Beijing capital international airport development project construction essay

Environment, Air

1. This guideline has been prepared as an evaluation and condensation of a full environment impact assessment (EIA) of the proposed Project – Beijing Low Cost International Airport (PLCA), which will be prepared for the Government by the consulting group of the Faculty of Economics and Management, Universiti Putra Malaysia, following China Government guidelines by The Ministry of Environmental Protection of the People's Republic of China, formally known as China's State Environmental Protection Administration (SEPA) and the methodologies described in Environmental Assessment Requirements and Environmental Review Procedures of the Asian Development Bank (1993) and Environmental Guidelines for Selected Infrastructure Projects (1990). The objective of the EIA is to ensure that environment aspects are addressed and potential problems are foreseen at the appropriate stage of project design. Hence, at the preliminary level, a coordinator is selected for the EIA to collect detail background information. The EIA report would be based on (i) the Project feasibility study prepared by Airways Engineering Consultants under Bank technical assistant (TA), (ii) discussions with principal authors of the above documents, (iii) field visits to the Project site and local government capital, and, (iv) discussions with local government and pertinent National Government officials with environmental responsibilities.

2. The methods used to carry out the EIA for impact identification included:

(i) review of available literature,

(ii) meetings with National and local government officials,

(iii) site visits to the PLCA and surrounding areas,

(iv) discussions with inhabitants near the site via door to door survey,

(v) ambient noise and air quality and surface water quality sampling and testing in the field and in the laboratory, and

(vi) application of professional knowledge and experience.

3. Besides, the EIA would require a baseline study on data and impact evaluation, assessment, documentation, decision making and post audits that incorporates the results and conclusions in the report of the EIA.

II. DESCRIPTION OF THE PROJECT

4. The rapid economic growth in China has led to the increase numbers of demand for air transport service consumer, in both passengers and cargo. Being located at the capital of the People’s Republic of China, the flourish of tourism sector, business and cargo service had caused the current capacity of Beijing Capital International Airport (PEK) registered 65. 3 million passengers and achieved 1, 420, 997 tonnes of cargo traffic in year 2009, which ranked the 3rd and 14th busiest in international respectively. It has reached an efficiency score since year 2006 till now (Andrew Yuen & Zhang, 2009). However, the PEK which has three terminals can only handle 78 million passengers per year. At the same time, since the projection for passenger capacity in 2012 would reach more than 90 million, it would be over congested in just round the corner. The current alternative or nearest international airport available is Tianjin BinHai International Airport, however

it is located too far, 160km from Beijing. While the nearby Beijing Nanyuan Airport (NAY) located north to Daxing is owned by military and serves as a middle cost domestic airport that capable of handling only 1. 2 million passengers per year, hence it is viable to look for a new destination to build an international airport that in future might accommodate the airlines currently using NAY. Strategic locality might be one of the factors that passengers are generally still prefer to land at PEK due to time and cost convenient. Besides, the design of PEK cannot accommodate airbus A380. Hence, it is urgent to look for a new suitable location to build a new airport that is schedule for completion in year 2015 to cater the future demand.

5. Previously, there was suggestion that the major difference between the current and new Beijing airport to segregate into either serving the local or international market so that there would be no overlap. However, it had received many objections due to its unfairness nature. It is proposed here that due to the rising of the low cost proposition in international market, the proposed Project is to design and construct a Beijing Low Cost International Airport. This can divert the passengers from the PEK that PLCA can be an aviation hub based low cost service that encourage more tourists and tap in the budgeted travel market. This is not the latest concept for low cost terminal building in China as the first has operated in Zhengzhou Xinzheng International Airport, which was limited only for domestic flights from May 2008 to October 2009. A survey conducted by Civil Aviation Net of China showed that 92% of respondents opt for low cost flights, if is needed to pay the air ticket by their own. Following the global market trend, due to

increasingly cost-conscious travelers, a huge new low cost airport that can cater 70-80 million passengers is proposed to be reasonable. The Beijing concept would be a successful one since it is not like the Zhengzhou model which failed due to restricted for domestic. In order to meet the forecasted traffic, the size for new airport would be 3, 800 hectares (ha) of land.

6. The suggested locations for the new airport include Lixian Town in Daxing District (39° 33′ 8″ North, 116° 26′ 42″ East), a downtown rural area covers an area of 1, 012 square kilometers with a population of 671, 444, as in year 2000 statistics. It is about 40 kilometers (km) south of the Beijing and can be connected to Beijing via Jingkai Express Highway. Another suggested location for the PLCA is at Gu’an District which is 60 km away from the current airport.

7. The first phase of development of the PLCA, the Project, will meet air traffic forecast demand for the year 2016, would involve the size of 1, 800 ha. This involves large turboprop aircraft with sufficient range to cover both the local and international demand. Development covers the soil improvement and earthworks necessary of construct a landing strip 2, 300 meters (m) in length, with an initial runway length of 3, 500 m. The project will also complete with enough passenger and cargo terminals, car park and access roads; control tower; crash; fire, and rescue building; ancillary buildings; housing for airport staff; wastewater treatment plant and a potable water system; electric power; fuel farm; perimeter fencing; and supporting airfield lighting and navigation aids. All of the security verification system, luggage system and other essential facilities are well equipped. The new

runway would be fitted for Boeing 737, Airbus A320 and Airbus A380. There would be various choices of restaurants, stores and duty free shops. It is not a luxurious one, but with just a simple interior decoration. All these would reduce in the airport landing fee and airport construction fee (ACF). As the proposed airport would be a low cost and incorporate the trendy green airport concept, boarding ramps is not provided. The following phase would claim another 1, 700 ha land, and total runway 7000 km. A 100 ha of unoccupied land is reserved as part of the Project to provide added protection in the approach areas from future possible encroachment by non-airport development. Every passenger is allowed to carry 15 kg luggage, five kg less than under normal regulations.

III. DESCRIPTION OF THE ENVIRONMENT

A. Physical Resources and Natural Environment

8. The PLCA is proposed to be located at an area of plain land, which is typical of the Lixian Town at Daxing District (Wu, et. al, 2010). The soil is heavy metal and hence not suitable for vegetable growing, but can be used for construction (Hu, et. al, 2006). Currently, the residence in the area depends on agriculture or food service that support Beijing’s demand. Due to the changing characteristics of the soil, a transition of economic activity is predicted. A detail studies should be carried out at the Project site for determining the suitability of the land and the possibility of earthquake and other natural disaster.

9. The climate of the area follows the four seasons, as similar to Beijing. The average temperature ranges from a high of 17. 9 to a low of 7. 2 Celsius. The wind velocity needs to be obtained from the China Meteorological Administration.

10. The baseline monitoring should be carried out. Both on the site itself and the nearby highway – Jingkai Expressway. The air quality, level of hydrocarbons and carbon dioxide have to be determined and compared with the national benchmarks.

11. The Longhe River and Xintiantang river are required to be carried out environment assessment as both of the rivers support the agriculture activities at the area.

12. Baseline monitoring of the surface water quality ought to be conducted at the two rivers. Sampling and testing are needed to understand the pollution level by human waste in surrounding areas.

13. Since the site of the airport is nearby to residents are and some of them are still relying the usage well, so the groundwater have be tested on the requirement of water treatment.

14. Since there are twelve forests and Yongding River as the mother river supporting many subrivals in nearby town within Daxing district, so the level of possibility of endanger to the flora and fauna need to be assessed. It is understood that the fishing activities have decreased due to the less raining in past few years.

C. Human and Economic Development

15. The PLCA is in an area of low population density.

16. Most of the residents of the area are farmers and small businessman who sell vegetable that supports the demands from Beijing city. However, the income level is quite low compared to the city.

17. The predominant land use around the PLCA is agriculture.

D. Quality of Life Values

18. Near to the site in other town but not at Lixian Town itself, only forests and some Mosques which are served as heritage conservative sites. There is healthcare service, power line, electricity, telephone, water treatment service for the area.

IV. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

19. This section assesses the potential impact of the proposed development of the PLCA on the surrounding environment and presents mitigation measures. It would cover the potential effects associated with location, design, construction and operation.

A. Environmental Impacts Due to Location

1. Disruption of Surface and Groundwater

20. The environment impacts of the location need to be carried out.

2. Relocation

21. Resettlement is required for some affected villages or called as “ cun” but the impact is needed a further studies.

3. Land Values

22. There would be an increase in land values for residential areas, nearby to the highway, airport. The local government hence has to do a proper planning to avoid bubble economics for the housing sectors.

23. The impact of the ecology from airport need to be taken into consideration.

B. Environmental Impacts Due to Project Design

1. Nearby River Erosion, Flooding

24. The construction of the airport could create a large impervious surface in an area that is now covered by grassland and some brush and trees. If the drainage is poor designed, it would affect the nearby rivers.

2. Disposal of Human Waste

25. There is potential pollution of surface water and groundwater due to the possible introduction of turbidity and coliform bacteria from human waste will be mitigated by the design of a wastewater treatment plant.

3. Petroleum Water Disposal

26. Some spilling of fuel is likely to occur during the aircraft refueling on the aircraft parking aprons, and it is necessary to trap and filter out these wastes before they enter the main drainage system of the aprons, which will empty into the nearby small river. To reduce such impact, the drainage system of the aprons will be designed so that water runoff during rains will be channeled into subsurface drains that will contain a trap system, accessible through access holes, to filter out and collect wastewater treatment plant after being treated to break down the hydrocarbons.

C. Environment Impacts During PLCA Construction

27. With the good design and construction standards and procedures are adopted according to Green Airport, it is expected to have minimum impacts. A contractual guarantee which include the environment impact associated with construction is a most appropriate way to ensuring such implementation to be adhered.

1. Sediment Runoff

28. The construction program might have impact towards the nearby river and altering its natural flow. This would affect the number of fish population in the river. Hence, implementation of erosion and sedimentation control is required to minimized the impact. The area should also replant threes alongside to ensure the green environment to be accomplished.

2. Dust and Noise/Vibration Pollution

29. The dust pollution would be under control due to latest technology. The noise and vibration pollution is minimized via strict rules and regulations so that it won’t affect the living hood of population nearby. No construction work is allowed before 7am and after 7pm on weekdays, weekends and public holiday. Penalty of RMB5000 would be imposed once there is an enforcement operation or any complaints regarding the constructor violate the rules and regulations.

3. Worker Safety and Health

30. Worker safety and health will be ensured via protection through contractual undertakings to implement safe site practices.

4. Slum Creation

31. Since there is job creation and recruitment of workforce from the residence nearby and no sourcing of workers from other areas are needed, hence there is little needs for building temporary on-site house and this reduce the risk of slum creation.

5. Traffic Congestion, Blocking, or Disruption of Utilities

32. The current level of traffic on the main highway near the site is not congested. There are new highways opening soon. Hence, there is little traffic problem arises.

D. Impacts During PLCA Operation

33. The impacts during operation phase should be analyzed and forecasted.

1. Noise/Vibration Disturbance

34. The accepted level of noise/vibration disturbance is about 65 decibels or 65 Ldn (day-night noise level) to the nearest residential area, since there would be some distance from the airport, hence the impact can be minimized. The distance between the airport and nearest housing area, hence, is needed to be estimated. Besides, controlling of noise/vibration disturbance can be done via the arrangement of the air traffic control by having schedule in the daytime and less air traffic in the night time. However, a completed noise analysis has to be carried out based on the forecasted future flight traffic volume. Noise monitoring terminals would be build to ensure the minimal impact of noise pollution.

2. Water Pollution/Escape of Sanitary Wastes

35. The construction of wastewater treatment plant and sewage distribution lines must be part of the Project. The water, especially at the terminal area needs to be treated with the latest green technology. Potable water for airport operations need to be provided from a drilled well, or wells with treatment to meet World Health Organization standards.

3. Air Pollution

36. The EIA should ensure minimum impact of air pollution even the operation of PLCA starts.

4. Congestion at Airport Access and Exit

37. The congestion level is ought to be estimated, regardless of current low level of usage and new highways are opening soon.

5. Hazards to Traffic from Operation Aircraft

38. The residential areas or buildings nearby are low and little risk arises for the height over aircraft passing. How, the accurate level is needed to be assessed to reduce any potential risk.

6. Human and Economic Development

39. The impact on possible changes from rural-to-urban would lead to migration towards areas nearby PLCA is needed to be assessed. Although it would bring job creation and have minor socio-economic changes from agriculture or small business towards service based, a details assessment would be required to ensure the culture is balanced and not change drastically.

40. The local government would play a very major role in permitting licenses for buildings and business. The potential positive impact would most probably be the increasing public facilities which is currently lacking.

7. Quality of Life Values

41. The current lacking of public facilities and facilities would be improved via the proposed project. The income level would be increased while the potential changes would be the population migration from other area in searching for employment opportunity.

8. Environmental Overview

42. The project will not involve scare or irreplaceable resource in line with the green airport concept. Raw materials such as sand and gravel should be employed for its construction and future expansion. No loss of biodiversity should be achieved.

V. ALTERNATIVES

43. The other alternative which is considered feasible is Gu’an as one of the nominated site. It is a downtown further down than Lixian Town.

VI. COST BENEFIT ANALYSES

A. Internal Rate of Return

44. The economic internal rate of return for the Project should be estimated.

B. Economic Benefits

45. The potential main economic benefit would be income generated from visitors’ expenditures, time saving for passengers, and the value of foregone passenger and cargo traffic. Cost saving due to low landing cost and additional employment and increased in property value are not included in this analysis.

C. Project Costs

46. Project costs include (i) civil works, (ii) other construction, (iii) equipment and its installation, (iv) consulting engineering design and supervision, and (v) cost for abatement for pollution.

D. Monitoring and Reporting Cost

47. Monitoring will be required to carried out during construction and operation of the Project. It would be a contractual base.

E. Nonqualified Environment Impacts

48. Any negative impacts in environment would be internalized into the cost of Project. Hence, cost-benefit and cost effectiveness of such pollution is not based on separated budget.

VII. INSTITUSIONAL REQUIREMENTS AND ENVIRONMENTAL MONITORING PROGRAM

A. Institutional Capacity

49. Since there are many experiences on airport building by China Aviation Society, hence with the assistant from consultant on EIA, which adhere to rules and regulations as mentioned earlier, no special training is required. However, the government needs to support on the low cost airline in order to be successful implemented.

B. Monitoring Program

50. The impacts of the proposed PLCA Project is needed to carried out whether it is significant in order to decide on the relevant type of monitoring program.

51. Sedimentation and control of erosion and water runoff, water quality, worker safety and health, and traffic interference would be the utmost monitoring items during construction period. All other monitoring programs are yet to be indentified after a thorough study.

52. Monitoring program for operation phase are also required for the preparation of control over kinds of potential serious pollution.

C. Documentations

53. Clear documentations are required. Appropriate recommendation should be included in the working document with the alternative environmental and economic impacts adhered.

VIII. PUBLIC INVOLVEMENT

54. Public involvement is important in this 21st century that the demand and supply is matched without major objection from the public. Local residents can be consulted via public hearing on the Project plan or random door-to-door survey can be carried out with sets of questionnaire on their view of potential impacts in term of the environment, social and economic towards the communities.

55. The public involvement between public and developer is needed for the negotiation on the required acquisition and compensation.

IX. DECISION-MAKING

56. The EIA would be important to facilitate the decision making process for the decision makers, however it does not serve as an absolute path. If it is rejected, further studies is required on alternatives.

IXI. POST AUDITS

47. Post audits are required to determine how closely to reality the EIA predictions. It is important to avoid any form of bureaucratic constrains. General statements in the body of legislation would be good as supplementary guidelines would be required from time to time.