Green Production and Sustainable Development in Secondary Aluminum, Lead, Zinc and Lithium Sectors in China

Part I: Project Information

GEF ID
10673

Project Type
FSP

Type of Trust Fund
GET

CBIT/NGI
- [ ] CBIT
- [ ] NGI

Project Title
Green Production and Sustainable Development in Secondary Aluminum, Lead, Zinc and Lithium Sectors in China

Countries
China

Agency(ies)
UNDP

Other Executing Partner(s)
Foreign Environmental Cooperation Center (FECO), Ministry of Ecology and Environment (MEE)

Executing Partner Type
Government

GEF Focal Area
Chemicals and Waste

Taxonomy
Focal Areas, Chemicals and Waste, Industrial Emissions, Waste Management, eWaste, Hazardous Waste Management, Non Ferrous Metals Production, Mercury, Sound Management of chemicals and waste, Best Available Technology / Best Environmental Practices, Eco-Efficiency, Persistent Organic Pollutants, Uninentional Persistent Organic Pollutants, Plastics, Influencing models, Strengthen institutional capacity and decision-making, Demonstrate innovative approache, Transform policy and regulatory environments, Stakeholders, Local Communities, Type of Engagement, Partnership, Information Dissemination, Consultation, Participation, Civil Society, Academia, Non-Governmental Organization, Community Based Organization, Trade Unions and Workers Unions, Communications, Awareness Raising, Education, Public Campaigns, Behavior change, Beneficiaries, Private Sector, Large corporations, SMEs, Non-Grant Pilot, Gender Equality, Gender Mainstreaming, Gender-sensitive indicators, Gender results areas, Capacity Development, Capacity, Knowledge and Research, Knowledge Generation, Learning, Theory of change, Indicators to measure change, Knowledge Exchange, Innovation

Rio Markers
Climate Change Mitigation
Climate Change Mitigation 0

Climate Change Adaptation
Climate Change Adaptation 0

Duration
60 In Months

Agency Fee($)
1,417,500.00

Submission Date
9/22/2020

A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount($)	Co-Fin Amount($)
CW-1-1	GET	15,750,000.00	110,350,000.00
	Total Project Cost ($)	**15,750,000.00**	**110,350,000.00**

B. Indicative Project description summary

Project Objective

Reduce and eliminate UP-POPs (PCDD/Fs, HCB and PCNs) and Brominated flame retardants (BFRs) releases through the introduction of BAT/BEP in the Secondary Aluminum and Zinc production, and implementation of a life cycle management in Lead acid battery and Lithiumn ion battery recycling in China.

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount($)	Co-Fin Amount($)
1. Strengthening the national policy and regulatory framework to reduce UP-POPs and BFRs releases from secondary non-ferrous metal industry	Technical Assistance	1.1 Reduced UP-POPs and BFRs releases resulting from sound metal scrap and batteries recycling management practices through the adoption and implementation of standards/measures, policies, plans, laws, regulations and guidance.	1.1.1 Policy and regulatory framework for metal scrap management developed, revised and improved, and relevant components integrated into the existing policy and regulatory framework 1.1.2 Technical by-laws, regulations and guidance aiming to reduce UP-POPs and BFRs release from batteries manufacturing, recycling and disposal practices developed, adopted and implemented. 1.1.3 Barriers to BAT/BEP and extended producer responsibility implementation removed (e.g. the institution of economic instruments and incentives).	GET	2,000,000.00	14,000,000.00

2. Reduction of UP-POPs and BFRs releases from unsound metal scrap and batteries recycling	Investment	2.1 Reduced releases of UP-POPs and BFRs as a result of improved raw material (recycled metal scrap and batteries) supply chains as well as the introduction of environmentally sound disposal practices and extended producer resoponsibility at recycling entities. 2.2 Prevent and minimize the generation of UP-POPs in the secondary metallurgical processes	2.1.1 Assessment of existing collection systems completed, and appropriate collection schemes established, feasible legislative arrangements, including proper acceptance and outbound material criteria. 2.1.2 Supply chains for local markets further developed, recycling rates increased and maximum quantities of recyclable plastic parts diverted from inadequate disposal. 2.1.3 Two demonstration projects implemented to demonstrate BAT/BEP and life cycle recycling in the collection and conditioning of waste batteries (one in lead acid batteries and one in lithium ion batteries), applying proper management of the hazardous waste generated in the process. 2.2.1 Assessment of secondary metallurgic production processes and technologies finalized. 2.2.2 Two demonstration projects implemented to demonstrate BAT/BEP in the secondary production of metals (one in aluminum and one in zinc)	GET	9,500,000.00	73,500,000.00

3. Implementation of a National Replication Programme (NRP)	Technical Assistance	3.1 Replication and Promotion of demonstration results and experience. 3.2 Promotional events (technical trainings) for project stakeholders, including awareness raising, delivered	3.1.1 A national replication plan of sustainable recycling and green production developed. 3.1.2 Results of the implemented demonstration project published and disseminated for replication. 3.2.1 Technical training for stakeholders and awareness raising workshops developed and implemented. 3.2.2 Awareness raising materials formulated and distributed for stakeholders.	GET	3,185,000.00	14,000,000.00
4. Project Monitoring, Evaluation and Knowledge Management	Technical Assistance	4.1 Project monitoring and evaluation. 4.2 Knowledge sharing and information dissemination for general the public.	4.1.1 M&E activities carried out, including annual review, mid-term review, social and economic assessment, and terminal evaluation conducted, and project performance evaluated. 4.2.1 Knowledge products on best practices, experiences and lessons learned documented and shared nationally and internationally, including recycling and disposal knowledge on waste lead/lithium batteries and metal scrap.	GET	315,000.00	3,500,000.00
				Sub Total ($)	**15,000,000.00**	**105,000,000.00**

Project Management Cost (PMC)			
	GET	750,000.00	5,350,000.00
	Sub Total($)	**750,000.00**	**5,350,000.00**
	Total Project Cost($)	**15,750,000.00**	**110,350,000.00**

C. Indicative sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Recipient Country Government	Ministry of Ecology and Environment	Grant	Investment mobilized	450,000.00
Recipient Country Government	Ministry of Ecology and Environment	In-kind	Recurrent expenditures	450,000.00
Recipient Country Government	Local Governments: Local Ecology and Environental Bureaus of demonstration regions	Grant	Investment mobilized	550,000.00
Recipient Country Government	Local Governments: Local Ecology and Environental Bureaus of demonstration regions	In-kind	Recurrent expenditures	550,000.00
Private Sector	Secondary metal(Lead, Aluminum and zinc) production and lithium battery recycling enterprises	Grant	Investment mobilized	64,860,000.00
Private Sector	Secondary metal(Lead, Aluminum and zinc) production and lithium battery recycling enterprises	In-kind	Recurrent expenditures	43,240,000.00
GEF Agency	UNDP	Grant	Investment mobilized	150,000.00
GEF Agency	UNDP	In-kind	Recurrent expenditures	100,000.00
			Total Project Cost($)	110,350,000.00

Describe how any "Investment Mobilized" was identified

In order to meet the requirements of GEF Secretariat on 1:7 co-finance, FECO communicated with various stakeholders, relevant entreprises and local environmental protection departments, and finally put forward to determine preliminary co-financing allocation plan. The categories of activity that co-finance will target independently, and/or leverage the GEF incremental financing. The precise fund allocation amounts across activity categories will be finalized during PPG phase of the CEO Endorsement package.

D. Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
UNDP	GET	China	Chemicals and Waste	POPs	15,750,000	1,417,500	17,167,500.00
				Total GEF Resources($)	**15,750,000.00**	**1,417,500.00**	**17,167,500.00**

E. Project Preparation Grant (PPG)

PPG Required ☑

PPG Amount ($)

300,000

PPG Agency Fee ($)

27,000

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
UNDP	GET	China	Chemicals and Waste	POPs	300,000	27,000	**327,000.00**
				Total Project Costs($)	**300,000.00**	**27,000.00**	**327,000.00**

Core Indicators

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)	4752.6	0	0	0
Expected metric tons of CO_2e (indirect)	0	0	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)				
Expected metric tons of CO_2e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO_2e (direct)	4,752.6			
Expected metric tons of CO_2e (indirect)	0			
Anticipated start year of accounting	2024			
Duration of accounting	3			

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)				

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)

Indicator 9 Reduction, disposal/destruction, phase out, elimination and avoidance of chemicals of global concern and their waste in the environment and in processes, materials and products (metric tons of toxic chemicals reduced)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
16.12	0.00	0.00	0.00

Indicator 9.1 Solid and liquid Persistent Organic Pollutants (POPs) removed or disposed (POPs type)

POPs type	Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
Polychlorinated dibenzofurans (PCDF)	8.06			
Polychlorinated dibenzo-p-dioxins (PCDD)	8.06			

Indicator 9.2 Quantity of mercury reduced (metric tons)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.3 Hydrochloroflurocarbons (HCFC) Reduced/Phased out (metric tons)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.4 Number of countries with legislation and policy implemented to control chemicals and waste (Use this sub-indicator in addition to one of the sub-indicators 9.1, 9.2 and 9.3 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 9.5 Number of low-chemical/non-chemical systems implemented, particularly in food production, manufacturing and cities (Use this sub-indicator in addition to one of the sub-indicators 9.1, 9.2 and 9.3 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 9.6 Quantity of POPs/Mercury containing materials and products directly avoided

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
3,000.00			

Indicator 10 Reduction, avoidance of emissions of POP to air from point and non-point sources (grams of toxic equivalent gTEQ)

Grams of toxic equivalent gTEQ (Expected at PIF)	Grams of toxic equivalent gTEQ (Expected at CEO Endorsement)	Grams of toxic equivalent gTEQ (Achieved at MTR)	Grams of toxic equivalent gTEQ (Achieved at TE)
16.13			

Indicator 10.1 Number of countries with legislation and policy implemented to control emissions of POPs to air (Use this sub-indicator in addition to Core Indicator 10 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
1			

Indicator 10.2 Number of emission control technologies/practices implemented (Use this sub-indicator in addition to Core Indicator 10 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
2			

Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Female	500			
Male	1,000			
Total	1500	0	0	0

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

This project aims to achieve the PCDD/Fs emission reduction of 354.75 grams TEQ and environmental sound disposal of a certain amount of BFRs containing plastics. It is expected that a plant size with output over 50,000 t and 10,000 t would be an appropriate demonstration plant in secondary Al and Zn, respectively. It is anticipated that demonstration activities undertaken at the two demonstration plants will allow for a reduction of PCDD/Fs releases as 16.125 g TEQ/a totally. In the NRP program, the project will promote BAT/BEP in dioxin emission reduction for 10 companies in each industry (SAl and SZn), with 161.25 g TEQ/a PCDD/Fs reduction. The total emission reduction of pilot and NRP plants are estimated to be 177.375 g/a. According to the 2-year operation period, the total emission reduction of the project is 354.75g. For the amount of environmentally sound disposal of BFRs containing plastics, the specific emission reduction will be determined in the PPG stage due to the lack of necessary monitoring data at present.

Part II. Project Justification

1a. Project Description

A) Global Environmental Problems

1. Secondary non-ferrous smelters primarily recover non-ferrous metal from new and used scrap and dross containing metal. Scrap metal and metal waste may also contain organic materials, such as paints, plastics, and solvents. Secondary non-ferrous smelting may lead to the unintentional formation of persistent organic pollutants (POPs), including polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs), polybrominated dibenzo-p-dioxins and polybrominated dibenz ofurans (PBDDs and PBDFs, together called PBDD/Fs), and dioxinlike compounds (such as polychlorinated biphenyls (PCBs) and polychlorinated naphthalenes (PCNs)), because of the incomplete combustion of impurities in the raw materials [1].

[1] Stieglitz, L., Bautz, H., Roth, W., Zwick, G., 1997. Investigation of precursor reactions in the de-novo-synthesis of PCDD/PCDF on fly ash. Chemosphere. 1997: 34, 1083–1090.

2. Some organic materials on scrap or other sources of carbon such as partially burnt fuels and reductant, e.g., coke, can generate PCDD/Fs when reacting with inorganic chlorides or organically bound chlorine at the temperature range of 250~450ºC. This process can be catalyzed by some metals such as copper and zinc etc. Additionally, the synthesis of PCDD/Fs and PCBs can also take place as the stack gas is cooled through the re-formation window which can be present in stack gas abatement systems [2].

[2] Eduljee, G.H., Dyke, P., 1996. An updated inventory of potential PCDD and PCDF emission sources in the UK. Sci. Total Environ.1996: 177, 303–321.

3. Secondary non-ferrous metal production are recognized as important sources of UP-POPs (Annex C, Part II and III of the Stockholm Convention; Section V and VI of the BAT/BEP Guidance/Guidelines; and UNEP Dioxin Toolkit). As one of the most toxic pollutants ever known to human, PCDD/Fs, as well as other POPs such as PCBs, have attracted much attention all over the world. Dioxins are mainly derived from the incomplete combustion of organic waste in raw materials, especially the burning of organic waste containing chlorine.

4. As an organic flame retardant, brominated flame retardants (BFRs) are cheaper than phosphorus and metal flame retardants, and can effectively improve the fire resistance of products. Therefore, BFRs is widely used in various industrial products and daily necessities, such as electronics, plastics, foam, textiles and furniture. Among them, the amount of consumption in the electronics industry is the largest, accounting for 35%-40% of the total. At present, the commonly used industrial BFRs mainly include Polybrominated diphenyl ethers (PBDEs), polybrominated biphenyls (PBBs), Hexabromocyclododecane (HBCD) and Tetrabromobisphenol-A (TBBPA). These substances are persistent, lipophilic and bioaccumulative, and their impact on the environment and biology can not be ignored.

5. Lead acid batteries and lithium ion batteries are widely used in transportation, communication, power and other fields. In order to improve the flame retardancy of the plastic shell, BFRs are often added to the shell plastics. Although the use of BFRs greatly improves the fire safety level of products, the plastic parts will release BFRs to the environment in the process of crushing, heating and burning, which will endanger the environment and human health.

6. China is the world's largest producer and consumer of aluminum, accounting for roughly 40% of global aluminum production. Up to now, there is about 150 plants for secondary aluminum metallurgy in China, producing 6,900,000 tons in 2017 [3]. Among the 150 secondary aluminum plants, there are about 30 plants that produce over 10,000 tons per year. The smelting process of secondary aluminum production consists of feeding, fusion, content adjusting, treatment of liquid aluminum and casting. In China, secondary aluminum industry mainly relies on imported waste scrap.

[3] Te Ba, Minghui Zheng *, Bing Zhang, Wenbin Liu, Ke Xiao, Lifei Zhang. Estimation and characterization of PCDD/Fs and dioxin-like PCBs from secondary copper and aluminum metallurgies in China. Chemosphere 75 (2009) 1173–1178.

7. More than 2,050,000 tons of lead was recycled in 2017 in China, accounting for 25% of the world total (CNMA). Waste lead-acid batteries are the main raw materials for smelting lead recycled, accounting for about 80% to 85%. In the final flow of waste lead-acid batteries (LAB), lead-acid battery factories and primary lead smelters accounted for 17%, small-scale smelting for 41%, and scale-recycled lead plants for 42%.

8. China has been the largest waste lead recycler in the world [4]. The standard spent-lead recycling production line includes the following procedures: (a) crash and separate the battery at ambient temperature and (b) recycle the lead paste, lead grids, plastic case, and waste acid. For the secondary lead production, the smelting process consists of feeding, fusion, deoxidation, content adjusting, treatment of lead liquid and casting.

[4] Te Ba, MinghuiZheng, Bing Zhang, et al. Estimation and characterization of PCDDFs and dioxin-like PCB emission from secondary zinc and lead metallurgies in China. Journal of Environmental Monitoring. 2009, 11, 867–872. C Zou, J Han, H Fu. Emissions of PCDD/Fs from steel and secondary nonferrous productions. Procedia Environmental Sciences, 2012, 16:279-288.

"Recycled Copper, Aluminum, Lead, Zinc Industrial Pollutant Emission Standards" (GB31574-2015) Modification order. Available online at http://www.zhb.gov.cn/gkml/hbb/bgth/201706/t20170615_416108.htm

9. The smelting process of the secondary zinc production consists of feeding, melting, refining and casting in a crucible. It is estimated that 1,600,000 tons secondary zinc is generated in the form of zinc metal in 2017, with 58% recycling rate and 25% medium-sized enterprises in China

10. China’s secondary non-ferrous production is becoming increasingly important due to the high demand of metal, shrinking mine resources and a booming circular economy in China. Although secondary non-ferrous metal production is significant to circular economy, the downside of smelting, processing and re-production of those secondary metals is the risk of releasing different types of pollutants, including UP-POPs, BFRs, strong acid and heavy metals, such as lead into the environment. Secondary non-ferrous smelter were the major sources of dioxin emission in China.

11. Metal containing materials used in secondary non-ferrous metal production varies greatly, and includes mixed scrap, for instance electronic waste (e-waste) parts such as cables, coils, plastic parts, which often contain plastic parts and chlorine compounds. These are the cause for the high POPs emissions in secondary non-ferrous metal production. The two most relevant processes with respect to POPs emission control are the scrap pre-treatment and smelting processes, in particular the smelting reduction step. They are, therefore, less of a concern regarding of POPs.

12. In addition, as the largest producer, consumer, and exporter of lithium-ion batteries (LIB), China has maintained about 34% global market in recent years. With the rapid promotion of new energy vehicles, the decommissioning and renewal of power batteries (mainly lithium-ion batteries) is about to explode. Generally, LIBs are composed of a cathode, anode, electrolyte and separator, and contain conducting carbons, polymers and lithium transition metal oxides,

such as $LiCoO_2$, $LiMn_2O_4$, $LiNiO_2$ and $LiCoxMnyNizO_2$. Spent LIBs can be classified as hazardous materials due to the existence of heavy metals, including lead, cobalt, copper, nickel, thallium, and silver.

13. The leakage of organic electrolytes as well as heavy metals will lead to serious contamination if the waste LIBs are directly incinerated. Aside from human toxicity and eco-toxicity, valuable materials in waste LIBs, such as lithium and cobalt, are worthy to be recycled due to limited natural reserves and increasing demands. Similar to the recovery process of lead acid batteries, if there is no effective pre-treatment during the recovery process, chlorine-containing organic matter will generate UP-POPs, such as PCDD/Fs, during the pyro metallurgical process. In addition, BFRs are also released into the environment during the fragmentation and disassembly of waste LIBs.

14. With the effectiveness of China's ban of importing solid waste including scrap metals, China will further energize its domestic recycling rate of useful materials. Meanwhile, China will witness the peak of replacement of electrical vehicles and electrical bicycles within 5 years, which will create huge market share for recycled LIBs and lead-acid batteries. Lack of collection schemes and policy support are the main reasons behind the waste battery collection problem. A package of solutions addressing green recycling, green production and chemicals control those typical secondary sectors is very imperative in China's context to safeguard the environment, human health and promotion of circular economy.

15. Finally, at present, the flux used in the production of secondary aluminum industry is partially a chlorine-containing compound, which is the second main source of chlorine produced by dioxin in the smelting process; the concentration of dioxin in the secondary zinc industrial waste gas is related to the content of chlorinated organic compounds contained in the treated waste copper. The recovered non-ferrous metals waste will be mixed with some wastes and impurities. The original dioxins in the impurities will be released in the temperature range of 200 ~ 500°C. The high temperature and metal catalysts of inorganic chlorine compounds and organochloride compounds during smelting and refining. Dioxins are produced under these conditions. The raw materials of the secondary lead and lithium industry are relatively simple. The lead-acid batteries and lithium-ion batteries are the main ones. If the batteries are effectively disassembled and sorted, the chlorine-containing organic wastes will be separated, and the probability of producing dioxins will be reduced.

16. Two (2) types of measures can be adopted to avoid UP-POPs emissions:

(a) Primary measures that prevent the formation of UP-POPs, including orderly recovery of recycable metal scrap, classification and screening of recovered scrap metal in order to minimize substances with high heavy metal content, removing organic matter and plastics, if necessary, to clean the raw materials and to reduce the amount of chlorine, especially organic chlorides, reducing the source of chlorine generated by dioxin in the source. Before the recycled metal enters the incinerator, it is broken into a suitable size, and the contact area with oxygen is increased as much as possible to facilitate the combustion.

(b) Secondary measures that prevent formed UP-POPs to be emitted to the environment, including the use of special or synergistic techniques to remove dioxin, such as bag filter, spray activated carbon or activated carbon filter cloth, fly ash (according to toxic and hazardous waste landfill or solidification treatment), catalyst oxidation technology (using vanadium pentoxide, tungsten trioxide, etc.), plasma technology, etc.

17. Therefore, the following elaborates on the barriers to the adoption of environmental sound management in the secondary non-ferrous metal industry:

a) Incomplete legal/regulatory framework and lack of capacity in policy enforcement at national, industrial and local level;

b) Recycling disorder has always been an important problem affecting the recycling of non-ferrous metal scrap. Limited access to international experience in implementing and sustaining a recycling value chain both financially and operationally;

c) Limited access to international BAT/BEP related to secondary non-ferrous metal processing technologies and limited ability/capacity to pilot and demonstrate it; and

d) Insufficient capacity to undertake monitoring of the UP-POPs and BFRs pollution caused by the secondary non-ferrous metal smelting and recycling, and dealing with both socio-economic and environmental legacies.

B) Baseline scenario

18. The raw material structure of China's secondary non-ferrous metal industry has been mainly due imported for a long time. In 2012, the import volume of waste non-ferrous metals reached a peak (74.86 million tons), and then declined year by year. In 2012, domestically recycled scrap aluminum exceeded imported aluminum for the first time. After 2015, the structure of raw materials has shifted from imported to domestic waste.

19. In 2017, domestic raw materials accounted for 58% of recycled aluminum raw materials. The import policy has been further tightened, which has a certain impact on the import of non-ferrous metal scraps in China. In the future, the proportion of domestic waste non-ferrous metals will be further increased. With the scrapping cycle and import policy adjustment, China will enter the peak period of scrap metal recycling in the near future. The annual scrap and recycling volume will enter a period of rapid rise. It is estimated that by 2020, China's waste non-ferrous metal production will reach 18 million tons [5].

[5] Available online at http://www.cmra.cn/cmra/xiehuigongzuo/20180612/232256.html

20. In 2018, the Environmental Protection Tax Law of the People's Republic of China was officially implemented, which may bring greater economic and production cost pressures for primary ore dressing enterprises and concentrate smelting enterprises. In order to reduce the amount of smelting slag, large smelting enterprises are bound to choosing non-ferrous metal scraps instead of primary mines for production will lead to an increase in the demand for domestic waste non-ferrous metals, and the importance of recycling non-ferrous metals will be further highlighted.

21. The chaotic recycling channels and the price hikes by the industry and traders not only make the recycling process pollute the environment, but also a large amount of resources flow into illegal production enterprises. The formal recycled metal enterprises face difficulties in purchasing raw materials. Regular enterprises must invest in environmental protection, equipment, technology, etc., together with management and other expenses, resulting in high recycling costs and lack of market competitiveness.

22. In China’s secondary non-ferrous production sector, about 3% of the large scale enterprises use advanced equipment which helps to control releases of conventional pollutants. However such technologies do not control or reduce emissions of PCDD/Fs. Some of the medium-size enterprises make use of basic production and primary pre-treatment technologies. Environmental protection facilities such as air pollution control devices (APCDs), water recycling, and

waste heat recovery technologies, have been established/introduced in scaled smelters. However, majority of the small manufacturing enterprises still lack the capacity to fulfill environmental protection measures.

23. In this scenario, the smaller secondary non-ferrous smelting plants will be slowly and continuously shut down due to more strict emission standards in the near future. Therefore the large and medium-size enterprises will represent the typical profile of the secondary non-ferrous recycling industry in China.

24. Furthermore, the most recent PCDD/Fs emission inventory for China has been carried out in 2007. Potential national release of PCDD/Fs emission to air, water, land, product and residue were estimated at 10,236.8 g TEQ/a as reported in the NIP. The total release from the non-ferrous metal production was estimated at 1,607.3 g TEQ/a, accounting for 15.7% of the total national release. There is no dioxin emission inventory information for the secondary lead and secondary lithium industries. The currently available information on PCDD/Fs releases from non-ferrous metal production is summarized in the Table below.

Table 1 - Dioxins emission reduction potential in two industries [6]

No.	Sector	Annual releases of PCDD/Fs (gTEQ/a)		
		Air	Residues	Total
1	Secondary Aluminum	133.5	332	465.5
2	Secondary Zinc	8	0	8

[6] China Environmental Protection Administration. The People's Republic of China National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants 2007. Available online at http://www.china-pops.org/guide/zyxz/wdxz/200807/P020121210484518645457.pdf
Wei Wang, Yufeng Wu. An overview of recycling and treatment of spent LiFePO4 batteries in China. Resources, Conservation & Recycling, 2017, (127): 233–243.

25. Tetrabromodiphenyl ethers and pentabromodiphenyl ethers, hexabromodiphenyl ethers and heptamobiphenyl ethers were included in the list of controlled substances of the Stockholm Convention in 2009. Hexabromocyclododecane and decabromodiphenyl ether were included in the list of controlled substances of the Convention in 2013 and 2017, respectively. Among these BFRs, China has issued notices in 2014 and 2016 on the entry into force of the amendments to tetrabromodiphenyl ether and pentabromodiphenyl ether, hexabromodiphenyl ether and heptamobiphenyl ether, and hexabromocyclododecane, respectively. So far, decabromodiphenyl ether has not been ratified by the Chinese government.

26. The annual consumption of decabromodiphenyl ether in China ranges from 20,000 to 40,000 tons, of which nearly 90% is used in plastics. 70% of the plastic containing decabromodiphenyl ether is used in electronic and electrical products. In addition, a large number of decabromodiphenyl ether have also been detected in vehicles (such as seat textile materials and plastic interior). In addition to plastics, decabromodiphenyl ether is partly used in coatings, rubber (e.g. mine conveyor belts) and textiles.

27. In 2017, the total amount of China's secondary non-ferrous metal industry was 10.65 million tons. Among them, the output of secondary aluminum, lead and zinc were about 6.90, 2.05, and 1.60 million tons, respectively. According to China Automotive Technology & Research Center (CATARC) in 2015, the sales data of LiFePO4 batteries accounted for 69% power batteries in China. The number of wastet LiFePO4 batteries has increased with the rapid development of the electric vehicle industry in China. In 2017, 176,000 tons power batteries were recycled in China. Typically LiFePO4 batteries contain 1.1% Li by weight [7]. Based on the above data, it can be inferred that China's recycled lithium production is about 1,336 t/a.

[7] Wei Wang, Yufeng Wu. An overview of recycling and treatment of spent LiFePO4 batteries in China. Resources, Conservation & Recycling, 2017, (127): 233–243.

28. According to China Recycled Metals Production Data in 2017 and Toolkit for Identification and Quantification of Releases of Dioxins, Furans and Other Unintentional POPs [8], it is assumed that the technical level of the secondary non-ferrous metal industry is at the level II, and the preliminary dioxins emission baseline of China in 2017 are calculated in Table 2.

[8] Available online at http://www.pops.int/Implementation/UnintentionalPOPs/ToolkitforUPOPs/ToolkitMethodology/tabid/196/Default.aspx

Table 2 - Dioxins emission in four industries

No	Sector	Production (t/a)[9]	Source categories	Potential Release Route (μg TEQ/t)		Annual releases of PCDD/Fs (gTEQ/a)		
				Air	Residues	Air	Residues	Total
1	Secondary Aluminum production	6,900,000	e(II)	4	400	27.60	2,760.00	2,787.60
2	Secondary Lead production	2,050,000	f(II)	8	50	16.40	102.50	118.90
3	Secondary Zinc production	1,600,000	g(II)	100	1	160.00	1.60	161.60
4	Secondary Lithium production	1,336	J(I)	100	ND	0.13	ND	0.13
	Total	10,551,336				204.13	2,864.10	3,068.23

[9] China Renewable Resources Recycling Industry Development Report (2018). Available online at http://ltfzs.mofcom.gov.cn/article/ztzzn/an/201806/20180602757116.shtml

29. At present, there is no survey data on the use of BFRs in lead-acid batteries and lithium-ion battery plastics, which will be carried out in the PPG phase of the project.

Associated baseline projects

30. Over the past decade, the Government of China has issued a variety of environmental laws, regulations, standards, technical guidelines and norms related to POPs control in the non-ferrous industry, including secondary copper, aluminium, lead and zinc sector. China has set up a series of national technical documents and standards on industrial quality and technical requirements, to control production condition, production capacity and requirements of typical

facilities. Such documents catalysed the reduction of carbon discharge and environmental pollutants emission, clean production, and industrial sustainability in a way. The main national standards covering secondary non-ferrous metal production are outlined in Table 3.

Table 3 - Main National Standards on Secondary Non-ferrous metal Sector

Standard Name and Number	Year	Issuing Institution	Applicable Scope
Classification and specification for scraps and waste component of aluminum and aluminum alloy (GB/T 13586-1992)	1992	AQSIQ	This standard specifies the classification, requirements, test methods, inspection rules and packaging, marking, transportation and storage of aluminum and aluminum alloy waste. This standard applies to the domestic and foreign trade of scrap aluminum and the recycling of waste aluminum from recyclable non-ferrous metal smelting enterprises and aluminum processing enterprises.
Environmental protection control standard for imported solid wastes as raw materials-Nonferrous metal scraps (GB 16487.7-2005)	2005	MEP, AQSIQ	Applicable to import management of nonferrous metal scraps in imported solid wastes as raw materials
Environmental protection control standard for imported solid wastes as raw materials-Waste electric motors (GB 16487.8-2005)	2005	MEP, AQSIQ	Applicable to waste electric motors in imported solid wastes as raw materials
Technical Specifications of Pollution Control for Treatment of Lead-acid Battery (HJ519-2009)	2009	MEP	This standard is applicable to the pollution control of the whole process of resource recycling, such as collection, storage, transportation and treatment of waste lead-acid batteries. It can also be used to guide the site selection, construction and post-construction pollution control management of resource recycling enterprises.
Dioxin pollution prevention and control technology policy in key industries	2015	MEP	The technical routes and technical methods that can be adopted for the prevention and control of dioxin pollution in key industries, including source reduction, process control, end treatment, new technology research and development, etc.

			arch and development, etc.
Emission Standards of Pollutants for Secondary Copper, Aluminum, Lead and Zink Industry. (GB 31574-2015)	2015	MEP, AQSIQ	Discharge limit value of waste water: HCBD≤0.006 mg/L; dioxin≤0.3 ng TEQ/L. Emission limit value of exhaust gas: dioxin≤0.1 Ng TEQ/m^3
Guideline on Available Technologies of Pollution Prevention and Control for Secondary Lead Smelt Industry	2015	MEP	This guideline is applicable to reclaimed lead smelting enterprises that use lead-containing metal scraps such as lead-acid batteries as the main raw materials.
Technical specification of treatment and disposal for zinc-containing waste materials (GB/T33055—2016)	2016	AQSIQ,SAC	This standard applies to the treatment and disposal of zinc-containing waste produced by chemical, metallurgy, electroplating, hot-dip galvanizing and other industries.
Recycling of traction battery used in electric vehicle-Dismantling specification (GB/T 33598-2017)	2017	AQSIQ,SAC	This standard is applicable to the overall disassembly and disassembly requirements, operating procedures and storage management requirements of used lithium-ion battery for vehicles. It is not applicable to the disassembly of used waste battery components for vehicles.
Technical specification for application and issuance of pollutant permit non-ferrous metal metallurgy industry—secondary non-ferrous metal (HJ 864.3-2018)	2018	MEE	This standard specifies the basic filing requirements for the application and issuance of pollutant discharge permits for secondary non-ferrous metal (secondary copper, *aluminum, lead and zinc*) pollutant discharge units, the determination of permitted emission limits, the actual emissions accounting, the method for compliance determination, and the self-monitoring, environmental management ledger and discharge permit implementation report. And other environmental management requirements, put forward feasible technical requirements for the prevention and control of recycled non-ferrous metals.

31. Although the waste lead battery has already been listed in the “National Hazardous Waste List”, and the state has also issued the “Technical Specification for Waste Lead Storage Battery Treatment Pollution Control” (HJ519-2009), clear requirements are made on the harmless resource recycling and disposal of waste lead storage battery. However, in practice, due to the lack of mandatory policy and regulation support and corresponding financial guarantees, coupled with the difficulty in achieving the recovery system in a short period of time, the enthusiasm and initiative of exploring and establishing a recycling system are not high, and the system construction of the standardized waste lead battery recycling is sluggish.

32. In March 2016, the Outline of the Thirteenth Five-Year Plan for National Economic and Social Development of the People's Republic of China was promulgated, and the promotion of resource conservation and intensive use was separately listed as a chapter, pointing out that it is necessary to establish a resource concept of conservation and intensive recycling and promote resources. In January 2017, the General Office of the State Council issued the "Promoter Responsibility Extension System Implementation Plan", requiring producers to extend their responsibilities to ecological design, the use of recycled raw materials, standardized recycling and expansion of information disclosure. Lead storage batteries were included in the first batch of implementation.

33. China's current legal and regulatory framework, management requirements in the field of secondary non-ferrous metal are covered throughout the various relevant laws, regulations and standards, but the existing problems and needs in the current system include the following:

(a) Although the state has formulated many management policies for the recycled metals industry (especially battery recycling), its effectiveness remains to be seen.

(b) At present, China has not established a standardized and effective non-ferrous metal recycling system that is completely dominated by formal enterprises. The legal framework has no normative requirements for the establishment of the whole system including producers, sellers, users and recyclers.

(c) Secondary non-ferrous metal smelting industry, has not yet considered specific provisions and requirements to address POPs, it is necessary to improve this situation in subsequent system construction.

(d) In terms of institutional capacity-building, capacity has not been established for monitoring and enforcement of the secondary non-ferrous metal industry, subsequent development in this area is on strong demand and of top priority.

34. Secondary non-ferrous metal industry is one of six priority sectors to be targeted for control of UP-POPs releases. However, no substantive activities were implemented to reduce China's PCDD/Fs releases from the secondary non-ferrous metal industry in the past few years. For the implementation of requirements on reduction of dioxin emission in secondary copper production industry according to the Stockholm Convention and NIP, “UP-POPs Reduction through BAT/BEP and PPP-based Industry Chain Management in Secondary Copper Production Sector in China”(hereafter as “the secondary copper project”) was developed by FECO and UNDP jointly. The project aims to reduce releases of UP-POPs from secondary copper production in China through strengthen institutional and management capacities, BAT/BEP demonstration, publicity and promotion activities etc. The secondary copper project has officially started implementation in July 2016. The implementation of the project, u to the moment, has resulted a major impact and a series of results have been achieved as follows:

a) Up to now, six national standards have been prepared, “Technical Specification for Application and Issuance of Pollutant Permit Non-ferrous Metal Metallurgy Industry-secondary Non-ferrous Metal” and “Evaluation Indicator System of Clean Production in Secondary Copper Industry” have been officially released and implemented, and it will effectively promote the realization of the project objectives.

b) The project selected two (2) pilot plants to carry out BAT/BEP demonstration from the whole process of raw material management, process control and end treatment, and used a combination of bag filter, activated carbon adsorption and flue gas quenching on the four production lines of the two companies. The gas treatment system was rebuilt and is expected to be completed before the end of 2020. At present, the project has invested a total of

$4,000,000, and the company has cofinanced more than $20,000,000 for technological transformation. After the completion of the transformation, it will further improve the company's clean production, reduce the emissions of heavy metals, UP-POPs and other pollutants, strengthen hazardous waste management and improve environmental management capabilities.

c) By the end of 2019, 94 training sessions have been conducted. 1,608 governmental officials, 1,825 technical workers, 3,285 enterprise managers and 2,330 general public participated in the trainings. The project increased awareness of pollution prevention and control of these pollutants through training by relevant government officials, managers, skilled workers and the public, and effectively guided the application and issuance of pollutant permits.

d) Public awareness activities will be conducted to promote implementation of full process UP-POPs reduction system. Through demonstration activities at two selected locations and actions to be taken at selected enterprises, pre-treatment, smelting, alloying, casting, electrolysis, gas treatment and fly ash disposal will be conducted in an environmentally sound manner utilizing demonstrated BAT/BEP that will result in achieving reduction of UP-POPs release.

e) During the implementation of the project, good relationships and coordination mechanisms have been established with various stakeholders, which provide a good basis for the implementation of the newly applied GEF project in other secondary non-ferrous metal industries.

35. As direct result of the implementation of the GEF project, the secondary copper industry is gradually promoting regulatory improvements and technology upgrades to reduce emissions of UP-POPs in the industry. However, other secondary non-ferrous metal industries also have the problem of large dioxins emissions due to their rapid growth and large scale. Based on the experience of the secondary copper project, there are still some problems that need to be solved:

a) The changes in relevant domestic and international policy standards should be closely followed with the implementation and promotion of the pollutant permit system and other new policies in China in recent years. Focusing on the needs of China's ecological civilization construction and pollution prevention and control work, design related activities or formulate relevant policy standards to serve China's compliance needs and pollution prevention and control work;

b) Secondary copper smelting and flue gas purification processes are similar to other secondary metals. Relevant process technologies and management models can be used for reference in other secondary metal smelting. But due to other types of waste metals, waste reduction, control measures, and smelting processes, and the matching facilities, are different. The experience of the secondary copper project can provide reference for the upgrading and re-innovation of other secondary metal smelting processes and flue gas purification processes and equipment, and achieve orderly development of the secondary non-ferrous metal industry;

c) In addition to the recycling and dismantling of recycled non-ferrous metal raw materials, the power batteries recycling and related recycling industry chains involved in the secondary lead and secondary lithium industries are not covered in the “UP-POPs Reduction through BAT/BEP and PPP-based Industry Chain Management in Secondary Copper Production Sector in China” project. Therefore, China's current producer responsibility extension and related economic operation mechanisms of the secondary non-ferrous metal industry should be focused on, with a view to promoting UP-POPs emission reduction from the perspective of life cycle and process management.

Considerations In Mitigation Impacts Of Covid-19 Pandemic

36. The COVID-19 pandemic is bringing significant disruption in local and global economies, and this could be one of the most serious economic setbacks in the history. While the impact of the pandemic will vary from country to country, it will most likely increase poverty and inequalities at a global scale, making achievement of SDGs even more urgent

37. Although the spread of the COVID-19 is still evolving in the world, with several countries transitioning between first to second waves of infection, China faces a situation of relative control of the local outbreak, with strict controls and a robust health plan to cope with challenges. The major risk related to the impact of the COVID-19 to this project proposal relates to its PPG Phase, to be carried out alongside 2021. While China is still developing a vaccine for the COVID-19, once proved successful, it is believed that the vaccine deployment would be initiated in 2021, and this would substantially lower the risks during project implementation, expected to be initiated in 2022.

38. However, the project still plans to carry out continuous monitoring and assessment of the impacts of COVID-19 on the progress of the project, and promote the implementation of the project according to the plan through various means, such as online meeting, telephone, etc if required.

39. In any case, UNDP will consider, during the PPG Phase, the principles of the UN framework for the immediate socio-economic response to COVID-19, as well UNDP´s Guidelines on UNDP's integrated response to COVID-19 potential linked and or parallel actions that could help decision-makers look and design beyond recovery, towards 2030, making choices and managing complexity and uncertainty in the green economy area to support the recovery from COVID-19 impacts.

C) Proposed alternative scenario, expected outcomes and components of the project

40. This project not only focuses on the secondary non-ferrous metal industry's green production model, but also focuses on collection demonstration, raw material recovery and economic incentives. This will significantly reduce the generation and release of UP-POPs such as dioxins, BFRs containing plastics, heavy metals and other pollutants from the source. Through the promotion of advanced technology and management experience of the demonstration project, the dioxin pollution prevention technology and equipment upgrade of the recycled metal enterprise can be promoted. Based on the current scale and average emission levels of the secondary non-ferrous metal industry, Table 4 and Table 5 list the potential emission reduction of dioxins (according to the 2-year operation period, the total emission reduction of the project is 354.75 g TEQ.) from this project.

Table 4 - Dioxins emission reduction potential of pilot plants in SAI and SZn industries [10]

No.	Sector	Production (t/a)	Source categories	PCDD/Fs Emission baseline (g TEQ/a)		PCDD/Fs Emission after project implemented (g TEQ/a)		PCDD/Fs Reduction (g TEQ/a)
				Air	Residues	Air	Residues	
1	Secondary Aluminum production	50,000	e(II)	0.2	20	0.025	5	15.175
2	Secondary Zinc production	10,000	g(II)	1	0.01	0.05	0.01	0.95
	Total	60,000		1.2	20.01	0.075	5.01	16.125

[10] This data is calculated by the toolkit . Available online at http://www.pops.int/Implementation/UnintentionalPOPs/ToolkitforUPOPs/ToolkitMethodology/tabid/196/Default.aspx

Table 5 - Dioxins emission reduction potential of NRP plants in SAl and SZn industries [11]

No.	Sector	PCDD/Fs Reduction (g TEQ/a)	Plants Number	Total PCDD/Fs Reduction (g TEQ/a)
1	Secondary Aluminum production		11	166.925
2	Secondary Zinc production	0.95	11	10.45
	Total	16.125	-	177.375

[11] This data is calculated by the toolkit . Available online at http://www.pops.int/Implementation/UnintentionalPOPs/ToolkitforUPOPs/ToolkitMethodology/tabid/196/Default.aspx

41. Public and Private Partnership is critical to ensure the technical and economic feasibility of BAT/BEP to reduce UP-POPs and BFRs. Government agencies, associations, research institutes and enterprises will work together on technology selection, piloting, evaluation and formulation of the replication plan. Regular communication and cooperation mechanism will be established for the joint work.

42. In addition to UP-POPs and BFRs reductions, other co-benefits will be identified for more incentives for the wider application of the technologies for UP-POPs reduction. The success of circular economy will also count on the effective cooperation by both public and private partnership where government should create enabling policy environment and enterprises can generate economic values. Value chain analysis and redesign is needed for the reconstruction of the cooperation of different enterprises to ensure the circular economy will contribute to sustainable development, environmental protection and economic development.

43. The project will also be demonstrative for other developed and developing countries. With the leading developed countries promise to ban petrol powered vehicles and promote electrical vehicles, China's pioneering demonstration on lithium and lead battery recycling and their green re-production will provide replicative models.

44. China's ban of importing scrap metals also influences global dynamics and makes major exporters in Europe and America reship them scrap metals to South-eastern Asia, where facilities and capacities on smelting and processing those secondary metals are very limited. The good practice, technologies and management experience generated from this project will be disseminated and shared with South-eastern Asian countries to minimize chemicals emissions and maximize resources recycling.

45. The following describes activities envisioned under each project component consistent with the Outcomes and Outputs provided above:

Component 1. Strengthening the national policy and regulatory framework to reduce UP-POPs and BFRs releases from secondary non-ferrous industry

Outcome 1.1 Reduced UP-POPs and BFRs releases resulting from unsound metal scrap and batteries recycling management practices through the adoption and implementation of standards/measures, policies, plans, laws, regulations and guidance.

Output 1.1.1 Policy and regulatory framework for metal scrap management developed, revised and improved and relevant components integrated into the existing policy and regulatory framework, (e.g. national standards on max. chloride content, technical specification for waste battery recycling and dismantling focusing on hazardous waste management.)

Output 1.1.2 Technical by-laws, regulations and guidance aiming to reduce UP-POPs and BFRs release from batteries manufacturing, recycling and disposal practices developed, adopted and implemented.

Output 1.1.3 Barriers to BAT/BEP implementation removed through e.g. the institution of economic instruments and incentives.

Component 2 Reduction of UP-POPs and BFRs releases from unsound metal scrap recycling

Outcome 2.1 Reduced releases of UP-POPs and BFRs as a result of improved raw material (recycled metal scrap) supply chains as well as the introduction of environmentally sound disposal practices at recycling entities.

Output 2.1.1 Assessment of existing collection systems completed, and appropriate collection schemes, feasible logislatical arrangements, including proper acceptance and outbound material criteria.

Output 2.1.2 Supply chains for local markets further developed, recycling rates increased and maximum quantities of recyclable plastic parts diverted from inadequate disposal.

Output 2.1.3 Two demonstration projects implemented to demonstrate BAT/BEP and life cycle recycling in the collection and conditioning of waste batteries (one in lead acid batteries and one in lithium ion batteries), and pay attention to the management of hazardous waste generated in the whole process.

Outcome 2.2 Prevent and minimize the generation of UP-POPs in the secondary metallurgical processes.

Output 2.2.1 Assessment of secondary metallurgic production processes and technologies finalized.

Output 2.2.2 Two demonstration projects implemented to demonstrate BAT/BEP in the secondary production of metals(one in aluminum and one in zinc).

Component 3. National Replication Programme (NRP)

Outcome 3.1 Replication and Promotion of demonstration results and experience.

Output 3.1.1 A national replication plan of sustainable recycling and green production developed.

Output 3.1.2 Results of the implemented demonstration project published and disseminated for replication.

Outcome 3.2 Promotional events for stakeholders awareness raising.

Output 3.2.1 Technical training for stakeholders and awareness raising workshops developed and implemented.

Output 3.2.2 Awareness raising materials formulated.

Component 4. Project Monitoring, Evaluation and Knowledge Management

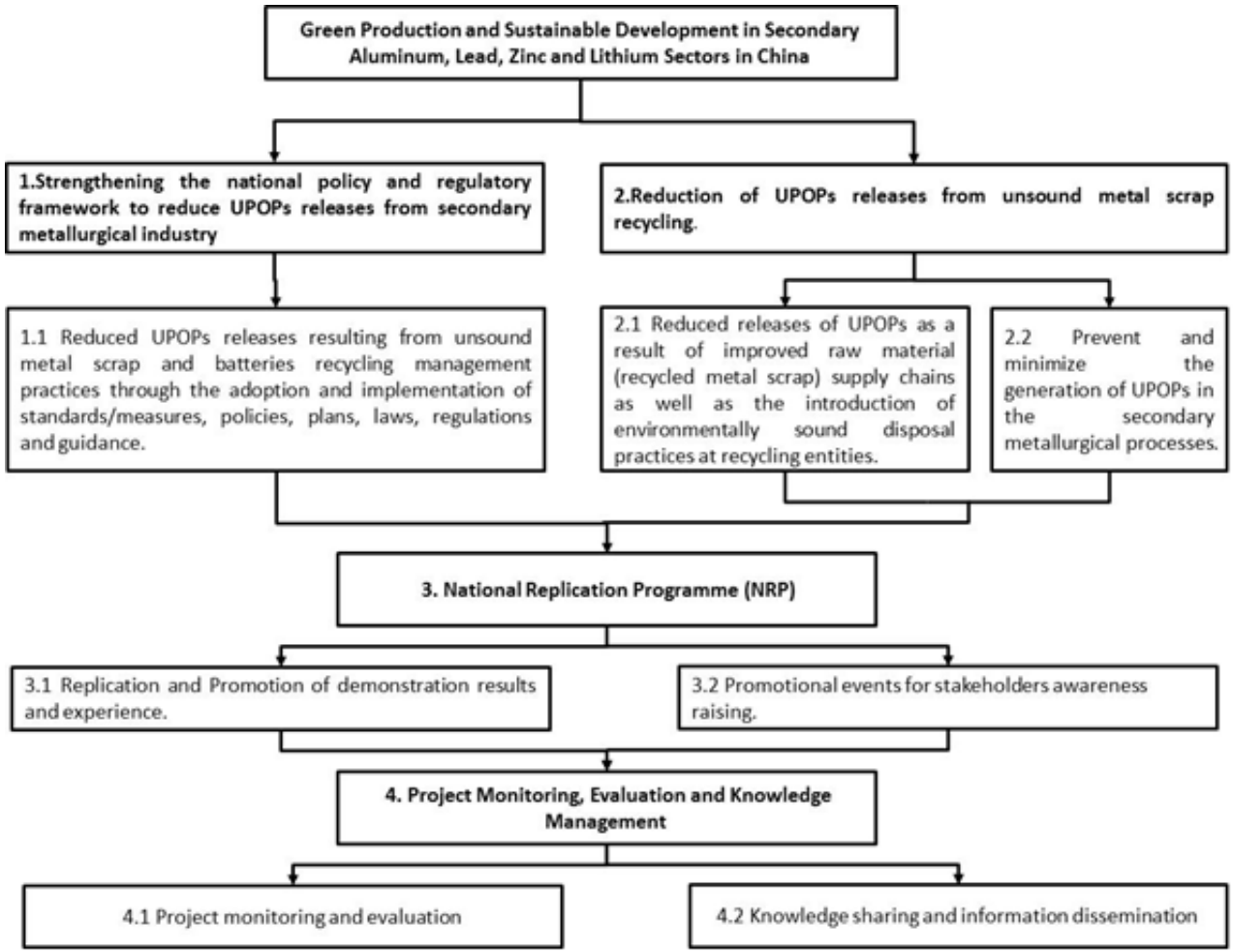
Outcome 4.1 Project monitoring and evaluation

Output 4.1.1 M&E activities undertaken with annual review, mid-term review, social and economic assessment, and terminal evaluation conducted and project performance evaluated.

Outcome 4.2 Knowledge sharing and information dissemination

Output 4.2.1 Knowledge products on best practices, experiences and lessons learned documented and shared nationally and internationally, including recycling and disposal knowledge on waste lead/lithium batteries and metal scrap.

FIG.1 - PROJECT ROAD-MAP



D) Alignment with GEF focal area and/or Impact Program strategies

46. The project is fully aligned with the GEF-7 Chemical and Waste Focal Area Strategy, Program 1 “Industrial Chemical Programs”, seeking to address chemicals (UP-POPs) and POPs containing wastes that are used or emitted from or in processes from the management of waste containing these chemicals. In this regards, the project envisages

a) Strengthen environmentally sound practices on secondary metals waste management/disposal;

b) Prevent that waste recycling practices that can emit UP-POPs and BFRs from leaking and/or entering material recycling supply chains;

c) Introduce and use of BAT/BEP and life cycle recycling to minimize and ultimately eliminate releases of UP-POPs and BFRs from critical source categories included in the Stockholm Conventions

d) The project will also strive to strengthening of national legislation and regulatory capacity with regard to UP-POPs and BFRs;

e) The project will also support sustainable recycling of non-ferrous metals and batteries, sound material-cycle society, and promote the adoption of improved environmentally sound disposal patterns.

47. Upon its successful implementation, the project would have established and promoted critical public-private partnership enabling the green production and sustainable development in Secondary aluminum, lead, zinc and lithium sectors in China.

48. As described in the above, there are many obstacles and challenges faced by the Chinese secondary non-ferrous metal industry. The GEF contribution will be instrumental to introduce international experience through BAT/BEP demonstration, recycling chain management, improved legal and regulatory measures, strengthened capacity for effective management, in order to improve production process, to address environmental and human health issues. GEF resource will also be directed to establish a national replication programme to ensure national efforts in the reduction of UP-POPs and BFRs releases.

49. Without GEF support, it is expected that China will continue its efforts to restructure its secondary non-ferrous metal industry to improve the sector’s economic performance, but the deployment of institutional and regulatory actions to strengthen and enforce environmental performance may not occur. At this particular point in time, when a significant growth of the sector is expected to occur, it is more than ever important to ensure that the sector starts operating in accordance with environmental laws and standards.

50. In a business-as-usual (BAU) scenario, small plants will be closed and large plants promoted (which lead to a reduction in energy consumption). However, large mills will face difficulties in limiting UP-POPs releases in the sector if BAT/BEP options are yet to be tested, both technologically and financially, in China’s secondary non-ferrous metal industry context. Without GEF contribution, it is unlikely that BAT/BEP technologies will be introduced prior or at the same speed as this market scanerio changes and evolves.

51. Furthermore, it is expected that very limited efforts will be undertaken to monitor UP-POPs and BFRs releases from the sector, which would lead to inadequate enforcement of newly developed UP-POPs and BFRs policies and standards for secondary non-ferrous metal production. Simply stated, it is foreseeable that UP-POPs and BFRs issues would be simply ignored under a BAU scenario.

52. With support from the GEF, the project will support the identification, demonstration, and promotion of BAT/BEP for secondary non-ferrous metal production enterprises and life cycle recycling for lead acid battery and lithium ion battery, and will promote strong inter-agency and industry coordination at the national and sub-national levels for enhanced sustainable development within the sector. With this strong coordination, institutional capacity and the legal framework will be strengthened, and BAT/BEP will be demonstrated and replicated nationwide. Without GEF support, this coordination would not occur, and

stand-alone work to be done by national level and local EEBs would remain, China would not be able to widely and successfully promote and introduce BAT/BEP measures in thermal processes in the secondary non-ferrous production due to the limited local capacities, technical and financial resources.

53. By supporting monitoring capacity development and routine UP-POPs monitoring, the proposed project will assist China to properly measure UP-POPs releases from its secondary non-ferrous metal industry and thus, effectively enforce its industrial and environmental policies and standards. Based on such activities, the project will help China to effectively restructure its secondary non-ferrous metal industry, improve the sector's economic and environmental performance, and minimize UP-POPs releases from the sector.

54. In addition, through the implementation of the project, the use of BFRs in lead-acid batteries and lithium-ion batteries will be identified and disposed of in an environmentally sound manner. The project will also promote the use of brominated flame retardants in lead-acid batteries and lithium-ion batteries through the formulation and improvement of the system.

55. COVID-19 may have a certain impact on the progress of the project, but on the other hand, the project will also take advantage of the opportunity of COVID-19 prevention, strengthen the system construction of demonstration enterprises, and further regulate the behavior of workers. In order to minimize the impact of COVID-19 as much as possible, the internal control system of demonstration enterprises will be improved, and applied in the other secondary non-ferrous metal industry enterprises through NRP.

F) Global Environmental Benefits (GEFTF)

56. The direct global environmental benefits will result from a significant reduction of UP-POPs and BFRs releases. At 2017 baseline level, the estimated total UP-POPs releases from the secondary aluminum, lead, zinc production and lithium production sectors were estimated at 2,365.13 g TEQ/a (Including 2,094.2 g TEQ/a in SAl, 118.8g TEQ/a in SPb, 152 g TEQ/a in SZn and 0.13g TEQ/a in SLi). At present, there is no survey data on the use of BFRs in lead-acid batteries and lithium-ion battery plastics, which will be carried out in the PPG phase of the project.

57. It is expected that the plant size to be identified during the PPG Phase, with output over 50,000 t and 10,000 t, would be an appropriate demonstration plant in secondary Al and Zn, respectively. It is anticipated that demonstration activities undertaken at the two pilot plants will allow for a reduction of UP-POPs releases as 16.125 g TEQ/a totally. In the NRP program, the project will promote BAT/BEP in dioxin emission reduction for 10 companies in each industry (SAl and SZn), with 161.25 g TEQ/a UP-POPs reduction. The total emission reduction of pilot and promote plants are estimated to be 177.375 g/a. According to the 2-year operation period, the total emission reduction of the project is 354.75 g TEQ.

58. In addition to PCDD/Fs, other UP-POPs, such as PCBs, HxCBz, PeCBz and PCNs, are also released from secondary metal production processes. The concentrations of them are generally higher than those of PCDD/Fs, up to several orders of magnitude. Secondary metal production is also important sources of heavy metal pollution, which are able to infiltrate deep into the respiratory tract, reaching the lungs. Direct drying or combustion of these raw materials containing chlorine element such as polyvinyl chloride and heavy metal will produce a variety of pollutants (PCDD/Fs, COx, NOx, dust and heavy metal compounds, as well as organic carbon compounds).

59. Since most of the mercury has been released during the primary metal smelting process, there is basically no mercury emission during the refining and smelting process, and “Emission Standards of Pollutants for Secondary Copper, Aluminum, Lead and Zinc Industry (GB 31574-2015)” do not specify the atmospheric emission limits of mercury. Large amounts of heavy metal-contained dust, fumes, and hazardous waste are discharged, seriously affecting public health. Long-term exposure to heavy metal of an adult can cause nephropathy and decreased performance of nervous systems and extremely affects brain development of a child.

60. This project is expected to generate multiple benefits for the global environment as it will not only lead to a reduction in UP-POPs and BFRs releases from the sector, but will also reduce the risks to human health, ecosystems and economies by sustainable supply chain management, innovations in green and sustainable chemistry, and adopting common approaches to chemicals management in secondary metallurgical sectors. The adaptation global environmental benefits from this project will result from the Sustainable Development Goals (SDGs) 3.9 and 12.4, which is in “SDG 3: Ensure healthy lives and promote well-being for all at all ages” and “SDG 12: Ensure sustainable consumption and production patterns”, respectively.

Climate Risk Screening

61. Over the past three decades, China has experienced rapid economic and social development resulting in a significant reduction in poverty and the attainment of many Millennium Development Goals [World Bank, 2015]. China, with a population of 1.3 billion, and one of the largest economies in the world, plays a critical role in global efforts to reduce greenhouse gas emissions and address the impacts of climate change [12].

[12] https://www.who.int/globalchange/resources/PHE-country-profile-China.pdf?ua=1

62. China’s climate is characterized by the distinct continental monsoon climate and the complex climate types, which provides complex and multiple natural background and different environments for various human activities. In the meantime, it also frequently gives rise to natural disasters, threatening social and economic activities. East China is one of the regions in the world with typical monsoon climate. The warm and humid airflow, which the summer monsoon brings from the sea, carries abundant rainfalls and provides a desirable natural environment. However, a concentrated rainfall also tends to cause disasters such as floods, storms and storm tides. Located deep in the hinterland, Northwest China lacks surface water owing to its inactive water circulation, and has a typical continental dry climate, which results in a fairly fragile natural and ecological environment. Because of its high elevation, the Qinghai-Tibet Plateau has a special plateau climate with annual average temperature below 0 degrees Celsius in most part. The seasonal change of temperature in China is quite prominent. In most regions, there are 4 distinct seasons, with cold winter and hot summer. According to the temperature indicator, the country is divided into 5 zones from south to north, i.e. tropical, subtropical, warm temperate, temperate and frigid zones. The seasonal changes of temperature in most regions of China are fiercer than that of other regions in the world with the same latitude (China’s Policies and Actions for Addressing Climate Change [13].

[13] The Progress Report 2009, November, 2009; China's Initial National Communication, 10 December 2004.

63. As per WHO (2015) [14] , Under a high emissions scenario, mean annual temperature is projected to rise by about 6.1°C on average from 1990 to 2100. If emissions decrease rapidly, the temperature rise is limited to about 1.7°C. Under a high emissions scenario, and without large investments in adaptation, an annual average of 23 million people are projected to be affected by flooding due to sea level rise between 2070 and 2100. If emissions decrease rapidly and there is a major scale up in protection (i.e. continued construction/raising of dikes) the annual affected population could be limited to about 2,400 people. Adaptation alone will not offer sufficient protection, as sea level rise is a long-term process, with high emissions scenarios bringing increasing impacts well beyond the end of the century.

[14] China´s Climate And Health Country Profile – 2015

64. In accordance to its Social and Environmental Standards (SES), a pre-Social and Envirnomental Screening Procedure (pre-SESP) was carried out and the following climate change related risks was identified as Moderate: “the proposed Project may result in significant [15] greenhouse gas emissions or may exacerbate climate change”.

[15] In regards to CO2, ‘significant emissions’ corresponds generally to more than 25,000 tons per year (from both direct and indirect sources). [The Guidance Note on Climate Change Mitigation and Adaptation provides additional information on GHG emissions.]

65. It is acknowledge that The metals recycling industry consumes substantial quantity of energy in its process, potentially resulting in high level of greenhouse gases emitted. In this regards, as the project aims to support the industries to use BAT/BEP that can reduce the releases of hazardous chemicals, it is expected that they can also bring co-benefits of improved energy efficiency of the recycling/smelting processes.

66. In this regards, through BAT/BEP demonstration and NRP, the project will promote relevant enterprises to save energy and reduce consumption, thus reducing CO2 emissions. It is estimated that through the implementation of the project, the comprehensive energy consumption of secondary aluminum demonstration enterprises and NRP enterprises will be reduced from 130 kgce/t to 110 kgce/t, and the comprehensive energy consumption of secondary zinc demonstration enterprises and NRP enterprises will be reduced from 1,200 kgce/t to 1,122 kgce/t, thus reducing CO2 emission by 52,278.6 t/a.

67. Although the manufacturing industry may not tbe the one facing the higher risk associated to climate change, factories and infrastructures located near landslide-prone and flooding areas or near coastal areas are facing a significant major risk. In this regards, during the PPG phase an in depth climate change risk assessment will be carried our as part of the environmental and social impact assessment (ESIA). to assess current status of selected industries, assess the resilience of these plants and the required adaptation measures upon potential effect due to climate change. These factors will provide the selection criteria to the participating industries since the project, for example, would not invest in area prone to flooding.

G) Innovation, sustainability and potential for scaling up

68. A package of solutions addressing the green production, chemicals control and green recycling of those typical secondary sectors is very imperative in China’s context to safeguard the environment, human health and the sustainable development of the society. This project not only focuses on the industry's green production model, but also focuses on raw material recovery and economic incentives. This will significantly reduce the generation and release of dioxins, heavy metals and other pollutants from the source.

69. In addition, China is currently the world’s largest scrap metal procurement market. As the “One Belt and One Road” strategy is favorable and domestic labor costs continue to rise, some companies have gradually shifted some of their primary dismantling operations and equipment to surrounding “Belt and Road” countries. Raw material sorting, primary processing, and then returned to the domestic market in the form of products. Therefore, the smooth development of this project also has a good demonstration and promotion significance for neighboring countries.

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

70. The Pre-selection/identification of the pilot plants will be carried out during the PPG stage, utilizing established evaluation and selection criteria and taking into account findings of the characterization study on the secondary non-ferrous metal production sector, allowing the information on the project site interventions to the provided.

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Indigenous Peoples and Local Communities Yes

Civil Society Organizations Yes

Private Sector Entities Yes

If none of the above,please explain why:

In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement.

71. The roles of each key stakeholder are identified and defined as follows, however these roles will be worked out further during the PPG phase of the project:

1) Ministry of Finance (MOF): a) Overall responsibility for national GEF program; b) Review, endorse and supervise preparation and implementation of this proposal as the Country GEF Focal Point.

2) Ministry of Ecology and Environment (MEE): a) Ongoing management of implementation of the NIP and management of the project; b)Issue national policy and standards to regulate environmental performance of China's secondary lead production sector; c) Supervise enforcement of environmental policies.

3) Ministry of Industry and Information Technology (MIIT): Provide technical and policy support to MOF, MOC and MEE on development and implementation of the secondary metal (lead, aluminum and zinc) and lithium ion batteries production industry management system including identification of technology requirements.

4) Local Government and Local Environmental Protection Bureaus: a) Local planning and development approvals; b) Support public information dissemination and local social impact mitigation; c) Monitor environmental performance; d) Enforce environmental policies and requirements applicable to secondary lead management.

5) Industry Association (Including Non-Ferrous Metal Association of China, Chinese Non-ferrous Metal Association Recycling Metal Branch, China Industry Technology Innovation Strategie Alliance, China Power battery forcible recovery of industrial technology innovation strategic alliance, Electric Vehicle Power Battery Recycling Strategic Alliance): a) Coordinate and support compilance actions within the sector; b) Facilitate information exchanges among members; c) Facilitate formulation of sector development strategies; d) Industrial strategy development of secondary metals; e) Enterprises management support.

6) Private Sectors: a) Participate in project activities; b) Carry out investment on UP-POPs and heavy metal reduction; c) Comply with national and local environmental policies and standards.

7) General Public: a) Improve consumers' awareness on UP-POPs and heavy metalissues related to the secondary lead sector; b) Exercise consumers' rights to influence environmental performance of the sector.

72. Effective Stakeholder engagement is the basis for achieving sustainable project implementation. In this regard, a wide range of relevant stakeholders will be consulted during the PPG phase to ensure active project participation and commitment. A series of meetings will be organized to discuss the project objectives, potential outcomes and outputs, to ensure active participation and support. Specific discussions with key stakeholders such as NDRC, MOF, MIIT and related associations, will be held to shape project design and activities, and to ensure goal alignment in support of the project.

73. Finally, FECO has established a good cooperation relationship with these stakeholders through the implementation of the secondary copper project, and all stakeholders have made their contributions to the implementation of the secondary copper project. It is believed that these will lay a good foundation for the implementation of this project.

3. Gender Equality and Women's Empowerment

Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).

74. From the perspective of project design, the project will undertake gender behaviors, attitudes and impact studies, conduct occupational health surveys and assessments with typical enterprises. The results will be incorporated as key aspects in the project design to strengthen corporate operational capabilities and enhance environmental awareness of personnel.

75. Target beneficiaries: Female workers in secondary non-ferrous metal industry. In the secondary aluminum, lead, zinc and lithium production sector, female workers constitutes a certain proportion of the work force. In a particular secondary lead production enterprise with about 300 employees, female workers may account for 20% and can be considered as occupying an important portion of the work force.

76. Key gender issues in the sectors:

a) Close the gaps of roles and needs between women and men in the secondary metal sectors.

b) In the areas of corporate management and particular production and maintenance processes, female workers tend to work in areas of less physical demand as compared to male workers.

c) Strengthen women's occupational protection management system to minimize health impact.

d) By reducing UP-POPs and BFRs releases from the secondary non-ferrous metal processing, health risks for female workers and their children will be reduced. During implementation, the project will address priority concerns of vulnerable and high risk groups, including female workers. The project will include activities to establish occupational protection management system of female workers. Periodic occupational medical examinations will be conducted to minimize adverse impact on female workers health.

e) Establish effective training system for female workers.

77. During project implementation, more than 90% of the female workers at the demonstration enterprises will be targeted for training, and actions will be undertaken to strengthen occupational and health protection and emission exposure management. Measures will be instituted to reduce exposure to dioxins and heavy metal emissions during secondary metal production process. In addition, two overarching interventions – awareness raising and multi-stakeholder's participation – will contribute to ensuring the successful implementation of gender mainstreaming.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes

closing gender gaps in access to and control over natural resources; Yes

improving women's participation and decision-making; and/or Yes

generating socio-economic benefits or services for women.

Will the project’s results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Will there be private sector engagement in the project?

Yes

Please briefly explain the rationale behind your answer.

78. Private Sector will participate in project activities, carry out investment on UP-POPs and BFRs reduction, and comply with national and local environmental policies and standards. Private sector actively participates in the project activities because it participates in the revision of industry standards and demonstration projects. On the one hand, it can obtain some economic incentives. On the other hand, it is conducive to the improvement of corporate pollution prevention technology and environmental management capabilities, and enhances the competitiveness of enterprises.

5. Risks to Achieving Project Objectives

Indicate risks, including climate change, potential social and environmental risks that might prevent the Project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the Project design (table format acceptable)

Outcomes Associated	Unfavourable event	Category	Risk before mitigation			Proposed Mitigation	Risk after mitigation		
			Probability To happen	Impact	Risk		Probability To happen	Impact	Risk
1.1	Policy not developed and implemented within project timeframe	Management	High	High	Medium	Early start on policy work (even at PPG to understand the scope of the policy). Identification of proper regulatory measures which may be approved quickly	Medium	Medium	Low
2.1 3.1	Few or no industries willing to adhere to the supply chain improved mechanism due to high financial costs in adhering to environmental regulations	Financial	High	High	Medium	Project will promoted deep coordination mechanisms between stakeholders and promote Industries willing to fully adhere, in line also with regulation enforcement .	Low	Medium	Low
						A national level characterization study of the sector will be conducted, technical, economic and environmental analysis will be carried out to carefully review technical and financial feasibility of various BAT/BEP options and ensure its applicability to the Chinese secondary aluminum and zinc production sector, BAT/B			

2.2	Failure to successfully test identified BAT/BEP options for the sector	Techinical	Medium	High	High	EP guidelines will be formulated. In addition, a set of selection criteria will be developed and agreed upon among all stakeholders to ensure that participating enterprises have sufficient financial resources and technical capacity to carry out investment activities. Extensive stakeholders consultation, coordination and participation will be vigorously pursued starting from project formulation, design through successful implementation of project activities	Low	Medium	Medium
2.2 3.1	Failure to BAT/BEP demonstration and implementation of NRP for the the climate change (e.g. changes in temperatures, rainfalls, increased flooding, sea level rise, saltwater acquirer contamination, increased soil erosion, etc)	Social	Medium	High	High	The project will carry out the selection of BAT/BEP demonstration enterprises in the PPG stage. In the selection process of demonstration enterprise, the impact of possible climate change, such as changes in temperatures, rainfalls, increased flooding, sea level rise, salt water acquirer contamination, increased soil erosion, etc. will be fully considered. In addition, long-term emergency plans will be required for BAT/BEP demonstration enterperises and enterprises participating in NRP to t	Medium	Medium	Low

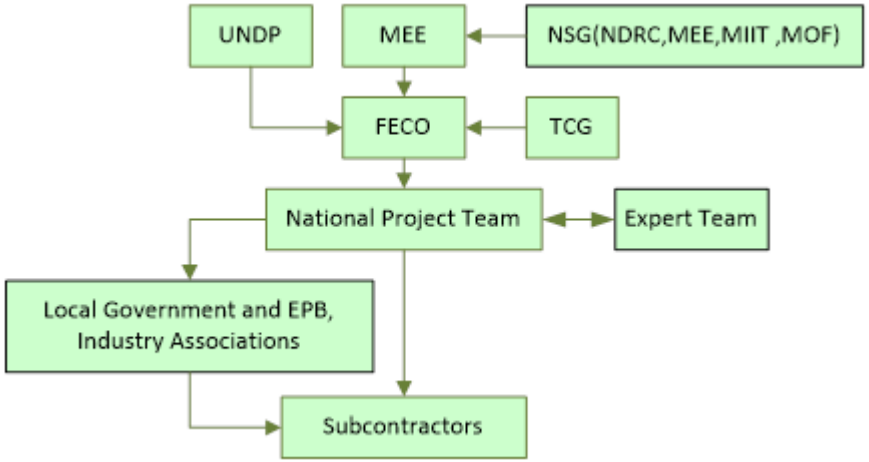
						participating in NRP to the impact of climate change, so as to minimize the impact of it in the process of project implementation and in the normal production process of enterprises after the completion of the project..			
3.1	Failure to promote sector-wide adoption of tested BAT/BEP options and green industry chain management		Low	Medium	Medium	To mitigate the risk, the project will support capacity development through close stakeholder consultation to build effective support for enforcement of national industrial and environmental policies. In addition, the project will also introduce, as necessary, new and enforceable policies, complemented by financial incentives, under the to-be-developed national replication plan in order to motivate secondary aluminum, lead, zinc and lithium production enterprises to comply with the national policies.	Low	Medium	Medium
All	Gender Mainstreaming activities / goal not conducted or achieved	Social	Medium	Medium	Medium	at PPG a detailed GM logical framework, with budget and indicators, will be integrated in the project. GM targets will be considered as core project targets	Low	Low	Low
						The project will always p			

All	Failure to promote the project affected by COVID-19	Social	Medium	High	High	The project will always pay attention to the impact of the COVID-19 on the implementation of the project. When necessary, the project will carry out the socio-economic impact assessment of the impact of COVID-19 on the progress of the project, and promote the implementation of the project according to the plan through various means, such as online meeting, telephone, etc.	Low	Low	Low

6. Coordination

Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.

FIG.2 - PROJECT INSTITUTIONAL STRUCTURE AND STOCKHOLDER ARRANGEMENTS



79. The implementation of the Stockholm Convention in China has been supported by various multilateral and bilateral organizations. With this support, China has completed its NIP, and based on the strategic guidance it contains, prepared fourteen POPs projects funded by the GEF, nine of which are under implementation. To facilitate consultation, coordination and collaboration among all stakeholders, China has set up a Technical Coordination Group (TCG) for its NIP preparation and implementation. Through the TCG, China has maintained good communication with its multilateral and bilateral development partners.

80. Experiences and lessons learned from formulation/design and implementation of other POPs projects in China will be applied to benefit the design and implementation of this proposed project. GEF "UP-POPs Reduction through BAT/BEP and PPP-based Industry Chain Management in Secondary Copper Production Sector in China" was officially implemented in July 2016. The secondary copper project is fruitful in developing regulations and standards, and two of standards and technical specifications have been issued by relevant ministries as national standards or guidance. Summarizing the implementation of the secondary copper project over the past two years, there are some useful experiences for the newly applied GEF project:

a) The newly project should closely follow changes in relevant domestic and international policy standards, and focus on the latest needs of China's ecological civilization construction and pollution prevention work. Design related activities or formulate relevant policy standards to serve China's compliance requirements and pollution prevention and control work;

b) The BAT/BEP demonstration plan for the secondary copper project has undergone extensive demonstrations by multiple parties, and finally selects the technical combination to control the emission of UP-POPs in flue gas. The secondary project will conduct an assessment of the effects of flue gas

treatment in 2020. Considering the similarity of smelting technologies in different secondary non-ferrous metal industries, relevant mature BAT/BEP technologies and management models can be used in the implementation of newly applied GEF project;

c) According to the secondary copper project, the raw materials have a great impact on the emission of UP-POPs in secondary metal smelter sectors. Therefore, the new applied GEF project will closely focus on China's current batteries and scrap cycling and related economic operation mechanisms, with a view to promoting UP-POPs emission reduction from the perspective of life cycle and process management;

d) The secondary copper project has conducted extensive training for government officials, enterprise managers and workers, etc., which found that it has little knowledge of UP-POPs and other knowledge, lacking awareness of pollution prevention of UP-POPs and heavy metals. UP-POPs and other pollution prevention awareness in other secondary metal smelters is even worse. The new project will strengthen the training of government officials, enterprises and the public related to the recycling and utilization of recycling in aluminum scrap, zinc scrap, lead and power batteries;

e) During the implementation of the secondary copper project, good relationships and coordination mechanisms were established with various stakeholders, which provided a good foundation for the implementation of the newly applied GEF project.

7. Consistency with National Priorities

Is the Project consistent with the National Strategies and plans or reports and assesments under relevant conventions

Yes

If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc

81. The Project is consistent with the Action Plan of China's National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants (NIP) placed a high priority on reduction of UP-POPs and BFRs release.

82. A national level strategy "Guidance on Control and Prevention for PCDD/F Release" also offers the framework on environmentally sound management of PCDD/Fs emission. The NIP lists the Regeneration of metallurgical industry as one of six priority sectors to be targeted for control of UP-POPs releases.

83. During the period up to 2015, the planned actions focus on sectoral or source category initiatives involving first-stage interventions to initiate control of PCDD/Fs sources by means of technical evaluation, environmental impact assessment, revised release standards, monitoring capacity building, and BAT/BEP demonstration. During GEF-5, projects were approved in two such priority source categories: municipal waste and pulp and paper. The third and fourth industry-related projects for electrical and electronic equipment and secondary copper industry, with their focus on UP-POPs releases were approved for GEF-6 funding.

84. This project not only focuses on the emission reduction of UP-POPs release in different industrial sectors, secondary aluminum, lead, zinc and lithium production, but also on the emission reduction of BFRs, which continues the focus with GEF support, is consistent with the NIP Action Plan. In line with guidance contained in the NIP and the 14th Five Year Plan (FYP) for POPs elimination, the project will be designed and implemented as an integral part of the country's efforts to improve the environmental performance of the sector. Specifically, the project will support implementation of the NIP by promoting BAT/BEP adoption and thus, minimize UP-POPs and BFRs releases from the sector. In addition, by reducing UP-POPs, BFRs and COD (chemical oxygen demand) discharge from the sector, the project will support directly the implementation of the 14th FYP. The project will also contribute to achieving the GEF-7 Corporate Results of increase in phase-out, disposal and reduction of release of POPs.

8. Knowledge Management

Outline the Knowledge management approach for the Project, including, if any, plans for the Project to learn from other relevant Projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

85. The knowledge management system of green production and sustainable development is one of key contents of this project, it is the exchange center of information storage, management and sharing for green production and sustainable development management in green production and sustainable development in secondary aluminum, lead, zinc and lithium sectors in China. By sharing platform for green production and sustainable development was established to realize information exchange and sharing between departments of environment protection in China.

86. With remote sensing monitoring as control measures, enterprise area as administration unit, pollutants as administration core, model as supporting tools as well as pollution permit as control means, the integrated service management system for secondary aluminum, lead, zinc and lithium Production was set up. The system provides important technical means and successful experiences in strengthening integrated water resources and water environment green production and sustainable development management, promoting cooperation among environmental protection departments at all levels, and improving environment status in secondary aluminum, lead, zinc and lithium sectors.

9. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF	CEO Endorsement/Approval	MTR	TE
High or Substantial			

Measures to address identified risks and impacts

Provide preliminary information on the types and levels of risk classifications/ratings of any identified environmental and social risks and potential impacts associated with the project (considering the GEF ESS Minimum Standards) and describe measures to address these risks during the project design.

Kindly refer to the project's Social and Environmental Screening Procedure (SESP) template.

Supporting Documents

Upload available ESS supporting documents.

Title	Submitted
6492 - pre-SESP -China Secondary metal project - FINAL_22Sept2020	

Part III: Approval/Endorsement By GEF Operational Focal Point(S) And Gef Agency(ies)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter with this template).

Name	Position	Ministry	Date
Peng Xiang	GEF Operational Focal Point	DEPARTMENT OF INTERNATIONAL ECONOMIC AND FINANCIAL COOPERATION, MINISTRY OF FINANCE	10/10/2019

ANNEX A: Project Map and Geographic Coordinates

Please provide geo-referenced information and map where the project intervention takes place

The Pre-selection/identification of the pilot plants will be carried out during the PPG stage, utilizing established evaluation and selection criteria and taking into account findings of the characterization study on the secondary non-ferrous metal production sector, allowing the information on the project site interventions to be provided.