ခြင်းဖြင့် အခိုးအငွေ့ကြောင့် ပတ်ဝန်းကျင်ထိခိုက်မှုကို လျော့ချခြင်း၊ • စက်ရုံအတွင်းနှင့် အနီး အနားတွင် သစ်ပင်ပန်းမံ စိုက်ပျိုးခြင်းဖြင့် carbon ထွက်ရှိမှုကို လျော့ချပေးခြင်း၊ • NOxထွက်ရှိမှုနည်းသော နည်းပညာမြင့် စက်ပစ္စည်းများအသုံးပြုခြင်း။ • စက်ပစ္စည်းများကို ပုံမှန်ပြုပြင်ထိန်းသိမ်းပေးခြင်း။ • ညှော်နုံ့ပျောက်ရန် အဆင့်မြင့်နည်းပညာအသုံးပြုခြင်း။
ရေ	• မိလ္လာစွန့်ထုတ်ရေ • စက်ပစ္စည်း၊ မော်တော်ယာဉ်များမှ ဆီယိုဖိတ်ခြင်း	အနည်းငယ်	• လက်ရှိရေဆိုးစွန့်ပစ်မှုပုံစံဖြစ်သော မိလ္လာစနစ်ကို ပုံမှန်စစ်ဆေးပေးခြင်း၊ • မိလ္လာကန်နှင့် မိလ္လာ စနစ်ကို လူဦးရေနှင့် သင့်တင့်သည့် ပမာဏရှိရန် စီစဉ်ထားခြင်း၊

			• ပုံမှန်သန့်ရှင်းရေးပြုလုပ်ပေးခြင်း။ • စက်ပစ္စည်းများကို ပုံမှန်ပြုပြင်ထိန်းသိမ်းပေးခြင်း။
မြေဆီလွှာညစ်ညမ်းမှု	• မတော်တစ စက်ပစ္စည်း၊ မော်တော်ယာဉ်များမှ ဆီယိုဖိတ်ခြင်း	အလွန်နည်း	• စက်ပစ္စည်းများကို ပုံမှန်ပြုပြင် ထိန်းသိမ်းပေးခြင်း။ • မတော်တစမှု မဖြစ်စေရန် ထိန်းသိမ်းခြင်း။
ဆူညံသံ	• မီးစက်၊ လေမှုတ်စက် နှင့် မော်တော် ယာဉ် အသုံးပြုမှုကြောင့် ပတ်ဝန်းကျင် ဆူညံမှု	အသင့်တင့်	• ဆူညံသံထွက်သောနေရာများကို အကာအကွယ် ဖြင့်ထားရှိခြင်း • စက်ပစ္စည်းများကို ပုံမှန်ပြုပြင်ပေးခြင်း
မီးဘေးအန္တရာယ်	• ကုန်ကြမ်းသိုလှောင်မှု နှင့် လျပ်စစ်သုံးစွဲ ပေါ့လျော့မှု	အသင့်တင့်	• ကုန်ကြမ်းများအား သီးသန့်ထားရှိခြင်း • လျပ်စစ်သုံးစွဲမှုများအား စနစ်တကျ အသုံးပြုစေခြင်း
စွန့်ပစ်အမှိုက်	• ထုတ်လုပ်ရာတွင် ကျန်ရှိသော ပိတ်စ အပိုင်းအစများ။ မီးဖိုချောင်နှင့် ရုံးတွင်းစွန့်ပစ်ပစ္စည်းများ	အသင့်တင့်	• စွန့်ပစ်အမှိုက်များအား ပြန်လည်သုံးစွဲရန် နှင့် စွန့်ပစ်ရန် အဖြစ်သတ်မှတ်ပီး သီးခြားစွန့်ပစ်စေခြင်း
စွန့်ပစ်အရည်	• နေအိမ်၊ စားသောက်ဆောင် တို့မှစွန့်ထုပ်ရေ။ မိလ္လာကန်စနစ်	အသင့်တင့်	• စွန့်ပစ်အမှိုက်များအား ပြန်လည်သုံးစွဲရန် နှင့် စွန့်ပစ်ရန် အဖြစ်သတ်မှတ်ပီး သီးခြားစွန့်ပစ်စေခြင်း
အန္တရာယ်ရှိအမှိုက်	• စက်များမှ ဆီယိုစိမ့်မှုများ၊ မော်တော်ယာဉ်များပြုပြင်ထိမ်းသိမ်းမှုက ထွက်ရှိသည့်အမှိုက်များ	အလွန်နည်း	• စက်သုံးဆီများအားစနစ်တကျ အသုံးပြုစေခြင်း၊ စနစ်တကျသိုလှောင်ခြင်း နှင့် အန္တရာယ်ရှိပစ္စည်းများအား စနစ်တကျထားရှိစေခြင်း
လူမှုစီးပွားဘဝ	• ဒေသခံပြည်သူများအတွက် အလုပ်အကိုင်အခွင့်အလမ်းများ ရရှိစေခြင်း		
လုပ်ငန်းပိတ်သိမ်းခြင်းကာလ			
လေထုညစ်ညမ်းမှု	• အဆောက်အဦးများ ဖြိုချမှုများ • ဖြိုချပစ္စည်းများ သယ်ယူမှုများ	အနည်းငယ်	• NOx ထွက်ရှိမှုနည်းသော နည်းပညာမြင့် စက်ပစ္စည်းများသုံးခြင်း၊ • စက်ပစ္စည်းများကို ပုံမှန်ပြုပြင်ထိန်းသိမ်းပေးခြင်း။

ရေ	• ဖြိုချပစ္စည်းများနှင့် မိလ္လာဖျက်ဆီးမှုများ	အနည်းငယ်	• ပုံမှန်သန့်ရှင်းရေးပြုလုပ်ပေးခြင်း။ • စက်ပစ္စည်းများကို ပုံမှန်ပြုပြင်ထိန်းသိမ်းပေးခြင်း။
မြေဆီလွှာညစ်ညမ်းမှု	• အဆောက်အဦးနှင့် ဆက်စပ်ပစ္စည်းများ • ဖြိုချပစ္စည်းများ သယ်ယူမှုများ	အနည်းငယ်	• မတော်တစမှု မဖြစ်စေရန် ထိန်းသိမ်းခြင်း။
အမှိုက်စွန့်ပစ်မှု	• အဆောက်အဦးများ • ဖြိုချပစ္စည်းများ သယ်ယူမှုများ	အလွန်နည်း	• စွန့်ပစ်အမှိုက်များအား ပြန်လည်သုံးစွဲရန် နှင့် စွန့်ပစ်ရန် အဖြစ်သတ်မှတ်ပီး သီးခြားစွန့်ပစ်စေခြင်း
အန္တရာယ်ရှိအမှိုက်	• စက်များမှ ဆီယိုစိမ့်မှုများ၊ မော်တော်ယာဉ်များပြုပြင်ထိမ်းသိမ်းမှုက ထွက်ရှိသည့်အမှိုက်များ • ဖြိုချပစ္စည်းများ သယ်ယူမှုများ	အလွန်နည်း	• စက်သုံးဆီများအားစနစ်တကျ အသုံးပြုစေခြင်း၊ စနစ်တကျသိုလှောင်ခြင်း နှင့် အန္တရာယ်ရှိပစ္စည်းများအား စနစ်တကျထားရှိစေခြင်း
မတော်တဆ ထိခိုက်မှုများ	• အဆောက်အဦးများ ဖြိုချမှုများ • ဖြိုချပစ္စည်းများ သယ်ယူမှုများ	အနည်းငယ်	• မတော်တစမှု မဖြစ်စေရန် ထိန်းသိမ်းခြင်း။

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်

အဆိုပါစက်ရုံ၏ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်ကို ရေရှည်ဖွံ့ဖြိုးတိုးတက်ကောင်းမွန်သော ပတ်ဝန်းကျင်အဖြစ် အကောင်အထည်ဖော်ဆောင်ရွက်ရန် ပတ်ဝန်းကျင်ဆိုင်ရာ ဆိုးကျိုးသက်ရောက်မှုများကို လျော့နည်းစေရန် စီမံခန့်ခွဲမှုအစီအစဉ်များနှင့် စောင့်ကြပ်ကြည့်ရှုရမည့်အစီအစဉ်များကို အောက်ပါအတိုင်း ပတ်ဝန်းကျင်ဆိုင်ရာ အကြောင်းအရာတစ်ခုချင်းစီအလိုက် ခွဲခြားပြုလုပ်ထားပါသည်။

၁။ လေထုညစ်ညမ်းမှုနှင့် ဖုန်မှုန့်ဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

၂။ ဆူညံမှုထိန်းခြင်းဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

၃။ အမှိုက်စွန့်ပစ်မှုဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

၄။ ရေဆိုးစွန့်ပစ်မှုဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

၅။ စွမ်းအင်အသုံးပြုမှုဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

၆။ ရေအသုံးပြုမှုဆိုင်ရာ စီမံခန့်ခွဲမှု အစီအစဉ်

၇။ အရေးပေါ်တုန့်ပြန်ရေး အစီအစဉ်

၈။ စောင့်ကြပ်ကြည့်ရှုရေး အစီအစဉ်

၉။ လူမှုအကျိုးတူ ပူးပေါင်းပါဝင်မှု အစီအစဉ် CSR Plan

၁၀။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်အတွက် ငွေကြေးလျာထားမှုအခြေအနေ

သက်ဆိုင်သူများနှင့် တွေ့ဆုံဆွေးနွေးခြင်း

သက်ဆိုင်သူများနှင့် တွေ့ဆုံဆွေးနွေးခြင်း အစီအစဉ်တွင် စက်ရုံ၏ EMP အစီရင်ခံစာ အကြောင်းကို ရှင်းလင်းတင်ပြခြင်းဖြစ်သည်။ တွေ့ဆုံပွဲကို ၂၈ ရက်၊ ဇန်နဝါရီလ၊ ၂၀၂၀ ခုနှစ်တွင် ဒဂုံဆိပ်ကမ်းမြို့နယ်၊ စက်မှုဇုန်ကော်မတီရုံး၊ ကနောင်အစည်းအဝေးခန်းမတွင် ပြုလုပ်ခဲ့ပါသည်။ တွေ့ဆုံပွဲတွင် စက်ရုံ၏သက်ဆိုင်ရာပုဂ္ဂိုလ်များ၊ အစိုးရအဖွဲ့ ရုံးများဖြစ်သော ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး ဦးစီးဌာန၊ စက်မှုကြီးကြပ်နှင့် စစ်ဆေးရေး ဦးစီးဌာန၊ ပတ်ဝန်း ကျင်ထိန်း သိမ်းရေးနှင့် သန့်ရှင်းရေးဌာ အစရှိသော သက်ဆိုင်ရာဌာနများ၏ တာဝန်ရှိပုဂ္ဂိုလ်များ၊ စက်မှုဇုန်စီမံခန့်ခွဲ မှုကော်မတီ၏ တာဝန်ရှိပုဂ္ဂိုလ်များမှ လိုအပ်သည်များကို အကြံပေးခြင်း၊ စီမံကိန်း၏ အစီရင်ခံစာတွင် လိုအပ်သည်များကို ဖြည့်စွက်ပေးရန် အကြံပြုချက်များပေးခဲ့ပါသည်။ ပြုလုပ်ခဲ့သည့် အစီအစဉ်အကျဉ်းကိုပါ ထည့်သွင်းဖော်ပြထားပါသည်။

နေ့ရက်	၂၀၂၀ ခုနှစ်၊ ဇန်နဝါရီလ၊ ၂၈ ရက်
နေရာ	စက်မှုဇုန်ကော်မတီရုံး၊ ကနောင်အစည်းအဝေးခန်းမ၊ ဒဂုံဆိပ်ကမ်းမြို့နယ်၊ ရန်ကုန်မြို့။
အစီအစဉ်အကျဉ်း	• စက်ရုံနောက်ခံအကြောင်း • စက်ရုံလုပ်ငန်းအကြောင်း • ပတ်ဝန်းကျင်ထိခိုက်မှုနှင့် လျော့ချရေးအစီအစဉ် • ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ်နှင့် စောင့်ကြပ်ကြည့်ရှုမှုအစီအစဉ် • အမေးအဖြေကဏ္ဍ

နိဂုံး

အကျဉ်းချုပ်အားဖြင့် ပြည်ထောင်စုသမ္မတ မြန်မာနိုင်ငံတော်၏ လမ်းညွှန်ချက်များ၊ ပတ်ဝန်းကျင်ဆိုင်ရာ ဥပဒေ၊ နည်းဥပဒေ၊ စည်းမျဉ်းစည်းကမ်းများနှင့် ချမှတ်ထားသော မူဝါဒ လမ်းညွှန်ချက်များအတိုင်း ပတ်ဝန်းကျင်ဆိုင်ရာ စီမံခန့်ခွဲမှု အလေ့အကျင့်များ၊ လုပ်ငန်းစဉ်များနှင့် လိုက်နာဆောင်ရွက် ကျင့်သုံးရန်တာဝန်များကို ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်တွင် ဖော်ပြရှင်းလင်း တင်ပြထားပါသည်။ စီမံကိန်းနှင့် သက်ဆိုင်သူများအား စီမံကိန်းဆိုင်ရာ အကြောင်းအရာများ

ရှင်းလင်းတင်ပြခြင်း၊ အကြံပြုချက်များနှင့် ဆွေးနွေးတင်ပြလာသည့် သဘောထား အကြံဉာဏ်များကိုရယူပြီး အစီအရင်ခံစာတွင် ဖော်ပြထားပါသည်။

EXECUTIVE SUMMARY

Introduction

Everyone wants to live in a place that's clean and healthy. That is why one of the world's primary concerns is the environment. As sad as it is, the world today is dying. The environment is slowly decaying, and it's all because of human negligence Environmental Management Plan is required for ensuring sustainable development. It should not affect the surrounding environment adversely. The management plan presented which needs to be implemented by the proposed expansion of Myanmar Green Start Energy Company Limited. The Initial Environmental Examination aims at controlling pollution at source with available and affordable technology followed by treatment measures, waste minimization and waste recycling measures are emphasized.

This report describes the findings of the Initial Environmental Examination (IEE) for the Manufacturing of solar products on CMP Basis by Myanmar Green Start Energy Company Limited. The main objective of this report is to identify the major environmental impacts due to implementation of the project along with the effective measures to mitigate the potential adverse impacts.

Project Background

The project approved for the investment endorsement from the Yangon Region Investment Committee (YRIC) Endorsement No. 097/2018 on 30, November 2018. The Yangon Region Investment Committee announce for the environmental approval and comments of the Ministry of the Natural Resources and Environmental Conservation (MONREC) on the proposed project and had approved the proposal for investment in manufacturing of solar products under the name of Myanmar Green Start Energy Company Limited as a solely owned foreign investment from the China. According to the Myanmar Environmental Conservation Law (2012), it requires that the proponents of every development project in the country submit either an Initial Environmental Examination (IEE) or an Environmental Impact Assessment (EIA) to Ministry of Natural Resources and Environmental Conservation (MONREC). As per the comments of Environmental Conservation Department (ECD), the said project requires an Environmental Management Plan (EMP) to meet the environmental assessment according to requirements of Notification No. YaKa-1/3/4 (EIA) (329/2019) on February 25, 2019. Therefore, Myanmar Green Start Energy Company Limited commissioned Myanwei Consulting Company Limited for IEE report study.

Project Proponent Profile

Investor Name:	Ms. Jiang Lu
Citizenship:	Chinese
Company ID No./ Passport No	ED3452112
Address of Registration office:	Dudu Motain No.1, No.1604, Office Building Guandu District, Kunming City, Yunnan Province, China.

Salient feature of the project

Type of Proposed Business:	Manufacturing of Solar Products on CMP Basis
Type of investment:	100% Foreign Investment
Type of Share :	Ordinary Share
Type of land :	Industrial Land
Total land area :	2 acres
Total building area :	Production building (6,960 square meters)
Land lease year :	25 years
Construction period :	One year and six months
Address:	Land Plot No. (63),Yaw Twin Wun U Phoe Hlaing Road, Dagon Seikkan Industrial Zone (1), Dagon Myo Thit (Seikkan) Township, Yangon Region
Contact Person:	09-786577514

Policy, Legal and Institutional Frame Work

The brief summary of relevant national environmental legislations such as Environmental Impact Assessment Procedure (2015) and National Environmental Quality (emission) Guidelines, established by the Ministry of Natural Resources and Environmental Conservation (MONREC) and overview of current local and international environmental and social policies including related international or regional convention for the proposed project.

1. The Constitution Law, 2008
2. The Environmental Conservation Law, 2012
3. The Environmental Conservation Rule, 2014
4. Environmental Impact Assessment Procedure, 2015
5. National Environmental Quality (Emission) Guideline, 2015
6. National Myanmar Environmental Policy, 2019
7. Foreign Investment Law, 2012
8. Foreign Investment Rule, 2013
9. Myanmar Investment Rule, 2017
10. Myanmar Insurance Law, 1993
11. Payment of Wages Law, 2016
12. The Payment of Wages Act, 1936
13. Yangon City Development Committee Law, 2018
14. The Amended Law for Factories Act, 1951 (2016)
15. The Private Industrial Enterprise Law
16. The Export and Import Law, 2012
17. The Prevention of Hazard from Chemical and Related Substances Law, 2013
18. The Underground Water Act
19. Myanmar Fire Brigade Law, 2015
20. Fire Safety Procedure
21. The Electricity Law, 2014

22. Labor Dispute Settlement Law, 2012
23. The Law Amending the Settlement of Labor Dispute Law, 2019
24. The Social Security Law, 2012
25. The Employment and Skill Development, 2013
26. The Worker's Compensation Act, 1923
27. The Leave and Holidays Act (1951, partially reused in 2014)
28. The Minimum Wage Law, 2013
29. Public Health Law, 1972
30. Prevention and Control of Communicable Disease Law (1995 Amendment in 2011)
31. Occupational Safety and Health Law, 2019
32. The Law on Standardization
33. လုပ်ငန်းခွင်သုံးပေါက်ကွဲစေတတ်သော ဝတ္ထုပြစ္စည်းများဆိုင်ရာ ဥပဒေ၊ (2018)
34. The Motor Vehicles Law, 2015
35. The Conservation of Water Resources and River Law, 2006
36. The Commercial Tax Law (1990 Amended 2014)

Project Description

The proposed factory is the 100% foreign investment by Myanmar Green Start Energy Company Limited with an estimated authorized capital of USD (0.595) million. The proposed factory is located at Land Plot No. (63), Yaw Twin Wun U Phoe Hlaing Road, Dagon Seikkan Industrial (1), Dagon Myo Thit (Seikkan) Township, Yangon Region and the total land area 2 acres. The factory aims to manufacture of solar products by using semiautomatic process control system with production process. The construction phase of the proposed factory initiated in November 2018 and then commercial running operation stage is May 2020.The proposed duration of the investment shall be 25 years extendable 10 years' periods two times. The term of the Lease shall be initial 5 years commencing from the date of signing of the Lease Agreement between landowner and Myanmar Green Start Energy Company Limited for proposed project site for 2 acres of land and extendable for 10 years in 2 times recommended by the Yangon Region Government.

Construction Phase

The project identification of construction phase is machinery and equipment installation period. Project proponent was leased the project area from previous owner; this area already constructed the warehouse building. The installation of machinery and equipment started in November 2019. The Installation project is completed as scheduled on the first week of May 2020.

Operation Phase

The total area of project site is 2 acres. The factory area includes one plant building around (6,096 sqm). Number of people 112 employees working at Myanmar Green Start Energy Company Limited factory. Most are local people, who manage the company by their dynamic, enthusiastic, experienced, and cooperative skills. The estimated production rate is (112,500) and (123,750) pieces per annually of production rate.

Decommissioning phase

The proposed project investment duration is 25 years and they will close out the project according to their MIC proposal.

Surrounding Environment

Primary data and secondary data collections are very imported to assess environmental impacts. Primary data collections (environmental quality measurements and monitoring) play an important role for conducting EMP. Therefore. Myanwei Consulting Group Limited conducted air quality, temperature and humidity, noise level measurement and light pollution measurement and compared with the National Environmental Quality (Emission) Guidelines and also described how to reduce the impact and how to maintain the pollutions. Also described the weather conditions, rainfalls and socio-economic component of the proposed project.

The baseline environmental quality at the Project Site and its immediate surroundings was established by groundwater, wastewater, ambient air quality samples, noise and indoor temperature and humidity measurements at immediate surrounding areas. To determine the existing baseline environmental quality within the project site on 12 September 2019. The overall conditions of air quality, light and noise levels are quoted from the project.

Item	Parameter
Air quality	(1) PM2.5, (2) PM10
Noise level	Sound level (LAeq)
Light	Light Intensity

According to the resulting of monitoring, all parameters of air quality are within the NEQGs guideline. Noise is also within the acceptable level of the guideline limit. Light measurement is in good condition and at the acceptable level of standard.

Secondary data collection of proposed project site area such as socio-economic condition, physical/ biological environment, weather data where be received from official township data was reference by Regional Data of Dagon Myo Thit (Seikkan) Township. The proposed project site is initiated into the industrial zone area. In 2017, the population of Dagon Myo Thit (Seikkan) Township 179,121 peoples.

Impact Assessment and Mitigation Measure

The assessment of each impact is based on consideration of the magnitude, duration, extent and probability of activities, which are going to be carried out during operation phases. In operation phase, there are 6 moderate significance impact on environment and human such as impact of electricity consumption. 1 low significant impact on environment and human such as impact of wastewater effluents and occupational health and safety of employees, workers and 2 very low significant impact on environment and human such as impact on aquatic lives, air pollution and noise. Significance impacts on environmental and human and detail impact assessment for operation phases can be seen in Table. All of the impacts during operation phases can be minimized by using mitigation measures and implementing Environmental Management Plan.

Environmental Impact	Project Activities	Impact Significance	Mitigation Measures
Construction Phase; It is not assessed in this phase, because of construction is already completed during IEE preparation.			
Operation Phase			
Air pollution	• Dust and GHGs emission from vehicles used for transporting raw materials and final products • Particulate matters emission from the activities of production process • Emission of smoke from kitchen • Emission from emergency diesel generator	Moderate	To control air pollution, the vehicles, generators and machineries have to check and maintain regularly. Ensuring vehicles, compressor and generator are well maintained. Smoke emission should be fitted with the bag filter.
Water pollution	• Sewage disposed of from the toilets • Oil spill and grease leaks from transporting vehicles and machinery equipment used in operation phase	Low	Use separate wastewater channels, septic type toilet system. The drainages around the compound area of the factory have to maintain and clean regularly.
Soil Contamination	• Accidental spillage of oil used by vehicles operating	Very low	Proper handling and use to prevent oil spillage. If there is an oil spill, clean up the area immediately. Concrete paving where oil storage tanks are placed.
Noise Pollution	• Generating noise from the production machinery • Noise from the generating of the emergency generators	Moderate	Use modernized low-noise machines. Generators are placed in a separate building with soundproof enclosures within the factory area.
Fire Hazard	• Poor electrical installations • waste disposed area • Raw materials storage • Diesel storage area	Moderate	To provide fire extinguishers, fire hose reels and fire hydrants on the walls of the factory for fire emergency cases.

Environmental Impact	Project Activities	Impact Significance	Mitigation Measures
			Regular inspection for existing firefighting equipment must be done. In case of fire emergency, water storage tank for fire frightening. The emergency fire alarms are installed at the factory for alerting the workers in case of fire. The main entrances and route for emergency cases of the factory must not be blocked with materials or machines for fire emergency cases.
Solid waste	• residual pieces of fabric scraps from the production lines • Waste from packaging materials • Waste from kitchen, dormitory and office.	Moderate	Provides separate garbage bins at each building. All of the solid wastes will be collected separately in garbage based on their types and stored in relevant separated waste storage area Final wastes should be disposed by using YCDC's service or licensed waste collection sevice.
Liquid waste	• Septic system and sewage. • Domestic liquid waste disposal from office, kitchen and dormitory.	Moderate	Regular inspection and cleaning, oil traps, septic tank and adequate covers for all storage and waste disposal areas can decrease these contaminations.
Hazardous waste	• Engine oil leaks, spills at diesel storage and during fuel refueling. • Used oil and lubricant discharged from the maintenance of vehicles and machines.	Very Low	Proper inspection and maintenance in storage of hazardous waste. Dispose of hazardous waste and containers in accordance with occupational health, safety and

Environmental Impact	Project Activities	Impact Significance	Mitigation Measures
			environmental requirements. The empty hazardous containers will hand over to suppliers for recycle or appropriate disposal. The hazardous wastes are transported by specially licensed carriers and disposed in a licensed faculty.
Occupational Health and Safety (Accidents, Injuries)	• Accidental cases cause by operating machines. • Electricity and emergency diesel generators. • Unloading, mixing, cutting, pressing and packaging activities. • Accidental cases of thermic fluid heater	Moderate	First aid training, safety training, firefighting training or other essential training for machinery handling must be provided for emergency cases of workers. According to the observed light intensity values, the proponent provides sufficient lighting for workers for safe working and reducing optical problems of the workers. Personal Protective Equipment (PPEs) like mask, earmuffs, helmets and goggles are provided for each department. To prevent electric shock hazards, electrical maintenance staff (handyman) is to be assigned to do regular inspections and take preventive measures. Manage the drainage systems of the factory to prevent health risk of the workers. The maximum allowable noise level for workers is 90dB(A) for 8hours exposure a day.

Environmental Impact	Project Activities	Impact Significance	Mitigation Measures
			Thus, adequate protective noise impact measures in the form of ear muffs/ear plugs to the workers working in high noise areas.
Social-economic Condition	• Job opportunities for local people	Positive Impact	
Decommissioning Phase			
Air pollution	• Decommissioning of buildings and related materials • Transportation of demolished materials	Low	Spray water twice a day Cover mesh trap around the decommission area Install shading net about 2 meters above temporary fence of decommission area Carry broken material with cover by canvas.
Water pollution	• Sewage form decommissioning workers • Demolition machinery equipment	Low	Systematically demolish the septic tanks.
Soil Contamination	• Decommissioning of buildings and related materials • Transportation of demolished materials	Low	Manage the spillage of oil and diesel and sewage.
Noise Pollution	• Decommission activities • Transportation of demolished materials	Low	Carry out the activities during day time. Maintain the machines and vehicles to reduce noise pollution. Provide the ear plugs to the workers.
Waste disposal	• Sewage system • Demolished debris such as bricks, concrete materials	Very Low	Recyclable materials and dispose to the define areas.
Hazardous waste	• Used lubricants from decommissioning vehicles and machines	Very Low	Manage the disposal way of hazardous waste.
Occupational Health and Safety (Accidents, Injuries)	• Decommissioning activities • Transportation of demolished materials	Low	Provide protective fencing or demarcation with tape at the boundaries of dangerous / hazardous zone and the appropriate warning signs, marking and

Environmental Impact	Project Activities	Impact Significance	Mitigation Measures
			safety signs and installation of the lost time injury notice board. Clean up excessive waste debris and liquid spills regularly. Use the third-party expert assisted by trained personnel to identify and remove hazardous materials.

Environmental Management Plan

The EMP for Myanmar Green Start Energy Company Limited has been prepared to address potential issues based upon discussion with factory management, workers, local community's view, stakeholder consultation and from the site visit of experts. The EMP is additional to and compliments the factory's safety management system. The following environmental issues that require environmental management plans based upon the potential impacts of activities by for proposed factory are as follows:

1. Air pollution/Dust Management plan
2. Noise Management
3. Solid Waste Management plan
4. Wastewater Management Plan
5. Energy Consumption Management Plan
6. Water Consumption Management Plan
7. Emergency Response plan
8. Environmental Monitoring and Reporting
9. Corporate Social Responsible (CSR) Plan

Public Consultation

This chapter presents results of public consultation and information disclosure conducted for the Myanmar Green Start Energy factory. Public participation can be considered as the required element of the EMP process. In this study various stakeholder's participation were made. Public consultation during preparation of EMP report was conducted on January 28, 2020 following the EIA procedure. The project's stakeholders in this category are key officials or representatives of the regional and local authorities who have direct responsibilities for the administration of the EMP process for environmental and social clearance and issuing operation permits for proposed development projects. For this factory, relevant key offices at the national level are Environmental Conservation Department (ECD) and Industry Supervision and Inspection Department. Relevant key office at the regional level is Yangon City Development Committee (YCDC), General Administrative Department, Fire Department, Factories and General Labor Law Inspection Department, Public Health Department, Industrial Supervision and Inspection Department.

Time and Date	January 28, 2020 10:30-12:30
Venue	Dagon Seikkan Zone Committee, Ka Naung Hall, Dagon Seikkan Township, Yangon.
Agenda	• Presentation on the Background Information of Project, • Project Description, • Impact Assessment, Environmental Mitigation • Environmental Management Plan and Monitoring Plan • Received and Answer from feedback of participants

Conclusion and Recommendation

In Conclusion, the environmental management practices, procedures and responsibilities are defined here in to get full compliance with the existing environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar. All the feed backs, desired and needs of local public recorded in public consultation meetings are well addressed and incorporated in formulation of EMP. It has been figured out that, the proposed solar products is going to generate local employment opportunities and enhance capabilities and working skills of employees. Consequently, their socio-economic standard is expected to be improved and undertaking corporate social responsibilities (CSR) as recommended. The study further concluded that positive impacts will be of immense benefit to the local community and national development as well.

This is recommended that;

- All appropriate environmental management measures detailed in this report, together with any other environmental management commitments should be implemented throughout the entire life of the factory
- Solid wastes and liquid wastes need to dispose according to YCDC rules and regulation
- Workers should be provided proper training and it should be ensured that workers use PPE during factory operation area.
- Daily, monthly and annual action plan shall be formulated based on this EMP and practiced at operation level.
- Keep full records of environmental management activities and present to annual independent third-party environment audit.
- Abide environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar.

Finally, the proponent should follow the comments and suggestions made by ECD after reviewing this EMP report. Once concerned authorities approve EMP, effective implementation of EMP by the project proponent is essential. The proponent should abide environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar.

CHAPTER 1
INTRODUCTION

Everyone wants to live in a place that's clean and healthy. That is why one of the world's primary concerns is the environment. As sad as it is, the world today is dying. The environment is slowly decaying, and it's all because of human negligence Environmental Management Plan is required for ensuring sustainable development. It should not affect the surrounding environment adversely. The management plan presented which needs to be implemented by the proposed expansion of Myanmar Green Start Energy Company Limited. The Initial Environmental Examination aims at controlling pollution at source with available and affordable technology followed by treatment measures, waste minimization and waste recycling measures are emphasized. In addition to the industry specific control measures, the proposed industry should adopt following guidelines.

1.1. AIM OF INITIAL ENVIRONMENTAL EXAMINATION

- Provide environmental management plan that minimize the environmental impact of the works and identify those responsible for its implementation.
- Define the monitoring program, which assess the implementation.

1.2. OBJECTIVE OF ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management System (EMS) is a framework that helps an organization achieves its environmental goals through consistent review, evaluation, and improvement of its environmental performance. The assumption is that this consistent review and evaluation will identify opportunities for improving and implementing the environmental performance of the organization. The EMS itself does not dictate a level of environmental performance that must be achieved; each organization's EMS is tailored to its own individual objectives and targets.

An EMS encourages an organization to continuously improve its environmental performance. The system follows a repeating cycle the organization first commits to an environmental policy, then uses its policy as a basis for establishing a plan, which sets objectives and targets for improving environmental performance. The next step is implementation. After that, the organization evaluates its environmental performance to see whether the objectives and targets are being met. If targets are not being met, corrective action is taken. The results of this evaluation are then reviewed by top management to see if the EMS is working. Management revisits the environmental policy and sets new targets in a revised plan. The company then implements the revised plan. The cycle repeats, and continuous improvement occurs.

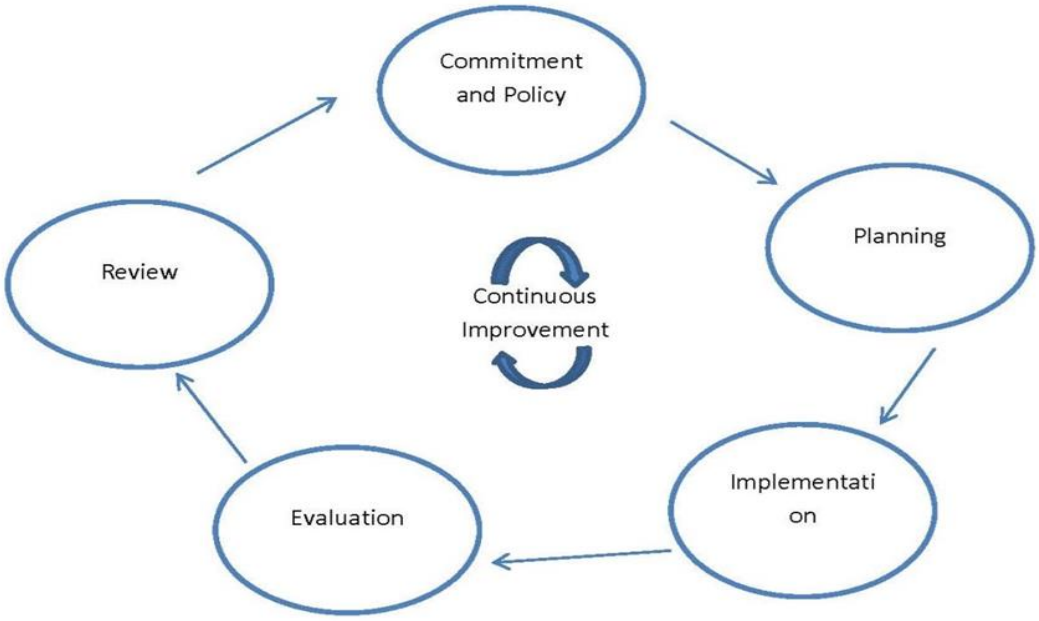


Figure 1-1 Continuous Improvement Circle

- **Commitment and Policy** – Top management commits to environmental improvement and establishes the organization's environmental policy. The policy is the foundation of the EMS.
- **Planning** – An organization first identifies environmental aspects of its operations. Environmental aspects are those items, such as air pollutants or hazardous waste that can have negative impacts on people and the environment. An organization then determines which aspects are significant by choosing criteria considered most important by the organization. For example, an organization may choose worker health and safety, environmental compliance, and cost as its criteria. Once significant environmental aspects are determined, an organization sets objectives and targets. An objective is an overall environmental goal (e.g., minimize use of chemical X). A target is a detailed, quantified requirement that arises from the objectives (e.g., reduce use of chemical X by 25% by September 1998). The final part of the planning stage is devising an action plan for meeting the targets. This includes designating responsibilities, establishing a schedule, and outlining clearly defined steps to meet the targets.
- **Implementation** – An organization follows through with the action plan using the necessary resources (human, financial, etc.). An important component is employee training and awareness for all employees. Other steps in the implementation stage include documentation, following operating procedures, and setting up internal and external communication lines.
- **Evaluation** – A company monitors its operations to evaluate whether targets are being met. If not, the company takes corrective action.
- **Review** – Top management reviews the results of the evaluation to see if the EMS is working. Management determines whether the original environmental policy is consistent

with the organization's values. The plan is then revised to optimize the effectiveness of the EMS. The review stage creates a loop of continuous improvement for a company.

1.2.1. Institutional Requirement

Myanmar Green Start Energy Company Limited will manage the development of the proposed project. The project proponent should appoint Health, Safety and Environment (HSE) issues throughout the duration of the project phases. HSE team is responsible for implementation and monitoring of EMP and Environmental Monitoring Plan (EMP) as well as coordination with local authorities and the nearby communities. The HSE Team also makes regular review of EMP to cover all potential impacts, amendments and modifications.

1.2.2. Responsibilities of the EMP

In order to ensure the sound development and effective implementation of the EMP, it will be necessary to identify and define the responsibilities. The environmental management practices, procedures, and responsibilities are defined herein to get full compliance with the existing environmental policy, laws, rules and regulations of the Republic of the Union of Myanmar. The following entities should be involved in the implementation of this EMP:

Myanmar Green Start Energy Company Limited: The proponent will be charged with the responsibility for ensuring that the proposed development has been accomplished in an environmentally sound manner. This can be achieved by inclusion of environmental specifications in the tender specifications, selection of environmentally conscious contractors, and supervision to ensure that the objectives of this IEE are met. The implementation of Environmental Management Plan (EMP) process will prepare and follow up by appointed persons for health, safety, and environmental management under the instruction of management team of Myanmar Green Start Energy Company Limited for EMP implementation facilities.

ECD (Yangon Region): The responsibility of ECD is to exercise general supervision and coordinating over all matters relating to the environment and to be instrumental in providing guidance for recognized regulatory frameworks.

Third-Party Environmental Consultant: The environmental consultant will have to ensure that the proposed EMP is up to date and is being followed properly by the proponent. Periodic audits of the EMP will have to be done to ensure that its performance is as expected, by comparing with operating standards so that any corrective actions can be taken.

1.2.3. Structure and Responsibilities for the EMP Development and Implementation

The HSE officer is responsible to the HSE components of the project and on matters relating to the implementation of the EMP throughout operation life. The S&E officer will have responsibilities that include:

- Ensure a monitoring system is in place to track and report all health, safety and environmental incidents;
- Carry out a thorough initial site inspection of environmental controls prior to work commencement;

- Record and provide a written report to the General Manager and production team of non-conformances with the IEE and require the HR supervisor to undertake mitigation measures to avoid or minimize any adverse impacts on environment or report required changes to the EMP.

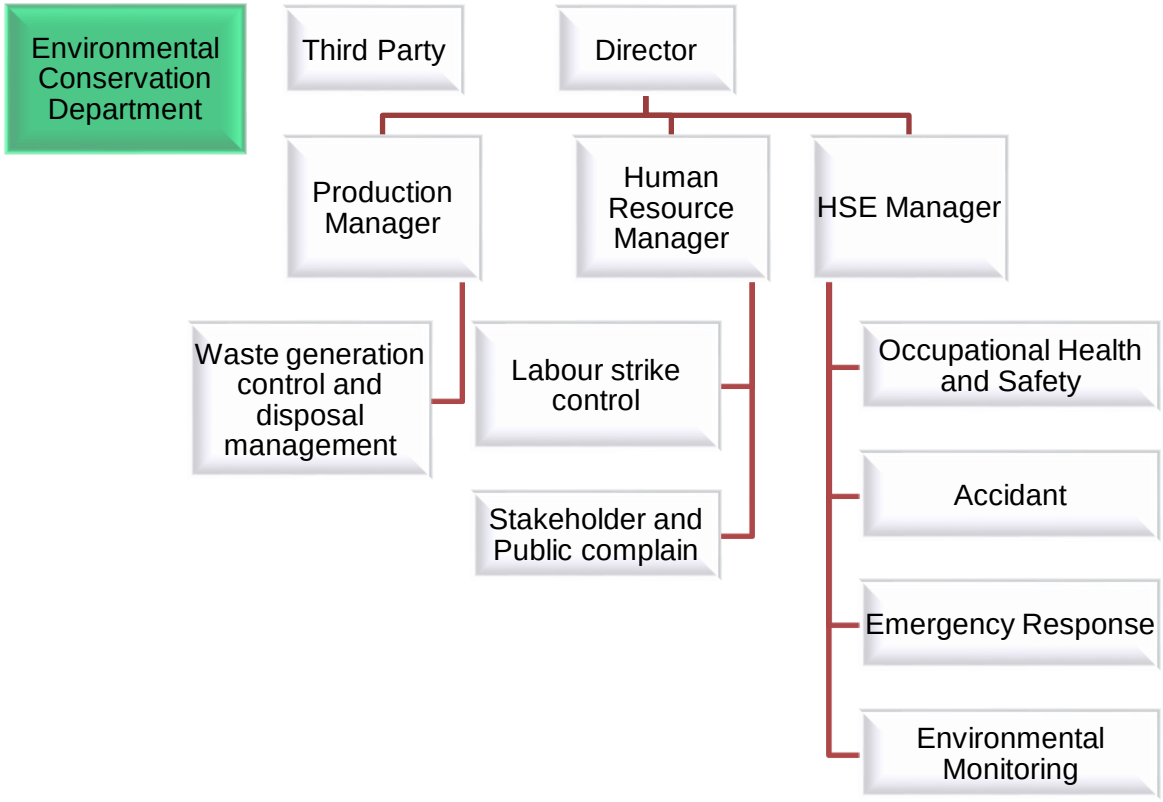


Figure 1-2 Organization Structure of Environmental Management Plan

Table 1-1 Responsibilities of HSE Members

Roles	Responsibilities
General Manager	The General Manager will be assisted by the Operations Manager and also the HR and HSE Officer. In terms of environmental protection commitments, the Operation Manager will be the key driving force and will be responsible for: • Establishing overall environmental direction and policy • Ensuring the implementation of the EMP • Ensuring investigation of all environmental incidents are reviewed and that reports are submitted on time • Ensuring an effective system of internal and external communication is in place • Providing advice regarding the environmental program
Operation Manager	The Operation Manager will assist the General Manager in looking into the overall environmental matters during the operational phase of the Project. The Operation Engineer will also be responsible for: • Adherence to the overall environmental direction and policy • Ensuring the implementation of the recommended actions in the investigation of all environmental incidents

Roles	Responsibilities
	• Managing resources for operation wastes
HR Manager	The HR Manager will carry out the day-to-day management of workers and social issues in the factory. The HR Manager will be responsible for: • Assisting the management in publicising and implementing corporate and local policies, objectives and programs • Maintaining key environmental-related documents and information • Communicating/ liaising with the local authorities on environmental issues
HSE Officer	The HSE Officer will be the key person in charge of all environmental matters pertaining to the site. The HSE Officer will be responsible for: • Coordinating the implementation of environmental programs, including monitoring of the project site environmental performance • Performing periodic internal environmental audits and inspections to ensure compliance with the legal environmental requirements • Ensure a monitoring system is in place to track and report all health, safety and environmental incidents; • Carry out a thorough initial site inspection of environmental controls prior to work commencement; • Record and provide a written report to the General Manager and production team of non-conformances with the EMP and require the HR Manager to undertake mitigation measures to avoid or minimize any adverse impacts on environment or report required changes to the EMP.

1.3. PROJECT BACKGROUND

The project approved for the investment endorsement from the Yangon Regional Investment Committee (YRIC) Endorsement No. YGN- 097/2018 on 30, November 2018 (**Appendix A).** The investment committee notified for the environmental approval and comments of the Ministry of the Natural Resources and Environmental Conservation (MONREC) on the proposed project and had approved the proposal for investment in manufacturing of solar products under the name of Myanmar Green Start Energy Company Limited.

According to the Myanmar Environmental Conservation Law (2012), it requires that the proponents of every development project in the country submit either an Initial Environmental Examination (IEE) or an Environmental Impact Assessment (EIA) to Ministry of Natural Resources and Environmental Conservation (MONREC). As per the comments of Environmental Conservation Department (ECD), the said project requires an Initial Environmental Examination (IEE) to meet the environmental assessment requirements of Notification No. YaKa-1/3/4 (EIA) (329/2019) on 25 February 2019. Therefore, Myanmar Green Start Energy Company Limited commissioned Myanwei Consulting Company Limited for IEE report study.

1.4. PROJECT PROPONENT PROFILE

This is the information of project proponent from the registration of Myanmar Investment Commission (MIC), which is described in below Table 1-2.

Table 1-2 Information of Myanmar Green Start Energy Company Limited

Investor Name:	Ms. Jiang Lu
Citizenship:	Chinese
Company ID No./ Passport No	ED3452112
Address of Registration office:	Dudu Motain No.1, No.1604, Office Building Guandu District, Kunming City, Yunnan Province, China.

1.4.1. **Salient feature of the project**

Type of Proposed Business:	Manufacturing of Solar Products on CMP Basis
Type of investment :	100% Foreign Investment
Type of Share :	Ordinary Share
Type of land :	Industrial Land
Total land area :	2 acres
Total building area :	Production building (6,960 square meters)
Land lease year :	25 years
Construction period :	One year and six months
Address:	Land Plot No. (63),Yaw Twin Wun U Phoe Hlaing Road, Dagon Seikkan Industrial Zone (1), Dagon Myo Thit (Seikkan) Township, Yangon Region
Contact Person:	09-786577514

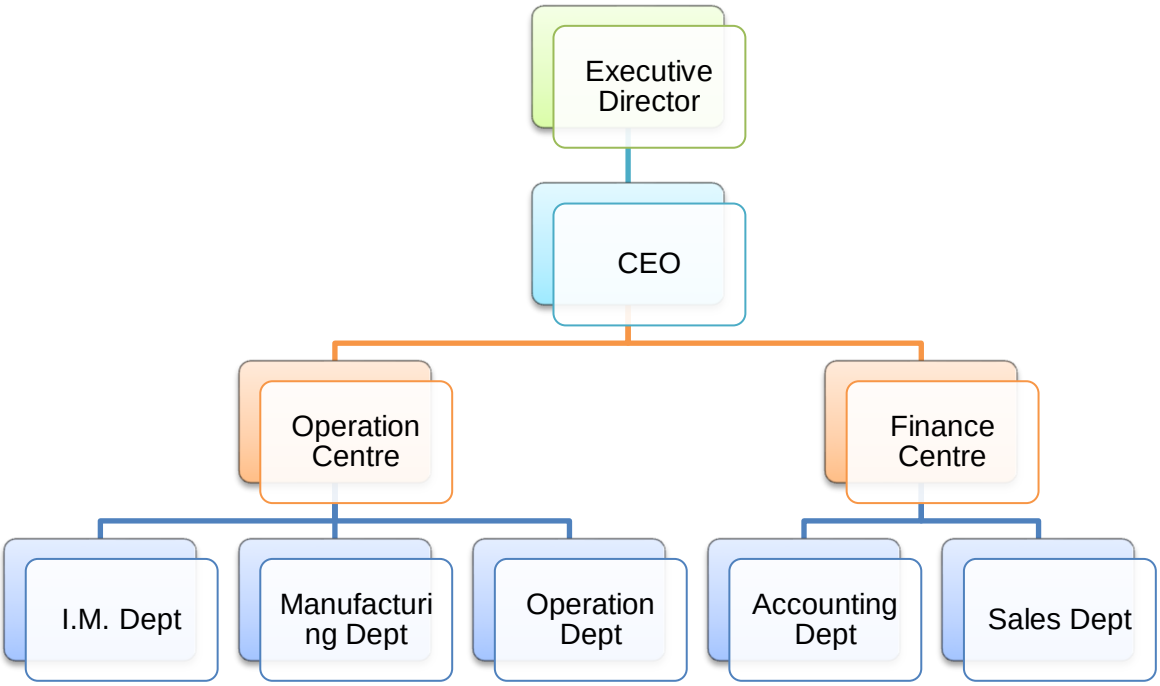


Figure 1-3 Organization of Myanmar Green Start Energy Company Limited

1.5. ENVIRONMENTAL CONSULTANT PROFILE

1.5.1. Scope of IEE Study

The IEE study firstly established baseline environmental setting within 100 meters of the project area, including existing conditions of air quality, water quality, noise, weather and local climate, waste, landscape and social assessment. The field studies were carried out by Myanwei Consulting farm conducted field survey, assessment activities, and prepared the report.

A reconnaissance study was performed on the proposed project site and baseline environmental data were also collected from possible sources using the appropriate measuring devices. Data interpretation and analysis were made based on those collected data for the present and potential future conditions. Suitable measures were proposed for the impacts to be mitigated to reduce to acceptable ones.

1.5.2. The specific objectives of the IEE study are as follows:

- To conduct preliminary examination of the environmental consequences of the project
- To describe the existing environmental condition of the proposed project site
- To collect detailed information about used of process, technology, equipment and machinery for proposed project
- To assess the potential environmental impacts of the proposed project

- To develop environmental management plan (EMP) with site specific environmental mitigation measures and monitoring standards guidelines for the proposed project
- To carry our public consultants to address any issues in concern with implementation of this project

1.6. IDENTIFICATION OF IEE STUDY TEAM

Myanwei Environmental Solutions Company Limited prepares the Initial Environmental Examination (IEE) with the Environmental Management Plan (EMP) for the proposed project. The environmental study was carried out by the study team and the following is a summary of team member ‘s responsibilities during the study period.

Table 1-3 Member of IEE study team

Name	Qualification	Responsibility
Myanwei Environmental Solutions Co., Ltd.	**Transition Consultant Registration Certificate No. 0069**	**EIA Organization** No. 36-38, 9th floor (A), Grand Myay Nu Condo, Myay Nu Street, Sanchaung Township, Yangon, Myanmar. Website: www.myanwweiconsulting.com Ph: 01-501221
Mr. Lin Htet Sein	MSc (Regional Geology) BSc (Hons) Geology Dip in Environmental Science Certificate in Environmental & Social Assessment Certificate in Environmental Stainability **TCR No. 0048**	Project Director, Environmental Consultant, Project Management
Dr. Hein Lynn Aung	M.B, B.S (Yangon), Business Management (International Collage of Management Sydney, Australia)	Project Director, Public Health Consultant, Project Management
Mr. Saw Yan Naung	B.E. Chemical Engineering B. Tech Chemical Engineering	Senior Environmental Consultant, Monitoring Measure, Document Administration
Mr. Myat Ko Ko	B.Sc (Hons) Geology M.Sc. Geology (Economic and Mining) Certificate of Environment Management Certificate of Geotechnical Engineering (Myanmar Geoscience Society)	Senior Environmental Consultant, Monitoring Measure, Document Administration
Mr. Kaung Sett Lwin	B.Sc (Hons) Geology Certificate of Geotechnical Engineering (Myanmar Geoscience Society)	Senior Environmental Consultant, Monitoring Measure, Document Administration
Ms. Haymar Htet Naing	B.A (English) Certificate of Achievement (English Access Micro Scholarship Program) U.S Embassy Rangoon	Senior Environmental Consultant, Monitoring Measure, Document Administration
Mr. Lynn Than Taung	B. Sc (Forestry)	Senior Environmental Consultant, Monitoring Measure, Document Administration

Name	Qualification	Responsibility
Myanwei Environmental Solutions Co., Ltd.	**Transition Consultant Registration Certificate No. 0069**	**EIA Organization** No. 36-38, 9th floor (A), Grand Myay Nu Condo, Myay Nu Street, Sanchaung Township, Yangon, Myanmar. Website: www.myanwweiconsulting.com Ph: 01-501221
Ms. Pyae Phyo Win	B.Sc (Hons) Bontany M.Sc (Botany)	Senior Environmental Consultant, Monitoring Measure, Document Administration
Ms. Wint Zar Ni Mg Mg	M.E (Environmental Science and Engineering) B.E Civil Engineering	Senior Environmental Consultant, Monitoring Measure, Document Administration
Mr.Aung Ye Thaw	B.Sc (Geology)	Junior Environmental Consultant, Monitoring Measure, Document Administration

CHAPTER 2
POLICY, LEGAL AND INSTITUTIONAL FRAME WORK

This section provides a brief summary of relevant national environmental legislations established by the MONREC and overview of current local and international environmental and social policies including related international or regional convention for the proposed project.

2.1. MYANMAR REGULATORY FRAMWORK

Myanmar has 24 ministries under the Office of the President as of May 2016. The leading ministries in-charge of environmental and social considerations are the Environmental Conservation Department (ECD) of the MONREC that was reorganized Ministry of Environmental Conservation and Forestry (MOECAF) in April 2016.

2.1.1. Laws and Regulations Related to Environmental and Social Considerations

Requirements related to environmental (and social) impact management for development projects are described in Table 2-1.

Table 2-1 List of Myanmar's Law relating to environmental management

Law and Regulation	Description
National Environmental Policy of Myanmar, (Notification No. 26/94 dated 5 December 1994)	To achieve harmony and balance between socioeconomic, natural resources and environment through the integration of environmental considerations into the development process enhancing the quality of the life of all its citizens.
Constitution 2008	
Section 37, (a)	The Union is the ultimate owner of all lands and all-natural resources above and below the ground, above and beneath the water and in atmosphere in the Union.
Section 37, (b)	The Union shall permit citizens' rights of private property, right of inheritance, right of private initiative and patent in accord with the laws.
Section 372	The Union guarantees the right to ownership, the use of property and the right to private invention and patent in the conducting of business if it is not contrary to the provisions of this Constitution and the existing laws.
Section 45	The Union shall protect and conserve natural environment.
Section 390, (a),(b),(c),(d)	Every citizen has the duty to assist the Union in preserving and safeguarding the cultural heritage, conserving the environment, striving for the development of human resources, and protecting and preserving the public property.
Environmental Conservation Law, 30 March 2012	
Objectives	to contract a healthy and clean environmental and to conserve natural and cultural heritage for the benefit of present and future generations; to maintain the sustainable development through effective management of natural resources and to enable to promote international, regional and bilateral cooperation in the matters of environmental conversation.
Section 3	c) to enable to emerge a healthy and clean environment and to enable to conserve natural and cultural heritage for the benefit of present and future generations;

	(d) to reclaim ecosystems as may be possible which are starting to degenerate and disappear; (e) to enable to manage and implement for decrease and loss of natural resources and for enabling the sustainable use beneficially;
Provisions of Duties and Powers relating to the Environmental Conservation of the Ministry: Section 7	(a) To specify categories and classes of hazardous wastes generated from the production and use of chemicals or other hazardous substances in carrying out industry, agriculture, mineral production, sanitation and other activities; (b) To prescribe categories of hazardous substances that may affect significantly at present or in the long run on the environment; (c) To promote and carry out the establishment of necessary factories and stations for the treatment of solid wastes, effluents and emissions which contain toxic and hazardous substances; (j) To prescribe the terms and conditions relating to effluent treatment in industrial estates and other necessary places and buildings and emissions of machines, vehicles and mechanisms; (m) To lay down and carry out a system of EIA and SIA as to whether or not a project or activity to be undertaken by any Government department, organization or person may cause a significant impact on the environment; (o) To manage to cause the polluter to compensate for environmental impact, cause to contribute fund by the organizations which obtain benefit from the natural environmental service system, cause to contribute a part of the benefit from the businesses which explore, trade and use the natural resources in environmental conservation works.
Chapter VI Environmental Quality Standards: Section10	The Ministry may, with the approval of the Union Government and the Committee, stipulate the following environmental quality standards: (a) suitable surface water quality standards in the usage in rivers, streams, canals, springs, marshes, swamps, lakes, reservoirs and other inland water sources of the public; (b) water quality standards for coastal and estuarine areas; (c) underground water quality standards; (d) atmospheric quality standards; (e) noise and vibration standards; (f) emissions standards; (g) effluent standards; (h) solid wastes standards; (i) other environmental quality standards stipulated by the Union Government.
Section 14	A person causing a point source of pollution shall treat, emit, discharge and deposit the substances which cause pollution in the environment in accord with stipulated environmental quality standards.
Section 15	The owner or occupier of any business, material or place which causes a point source of pollution shall install or use an on-site facility or controlling equipment in order to monitor, control, manage, reduce or eliminate environmental pollution. If it is impracticable, it shall be arranged to dispose the wastes in accord with environmentally sound methods.
Section 16	A person or organization operating business in the industrial estate or business in the SEZ or category of business stipulated by the Ministry:

	(a) is responsible to carry out by contributing the stipulated cash or kind in the relevant combined scheme for the environmental conservation including the management and treatment of waste; (b) shall contribute the stipulated users 'charge s or management fees for the environmental conservation according to the relevant industrial estate, SEZ and business organization; (c) shall comply with the directives issued for environmental conservation according to the relevant industrial estate, SEZ or business.
Section 24	The project proponent has to allow relevant governmental organization or department to inspect whether performing is conformity with the terms and condition include in prior permission, stipulated by the ministry, or not.
Section 25	The project proponent has to comply with the terms and conditions include in prior permission.
Section 29	The project proponent has to abide by the stipulations included in the rules, regulations, by-law, order, notification and procedure, which are issued by said law.
Environmental Conservation Rules, 2014	
Rules 58	The Ministry shall form the EIA Report Review Body with the experts from the relevant Government departments, organizations.
Rules 59	The Ministry may assign duty to the Department to scrutinize the report of EIA prepared and submitted by any organization or person relating to EIA and report through the EIA Report Review Body.
Rules 61	The Ministry may approve and reply on the EIA report o IEE or EMP with the guidance of the Committee.
Sub-rule (a) of rule 68	The project proponent has to avoid emit, discharge or dispose the materials which can pollute to environment, or hazardous waste or hazardous material prescribed by notification in the place where directly or indirectly injure to public.
Sub-rule (b) of rule 68	The project proponent has to avoid performing to damage to ecosystem and the environment generated by said ecosystem.
Environmental Impact Assessment Procedure (December 2015)	
Objectives	The project proponent has to be liable for all adverse impacts caused by doing or emitting of project owner or contractor, sub-contractor, officer, employee, representative or consultant who is appointed or hired to perform on behalf of project owner, under sub-paragraph (a) of paragraph 102. The project proponent has to support, after consulting with effected persons by project, relevant government organization, government department and other related persons, to resettlement and rehabilitation for livelihood until the effected persons by the project receiving the stable socio-economy which is not lower than the status in pre-project, under sub-paragraph (b) of paragraph 102 The project proponent has to fully implement all commitments of project and conditions included in EMP. Moreover, the project proponent has to be liable for contractor and sub-contractor who perform on behalf of him/her have to fully abide by the relevant laws, rules, this procedure, EMP and all conditions, under paragraph 103. The project proponent has to be liable and fully & effectively implement all requirements included in ECC, relevant laws and rules, this procedure and standards under rule 104.

	The project proponent has to inform the completed information, after specifying the adverse impacts caused by the project, from time to time, under paragraph 105. The project proponent has to continuously monitor all adverse impacts in the pre-construction phrase, construction phrase, operation phrase, suspension phrase, closure phrase and post-closure phrase, moreover has to implement the EMP with abiding the all conditions included in ECC, relevant laws & rules and this procedure, under paragraph 106. The project proponent has to submit, as soon as possible, the failures of his or her responsibility, other implementation, ECC or EMP. If dangerous impact caused by this failure or failure should be known by the Ministry the project proponent has to submit within 24 hours and other than this situation has to submit within 7 days from knowing it, under paragraph 107. The project proponent has to submit the monitoring report dually or prescribed time by Ministry in line with the schedule of EMP, under paragraph 108. The project proponent has to prepare the monitoring report in accord with the rule 109. The project proponent has to show this monitoring report in public place such as library, hall and website and office of project for the purpose to know this report by public within 10 days from the date which the report is submitted to the Ministry. Moreover, has to give the copy of this report, by email or other way which way agreed with the asked person, to any asked person or organization, under paragraph 110. The project proponent has to allow inspector to enter and inspect in working time and if it is needed by Ministry has to allow inspector to enter and inspect in the office and work-place of project and other work-place related to this project in any time, under paragraph 113. The project proponent has to allow inspector to immediately enter and inspect in any time if it is emergency or failure to implement the requirements related to social or environment or caused to it, under paragraph 115. The project proponent has to allow inspector to inspect the contractor and sub-contractor who implement on behalf of project, under paragraph 117.
Screening: Section 23	a) The project proponent shall submit the Project Proposal to the Ministry for Screening. b) The Ministry will send the Project Proposal to the Environmental Conservation Department to determine the need for environmental assessment. c) Following the preliminary Screening and verification that the Project Proposal contains all required documents and related materials, subject to Articles 8, 9, 10, 11, 26 and 27 the Department shall make a determination in accordance with Annex 1 ‗ Categorization of Economic Activities for Assessment Purposes ‘, taking into account Article 25 and the additional factors listed in Article 28 in order to designate the Project as one of the following, and then submit it to the Ministry: i) An EIA Type Project, or ii) An IEE Type Project, or iii) A Non IEE or EIA Type, and therefore not required to
National Environmental Quality (Emission) Guidelines (NEQG) (December 2015)	

Objectives	To provide the basis for regulation and control of noise and vibration, air emissions, and liquid discharges from various sources in order to prevent pollution for purposes of protection of human and ecosystem health.
National Environmental Policy of Myanmar (2019)	
National Environmental Policy Vision & mission	Vision A clean environment, with healthy and functioning ecosystem, that ensures includes development and wellbeing for all people in Myanmar. Mission To establish national environmental policy principle for guiding environmental protection and sustainable development and for mainstreaming environmental consideration into all polices, laws, regulation, plans, strategic, programmes and projects in Myanmar.
Myanmar Investment Rules, 2017 Amendment 2018	
Rule 202	The project proponent has to comply with the conditions of the permit issued by the MIC and applicable laws when making the investment
Rule 203	The project proponent has to fully assist while negotiating with the authority for settling the grievance of the local community which has been affected due to investment
Rule 206.	The project proponent has to submit the passport, expert evidence or document of degree and profile to the MIC office for approval if decide to appoint a foreigner as senior management, technician expert or consultant according to subsection (a) of section 51 of Myanmar Investment Law
Myanmar Insurance Law (1993)	Section 15 - If the project proponent uses the owned vehicles the project owner has to ensure the insurance for the injured person. Section 16 - The project proponent has to ensure insurance to compensate for general damages because the project may cause damages to the environment and injury to the public.
Payment of Wages Law (2016)	
Section 3 & 4	The project proponent has to pay the wages in accord with section 3 and 4 of said law,
Section 5	The project proponent has to submit with the agreements of employees & reasonable ground to the department if it is difficult to pay because of force majeure included in a natural disaster
Section 7-13	The project proponent has to abide by the provisions of section 7 to 13 in the chapter (3) in respect of deduction from wages.
Section 14	The project proponent has to pay the overtime fees, prescribed by law, to the employees who work over working hours
Yangon City Development Committee Law (2018)	
Section (317)	The proponent shall not block the natural river channel, change the course, and disrupt the water channel, filling with soil within the city boundaries without the consent of the Committee
Section (318)	The project proponent shall not construct buildings, factories, and industries without sewage, toilet, septic tanks, and wastewater treatment system

Section (322)	The project proponent is not allowed to make activities that will produce noise pollution, water pollution, air pollution, and soil pollution to impact the environment within the city's boundaries
The Amended Law for Factories Act, 1951 (2016)	
Hygiene in Working Environment: Section 3	Mentions responsibilities of employer and manager regarding waste disposal, ventilation, extreme temperature, dust and gas generation, minimum space for each worker, lighting, portable drinking water and toilets for employees.
Safety in Working Environment: Section 4	States responsibilities of employer and manager concerning with machine guarding, personal protective equipment, housekeeping, aisles and exits, chemical storage and fire protection system to avoid accident.
The Private Industrial Enterprise Law, 1990	
Basic Principles: Section 3	Private Industrial Enterprises shall be conducted in accordance with the following basic principles: - (a) to enhance the higher proportion of the manufacturing value added in the gross national product and value of services, and to increase the production of the respective economic enterprises which are related to the industrial enterprise; (b) to acquire modern technical know-how for raising the efficiency of industrial enterprises and to establish the sale of finished goods produced by the industrial enterprise not only in the local market, but also in the foreign market; (d) to cause narrowing down of the gap between rural development and urban development by causing the development and improvement of industrial enterprises; (e) to cause opening up of more employment opportunities; (f) to cause avoidance of or reduction of the use of technical know-how which cause environmental pollution; (g) to cause the use of energy in the most economical manner.
The Export and Import Law (2012)	
Objectives	The objectives of this law are as follows: a) To enable to implement the economic principles of the State successfully. b) To enable to lay down the policies relating to export and import that supports the development of the State. c) To cause the policies relating to export and import of the State and activities are to be in conformity with the international trade standards. d) To cause to be streamlined and speedy in carrying out the matters relating to export and import.
Prohibitions: Section 5	No persons shall export or import restricted, prohibited and banned goods.
Prohibitions: Section 6	Without obtaining license, no person shall export or import the specified goods which are to obtain permission.
Prohibitions: Section 5	A person who obtained any license shall not violate the conditions contained in the license.
The Prevention of Hazard from Chemical and Related Substances Law, 2013	

This law was enacted with the objectives of: a. To protect from being damaged the natural environment resources and being hazardous any living beings by chemical and related substances; b. To supervise systematically in performing the chemical and related substances business with permission for being safety; c. To perform the system of obtaining information and to perform widely educative and research for using the chemical and related substance systematically; d. To perform the sustainable development for the occupational safety, health and environmental conservation. Regarding the chemical management and storage, currently, regulations governing chemicals management are divided between various Acts, mostly dating from colonial times; hence the legislation is in many respects related to the British framework. The Factory Act and the Public Health Act contain the provisions for chemicals management and storage. Some chemicals are likely to require permits.	
Underground Water Act (21st June, 1930)	
The underground water act enacted on the date of 21st June in 1930 whereas it is expedient to conserve and protect underground sources of water supply in the Union of Burma. This act prohibits sinking of a tube for the purpose of obtaining underground water except under and in accordance with the terms of a license granted by the water officer. Township Officer or sub-divisional officer had power to close a license tube after exercising jurisdiction over the local area concerned and the expense of such closure shall be recoverable from the owner of the tube as if it were an arrear of land-revenue.	
Section 3	No person shall sink a tube for the purpose of obtaining underground water except under and in accordance with the terms of a licence granted by the water officer. Every person owning a tube which was in existence before the extension of this Act to the local area concerned shall apply to the water officer for a licence for the said tube, and such licence shall be granted free of charge.
Section 5	Every person obtaining or attempting to obtain underground water shall supply the water officer with such information as the President of the Union may by rule prescribe.
Section 6	The President of the Union may make rules 1- (a) prescribing the conditions subject to which licences may be granted by the water officer under section 3; (b) prescribing the form of and the procedure for granting such licences and the fees payable for the issue thereof; (c) prescribing the information to be supplied to the water officer under section 5.
Myanmar Fire Brigade Law (2015)	
Chapter II Objectives Section 3	The objectives of this Law are as follows: (a) to prevent destruction of State-owned property, private property, cultural heritage and the lives and property of the public by fire and other natural disaster; (b) to organize the Fire brigade systematically and to train members of the fire brigade; (c) to carry out extinguishing fire, prevention and search and rescue when fire, other natural disaster, epidemic disease or any kind of sudden disaster occurs; (d) to educate, organize and incite extensively so as to achieve public cooperation when any disaster occurs;

	(e) to participate and help, if necessary, for the State safety, peace of the public and the rule of law
Chapter VIII Activities for Fire Safety Section 15	The different levels of Fire Safety Body shall: (a) perform the activities for fire safety in accord with the procedures laid down by the Central Body; (b) organize and educate to obtain the cooperation of the public in the activities for fire safety; (c) supervise as may be necessary the participation of all the relevant members of fire brigade in accord with the work programmes laid down by the Central Body when fire hazard, other natural disaster, epidemic disease or sudden disaster occurs; (d) appoint fire safety warning groups in coordination with the relevant administrative organizations.
Section 16	The person-in-charge of the Township Fire Services Department shall: (a) issue, from time to time, the directives on fire safety to be abided by the residents in the city, ward or village - tract; (b) inspect or cause to inspect in accord with the stipulations whether the residents in the city, ward or village - tract abide by the directives issued under sub-section (a) and arrange to enable warning or taking action, as may be necessary, against those who do not abide by.
Chapter XI Prohibitions Section 24	No person shall fail to abide by the directives of fire safety issued under section 16 by the head of the relevant Township Department of Fire Services.
Section 25	The owner or manager of the factory, workshop, bus terminal, airport, port, hotel, motel, lodgings, condominium, market, department, organization or business exposed to fire hazard shall, in accord with the directive of the Department of Fire Services: (a) not fail to form the Reserve Fire Brigade; (b) not fail to provide fire safety equipment.
Section 26	No person shall, knowing that there is no outbreak of fire, report fraudulently the outbreak of fire to the Fire brigade.
Section 25	No person shall, without cause, obstruct, block, disturb, or attack the members of the fire brigade and vehicles which departed to extinguish the fire and direct by any means to the place which is not related to the outbreak of fire.
The Electricity Law (2014)	
In 2014, the new Electricity Law, a comprehensive piece of legislation covering licensing, a new regulatory commission, standards, inspection, tariff, and restrictions, replaced the Electricity Law of 1984. The Electricity Law divides projects into “small” (up to 10 MW), “medium” (between 10 MW to 30 MW) and large (upwards of 30 MW); the states and regions can issue permits for small and medium power plants. In case these plants are not connected to the national grid, the Union Government Ministry is not the primary authority involved. The authorities have a legal right to use land for the purpose of power plants under the Electricity Law, and have the right to expand and maintain their facilities. The law also provides that the authorities can build transmission lines in accordance with existing laws.	
Purpose	To ensure compliance with the conditions of permission for productions of in line with the above law.

Section 10 (b)	The project proponent will implement the project with the best practices to reduce the damages on the environment, health and socio-economy also will pay compensation for the damages and will pay the fund for environmental conservation.
Section 18	The project proponent has to take the certificate of electric safety, issued by the chief-inspector, before the commencement of power generation.
Section 21 (a)	The project proponent has to be liable for damages to any person or enterprise by failure to abide by the quality standards or rules, regulation, by-law, order, and a directive issued
Section 22 (a)	The project proponent has to be liable for damages to any person or enterprise by the negligence of project owner.
Section 26 (a, b)	The project owner has to comply with the permission for electric searching and generation.
Section 27	The project proponent will inform promptly to chief-inspector and head officer of related office while occurring of accident in electricity generation.
Section 40	The project proponent will comply with the standards, rules, and procedure. Moreover, will allow the inspection by respected governmental department and organization if it is necessary.
Section 68	The project proponent will pay the compensation to anyone who is injured or caused to death in electric shock or fire caused by the negligence or omitting of the project owner or representative of the project owner.
Labor Dispute Settlement Law (28 Mar 2012 replacing 1929 version)	
This law was enacted for safeguarding the right of workers or having good relationship between employer and workers and making peaceful workplace or obtaining the rights fairly, rightfully and quickly by settling the dispute of employer and worker justly. It stipulates that employer in which more than 30 workers are employed shall form the workplace coordinating committee consisting of the representatives of workers and the representatives of employer.	
Section 23	A party, employer or worker, may complain individual dispute relating to his grievance to the Conciliation Body and if he is not satisfied with the conciliation of such body in accord with stipulated manners, may apply to the competent court in person or by the legal representative.
Section 24	The relevant Conciliation Body shall, in respect of the collective dispute known or received by the complaint of either party, employer or worker, in respect of the dispute; information sent by the Minister or the Region or State Government or any other means, carry out as follows: (a) conciliating so as to be settled within three days, not including the official holidays, from the day of knowing or receipt of such dispute; (b) concluding mutual agreement if the settlement is reached in conciliating under sub-section (a), before the Conciliation Body.
Section 25	The Conciliation Body shall refer the collective dispute which does not reach settlement to the relevant Arbitration Body and inform the persons relating to the dispute.
Section 38	No employer shall fail to negotiate and coordinate in respect of the complaint within the prescribed period without sufficient cause.
Section 39	No employer shall alter the conditions of service relating to workers concerned in such dispute at the consecutive period before commencing the dispute within the period under investigation of the

	dispute before the Arbitration Body or Tribunal, to affect the interest of such workers immediately.
Section 40	The project proponent has to not close the work without negotiation, discussion on dispute in accord with this law, decision by Tribunal
Section 51	The project proponent has to pay the compensation decided by Tribunal f violates any act or any emission to omission to damage the interest of labour by reducing of product without efficient cause.
Section 46	Any employer who violates any prohibition contained in sections 38 and 39 shall, on conviction, be punished with a fine for a minimum of one-lakh kyats.
The Social Security Law (2012)	
The Social Security Law, enacted in 2012, was amended the Social Security Act in 1954. It stipulates the formation and implementation of social security systems.	
Section 53(a)	The employers and workers shall co-ordinate with the Social Security Board or insurance agency in respect of keeping plans for safety and health in order to prevent employment injury, contracting disease and decease owing to occupation and in addition to safety and educational work of the workers and accident at the establishment;
The employment and skill development (2013)	
This law was enacted for safeguarding the right of workers or having skillful of workers and making peaceful workplace or obtaining the rights fairly, rightfully and quickly by settling the dispute of employer and worker justly. Employer shall conduct occupational training to enhance the skills of workers.	
Section 5	The project proponent has to appoint employees with the contract in line with the provision of section 5 of said law.
Section 14	Employer shall conduct occupational training to enhance the skills of workers who are to be employed as well as workers who are presently employed in accordance with the requirements of the enterprise and the policy of the Skills Development Agency.
The Worker's Compensation Act, 1923	It stipulates that employer is required to make payments to employees who become injured or who die in any accidents arising during and in consequence of their employment. Such compensation also must be made for diseases which arise as a direct consequence of employment, such as carpal tunnel syndrome.
The Payment of Wages Act, 1936	The Payment of Wage Act defines the payment obligation to the workers employed in the factories or railway administration. It stipulates the method of payment stating that the payment should be made in cash on a regular payday, and allows legal action against delayed payment or un-agreeable deduction.
The Leave and Holidays Act (1951, partially revised in 2014)	This act has been used as the basic framework for leaves and holidays for workers with minor amendment in 2006 and 2014. This defines the public holidays that every employee shall be granted with full payment. It also defines the rules of leaves for workers including medical leave, earned leave and maternity leave.
The Minimum Wage Law (2013)	The minimum wage law, passed in March 2013, was replaced the 1949 Minimum Wage Act. The law provides a framework for minimum wage determination: the presidential office establishing a tripartite minimum wage committee shall decide minimum wage with industrial variation based on a survey on living costs of workers possibly every two years. This also stipulates equal payment.
Public Health Law (1972)	

Objectives	To ensure the public health include not only employees but also resident people and cooperation with the authorized person or organization of health department. This law focuses as follows The project owner has to cooperate with the authorized person or organization in line with the section 3 and 5 of said law. The project proponent has to abide by any instruction or stipulation for public health under the section 3 of said law. The project proponent has to allow any inspection, anytime, anywhere if it is needed under the section 5 of said law.
Prevention and Control of Communicable Disease Law 1995 (Amendment in 2011)	
Chapter 2 Prevention	4. When a Principal Epidemic Disease of a Notifiable Disease occurs; Immunization and other necessary measures shall be undertaken by the Department of Health, in order to control the spread thereof; The public shall abide by measures undertaken by the Department of Health under sub-section (a).
Chapter 4 Environmental Sanitation	For prevention of the outbreak of Communicable Disease and effective control of Communicable Disease when it occurs, the public shall under the supervision and guidance of the Health Officer of the relevant area, undertake the responsibility of carrying out the following environmental sanitation measures; - Indoor, outdoor sanitation or inside the fence outside the fence sanitation; Well, ponds and drainage sanitation; Proper disposal o refuse and destruction thereof by fire; Construction and use of sanitary latrines; Other necessary environmental sanitation measures.
Occupational Safety and Health Law (2019)	
Purpose:	To effectively implement measures related to safety and health in every industry and to set occupational safety and health standards;
Section-26 Sub-section (e)	The project proponent has to provide adequate and relevant personal protective equipment to workers free of charge and make them wear it during work so as not to expose workers to any serious occupational diseases or hazards.
Section-26 Sub-section (1)	The project proponent has to arrange and display occupational safety and health instructions, warning signs, notices, posters, and signboards.
Section-30 Sub-section (a)	The worker shall wear or use at all times any protective clothes, equipment and tools provided by the employer for the purpose of safety and health.
Section-30 Sub-section (d)	The worker shall proper and systematic use any equipment and tools, machines, any parts of the machines, vehicles, electricity and other substances being used at the workplace.
Section-30 Sub-section (e)	The worker shall take reasonable care for the safety and health of himself/ herself and of other persons who may be affected by his/ her acts or omissions at work.
The law on Standardization	
Objectives	The Objectives of this Law are as follows: to enable to determine Myanmar Standard

	to enable to support export promotion by enhancing quality of production organizations and their product, production processes and services to enable to protect the consumers and user by guaranteeing imports and products are not lower than prescribed standard, and safe from health hazards to enable to support protection of environment related to products, production process and services from impact, and conservation of natural resources to enable to protect manufacturing, distributing and importing the disqualified goods which do not meet the prescribed standard and those which are not safe and endangered to the environment to support on establishing the ASEAN Free Trade Area and to enable to reduce technical barriers to trade to facilitate technological transfer and innovation by using the standards for the development of national economic and social activities in accordance with the national development programme.
Chapter 7 Taking Action by Committee No. 19	The committee may, if it is found out that holder of certificate of certification violates any term or condition contained in the relevant recommendation, pass any of the following administrative order: warning suspending the certificate of certification for limited period cancelling the certificate of certificaion
Vehicles Safety and Motor Vehicle Management Law, 2020	
Objectives	When the constructions periods and if it is needed in operation and production period for all vehicles The project proponent has to promise to abide by the nearly all provisions of said law and rules, especially the provisions related to air pollution, noise pollution and life safety.
The Conservation of Water Resources and Rivers Law (2016)	
Chapter II Aims Section 3	The aims of this Law are as follows: (a) to conserve and protect the water resources and rivers system for beneficial utilization by the public; (b) to smooth and safety waterways navigation along rivers and creeks; (c) to contribute to the development of State economy through improving water resources and river system; (d) to protect environmental impact.
Chapter V Prohibitions Section 8	No person shall: (a) carry out any act or channel shifting with the aim to ruin the water resources and rivers and creeks. (b) cause the wastage of water resources wilfully.
Section 11	No person shall: (a) dispose of engine oil, chemical, poisonous material and other materials which may cause environmental damage, or dispose of explosives from the bank or from a vessel which is plying, vessel which has berthed, anchored, stranded or sunk.

	(b) catch aquatic creatures within river-creek boundary, bank boundary or waterfront boundary with poisonous materials or explosives. (c) dispose of disposal soil and other materials from panning for gold, gold mineral dredging or resource production in the river and creek, into the river and creek or into the water outlet gully which can flow into the river and creek.
Section 11	11. No person shall: (a) dispose of engine oil, chemical, poisonous material and other materials which may cause environmental damage, or dispose of explosives from the bank or from a vessel which is plying, vessel which has berthed, anchored, stranded or sunk. (b) catch aquatic creatures within river-creek boundary, bank boundary or waterfront boundary with poisonous materials or explosives. (c) dispose of disposal soil and other materials from panning for gold, gold mineral dredging or resource production in the river and creek, into the river and creek or into the water outlet gully which can flow into the river and creek.
Section 19	No one shall dispose of any substance into the river-creek that may cause damage to waterway or change of watercourse from the bank or vessel which is plying, vessel which has berthed, anchored, stranded or sunk.
Section 22	No one shall, without the permission of the directorate, pile sand, shingle and other heavy materials for business purposes in the bank area and waterfront area.
Chapter VI Penalties Section 29	Whoever attempts or conspires or abets in the commission of an offence under this Law shall be punished with the punishment provided for such offence in this Law.
Chapter VII Miscellaneous Section 30	Any government department and organization or any person desirous of constructing drainage, utilizing river water intake, constructing bridges spanning rivers, connecting underground pipe, connecting underground electric power cable, connecting underground telecom cable or digging in rivers and creeks, bank boundary and waterfront boundary, under the requirement of work, shall in order not to adversely affect the water resources and rivers and creeks, carry out only after obtaining the approval of the Ministry of Transport.
The Commercial Tax Law (1990) Amended 2014	
Chapter 5 Registration and Intimation of Commencement of Enterprise 11 (b)	Any Person who commences operation of a goods production enterprise or service enterprise shall furnish letter of intimidation on the commencement of the operation as such to the relevant Township Revenue Officer as stipulated by regulations.
Chapter 6 Monthly Payment of Tax and Sending of Three-Monthly Return 12 (a)	Any person who has taxable proceed of sale or receipt from service within a year, shall pay due monthly tax within ten days after the end of the relevant month. Moreover, a three-monthly return shall be furnished

	to the relevant Township Revenue Officer within one month after the end of relevant three-month.
12 (b)	The Township Revenue Officer may intimate any person to pay due monthly tax and send three-monthly return if there is cause to consider that he has taxable proceed of sale or receipt from service within a year.
12 (c)	If it is failed to pay tax under sub-section (a) or (b), or if there is cause to consider that the tax paid is less than the tax payable, the Township Revenue Officer may, based on the information received, estimate and claim the tax payable or the additional tax payable.
12 (d)	The tax paid under sub-section (a), (b) or (c) shall be set-off from the tax due in the assessment.
12 (e)	The tax payable on goods imported under sub-section (c) of section 4 of the Law shall be collected together with the customs duties by the Customs Department in accord with the manner of collecting customs duties.
လုပ်ငန်းခွင်သုံးပေါက်ကွဲစေတက်သောဝတ္ထုပစ္စည်းများဆိုင်ရာဥပဒေ (၂၀၁၈)	
ရည်ရွယ်ချက်	လုပ်ငန်းခွင်သုံးပေါက်ကွဲစေတက်သော ဝတ္ထုပစ္စည်းများကို စနစ်တကျပြုလုပ်ခြင်း၊ တင်သွင်းခြင်း၊ သယ်ယူခြင်း၊ သိုလှောင်ခြင်းနှင်း သုံးစွဲခြင်းတို့ပြုနိုင်ရန်၊ ယမ်းဘီလူးနှင့် ဆက်စပ်သုံးပစ္စည်းများ အသုံးပြုသည့် လုပ်ငန်းခွင်ဘေးအန္တရာယ် ကင်းရှင်း၍ လုံခြုံမှုရှိစေရန်၊ လုပ်ငန်းခွင်သုံး ပေါက်ကွဲစေတက်သော ဝတ္ထုပစ္စည်းများ ပြုလုပ်သုံးစွဲမှုများကို စနစ်တကျ ကြီးကြပ်နိုင်ရန်။
အခန်း ၇ တားမြစ်ချက်များ အမှတ် ၁၈	လိုင်စင်ရရှိသူနှင့် ခွင့်ပြုချက်ရရှိသူ မည်သူမျှ စစ်ဆေးရေးအရာရှိချုပ် သို့မဟုတ် စစ်ဆေးရေးအရာရှိ၏ စစ်ဆေးခြင်းကို ခံယူရန် ငြင်းပယ်ခြင်းမပြုရ။
အမှတ် ၁၉ (ခ)	ပုဒ်မ ၈ အရ ကာကွယ်ရေးဌာနကောင်စီ အမှုဆောင်အဖွဲ့၏ အတည်ပြုချက်မရရှိဘဲ လုပ်ငန်းခွင် ပေါက်ကွဲစေတက်သော ဝတ္ထုပစ္စည်းများကို ဖျက်ဆီးခြင်းမပြုရ။

အမှတ် ၁၉ (ဂ)	ဤဥပဒေအရ ထုတ်ပြန်သည့် နည်းဥပဒေ၊ စည်းမျဉ်း၊ စည်းကမ်း၊ အမိန့်ကြော်ငြာစာ၊ အမိန့်နှင့် ညွှန်ကြားချက်များနှင့်အညီ ဆောင်ရွက်ရန် ပျက်ကွက်ခြင်း မရှိစေရ။

2.2. AUTHORIZED INSTITUTIONS AND RECOMMENDATIONS

The Ministry of Environmental Conservation and Forestry (MOECAF) was reformed as the Ministry of Natural Resources and Environmental Conservation (MONREC) on 30 March 2016 in order to undertake both environmental and natural resources conservation and management more effectively. Under Section 3 of the Environmental Impact Assessment Procedure (2015), pursuant to section 21 of the law and Articles 52, 53 and 55 of the Environmental Conservation Rules, all projects and project expansions undertaken by any organization, which may cause impact on environmental quality that, are required to obtain prior permission. This is to be in accordance with section 21 of the Environmental Conservation Law, and Article 62 of the Environmental Conservation Rules, having the potential to cause adverse impacts, that are required to undertake IEE or EIA or to develop an EMP, and to obtain an Environmental Compliance Certificate (ECC) in accordance with this EIA procedure.

2.3. COMMITMENT OF MYANMAR GREEN START ENERGY COMPANY LIMITED

Project proponent shall be responsible for the preservation of the environment at and around the area of project site. In addition to this, it shall carry out as per instructions made by Ministry of Natural Resources and Environmental Conservation (MONREC) in which to conduct an IEE process and an EMP which describe the measure to be taken for preventing, mitigation and monitoring significant environment impacts resulting from the implementation and operation of proposed project or business or activity has to be prepared and submitted and to perform activities in accordance with this IEE and be abided by the environment policy, Environmental Conservation Law and other environmental related rules and procedures. Project proponent shall be responsible for the environmental assessment of factory development as follows:

- To set up welfare plan such as staff medical checkup, training program and Public talk for getting knowledge, risk prevention, bonus and social security services.
- To promote Corporate Social Responsibility- (CSR) with 2% of the net profit for development of safe, economic and social environment
- To carry out fire safety assessment and ensure adequate and appropriate fire safety measures for employees
- To carry out disposing wastes according to Yangon City Development Committee regulations, protect, and preserve the project environment from pollution of air, water and land by following laws and guidelines lay down by MONREC.

2.4. INTERNATIONAL GUIDELINES

Organization’s Guidelines, World Bank Safeguard Policies, IFC Performance Standards and National Environmental Quality (Emission) Guidelines (2015) are referred for EMP of the proposed factory project.

CHAPTER 3
PROJECT DESCRIPTION

3.1. BACKGROUND INFORMATION

This report describes the findings of the Initial Environmental Examination (IEE) for the Manufacturing of solar products by Myanmar Green Start Energy Company Limited. The main objective of this report is to identify the major environmental impacts due to implementation of the project along with the effective measures to mitigate the potential adverse impacts.

3.1.1. Background of the Project

The project approved for the investment endorsement from the Yangon Regional Investment Committee (YRIC) Endorsement No. YGN- 097/2018 on 30, November 2018 (**Appendix A).** The investment committee notified for the environmental approval and comments of the Ministry of the Natural Resources and Environmental Conservation (MONREC) on the proposed project and had approved the proposal for investment in manufacturing of solar products under the name of Myanmar Green Start Energy Company Limited.

According to the Myanmar Environmental Conservation Law (2012), it requires that the proponents of every development project in the country submit either an Initial Environmental Examination (IEE) or an Environmental Impact Assessment (EIA) to Ministry of Natural Resources and Environmental Conservation (MONREC). As per the comments of Environmental Conservation Department (ECD), the said project requires an Initial Environmental Examination (IEE) to meet the environmental assessment requirements of Notification No. YaKa-1/3/4 (EIA) (329/2019) on 25 February 2019. Therefore, Myanmar Green Start Energy Company Limited commissioned Myanwei Consulting Company Limited for IEE report study.

3.2. PROJECT IMPLEMENTATION PROGRAM

The proposed factory is the 100% foreign investment by Myanmar Green Start Energy Company Limited with an estimated authorized capital of USD (0.595) million. The proposed factory is located at Land Plot No. (63), Yaw Twin Wun U Phoe Hlaing Road, Dagon Seikkan Industrial Zone (1), Dagon Myo Thit (Seikkan) Township, Yangon Region and the total land area are 2 acres. The factory aims to manufacture of solar products by using semiautomatic production process. The construction phase of the proposed factory initiated in November 2018 and then commercial running operation stage is May 2020. The proposed duration of the investment shall be 25 years extendable 10 years' periods two times. The term of the Lease shall be initial 5 years commencing from the date of signing of the Lease Agreement between landowner and Myanmar Green Start Energy Company Limited for proposed project site for 2 acres of land and extendable for 10 years in 2 times recommended by the Yangon Region Government.

3.3. CONSTRUCTION PHASE

The project identification of construction phase is machinery and equipment installation period. Project proponent was leased the project area from previous owner; this area already constructed the warehouse building. The installation of machinery and equipment started in November 2018. The Installation project is completed as scheduled on the first week of May

2020. During the IEE study, the factory building is already constructed at the project site, photo of the factory building is presented in Figure 3-1.

Figure 3-1 Construction Phase of Myanmar Green Start Energy Factory

3.4. OPERATION PHASE

The total area of project site is 2 acres. The factory area includes one plant building around (6,096 sqm). Number of people 112 employees working at Myanmar Green Start Energy Company Limited factory. Most are local people, who manage the company by their dynamic, enthusiastic, experienced, and cooperative skills. The estimated production rate is (112,500) pieces per annually of production rate.

3.4.1. Location of Proposed Project

The proposed project factory is located at Land Plot No. (63), Yaw Twin Wun U Phoe Hlaing Road, Dagon Seikkan Industrial Zone (1), Dagon Myo Thit (Seikkan) Township, Yangon Region and the Republic of the Union of Myanmar. The proposed factory falls at the coordinates of North Latitude 16°50'6.70"N and East Longitude 96°17'1.00"E. Location of the proposed project area were shown in Figure 3-2, Figure 3-3, Figure 3-4, Figure 3-5 and Figure 3-6.

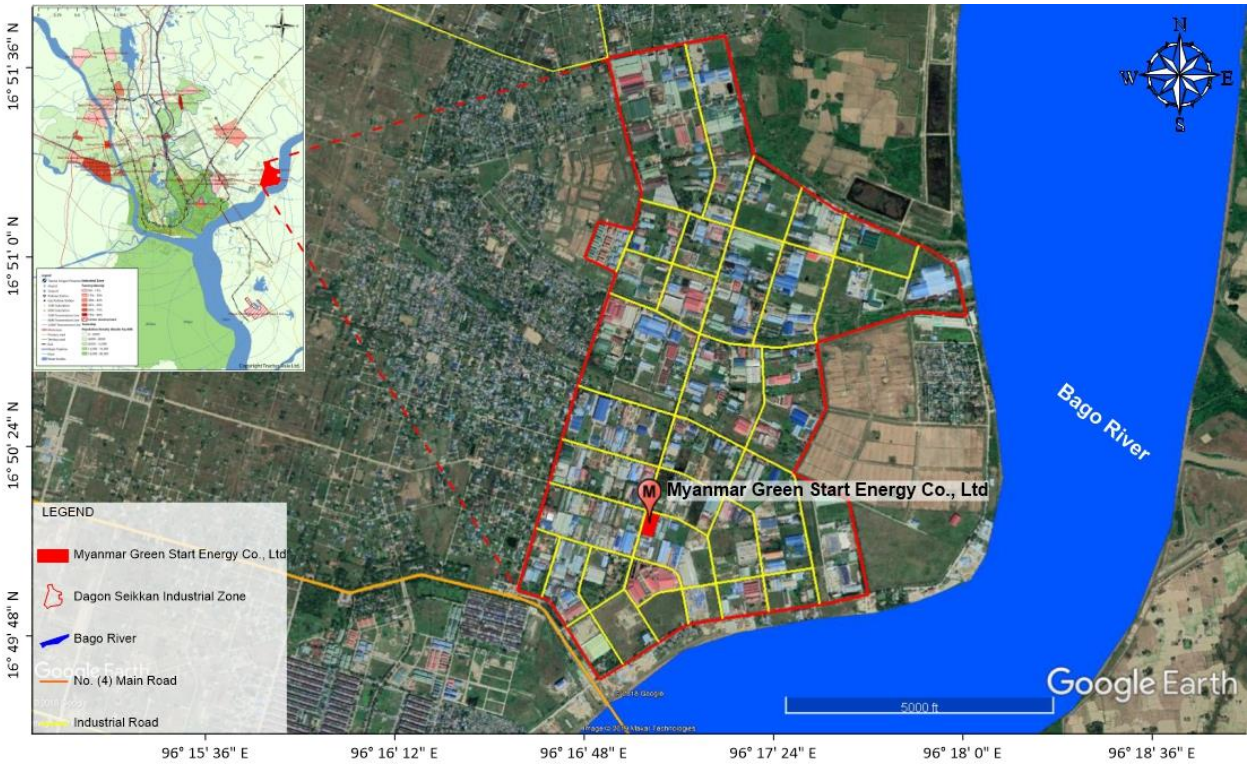


Figure 3-2 Location map of the Project

Figure 3-3 Location map of Project (Google source)

Figure 3-4 Site layout drawing (Google drawing)

Figure 3-5 Factory Layout drawing

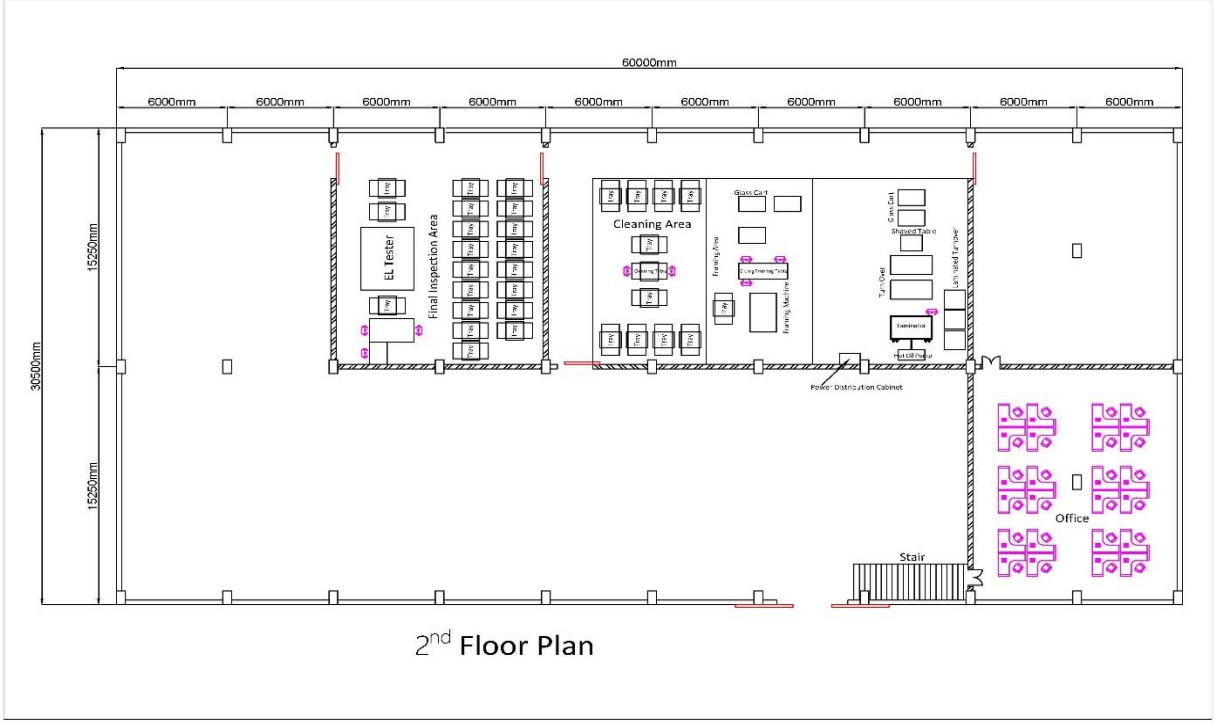


Figure 3-6 Factory Layout Drawing (2nd Floor Plan)

3.5. PRODUCTION PROCESS

A solar panel is a collection of solar cells. The standard method for the manufacture of silicon cell based on the semiconductor industry covers the following: sand reduction to metallurgical grade silicon, purification to semiconductor grade silicon, conservation to single crystal silicon wafers, processing into cells and encapsulation into modules. The purpose of inspection production testing is to verify that the cells, which have been purchased, and the products built with them conform to agreed specifications. Typical tests include both mechanical and electrical tests. The components are checked for dimensional accuracy and sample subassemblies are subject to weld strength testing of the interconnections. Electrical parameters measured include the internal impedance and the output voltage of the cell or battery pack with or without a load. The battery is also submitted to short duration charging and discharging pulses of about 2 milliseconds to check that the unit accepts and can deliver charge. The most common way to laminate a solar panel is by using a lamination machine. This old-fashioned method has many disadvantages, but is used by the large majority of solar panel manufactures. The component test objects shall be mounted in a manner that is similar to the intended usage. This requirement would include the use of such devices as reflectors and roof support structures. The intent is that all thermal and optical characteristics are reproduced during the test. Process flow diagram of Myanmar Green Start Energy Company Limited is presented in Figure 3-7.

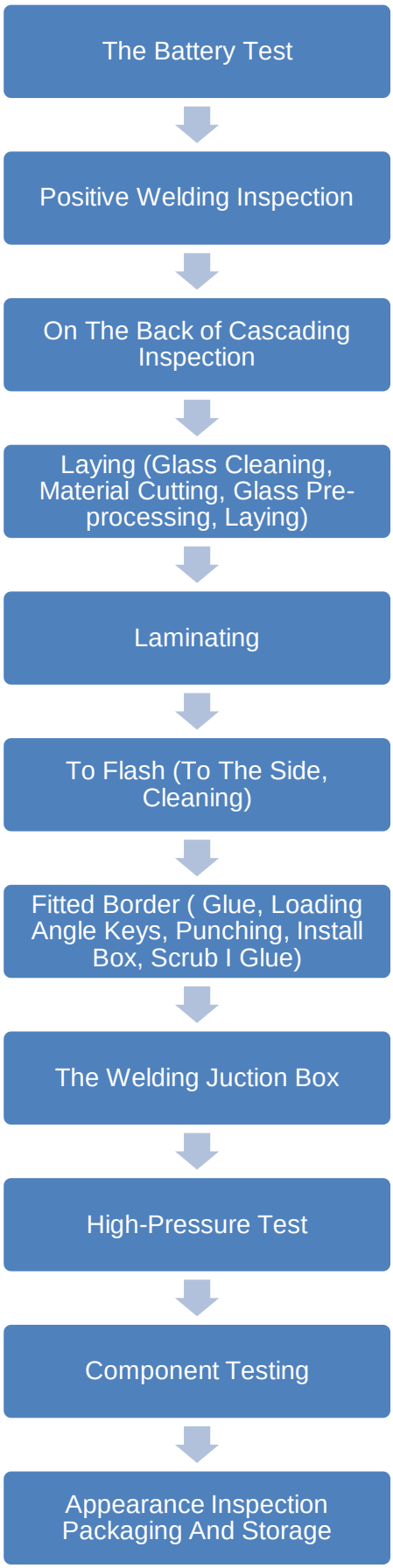


Figure 3-7 Production flow diagram

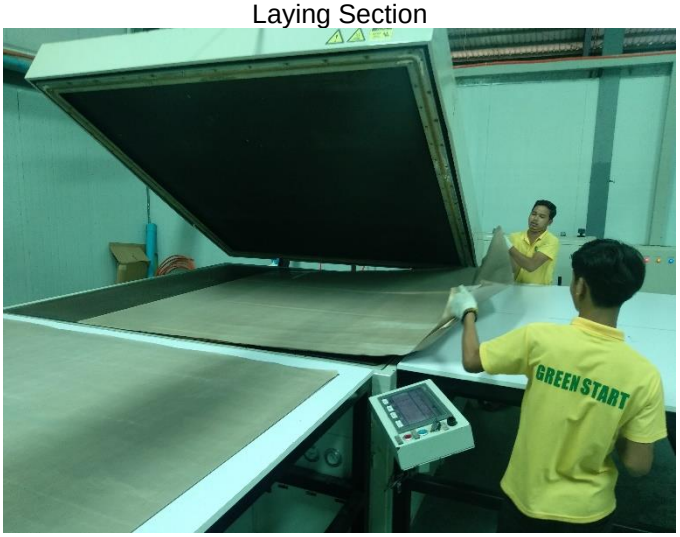
Raw Materials

Cutting

Welding Section

Laying Section

Welding Junction Box Section



High-Pressure Section

Finished Good Products

Packing Section

Figure 3-8 Production process

3.6. UTILITIES

3.6.1. Machinery and equipment

Automation systems for fully automatic and semiautomatic systems control of each process machine or complete processing line have been implemented. Lists of machinery and equipment required for the proposed factory are listed in Table 3-1.

Table 3-1 List of machinery and equipment

No.	Description	HS Code	Unit	Quantity
1	Single Piece Sorter		Set	1
2	Single Piece Sorter Table		Set	1
3	Scribing Machine	8438	Set	1
4	Work Bench	9403	Set	1
5	Sorting Table		Set	1
6	Cartridge		Set	20
7	Plastic Tray	3924	Set	20
8	ISBN Printer	8443	Set	1
9	Automatic Welding Machine	8515	Set	1
10	Artificial Welding Station	7408	Set	1
11	Thermostat Tip	9032	Set	10
12	String Welding Car	8544	Set	5
13	Battery String Tray	8536	Set	60
14	Laminated Table		Set	2
15	EVA, Back Panel Placement Table		Set	2
16	Glass Car		Set	3
17	Laminated Turnover Frame		Set	8

No.	Description	HS Code	Unit	Quantity
18	Semi-automatic Cutting Table		Set	1
19	IV Tester		Set	1
20	El Tester	9030	Set	1
21	Laminator	8439	Set	1
22	Paring Table	7615	Set	1
23	Framed Car	8703	Set	4
24	Group Machine	8438	Set	1
25	Pneumatic Glue Gun		Set	2
26	Gluing Framed Table		Set	1
27	Cleaning Table		Set	1
28	Inspection Table		Set	1
29	Packing Table		Set	1
30	Packing Tool	8459	Set	1
31	Repair Station		Set	1
32	Rework Table		Set	1
33	Diesel Forklift		Set	3ton
34	Hydraulic Forklift		Set	3ton
35	Air Compressor	8414	Set	1

3.6.1. **Raw Material**

The main materials for production of Solar are Solar Frisbee, Solar Intelligent Street Light & Solar Integrated Machine are imported from China. Annual raw material requires for production process provided in Table 3-2.

Table 3-2 Annual Raw Material Requirements

No	Particular	Unit	Year - 1	Year -4-10
1	Cell	Sheet	105,000	115,500
2	Wafer	Sheet	105,000	115,500
3	Component	Set	105,000	115,500
4	PET Laminate	Sheet	105,000	115,500
5	Glass Laminate	Sheet	105,000	115,500
6	Charge Controller	Set	105,000	115,500
7	Controller	Set	105,000	115,500

No	Particular	Unit	Year - 1	Year -4-10
8	EVA	Square Meter	105,000	115,500
9	Backplane	Square Meter	105,000	115,500
10	Frame	Set	105,000	115,500
11	Junction Box	Set	105,000	115,500
12	USB Junction Box	Set	105,000	115,500
13	Photovoltaic Line	Meter	105,000	115,500
14	Wire	Meter	105,000	115,500
15	Braided Copper Wire	Meter	105,000	115,500
16	Sheathed Cable	Meter	105,000	115,500
17	American Standard Line	Meter	105,000	115,500
18	Polyethylene Insulating Sleeve	Meter	105,000	115,500
19	Anderson Plug	Pcs	105,000	115,500
20	Crocodile Clip	Pair	105,000	115,500
21	Heat Shrinkable Tube	Meter	105,000	115,500
22	Stainless Steel Countersunk Head Tapping Screw	Pcs	105,000	115,500
23	2.5 Inch Hinge	Pcs	105,000	115,500
24	Box Buckle	Pcs	105,000	115,500
25	Cross Head Self-Tapping Screw	Pcs	105,000	115,500
26	Curved Handle	Pcs	105,000	115,500
27	Phillips Head Nail	Pcs	105,000	115,500
28	Aluminum Square Tube	Root	105,000	115,500
29	Black Rubber Sleeve	Pcs	105,000	115,500
30	Upper Bracket	Pcs	105,000	115,500
31	Three-Hole Side Bracket	Pcs	105,000	115,500

No	Particular	Unit	Year - 1	Year -4-10
32	Two-Hole Side Bracket	Pcs	105,000	115,500
33	Bracket Swing Arm	Pcs	105,000	115,500
34	Hex Bolts #1	Pcs	105,000	115,500
35	Self-Locking Nuts	Pcs	105,000	115,500
36	Plastic Gasket	Pcs	105,000	115,500
37	Hex Bolts #2	Pcs	105,000	115,500
38	Square Hole Bolt	Pcs	105,000	115,500
39	Butterfly Nut	Pcs	105,000	115,500
40	External Serrated Gasket	Pcs	105,000	115,500
41	Hardware Hook	Pcs	105,000	115,500
42	Z-Type Gasket	Pcs	105,000	115,500
43	Plastic R Clip	Pcs	105,000	115,500
44	Cross Recessed Large Flat Head Self-Tapping Screws	Pcs	105,000	115,500
45	Flat Tail Self Tapping Screw	Pcs	105,000	115,500
46	Blind Rivet	Pcs	105,000	115,500
47	Plastic Corner	Pcs	105,000	115,500
48	Tote Bag	Pcs	105,000	115,500
49	Cable Tie	Article	105,000	115,500
50	Scotch Tape	Meter	105,000	115,500
51	Instruction Manual	Sheet	105,000	115,500
52	Canvas	Sheet	105,000	115,500
53	Pearl Cotton	Sheet	105,000	115,500
54	Embroidery Label	Pcs	105,000	115,500
55	Hook Strip	Article	105,000	115,500
56	Handbag	Root	105,000	115,500

No	Particular	Unit	Year - 1	Year -4-10
57	Cotton Handle	Pcs	105,000	115,500
58	Velcro	Pair	105,000	115,500
59	Vacuum Cup	Pcs	105,000	115,500
60	USB Data Cable	Root	105,000	115,500
61	Carabiner	Pcs	105,000	115,500
62	Self adhesive Bag	Pcs	105,000	115,500
63	Tag Jam	Sheet	105,000	115,500
64	Net Bag	Pcs	105,000	115,500
65	Zipper Strip	Root	105,000	115,500
66	Cloth	Article	105,000	115,500
67	Hard Cardboard	Sheet	105,000	115,500
68	Surrounding	Root	105,000	115,500
69	Plastic Tag Line	Root	105,000	115,500
70	Silica Gel	ML	105,000	115,500
71	Bar Code Paper	Sheet	105,000	115,500
72	Power Nameplate Paper	Sheet	105,000	115,500
73	Flux	ML	105,000	115,500
74	Industrial Alcohol	Gram	105,000	115,500
75	Solder Wire	Gram	105,000	115,500
76	Paper Partition	Sheet	105,000	115,500
77	Paper Corner	Pcs	105,000	115,500
78	Inner Carton	Pcs	105,000	115,500
79	Outer Carton	Pcs	105,000	115,500
80	Paper Circumference	Pcs	105,000	115,500
81	Upper Cover	Pcs	105,000	115,500
82	Lower Lid	Pcs	105,000	115,500
83	Plywood	Sheet	105,000	115,500
84	Fumigation-Free Tray	Pcs	105,000	115,500

No	Particular	Unit	Year - 1	Year -4-10
85	Seal Tape	Meter	105,000	115,500
86	Foam Board	Pair	105,000	115,500
87	Foam	Pcs	105,000	115,500
88	L-Shaped Corner	Set	105,000	115,500
89	Green PET Plastic Strip	Pcs	105,000	115,500
90	Plastic Steel Packing Buckle	Set	105,000	115,500
91	Stretch Film	Trip	105,000	115,500
92	MC4 Connector	Trip	105,000	115,500
93	Yangshui Inverter	Trip	105,000	115,500
94	Deep Well Submersible Pump	Trip	105,000	115,500
95	DC Side Cable	Trip	105,000	115,500
96	AC Side Cable	Trip	105,000	115,500
97	Water Level Sensor	Trip	105,000	115,500
98	Sensor Cable	Set	105,000	115,500
99	Filter	Pcs	105,000	115,500
100	GPRS	Pcs	105,000	115,500
101	Photovoltaic Three-Way Connector	Pcs	105,000	115,500
102	Photovoltaic Four-Way Connector	Pair	105,000	115,500
103	Distribution Box	Pcs	105,000	115,500
104	Reservoir Sensor	Set	105,000	115,500
105	Water Pump	Pcs	105,000	115,500
106	Ground Support	Set	105,000	115,500
107	Horse Light	Trip	105,000	115,500
108	Spring Lantern	Trip	105,000	115,500
109	Flying Crane Light	Trip	105,000	115,500
110	Sail Light	Trip	105,000	115,500
111	Night Hawk Light	Trip	105,000	115,500
112	Moonlight	Trip	105,000	115,500

No	Particular	Unit	Year - 1	Year -4-10
113	Jingwei Lamp	Trip	105,000	115,500
114	The Height Of The Pole Is 1~12 Meters	Set	105,000	115,500
115	Iron Lithium Battery	Pcs	105,000	115,500
116	Ternary Lithium Battery	Pcs	105,000	115,500
117	Lithium Iron Phosphate Battery	Pcs	105,000	115,500
118	Lithium Battery	Pcs	105,000	115,500
119	Maintenance-Free Lead Acid Battery	Pcs	105,000	115,500
120	Open Copper Nose	Pcs	105,000	115,500
121	Inverter	Pcs	105,000	115,500
122	Lightning Protection Combiner Box	Pcs	105,000	115,500
123	Solar Frisbee (Sheet)	Sheet	105,000	115,500
124	Solar Integrated Machine	Pcs	105,000	115,500
125	Aviation Connector	Pair	105,000	115,500
126	Screw	Pcs	105,000	115,500
127	Silica Gel	Pcs	105,000	115,500
128	Potting Glue	Gram	105,000	115,500
129	Tin Strip	Kg	105,000	115,500
130	Ribbon	Volume	105,000	115,500

Table 3-3 Raw material require for a piece of product and annual requirement

No	Particular	Unit	Solar Frisbee	Solar Intelligent Street Light	Solar Integrated Machine
1	Cell	Sheet	1.0	1.0	1.0
2	Wafer	Sheet	1.0	1.0	1.0
3	Component	Set	1.0	1.0	1.0
4	PET Laminate	Sheet	1.0	1.0	1.0
5	Glass Laminate	Sheet	1.0	1.0	1.0

No	Particular	Unit	Solar Frisbee	Solar Intelligent Street Light	Solar Integrated Machine
6	Charge Controller	Set	1.0	1.0	1.0
7	Controller	Set	1.0	1.0	1.0
8	EVA	Square Meter	1.0	1.0	1.0
9	Backplane	Square Meter	1.0	1.0	1.0
10	Frame	Set	1.0	1.0	1.0
11	Junction Box	Set	1.0	1.0	1.0
12	USB Junction Box	Set	1.0	1.0	1.0
13	Photovoltaic Line	Meter	1.0	1.0	1.0
14	Wire	Meter	1.0	1.0	1.0
15	Braided Copper Wire	Meter	1.0	1.0	1.0
16	Sheathed Cable	Meter	1.0	1.0	1.0
17	American Standard Line	Meter	1.0	1.0	1.0
18	Polyethylene Insulating Sleeve	Meter	1.0	1.0	1.0
19	Anderson Plug	Pcs	1.0	1.0	1.0
20	Crocodile Clip	Pair	1.0	1.0	1.0
21	Heat Shrinkable Tube	Meter	1.0	1.0	1.0
22	Stainless Steel Countersunk Head Tapping Screw	Pcs	1.0	1.0	1.0
23	2.5 Inch Hinge	Pcs	1.0	1.0	1.0
24	Box Buckle	Pcs	1.0	1.0	1.0
25	Cross Head Self-Tapping Screw	Pcs	1.0	1.0	1.0

No	Particular	Unit	Solar Frisbee	Solar Intelligent Street Light	Solar Integrated Machine
26	Curved Handle	Pcs	1.0	1.0	1.0
27	Phillips Head Nail	Pcs	1.0	1.0	1.0
28	Aluminum Square Tube	Root	1.0	1.0	1.0
29	Black Rubber Sleeve	Pcs	1.0	1.0	1.0
30	Upper Bracket	Pcs	1.0	1.0	1.0
31	Three-Hole Side Bracket	Pcs	1.0	1.0	1.0
32	Two-Hole Side Bracket	Pcs	1.0	1.0	1.0
33	Bracket Swing Arm	Pcs	1.0	1.0	1.0
34	Hex Bolts	Pcs	1.0	1.0	1.0
35	Self-Locking Nuts	Pcs	1.0	1.0	1.0
36	Plastic Gasket	Pcs	1.0	1.0	1.0
37	Hex Bolts	Pcs	1.0	1.0	1.0
38	Square Hole Bolt	Pcs	1.0	1.0	1.0
39	Butterfly Nut	Pcs	1.0	1.0	1.0
40	External Serrated Gasket	Pcs	1.0	1.0	1.0
41	Hardware Hook	Pcs	1.0	1.0	1.0
42	Z-Type Gasket	Pcs	1.0	1.0	1.0
43	Plastic R Clip	Pcs	1.0	1.0	1.0
44	Cross Recessed Large Flat Head Self-Tapping Screws	Pcs	1.0	1.0	1.0
45	Flat Tail Self Tapping Screw	Pcs	1.0	1.0	1.0

No	Particular	Unit	Solar Frisbee	Solar Intelligent Street Light	Solar Integrated Machine
46	Blind Rivet	Pcs	1.0	1.0	1.0
47	Plastic Corner	Pcs	1.0	1.0	1.0
48	Tote Bag	Pcs	1.0	1.0	1.0
49	Cable Tie	Article	1.0	1.0	1.0
50	Scotch Tape	Meter	1.0	1.0	1.0
51	Instruction Manual	Sheet	1.0	1.0	1.0
52	Canvas	Sheet	1.0	1.0	1.0
53	Pearl Cotton	Sheet	1.0	1.0	1.0
54	Embroidery Label	Pcs	1.0	1.0	1.0
55	Hook Strip	Article	1.0	1.0	1.0
56	Handbag	Root	1.0	1.0	1.0
57	Cotton Handle	Pcs	1.0	1.0	1.0
58	Velcro	Pair	1.0	1.0	1.0
59	Vacuum Cup	Pcs	1.0	1.0	1.0
60	USB Data Cable	Root	1.0	1.0	1.0
61	Carabiner	Pcs	1.0	1.0	1.0
62	Self adhesive Bag	Pcs	1.0	1.0	1.0
63	Tag Jam	Sheet	1.0	1.0	1.0
64	Net Bag	Pcs	1.0	1.0	1.0
65	Zipper Strip	Root	1.0	1.0	1.0

No	Particular	Unit	Solar Frisbee	Solar Intelligent Street Light	Solar Integrated Machine
66	Cloth	Article	1.0	1.0	1.0
67	Hard Cardboard	Sheet	1.0	1.0	1.0
68	Surrounding	Root	1.0	1.0	1.0
69	Plastic Tag Line	Root	1.0	1.0	1.0
70	Silica Gel	ML	1.0	1.0	1.0
71	Bar Code Paper	Sheet	1.0	1.0	1.0
72	Power Nameplate Paper	Sheet	1.0	1.0	1.0
73	Flux	ML	1.0	1.0	1.0
74	Industrial Alcohol	Gram	1.0	1.0	1.0
75	Solder Wire	Gram	1.0	1.0	1.0
76	Paper Partition	Sheet	1.0	1.0	1.0
77	Paper Corner	Pcs	1.0	1.0	1.0
78	Inner Carton	Pcs	1.0	1.0	1.0
79	Outer Carton	Pcs	1.0	1.0	1.0
80	Paper Circumference	Pcs	1.0	1.0	1.0
81	Upper Cover	Pcs	1.0	1.0	1.0
82	Lower Lid	Pcs	1.0	1.0	1.0
83	Plywood	Sheet	1.0	1.0	1.0
84	Fumigation-Free Tray	Pcs	1.0	1.0	1.0
85	Seal Tape	Meter	1.0	1.0	1.0

No	Particular	Unit	Solar Frisbee	Solar Intelligent Street Light	Solar Integrated Machine
86	Foam Board	Pair	1.0	1.0	1.0
87	Foam	Pcs	1.0	1.0	1.0
88	L-Shaped Corner	Set	1.0	1.0	1.0
89	Green PET Plastic Strip	Pcs	1.0	1.0	1.0
90	Plastic Steel Packing Buckle	Set	1.0	1.0	1.0
91	Stretch Film	Trip	1.0	1.0	1.0
92	MC4 Connector	Trip	1.0	1.0	1.0
93	Yangshui Inverter	Trip	1.0	1.0	1.0
94	Deep Well Submersible Pump	Trip	1.0	1.0	1.0
95	DC Side Cable	Trip	1.0	1.0	1.0
96	AC Side Cable	Trip	1.0	1.0	1.0
97	Water Level Sensor	Trip	1.0	1.0	1.0
98	Sensor Cable	Set	1.0	1.0	1.0
99	Filter	Pcs	1.0	1.0	1.0
100	GPRS	Pcs	1.0	1.0	1.0
101	Photovoltaic Three-Way Connector	Pcs	1.0	1.0	1.0
102	Photovoltaic Four-Way Connector	Pair	1.0	1.0	1.0
103	Distribution Box	Pcs	1.0	1.0	1.0
104	Reservoir Sensor	Set	1.0	1.0	1.0
105	Water Pump	Pcs	1.0	1.0	1.0

No	Particular	Unit	Solar Frisbee	Solar Intelligent Street Light	Solar Integrated Machine
106	Ground Support	Set	1.0	1.0	1.0
107	Horse Light	Trip	1.0	1.0	1.0
108	Spring Lantern	Trip	1.0	1.0	1.0
109	Flying Crane Light	Trip	1.0	1.0	1.0
110	Sail Light	Trip	1.0	1.0	1.0
111	Night Hawk Light	Trip	1.0	1.0	1.0
112	Moonlight	Trip	1.0	1.0	1.0
113	Jingwei Lamp	Trip	1.0	1.0	1.0
114	The Height Of The Pole Is 1~12 Meters	Set	1.0	1.0	1.0
115	Iron Lithium Battery	Pcs	1.0	1.0	1.0
116	Ternary Lithium Battery	Pcs	1.0	1.0	1.0
117	Lithium Iron Phosphate Battery	Pcs	1.0	1.0	1.0
118	Lithium Battery	Pcs	1.0	1.0	1.0
119	Maintenance-Free Lead Acid Battery	Pcs	1.0	1.0	1.0
120	Open Copper Nose	Pcs	1.0	1.0	1.0
121	Inverter	Pcs	1.0	1.0	1.0
122	Lightning Protection Combiner Box	Pcs	1.0	1.0	1.0
123	Solar Frisbee (Sheet)	Sheet	1.0	1.0	1.0
124	Solar Integrated Machine	Pcs	1.0	1.0	1.0
125	Aviation Connector	Pair	1.0	1.0	1.0

No	Particular	Unit	Solar Frisbee	Solar Intelligent Street Light	Solar Integrated Machine
126	Screw	Pcs	1.0	1.0	1.0
127	Silica Gel	Pcs	1.0	1.0	1.0
128	Potting Glue	Gram	1.0	1.0	1.0
129	Tin Strip	Kg	1.0	1.0	1.0
130	Ribbon	Volume	1.0	1.0	1.0

Figure 3-9 Raw material store area

3.6.2. **Product**

The products of the factory are Solar Frisbee, Solar Intelligent Street Light, Solar Water Pump and Solar Integrated Machine variety presented in Table 3-3.

Table 3-3 Annual production rate

No	Particular	Unit	Year 1	Year 2	Year 3	Year 4	Year 6-10
1	Solar Frisbee	Set	30,000	30,000	30,000	33,000	33,000
2	Solar Intelligent Street Light	Set	15,000	15,000	15,000	16,500	16,500
3	Solar Water Pump	Set	7,500	7,500	7,500	8,250	8,250
4	Solar Intergrated Machine	Set	60,000	60,000	60,000	66,000	66,000

I	**Production (Pcs)**	-	**112,500**	**112,500**	**112,500**	**123,750**	**123,750**

Figure 3-10 Product Photos

3.6.3. Human Resource

The proposed Factory of Myanmar Green Start Energy Company Limited has the employees more than 80% are local people, who manage the company by their dynamic, enthusiastic, experienced, and cooperative skills. Currently, one shift (8 hours + overtime 2 hours) of production are running or operating. Management and team member detail of human resource is mentioned in Table 3-4.

Table 3-4 Manpower list of Myanmar Green Start Energy Company Limited

No	Particular	Local	Foreign
1	Factory Manager	1	2
2	Financial Manager	1	1
3	Purchasing Manager	1	1
4	Human Resources Manager	1	1
5	Shipping Manager	1	
6	Secretary		1
7	Quality Control (QC)	8	1
8	Store Supervisor	2	1
9	Technician		1
10	Store Keeper	4	
11	Driver	2	
12	Security Staff	2	
12	Cleaner	4	
13	Skill and Semiskill Workers	50	
14	Unskilled Workers	10	
15	Translator	2	

Total	112

3.6.4. **Water Supply System and Water Use**

The project was using groundwater for domestic use and firefighting. The groundwater stores in the three storage tanks on one-ground tanks with capacity of 15,000 gallons for fire-fighting and in ground tank with capacity of 14,976 gallons for domestic use. (see in Figure 3-11).

Figure 3-11 Water storage and filtration system

Currently 112 employees are at day shift workers (8:00 am to 5:00 pm). Based on world average, the average daily domestic demands in commercial/industrial settings range between 20 gallons per day (gpd) per employee. Since the factory has a maximum of 112 workers, factory water needs ranged from 530 gallons per day.

The factory has two separated water distribution systems comprising domestic use system and fire water system. Groundwater contains in ground storage tank with capacity of 12,836 gallons for firefighting. Fire water distribute via main type to distribute water for fire-fighting equipment such as, sprinkler system, fire hose within the factory by firewater pump with capacity of 833 gallons per minute. The domestic use of water are treated by filtration system by oxidation tower, chlorine-dosing system; de-iron filter (FRP), carbon filter, and cartridge filter. Treated water

pumps to be stored in the overhead tank with 15,000 gallons on the water tower then water distribute to the factory operation area via pipes by gravity.

3.6.5. Water Drainage and flood protection

Kitchen and dishwashing sink were drainage pipe with 4-inch diameter PVC to drain wastewater from washing area into the concrete channel. Within the factory compound, there was drainage channel with concrete to collect rainwater in the factory area. The factory is located in Dagon Seikkan Industrial Zone. The factory has already provided internal rainwater drainage system in connection with local drainage system outside the factory to drain into industrial drainage through Bago River.

Figure 3-12 Rainwater drainage in factory compound

3.6.6. Electricity system

The proposed project is intended to get required electricity supply form Yangon City Electricity Supply Board (YESB) and distributed by 315 kVA Transformers. Another source of energy 120 kVA generator will also be kept as the emergency generator if normal electricity supply could not provide for the proposed project. Electricity distribution room is shown in Figure 3-13.

Figure 3-13 Electricity distribution room

3.7. ALTERNATIVE PROJECT SITE

No alternative site has been proposed aside from this area since the proposed project area is situated within Land Plot No. (63), Yaw Twin Wun U Phoe Hlaing Road, Dagon Seikkan Industrial Zone (1), Dagon Myo Thit (Seikkan) Township, Yangon Region, which has been designated and already finished the construction phase during IEE study. The factory already has endorsement from Myanmar Investment Commission.

3.8. DECOMMISSIONING PHASE

The proposed project investment duration is 25 years and they will close out the project according to their MIC proposal.

CHAPTER 4
SURROUNDING ENVIRONMENT

The purpose of this Chapter is to predict how environmental and socio-economic conditions will affect because of the implementation of the proposed Project. This requires a sound understanding of the baseline conditions at the Project Site, which established through desktop study research, site surveys, primary data collection and projections for future developments. Findings provide the current and future characteristics of the Project Site and the value and vulnerability of the key environmental and socio-economic resources and receptors. The following sections provide a description of the environmental and socio-economic aspects of the Project.

4.1. METHODOLOGY FOR DATA COLLECTION AND ANALYSIS

The followings are methodologies used for Environmental Management Plan (EMP) for this IEE report preparation;

- Onsite Measurements and Analysis – Baseline parameters such as air quality and noise quality of the existing project site during the operation phase were measured onsite. For water quality parameters was also measured on site and sample raw water and waste were sent to respective laboratories for analysis. The analyzed results are mentioned in this chapter.
- Secondary data collection of proposed project site area – Socio economic condition, physical/biological environment, and weather data are collected from official township data of Dagon Myo Thit (Seikkan) Township, Yangon Region.

4.2. ENVIRONMENTAL BASELINE STUDY

The field observation for determining the environmental baseline of the proposed project area was undertaken during construction period. The survey team consists of the senior consultant and environmental quality team. The baseline data collected regarding the environmental condition of the project area was conducted in the following section. The environmental setting around the project site and monitoring location point is shown in Table 4-1.

Table 4-1 Environmental Setting around the Proposed Project Site

Particulars	Detail
Coordinate Point	16°50'6.70"N and 96°17'1.00"E.
Climate Conditions (Department of Meteorology and Hydrology - DMH)	Annual Mean Maximum Temperature: (32.67) °C Annual Mean Minimum Temperature: (22.34) °C Annual Rainfall: 106.3 inches
Wind Speed	3.05 m/s
Present land use at the proposed site	Industrial Land Use Type
Nearest Road	Bago River Road (0.866 km) distance from project site
Nearest Water bodies	Bago River (1.5 km) distance from project site
Forest Area	No Exist
Wetlands	No Exist

Protective Area	No Exist

The purpose of this Chapter is to predict how environmental and socio-economic conditions will affect because of the implementation of the proposed Project. This requires a sound understanding of the baseline conditions at the Project Site, which established through desktop study research, site surveys, primary data collection and projections for future developments. Findings provide the current and future characteristics of the Project Site and the value and vulnerability of the key environmental and socio-economic resources and receptors. The following sections provide a description of the environmental and socio-economic aspects of the Project.

4.2.1. **Topography**

The proposed project area is situated in Dagon Seikkan Industrial Zone (1), Dagon Myo Thit (Seikkan) Township, and its topographic condition is flat. The proposed project site is primarily agricultural land, but now is initiated into the industrial zone area.

4.2.2. **Geology**

The Yangon area is underlain by alluvial deposits (Pliestocene to Recent), the non-marine fluvialtile sediments of Irrawady formation (Pliocene), and hard, massive sandstone of Pegu series (early-late Miocene). Alluvial deposits are composed of gravel, clay, silts, sands and laterite which lie upon the eroded surface of the Irrawaddy formation at 3-4.6 m above mean sea level (MSL). The rock type in Yangon is mainly soft rocks, which consist of sandstone, shale, limestone and conglomerate. Geological map of Yangon Regional area is shown in Figure 4-1.

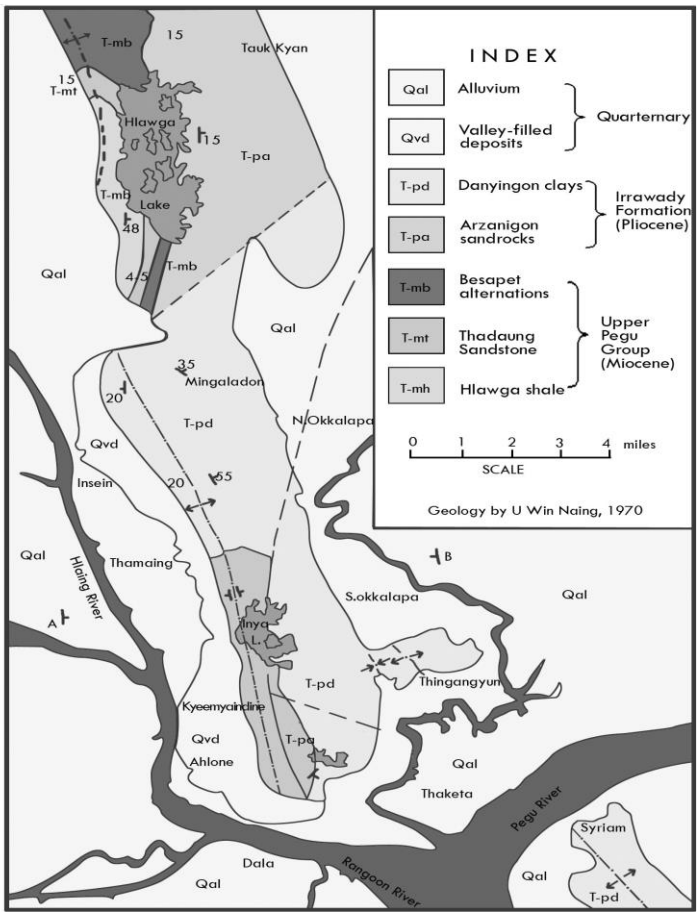


Figure 4-1 Geological Map of the project area

4.2.3. **Hydrology**

Yangon is rich in groundwater resources conserved by unconsolidated Tertiary-Quaternary deposits. In Yangon, groundwater is mostly extracted from Valley filled deposits and Ayeyarwady sandstones.

Groundwater availability is generally based on the distribution of permeable and relatively impermeable rocks. The nature of openings in the rocks determines permeability of rocks. Based on local geological considerations, potential groundwater source of Yangon can be roughly divided into two sub regions, namely the low potential area and high potential area. Low potential areas are areas with those rock units of Hlawga Shale, Thadugan Sandstones and Basepet Alternation of upper Pegu Group (Miocene epoch) and Danyingon Clays of Irrawaddy rocks. These rocks and formations are a dense, massive and consolidated nature and have impervious characteristic. High potential areas are underlain by Pliocene Series and recent Formations. High potential area covers approximately 85 percent of the Yangon city including Pabedan. Stand pipe piezometers were installed at a depth of up to 30 m from the existing ground level while a pumping well was installed upon completion of the soil investigation works. Based on the results recorded up to the 8th of December 2012, stabilized groundwater level was observed to range between 0.49 m MSL to -1.81 m MSL4.

Water Supply: The Yangon City Development Committee (YCDC) has an overall responsibility for the management and distribution of water for Yangon City. Presently, YCDC's

water supply is obtained from two main sources: (1) reservoir (Hlawga, Gyobu, Pugyi and Ngameoyeik reservoirs) and, (2) groundwater from YCDC's tube wells. Water from these sources is utilized to varying degrees. Areas not supplied with water from the YCDC rely on shallow surface wells and private boreholes. Water supply for the Project Site will be obtained from onsite bore wells for both construction and operations due to the poor reliability of municipal supply. Permitting is part of the Planning Consent Application currently underway. The boreholes will be provided and operated by the Developer.

Hydrology: The Project Site lies along the catchment of the Pazundaung River which flows east of the site in a southerly direction to converge into the Yangon River. The Yangon River (also known as the Rangoon River or Hlaing River) is formed by the confluence of the Pegu and Myitmaka rivers and flows into the Gulf of Martaban which is part of the larger Andaman Sea. The river flows along a 40 km stretch flowing from southern Myanmar as an outlet of the Ayeyarwady River into the Ayeyarwady delta. A small portion of the Bago River (the estuary) lies within the Yangon Division. The Pazundaung Creek and Bago River joins the Yangon River and from there, flow towards the southwestern direction into Andaman Sea.

4.2.4. **Climate**

Yangon has a tropical monsoon climate under the Koppen climate classification system. The city typically experiences a distinct rainy season from the month of May through to October when a substantial amount of precipitation occurs; and dry season, which commences from November and ends in April. During the course of a year, average temperatures show some variance with average highs ranging from 26 °C to 36 °C and average lows occurring between 18 °C and 25 °C. The hottest period is between February and May, with little or no rain. At the end of this season, generally from March to April, the average monthly temperature reaches the upper 30 °C. The average temperatures in Yangon range from 24 °C to 36 °C in April during the hot season and it ranges from 18 °C to 32 °C in January during the cooler season.

Rainfall and Relative Humidity: The climate of Myanmar follows a typical monsoon pattern. Historically, the average annual mean rainfall for Yangon is 2,681 mm with the annual average rainy days of 129.3 days. During the course of 2013, the Department of Meteorology and Hydrology (Myanmar) reported an annual precipitation of approximately 2700 mm. The month with the most precipitation was in July. The relative humidity was generally higher from May to October 2013. The dry season occurs from November to April. Based on the historical weather for the last twelve months in Yangon, no precipitation was observed in December 2012, February 2013 and March 2013. The least humid month of the last 12 months was February 2013 with an average daily low humidity of 34%, and the most humid month was September with an average daily high humidity of 80%.

The proposed project is located at Dagon Seikkan Industrial Zone (1), Dagon Myo Thit (Seikkan) Township, Yangon Region. The climate condition of Dagon Myo Thit (Seikkan) Township is the dry season of area in which the project starts in December and ends in March. The raining season starts in June and ends in September and the cold season follow with the cooler, drier months of October to January. The highest temperature is 45°C and low range is 12.5°C reference from Township Meteorology data, Regional Data of Dagon Seikkan Township. 2012 to 2017 Yearly data of rainfall and temperature is presented in Table 4-2.

Table 4-2 Annual rainfall and temperature

Year	Rainfall		Temperature	
	Raining day	Rainfall value	Summer season Max (°C)	Winter season Min (°C)
2015	102	79.20	45° C	15° C
2016	101	138.85	42° C	18° C
2017	113	134.53	40° C	12.5° C
2018	35	42.28	45° C	15° C

Source: Department of Administrative Dagon Myo Thit (Seikkan) Townships, Regional data (www.gad.gov.mm.com)

4.2.1. Indoor Temperature and Humidity

The indoor temperature and humidity condition on 12 September 2019 shows the average temperature of 27.3 °C while the average humidity is 82.6 % as shown in Table 4-3.

Table 4-3 Temperature and Humidity Measurement at Factory

Date and Time	Description	Result value	Environmental parameter air station guideline
12 September 2019 (1:00 pm to 5:00 pm)	Relative Humidity RH %	82.6 (%)	Present condition
	Temperature	27.3 °C	Present condition

Figure 4-2 Temperature and Humidity measurement

4.2.2. Light

Activities of the workers in solar factory are highly dependent on the quality of light. Therefore, the consultant conducted the light measurement in Solar factory is presented in Figure 4-2. The illustrates the recommended illumination and limiting glare index applicable to typical works (fairly severe to very severe tasks) in Solar factory is provided in Table 4-4. Appropriate lighting is the need for every department, irrespective to the task being handled. Although, there are some areas where focus on maintaining proper illumination is very crucial in a Solar factory, like the inspection points (on-floor and in stores), sampling, cording section, beading section, and the finishing section, as these areas are crucial to the quality of the production. The tasks involved in these areas require high levels of worker focus and accurate lighting ensures lower errors and

defects passing on to the next stage. However, according to the result of light measurement at operation area (inside the production sector) is good condition to the acceptable level of standard.

Table 4-4 Recommended illumination and limiting glare index based on IES Code, 1968

Visual test	Illumination (lux)	Glare index
Casual seeing	100	28
Rough task with large detail	200	25-28
Ordinary task medium detail	400	25
Fairly severe task, small detail (e.g. drawing office, sewing)	600	19-22
Severe, prolonged task, very small detail (e.g. fine assembly, hand tailoring)	900	16-22
Very severe, prolonged task, very small detail (e.g. gem cutting, hosiery mending, gauging very small parts)	1,300-2,000	13-16

Source: Koenigsberger, et al. 1975

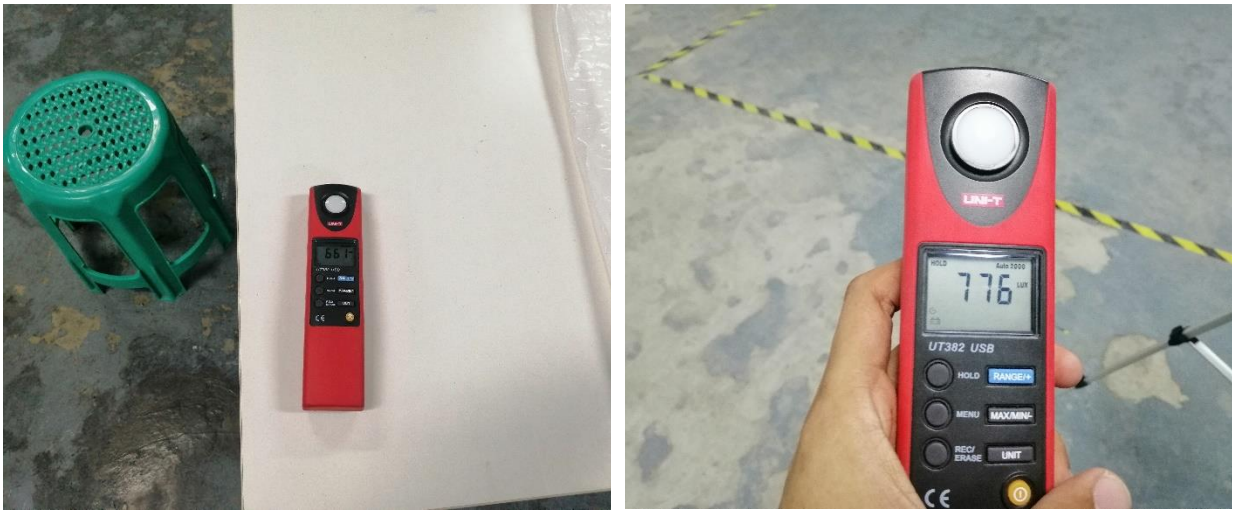


Figure 4-3 Light quality measurement photo

Table 4-5 Light Measurement in Solar factory

No	Measure area	Unit	Measure value	Standard	Type of Light
1	Cutting Area	Lux	674	900	LED tube light
2	Welding Area	Lux	661	900	LED tube light
3	Laminated Area	Lux	826	900	LED tube light
4	Framing Area	Lux	970	900	LED tube light
5	Test Area	Lux	776	900	LED tube light
6	Packing Area	Lux	382	900	LED tube light
7	Raw Material Area	Lux	602	900	LED tube light

* Lighting standards and codes usually provide recommended illuminance ratios between the task area and its surroundings (EN 12464-1 2002) (CIBSE 1997) (IESNA 2000, 676708).

4.2.3. **Noise**

The Noise level was measured by using Digital Sound Level Meter for working hours on 12 September 2019 (Figure 4-4). The average noise level in the project site area is presented in Table 4-6. Receptor (outside of production area at project site) noise level measurement is dB and within the comfortable range of 40-60 decibel. However, found to be the Noise source monitoring at operation area (inside the production sector) noise level not exceeding the level of National Environmental Quality (Emission) Guideline and outside of production area at the project site is acceptable when compared with National Environmental Quality (Emission) Guideline. Therefore, no obvious influence can be caused occupational health and safety of employees during operation. Moreover, Personal Protective Equipment (PPE) to decrease adverse impact of noise will be provided for employees when necessary.

Table 4-6 Comparison of Noise level measurement

Area	GPS point	Average Noise Level (dB)	NEQ Guideline
Project Site (Operation area)	16°50'6.70"N 96°17'1.00"E	54.35 dB	70 dB

Figure 4-4 Noise level measurement in the factory

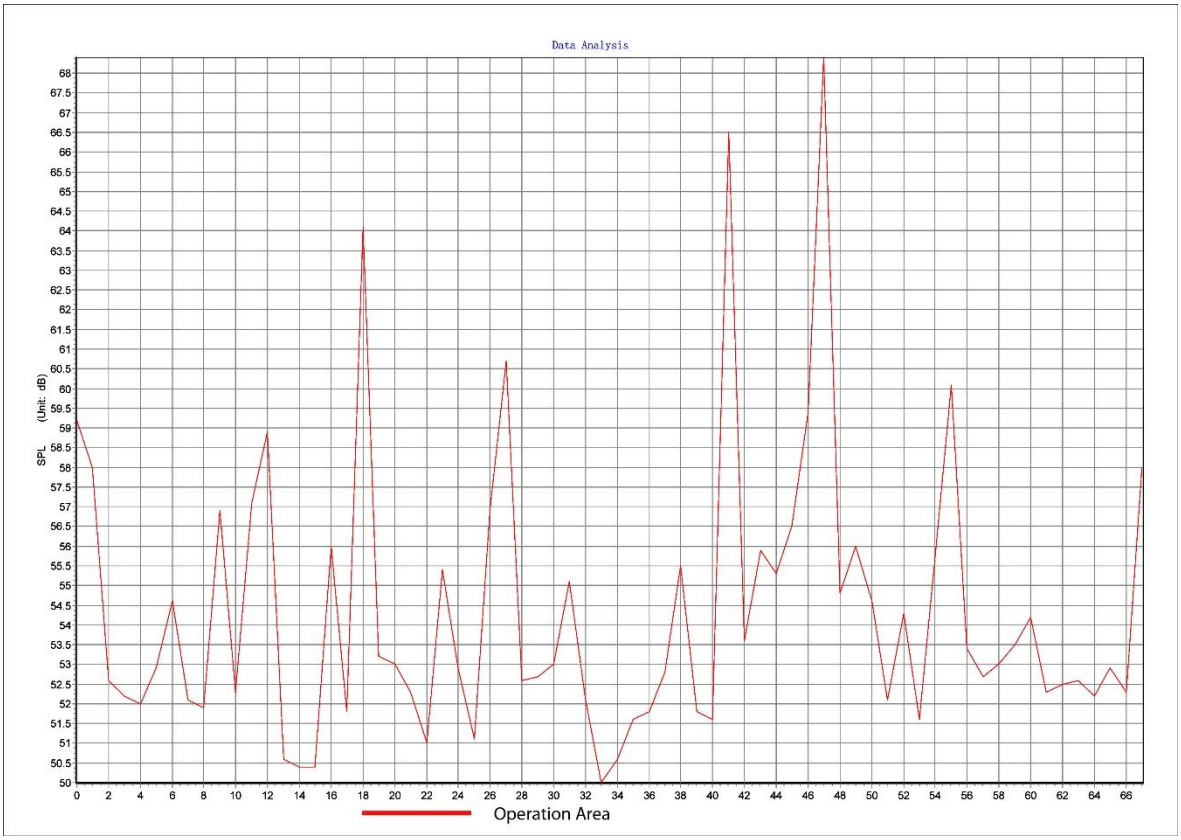


Figure 4-5 Sound analysis graph

4.2.4. Air Quality

To determine the existing baseline ambient air quality status within the project site on 12 September 2019, 8-hours of working period air pollutants level, which include dust PM_{10} and $PM_{2.5}$ were measured at the selected site using the HAZSCANNER air monitoring station. To reveal the existing status of baseline air quality, the average ambient air qualities measured were compared with National Environmental Quality (Emission) Guideline. The measurement location point is situated at latitude 16°50'6.70"N and longitude 96°17'1.00"E.

It was observed that the air quality of (PM_{10}, $PM_{2.5}$) are within the National Environmental Quality (Emission) Guideline.

Table 4-7 Observed air quality results

Location	Parameters	Observed value	Guideline value	Unit	Organization	Averaging period
16°50'6.70"N 96°17'1.02"E	PM_{10}	38.55	50	$\mu g/m^3$	NEQG	8 hrs
16°50'6.71"N 96°17'1.02"E	$PM_{2.5}$	16.87	25	$\mu g/m^3$	NEQG	8 hrs

NEQ = National Environmental Quality (Emission) Guideline

NAAQS = National Ambient Air Quality Standards were developed by the U.S. EPA

ACGIH = the American Council of Governmental Industrial Hygienists recommends


Figure 4-6 Air Quality Measurement Photo

4.3. BIOLOGICAL COMPONENT

There is no forest area, wildlife and wetlands within or around the project compound. The proposed project site is not located in or near a sensitive ecosystem as the proposed project area is situated in the Dagon Seikkan Industrial Zone (1), Dagon Myo Thit (Seikkan) Township. Moreover, desktop review and site visits confirmed the absence of unique or ecologically significant flora and fauna. However, the nearest water body is the Haling River.

4.4. SOCIO-ECONOMIC COMPONENT

4.4.1. Population

Myanmar Green Start Energy Company Limited factory is located across Dagon Myo Thit (Seikkan) Township in Yangon Region. In 2017, there are about people 273,721 in Township as shown in Table 4-8.

Table 4-8 Population of Males and Females at Dagon Myo Thit (Seikkan) Township (2017)

Item	Older 18 year			Younger 18 year			Total		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
Urban	49,337	52,759	102,136	29,771	30,092	59,863	79,148	82,851	161,999
Rural	5,200	5,185	10,385	3,350	3,387	6,737	8,550	8,572	17,122
Total	54,577	57,944	112,521	33,121	33,479	66,600	87,698	91,423	179,121

Source: Department of Administrative Dagon Myo Thit (Seikkan) Townships, Regional data (www.gad.gov.mm.com)

4.4.2. Religion

The different kinds of religion present in Dagon Myo Thit (Seikkan) Townships are as shown in Table 4-7.

Table 4-9 Religion in Dagon Myo Thit (Seikkan) Township (2017)

Township	Buddhist	Christian	Hindu	Muslim	Others	Total
Dagon Seikkan	169,576	4,646	1,547	2,354	998	179,121

Source: Department of Administrative Dagon Myo Thit (Seikkan) Townships, Regional data (www.gad.gov.mm.com)

4.4.3. **Local Economy**

Among regional towns, Dagon Myo Thit (Seikkan) Township has a variety of businesses and services operating in the community with other businesses/services, based in the region. Most of the sources of livelihood in the Township are employment of factory. Services and facilities available include:

- post office
- beauticians
- butcher
- hairdressers
- furniture and electrical store
- restaurants
- cafes
- shoe and clothing shops
- industrial services
- pharmacy
- veterinarian
- bus service
- gift stores
- music store
- pubs and bars
- florist

4.4.4. **Public Infrastructure and Access**

4.4.4.1. Communication and Transportation

Major transportation route in Dagon Myo Thit (Seikkan) Township are port and car road as presented in in Table 4-10.

Table 4-10 Transportation route

Categories	**Township**		**Miles**
	From	**to**	
Bus Line (2,3,4,5,71,80,60)	Yuzana	Downtown Area	4.2
Highway Road	AyarWun Road Bago Myint Road KanNarPark Road Yadanar Road		2.5 2.4 4.4 2.5

Source: Department of Administrative Dagon Myo Thit (Seikkan) Townships, Regional data (www.gad.gov.mm.com)

4.4.4.2. Education

Location of major schools were situated i.e. basic education primary school (B.E.P.S.), basic education middle school (B.E.M.S), basic education high school (B.E.H.S) and university, in the Dagon Myo Thit (Seikkan) Township. The name and the located village tract/ ward of schools are described Table 4-11.

Table 4-11 List of major school in Dagon Myo Thit (Seikkan) Township

No.	Name of School	Location
1	Union of Young Nations Ability Improvement Degree Collage	No. 3383, Sittaung Street, 61 Ward
2	Basic Education High School (1)	88 Ward
3	Basic Education High School (2)	94 Ward
4	Basic Education High School (3)	168 Ward
5	Basic Education Middle School (1)	168 Ward
6	Basic Education Middle School (2)	93 Ward
7	Basic Education Middle School (Thatyetpin Chaung)	Thatyetpin Chaung
8	Basic Education Middle School (Nyaung Pin)	Nyaung Pin

Source: Department of Administrative Dagon Myo Thit (Seikkan) Townships, Regional data (www.gad.gov.mm.com)

4.4.4.3. Health Status

The diseases of high prevalence reported in 2013 are Tuberculosis (TB), followed by Acute Respiratory Infection (ARI), Diarrhea, TB and snakebites. With reference to the Township Health Profile 2014 of Dagon Myo Thit (Seikkan) Township, no accidental work injuries reported to the township hospital in 2013 as shown in Table 4-11. The common diseases are as shown in Table 4-10.

Table 4-12 Common Diseases in Dagon Myo Thit (Seikkan) Township

Disease	Dagon Myo Thit (Seikkan) Township	
	Morbidity	Mortality
Malaria (Per 100000P)	-	-
ARI (Per 100000<5Children)	-	-
Dysentery	33	-
Diarrhea (Per 100000P)	827	-
TB (Sputum+) (Per 10000P)	334	12
HIV/AIDS (2015-2016) (2016-2017)	37 21	8 1

Table 4-13 Lists of hospital in Dagon Myo Thit (Seikkan) Township

Hospital Name	Beds/Services	Responsible
Township Hospital	25	Government

Source: Department of Administrative Dagon Myo Thit (Seikkan) Townships, Regional data (www.gad.gov.mm.com)

4.5. CULTURAL AND VISUAL COMPONENTS

Dagon Myo Thit (Seikkan) Township is growing into a busy and vibrant community. The population fluctuates; however, there has been steady growth over the last decade. It tends to be a stopover on a journey rather than a destination. It has a number of sites that are interesting; however, there is no main attraction. Visitors to the town are generally visiting for work, investment or family reasons.

CHAPTER 5
IMPACT ASSESSMENT AND MITIGATION MEASURE

5.1. METHODOLOGY FOR THE ASSESSMENTS

The assessment of each impact based on consideration of the magnitude, duration, spatial and frequency of activities, which are going to carry out during three phases and characteristics of the project site. The assessment is qualitative and the significance of each impact is been classified into five categories in overall.

The following methodology have been applied to assess the environmental impacts of the factory mainly on air, water, land, biodiversity, including human beings. Each source of impact had assessed by four parameters, magnitude, duration, extent and probability and each assess point have five scales as mentioned in Table 5-1:

Table 5-1 Impact assessment parameters and its scale

Assessment	Scale				
	1	2	3	4	5
Magnitude (M)	Insignificant	small and will have no effect on working environment	Moderate and will result in minor changes on working environment	High and will result in significant changes on working environment	Very high and will result in permanent changes on working environment
Duration (D)	0 - 1 year	2 - 5 year	6 - 15 year	Life of operation	Post Closure
Extent (E)	Limited to the site	Limited to the local area	Limited to the region	National	International
Probability (P)	Very improbable	Improbable	Probable	Highly probable	Definite

Then, the Significant Point (SP) calculated by following formula.

Significant Point (SP) = (Magnitude + Duration + Extent) * Probability

Impact Significance: Based on calculated significant point, impact significance is able to categorize as follows:

Significant Point (SP)	Impact Significance
<15	Very Low
15-29	Low
30-44	Moderate
45-59	High
60	Very high

5.2. IMPACT IDENTIFICATIONS

The development of infrastructure for the proposed project likely to happen changes in the local environment in terms of physical, biological and socio-economic aspects along with the perspective on both positive and negative impacts. In this IEE study, the potential environmental impacts brought by various activities of proposed factory project will be identified and judged by site surveying with checklist, meeting with client team, including plant manager and supervisor, representatives from the factory operators and assessing the environmental baseline information for operation and decommissioning phases along with its mitigation measure.

5.2.1. Positive Impact

During the project implementation, local people can get job opportunities in administrative sectors, office works, transportation sectors, skill and unskilled workers, etc. Due to the implementation of the project, there will be employment opportunities especially for workers from the local community. Employees will also improve more in their professional knowledge and skills. The net effect of job creation is the improvement of the livelihoods and living standards of the beneficiaries and poverty reduction, development of local people's livelihood. Cause of the proposed project is located in Dagon Seikkan Industrial Zone (1), there may have business opportunities to local people. Local people can have a market by selling foods, snacks and drinks nearby the factory.

5.2.2. Negative Impact

The following Figure 5-1 briefly described the potential negative impacts of the proposed project. There are four main types of impacts; impact on environmental resources, impact on ecological resource, impact on human and impact of waste generation.

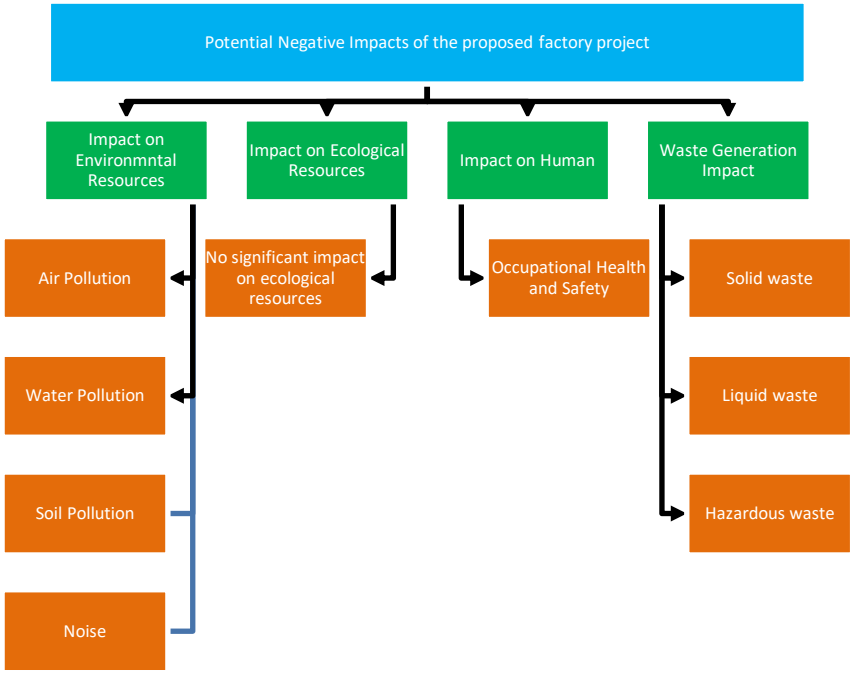


Figure 5-1 Potential negative impact affect from proposed factory project

5.3. POTENTIAL IMPACTS

Significant impacts were determined through the following issues:

I. Views of interested and affected local person;
II. Legislation
III. Professional adjustment of the project team includes of consultant, associate consultant, international environmental impact assessment methodology

Impacts on the environment from various activities of the project can be categorized as follows;

I. Impact on Environmental Resource
   - ❖ Impact on Air Quality
   - ❖ Impact of Noise Level
   - ❖ Impact on Water Quality
   - ❖ Impact on Soil Quality

II. Impact on Ecological Resources
   - ❖ Aquatic Ecosystem

III. Impact on Human Environment
   - ❖ Health and Safety
   - ❖ Socio-economics

IV. Impact of Waste Disposal
   - ❖ Solid waste disposal
   - ❖ Liquid waste disposal

5.4. POTENTIAL ENVIRONMENTAL IMPACTS OCCURRED

The following are the anticipated impacts during operation phases of Sweater manufacturing factory;

1. Impact of Air Emission
2. Impact of Noise
3. Impact of Water (consumption and pollution)
4. Impact of Solid waste and liquid
5. Electricity Consumption
6. Occupational Health and safety

None of the impacts during operation phase are affected directly to local communities, but some environmental impacts are primarily related to the factory in which resource utilization is an issue that should be seen from a sustainable development perspective, combustion of fossil fuels, greenhouse emission and occupational health and safety for employees working at the proposed factory.

5.5. ENVIRONMENTAL POLLUTION

5.5.1. Impact on Air Quality

In Myanmar Green Start Energy Company Limited factory will be used the semi-automatic process control system. In which assigned person from the operation line will operate each processing step. The major sources of air emission in the Myanmar Green Start Energy Company Limited factory will be defined as below. The project factory is already constructed during environmental assessment study and site visit. During construction phase, dust emission was addressed as potential environmental impact and is expected to be non-significant because the construction phase is a short-term affect. So, we are not assessed potential environmental impact during construction phase.

During the operation phase, there is no emission of smoke from the process of production. Particulate matters are generated during cutting and pressing the raw materials. But that particles amount is low. Dust particles, CO_2 and SO_2 would be emitted from the activities of loading, unloading and transportation of the raw materials and final product. Various activities as cooking from kitchen, using air conditioners in office building, storage of raw materials, vehicles movements, operating diesel generators would also be a factor slightly affecting to air quality.

Table 5-2 Air Quality Impact Sources

Sources	Emission parameters
Electricity consumption and diesel Generator and Vehicle movements for delivering and transporting of the raw materials and final products	PM, CO, SO_2 and NO_2

Air impact source of emergency used of generator and vehicle movements and transportation of raw materials may also generate particulate matters PM_{10} and PM2.5. However, these anticipated impacts are in manageable limits to control the air pollution with relevant mitigation measures and the proposed factory will be managed by using their HSE guidelines.

5.5.2. Energy Consumption and Related CO_2 (GNG) emission

Though main electricity source for the factory is the national grid line, sound-proof diesel generators will be set-up in case of electricity shortages. So, the standby generators will be used for both operation and administration appliances. The proposed project will use annually 480 gallons of diesel for vehicles such as transportation vehicle and emergency use of a generator. The following table shows the amount of CO_2 emission coming from the combustion of fuels.

Burning diesel or other fuels creates exhaust gasses. Diesel generators produce carbon dioxide (CO_2), nitrogen oxide (NOx), and particulate matter. These generators release this into the atmosphere and substantially reduce air quality in the nearby regions. Every liter of fuel has 0.73 kg of pure carbon, 2.6 kg of carbon dioxide released per liter of diesel fuel.

Table 5-3 Category of GHGs Assessment

Category	Range
Negligible	no GHG assessment necessary
Low	< 20 kt/y CO_2-equivalent per year
Medium-Low	20 – 100 kt CO_2- equivalent per year
Medium-High	100 kt – 1 Mt CO_2- equivalent per year
High	>1 Mt CO_2-e equivalent per year

Source: EBRD GHG Assessment Methodology, 2010

Table 5-4 CO2 Emission by the Uses of Fuel

No.	Type	Amount (gallon/year)	Equivalent CO_2 emission (Kilotons)	Status
1	Diesel for generator	480	0.35 kilotons	**Negligible**

According to above conversion, the emission of CO_2 relative to the fuel consumed by the proposed project will not harmfully effect to the environment. However, the proposed Solar Products factory will use a lot of electrical energy mainly for lighting, running of equipment, running of pumping systems for pumping water into the storage tank. Since electricity generation involves utilization of natural resources, excessive electricity consumption will strain the resource and negatively impact on their sustainability.

5.5.3. Impact of Noise

During the construction phase, significant impact on noise and vibration to surrounding environment must be generated from the movements of vehicles, operating the machinery, excavation activities and transportation of equipment and construction materials by heavy trucks. However, the project factory is already constructed during environmental assessment study and site visit. Therefore, the proposed project is located in industrial zone and already finished the construction, the potential impact on noise and vibration is not assessed and short-term affect must be caused the construction period is temporary.

During the operation phase, noise impact may be a significant impact for Solar production sectors. The significant sources of noise impact activities are the operation of various machinery and equipment listed in for sewing line, cutting line and the emergency used of generator, vehicles and automobile movements (short-term noise) will be noise impacts sources. According to the noise results of 8 hours continuously measurement, at the source of operation area inside the factory and within the factory area are slightly exceeding the noise level of 70 dB of NEQ (emission) guideline. Therefore, no obvious influence can be caused expected to environment.

During the decommissioning phase, the heavy vehicles, machineries and equipment used for decommissioning activities can affect the noise level and vibration of the area.

5.5.4. **Impact on Water Quality**

5.5.4.1. Water Consumption

In the operation phase of solar manufacturing factory, there is no water use for processing purpose. Tube well is the main source of raw water will be treated by passing through into (i) the oxidation tower to remove oxidized materials, (ii) chlorine dosing system, (iii) de-iron filter, (iv) carbon filter and (v) cartridge filter. Then the obtained treated water will be provided for the whole factory use of general office facilities such as canteen, toilets and other general use. Estimated maximum water consumption for the whole factory is 530 gal per day.

5.5.4.2. Water Pollution

The effluent wastewater will generate from domestic usage. Water pollution may be caused by domestic wastewater discharge from the canteen, which have Total Solid (TS), Suspended Solid TSS). Grease and oil that can seriously also affected on water quality. In addition, improper management of wastewater treatment system of industry effluents and domestic wastewater will effect on ground water and the nearest surface water body.

5.5.5. **Impact on Soil Quality**

During the construction phase, the excavation works from the construction activities must be the major impact on soil. The soil is compacted by the vehicles and the solid waste disposal improperly by the workers can affect the soil quality. Oil spillage from the vehicles could be also polluted to the soil. However, the project factory is already constructed during environmental assessment study and site visit. Therefore, impact on water quality is not assessed for this project.

During the operational phase, there is no significant impact on soil quality due to solar manufacturing activities because concrete road facilities have been implemented at the whole project site area. However, there may be effect on soil if wastes from the operation period are disposed improperly.

During the decommissioning phase, transportation of decommissioning materials and transferred of heavy machinery may happen oil leakage and lubricants, and thus it can lead to impact on soil. Moreover, hazardous releases of materials or oil utilized in the infrastructure can contaminate the existing soil during the decommissioning phase.

5.5.6. **Impact on Ecological Resource**

The proposed project is located in the industrial zone. Therefore, there is no wildlife, forests, protected area, coastal resource or mangrove area and rare and endangered species are found around the project area. The nearest water body is Bago River, which is running from north to south and later join into the Yangon River in the south.

5.5.7. **Impact of Waste Disposal**

Most activities of the solar manufacturing factory will generate the relatively low level of waste. Solid waste from production sector will consists of process waste such as Industrial waste would be generated from operation such as yarn cone, plastic bags, cardboard, paper board,

plastic string, etc. and food waste, plastic, paper, glass, metal can, sanitary napkins, tissue paper, garden waste, etc. However, proposed factory have been implemented the solid waste disposal system by the segregation of waste type such as paper waste, food waste, production waste and hazardous waste according to their environmental health and safety guideline. The required rubbish bins have been provided and regularly checked and monitored by assigned person of proposed factory. Before send to dumping site of Dagon Myo Thit Seikkan Township Development Committee, the proper disposal waste facilities and temporary waste disposal site have been provided in the factory site and they should be followed and monitored the solid waste disposal system with the help of Municipal guidelines. Moreover, for the purpose of hygienic canteen, kitchen facilities and standard septic type of toilets, well-cleaned and well-maintained already provided for the proposed factory site.

5.5.7.1. Solid Waste

During the construction and decommissioning phase, various kinds of solid wastes will be generated. These wastes will be collected and clean every day to avoid any undesirable working condition and environmental impacts. Based on their types (glass, metal, plastic, wood, cement residues, oil spills and paper based), these solid wastes will be collected separately in rubbish bins and regular and proper disposal will be done in accordance with YCDC guidelines.

In the operation phase, major solid wastes of the proposed solar products factory may be generated form production lines, cutting and packaging. Factory shall use textile, thread and carton box as raw materials. The residual pieces of the fabric scraps from the production lines and cutting line used carton box, plastic sheet from the packaging are the main source of solid waste. In addition to factory solid waste, canteen, kitchen and dormitory will produce solid wastes mainly personal remnants, household wastes and food residues.

5.5.7.2. Liquid Waste

There may be expected no significant liquid waste from the construction and decommissioning phase. The main source of the liquid waste of these two phases may be from the sanitary wastewater.

During the operation phases, sanitary wastewater from the usage of toilet facilities, kitchen and canteens will be discharged as liquid waste. All of the liquid waste will be collected in septic tanks which are attached with proper sewage treatment tanks (as mentioned in factory site plan) and regular monitoring should be done in cooperation with YCDC and follow the YCDC guidelines for proper disposal.

5.6. IMPACT ON HUMAN

5.6.1. **Socio-economic Benefit**

The proposed project is the long-term investment in the industrial sector. Most of the impacts of the proposed project on socio-economic environment may be positive. Implementation of proposed project may create temporary employment during construction and decommissioning phases and permanent jobs in the operation phase. Subsequently, socio-economic standards of

local people will be increased and eventually it may lead to the economic growth at local and regional level.

5.6.2. Occupational Health and Safety

During the construction phase, significant accidents and injuries like electric shocks, falling from heights, chemical exposure, crushing injury, fire hazards can be occurred due to the construction activities including metal grinding and cutting, concrete work and welding the metals. Moreover, accidents and injuries to workers and local communities could be caused from heavy vehicles movement for the transport of construction materials and equipment. Small injuries due to slips, headache and sickness must be caused of the noise, air pollution and odor could also be affected to the workers and local people. However, the project factory is already constructed during environmental assessment study and site visit. Therefore, impact on water quality is not assessed for this project.

During the operation phase, using the machinery for production process can get injuries. Noise from the generating of the machine and generator may also affect the health of people working in the project area. Fire and explosion hazards are mainly cause from the storage of raw materials and poor management of waste disposal. The usage of fuel must carefully handle because spillage and leakage of oil and grease can cause ignition of fire. Domestic wastewater or grey water produced from canteen, kitchen and toilets will cause enormous breeding of mosquitos, which can lead to diseases like malaria and dengue fever, if not carefully managed.

During the decommissioning phase, activities related with decommissioning process can cause injuries and can affect the health of decommissioning workers.

5.7. PROJECT ACTIVITIES AND ITS SIGNIFICANT IMPACTS

The relative importance of each impact is assessed based on the understanding that general mitigation measures will be integrated into the baseline project. Therefore, when the general mitigation measures reduce impacts to the point of rendering them negligible they are excluded from further analysis. Once the significance of the impact is established as more than negligible, it is described and additional, specific mitigation measures may be proposed to allow optimal integration of the project into the environment.

Table 5-5 Evaluation and Perdition of Significant Impacts for Operation Phase

Environmental Impact	Project Activities	Significant of Potential Impacts					Impact Significance
		M	D	E	P	SP	
Construction Phase; It is not assessed in this phase, because of construction is already completed during IEE preparation.							
Operation Phase							
Air pollution	• Dust and GHGs emission from vehicles used for transporting raw materials and final products	3	4	2	4	36	Moderate

Environmental Impact	Project Activities	Significant of Potential Impacts					Impact Significance
		M	D	E	P	SP	
	• Particulate matters emission from the activities of production process • Emission from emergency diesel generator						
Water pollution	• Sewage disposed of from the toilets • Oil spill and grease leaks from transporting vehicles and machinery equipment used in operation phase	2	4	2	3	24	Low
Soil Contamination	• Accidental spillage of oil used by vehicles operating	1	4	1	2	12	Very low
Noise Pollution	• Generating noise from the production machinery • Noise from the generating of the emergency generators	3	4	1	4	32	Moderate
Fire Hazard	• Poor electrical installations • waste disposed area • Raw materials storage	3	5	2	4	40	Moderate
Solid waste	• residual pieces of fabric scraps from the production lines • Waste from packaging materials • Waste from kitchen, dormitory and office.	3	5	1	4	36	Moderate
Liquid waste	• Septic system and sewage. • Domestic liquid waste disposal from office, kitchen and dormitory.	2	4	2	4	32	Moderate
Hazardous waste	• Engine oil leaks, spills at diesel storage and during fuel refueling. • Used oil and lubricant discharged from the maintenance of vehicles and machines.	2	4	1	2	14	Very Low
Occupational Health and Safety (Accidents, Injuries)	• Accidental cases cause by operating machines. • Electricity and emergency diesel generators. • Unloading, mixing, cutting, pressing and packaging activities. • Accidental cases of thermic fluid heater	3	4	1	4	32	Moderate
Social-economic Condition	• Job opportunities for local people	-	-	-	-	-	Positive Impact
Decommissioning Phase							
Air pollution	• Decommissioning of buildings and related materials	3	1	1	4	20	Low

Environmental Impact	Project Activities	Significant of Potential Impacts					Impact Significance
		M	D	E	P	SP	
	• Transportation of demolished materials						
Water pollution	• Sewage form decommissioning workers • Demolition machinery equipment	3	1	1	3	15	Low
Soil Contamination	• Decommissioning of buildings and related materials • Transportation of demolished materials	3	1	1	3	15	Low
Noise Pollution	• Decommission activities • Transportation of demolished materials	3	1	1	3	15	Low
Waste disposal	• Sewage system • Demolished debris such as bricks, concrete materials	2	1	1	3	12	Very Low
Hazardous waste	• Used lubricants from decommissioning vehicles and machines	2	1	1	3	12	Very Low
Occupational Health and Safety (Accidents, Injuries)	• Decommissioning activities • Transportation of demolished materials	3	1	2	3	18	Low
Social-economic Condition	• Temporary job opportunities for local people	-	-	-	-	-	Positive Impact

According to the result of analysis, it can be concluded that most of the project activities have low significance on environment, in all phases. Project activities that can produce solid waste and liquid waste are moderate significance. Moreover, project activities that emit dust and GHGs and accidental cases are moderately significant. Fire hazard potential of the proposed project and noise pollution are highly significant. But this can be prevented or mitigated by using the following mitigation measures. The following figure shows the impact significance of the proposed project.

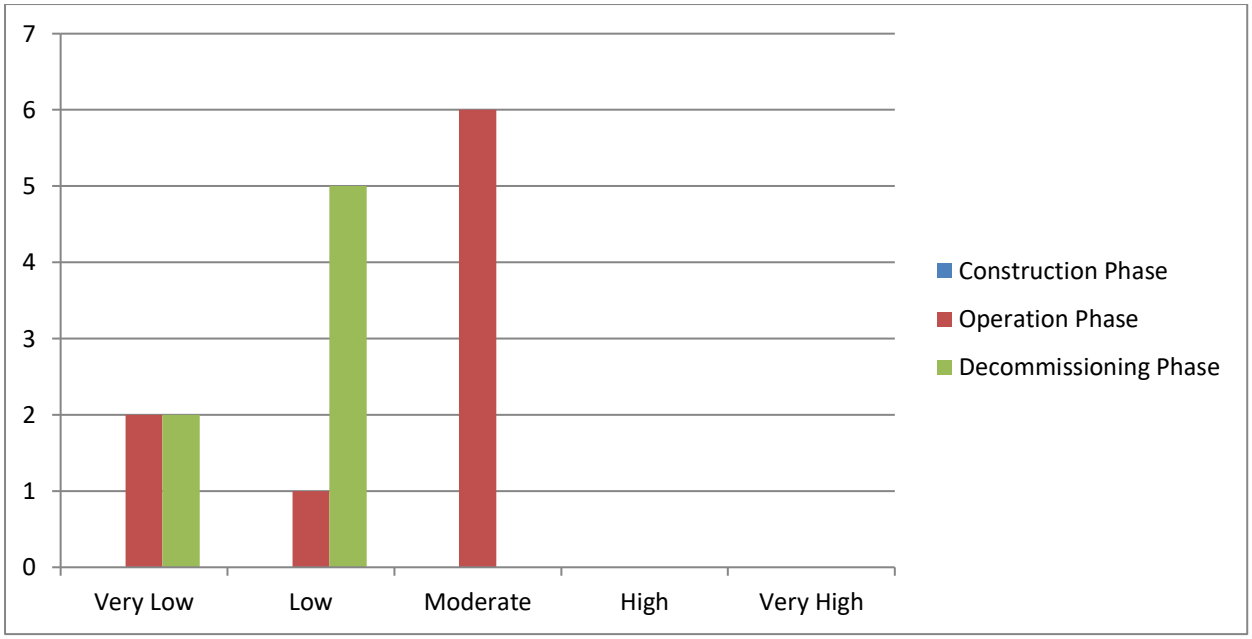


Figure 5-2 Impact Significance of the proposed project

5.8. ENVIRONMENTAL IMPACT MITIGATION MEASURES FOR OPERATION PHASE

The proposed Myanmar Green Start Energy Company Limited, solar products factory has developed the implementing of environmental management plan, appropriate mitigation measures for potential impact occurred in during operation phase, and additional impact mitigation measures shall be seen in following mitigation measures.

5.8.1. Mitigation Measures for Air Quality Impact

The significant sources of gas emission from emergency generator and transportation vehicles will be mitigated by using maintaining system in the operation process.

- Switch off vehicles when not in operation to reduce emissions by drivers
- Adequate stack must be provided as per Industrial guidelines for the proper dispersion of potential pollutants

Moreover, Myanmar Green Start Energy Company Limited, solar products factory has also implemented canteen facilities, kitchen ventilation system has already installed and operated in order to remove smoke, heat, odors, and steam from cooking.

5.8.2. Mitigation Measures for Noise Impact

The following mitigation measures shall be considered to reduce noise levels in the operation phase of the sweater factory.

I. Low noise equipment should be used where possible
II. All preventive measures such as regular operation and maintenance of pump motors, and compressor should be carried out and enclosures will be provided to abate noise levels at source
III. Noisy equipment should not be permitted during night hours as much as possible

5.8.2.1. **For Diesel Generator**

Used of Generator should be housed in a suitable acoustic enclosure. The acoustic insulation should be designed to meet mandatory standards based on a 25 dB insertion loss.

5.8.3. **Mitigation Measures for Water Consumption and Contamination**

5.8.3.1. Water Consumption

In operation phase, according to the estimated water consumption for the whole factory is 21,414 gallons per day for the purpose of general office uses and laundry section. So, the appropriate water conservation plan should be implemented with commensurate with the magnitude and cost of water use. These programs should promote the continuous reduction in water consumption and achieve savings in the water pumping, treatment and disposal costs.

Building Facility Operations

- ❖ Regularly maintain plumbing, and identify and repair leaks
- ❖ Shut off water to unused areas
- ❖ Install self-closing taps, automatic shut-off valves, spray nozzles, pressures reducing valves and water conserving fixtures (e.g. low flow shower heads, faucets, toilets, urinals and spring loader)
- ❖ Operate dishwashers and laundries on full loads, and only when needed
- ❖ Install water-saving equipment in lavatories, such as low flow toilet
- ❖ Recycling water used from wastewater treatment system

5.8.3.2. Toilet facilities

Currently toilet facilities have hygienic toilets already provided and categorized by gender, marked distinctly for men and women by signs and symbols. In addition, toilet areas will also be provided with water sinks, necessary toiletries, and hand washing soaps, hand drying facilities, and waste bins.

Figure 5-3 Toilet Facilities in factory at Myanmar Green Start Energy Factory

5.8.3.3. Recommended Wastewater Effluents Impact Mitigation Measures

- Ensure that liquid waste from the proposed site is directed to the appropriate drains
- Maintain the equipment, pipelines in good working conditions and drainage system to avoid clogging

5.8.4. **Mitigation Measures for Waste Disposal**

At Myanmar Green Start Energy Company Limited, solar products factory, waste categorization has been developed into at least four types of waste that includes iron, compost waste, lubricant waste, recycle waste such as polypropylene bags (PP) etc.

All of production waste such as leather scrap; plastic bags, cardboard, wood, plastic string and other non-hazardous waste will be collected by designated garbage bins and then sent to the temporary storage areas of solid waste in the project site area, which include 4 compartments for different kinds of waste categories. In addition, pest control program has also implemented at the entrance of rodents and insects. Myanmar Green Start Energy Company Limited also has an agreement service with Dagon Myo Thit (Seikkan) Township Development Committee for waste disposal facilities to collect the all production waste, office waste and domestic waste. According to the waste management practice, Myanmar Green Start Energy Company Limited solar products factory has provided the dedicated dustbins for paper waste, plastic waste, production waste and food waste for the proper disposal of waste. Appropriate recycling methods are in practice to dispose of the wastes in the environmental friendly manner.

5.8.5. **Mitigation Measures for Occupational Health and Safety**

5.8.5.1. Exposure of Noise

The Occupational Safety and Health Administration (OSHA) have recommended permissible noise exposure limit for industrial workers, which is based on 90 dB (A) for 8 hours exposure a day with 5dB trading rates. The limits are mentioned in Table 5-6. According to OSHA, the maximum allowable noise level for workers is 90 dB (A) for 8 hours exposure a day. Thus, adequate protective noise impact measures in the form of ear muffs/ear plugs to the workers working in high noise areas, need to provide if actual noise level monitoring results are more than 90 dB (A) at the work site for working time hours for 8 hours.

Table 5-6 Permissible exposure of noise limits

Total Time of Exposure Per Day in Hours	Noise Level dB(A)
8	90
6	92
4	95
3	97
5	100
1	105
½	110
¼	115

5.8.5.2. Recommended Mitigation Measures for Occupational Health and Safety

- Consider the provision of personal protective equipment only after all measures for removing or controlling safety hazards have been provided reasonably impractical
- Ensure that sufficient personal protective equipment is provided and that they are readily available for every person who may need to use them.
- The management should ensure that all persons make full and proper use of the personal protective equipment provided
- Provide instruction and training in the proper use and care of any specific protective equipment where necessary
- Ensure that the personal protective equipment is in good condition. Report immediately any damage to the management for replacement. Always keep the personal protective equipment as clean as possible.

Monitoring should be designed and implemented by accredited professionals, as part of an occupational health and safety-monitoring program. Facilities should also maintain a record of occupational accidents and diseases. Projects should try to reduce the number of accidents among project workers (whether directly employed) to a rate of zero, especially accidents that could result in lost work time, different levels of disability, or even fatalities.

5.8.5.3. Material Storage guidelines

Storage practices to reflect the safety of workers are also developed in Myanmar Green Start Energy Company Limited. All the shelves in the storage areas are secured, firmly placed and organized to prevent from any collisions that can affect the workers during working. Different materials will be stored separately by type and according to the designed layout.

5.8.5.4. First Aid Guidelines and Facilities

A well organized and proper first aid system is implanted to provide immediate first aid to anyone who is injured in the workplace and had also conducted the first aid training by Myanmar Red Cross Society. Adequate number of first-aid kits are listed and made available at all workplaces and contacts of medical providers, hospitals will be notified. The followings are some of the contents in a sample first aid kit.

- Bandage

- Adhesive Tape
- Antiseptic wipe
- Burn dressing and treatment items
- Cold pack
- CPR barrier
- Sterile wound dressings
- Sterile eye coverings
- Scissors, tweezers, compress

Figure 5-4 First Aid Facilities at Myanmar Green Start Energy Factory

5.9. POTENTIAL ENVIRONMENTAL IMPACTS OCCURRED DURING DECOMMISSION PHASE

The proposed duration of the investment shall be 25 years. The term of the Lease shall be initial 5 years commencing from the date of signing of the Lease Agreement between Local owner and Myanmar Green Start Energy Company Limited for proposed project site for 2 acres of land and extendable for ten years in 2 times as recommended by the Yangon Region Government. The project of land and warehouse will be restitution to land owner after decommissioned. Therefore, the IEE study is not assessed for environmental impact during decommission phase.

CHAPTER 6
ENVIRONMENTAL MANAGEMENT PLAN

6.1. OBJECTIVE OF ENVIRONMENTAL MANAGEMENT PLAN

The objective of the environmental management is to ensure potential environmental issues are managed by proper mitigation measures in compliance with the relevant laws and regulations stipulated by national authorities. Environmental management is based on the basic principles of management known as the P-D-C-A cycle (Figure 6-1). Environmental management consists of four related tasks as described below:

- Plan (P) - What need to be done

Mitigation measures for the potential environmental impacts of the factory such as air emission, noise, solid waste, wastewater and health and safety at work are described in this chapter. The Project Proponent will follow the plan for the mitigation measures according to the scheduled time.

- Do (D) - Implement the plan

The Project Proponent as described in this chapter will implement the mitigation measures for the potential environmental impacts appropriately.

- Check (C) - Monitor and evaluate the results of implementation

The effectiveness of the mitigation measures will be monitored, evaluated and documented.

- Act (A) - Taking corrective actions to improve the results, if found inadequate

If nonconformities are noted with reference to the environmental monitoring benchmarks, corrective actions need to be planned to mitigate the existing environmental impacts.

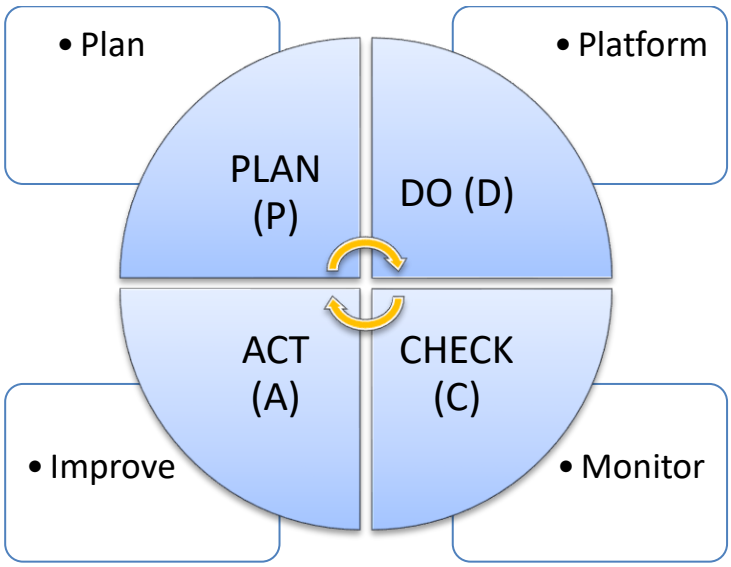


Figure 6-1 PDCA cycle

6.1.1. Institutional Requirement

Myanmar Green Start Energy Company Limited will be managed the development of the proposed project. The project proponent should appoint Health, Safety and Environment (HSE) issues throughout the duration of the project phases. HSE team is responsible for implementation and monitoring of Environmental Management Plan (EMP) and Monitoring Plan as well as coordination with local authorities and the nearby communities. The HSE Team also makes regular review of EMP to cover all potential impacts, amendments and modifications.

6.2. RESPONSIBILITIES OF THE ENVIRONMENTAL MANAGEMENT PLAN

In order to ensure the sound development and effective implementation of the EMP, it will be necessary to identify and define the responsibilities. The environmental management practices, procedures, and responsibilities are defined herein to get full compliance with the existing environmental policy, laws, rules and regulations of the Republic of the Union of Myanmar. The following entities should be involved in the implementation of this EMP:

Myanmar Green Start Energy Company Limited: The proponent will be charged with the responsibility for ensuring that the proposed development has been accomplished in an environmentally sound manner. This can be achieved by inclusion of environmental specifications in the tender specifications, selection of environmentally conscious contractors, and supervision to ensure that the objectives of this EMP are met. The implementation of Environmental Management Plan (EMP) process will prepare and follow up by appointed persons for health, safety, and environmental management under the instruction of management team of Myanmar Green Start Energy Company Limited for EMP implementation facilities.

Environmental Conversation Department (Yangon Region): The responsibility of ECD is to exercise general supervision and coordinating over all matters relating to the environment and to be instrumental in providing guidance for recognized regulatory frameworks.

Third-Party Environmental Consultant: The environmental consultant will have to ensure that the proposed EMP is up to date and is being followed properly by the proponent. Periodic audits of the EMP will have to be done to ensure that its performance is as expected, by comparing with operating standards so that any corrective actions can be taken.

6.2.1. Structure and Responsibilities for the EMP Development and Implementation

The HSE officer is responsible to the HSE components of the project and on matters relating to the implementation of the EMP throughout operation life. The S&E officer will have responsibilities that include:

- Ensure a monitoring system is in place to track and report all health, safety and environmental incidents;
- Carry out a thorough initial site inspection of environmental controls prior to work commencement;
- Record and provide a written report to the General manager and production team of non-conformances with the EMP and require the HR supervisor to undertake mitigation measures to avoid or minimize any adverse impacts on environment or report required changes to the EMP;

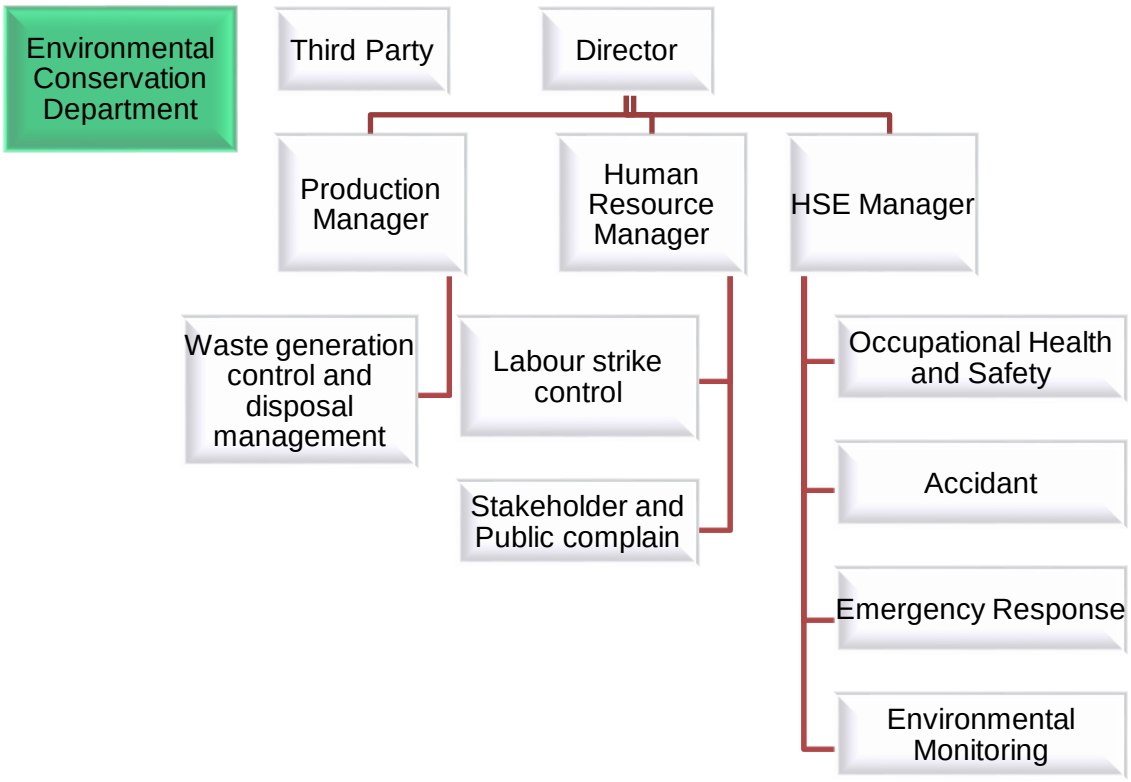


Figure 6-2 Organization Structure of Environmental Management Plan

Table 6-1 Responsibilities of HSE Members

Roles	Responsibilities
General Manager	The General Manager will be assisted by the Operations Manager and also the HR and HSE Officer. In terms of environmental protection commitments, the Operation Manager will be the key driving force and will be responsible for: • Establishing overall environmental direction and policy • Ensuring the implementation of the EMP • Ensuring investigation of all environmental incidents are reviewed and that reports are submitted on time • Ensuring an effective system of internal and external communication is in place • Providing advice regarding the environmental program
Operation Manager	The Operation Manager will assist the General Manager in looking into the overall environmental matters during the operational phase of the Project. The Operation Engineer will also be responsible for: • Adherence to the overall environmental direction and policy • Ensuring the implementation of the recommended actions in the investigation of all environmental incidents • Managing resources for operation wastes
HR Manager	The HR Manager will carry out the day-to-day management of workers and social issues in the factory. The HR Manager will be responsible for: • Assisting the management in publicising and implementing corporate and local policies, objectives and programs

Roles	Responsibilities
	• Maintaining key environmental-related documents and information • Communicating/ liaising with the local authorities on environmental issues
HSE Officer	The HSE Officer will be the key person in charge of all environmental matters pertaining to the site. The HSE Officer will be responsible for: • Coordinating the implementation of environmental programs, including monitoring of the project site environmental performance • Performing periodic internal environmental audits and inspections to ensure compliance with the legal environmental requirements • Ensure a monitoring system is in place to track and report all health, safety and environmental incidents; • Carry out a thorough initial site inspection of environmental controls prior to work commencement; • Record and provide a written report to the General Manager and production team of non-conformances with the EMP and require the HR Manager to undertake mitigation measures to avoid or minimize any adverse impacts on environment or report required changes to the EMP.

6.3. ENVIRONMENTAL MANAGEMENT PLAN

The EMP for Myanmar Green Start Energy Company Limited has been prepared to address potential issues based upon discussion with factory management, workers, local community ‘s view, stakeholder consultation and from the site visit of experts. The EMP is additional to and compliments the factory’s safety management system. The following environmental issues that require environmental management plans based upon the potential impacts of activities by for polyester production are as follows;

6.3.1. Air Pollution/Dust Management Plan

Objectives:	• To minimize the adverse impact to air quality caused by stack gas emission from generator and also dust management generated from vehicular movement. • To comply with relevant government rules	
Relevant government law and rule	• National Environmental Quality (Emission) Guidelines (2015)	
Time Frame	• Entire life spans of the factory operation	
Management Plan	• The factory has planted trees in its premises which reduce the carbon emission by the factory and minimize the air pollution • Periodic maintenance of generator is conducted • There is no open burning of waste materials at the site • Workers are provided mask during working in any dusty area	
Monitoring & Reporting	• Frequency	Biannually
	• Monitoring Point	Indoor and Outdoor of proposed project

	• Parameters	PM $_{2.5,}$ PM $_{10}$, SO_2, NO_2, O_3, CO
Estimated cost	• 1,000,000 Kyats per year	
Responsibility	Management of the factory; • Head of Maintenance-Total implementation of above of air pollution management plan • Production Manager-Air quality in the production area is good enough • Manager -To hire organization/independent third party testing air quality • EHS officer-Monitor the hygiene of ambient air quality in surrounding of the factory	

6.3.2. **Noise Management Plan**

Objectives:	• To avoid nuisance noise to nearby residents generated from generator and other machineries. • To comply with noise standard of National Environmental Quality (Emission) Guideline	
Relevant government law and rule	• National Environmental Quality (Emission) Guidelines (2015)	
Time Frame	• Throughout the project life	
Management Plan	• Building noise insulated generator room and ensure satisfactory maintenance of relevant equipment • Impose speed limit to track and vehicles at the transportation route. • Provide sufficient personal protective equipment (PPE) at the work place • All the related personnel will be provided proper training about the relevant issues and ensure PPE wear during working in noisy area.	
Monitoring & Reporting	• Frequency	Biannually
	• Monitoring Point	Two points in operation area (especially cutting and sewing)
	• Parameters	Sound Decibel
Estimated cost	• 500,000 Kyats per year	
Responsibility	Manager • To hire organization/independent third party testing noise level • Ensure that all workers use PPE during operation	

6.3.3. **Solid waste management Plan**

Objectives:	• To minimize waste generation by developing strategies for the management and disposal of all waste in a manner that is sustainable and sensitive to the environment • To comply government waste management policy
Relevant government law and rule	• National Waste Management Strategy and Action Plan (Draft 2018)

Time Frame	• Entire life spans of the factory operation
Management Plan	• The factory does not dispose any kind of solid waste on the factory premises or not dump in the surface water like local pond, canal or river, etc. • The solid wastes are stored properly and separately in a certain location in proper manner such as cloth scrap waste need to collect at one place and poly/carton waste should collect at another place. Metal/Hazardous material waste such as fudge electric bulbs; empty chemical container is stored another in separate place of storage area. • Recycle wastes like fabric scrap, carton box, plastic sheet, etc. are hand over to local buyer for reuse and waste-tracking record shall be kept every day. • The metal or glass waste of electric bulb is taken by the suppliers to recycle them. • The daily domestic waste of workers hands over to YCDC waste collector to collect every day • Daily wastes are stored clearly labeled containers and in such a manner that all related personnel are provided proper training about the relevant issues.
Monitoring & Reporting	• Daily wastes have to be collected and hand over to YCDC waste collector • The inventory record of waste disposal will be maintained as proof for proper management as designed
Estimated cost	• 50,000 Kyats per month
Responsibility	Manager (HR) • Responsible for overall site cleanliness and waste management • Regular waste collection to minimize excessive waste storage

6.3.4. **Wastewater Management Plan**

Objectives:	• Prevent pollution underlying groundwater sources	
Relevant government law and rule	National Environmental Quality (Emission) Guidelines (2015)	
Time Frame	Entire life spans of the factory operation	
Management Plan	• Ensure that drainage lines and sewage system of factory and the nearest public drainage are watertight and sufficient capacity • Regular check and maintain sewerage facility. • Clean the factory ‘s drainage to avoid odor emission and to avoid the block of water flow.	
Monitoring & Reporting	• Frequency	Biannually
	• Parameters	pH, Turbidity, Conductivity, Iron, Sulphate, TSS, TDS, Manganese, COD, BOD, Cyanide, Copper, Zinc, Carbonate

	• Proper maintenance of drainage and sewerage system will be conducted periodically
Estimated cost	• 800,000 Kyats per year
Responsibility	• Manager -To hire organization/independent third party testing wastewater quality • EHS officer-Monitor the condition of factory's drainage and sewerage system

6.3.5. **Energy Management Plan**

Objectives:	• The energy management is aimed at minimizing electricity use results from site equipment and working lighting • Comply with the standard of energy use
Relevant government law and rule	National Energy Management Committee (Myanmar Energy Master Plan 2015)
Time Frame	Once in a year throughout the factory life
Management Plan	• Installation of timers and thermostats to control heating and cooling • Energy saving light installed in different area of the factory for saving energy • Used of energy saving devices must be installed • Ensure that good housekeeping measures such as turning off equipment and lights when not in use
Monitoring & Reporting	• Conduct annual energy efficiency of adult to find out the scope for energy saving
Estimated cost	• Approximately 100,000 Kyats per year
Responsibility	Manager • To arrange energy, audit technical personnel • To monitor and record electricity consumption, other related energy issues and take necessary actions if any problem arises

6.3.6. **Water Consumption Management Plan**

Objectives:	• The water consumption management is aimed at minimizing ground water use
Relevant government law and rule	• The Underground Water Act (1930)
Time Frame	• Entire life spans of the factory operation
Management Plan	• Install water meter for internal control of water consumption • All staff trains and makes aware conservation practices and proper methods of water use must be place in toilets and other areas of water consumption • The contamination of water is avoided by suitable management of oil and fuel used in machineries and vehicles

	• Trees plantation surrounding the factory
Monitoring & Reporting	• Daily visual inspections
Estimated cost	• Approximately 5 million kyats (annually)
Responsibility	Manager • Arrange audit on water usage controls environmental officer

6.3.7. **Emergency Response and Disaster Management Plan**

Objectives:	• Reduce the risk of accidents at the factory area
Relevant government law and rule	• The Employment and Skill Development Law (August 2013), ILO guide to Myanmar Labour Law (2017)
Time Frame	• Entire life spans of the factory operation
Management Plan	• The factory management has taken proper measures to handle any emergency situation like fire, earthquake, flood and storm • Provision and inspection of firefighting equipment and fire hydrant system in all the sections • A detail evaluation plan (fire exist, emergency exit door, etc.) is established and communicated with workers • Periodic inspection of safety relief valve provided with pressure vessels and equipment, preventive maintenance; aware the workers about electric shock by necessary training. • Regular fire drill operation is conducted • Workers are informed about what to do in earthquake like stay in a safe place such as under table of desk, not to try move outside during earthquake, workers who will be outside during earthquake shall remain stay out of the building, trees, lump post, etc. Other relevant safety instruction of emergency situation it informed to workers by training • Workers are aware of dangers from physical hazards such as obstacles covered by floodwater (storm debris, drainage opening, and ground erosion) and from displaced reptiles (Snake) or other animals. • A medical team has been prepared for primary treatment (First Aid) • Prepare an emergency contact directory consisting contact numbers of nearest fire service, local police station, hospitals, etc. and display it in a place that everybody can see it easy. • Build a safety committee which from firefighting team, rescue team. The committee arrange a meeting every month to discuss about safety management • Ensure proper training of the employees about the disaster management, fire safety as well as occupational health and safety
Monitoring & Reporting	Weekly check fire extinguishers and water hydrant in position Daily inspect that all fire exist are open • Servicing fire extinguisher and records accidents,
Estimated cost	• Approximately 1,500,000 Kyats per year

Responsibility	Manager and EHS officer • Arrange firefighting training after every 3 months • Responsible for fire control and response • Monitoring daily danger warning and bans

6.3.8. Environmental Monitoring Plan

Monitoring of the anticipated environmental and social impacts in the receiving environments is important in evaluating the effectiveness of mitigation plan and compliance with the regulatory measures in place. During the operation phase, monitoring will be undertaken to ensure that proposed mitigation measures for negative impacts and enhancement measures for positive impacts are implemented. Main objectives of environment monitoring plan include;

1. To identify and resolve environmental issues and other functions that may arise during the operation phase
2. To implement air quality and noise affect monitoring plan during the operation phase
3. To check and quantify the overall environmental performance, implement action plans and recommend and implement remedial actions
4. To conduct regular reviews of monitored data as the basis for assessing mitigation measures are identified, designed and implemented;
5. To assess and interpret all environmental monitoring, data to ascertain whether environmental control measures and practices are functioning in accordance to specifications
6. To predict the unforeseen impacts

6.4. ENVIRONMENTAL MONITORING SCHEDULE AND REPORTING

The EMP cell members responsible may conduct daily, weekly or monthly general inspections of the project area and facilities. The objectives are to identify non-compliances to EMOP. Table 6-2 is provided the environmental monitoring schedule for Myanmar Green Start Energy factory. The factory submits monitoring report to the Ministry not less frequently than every six (6) months, as provided in a schedule in the EMP,

Table 6-2 Environmental monitoring schedule for Myanmar Green Start Energy Company Limited

Issues	Parameter	Frequency	Area to be monitored	Monitoring cost	Responsible section
Construction Phase; It is not assessed in this phase, for the reason that construction is already completed during IEE preparation.					
Operation Phase					
Air quality	PM 2.5, PM 10, SO2, NO2, O3, CO, CO2	Biannually	One point in the production area	1,000,000 Kyats	Myanmar Green Start Energy Company Limited
Water Quality	pH, Turbidity, Conductivity, Iron, Sulphate,	Biannually	Final discharge point of factory drainage	800,000 Kyats	Myanmar Green Start Energy Company Limited

Issues	Parameter	Frequency	Area to be monitored	Monitoring cost	Responsible section
	TSS, TDS, Manganese, COD, BOD, Cyanide, Copper, Zinc, Carbonate				
Noise	Noise level in decibel (dBA)	Biannually	Two points (point source in operation area and sensitive receptor)	500,000 Kyats	Myanmar Green Start Energy Company Limited
Waste Generation	Solid waste, Liquid waste and Hazardous waste	Regularly	Recycle house and waste house and at the factory office	300,000 Kyats	Myanmar Green Start Energy Company Limited
Fire Hazardous	Visual inspection, firefighting equipment	Monthly	At the factory	1,200,000 Kyats	Myanmar Green Start Energy Company Limited
Light intensity	IL luminance	Biannually	At the production line (especially cutting and QC)	400,000 Kyats	Myanmar Green Start Energy Company Limited
Decommissioning Phase					
Air quality	PM2.5, PM10	One time during this phase	One point in the production area	1,000,000 Kyats	Myanmar Green Start Energy Company Limited
Water Quality	pH, DO, BOD, COD,TDS, Temp, Oil and Grease, Chlorine, Arsenic	One time during this phase	Final discharge point of factory drainage	500,000 Kyats	Myanmar Green Start Energy Company Limited
Noise	Noise level in decibel (dBA)	One time during this phase	One points in demolishing area	400,000 Kyats	Myanmar Green Start Energy Company Limited
Rehabilitation	Recovering and Vegetation		All decommissioning area		Myanmar Green Start Energy Company Limited

6.5. CAPACITY BUILDING AND TRAINING PLAN

The emergency preparedness is vital, as quick and correct response is necessary in case of emergency to reduce injuries, harm and other damage. Care should be given for during processing activities in order to prevent synthetic errors and accidental cases (e.g., electricity shock and fire hazards).

The emergency response plans should be established for handling all foreseeable emergencies in the workplace and must provide the following;

6.5.1. **Assignment of responsibilities**

All senior staff such as a line/production manager or safety officer should be assigned to lead the emergency response team and charged with the duties of (1) assessing the emergency and taking necessary actions (2) overseeing the implementation of the emergency response plan (3) organizing regular drill (4) ensuring all emergency equipment is well maintained.

6.5.2. **Emergency procedures**

Emergency procedures are operating instructions for employees to follow in emergency case

About work safety in the concerned processing, the management team should

a) Identify and list out all possible emergency situations in the workplace
b) Assess the effects and impacts of the emergency situations
c) Establish emergency response plans
d) Provide and maintain emergency equipment and other necessary resources
e) Ensure that staff are familiarized with the arrangements in case of emergencies by providing procedural instructions and employee training and organizing drills

6.5.3. **Training for Emergencies**

The type, amount and frequency of training varies, depending upon the tasks employees are expected to perform. Although training must be provided to employees at least annually, safety meetings and drills should be conducted at more frequent intervals.

Regardless of the specific type of facility, training should include, though not be limited to the following;

- Hazard recognition and prevention (fire, explosion, etc.)
- Proper use of fire extinguishers
- Emergency reporting procedures
- Preventive maintenance
- Hazardous materials spill response
- First Aid

6.5.4. **Fire Prevention and Protection**

The fire prevention and protection program must address the following topics:

Prevention; policies, practices and procedures designed to keep the conditions necessary for a fire from coming together

- Hot work permits
- Lockout/tag out policies
- Design specifications for storage of flammable materials

Severity reduction; policies, practices and procedures designed to reduce the spared of fire and end the fire.

- Emergency plans

- Alarm systems
- Portable fire extinguishers
- Fire Protection Equipment

Cleanup; policies, practices and procedures designed to return the affected area to an operational level and reduce other losses created by improper cleanup

- First aid
- Removal of debris to an appropriate waste site
- Equipment and facility repair

6.5.5. **Fire Protection Equipment**

1. Explosion Suppression Systems: Explosion suppression systems should be used in unusually hazardous areas such as elevator legs, boots and head, or in areas such as bins, distributors and tanks.

2. Portable Fire Extinguishers: All buildings within a facility must have fully charged and operable portable fire extinguishers. If employees are expected to use portable extinguishers or other firefighting equipment against incipient fires, they must be trained to use the equipment. Training must include the following:
   - Correct type of extinguisher to use on different classes of fire
   - Proper techniques for use of the equipment to extinguish a fire
3. Standpipes and Hoses: All areas within a facility that are above 75 feet from ground level and in which combustible materials other than grain are stored should have wet or dry standpipes and hoses installed.

4. Automatic Sprinkler Systems: Automatic sprinkler systems are recommended in areas containing combustible materials.

5. Fire Hydrants: All grain and feed mill facilities should have adequate public or private fire hydrants on site. Each fire hydrant should have an adequate water supply.

6.5.6. **Fire Safety and Evacuation Plan**

Fire Evacuation plans should include the following information

- Emergency escape routes must be clearly shown on floor plans and workplace maps
- Employers must know that their employees know the emergency escape routes
- Procedures for employees who must remain to operate critical equipment before evacuating
- Identification and assignment of personnel responsible for rescue or emergency medical aid

Fire Safety Plans should include the following information:

1. Procedure for reporting a fire or other emergency
2. Site plans indicating the following
   - The Occupancy assembly point
   - The locations of fire hydrants

- The normal routes of fire department vehicles access

3. Floor Plans identifying the locations of the following
   - Exits
   - Primary evacuation routes
   - Secondary evacuation routes
   - Accessible egress routes
   - Areas of refuge
   - Exterior area for assisted rescue
   - Manual fire alarm boxes
   - Portable fire extinguishers
   - Occupant-use hose stations
   - Fire alarm annunciators and controls

The following American National Fire Fighting Association (NFFA) Standards must be following.

Table 6-3 American National Fire Fighting Association (NFFA) Standards

No.	Parameters	Proposed Capacity	Remark
1	Fire water flow	14 bar	
2	Deluging rate	12.0 liters/m2/min	
3	Foam rate	10.0 liters/m2/min	
4	Maximum water pressure	190 liters/min	For storage area

Emergency evacuation Drill: An exercise performed to train staff and occupants and to evaluate their efficiency and effectiveness in carrying out emergency excavation procedures

Employee Training and Response Procedures: Employee shall be trained in the fire emergency procedure described in their fire evacuation and fire safety plans and training should be based on these plans;

Frequency: Employee shall receive training in the contents of fire safety and evacuation plans and their duties as part of new employee orientation and at least annually thereafter. Records shall be kept and made available to the fire code official upon request.

Employee Training Program: Employee shall be trained in fire prevention, evacuation and fire safety in accordance with the following sections.

- Fire Prevention Training - Employee shall be apprised of the fire hazards of the materials and processes to which they are exposed. Each employee shall be instructed in the proper procedures for preventing fires in the conduct of their assigned duties

- Evacuation Training – Employees shall be familiarized with the fire alarm and evacuation signals, their assigned duties in the event of an alarm or emergency, evacuation routes, areas of refuge, exterior assembly areas and procedures for evacuation

- Fire Safety Training – Employee assigned fire-fighting duties shall be trained to know the locations and proper use of portable fire extinguishers or other manual fire-fighting equipment and the protective clothing or equipment required for its safe and proper use.

6.5.7. Site Fire Control

1. Alert other people through fire alarm
2. If small, control using an extinguisher
3. Contact fire brigade if not under immediate control
4. Attend to human life in immediate danger
5. For electrical fires turn off power before fighting
6. Once out of the building, stay out. Do not allow people to go back into the burning building to collect valuables. While evacuating the building, close doors (but do not lock) to slow down the spread of fire
7. Obey all instructions
8. Proceed to an emergency evacuation area (Muster Point)

6.5.8. Fire Safety Plan and Firefighting System Prepared in Myanmar Green Start Energy Company Limited

For fire safety plan, Myanmar Green Start Energy Company Limited has a plan to keep sufficient amount of fire extinguishers, in case of emergency fire problems in factory building. Firefighting training plan is also prepared for all employees by using the instructions, techniques and guidelines in concern with fire emergency matters according to the guidelines of Myanmar Fire Services Department. Moreover, smoking inside the building is strongly prohibited to avoid unwanted fire problems and firewater will be stored by capacity of (170 m^3) of ground water tank.

Figure 6-3 Fire Safety Plan and Firefighting System

6.5.9. Employee Information and Training

Employees must be informed about any operations in their work area where hazardous chemicals or materials are present. They must also be informed about the locations and availability of the hazard communication program, list of chemicals and SDSs. Employees must receive training on the following:

- Methods for detecting the presence or release of a hazardous chemical, such as monitoring devices and the visual
- appearance or odor of the chemical
- Physical and health hazards of chemicals in their work area
- How to protect themselves using work practices, emergency procedures and personal protective equipment
- How to interpret the information on the labels and MSDSs

6.5.10. Health and Safety Training Plan for Worker

Health and Safety Training plan currently used and provided in Myanmar Green Start Energy Company Limited to all employees and workers by trainings internally and externally. Specific trainings are recommended and conducted according to the health and safety guidelines to enhance worker ‘s health and to prevent all potential risks and hazards might occur in the factory. All required trainings related to health and the respective departments propose safety or operational parts, top management makes decision and HR organizes and conducts the trainings.

Table 6-4 Training Plan Used in Myanmar Green Start Energy factory

No.	Health and Safety Guidelines	Training needs
1.	Management	General fire and emergency response plan, evacuation. All training materials and procedures covering health and safety for workers and employees
2.	Machine safety and noise management	Training for machine operations to all operators Use of PPE and proper use of any necessary protection

		Maintenance and Emergency procedures
3.	Environment safety	Understanding and training on recognition and maintenance not to affect environment
4.	Material storage and safety	Safety use of related devices and machines Use of necessary protections in working areas Sanitation work
5.	Fire Safety	Firefighting and evacuating training and practices Firefighting materials/ devices use
6.	First Aid	first aid / CPR/ AED training from providers (Outsource) training on hazard of pathogens

6.6. CORPORATE SOCIAL RESPONSIBILITY (CSR) PLAN

The CSR activities have the objective to uplift quality of life and gain favorable relations from all communities in the operation area. The CSR program for Myanmar Green Start Energy Company Limited consists of three main sectors; Health, Education and Community Development Sector. CSR activities are conducted in compliance with MIC's guideline for implementation of CSR program.

Myanmar Green Start Energy Company Limited will contribute 2% of our Net Profit to social welfare activities that will help society and country of Myanmar. Our social welfare activities shall include training of our employees such as on job training to be more qualified, language (Chinese) training on weekends with experienced teachers and providing necessary healthcare such as medical checkups and giving proper medical knowledge about deceases and its prevention. Part of our CSR activity such as donations will also contribute to public school around our factory (Table 6-5).

Table 6-5 CSR plan at Myanmar Green Start Energy Company Limited

No	Particle	Contribution
1	Public school	0.5%
2	Non-profit training	1
3	Employees healthcare	0.5%

6.6.1. Public School

We will contribute 0.5% of our net profit to the public school near the factory to be a part of creating the better community. We will also work together with the school to understand more about the needs and we will also ensure that our contributions will be used in the most effective and efficient way for the society.

6.6.2. Non-profit Training

We will contribute 1% of our net profit for the trainings of our Employees. Our trainings include job-related trainings, language trainings and safety trainings. The main objective of our trainings are that we want our bags with their work but also improving their other skills such as

language and promoting knowledge about safety measures and occupational health employees to be not only become more productive and more qualified.

6.6.3. **Healthcare**

One of our main concerns is the well-being of our employees. We will contribute 0.5% of our net profit for the healthcare, which includes medical checkup for the employees and providing health education to our workers.

6.7. GRIEVANCE REDRESS MECHANISM (GRM)

People who live near the project affected area or stakeholders can complain about the problems and impacts that they suffer; they can complain though Grievance Committee, which includes the responsible persons of Myanmar Green Start Energy Company Limited representative from Dagon Seikkan Industrial Zone (1) and representative from General Administration Department (Dagon Myo Thit Seikkan Township). Small issues will be solved at the Grievance Committee stage and other unsolved problems will be submitted to higher responsible authorities and finally the responsible person decided by the court in legal terms. The following diagram (Figure 6-4) show steps of Grievance Redress Mechanism of Proposed Factory Project.

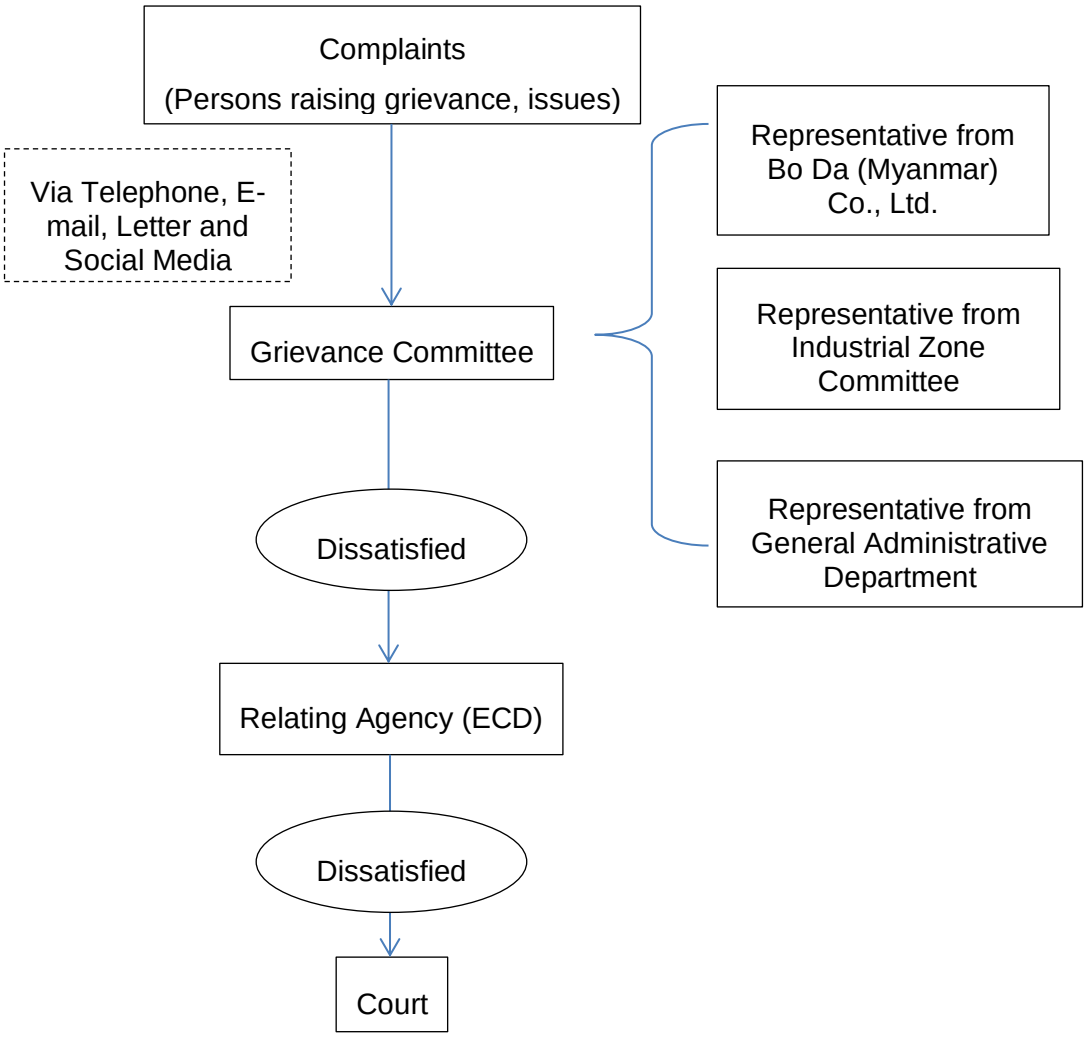


Figure 6-4 Grievance Redress Mechanism flow diagram

CHAPTER 7
PUBLIC CONSULTATION

7.1. PUBLIC CONSULTATION PROCESS

This chapter presents results of public consultation and information disclosure conducted for the Myanmar Green Start Energy factory. Public participation can be considered as the required element of the EMP process. In this study various stakeholder 's participation was made.

Public consultation during preparation of EMP report was conducted on January 28, 2020 following the EIA procedure.

The project's stakeholders in this category are key officials or representatives of the regional and local authorities who have direct responsibilities for the administration of the EMP process for environmental and social clearance and issuing operation permits for proposed development projects.

For this factory, relevant key offices at the national level are Environmental Conservation Department (ECD) and Industry Supervision and Inspection Department.

Relevant key office at the regional level is Yangon City Development Committee (YCDC), General Administrative Department, Fire Department, Factories and General Labor Law Inspection Department, Public Health Department, Industrial Supervision and Inspection Department.

Public consultation carried out after the presentation on the project, followed by questions, answers and discussion. U Si Yan Hein presented EMP study and findings from Myanwei, after the presentation following questions and answer section. Summary of public consultation meeting is presented Table 7-1 Is shown the consultation meeting photo. **(PCM presentation power point slide is described in Appendix)**

Table 7-1 Summary of public consultation meeting

Time and Date	January 28, 2020 10:30-12:30
Venue	Zone Committee Office, Ka Naung Hall's Meeing Room, Dagon Seikkan Township.
Agenda	• Presentation on the Background Information of Project, • Project Description, • Impact Assessment, Environmental Mitigation • Environmental Management Plan and Monitoring Plan

	• Site survey and performances of Myanmar Green Start Energy factory • Received and Answer from feedback of participants

Figure 7-1 Public consultation meeting photo

7.2. RECOMMEND SUGGESTION AND COMMENT

After the presentation, the floor opened for questions and answers. There is no suggestion and comment for presentation and EMP draft report, because the project is sample manufacturing of luggage and bags on CMP Basis. In addition,

Suggestion; U Kyaw Kyaw; Township Development Committee

- To compliance with YCDC procedure for solid waste management and disposed process
- To implement the sufficient septic tank design for workers

Daw Thet Wai Hnin, Environmental Conservation Department;

- To control the dust emission form the fabric cutting line and other dust emission area
- To describe the mitigation plan of dust emission level in the report
- To describe the monitoring plan of air quality and detail parameter in the report

Suggestion; U Aung Myint Oo; YCDC

- To provide the waste tank for waste water and some used oils
- To plant the some plants in this factory and
- To make when they wasted at that time to get a bail.

CHAPTER 8
CONCLUSION AND RECOMMENDATION

8.1. CONCLUSION

IEE has been prepared for Myanmar Green Start Energy Company Limited is located at Land Plot No. (63), Yaw Twin Wun U Phoe Hlaing Road, Dagon Seikkan Industrial Zone (1), Dagon Myo Thit Seikkan Township, Yangon Region. The main objective of the study is focused specially on the required environmental management measures or creating environmentally friendly workplace. An IEE has been carried out for the factory according to the requirement of the proponent as it has been made for solar production factory.

Thus, the factory management can take proper mitigation steps against adverse environmental impacts by following this IEE. The necessary measure to mitigate impact regarding different environmental parameter such as air, water, waste, noise has been proposed in this IEE.

However, all necessary implementation measures to mitigate adverse environmental, health and safety impacts have already been taken to meet National Environmental Quality (Emission) Guideline (2015). On the other, the factory has positive impacts in terms of environmental in the operation phase. Further, this will indirectly help in boosting up the national economic condition through foreign investment. An outline of IEE has been given in the present report to mitigate/enhance the impacts, which occurs during operation phase of the factory.

The effective implementation of the mitigation measures proposed will ensure towards good environmental management within the proposed project area. Furthermore, the environmental monitoring plan prepared as part of the EMP will provide adequate opportunities to address any residual impacts during the operation phase.

In conclusion, it has been figured out that, the proposed luggage and bags factory is going to generate local employment opportunities and enhance capabilities and working skills of employees. Consequently, their socio-economic standard is expected to be improved and undertaking corporate social responsibilities (CSR) as recommended. The study further concluded that positive impacts would be of immense benefit to the local community and national development as well.

8.2. RECOMMENDATION

This is recommended that;

- All appropriate environmental management measures detailed in this report, together with any other environmental management commitments should be implemented throughout the entire life of the factory
- Solid wastes and liquid wastes need to dispose according to YCDC rules and regulation
- Workers should be provided proper training and it should be ensured that workers use PPE during factory operation area.

- Daily, monthly and annual action plan shall be formulated based on this EMP (Chapter 8) and practiced at operation level.
- Keep full records of environmental management activities and present to annual independent third party environment audit.
- Abide environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar.

Finally, the proponent should follow the comments and suggestions made by ECD after reviewing this IEE report. Once concerned authorities approve IEE report, effective implementation of IEE by the project proponent is essential. The proponent should abide environmental policy, laws, rules and instructions of the Republic of the Union of Myanmar.

APPENDIX A

YRIC Endorsement of Myanmar Green Start Energy Company Limited

Form (5-B)

THE REPUBLIC OF THE UNION OF MYANMAR
YANGON REGION INVESTMENT COMMITTEE
ENDORSEMENT

651
30.11.2018

Endorsement No. YGN – 097 /2018 Date 30 November 2018

This endorsement is issued by Yangon Region Investment Committee according to the section 25, sub-section (d) of the Myanmar Investment Law-

(1) Name of Investor MS. JIANG, LU

(2) Citizenship CHINESE

(3) Residence Address DUDU MOTAIN NO.1, NO 1604, OFFICE BUILDING GUANDU DISTRICT, KUNMING CITY , YUNNAN PROVINCE, PEOPLE'S REPUBLIC OF CHINA

(4) Name and Address of Principal Organization -

(5) Place of Incorporation -

(6) Type of business MANUFACTURING OF SOLAR PRODUCTS ON CMP BASIS

(7) Place(s) of investment Project PLOT NO. 63, MYAY TAING BLOCK ZONE (1), DAGON SEIT KAN TOWNSHIP, YANGON REGION

(8) Amount of Foreign Capital US$ 0.595 MILLION

(9) Period for Foreign Capital to be brought in WITHIN ONE YEAR AND SIX MONTHS FROM THE DATE OF ISSUANCE OF ENDORSEMENT

(10) Total Amount of Capital (Kyat) EQUIVALENT IN KYAT OF US$ 0.595 MILLION

(11) Construction/ Preparation Period ONE YEAR AND SIX MONTHS

(12) Validity of Endorsement 25 YEARS

(13) Form of Investment WHOLLY FOREIGN OWNED

(14) Name of Company Incorporated in Myanmar MYANMAR GREEN START ENERGY COMPANY LIMITED

YRIC097/2018

30/11/2018

(Phyo Min Thein)
Chairman

ပုံစံ (၅-ခ)

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်
ရန်ကုန်တိုင်းဒေသကြီးရင်းနှီးမြှုပ်နှံမှုကော်မတီ
အတည်ပြုမိန့်

အတည်ပြုမိန့်အမှတ် ရကတ- ၀၉၇ /၂၀၁၈ ၂၀၁၈ ခုနှစ် နိုဝင်ဘာလ ၃၀ ရက်

ရန်ကုန်တိုင်းဒေသကြီး ရင်းနှီးမြှုပ်နှံမှု ကော်မတီသည် မြန်မာနိုင်ငံ ရင်းနှီးမြှုပ်နှံမှု ဥပဒေ ပုဒ်မ-၂၅ ပုဒ်မခွဲ (ဃ) အရ ဤအတည်ပြုမိန့်ကိုတုတ်ပေးလိုက်သည် -

(၁) ရင်းနှီးမြှုပ်နှံသူအမည် MS. JIANG,LU

(၂) နိုင်ငံသား: CHINESE

(၃) နေရပ်လိပ်စာ DUDU MOTAIN NO.1, NO 1604, OFFICE BUILDING GUANDU DISTRICT, KUNMING CITY ,YUNNAN PROVINCE, PEOPLE' S REPUBLIC OF CHINA

(၄) ပင်မအဖွဲ့အစည်းအမည်နှင့်လိပ်စာ -

(၅) ဖွဲ့စည်းရာအရပ် -

(၆) ရင်းနှီးမြှုပ်နှံသည့်လုပ်ငန်းအမျိုးအစား: CMP စနစ်ဖြင့် ဆိုလာပစ္စည်းအမျိုးမျိုး ထုတ်လုပ်ခြင်းလုပ်ငန်း

(၇) ရင်းနှီးမြှုပ်နှံသည့်အရပ်ဒေသ(များ) မြေကွက်အမှတ် ၆၃ ၊ မြေတိုင်းရပ်ကွက်အမှတ် ၉၆-၁၊ ဒဂုံဆိပ်ကမ်း မြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး

(၈) နိုင်ငံခြားမတည်ငွေရင်း ပမာဏ အမေရိကန်ဒေါ်လာ ၀.၅၉၅ သန်း

(၉) နိုင်ငံခြားမတည်ငွေရင်းယူဆောင်လာရမည့်ကာလ အတည်ပြုမိန့် ရရှိသည့်နေ့မှ ၁ နှစ် နှင့် ၆လအတွင်း

(၁၀) စုစုပေါင်း မတည်ငွေရင်းပမာဏ(ကျပ်) အမေရိကန်ဒေါ်လာ ၀.၅၉၅ သန်းနှင့် ညီမျှသော မြန်မာကျပ်ငွေ

(၁၁) တည်ဆောက်မှု/ ပြင်ဆင်မှုကာလ ၁ နှစ် နှင့်၆လ

(၁၂) အတည်ပြုမိန့်သက်တမ်း ၂၅ နှစ်

(၁၃) ရင်းနှီးမြှုပ်နှံမှုပုံစံ ရာခိုင်နှုန်းပြည့် နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှု

(၁၄) မြန်မာနိုင်ငံတွင် ဖွဲ့စည်းမည့် ကုမ္ပဏီအမည် MYANMAR GREEN START ENERGY COMPANY LIMITED

YRICD972018

(ဖြိုးမင်းသိန်း)
ဥက္ကဋ္ဌ

Confidential

THE REPUBLIC OF THE UNION OF MYANMAR
YANGON REGION INVESTMENT COMMITTEE
Plot No. 49, Seinlae May Street,
Kabar Aye Road Yankin Township, Yangon.

Republic of the Union of Myanmar ★ Yangon Region Investment Committee
No. 651
Date 30.11.2018

Tel: 01- 658263
Fax: 01-658264

Our ref : YRIC-1/E-097/2018(651)
Date : 30 November 2018

Subject: **Decision of the Yangon Region Investment Committee on the Endorsement for manufacturing of solar products on CMP basis under the name of Myanmar Green Start Energy Company Limited**

Reference: Myanmar Green Start Energy Company Limited's letter dated 15th November 2018

1. The Yangon Region Investment Committee, at its meeting (15/2018) held on 17th November 2018, approved the Endorsement for manufacturing of solar products on CMP basis under the name of Myanmar Green Start Energy Company Limited submitted by Ms. Jiang,Lu (100%) from People's Republic of China as a wholly foreign owned investment in accordance with the Myanmar Investment Law and Rules.

2. The terms and conditions of the "Endorsement" are stated in the following paragraphs:

(a) The term of an Endorsed project shall be twenty-five (25) years commencing from the date of the issuance of the Endorsement by the Yangon Region Investment Committee.

(b) The term of the Lease Agreement for land and building shall be initial five(5) years and extendable for two times for ten (10) years commencing from the date of signing of the Lease Agreement between U Kyaw San Lwin (Lessor) and Myanmar Green Start Energy Company Limited (Lessee).

(c) The annual rent for the land and building shall be Kyat 42.00 million (forty-two million Kyat only)calculated at the rate of Kyat

Confidential

5189.21 per square meter per year for the total land measuring 8093.713 square meters (2.00 acres).

(d) Myanmar Green Start Energy Company Limited, which has obtained the Endorsement for enjoyment of exemptions and reliefs under sections 75, 77 and 78 of the Chapter XVIII of Myanmar Investment Law, may submit the application form.

(e) Myanmar Green Start Energy Company Limited shall use its best efforts to achieve a timely realization of the work stated in the Endorsement application.

(f) Myanmar Green Start Energy Company Limited shall obey and respect the responsibilities of investors under section 65 of Myanmar Investment Law and Chapter XX of Myanmar Investment Rules.

(g) Myanmar Green Start Energy Company Limited shall carry out prevention, mitigation and monitoring of significant environmental impacts according to the type of investment activities in accordance with the relevant laws, rules, regulations and procedures.

(h) Myanmar Green Start Energy Company Limited shall submit to the Myanmar Investment Commission any transfer of shares or transfer of the business to any person during the investment period in accordance with section 72 of Myanmar Investment Law and rule 191of Myanmar Investment Rules.

(i) Myanmar Green Start Energy Company Limited which has benefitted from the Endorsement or enjoyment of exemptions or reliefs shall submit an annual report in the prescribed form to the Myanmar Investment Commission within three (3) months at the financial year in accordance with rule 196 of Myanmar Investment Rules and shall publish a summary of the report on its website or the Myanmar Investment Commission's website.

(j) Myanmar Green Start Energy Company Limited must, during the operation period under the Endorsement of the Yangon Region

Investment Committee, submit its operating report quarterly in the prescribed form in accordance with rule 197 of Myanmar Investment Rules.

3. Myanmar Green Start Energy Company Limited shall carry out in accordance with the stipulations of the relevant Union Ministries, governmental department and governmental organizations to obtain license, permit or registration as per section 65(d) of Myanmar Investment Law.

4. Myanmar Green Start Energy Company Limited shall submit five (5) copies of all approvals, licences, permits and similar authorizations relevant to the initial implementation of the investment and the Lease Agreement for land and buildings to the Yangon Region Investment Committee.

30/11/2018

(Phyo Min Thein)

Chairman

Myanmar Green Start Energy Company Limited

cc: 1. Ministry of Home Affairs
2. Ministry of Office of the Union Government
3. Ministry of Natural Resources and Environmental Conservation
4. Ministry of Labour, Immigration and Population
5. Ministry of Industry
6. Ministry of Commerce
7. Ministry of Planning and Finance
8. Office of the Myanmar Investment Commission
9. Chairman, CMP Enterprises Supervision Committee
10. Director General, Department of Environmental Conservation
11. Director General, Directorate of Labour
12. Director General, Department of Immigration
13. Director General, Directorate of Industrial Collaboration
14. Director General, Directorate of Industrial Supervision and Inspection
15. Director General, Department of Trade

16. Director General, Directorate of Investment and Company Administration
17. Director General, National Archives Department
18. Director General, Customs Department
19. Director General, Internal Revenue Department
20. Monitoring and Supervision Division , Directorate of Investment and Company Administration

APPENDIX B
Environmental Quality Result

Air Quality Result

MYANWEI
ENVIRONMENTAL SOLUTIONS
No. 28, Myay Nu Street, Sanchaung Township, Yangon Region, The Republic of the Union of Myanmar. Office: (+95) 9777922169, (+95) 9777929885 Mobile: (+95) 9421137569; env@myanweiconsulting.com www.myanwweiconsulting.com

Project Name:	Myanmar Green Start Energy Company Limited.
Project Location:	Land Plot No.(63), Yaw Twin Wun U Phoe Hlaing Road, Dagon Seikkan Settmu Zone (1), Dagon Moy Thit (Seikkan) Township, Yangon Region.
Sampling Date:	12 September 2019
Sampling Time:	1:00 am to 4:00 pm
Sampling Condition:	Good
Sampling By:	Environmental Team Represented By Myanwei Consulting Group Company Limited

Instrument	Type	Sampling Rate	Location
OCEANUS-AQM-09	PM, O_3, NO_2, SO_2, CO Detector	0-999.9 (µg/M^3)	Operation Area (Indoor)

National Environmental Quality (Emission) Guideline

Parameter	Averaging period	Guideline value	Unit
PM 10[a]	1-year 24-hour	20 50	(µg/M^3)
PM 2.5[a]	1-year 24-hour	10 25	(µg/M^3)

a. Values from air quality guidelines-global update 2005: particulate matter, ozone, nitrogen dioxide and sulfur dioxide.
b. Values from air quality guidelines for Europe, 2nd edition.

Monitoring Result

Location	GPS Value	Parameters	Observed Value	Unit	Guideline Value
Production Area	16°50'6.70"N 96°17'1.00"E	PM10 PM2.5	38.55 16.87	µg/m3 µg/m3	50 25

LIN HTET SEIN
DIRECTOR
MYANWEI ENVIRONMENTAL SOLUTIONS COMPANY LIMITED.

Lighting Result

MYANWEI
ENVIRONMENTAL SOLUTIONS
No. 28, Myay Nu Street, Sanchaung Township, Yangon Region, The Republic of the Union of Myanmar. Office: (+95) 9777922169, (+95) 9777929885 Mobile: (+95) 9421137569; env@myanweiconsulting.com www.myanweiconsulting.com

Project Name:	Myanmar Green Start Energy Company Limited.
Project Location:	Land Plot No.(63), Yaw Twin Wun U Phoe Hlaing Road, Dagon Seikkan Settmu Zone (1), Dagon Myo Thit Seikkan Township, Yangon Region.
Sampling Date:	12 September 2019
Sampling Time:	1:00 pm to 4:00 pm
Sampling Condition:	Good
Sampling By:	Environmental Team Represented By Myanwei Consulting Group Company Limited

Instrument	Type	Sampling Rate	Location
Uni-T (Luminometer)	UT380 Series	100 times/second	16°50'6.70"N 96°17'1.00"E

No	Measure area	Unit	Result	Standard	Remark
1	Cutting Area	Lux	674	800-900	Normal
2	Welding Area	Lux	661	800-900	Normal
3	Laminated Area	Lux	826	800-900	Normal
4	Framing Area	Lux	970	800-900	Normal
5	Test Area	Lux	776	800-900	Normal
6	Packing Area	Lux	382	1000-1100	Normal
7	Raw Material Area	Lux	602	1000-1100	Normal

IESNA Lighting Handbook

Area / Task / Process	Illuminace levels (lux)
Exterior calculating, walkways, stores, main entrances and exit roads, car parking, internal factory roads, etc.	20-50
Boiler house, transformer yards, furnace rooms, entrances, corridors, stairs, etc.	70-100
Calculation area in industry, stores, stock rooms and canteen.	100-150
Coarse Work	200-300
Medium work	300-500
Fine Work	500-1500
Very fine minute and precise work	1500-3000

Department	Type of Light	Wattage of Light	Lux Level

Fabric store	Fluorescent tube light	40 W	300
Sewing floor	LED tube light	20 W (T8)	400
Cutting floor	LED tube light	22 W (T8)	1000
Finishing	LED tube light	28 W (T8)	600
Inspection points	LED tube light	28 W (T8)	900 (except 1500 at audit tables)
Sampling	LED tube light	22 W (T8)	500
Office areas	Fluorescent tube light	36 W (T)	300

Noise Result

MYANWEI
ENVIRONMENTAL SOLUTIONS
No. 28, Myay Nu Street, Sanchaung Township, Yangon Region, The Republic of the Union of Myanmar. Office: (+95) 9777922169, (+95) 9777929885 Mobile: (+95) 9421137569; env@myanweiconsulting.com www.myanwweiconsulting.com

Project Name:	Myanmar Green Start Energy Company Limited
Project Location:	Land Plot No.(63), Yaw Twin Wun U Phoe Hlaing Road, Dagon Seikkan Industrial Zone (1), Dagon Myo Thit (Seikkan) Township, Yangon Region.
Sampling Date:	12 September 2019
Sampling Time:	1:00 pm To 4:00 pm
Sampling Condition:	Good
Sampling By:	Environmental Team Represented By Myanwei Consulting Group Company Limited

Instrument	Type	Sampling Rate	Location
Digital Sound Level Meter	GM 1356 USB	30 -130 dB	16°50'6.70"N and 96°17'1.00"E

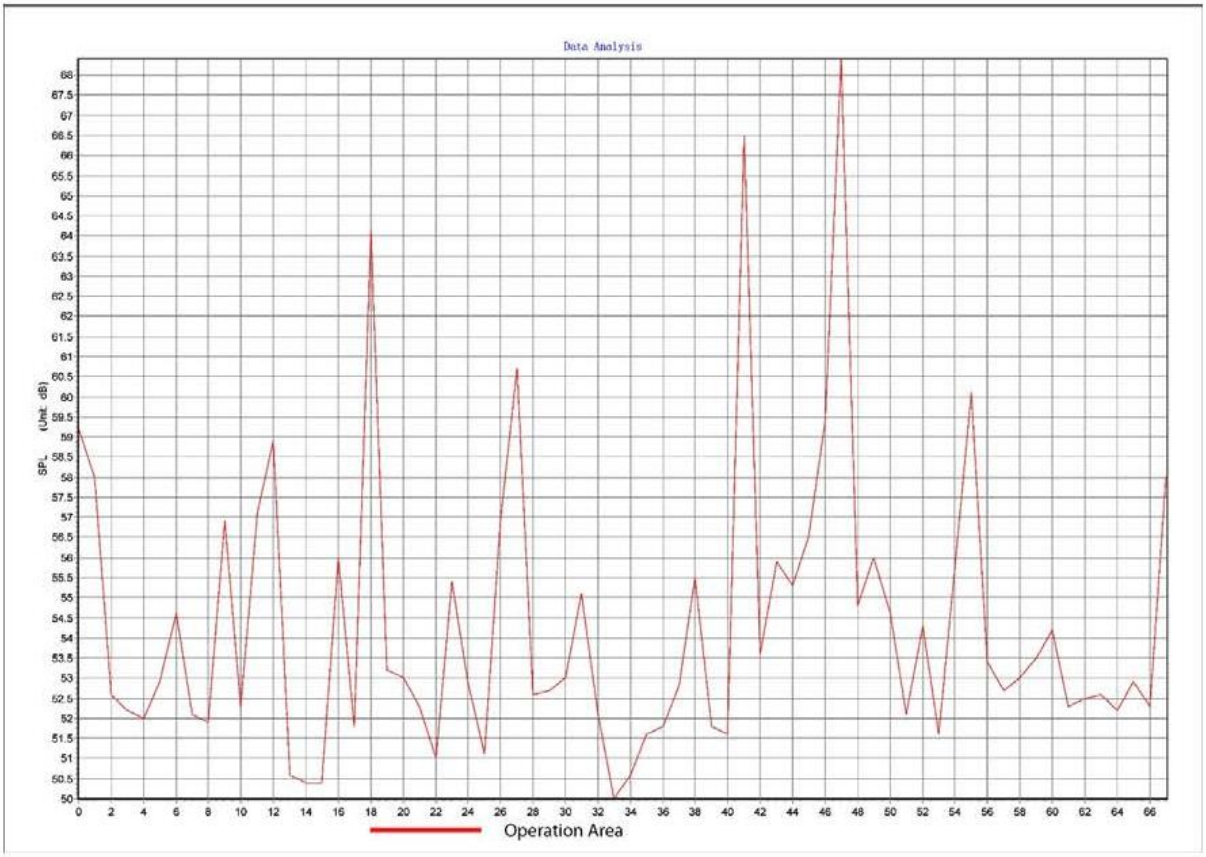
No	Place	Unit	Result	Standard	Remark
1	Operation Area	dBA	54.35	70 dBA	Slightly Above

National Environmental Quality (Emission) Guideline

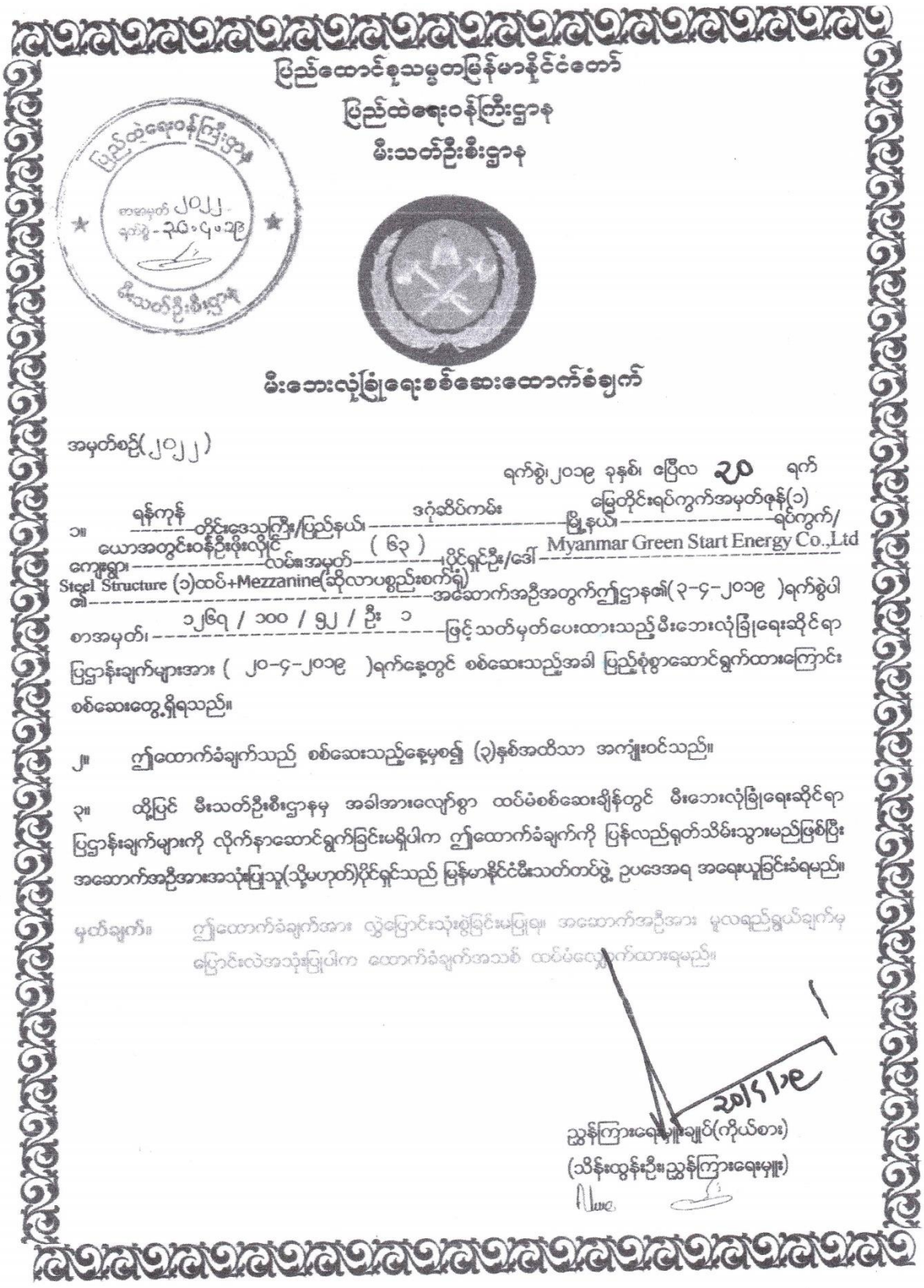
Receptor	One Hour Laeq (dBA)	Guideline value
	Daytime	Nighttime
	7:00 – 22:00 (10:00 – 22:00 for Public holidays)	22:00 – 07:00 (22:00 – 10:00 for Public holidays)
Residential, Institutional, Educational	55	45
Industrial, Commercial	70	70

LIN HTET SEIN
DIRECTOR
MYANWEI ENVIRONMENTAL SOLUTIONS
COMPANY LIMITED.

Monitoring Graph



APPENDIX C
Fire Safety Certificate



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်

ပြည်ထဲရေးဝန်ကြီးဌာန

မီးသတ်ဦးစီးဌာန

မီးဘေးလုံခြုံရေးစစ်ဆေးထောက်ခံချက်

အမှတ်စဉ်(၂၀၂၂)

ရက်စွဲ၊ ၂၀၁၉ ခုနှစ်၊ ဇွန်လ ၂၀ ရက်

၁။ ရန်ကုန်တိုင်းဒေသကြီး/ပြည်နယ်၊ ဒဂုံဆိပ်ကမ်းမြို့နယ်၊ မြေတိုင်းရပ်ကွက်အမှတ်စုံနံ(၁) ယောအတွင်းဝန်ဦးဝိုးလိုင်လမ်းအမှတ်(၆၃)ပိုင်ရှင်ဦး/ဒေါ် Myanmar Green Start Energy Co.,Ltd ကေးရွာ၊ Steel Structure (၁)ထပ်+Mezzanine(ဆိုလာပစ္စည်းစက်ရုံ) တွင် အဆောက်အဦအတွက် ဤဌာန၏(၃-၄-၂၀၁၉)ရက်စွဲပါ စာအမှတ်၊ ၁၂၆၃ / ၁၀၀ / ၅၂ / ဦး ၁ ဖြင့် သတ်မှတ်ပေးထားသည့် မီးဘေးလုံခြုံရေးဆိုင်ရာ ပြဋ္ဌာန်းချက်များအား (၂၀-၄-၂၀၁၉)ရက်နေ့တွင် စစ်ဆေးသည့်အခါ ပြည့်စုံစွာဆောင်ရွက်ထားကြောင်း စစ်ဆေးတွေ့ရှိရသည်။

၂။ ဤထောက်ခံချက်သည် စစ်ဆေးသည့်နေ့မှစ၍ (၃)နှစ်အထိသာ အကျုံးဝင်သည်။

၃။ ထို့ပြင် မီးသတ်ဦးစီးဌာနမှ အခါအားလျော်စွာ ထပ်မံစစ်ဆေးချိန်တွင် မီးဘေးလုံခြုံရေးဆိုင်ရာ ပြဋ္ဌာန်းချက်များကို လိုက်နာဆောင်ရွက်ခြင်းမရှိပါက ဤထောက်ခံချက်ကို ပြန်လည်ရုတ်သိမ်းသွားမည်ဖြစ်ပြီး အဆောက်အဦအားအသုံးပြုသူ(သို့မဟုတ်)ပိုင်ရှင်သည် မြန်မာနိုင်ငံမီးသတ်တပ်ဖွဲ့ ဥပဒေအရ အရေးယူခြင်းခံရမည်။

မှတ်ချက်။ ။ ဤထောက်ခံချက်အား လွဲပြောင်းသုံးစွဲခြင်းမပြုရ။ အဆောက်အဦအား မူလရည်ရွယ်ချက်မှ ပြောင်းလဲအသုံးပြုပါက ထောက်ခံချက်အသစ် ထပ်မံလျှောက်ထားရမည်။

၂၀၁၄/၆/၂၀

ညွှန်ကြားရေးမှူးချုပ်(ကိုယ်စား)

(သိန်းထွန်းဦး၊ညွှန်ကြားရေးမှူး)

APPENDIX D
Public Consultation Meeting (PCM)

Invitation List

တွေ့ဆုံဆွေးနွေးပွဲ အခမ်းအနားသို့ ဖိတ်ကြားထားသူများစာရင်း

နေ့စွဲ - ၂၃ ရက်၊ ဇန်နဝါရီလ၊ ၂၀၂၀ ခုနှစ်

စဉ်	အမည်	ရာထူး	ဌာန / အဖွဲ့အစည်း	ဆက်သွယ်ရန်	လက်မှတ်
	Kyawt Kay Paing	Deputy Staff Officer	ECD		[signature]
	[illegible]	[illegible]		09-969633626	[signature]
	[illegible]	[illegible]		09-421020401	[signature]
	[illegible]	[illegible]		09 797927701	[signature]
	[illegible]	[illegible]	[illegible]	09-952390000	[signature]
	[illegible]	[illegible]	:	09-5135457	[signature]
	[illegible]	WA	[illegible]	09-250559164	[signature]

Myanwei Consulting Company Limited

တွေ့ဆုံဆွေးနွေးပွဲ အခမ်းအနားသို့ ဖိတ်ကြားထားသူများစာရင်း

နေ့စွဲ - ၂၃ ရက်၊ ဇန်နဝါရီလ၊ ၂၀၂၀ ခုနှစ်

စဉ်	အမည်	ရာထူး	ဌာန / အဖွဲ့အစည်း	ဆက်သွယ်ရန်	လက်မှတ်
၁	ဒေါ်အိအိခိုင်	နေ့တာ	MIST	၀၉-၄၅၂၁၈၆	[illegible]

Myanwei Consulting Company Limited

တွေ့ဆုံဆွေးနွေးပွဲ အခမ်းအနားသို့ တက်ရောက်သူများစာရင်း

နေ့စွဲ - ၂၈ ရက်၊ ဇန်နဝါရီလ၊ ၂၀၂၀ ခုနှစ်

စဉ်	အမည်	ရာထူး	ဌာန / အဖွဲ့အစည်း	ဆက်သွယ်ရန်	လက်မှတ်
၁	ဦးမြင့်ဦး	လက်ထောက်ညွှန်ကြားရေးမှူး	PRCD (YCDC)	09-451628098	
၂	ဦးကျော်ကျော်	လက်ထောက်ညွှန်ကြားရေးမှူး	〃	09 5098374	
၃	ဦးရဲထွန်းမြင့်	ဦးစီးအရာရှိ (ဆက်သွယ်ရေး)	〃	09-261575577	
၄	ဒေါ်ခင်ခင်ဝေ	တိုင်းဒေသကြီး ပညာရေးမှူးရုံး	အခြေခံပညာ ဦးစီးဌာန	09-427089130	
၅	ဒေါ်သက်ဝေမွန်	ဦးစီးအရာရှိ	ECD	09 430 768 79	
၆	ဒေါ်မြတ်ထက်ခိုင်	ဒုတိယဦးစီးမှူး	ECD	09-974222928	
၇	ဦးဇော်နောင်အောင်	လက်ထောက်ဦးစီးမှူး	မီးသတ်ဦးစီးဌာန	09-420086936	
၈	ဦးရိုးဝင်း	တပ်ကြပ်ကြီး	〃		
၉	ဦးအောင်မြင့်ဦး	ဒုဦးစီးမှူး	မြို့ပြစီမံကိန်း	09-421545599	

Myanwei Consulting Company Limited

တွေ့ဆုံဆွေးနွေးပွဲ အခမ်းအနားသို့ တက်ရောက်သူများစာရင်း

နေ့စွဲ - ၂၈ ရက်၊ ဇန်နဝါရီလ၊ ၂၀၂၀ ခုနှစ်

စဉ်	အမည်	ရာထူး	ဌာန / အဖွဲ့အစည်း	ဆက်သွယ်ရန်	လက်မှတ်
	Win Tun	Managor	Myanma Green Stat	09421061824	
	LAI ZHENJZAN	PROMOTER	Zhongze Bags Industry Co.Ltd.	09-777576555	
	Aung Waing Oo	HR manauger	〃	09-789689619	

Myanwei Consulting Company Limited

Myanmar Green Start Energy Co.,Ltdတ၏ CMP စနစ်ဖြင့် ဆိုလာပစ္စည်းအမျိုးမျိုးထုတ်လုပ်ခြင်းလုပ်ငန်း

ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း အစီရင်ခံစာ (မူကြမ်း) အတွက် သက်ဆိုင်သူများနှင့် တွေ့ဆုံဆွေးနွေးပွဲ အခမ်းအနား။

၂၈ရက်၊ ဇန်နဝါရီလ၊ ၂၀၂၀ ခုနှစ်။

Preparaed By

Myanwei Consulting Co., Ltd.

အစည်းအဝေး အကြောင်းအရာ

၁။ Myanmar Green Start Energy Company Limitedအား မိတ်ဆက်ခြင်း

၂။ ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းအား မိတ်ဆက်ခြင်း

၃။ သက်ရောက်မှုဆန်းစစ်ခြင်း ရလဒ်များနှင့် ထိခိုက်မှုအဆင့်သတ်မှတ်ချက်များ

၄။ ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှုများနှင့် ဖြေလျော့ရေးနည်းလမ်းများ

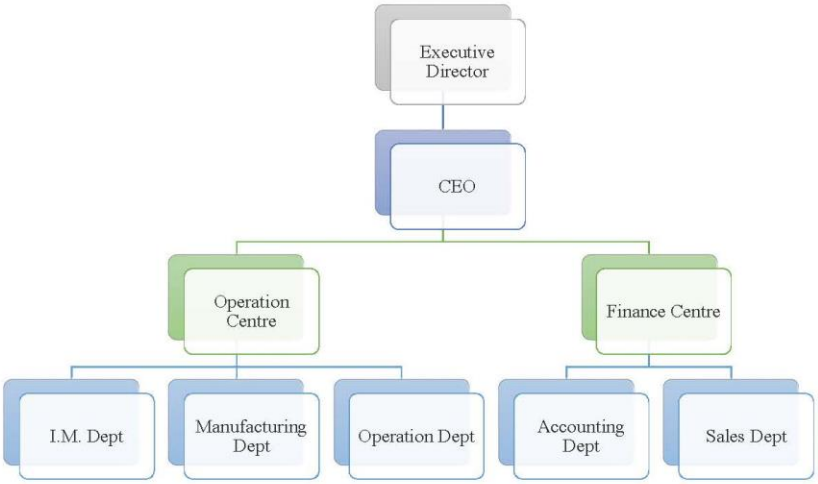
၅။ ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ် နှင့်

၆။ စက်ရုံ၏ဆောင်ရွက်ချက်များ

1

Myanmar Green Start Energy Company Limited

Myanmar Green Start Energy Co., Ltd. ၏ ဖွဲ့စည်းပုံ



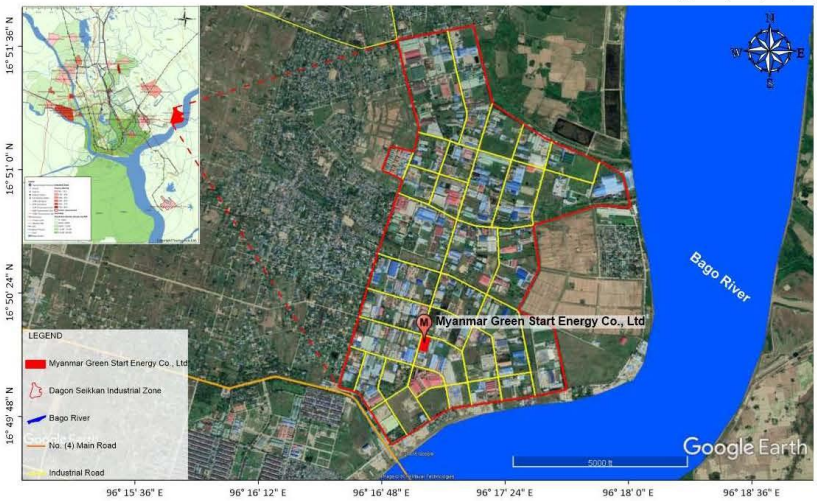
Myanmar Green Start Energy Company Limited

လုပ်ငန်းအမျိုးအစား	CMP စနစ်ဖြင့် ဆိုလာပစ္စည်းအမျိုးမျိုးထုတ်လုပ်ခြင်းလုပ်ငန်း။
ခွင့်ပြုမိန့်အမှတ်	(ခွင့်ပြုမိန့်အမှတ်- ၈၉၇/၂၀၁၈)၂၀၁၈ ခုနှစ်၊ နိုဝင်ဘာလ ၃၀ ရက်။
ရင်းနှီးမြှုပ်နှံမှု	၁၀၀ ရာခိုင်နှုန်း နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှု
မြေဧရိယာ	မြေဧရိယာစုစုပေါင်း = ၂ ဧက(၈,၀၉၃.၇၁၃ စတုရန်းမီတာ)
အဆောက်အဦး	(၁၀၀ပေ x ၂၀၀ပေ) တစ်ထပ်အဆောက်အအုံတစ်လုံး။
ရင်းနှီးမြှုပ်နှံသည့်ကာလ	နှစ် ၂၅ ရင်းနှီးမြှုပ်နှံမှု
စက်ရုံလိပ်စာ	မြေကွက်အမှတ်- ၆၃၊ ယောအတွင်းဂန့်ဦးဖိုးလှိုင်လမ်း၊ဒဂုံဆိပ်ကမ်းစက်မှုဇုန်၊ ဒဂုံမြို့သစ်ဆိပ်ကမ်း။

လုပ်ငန်းလည်ပတ်ရန်အခြေခံလိုအပ်ချက်များ

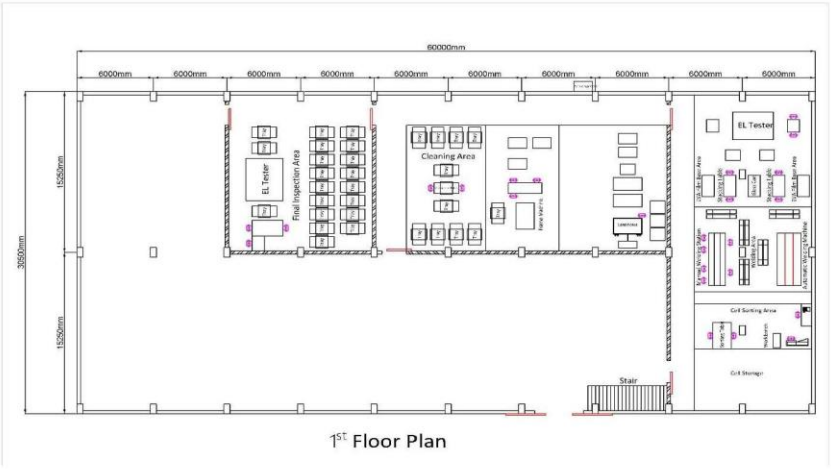
ရေအသုံးပြုမှုအခြေအနေ	
ရေအရင်းအမြစ်	အဝီစိတွင်းရေ (၁ တွင်း)
အဓိကလိုအပ်ချက်	
လက်ရှိလူဦးရေ	၁၁၂ ဦး
အဓိကကုန်ကြမ်း	Cell ပြား၊ Wafer၊ EVA နှင့်အခြားဆက်စပ်ပစ္စည်းများ။
နှစ်စဉ်ထွက်ကုန်ပစ္စည်းပမာဏ	နှစ်စဉ်ပထမနှစ် မှ ၁၀နှစ်အတွင်း အိတ်အလုံးရေ (၁၁၂,၅၀၀) မှ (၁၂၃,၇၅၀)

Myanmar Green Start Energy Co., Ltd. ၏ စက်ရုံတည်နေရာ

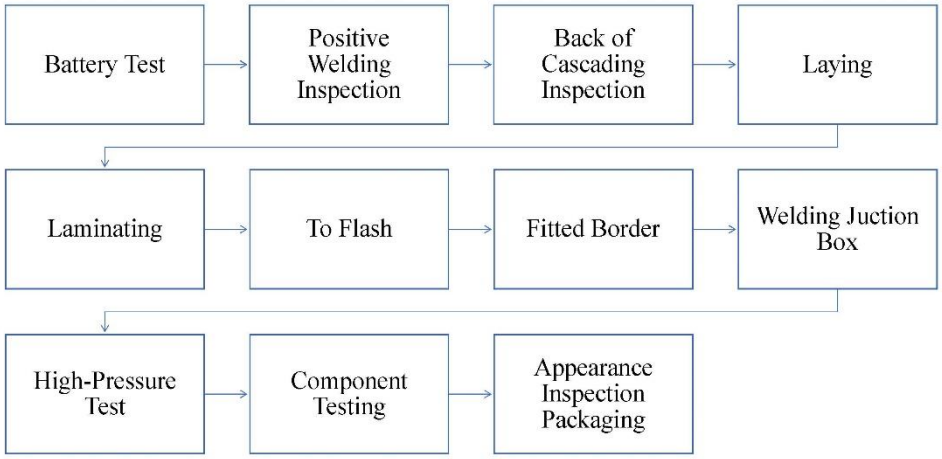


Myanmar Green Start Energy Co.,Ltd ၏ထုတ်လုပ်မှုအလိုက် နေရာပြမြေပုံ

Myanmar Green Start Energy Co., Ltd. ထုတ်လုပ်မှုအလိုက်နေရာပြမြေပုံ



Myanmar Green Start Energy Co., Ltd. ၏ထုတ်လုပ်ပုံအဆင့်ဆင့်



Myanmar Green Start Energy Co., Ltd. ၏ထုတ်လုပ်ပုံများ

ပစ္စည်းသိုလှောင်ခြင်း

ဘက်ထရီစစ်ခြင်း

ဂဟေဆော်ခြင်း

သက်ရောက်မှုအဆင့်မြင့်မားခြင်း

Myanmar Green Start Energy Co., Ltd. ၏ထုတ်လုပ်ပုံများ

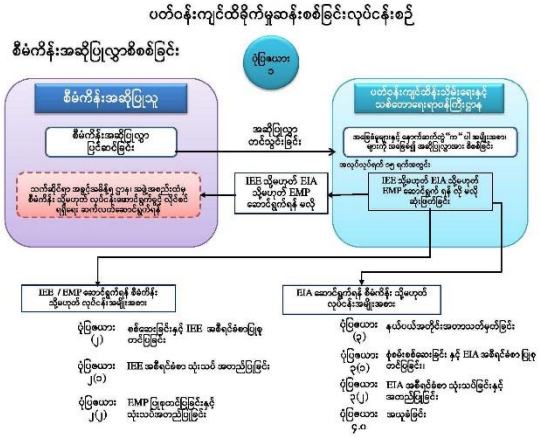
ထုတ်ကုန်စစ်ဆေးခြင်း

ထုတ်ပိုးခြင်း

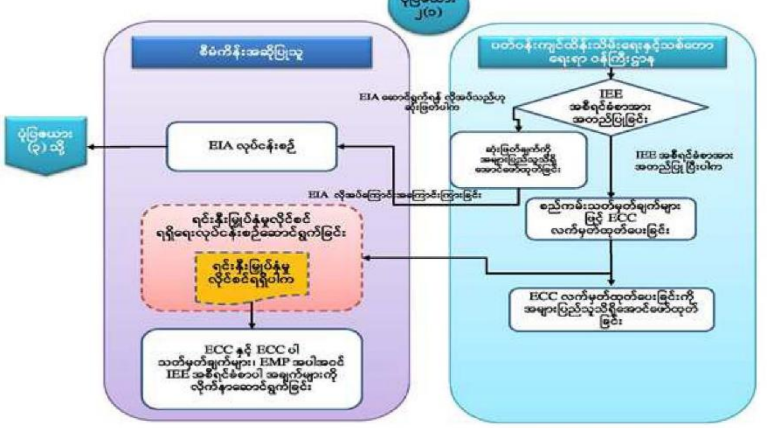
Myanmar Green Start Energy Co., Ltd. ၏ထုတ်ကုန်ပစ္စည်းများ

ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်အား မိတ်ဆက်ခြင်း

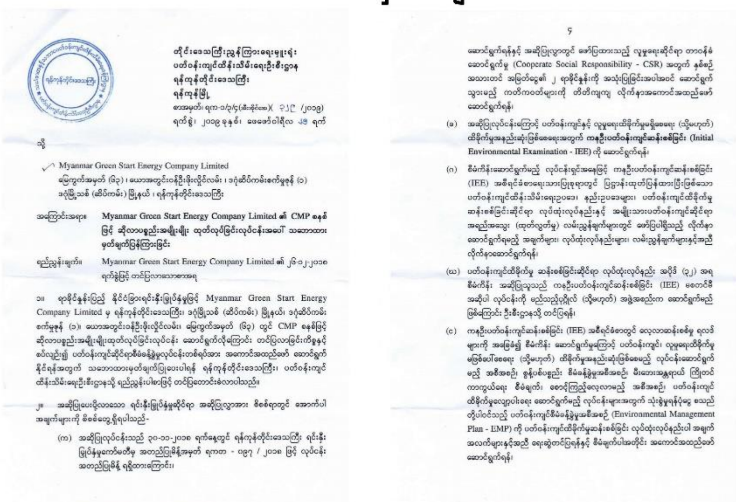
ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းလုပ်ငန်းစဉ်



IEE အစီရင်ခံစာသုံးသပ်ခြင်းနှင့်အတည်ပြုခြင်း



သဘောထားမှတ်ချက်



တိုင်းဒေသကြီးညွှန်ကြားရေးမှူးရုံး
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန
ရန်ကုန်တိုင်းဒေသကြီး
ရန်ကုန်မြို့
စာအမှတ်၊ ရကၣ-၁/၃/၄(ဆီးဆိုင်ရာ)(၃၂၉ /၂၀၁၉)
ရက်စွဲ၊ ၂၀၁၉ ခုနှစ်၊ ဖေဖော်ဝါရီလ ၂၅ ရက်

သို့

Myanmar Green Start Energy Company Limited
မြေကွက်အမှတ် (၆၃)၊ ယောအတွင်းဝန်ဦးဖိုးလှိုင်လမ်း၊ ဒဂုံဆိပ်ကမ်းစက်မှုဇုန် (၁)
ဒဂုံမြို့သစ် (ဆိပ်ကမ်း) မြို့နယ်၊ ရန်ကုန်တိုင်းဒေသကြီး

အကြောင်းအရာ။ **Myanmar Green Start Energy Company Limited ၏ CMP စနစ်ဖြင့် ဆိုလာပစ္စည်းအမျိုးမျိုး ထုတ်လုပ်ခြင်းလုပ်ငန်းအပေါ် သဘောထားမှတ်ချက်ပြန်ကြားခြင်း**

ရည်ညွှန်းချက်။ Myanmar Green Start Energy Company Limited ၏ ၂၆-၁၂-၂၀၁၈ ရက်စွဲဖြင့် တင်ပြလာသောစာအရ

၁။ ရာနိုင်နှုန်းပြည့် နိုင်ငံခြားရင်းနှီးမြှုပ်နှံမှုဖြင့် Myanmar Green Start Energy Company Limited မှ ရန်ကုန်တိုင်းဒေသကြီး၊ ဒဂုံမြို့သစ် (ဆိပ်ကမ်း) မြို့နယ်၊ ဒဂုံဆိပ်ကမ်းစက်မှုဇုန် (၁)၊ ယောအတွင်းဝန်ဦးဖိုးလှိုင်လမ်း၊ မြေကွက်အမှတ် (၆၃) တွင် CMP စနစ်ဖြင့် ဆိုလာပစ္စည်းအမျိုးမျိုးထုတ်လုပ်ခြင်းလုပ်ငန်း ဆောင်ရွက်လိုကြောင်း တင်ပြလာခြင်းကိစ္စနှင့် စပ်လျဉ်း၍ ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှုလုပ်ငန်းတစ်ရပ်အား အကောင်အထည်ဖော် ဆောင်ရွက်နိုင်ရန်အတွက် သဘောထားမှတ်ချက်ပြုပေးပါရန် ရန်ကုန်တိုင်းဒေသကြီး၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာနသို့ ရည်ညွှန်းပါစာဖြင့် တင်ပြတောင်းခံလာပါသည်။

၂။ အဆိုပြုပေးပို့လာသော ရင်းနှီးမြှုပ်နှံမှုဆိုင်ရာ အဆိုပြုလွှာအား စိစစ်ရာတွင် အောက်ပါအချက်များကို စိစစ်တွေ့ရှိရပါသည်-

(က) အဆိုပြုလုပ်ငန်းသည် ၃၀-၁၁-၂၀၁၈ ရက်နေ့တွင် ရန်ကုန်တိုင်းဒေသကြီး ရင်းနှီးမြှုပ်နှံမှုကော်မတီမှ အတည်ပြုမိန့်အမှတ် ရကတ - ၀၉၇ / ၂၀၁၈ ဖြင့် လုပ်ငန်းအတည်ပြုမိန့် ရရှိထားကြောင်း၊

၄

ဆောင်ရွက်ရန်နှင့် အဆိုပြုလွှာတွင် ဖော်ပြထားသည့် လူမှုရေးဆိုင်ရာ တာဝန်ခံဆောင်ရွက်မှု (Cooperate Social Responsibility - CSR) အတွက် နှစ်စဉ်အသားတင် အမြတ်ငွေ၏ ၂ ရာခိုင်နှုန်းကို အသုံးပြုခြင်းအပါအဝင် ဆောင်ရွက်သွားမည့် ကတိကဝတ်များကို တိတိကျကျ လိုက်နာအကောင်အထည်ဖော်ဆောင်ရွက်ရန်၊

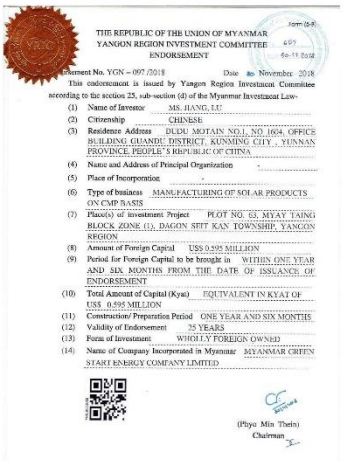
(ခ) အဆိုပြုလုပ်ငန်းကြောင့် ပတ်ဝန်းကျင်နှင့် လူမှုရေးထိခိုက်မှုမရှိစေရေး (သို့မဟုတ်) ထိခိုက်မှုအနည်းဆုံးဖြစ်စေရေးအတွက် **ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (Initial Environmental Examination - IEE)** ကို ဆောင်ရွက်ရန်၊

(ဂ) စီမံကိန်းဆောင်ရွက်မည့် လုပ်ငန်းရှင်အနေဖြင့် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (IEE) အစီရင်ခံစာရေးသားပြုစုရာတွင် ပြဋ္ဌာန်းထုတ်ပြန်ထားပြီးဖြစ်သော ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဥပဒေ၊ နည်းဥပဒေများ၊ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းနှင့် အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာ အရည်အသွေး (ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များတွင် ဖော်ပြပါရှိသည့် လိုက်နာဆောင်ရွက်ရမည့် အချက်များ၊ လုပ်ထုံးလုပ်နည်းများ၊ လမ်းညွှန်ချက်များနှင့်အညီ လိုက်နာဆောင်ရွက်ရန်၊

(ဃ) ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်း အပိုဒ် (၃၂) အရ စီမံကိန်း အဆိုပြုသူသည် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (IEE) မစတင်မီ အဆိုပါ လုပ်ငန်းကို မည်သည့်ပုဂ္ဂိုလ် (သို့မဟုတ်) အဖွဲ့အစည်းက ဆောင်ရွက်မည်ဖြစ်ကြောင်း ဦးစီးဌာနသို့ တင်ပြရန်၊

(င) ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း (IEE) အစီရင်ခံစာတွင် လေ့လာဆန်းစစ်မှု ရလဒ်များကို အခြေခံ၍ စီမံကိန်း ဆောင်ရွက်မှုကြောင့် ပတ်ဝန်းကျင်၊ လူမှုရေးထိခိုက်မှု မဖြစ်ပေါ်စေရေး (သို့မဟုတ်) ထိခိုက်မှုအနည်းဆုံးဖြစ်စေမည့် လုပ်ငန်းဆောင်ရွက်မည့် အစီအစဉ်၊ စွန့်ပစ်ပစ္စည်း စီမံခန့်ခွဲမှုအစီအစဉ်၊ မီးဘေးအန္တရာယ် ကြိုတင်ကာကွယ်ရေး စီမံချက်၊ စောင့်ကြည့်လေ့လာမည့် အစီအစဉ်၊ ပတ်ဝန်းကျင်ထိခိုက်မှုလျော့ပါးရေး ဆောင်ရွက်မည့် လုပ်ငန်းများအတွက် သုံးစွဲမှုရန်ပုံငွေ စသည်တို့ပါဝင်သည့် ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှုအစီအစဉ် (Environmental Management Plan - EMP) ကို ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း လုပ်ထုံးလုပ်နည်းပါ အချက်အလက်များနှင့်အညီ ရေးဆွဲတင်ပြရန်နှင့် စီမံချက်ပါအတိုင်း အကောင်အထည်ဖော်ဆောင်ရွက်ရန်၊

ရန်ကုန်တိုင်းဒေသကြီးရင်းနှီးမြှုပ်နှံမှုကော်မတီအတည်ပြုမိန့်



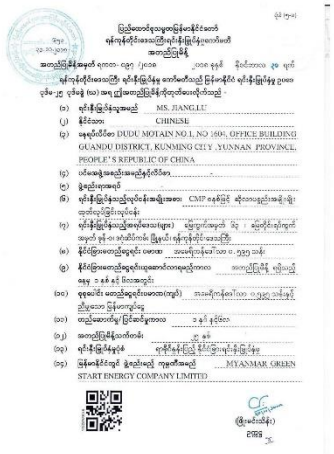
THE REPUBLIC OF THE UNION OF MYANMAR
YANGON REGION INVESTMENT COMMITTEE
ENDORSEMENT

Endorsement No. YGN – 097 /2018 Date : 8th November 2018

This endorsement is issued by Yangon Region Investment Committee according to the section 25, sub-section (d) of the Myanmar Investment Law-

(1) Name of Investor : MS. JIANG, LU
(2) Citizenship : CHINESE
(3) Residence Address : DUDU MOTAIN NO.1, NO 1604, OFFICE BUILDING GUANDU DISTRICT, KUNMING CITY , YUNNAN PROVINCE, PEOPLE'S REPUBLIC OF CHINA
(4) Name and Address of Principal Organization : -
(5) Place of Incorporation : -
(6) Type of business : MANUFACTURING OF SOLAR PRODUCTS ON CMP BASIS
(7) Place(s) of investment Project : PLOT NO. 63, MYAY TAING BLOCK ZONK (1), DAGON SEIT KAN TOWNSHIP, YANGON REGION
(8) Amount of Foreign Capital : US$ 0.595 MILLION
(9) Period for Foreign Capital to be brought in : WITHIN ONE YEAR AND SIX MONTHS FROM THE DATE OF ISSUANCE OF ENDORSEMENT
(10) Total Amount of Capital (Kyat) : EQUIVALENT IN KYAT OF US$ 0.595 MILLION
(11) Construction/ Preparation Period : ONE YEAR AND SIX MONTHS
(12) Validity of Endorsement : 25 YEARS
(13) Form of Investment : WHOLLY FOREIGN OWNED
(14) Name of Company Incorporated in Myanmar : MYANMAR CRITIN START ENERGY COMPANY LIMITED

(Phyo Min Thein)
Chairman



(ဖြိုးမင်းသိန်း)
ဥက္ကဋ္ဌ

သက်ရောက်မှုဆန်းစစ်ခြင်းရလာဒ်များနှင့် ထိခိုက်မှုအဆင့်သတ်မှတ်ချက်များ

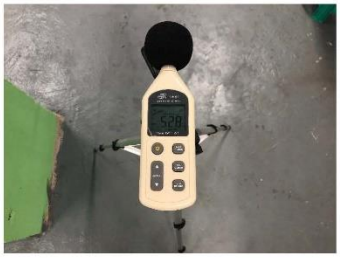
စီမံကိန်းပတ်ဝန်းကျင်အနေအထား

စဉ်	အကြောင်းအရာ	ဖော်ပြချက်
၁။	ကိုဩဒိနိတ်အမှတ်	မြောက်လတ္တီကျူ ၁၆°၅၀'၆.၇"နှင့် အရှေ့လောင်ဂျီကျူ ၉၆°၀၁'၁.၀၀"
၂။	ရာသီဥတုအခြေအနေ	ဒဂုံမြို့သစ်ဆိပ်ကမ်းမြို့နယ် နှစ်စဉ်ပျမ်းမျှအမြင့်ဆုံးအပူချိန် ၄၂°C အနိမ့်ဆုံးအပူအချိန် ၁၆°C စုစုပေါင်း မိုးရေချိန်လက်မ ၉၈.၆၇ လက်မ
၃။	စက်ရုံနေရာတွင်မြေအသုံးချမှု	စက်မှုလုပ်ငန်းနှင့်သက်ဆိုင်သောမြေအသုံးချမှုပုံစံ (စက်မှုဇုန်)
၄။	လမ်းပန်းဆက်သွယ်ရေး	ပဲခူးမြစ်လမ်း၊ ကနောင်မင်းသားကြီးလမ်း။
၅။	အနီးဆုံးရေအရင်းအမြစ်	ပဲခူးမြစ်
၆။	သစ်တောဇရိယာ	မရှိ
၇။	ကန့်သတ်ကာကွယ်ထားသော ဇရိယာ	မရှိ
၈။	တိုင်းတာမှုရလဒ်	❑ ဆူညံသံ တိုင်းတာခြင်း ❑ အလင်းရောင် တိုင်တာခြင်း ❑ လေထုအရည်အသွေး တိုင်းတာခြင်း ❑ အပူချိန် နှင့် စိုထိုင်းမှု အရည်အသွေး တိုင်းတာခြင်း

ဆူညံသံတိုင်းတာမှု

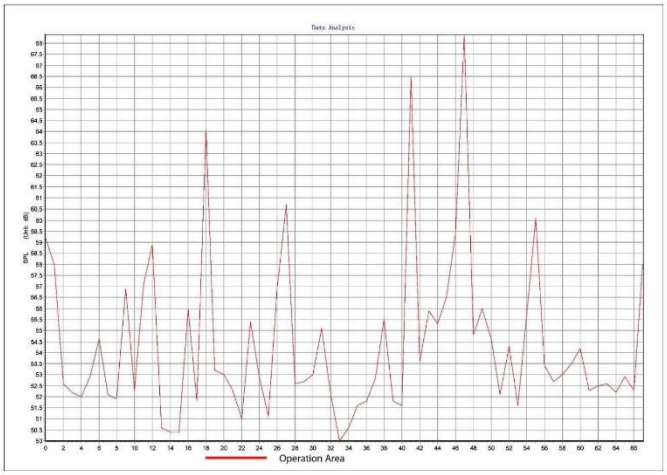
Date/ Time	Measurement Area	GPS value	Measurement Result	NEQ Guildline
12 September 2019 (10:00 to 4:00 pm)	Operation Area	16°50‘6.7"N 96°01‘1.0"E	54.35 dBA	70 dBA

အထက်ဖော်ပြပါ ဆူညံသံတိုင်းတာမှုရလဒ်များအရ
Myanmar Green Start Energy Co., Ltd.၏ဆူညံသံများမှာ National Emission Quality Guideline
အတွင်းတည်ရှိနေသည်ကိုလေ့လာတွေ့ရှိရပါသည်။



စက်ရုံတွင်းဆူညံသံတိုင်းတာမှု

Myanmar Green Start Energy Co., Ltd. ၏ဆူညံသံတိုင်းတာမှုပြ ဂရပ်



လုပ်ငန်းခွင်အလင်းရောင်တိုင်းတာမှု

Date/ Time	Measurement Area	Measurement Result	Standard Value	Remark
12 September, 2019	Raw Materials	602	300	Above
	Welding Area	661	900	Below
	Laminated Area	826	900	Below
	Framing Area	970	900	Above
	Packing Area	382	600	Below

လုပ်ငန်းခွင်အတွင်းအလင်းရောင်တိုင်းတာမှု

လေထုတိုင်းတာမှု

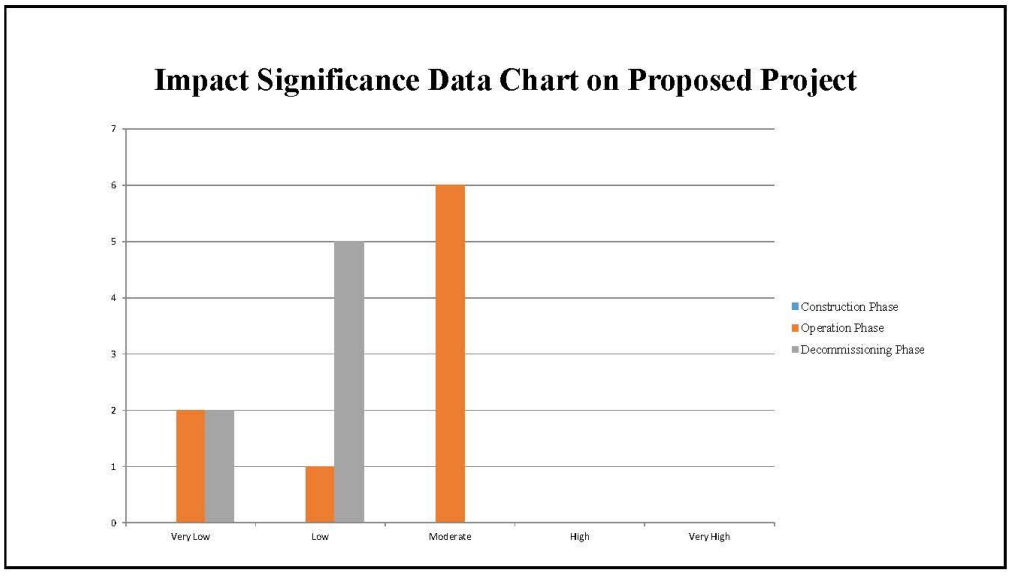
Date/Time	Parameter	Measurement Area	Result	Guideline Value	Unit	Organization	Period
12 September 2019	PM_{10}	Project Area	38.55	50	µg/m3	NEQG	24 hours
	$PM_{2.5}$		16.87	25	µg/m3	NEQG	24 hours

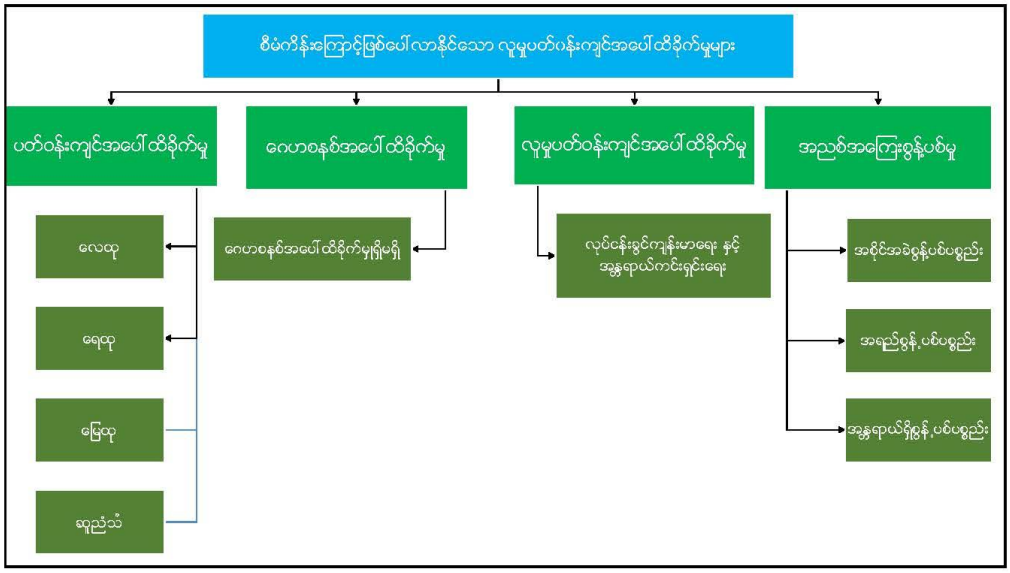
စက်ရုံတွင်း
လေထုတိုင်းတာခြင်း

အပူချိန်တိုင်းတာမှု

Myanmar Green Start Energy Company Limited. ၏ လုပ်ငန်းခွင်ပျမ်းမျှစိုထိုင်းမှုမှာ ၈၂.၆%
နှင့် အပူချိန်တိုင်းတာမှုမှာ ၂၇.၃ °C ရှိပါသည်။

ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှုများနှင့် ဖြေလျော့ရေးနည်းလမ်းများ





သက်ရောက်မှု	စီမံကိန်းဆောင်ရွက်ချက်	လျော့နည်းစေရန် အရေးယူဆောင်ရွက်မှု
ဆူညံသံ	▪ မီးစက်၊ လေမှုတ်စက် နှင့် မော်တော် ယာဉ် အသုံးပြု မှုကြောင့် ပတ်ဝန်းကျင် ဆူညံမှု	▪ ဆူညံသံထွက်သောနေရာများကို အကာအကွယ် ဖြင့်ထားရှိခြင်း ▪ စက်ပစ္စည်းများကို ပုံမှန်ပြုပြင်ပေးခြင်း
မီးဘေးအန္တရာယ်	▪ ကုန်ကြမ်းသိုလှောင်မှု နှင့် လျှပ်စစ်သုံးစွဲ ပေါ့လျော့မှု	▪ ကုန်ကြမ်းများအား သီးသန့်ထားရှိခြင်း ▪ လျှပ်စစ်သုံးစွဲမှုများအား စနစ်တကျ အသုံးပြုစေခြင်း
စွန့်ပစ်အမှိုက်	▪ ထုတ်လုပ်ရာတွင် ကျန်ရှိသော ပိတ်စ အပိုင်းအစများ။ မီးဖိုချောင်နှင့် ရုံးတွင်းစွန့်ပစ်ပစ္စည်းများ	▪ စွန့်ပစ်အမှိုက်များအား ပြန်လည်သုံးစွဲရန် နှင့် စွန့်ပစ်ရန် အဖြစ်သတ်မှတ်မီး သီးခြားစွန့်ပစ်စေခြင်း
စွန့်ပစ်အရည်	▪ နေအိမ်၊ စားသောက်ဆောင် တို့မှစွန့်ထုတ်ရေ။ မိလ္လာကန်စနစ်	▪ စွန့်ပစ်အရည်များအားသီးခြားရေနုတ်မြောင်းတွေဖြင့် တွဖြင့်စွန့်ပစ်ခြင်း။
အန္တရာယ်ရှိအမှိုက်	▪ စက်များမှဆီယိုစိမ့်မှုများ၊ နိုင်လွန်ပိတ်စများ၊ တစ်ခြားမီးလောင်လွယ်သောအမှိုက်များ	▪ စက်သုံးဆီများအားစနစ်တကျ အသုံးပြုစေခြင်း၊ စနစ်တကျသိုလှောင်ခြင်း နှင့် အန္တရာယ်ရှိပစ္စည်းများအား စနစ်တကျထားရှိစေခြင်း

ပတ်ဝန်းကျင်စီမံခန့်ခွဲမှု အစီအစဉ်

လေထုညစ်ညမ်းမှုလျော့ချရေး

ရည်ရွယ်ချက်	**စီမံကိန်းကြောင့် စက်ရုံမှ ထွက်သော ဓာတ်ငွေ့များနှင့် မီးစက်များမှ ထွက်ရှိသော ဓာတ်ငွေ့များကြောင့် လေထုညစ်ညမ်းမှုကို လျော့ချရန်**
လိုက်နာရမည့် စည်းကမ်း	**အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅)**
စီမံခန့်ခွဲမှု အစီအစဉ်	▪ စက်ရုံအတွင်းနှင့် အနားဝန်းကျင်တွင် သစ်ပင်ပန်းမန်စိုက်ပျိုးခြင်း ▪ စက်ရုံအတွင်း မည်သည့်စွန့်ပစ်ပစ္စည်းများအား မီးရှို့ဖျက်စီးခြင်း မပြုလုပ်ခြင်း ▪ လုပ်သားများအား Personal Protective Equipment (PPE) ဟုခေါ်သော အကာအကွယ်ပစ္စည်းများဖြစ်သည့် လေကာ/နေကာမျက်မှန်များ၊ နှာခေါင်းစည်း၊ Helmets စသည်တို့အားထောက်ပံ့ခြင်း၊ အသိပညာပေး သင်တန်းများ ပေးခြင်း
တာဝန်ယူရမည့် ပုဂ္ဂိုလ်	▪ ပြုပြင်ထိန်းသိမ်းရေးအရာရှိ - လေထုညစ်ညမ်းမှုလျော့ချရေးနည်းလမ်းများ ▪ ထုတ်လုပ်ရေးမန်နေဂျာ- လုပ်ငန်းခွင်လေထုသန့်ရှင်းရေး ▪ မန်နေဂျာ - ပတ်ဝန်းကျင်လေအရည်အသွေးတိုင်းတာရန် (ThirdParty) ဖြင့်ညှိနှိုင်းဆောင်ရွက်ရန်

ဆူညံသံလျော့ချရေး

ရည်ရွယ်ချက်	ဘေးပတ်ဝန်းကျင်ဆူညံမှုမဖြစ်ပေါ်စေရန် နှင့် စက်ရုံရှိ မီးစက်နှင့် အခြားစက်ပစ္စည်းများ ကြောင့် လုပ်သားများအပေါ် ထိခိုက်မှု လျော့ချရန်
လိုက်နာရမည့် စည်းကမ်း	▪ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်း (၂၀၁၅) ▪ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅)
စီမံခန့်ခွဲမှုအစီအစဉ်	▪ မီးစက်၊လေမှုတ်စက်တို့ကို ဆူညံသံထိန်းချုပ်နိုင်သော ခန်းဖွဲ့စည်းမှုပုံစံ တည်ဆောက်ထားခြင်း ▪ လုပ်ငန်းသုံးယာဉ်များကိုဆူညံသံလျော့ချရန်သတ်မှတ်အရှိန်ထက်ကျော်လွန်မမောင်းစေခြင်း ▪ လုပ်သားများအား Personal Protective Equipment (PPE) ဟုခေါ်သော အကာအကွယ်ပစ္စည်းများဖြစ်သည့် လေကာ/နေကာမျက်မှန်များ၊ နှာခေါင်းစည်း၊ Helmets စသည်တို့အား ထောက်ပံ့ခြင်း၊ အသိပညာပေး သင်တန်းများ ပေးခြင်း
တာဝန်ယူရမည့်ပုဂ္ဂိုလ်	မန်နေဂျာ - ဆူညံသံတိုင်းတာရန် (ThirdParty) ဖြင့်ညှိနှိုင်းဆောင်ရွက်ရန်

အစိုင်အခဲစွန့်ပစ်မှု ထိန်းသိမ်းရေး

ရည်ရွယ်ချက်	စွန့်ပစ်အမှိုက်ထွက်ရှိမှုလျော့ချရေးနှင့် စွန့်ပစ်အမှိုက်ကြောင့် ပတ်ဝန်းကျင်ညစ်ညမ်းမှုကို လျော့ချရန်
လိုက်နာရမည့်စည်းကမ်း	▪ **ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်း (၂၀၁၅)** ▪ **National Waste Management Strategy and Action Plan (Draft 2018)**
စီမံခန့်ခွဲမှုအစီအစဉ်	▪ စက်ရုံမှ မည်သည်စွန့်ပစ်ပစ္စည်းမှ မြေ၊ ရောင်း၊ အင်း၊ အိုင် အတွင်းသို့ မစွန့်ပစ်ရ ▪ စက်ရုံတွင် စွန့်ပစ်ပစ္စည်းများကို ပြန်လည်အသုံးပြုနိုင်သောပစ္စည်း(ဆိုးဆေး၊ စက္ကူဖာ၊ ပလက်စတစ်၊ စသည်ဖြင့်) များကို ပြည်တွင်းဝယ်ယူသူများထံ ပြန်လည်ရောင်းချခြင်း ▪ စွန့်ပစ်ရန်ပစ္စည်း(လုပ်သားများမှစွန့်ပစ်ပစ္စည်းနှင့်မီးဖိုချောင်ထွက်ပစ္စည်းများ)ကို မြို့တော်စည်ပင်သာယာရေးအဖွဲ့အစည်း ကို နေ့စဉ်ခေါ်ယူပြီး သိမ်းဆည်းစေခြင်း ▪ အန္တရာယ်ရှိပစ္စည်း (စက်ဆီအဟောင်းများ၊ လျှပ်စစ်ပစ္စည်းအပျက်များ၊ သံထည်ပစ္စည်း) များကို ဝယ်ယူသူထံမှပြန်လည် သိမ်းဆည်းစေခြင်း ▪ စက်ရုံတွင် အမှိုက်စွန့်ပစ်ရန် အတွက် အမှိုက်ပုံးများကို စီမံထားခြင်း ▪ စက်ရုံဝန်းထမ်းအားလုံးကို စနစ်တကျ အမှိုက်စွန့်ပစ်ရန် တိုက်တွန်းနှိုးဆော်ထားခြင်း
တာဝန်ယူရမည့်ပုဂ္ဂိုလ်	▪ မန်နေဂျာ - စက်ရုံအတွင်းသန့်ရှင်းရေးအတွက်စီမံခန့်ခွဲရန်တာဝန်ရှိသည် ▪ အမှိုက်စွန့်ပစ်မှု ပုံမှန်ပြုလုပ်ရန်နှင့် စွန့်ပစ်ပစ္စည်းသယ်ယူသူများကို ပုံမှန်ပြုလုပ်ရန် တာဝန်ယူဆောက်ရွက်ရန်

စွန့်ပစ်အရည် ထိန်းသိမ်းရေး

ရည်ရွယ်ချက်	မြေပေါ်ရေနှင့် မြေအောက်ရေ ညစ်ညမ်းမှုမဖြစ်စေရေး
လိုက်နာရမည့်စည်းကမ်း	▪ ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာလုပ်ထုံးလုပ်နည်း (၂၀၁၅) ▪ အမျိုးသားပတ်ဝန်းကျင်ဆိုင်ရာအရည်အသွေး(ထုတ်လွှတ်မှု) လမ်းညွှန်ချက်များ (၂၀၁၅)
စီမံခန့်ခွဲမှုအစီအစဉ်	▪ စက်ရုံရေမြောင်းများနှင့်မိလ္လာစနစ်ကို စနစ်တကျ သန့်ရှင်းအောင်ထားရှိခြင်း လုံလောက်သည့်အတိုင်းအတာ ပမာဏရှိခြင်း ▪ မိလ္လာစနစ်ကို ပုံမှန်စစ်ဆေးပြီး လိုအပ်သကဲ့သို့ ထိန်းသိမ်းပြုပြင်ခြင်း ▪ စက်ရုံရေမြောင်းအတွင်းတွင် ပိတ်ဆို့မှုမရှိစေရန်နှင့် အနံ့ဆိုးများမထွက်စေရန်စီမံခြင်း
တာဝန်ယူရမည့်ပုဂ္ဂိုလ်	မန်နေဂျာ - စွန့်ထုတ်ရေအရည်အသွေးတိုင်းတာရန် (ThirdParty) ဖြင့်ညှိနှိုင်းဆောင်ရွက်ရန်

စွမ်းအင်သုံးစွဲမှု ထိန်းသိမ်းရေး

ရည်ရွယ်ချက်	လျှပ်စစ်သုံးစွဲမှုလျော့ချစေရန်နှင့် လုပ်ငန်းခွင်အတွင်း လျှပ်စစ်သုံးစွဲမှုကြောင့် အန္တရာယ်မရှိစေရန်
စီမံခန့်ခွဲမှုအစီအစဉ်	▪ စက်ရုံတွင်း လျှပ်စစ်သုံးစွဲမှုများအတွက် စွမ်းအင်လျော့ချနိုင်သည့် စက်ကရိယာများတပ်ဆင်ခြင်း ▪ အသုံးမပြုလျှင် စက်ကရိယာများပိတ်ဆင်ထားခြင်း ▪ စွမ်းအင်အသုံးနည်းသော Lighting စနစ်တပ်ဆင်ခြင်း ▪ စက်ပစ္စည်းနှင့် Lighting အသုံးပြုမှုကို စောင့်ကြည့်ထိန်းသိမ်းရေးစနစ်ထားရှိခြင်း (ဥပမာ-အသုံးမပြုပဲမီးဖွင့်ထားခြင်း၊ စက်ဖွင့်ထားခြင်းမျိုး မရှိစေရန်)
တာဝန်ယူရမည့်ပုဂ္ဂိုလ်	မန်နေဂျာ

မြေအောက်ရေသုံးစွဲမှု

ရည်ရွယ်ချက်	ရေသုံးစွဲမှုလျော့ချရေး
လိုက်နာရမည့်စည်းကမ်း	The Underground Water Act (1930)
စီမံခန့်ခွဲမှုအစီအစဉ်	▪ ရေအသုံးပြုမှု သိရှိနိုင်သော မီတာတပ်ဆင်ခြင်း ▪ ဝန်ထမ်းများအားအသိပညာပေးခြင်းနှင့် လိုက်နာဆောင်ရွက်ရန် တိုက်တွန်းခြင်း ▪ စက်ရုံရှိတာဝန်ရှိပုဂ္ဂိုလ်များအား (Third Party) နေဖြင့်မြေအောက်ရေအကျိုးရှိရှိအသုံးချရန်စည်းကမ်းချက်နဲ့အညီ လမ်းညွှန်ထားခြင်း။
တာဝန်ယူရမည့် ပုဂ္ဂိုလ်	မန်နေဂျာ ▪ ရေ အသုံးပြုမှုစာရင်း စစ်ဆေးခြင်း ▪ ဝန်ထမ်းများလိုက်နာဆောင်ရွက်မှု စစ်ဆေးခြင်း

အရေးပေါ်အခြေအနေတုန့်ပြန်မှု

ရည်ရွယ်ချက်	**စက်ရုံတွင်းမတော်တဆထိခိုက်မှု လျော့ချရေး**
လိုက်နာရမည့်စည်းကမ်း	**အလုပ်အကိုင်နှင့် ကျွမ်းကျင်မှုဖွံ့ဖြိုးတိုးတက်ရေးဥပဒေ (၂၀၁၃), ILO guide to Myanmar Labour Law (2017)**
စီမံခန့်ခွဲမှုအစီအစဉ်	▪ အရေးပေါ်အခြေအနေဖြစ်သော (မီး၊ ငလျင်၊ ရေကြီးရေလျှံမှု) တို့အတွက် စက်ရုံတွင် စီမံခန့်ခွဲမှုရှိခြင်း ▪ စက်ရုံ၏မီးသတ်စနစ်များကို ပုံမှန်စစ်ဆေးခြင်း ▪ ရေးဆွဲထားသော အရေးပေါ်တုန့်ပြန်ရေး အစီအစဉ်များကို ဝန်ထမ်းများ အကျွမ်းတဝင်ဖြစ်စေရန် စီမံထားခြင်း ▪ လောင်စာသိုလှောင်ခန့်ရာများ၊ လျှပ်စစ်ဖြန့်ဖြူးရေးနေရာများကို အဓိကထားပြီး စောင့်ကြည့်စစ်ဆေးခြင်း၊ ပြုပြင်မွမ်းမံခြင်း ▪ ပုံမှန်မီးဘေးကာကွယ်ရေး၊ ငလျင်လှုပ်ခတ်လျှင် ပြုလုပ်ရမည့်ပုံစံများ၊ ရေကြီးရေလျှံမှု အခြေအနေထိန်းသိမ်းရေး အစီအစဉ်များ၊ ရေးဦးပြုစုခြင်းသင်တန်းများကို ပုံမှန်လေ့ကျင့်မှုများ သင်ကြားမှုများ ပြုလုပ်ခြင်း ▪ အရေးပေါ်ဆက်သွယ်ရန် ဖုန်းနံပါတ်၊ လိပ်စာများ၊ အများသူငါမြင်သာစေသောနေရာများတွင် ကပ်ထားခြင်း ▪ စက်ရုံတွင်း မီးသတ်အဖွဲ့ငယ်၊ အန္တရာယ်ကင်းရှင်းရေး စောင့်ကြည့်ရေးအဖွဲ့ငယ်များထားရှိပြီး လစဉ် ဆွေးနွေးတိုင်ပင်ခြင်း လေ့ကျင့်ခြင်းများ ပြုလုပ်ခြင်း
တာဝန်ယူရမည့်ပုဂ္ဂိုလ်	▪ Manager and EHS officer ▪ မီးသတ်သင်တန်းများ ၃ လတစ်ကြိမ်ပြုလုပ်ရန်စီမံပေးခြင်း ▪ အရေးပေါ်အခြေအနေနှင့် မတော်တဆထိခိုက်မှုမရှိစေရေး စောင့်ကြည့်စစ်ဆေးခြင်း

ပတ်ဝန်းကျင်ဆိုင်ရာစောင့်ကြည့်မှု

ကဏ္ဍ	အမျိုးအစား	ကြိမ်နှုန်း	နေရာ	တာဝန်ရှိသူ
လုပ်ငန်းလည်ပတ်ချိန်				
လေထု	$PM_{2.5}$, PM_{10}	တစ်နှစ် ၂ကြိမ်	ထုပ်လုပ်မှု ဇရိယာအတွင်း	Myanmar Green Start Energy Co.,Ltd.
ရေ	pH, DO, BOD, COD,TDS, Temp, Oil and Grease, Chlorine, Arsenic	တစ်နှစ် ၂ကြိမ်	ရေဆိုးသန့်စင်ဆက်မှ သန့်စင်ပြီးရေ	Myanmar Green Start Energy Co.,Ltd.
ဆူညံသံ	ဆူညံသံ ပမာဏ	တစ်နှစ် ၂ကြိမ်	၂ နေရာ (ထုပ်လုပ်မှု ဇရိယာ အတွင်း)	Myanmar Green Start Energy Co.,Ltd.
အမှိုက်စွန့်ပစ်မှု	အဆိုင်အခဲ၊ အရည် နှင့် အန္တရာယ်ရှိပစ္စည်း	ပုံမှန်	စက်ရုံအတွင်း ပြန်လည်အသုံးပြုရန်နှင့် စွန့်ပစ်ရန်ဟူ၍ အမှိုက်ပုံများအား ခွဲခြားခြင်း	Myanmar Green Start Energy Co.,Ltd.
မီးဘေးအန္တရာယ်	မီးသတ်ဆေးဘူးပစ္စည်းများနှင့်အရေးအရေးပေါ်ဖုန်းနံပါတ်များ	လစဉ်	စက်ရုံဇရိယာ အတွင်း	Myanmar Green Start Energy Co.,Ltd.
အလင်းရောင်ပြင်းပြမှု	အလင်းရောင်စမ်းခြင်း	တစ်နှစ် ၂ကြိမ်	ထုတ်လုပ်မှု ဇရိယာအတွင်း (ပိတ်ဖတ်ခြင်း နှင့် အရည်အသွေး စစ်ဆေးခြင်း)	Myanmar Green Start Energy Co.,Ltd.
လုပ်ငန်းဖြတ်သိမ်းခြင်းကာလ				
လေထု	PM2.5, PM10	ဖြတ်သိမ်းမှု ကာလအတွင်း ၁ကြိမ်	ထုပ်လုပ်မှု ဇရိယာအတွင်း	Myanmar Green Start Energy Co.,Ltd.
ရေ	pH, DO, BOD, COD,TDS, Temp, Oil and Grease, Chlorine, Arsenic	ထိုကာလအတွင်း ၁ကြိမ်	ရေဆိုးသန့်စင်ဆက်မှ သန့်စင်ပြီးရေ	Myanmar Green Start Energy Co.,Ltd.
ဆူညံသံ	ဆူညံသံ ပမာဏ	ထိုကာလအတွင်း ၁ကြိမ်	ဖြတ်သိမ်းမှု ဇရိယာ	Myanmar Green Start Energy Co.,Ltd.
ပြန်လည်မွမ်းမံခြင်း	သစ်ပင်များပြန်လည်စိုက်ပျိုးခြင်း		ဖြတ်သိမ်းမှု ဇရိယာအားလုံး	Myanmar Green Start Energy Co.,Ltd.

ပတ်ဝန်းကျင်ဆိုင်ရာစောင့်ကြည့်မှု ခန့်မှန်းကုန်ကျစရိတ်

စဉ်	အကြောင်းအရာ	အကြိမ်အရေအတွက်	ကုန်ကျစရိတ် (အမေရိကန် ဒေါ်လာ)
လျော့ချခြင်းအစီအစဉ်			
၁.	စက်ရုံအတွင်းလေအဝင်အထွက်အစီအစဉ်	၁နှစ် တကြိမ်	နှစ်စဉ် ဒေါ်လာ ၂၀၀
၂.	စက်ရုံဇရိယာအတွင်း သစ်ပင်များပိုက်ပျိုးခြင်း	၃လ တကြိမ်	၃လခြား ဒေါ်လာ ၇၀
၃.	အဆိုင်အခဲအမှိုက်စစ်ခြင်း	၁၂ ကြိမ်	နှစ်စဉ် ဒေါ်လာ ၁၀၀၀
၄.	တစ်ကိုယ်ရည်သုံး ကာကွယ်ရေးပစ္စည်းများ၊ယ်ယူခြင်း	၆ လ တကြိမ်	၆ လခြား ဒေါ်လာ ၁၅၀
၅.	ဆေးပစ္စည်များနှင့် ကျန်းမာရေးစစ်ဆေးခြင်း	၁ နှစ် တကြိမ်	နှစ်စဉ် ဒေါ်လာ ၅၀၀
အရေးပေါ်အစီအစဉ်			
၁.	မီးသတ်ဆေးဘူး	၁လ တကြိမ်	လစဉ် ဒေါ်လာ ၃၀၀
၂.	မီးသတ်အချက်ပြ စနစ်	၁လ တကြိမ်	
၃.	ရေးဦးသူနာပြု ပစ္စည်းများ	၁လ တကြိမ်	
စောင့်ကြပ်ကြည့်ရှုရေးအစီအစဉ်			
၁.	ရေဆိုးရေဘေစ်	၂ ကြိမ်	၁နှစ် ဒေါ်လာ ၂၀၀
၂.	ဆူညံသံ	၂ ကြိမ်	၁နှစ် ဒေါ်လာ ၃၀၀
၃.	စောင့်ကြပ်ကြည့်ရှုမှု အစီရင်ခံစာ	၁ ကြိမ်	ဒေါ်လာ ၁၀၀၀

လူမှုအကျိုးတူပူးပေါင်း ပါဝင်မှု

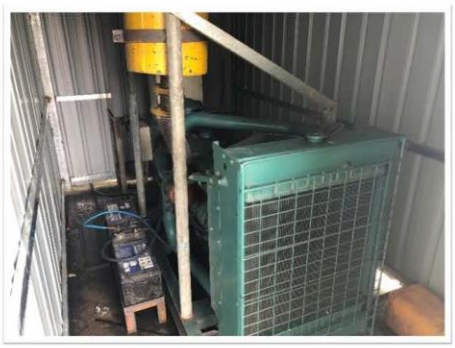
Myanmar Green Start Energy တွင် CSR အတွက် အမြတ်ငွေ၏ ၂% ကို ကျန်းမာရေး၊ ပညာရေးနှင့် နယ်မြေဖွံ့ဖြိုးတိုးတက်ရေးတို့ အတွက် အသုံးပြုသွားမည် ဖြစ်ပါသည်။

ကျန်းမာရေး	ဝန်ထမ်းများ ကျန်းမာရေး စောင့်ရှောက်မှု	၀.၅ %
ပညာရေး	ပညာရေးကဏ္ဍ မြှင့်တင်ရေးနှင့် လူ့အခွင့်အရေး အသိပညာပေးခြင်း	၀.၅ %
နယ်မြေဖွံ့ဖြိုးတိုးတက်ရေး	ဒေသတွင်း လိုအပ်သကဲ့သို့ လှူဒါန်းခြင်း	၁ %

စက်ရုံ၏ဆောင်ရွက်ချက်များ

Myanmar Green Start Energy Co., Ltd ဂန်ထမ်းများအတွက်သုံးရေပြင်ဆင်ထားရှိမှု

ဂန်ထမ်းများအတွက် သန့်စင်ခန်းများထားရှိမှု



Myanmar Green Start Energy Co., Ltd. ၏ လျှပ်စစ်သုံးစွဲမှု

Myanmar Green Start Energy Co., Ltd. ၏ မီးဘေးအန္တရာယ်အတွက် ထားရှိမှုများ

ဝန်ထမ်းများအတွက် ဆေးခန်းနှင့်ဆေးပစ္စည်းများထားရှိမှုများ

Thank You for Your Patient Attention!