Yunnan Kunming Changshui Green Airport Development Project

Non-Technical Summary

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Abbreviations

AIIB	Asian Infrastructure Investment Bank
AP	Affected Person
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESAP	Environmental and Social Action Plan
ESA	Environmental and Social Audit
ESS	Environmental and Social Standards
RPF	Resettlement Plan Framework
RAP	Resettlement Action Plan
DDR	Due Diligence Report
YAG	Yunnan Airport Group Co., Ltd.
YLdn	Day-night Average Sound Level (Weighted)
WECPNL	Weighted Equivalent Continuous Perceived Noise Level
GB	Guobiao (China National Standard)
EHS	Environment, Health and Safety
KAEZ	Kunming Airport Economic Zone
NMHC	Non-Methane Hydrocarbons
TSP	Total Suspended Particulates
PM_{10}/$PM_{2.5}$	Particulate Matter ≤10/2.5μm
NO_2, SO_2, CO	Nitrogen Dioxide, Sulfur Dioxide, Carbon Monoxide
HD	House Demolition
LAR	Land Acquisition and Resettlement
GRM	Grievance Redress Mechanism
FGD	Focus Group Discussion

Weights and Measures

Unit	**Meaning**
dB(A)	A-weighted decibel, a unit for sound level
μm	Micrometer (one millionth of a meter)
m^3/day	Cubic meters per day
mg/m^3	Milligrams per cubic meter, for concentration
mu	Chinese mu (≈666.7 square meters)
%	Percent
km	Kilometer
km^2	Square kilometer
ha	Hectare (10,000 square meters ≈ 15 mu)

Table of Content

I. Project Overview

The People's Government of Yunnan Province has applied for a loan from the Asian Infrastructure Investment Bank (AIIB) for the implementation of the Yunnan Kunming Changshui Green Airport Development Project (hereinafter referred to as "the Project"). The Project will be implemented from 2023 to 2026.

The Project consists of four components:

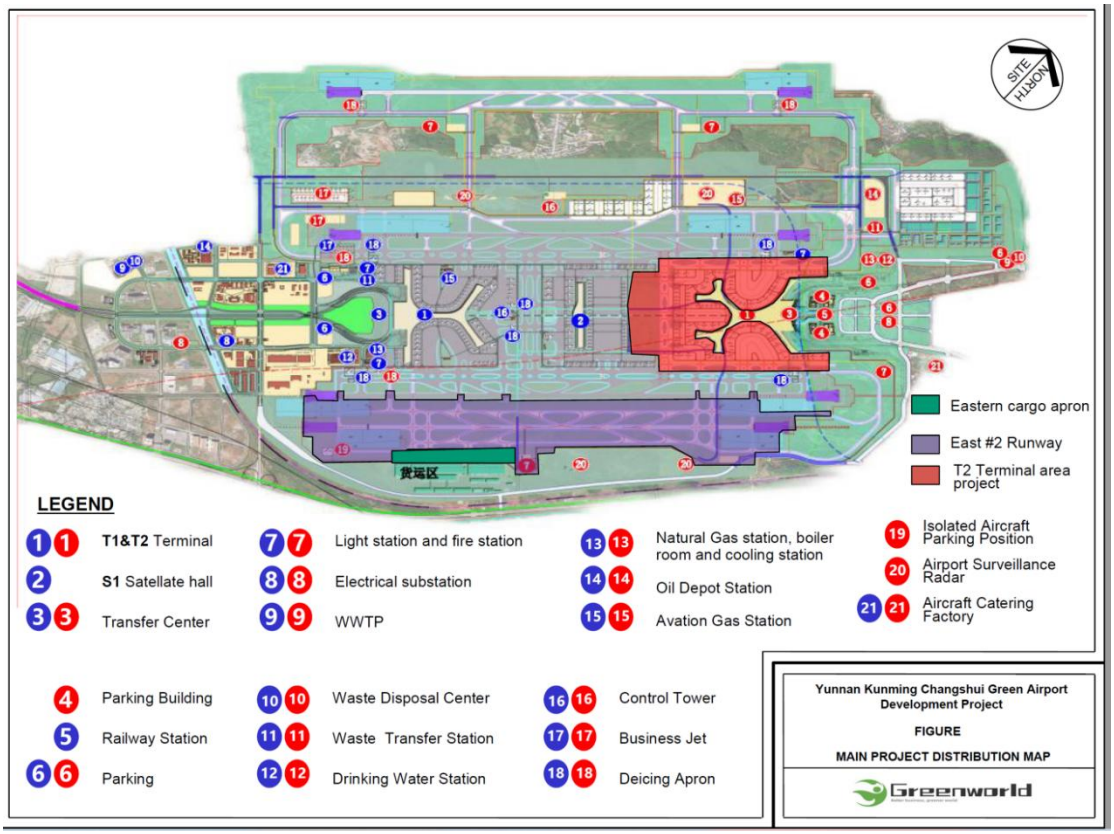
• Component 1: The east airfield works include the construction of runway E2 and its corresponding perpendicular taxiways and parallel taxiways; a cargo apron in the east area which accommodates 16 aircraft stands; air traffic control (ATC) and navigation systems, instrument landing system (ILS), navigation lighting and power supply systems, drainage systems and fire stations; a smart runway, i.e., installation of sensing devices and monitoring systems on the pavement and base of runway E2.

• Component 2: Terminal 2 area works, including the construction of aprons (totaling 78) around Terminal 2, including base course treatment, civil works and pavement; airfield road and bridge works, including a northeast underpass, a northwest underpass, a terminal west underpass, and a terminal east underpass; supporting infrastructure such as lighting, drainage, power supply and firefighting systems on the airside of Terminal 2.

• Component 3: Relevant equipment of green airport. New energy vehicles; installation of charging piles, aircraft ground air conditioner works and 400 Hz ground power supply units on the apron, as well as automatic noise monitoring equipment and its installation.

• Component 4: Technical support and capacity building: 1) project implementation support, including environmental and noise monitoring and assessment; social impact and resettlement monitoring and evaluation; and other necessary support to improve the quality and efficiency of project implementation. 2) Institutional capacity building, including: (I) formulating the decarbonization roadmap and action plan for YAG; (ii) enhancing YAG's ESG information disclosure and capacity in green and sustainable development; (iii) enhancing the building of regional connectivity capacity by means such as holding aviation summits with countries in South and Southeast Asia and developing a roadmap for building the best international transit hub airport in the region.

The scope of this assessment covers the project and also the associated facilities. As per the definition in AIIB’s Environmental and Social Framework, an “associated facility” means an activity not included in the project description in the project management agreement, but is inherently connected to the project as identified by AIIB in consultation the client. The key principles for identification are: (a) being directly and substantially related to the project; (b) being implemented or planned along with the project; and (c) being feasibly necessary for the project, and would not be constructed or expanded without the project.



Note: Blue figures indicate the existing facilities of Kunming Airport; red figures indicate the proposed facilities in the medium and long-term development plan of Kunming Airport.
Source: Design institute and Greenworld

Figure 1 Layout of Proposed Facilities of the Project

The project is based on the expansion of the existing Kunming Changshui International Airport. Given the relatively large scale of civil works and the potential noise impact of future operations, the Project is classified as environmental and social A under the AIIB's environmental and social policy requirements, requiring the preparation of an Environmental and Social Impact Assessment (ESIA) Report, including Environmental and Social Management Plan (ESMP). In November 2022, Yunnan Airport Group Co., Ltd. entrusted the Consortium of Guangzhou Greenworld Engineering Consulting Co., Ltd. and Hohai University (hereinafter referred to as the "ESIA unit") to undertake environmental and social assessment of the development of the Project. This report is the Environmental and Social Impact Assessment for the proposed Yunnan his project involves the construction of new facilities while building upon the existing infrastructure of Kunming Changshui Airport. A comprehensive audit of the environmental and social aspects of the airport's current facilities was conducted. A time-limited action plan, i.e., environmental and social action plan (ESAP) aimed at enhancing the airport's environmental and social performance was developed based on the findings of the auditing.

The environmental and social risk management tools used in this project include 1) Environmental and Social Impact Assessment and Environmental and Social Management Plan; 2) Environmental and Social Audit of Existing Facilities and Environmental and Social Action Plan; 3) Resettlement Plan Framework; and 4) Stakeholder Engagement Plan.

II. Environmental and Social Impact Assessment and Management Plan

A. Methodology

An ESIA report is prepared to assess the potential environmental and social impacts and risks of the Project, evaluate alternatives, and design appropriate mitigation, management and monitoring measures to eliminate, offset or reduce adverse environmental and social impacts, and enhance and expand positive benefits of the Project.

The ESIA is carried out according to the following steps:

(1) Review relevant technical documents of the Project, conduct preliminary project analysis, identify key environmental and social impacts, and clearly evaluate key environmental and social protection objectives. The technical documents mainly include:
- Feasibility Study Report for Yunnan Kunming Changshui International Airport Expansion Project (2022);
- Environmental Impact Report for Yunnan Kunming Changshui International Airport Expansion Project (2022);
-Preliminary design for the Yunnan Kunming Changshui International Airport Expansion Project (2023);
- Master Plan for Kunming Changshui International Airport (2019);
- Water and Soil Conservation Plan for Yunnan Kunming Changshui Green Airport Development Project (2022).

(2) From November 2022 to March 2023, the ESIA unit conducted a site survey to investigate the proposed construction sites involved in the Project and operation of existing Kunming Changshui International Airport, aiming to gain a more objective understanding of the selected site, site conditions, land, environmental and social sensitive points, influence factors, population composition and needs of residents, and the social and economic conditions of affected communities in the project area.

(3) In February 2023, field investigation was carried out at the construction sites within the implementation scope of the Project:
- Institutional interviews and data collection. 14 institutional interviews and discussions were held with Yunnan Airport Group Co., LTD., AIIB Project Office, Yunnan Central Yunnan New Area Management Committee, Emergency Management Bureau, Natural Resources and Planning Bureau, Ecological Environment Bureau, Statistics Bureau, Human Resources and Social Security Bureau, Rural Revitalization Bureau, People's Community Bureau, Women's Federation, Civil Affairs Bureau, Ecological Environmental Protection Bureau, Transportation Bureau and other institutions and departments involved in the project area. And collected the basic data and literature closely related to the project.
- Field survey. The towns, streets, communities/villages, the surrounding areas of the airport, the conditions of roads and infrastructure, as well as the construction site of the project station were investigated on the spot.
- Focus group. In different streets and communities of the project county, a total of 14 resident focus group discussions were held, with a total of 193 participants. 93 of them were women, accounting for 48.19%; There were 78 old people, accounting for 17.22%; There were 241 persons in charge of relevant departments, residents' committees and villagers' representatives, accounting for 53.2%.
- Interviews with key informants. 42 key informants from the project counties, township streets and villages/communities were interviewed.

- Questionnaire survey. In the process of field investigation, a total of 400 one-on-one face-to-face questionnaires were completed in the project area. After statistical inspection and screening, 400 of them were effective, and the efficiency of the questionnaires was 100%.

(3) Based on technical analysis, focus group discussion and field studies, the draft of the Environmental and Social Impact Assessment of Kunming Changshui Green Airport Development Project has been prepared in accordance with relevant domestic technical guidelines and assessment methods, such as Technical Guidelines for Environmental Impact Assessment - Civil Airport Construction Projects (HJ/T87-2002) and ICAO 1) Guidelines for Environmental Assessment of Proposed Changes in Air Traffic Management Operations (2014); 2) Noise Reduction Operation Procedures; 3) Aircraft Noise Management Balance Method Guide; 4) Airport Air Quality Manual (2011) and other international industry best practices to conduct environmental and social impact assessment. Technical methods such as mathematical model, analogical analysis and professional judgement are used to analyse the feasibility of the project's pollutant discharge to meet the standards and the degree of impact on the surrounding environment, and to propose environmental mitigation measures and proposals. This project focuses on predicting the impact of aircraft noise on the surrounding area of the airport, and analyzing the compatibility of the airport construction with relevant planning.

(4) The first draft of the ESIA Report and ESMP will be revised and improved according to the public and experts' opinions.

B. Major Environmental Impacts and Mitigation Measures

The main environmental impacts of the project and proposed mitigation measures are as follows. Detailed mitigation measures and monitoring and reporting requirements are elaborated in the standalone Environmental and Social Management Plan for the Project.

(1) Impact on acoustic environment

The assessment is carried out according to the airport noise monitoring data from January 4 to 20, 2022 in the *Post-completion EIA Report for the Kunming New Airport Project Adjusted According to Approved Feasibility Study Report*. A total of twenty aircraft noise monitoring points have been established both below and alongside the airport route with the purpose of continuously monitoring the maximum A-weighted sound level (LAmax) and duration (Td) of noise produced whenever an aircraft flies over the monitoring points, the LEPN of each aircraft and the total number of flights passing through the monitoring points in seven days, to calculate the LWECPN. The monitoring results indicate that the noise level at N1 (Ganhaizi Village) exceeds the standard limit for Class I areas as defined in the *Standard of Aircraft Noise for Environment Around Airport* (GB9660-88) by 1.8 dB; the noise levels at N12 (Kunming Guanghua School), N18 (Xingyuan School), and N20 (Yunnan Vocational College of Agriculture) exceed the standard limit for Class II areas as defined in the Standard by1.6 dB, 1.1 dB, and 3 dB, respectively. It is noteworthy that Xingyuan School has ceased operations.

According to the airport noise contour map and in combination with the aircraft flight paths and the distribution of surrounding acoustic environment protection targets, a total of 12 online aircraft noise monitoring points are set up.

Among the 164 sensitive points (including 52,842 households/150,194 persons)within the noise assessment scope in this phase, 140 sensitive points (Class II sensitive receivers) are environmental protection targets of the project, including 108 (about 29,495 households/92,592 persons) are general sensitive recievers and 32 are schools and hospitals (Class I sensitive receivers) exceed the corresponding standard limits. As the remaining 6 settlements and 18 schools and hospitals are included in the previous EIA planning and control scope and will be constructed following approval of the previous EIA report, these locations are not included in the implementation scope of noise prevention and control measures in this phase.

Taking YLdn as the reference assessment indicator: Among all 160 acoustic environment sensitive points (receivers) within the assessment scope in this phase, there are 120 points where the YLdn exceeds the YLdn limit of 57 dB(A) to varying degrees. Compared to WECPNL, there is a significant increase in the number of non-conforming points of general settlements (Class II sensitive receivers) due to changes in the executive standard. However, there is a relatively small change in the number of non-conforming points of schools and hospitals (Class I sensitive receivers).

Based on the assessment results by Yldn, the aircraft noise from Kunming Changshui International Airport significantly affects the surrounding environment. In terms of development, planning and control recommendations for the land around the airport and Yldn limit of 57 dB(A) should be taken as key reference indicators for the planning and development of residential, educational, and medical land and land for other purposes, to ensure that the airport's future development has no additional negative impacts to the neighboring communities.

According to the varying responsibility subjects for construction and non-conformance, 140 of the 164 sensitive points within the noise assessment scope in this phase are assessed as environment protection targets. Included are 108 villages and general settlements (Class II sensitive receivers) and 32 schools and hospitals (Class I sensitive receivers). As the remaining 6 settlements and 18 schools and hospitals are included in the previous EIA planning and control scope and will be constructed following approval of the previous EIA report, these locations are not included in the implementation scope of noise prevention and control measures in this phase.

Excluding the new sensitive buildings according to the approved previous EIA report, after the implementation of the expansion project in this phase, the aircraft noise WECPNLs of 26 villages and settlements (Class II sensitive receivers) and 27 schools and hospitals (Class I sensitive receivers) in this phase will exceed the corresponding standard limits.

Among the 26 villages and general settlements (Class II sensitive receivers), there are 3 locations where the WECPNL exceeds 85 dB. For these locations, relocation measures will be implemented as an environmental protection effort. And installation of soundproof windows will be adopted for the other 23 sensitive points for noise prevention and control. Among the 27 schools and hospitals (Class I sensitive receivers), one with a WECPNL exceeding 80 dB should be relocated, while for the remaining 26, installation of soundproofing windows may be adopted.

Based on the analysis of implementation results of noise protection measures, it can be guaranteed that the indoor noise levels at the main acoustic environment sensitive points around the airport meet the prescribed limits required by the World Bank's EHS guidelines, specifically, Ld = 55 dBA in the daytime (07:00-22:00), and Ln = 45 dBA in the nighttime.

After the implementation of sound insulation measures in this phase, the indoor noise levels of the majority of residential, office and cultural, and educational buildings within the assessment scope of the airport in this phase can meet the limit requirements of Lden ≤ 45 dB and Lnight ≤ 40 dBA in the *Environmental Noise Guidelines for the European Region* (2018) issued by WHO.

(2) Atmospheric environment

Current atmospheric environment. Upon consideration of the pollutant generation of the Project and the prevailing wind direction of the airport, additional monitoring of non-methane hydrocarbons and total suspended particles (TSP) in the project area was conducted at Getenggou on the northeast side of the airport. Results indicate that the levels of conventional atmospheric pollutants, including TSP, within the assessment area comply with the Class II standard limits specified in the *Ambient Air Quality Standard* (GB3095-2012), and the hourly monitored non-methane hydrocarbon levels are below 2.0 mg/m^3.

The construction area of this project is located within a region where ambient air quality meets the applicable standards. The predicted ratio of maximum ground concentration (daily average under assurance rate, added by the current concentration) to standard concentration of pollutants, including NO_2, SO_2, CO, total PM_{10}, and total $PM_{2.5}$, is 63.58%, 9.25%, 29.54%, 54.89%, and 64.70%, respectively, which comply with the environmental quality standards. The ratio of maximum ground concentration, added by the annual average maximum regional environmental mass concentration, to standard concentration of NO_2, SO_2, CO, total PM_{10}, and total $PM_{2.5}$ is 77.97%, 16.24%, 66.06%, and 77.88%, respectively, which also comply with the environmental quality standards. As for NMHCs, for which only short-term concentration limits are specified, the ratio of maximum ground concentration (short-term) to standard concentration is 94.65%, which complies with the environmental quality standard.

The impact of dust during construction can be effectively mitigated through the implementation of measures such as watering and covering. The waste gas generated during operation mainly includes aircraft exhaust, automobile exhaust, and waste gas emissions from the sewage treatment station, and all of which are fugitive emissions. Among them, the pollutants in aircraft exhaust and automobile exhaust mainly include NO_2, non-methane hydrocarbons, CO, etc. These pollutants are emitted intermittently and from mobile sources, so they are relatively well-dispersed, resulting in minimal negative impact on the surrounding air. According to the prediction, the levels of pollutants comply with the standards.

Control of aircraft exhaust: In terms of design of airport flight density, it is advisable that the airport avoids congested takeoff and landing schedules when designing flight density. This will help prevent high concentrations of atmospheric pollutants, such as CO and NO_2, in the airport area over a certain period of time. It is encouraged that airlines adopt aircraft models with lower pollution emissions.

(3) Surface water environment

Current surface water environment. Except for petroleum pollutants, all other indicators of pollutants in surface water bodies surrounding the airport, including Baoxiang River, Huazhuang River, and Yangguanzhuang Reservoir, comply with the Class III standards of *Environmental Quality Standard for Surface Water* (GB3838-2002). The non-conformance of petroleum pollutants in the water bodies is

primarily a result of construction operations carried out in proximity to the area.
A new sewage treatment plant to be built under the Project, with a capacity of 15,000 m3/d, will work with the existing reclaimed water treatment plant in the treatment of the airport's domestic sewage from 2030. During the dry season, once the treated sewage meets the higher standard of water for "flushing of toilets and vehicles" and "urban greening, road cleaning, fire fighting and building construction" as specified in the *Reuse of Urban Recycling Water - Water Quality Standard for Urban Miscellaneous Water Consumption* (GB/T18920-2020), it shall be reused for road sprinkling, watering of greening space, and toilet flushing, instead of being discharged. And during the rainy season or in case of an accident, a portion of the sewage shall be discharged into the south sewage treatment plant in the airport area for treatment.

(4) Groundwater and soil environment
The construction of the Project has little impact on groundwater and soil quality.

(5) Solid waste
The site of the Project is basically level, and the amount of muck generated during the construction period is small. The solid waste generated during the operation period mainly includes aviation waste and domestic waste. After being sealed and disinfected, aviation waste from areas other than the quarantine area shall be transported and disposed of together with domestic waste by KSEC Environmental Protection Technology Co., Ltd.

(6) Ecological environment
The project site does not involve ecologically sensitive areas, including but not limited to, nature reserves, scenic spots, world cultural and natural heritage sites and scenic spots, or important ecologically sensitive areas, including but not limited to, forest parks, geological parks and wetland parks. The project site complies with the requirements in terms of planning and environmental protection management of the State, Yunnan Province and Kunming City.

The animal abundance in the whole Kunming Changshui International Airport and the monitoring and sampling area of 5 km in the vicinity is relatively low. The abundance of birds is the highest, but that of mammals and amphibians is relatively low.

Amphibians and reptiles have the lowest evenness, which indicates that their species distribution is relatively uneven and there is a phenomenon of "one species at one location" in some of the monitoring and sampling areas. The evenness of birds is relatively higher, but the survey records of some sampling routes also show relatively low evenness. This indicates that the species distribution of birds is also uneven.
Birds have relatively higher evenness compared to mammals and amphibious reptiles. Amphibious reptiles have low unevenness, with some species exhibiting clustering or living in specific habitats, and have highly varying population sizes.

There are 14 species of national Class II protected animals in the assessment area, including 12 species of birds and 2 species of mammals in China. There are 12 species of national Class II protected birds, namely, Glaucidium cuculoides, Otus sunia, Otus lettia, Halcyon smyrnensis, *Falco tinnunculus, Falco subbuteo, Falco amurensis, Accipiter nisus, Buteo buteo, Milvus migrans, Elanus caeruleus,* and *Luscinia calliope. There is one species listed as vulnerable species by IUCN, namely, Halcyon pileata, and two species listed* as near threatened species in the Red List of China's Vertebrates, namely, *Falco amurensis and Elanus caeruleus.*

Protection measures for birds:

1) Habitat control
To prevent and control bird strikes at airports, it is generally recommended to relocate birds from the airport area to a more suiTable habitat. This can be achieved through the creation of an artificial habitat designed to attract birds away from the airport, or by redirecting the migration routes of birds that intersect with the airport. It is suggested that the airport should reduce the complexity of the lawn vegetation in the airport by using herbicides, or planting local grass and tree species that birds do not like for greening. The airport lawn should be treated, trimmed and cleaned of rotten grass in a timely manner to control the grass height within 15~20 cm, making it difficult for birds to hide. One grass species that do not produce seeds should be planted to prevent flowering and attracting insects and seed-bearing vegetation from attracting herbivorous birds such as *Alauda gulgula, Anthus godlewskii*, and *Chloris sinica*. Low-toxicity, effective insecticides should be sprayed in a timely manner to minimize the number of soil animals and insects. Domestic waste in the airport area should be cleaned, and the drainage system should be improved to reduce the number of birds. Regular patrol inspection should be carried out and damaged fences should be repaired. Domestic waste produced in the airport and nearby areas should be properly disposed of. Rat poison and mousetraps should be used to prevent small mammals from entering the airport and attracting raptors.

In addition, it is recommended that the airport strengthen communication with the local government and residents, actively organize publicity of knowledge related to protection of aerodrome obstacle free space, enhance communication and liaison with the local government, village committees and pigeon associations, work together to regulate pigeon breeders, and standardize the management of domestic pigeon release and drone use within the aerodrome obstacle free space strictly according to the *Civil Aviation Law* and related regulations.

2) Biological control
Preventive measures must be taken during the breeding season for clustered birds, including domestic swallows. If nesting is found, the birds should be repelled and the nest should be destroyed immediately. If swallows are seen flying over the airport during takeoff or landing, bird repellers like bird scare cannons should be utilized. In addition, bird repellers shall be installed within a certain range of the airport. Comprehensive technological measures to prevent interference by wild animals, such as using artificial grass near runways, auditory and visual scare techniques such as colors, alarms, lights, sounds, fireworks, and propane explosions shall be used. Danger signals may be used to stimulate the visual and auditory systems of wild animals, to trigger the escape reaction, and thus repel wild animals and birds.

3) Catching ground birds with net traps
Small birds that appear within the airport can be controlled using bird net traps to reduce raptors attracted by them. For birds captured by bird net traps, it is suggested to release them at other places adhering to animal protection principles instead of killing them, especially for nationally protected species and other rare species.

4) Strengthen bird condition investigation and information management
Further monitoring shall be carried out for the west woodland where the number of birds is large. Timely monitoring of birds at the airport shall be carried out to understand the life habits of airport birds, and effectively prevent bird strikes. It is necessary to strengthen patrol inspection and management of the aerodrome obstacle free space of the airport and timely conduct basic work such as bird prediction and forecasting, standardize airport bird monitoring, keep bird monitoring records, gradually collect the information to establish a bird warning system to timely predict bird condition at the airport. Measures shall be taken in time to prevent and

control new birds found in the vicinity of the airport. To facilitate the standardization of bird strike prevention at the airport, it is crucial to gain a comprehensive understanding of the current status and migratory habits of birds in the vicinity of the airport. Moreover, bird clusters that appear at the airport and high-flying birds should be closely monitored and promptly repelled to reduce threats to airport aviation safety.

C. Major Social Impacts and Mitigation Measures

The main social benefits of the project are (1) Increased employment opportunities. This includes both direct and indirect employment opportunities. Direct employment opportunities include temporary jobs with low technical requirements, while indirect employment opportunities include other jobs created by industrial development in the vicinity of the airport during the operating period.

(2) Increased income for local residents. The implementation of the project will bring about the integrated development of surrounding industries, increase employment opportunities for local residents, improve the quality of employment, and enhance the revitalisation of inherent assets.

(3) Improve passenger waiting experience. The renovation and expansion of T2 Terminal can directly expand the throughput of Changshui Airport, increase the handling capacity to 95 million person-times, relieve the overloaded handling capacity of T1 Terminal, reduce the boarding time of tourists and improve the comfortable travel experience of tourists.

(4) Supporting the export of agricultural products and consolidating the achievements of poverty alleviation. This project will help consolidate and expand the effective link between poverty alleviation and rural revitalisation. It will not only accelerate the export of Kunming and Yunnan products, but also effectively promote the development of Yunnan tourism.

(5) To promote the development of women in the project area. This project can promote the development of women in the project area, including providing employment opportunities for women and increasing their economic income; promoting women's participation and promoting their own development; providing a more comfortable and convenient travel environment for women.

Social risks of project implementation mainly include: (1) Impact of land expropriation. The project involves the permanent occupation of 213.82 mu of collective land (67.36 mu of related project), including 4.05 mu of cultivated land (2.37 mu of associated facility) (not involving basic farmland), affecting the collective of Wuxi Village and 13 people in 3 households in the village. The existing state-owned land belongs to the existing land of Yunnan Airport Group, which does not involve temporary land occupation, residential housing demolition, etc. The collective land acquisition activities are carried out in full accordance with the legal framework of AIIB Environmental and Social Framework -- ESS2 Land acquisition and Involuntary Resettlement, Land Management Law of the People's Republic of China, etc. The Resettlement Due Diligence Report has determined that there are no outstanding issues and complaints. The project land acquisition impact risk is low to medium.

(2) Noise risk. Field investigation found that there are some remaining problems in the surrounding communities of the project area, such as the ineffective implementation of noise protection measures after the first phase construction, and the cumulative impact of the project construction. The project noise risk level is

medium and high.

(3) Air pollution, water pollution and other environmental impacts. In addition to noise, the environmental impacts brought by this project mainly include air pollution risk, water pollution risk and communication signal interference risk. The above impacts can be implemented through environmental mitigation measures, and the risk level is low.

(4) The influence of the labor influx during the construction and operation period. A large number of workers from other places rush into the project area for long-term operations, which will bring certain social and health risks, including the risk of disease transmission, the risk of cultural and customs differences, the risk of indiscriminate parking of vehicles, the risk of delayed rent payment, and the risk of increased pressure on water and electricity. In view of the above risks, the surrounding communities, in accordance with the floating population management plan, strengthen the management of migrant population, coordinate the contradictions between migrant population and local residents, and improve the community water, electricity and other infrastructure. The impact of the influx of external population was identified as small and the risk level was low to medium.

(5) Risk of labor rights protection. The panel's field investigation found that potential labor rights protection risks include the impact of aircraft noise during employees' work, possible emergencies and quality and safety accidents, risks of sexual harassment or sexual assault, health and infectious diseases, and lack of wage and welfare protection. In view of these risks, the project office and the project implementing agency shall ensure that the construction unit and the contractor strictly abide by the laws and regulations of the People's Republic of China on labor safety, ensure fair treatment of project workers in accordance with the labor management measures and regulations of Kunming City, and provide them with a safe and healthy working environment. In terms of GBV management, the rights and interests of female workers are effectively protected according to the Special Provisions of Yunnan Province on Labor Protection for Female Workers. Therefore, although there are risks in the protection of labor rights and interests, the implementation of management measures for the protection of labor rights and interests in this project is relatively perfect, and the risk level of labor rights protection is identified as medium and low.

(6) Traffic safety risks. During the construction period of the project, the increase of external vehicles and the shuttle rolling of large mechanical vehicles will cause damage of the existing road surface around the community. In addition, the lack of traffic signs in some villages may also lead to the risk of traffic safety accidents. During the project operation period, the number of operators and vehicles in the project area increased, resulting in an increase in collision accidents, indiscriminate parking and other contradictory disputes. In view of the traffic safety risks existing during the construction period and operation period, the project office and the project implementation subject in accordance with the Kunming traffic safety management regulations, from the vehicle safety and driver management of two dimensions to reduce the project area traffic safety risks, including the planning and construction of the road dedicated to vehicles, improve road signs, guardrail and other supporting facilities, traffic safety publicity. Traffic safety risks belong to the low level.

(6) Risk of insufficient participation of vulnerable groups. The vulnerable groups of this project mainly include female groups, low-income population and ethnic minorities. Field investigation found that vulnerable groups have the risk of insufficient participation, including participation in project negotiation and project construction. Although the streets and communities strongly encourage vulnerable groups to

participate in this project, the overall participation of vulnerable groups is still not good due to the constraints of the reality. The risk level of inadequate participation of vulnerable groups was identified as intermediate.

Based on the major social impacts identified, mitigation measures and social management plans have been developed to: (1) reduce the risk of land acquisition, and a resettlement framework has been developed; (2) reduce the risk of noise pollution, a noise management plan has been prepared to propose noise prevention measures; (3) propose corresponding and specific mitigation measures for atmospheric environment, water environment and acoustic environment to reduce the impact of atmospheric environment, water environment and other environmental aspects; (4) traffic management during the construction period to reduce traffic safety risks; (5)strengthen labor management, increase the protection of labor rights and interests during construction and operation; (6) from the perspective of cultural education publicity and community management, corresponding measures should be put forward to reduce the disturbance impact of labor influx on local residents and society during the construction and operation period; (7) Strengthen health and safety protection to reduce social risks caused by AIDS and COVID-19; (8) To increase the participation of vulnerable groups; (9) The development of gender-specific action plans for women.

To promote gender equality, project offices, contractors, governments and grassroots organizations need to:

(1) Increase employment opportunities for women.
a. Provide employment opportunities for women in the villages involved in the project area during the construction and operation of the project. The monitoring indicators are: giving priority to women in project employment opportunities (the baseline value of female workers during construction is about 8%, the target value is 15%).
b. For jobs that are not physically demanding, the employment age range should be appropriately relaxed, giving priority to women aged 40 to 50 who are difficult to find non-agricultural employment opportunities, such as cleaning, cooking, management and other jobs.

(2)Enhancing women's development capacity
a. Improve women's skills, knowledge and opportunities for employment and entrepreneurship by holding seminars on employment knowledge, training courses on skills and knowledge, and seminars on employment and entrepreneurship. The monitoring indicators are: the proportion of women participating in various training, including noise prevention, women's rights promotion and education, employment skills training, etc. (baseline 20%, target 30%).

b. In the green airport and sustainable information disclosure capacity building training, provide appropriate skills training content and set appropriate training time based on women's physical and psychological quality, education level, personal needs and other factors, so as to further ensure that women can have the same opportunities to improve their skills as men. The monitoring indicators were: training to improve the disclosure and management of information on women's participation in YAG projects (baseline 25%, target 50%).

(3) Increase women's participation in decision-making
a. Increase the proportion of women in the decision-making of relevant matters in the community. The monitoring indicators were: participation of women in project mobilization, disclosure of information aimed at women, policy advocacy and consultation (baseline 20%, target 30%).

b. Increase the proportion of women or "jointly signed by both husband and wife" in land acquisition or demolition compensation agreements. The monitoring indicators are: the proportion of women who sign compensation agreements for land acquisition or demolition (baseline 0%, target 100%).

(4) Reduce the risk of gender-based violence
a. Strengthen the protection of women workers' rights and interests by providing regular mental health counseling and training for women workers' rights and interests. The monitoring indicator is that 100 per cent of women workers have received training in Labour rights protection.

b. Strengthen supervision of construction sites to avoid harmful practices such as gender-based violence, sexual exploitation and abuse, and sexual harassment. The monitoring indicators are: ensuring that 100 per cent of women workers receive equal pay for equal work with men, and 0 incidents of gender-based violence.

c. Establish clear channels for complaint and complaint, set up a complaint and complaint group at the construction site, including at least two female members, and ensure the safety of the complaint and complaint group members to avoid the situation of prejudice and fear of retaliation. The monitoring indicators are: the establishment of complaint channels and the number of female members.

The ethnic minority identification survey found that: (1) In the project affected area, there are no ethnic minority group that triggers the ESS3 criterion. (2) In the project construction area, the ethnic minority population is very small, and there is no traditional territory, minority language or traditional culture, or ethnic minority that considers its people as an ethnic minority group. Therefore, the ethnic minority development plan is not required for the Project.

D. ESMP Implementation Arrangements

Yunnan Airport Group Co., Ltd. will coordinate with other participants to promote the construction of the Project. Overall responsibilities of Yunnan Airport Group Co., Ltd. include: (1) Appoint an environmental and social coordinator for each lot to coordinate the participants in the implementation of the ESMP; (2) Ensure that the ESMP, monitoring plan and mitigation measures are included in the tendering documents and construction contracts; (3) Ensure the operation of the grievance mechanism; (4) Handle unforeseen adverse impacts and report to AIIB in a timely manner; (5) Employ a qualified external environmental supervision unit and a qualified external social supervision unit. Yunnan Airport Group Co., Ltd. shall regularly report on the implementation of the ESMP for the Project in the form of a standalone document as part of the project implementation report, on a quarterly basis during project implementation. Based on AIIB's assessment of the implementation of environmental and social measures, an environmental and social monitoring report shall be submitted on a quarterly basis during the first year of project implementation, and on a semi-annually basis thereafter.

III. Environmental and Social Audit

To ensure compliance with AIIB's Environmental and Social Standards (ESSs), an Environmental and Social Audit (ESA) was conducted to evaluate current operations at Kunming Airport and identify areas requiring improvement. The primary aim of the audit was to assess the environmental and social performance of the existing airport operations and to formulate an Environmental and Social Action Plan (ESAP) that addresses identified gaps and enhances compliance with regulatory requirements.

A. Methodology

The audit process included a safety briefing, field reviews, stakeholder interviews, and a questionnaire survey targeting airport staff. These activities took place between November 29 and December 2, 2022, and were supplemented by additional site visits and discussions throughout December 2022 and early 2023.

B. Key Findings

The audit revealed several areas of concern:

1) Organizational Capacity: There was a lack of dedicated personnel for environmental and social management, with unclear roles and responsibilities. No comprehensive organizational chart for environmental and social management was available.
2) Environmental Management: Existing EHS systems had not been updated to reflect current legal and regulatory requirements. Compliance with environmental permits was noted, but gaps in pollution prevention and monitoring, particularly regarding wastewater discharge and noise emissions, were identified.
3) Labor and Social Issues: Although labor relations were generally compliant, gaps in integrating Corporate Social Responsibility(ESR) practices into supplier management were evident. There were also deficiencies in anti-harassment training and grievance mechanisms.
4) Health and Safety: The airport's health and safety management systems were generally in place, yet specific indicators for airport employee accidents were not tracked.

To address the findings, a comprehensive ESAP was developed, including the following key actions:

1) Appoint dedicated environmental and social management personnel and establish clear roles.
2) Update EHS management systems and develop environmental KPIs for ongoing monitoring.
3) Conduct regular monitoring of wastewater discharge and implement noise mitigation measures, including the installation of noise monitoring systems.
4) Improve hazardous waste management practices to ensure timely disposal and compliance with regulations.
5) Carry out soil and groundwater investigations to assess potential contamination risks.
6) Update and regularly drill the emergency response plan to include relevant stakeholders.
7) Enhance supplier management practices to incorporate CSR requirements and improve training on anti-harassment policies.

Ⅳ. Resettlement Plan Framework

A. Scope of application of the RPF

This RPF applies to: 1) potential nonresidential building demolition before the Project is approved by AIIB, details of which have not been determined, such as the aircraft maintenance station of China Eastern Technology Co., Ltd. Yunnan Branch to be displaced, and the 498.59 mu of state-owned land to be withdrawn; 2) LAR activities out of the LAR impacts arising from detailed design, optimization or adjustment or otherwise; 3) potential noise displacement arising from the Project's operation stage noise, such as Changpo and Ganhaizi Villages that may be subject to displacement due to operation stage noise, and Huaqing Village and Fuxing Primary School that may be subject to displacement due to cumulative noise.

B. Key points of the RPF

This report consists of 3 key parts: 1) An RPF has been prepared for potential land occupation, HD (implementation period and range uncertain) and noise displacement impacts of the Project and associated projects; 2) An ARAP has been prepared for the 213.82 mu of collective land to be acquired for the Project according to AIIB's ESF, as detailed in Appendix 1; 3) A resettlement due diligence report (DDR) has been prepared for LA compensation completed in 2008, and the 7,285.38 mu of state-owned land allocated to YAG in 2015, as detailed in Appendix 2.

C. Identification of LAR impacts (including associated projects)

1) State-owned land: 7,783.97 mu of state-owned land will be occupied permanently (including 902.06 mu for the associated projects), in which 7,285.38 mu has been allocated[1] and the remaining 498.59 mu is about to be withdrawn[2].
2) Collective land: 213.82 mu of collective land will be occupied permanently (including 67.36 mu for the associated projects), including 180.28 of non-contracted collective woodland and 33.55 mu of contracted woodland, affecting 3 households with 13 persons.
3) Temporary land occupation: The construction camp, mixing stations, and temporary topsoil and earth stockyards will be on existing unused land of the airport, not involving additional temporary land occupation.
4) HD: nonresidential building demolition for the aircraft maintenance station of China Eastern Technology Co., Ltd. Yunnan Branch
5) Noise displacement: Based on the noise assessment results in the EIA, i) Changpo and Ganhaizi Villages may be subject to displacement due to noise of East Runway #2, in which Ganhaizi Village is to be relocated for Phase 1 airport construction; ii) Huaqing Village and Fuxing Primary School may be subject to displacement due to cumulative noise. Whether noise displacement will be implemented will be subject to consultation with the APs after the baseline and operation stage noise assessment; the current impacts are estimated in the feasibility study, and there is no detail for implementation time yet.

D. Policies, laws and entitlements

[1] This state-owned land has been allocated by the Yunnan Provincial Government to YAG, and YAG has the right to use it.
[2] The right to use 498.59 mu of state-owned land belongs to China Eastern Technology Co., Ltd. Yunnan Branch, and will be transferred to YAG after being withdrawn by the DZNA Management Committee.

The Project's resettlement policies have been formulated in accordance with the applicable laws and regulations of the PRC and Yunnan Province, as well as AIIB's ESF-ESS2 "Land Acquisition and Involuntary Resettlement". A comprehensive legal framework has been established below.

1) The laws and policies applicable to LAR arising from the Project include AIIB's ESF—ESS2 "Land Acquisition and Involuntary Resettlement", the Land Administration Law of the PRC (Amended), Regulations on the Implementation of the Land Administration Law of the PRC (Order No.743 of the State Council), Decision of the State Council on Deepening the Reform and Rigidly Enforcing Land Administration (SC [2004] No.28), Guidelines on Improving Compensation and Resettlement Systems for Land Acquisition (MLR [2004] No.238), Notice of the State Council on Intensifying Land Control (SC [2006] No.31), Measures on Public Announcement of Land Acquisition (Order No.10 of the Ministry of Land and Resources), Regulations on House Expropriation on State-owned Land and Compensation (Order No.590 of the State Council), Notice of the General Office of the Ministry of Natural Resources on Accelerating the Fixation of Block Comprehensive Land Prices for Farmland Acquisition (MNRO [2019] No.53), Notice of the Ministry of Natural Resources, Ministry of Agriculture and Rural Affairs, and National Forestry and Grassland Administration on Strictly Controlling Uses of Farmland (MNR [2021] No.166), Notice of the Ministry of Natural Resources on Regulating the Management of Temporary Land Use (MNR [2021] No.2), Notice of the Ministry of Finance, and Ministry of Land and Resources on Adjusting Levy Levels of Compensation for Using Additional Construction Land in Some Regions (CZ [2009] No.24), Notice of the Ministry of Finance, the Ministry of Land and Resources, and the People's Bank of China on Adjusting the Policy on Fees for Compensated Use of New Construction Land (CZ [2006] No.48), as well as the applicable policies of Yunnan Province, Kunming Municipality and the project county / district.

2) The laws and policies applicable to noise displacement arising from the Project include AIIB's ESF—ESS2 "Land Acquisition and Involuntary Resettlement", the Law of the PRC on Noise Pollution Prevention and Control (Order No.104 of the President), Land Administration Law of the PRC (effective from January 1, 2020), Regulations on the Implementation of the Land Administration Law of the PRC (Order No.743 of the State Council), Regulations on House Expropriation on State-owned Land and Compensation (Order No.590 of the State Council), and the policies on compensation and resettlement for HD and ground attachments in Yunnan Province, Kunming Municipality and the project county / district.

E. Resettlement strategy

1) Compensation and resettlement strategies for persons affected by LAR

Compensation: a) Grant monetary compensation to the APs at land or house replacement cost; b) Provide persons affected by HD / displacement with resettlement sites with equivalent employment and production opportunities, and sufficient housing; c) Compensate for irrecoverable assets with full replacement cost quickly; c) Pay compensation fully to the APs losing land or other assets without deduction for any reason; d) Pay compensation directly where possible with minimum intermediate links.

Training and employment: a) Provide free skills training to all APs to promote their production and livelihood restoration; b) Make jobs first available to the APs, including skilled and unskilled jobs.

Social security: Provide social security to the APs, including basic endowment insurance for land-expropriated farmers (LEFs), minimum living security (MLS), etc.
Assistance for women and vulnerable groups: a) Make jobs and training first available to them; b) Provide them equal access to LA and HD compensation; c) Provide assistance and pay special attention to them in production and livelihood development measures.

Others: a) Support and encourage the APs to participate, and express their needs and expectations, collect their opinions during resettlement implementation, and determine compensation and resettlement programs through consultation; b) Disclose project information in an understandable language and acceptable forms, and at convenient places, including the RAP, RPF, etc.; c) Provide infrastructure and community services to the APs as necessary.

2) Compensation and resettlement strategies for noise displaced persons
Consultation: a) Collect expected resettlement modes from noise displaced persons by means of FGD, visit and questionnaire survey, and identify them through adequate consultation; b) Determine the compensation and resettlement program through consultation.

Compensation: a) The noise displaced persons may choose monetary compensation or property swap voluntarily. In case of monetary compensation, a third party valuation agency will determine compensation amounts at replacement cost according to the legal and policy framework for noise displacement. In case of property swap, determine the property swap method and resettlement site according to the legal and policy framework for noise displacement. b) Pay compensation directly where possible with minimum intermediate links. c) After noise displacement is completed, the ownership of the vacated houses will belong to the DZNA Management Committee, and the remaining home sites on the rural collective land will still be owned by the original village collective.

Other: Take special assistance measures for noise displaced persons without a house or with housing difficulties.

F. Organizational setup

YAG is the project implementing agency (PIA). A project implementing office (PIO) is set up under the PIA. Kunming Changshui International Airport Co., Ltd. is the project implementing unit (PIU). YAG is responsible for project preparation, implementation and subsequent management, and assumes overall responsibility for E&S management under the Project. The DZNA Management Committee is responsible for the implementation of noise reduction measures for settlements, schools and hospitals involved in the Project's resettlement and environmental noise.

G. Public participation and information disclosure

All APs (with 30% being women) have been informed of the construction scope of the Project and the key points of the RAP through public participation and information disclosure by various means, such as meeting, interview, FGD and media publicity. The RAP will be disclosed to the APs on the official website of YAG to involve them in the Project, and their opinions will be well incorporated into the RAP. In addition, public participation and information disclosure will be further conducted at the implementation stage.

H. Resettlement budget

The Project's resettlement budget includes LA and HD compensation, noise displacement compensation, management fees, resettlement planning and monitoring costs, training costs, taxes and fees, contingencies, etc. The Project's resettlement funds will be disbursed on the following principle: All costs incurred during LAR will be included in the general budget of the Project. The DZNA Management Committee will disburse funds to the sub-district finance offices at the specified rates for payment to the affected communities and persons.

I. Monitoring and Evaluation

The monitoring and evaluation covers all LAR and noise displacement activities arising from the Project. In order to ensure successful resettlement implementation, resettlement implementation will be subject to internal and external monitoring. Internal monitoring will be conducted by YAG, and an internal monitoring report will be submitted to AIIB quarterly in Year 1 and semiannually from Year 2, depending on the evaluation results of the implementation of E&S measures. YAG will appoint an independent agency to conduct external M&E, and submit M&E reports the YAG and AIIB semiannually, and M&E costs will be included in the budget of the capacity building component.

V. Stakeholder Engagement Plan

A social impact assessment of the Project is conducted for both the major and minor stakeholders of the Project. The major stakeholders of the Project are the direct beneficiaries within the scope of influence of the Project and the groups negatively affected by the construction of the Project, including residents, vulnerable groups, households affected by land acquisition, teachers and students in schools, employees of enterprises and public institutions within the scope of Changshui Subdistrict and Dabanqiao Subdistrict under the jurisdiction of Kunming Airport Economic Zone, as well as airport passengers, airport construction and operation This Stakeholder Engagement Plan (SEP) is prepared for the Project, and is a dynamic document, to be improved based on the Project's progress and practical stakeholder engagement. This SEP has been prepared in accordance with AIIB's Environmental and Social Policy, ESS1: Environmental and Social Assessment and Management, the Memorandum of Understanding of AIIB's preparatory mission, and other stakeholder engagement requirements of the Project.

The SEP identifies key stakeholders of each component at different stages, evaluates their impacts on the Project, evaluates their influence on the Project, and makes a summary analysis on this basis.

Project-affected parties include residents/enterprises affected by land acquisition and resettlement, residents affected by noise (including those affected by noise displacement), airport construction workers, airport internal operating personnel, airport passengers, airline companies, etc. Other interested parties include the project implementation office (PIO), project implementing agency, Kunming Airport Economic Zone (KAEZ), departments concerned of the DZNA Management Committee, sub-districts, communities, media (e.g., Colorful Airport), design and consulting agencies, and contractor. Based on the characteristics of the components, no special approval is involved, and the government agencies concerned perform routine project management and supervision within their scope of authority only.

Among project-affected parties, vulnerable groups, and their main interests and needs have been further identified, mainly including low-income residents, old people, women, minority residents, etc.

A project information (especially environmental and social impact information) disclosure plan, a stakeholder engagement program, a feedback mechanism, and grievance redress mechanism(GRM) for the Project and workers have been established based on stakeholder identification and analysis. This SEP defines arrangements on organizational support, resources, and environmental and social performance monitoring for the PIU.

The GRM of this project is part of the SEP. During the preparation, construction, and operation of the Project, in order to timely understand and address the impacts and issues that the Project brings to stakeholders, and to ensure the residents' needs for information disclosure and community participation to the greatest extent, a project-level grievance channel will be established based on the current grievances situation of residents. All records of grievances and their resulting resolutions will be kept and reported to AIIB via the semi-annual environmental and social monitoring mechanism.

The grievance mechanism of the Project mainly includes:

1) The first is the project-level grievance mechanism, which establishes a channel for residents, social organizations, and business entities affected by the Project to voice their concerns during the implementation and operation of the Project.
2) The second is the grievance mechanism that operates at the project laborer level, which establishes a channel for direct laborers, contract laborers, as well as the employees of the project to voice their concerns.