Greenfield Airport Development in India: A Case Study of Bangalore International Airport

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Abstract

Government of India (GOI) is promoting Public Private Partnership (PPP) for development of Airports in India. Successful implementation of PPP depends on the efficient distribution of project risks among stakeholders. Bangalore international Airport Limited (BIAL) is taken ***as a case to study*** *the development of green field airports in India under PPP.*

The case analysis has revealed time overrun, cost overrun, stakeholders conflict, Demand variation, debt repayment default, increased liability of lender and public authority due to refinancing, Macroeconomic risk i.e. inflation, exchange rate , Interest rate variation, Gaps in concession agreement, not prefixed rate of return ***as the prime risks in development of green field airport in India****.*

Policy suggestions are based on action required to mitigate these risks.

Key words: BOOT, Single till method, Double till method, cost plus regulation, Price fixed regulation, CADS, DSCR

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1.0 Airport Development in India

Air travel has been a pivotal and preferred mode of transport worldwide. An increasing number of passengers are opting for air travel, alongside a large number of Airlines, making the airports congested. The Air Traffic Movement (ATM) grew @17% CAGR during the period 2001-02 to 2007-08. In the year 2011-12, also, the ATM growth rate was in double digit, about 10.8%. The passenger movements (PM) grew at, 20% CAGR during 2001-02 to 2007-08 and, 13% CAGR during 2009-2012.

The development of Brownfield and Greenfield airports is a necessity to ease airport congestion. The governments, worldwide, have given way to new financing models for the development of airports due to their constrained fiscal position. Public Private Partnership (PPP) model i.e. Build Operate and Transfer (BOT), Build Own Operate and Transfer (BOOT) have been tried for development of Airports in India.

Up gradation of existing facilities comes under brown field projects. These projects are developed under BOT model. Delhi International Airport (India) and Mumbai International Airport (India) have been developed under BOT contract. Development of Brownfield airport have faced following problems,

- Non availability of adequate land for expansion
- Opposition of public residing nearby airport, due to noise and air pollution

Green field projects have been tried to solve the above problem. **BIAL** is the recently developed Green field airport at Bangalore in India. It has been developed under BOOT model. Prior to this, Bangalore was served by HAL Bangalore International Airport. The old airport did not have sufficient land for accommodating the expansion plans, so it was decided to build Green field airport.

Bangalore international Airport Limited (BIAL) is taken as case to study the development of green field airports in India. The 1st objective of the case study is to identify the issues of risk in development of green field airports in India. The 2nd objective of the case study is to make Policy suggestions for future development of green field airport in India.

2.0 Aviation Sector-Regulatory Environment in India

The Ministry of Civil Aviation is the nodal ministry responsible for formulation of national policies/programmes for development/regulation of Civil Aviation in India. Its main objective is to ensure orderly growth of civil air transport in India. Its function extends to overseeing airport facilities, air traffic services and carriage of passengers and goods by air. Director General Civil Aviation (DGCA) and Airports Authority of India (AAI) works directly under Ministry of civil aviation.The role of Director General Civil Aviation (DGCA) includes,

1. Regulate Air traffic in India
2. Granting Air Operator's certificates to Indian carriers
3. Regulate transport services operating to/from/within/over India
   (Both, Indian and foreign operators)
4. Grant clearance to scheduled and non-scheduled flights
5. Issue certificate to aerodromes and CNS/ATM facilities
6. Issue license to air traffic controllers.

Airports Authority of India (AAI) manages most of the airports in India. It is entrusted with the responsibility of creating, upgrading, maintaining and managing civil aviation infrastructure both on the ground and air space. AAI manages and operates 126 airports and 329 airstrips (including 16-International airports, 89-domestic airport and 26-civil enclaves). Revenue on these airports is generated from landing/parking fees and fees collected for

providing CNS (Communication, Navigation & Surveillance) & Air Traffic Control (ATC) services to aircraft over the Indian airspace.

In India, the aeronautical tariff rates for all airports i.e.RNFC (Route Navigation Facility Charge), TNLC (Terminal, Navigation and Landing Charge) are fixed by AAI based on the tariffs prevalent on AAI owned airports.

All airports in India were continued to be under control of AAI till 1999, before start of CIAL (Cochin International Airport Limited) operation. No private investments, domestic or foreign, were allowed for development of Airports in India. In the year 1990 Indian Parliament passed legislation to allow private participation in airports development. Since then, Government has handed over four major airports (Delhi, Mumbai, Hyderabad, and Bangalore) to private companies for the purpose of modernization/development under PPP agreement.

Development of airport in India (construction & operation) requires various permissions/clearances from public authority i.e.

1. Permission for airport construction and operation *from DGCA*
2. Environmental clearance *from ministry of environment and forest(MOEF)*
3. Permission for mining, use of explosives, use of water from river and reservoir, Pollution clearances for setting up of construction plants and equipments, Permission for cutting of trees *from state government*

Involvement of public agency, as partner, in PPP model may help in getting speedy clearances [32, 33]. AAI operated airports are generally waived off from the requirement for obtaining license to operate i.e. it enjoyed permanent licenses status. But Private operators are required to receive license which is generally issued for short duration. Such licenses to private parties are generally issued by DGCA, a government agency. This kind of regulation creates an uncertainty and adversely affects future operational and marketing planning of

airports [4]. However these regulations prevent unnecessary exploitation of user. These ensure that the operator is constantly on its toes to provide the best services. Bur for equity, these regulations should be equally applicable on AAI operated airports also.

3.0 Case Study –Bangalore International Airport Limited (BIAL)

BIAL airport is located 34km from the Bangalore city. It is spread over a land area of 3900 Acre. The airport is having an annual passenger capacity of 12.0 million and cargo handling capacity of 35000 tonnes. The total project cost for phase-1 was $495.6 million. The airport offers non aeronautical services like hotels, food court, tax free shops, shopping mall etc besides regular aeronautical services. The 1st phase of airport becomes operational in May-2009 [30, 39].The Phase-II of BIAL includes development of one more terminal and another runway. The estimated cost of Phase-II is about Rs $500 million. The work of phase-II is under progress (year 2013).

3.1 Project Structure

The Bangalore international airport was developed under Built Own Operate Transfer (BOOT) model. The concession period of the airport has been kept 30 years which is extendable up to 60 years. The partnership structure along with roles of the project stakeholders is detailed in figure-1.

BIAL is a Public Limited Company promoted by Siemens Project Ventures (Equity:40%), Mumbai Airport Developers Private Limited (a wholly owned subsidiary of GVK Power & Infrastructure Limited) (Equity: 29%), Flughafen Zurich (Equity: 5%) and two public agency(Equity: 26%). The public agencies include Karnataka State Industrial Investment & Development Corporation Limited (13%) and Airports Authority of India (13%). Private promoters hold 74% stake in BIAL while the state holds the remaining 26% [30, 39].

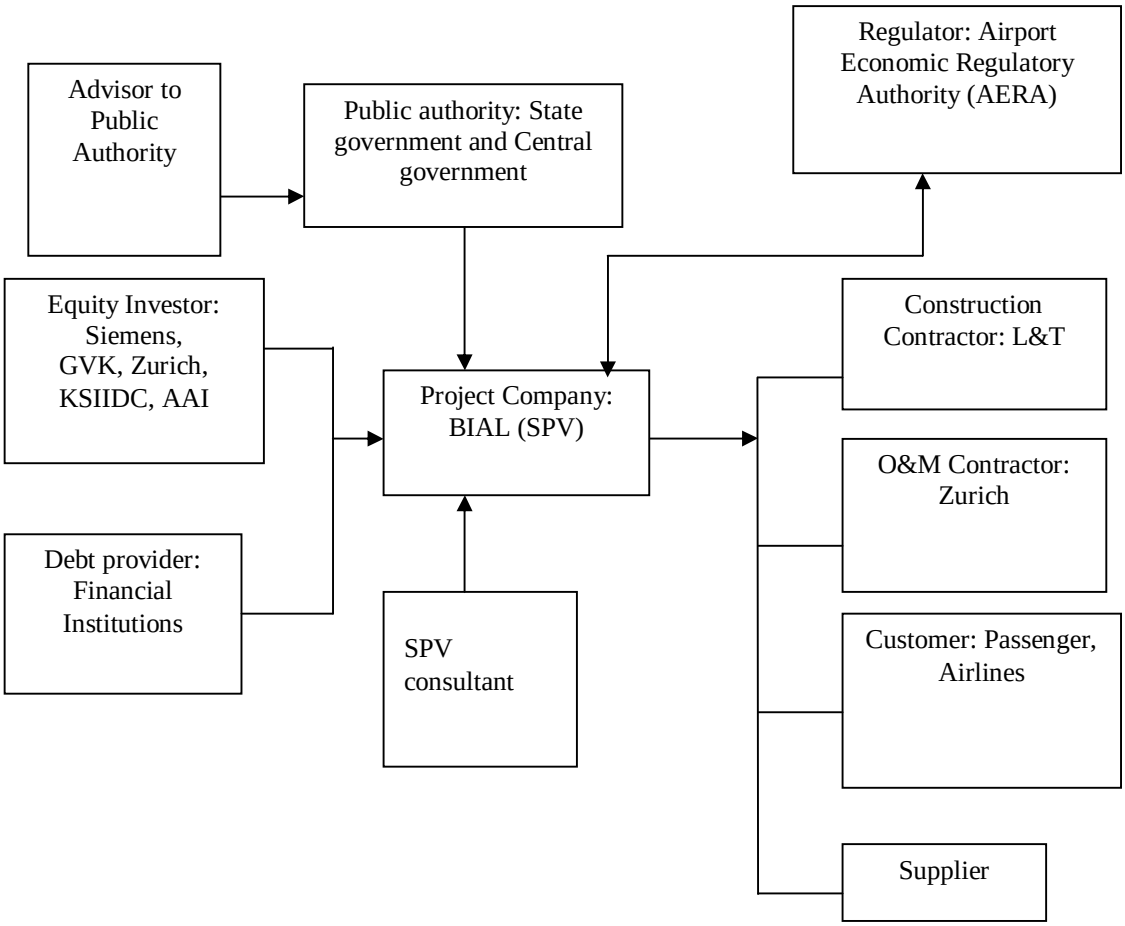

Figure-1. Typical PPP Project Structure for BIAL

Few changes have taken place in equity structure of BIAL despite provision of shareholding lock in period,

- Siemens Project Ventures shall hold at least forty percent (40%) of the paid up capital of BIAL for a period of three (3) years after commercial operation date (COD) of airport and not less than twenty six percent (26%) for a period of seven (7) years after COD .

(i) Flughafen Zurich AG can divest equity only after three years from COD. But its equity cannot go below 5% during the concession period.

Initially the Zurich had equity stake of 17% in BIAL. It had divested 12% stake to m/s GVK for $96 million on 7-10-09(after completion of three years from COD).

(ii) L&T had sold its full stake of 17% to Mumbai Airport Developers Private Limited, a wholly owned subsidiary of GVK Power & Infrastructure Limited on 6-12-09. The acquisition was priced at Rs 105 per share with total cost of Rs 686 cr.

Equity sell by Zurich (Foreign Partner) was as per the provision of Concession Agreement (CA) which allowed them to divest 12% equity (out of Total of equity of 17%) after COD. As per Zurich, the equity has been sold for raising funds for development of 2nd phase of BIAL development however they remain committed to operations through their continued equity participation of 5%.

There are news that other foreign partner, Siemens, is also willing to sale its equity and waiting for minimum lock in period to end. Concession agreement of BIAL is silent about the sharing of the risk related to the exchange rate variation. This may be one of the reasons for equity sale by foreign partner.

L&T cited that it has the role of construction agency, so it is free to divest completely after construction completion. Concession Agreement is silent about (when) the sale of equity by L&T and other partners i.e. AAI and KSIIDC (Karnataka State Industrial Investment and Development Corporation). As a mean to ensure adequate construction performance of the project, the construction agency must have a minimum equity lock in period.

CA does not specify mechanism for equity sale approval [16]. It is important that the new incumbent is qualified one. The equity sale generally involves financial gains. The gain out of the equity sale is kept by the equity divester. Public authority can gain only on account of tax applicable on the proceeds (profit) of the equity sale [1, 16]. Sale of equity by original sponsors for early gains is not a good practice in long term airport projects. The new incumbent will definitely be under pressure to generate cash flow to recover its investment. They may resort to cost cutting that may affect the quality of service adversely.

3.2 Project Partners Role

The design of BIAL Airport was prepared by world renowned Kaufmann and Vander Meer Planer AG of Switzerland. Top Indian construction firm L&T (India) was responsible for civil construction work. Contract for equipping the airport with technical system was awarded to M/S Siemens Industrial Solutions and Services Group (I&S) and Siemens India Ltd. The contract included supply, engineering and installation of airfield lighting, IT and communication systems, baggage handling system as well as power supply and building services automation system. Zurich was to handle airport operation.

To handles acquisition of land efficiently, an expert agency KSIIDC (Public agency) was incorporated. The overall project coordination was handled with AAI (another public agency) [7, 30].

3.3 Project Cost

The BIAL airport was planned for the passenger capacity of 8 to 10 million per year initially. The capacity of the airport was increased, by AAI, to 12 million in anticipation of enhanced future air traffic. This has resulted in project cost increase from $UDS 389 million to $USD 495.6 million.

The cost overrun was due to scope change introduced by public agency AAI. The concessionaire was fully compensated for escalated cost under CA. As per CA, the user tariffs to be fixed based on the final audited project cost on completion [8]. Since project cost was not freeze initially, it is difficult to explicitly say anything about the cost efficiency achieved in the project.

Project cost can also be changed due to time over run. The project cost escalation due to time overrun shall always be borne by the defaulting party [16, 32, 33].

3.4 Project Regulation and Control

Airports are high risk zone from security point of view, due to heavy movement of high profile people, general public and foreigners. The security of airport shall be taken over by Public authority in the national interest.

The air traffic control is considered to be a high tech activity which requires lot of coordination, at the national and international level. Only a centralized agency can take over such responsibility. Worldwide the air traffic control is carried out by public authority [32, 33]. At BIAL, Air traffic control and Security services are provided by public agencies like AAI and CISF (Central Industrial Security Force) respectively. The charges for these services are decided by public agencies [8]. The airports operators do not have any say in fixing these charges.

As per CA the risk due to Change in Political Leadership, Local Political Activism, Centre State Relations, and Change in laws is to be borne and addressed by public authority in time bound manner. Due to change in law if any financial loss incur to concessionaire exceeding Rs 10 million in any year, then he shall be eligible for compensation to recover the financial losses. The compensation can be in terms of increased cash flow may be through enhanced concession period. During the concession term the GOIs liability for above risks cannot be more than Rs 100 Cr [8].

The government has also agreed not to permit building of new airport within the radius of 150 km from BIAL. The non-compete status has been given to ensure assured income to the developer. If there is no other airport around, then, the private player may not bother about efficiency or other technological advancements. With a view to protect the interest of the customer, the service level is required to be maintained as per IATA scale used for recognising International Airports.

The airport projects are long term in nature and involve many stakeholders. There is always a possibility of dispute among partners. Early resolution of such dispute is critical for the long term survival and success of partnership. The concession agreement provides for resolution of such disputes among stakeholders through independent regulatory authority. An independent agency, Airport Economic Regulatory Authority (AERA), has been set up for regulation of airports. The power of authority extends into [10],

- Lay down or regulate standards
- Approve Tariff/charges
- Impose penalties for default
- To settle disputes between Public (user), Concessionaire and the Government.

3.5 Project Finance

The debt-equity ratio for the project was 70:30 [30, 39].The commercial /development banks had provided finance for the PPP projects during construction. This was a heavy debt financed project. The rate of interest on project finance is decided based on project risk profile. The project risk profile depends on likely cash available for debt servicing and credit worthiness of the sponsor. Interest rate may be fixed or floating depends upon risk profile. The development of airport projects involve long term finances of more than 30 years (concession period of 30-60 years in case of BIAL). The projection of macroeconomic environment for such a long term is difficult. It makes difficult to negotiate project finance at fixed interest rate for BIAL.

Concession agreement of BIAL is silent about the issues of refinancing**.** PPP projects in United Kingdom had faced lot of conflict due to non clarity on the issue of Refinancing in CAs. Later, Public authority in U.K has incorporated provision for sharing of gain accrued due to refinancing of PPP projects in 50: 50 proportions [19].

3.6 Project Execution

The Greenfield international airport at Bangalore was first conceived by Tata led consortium in the year 1991. The Tatas-led consortium, later, walks out over delay in clearance. *A MOU was signed between KSIIDC and Airport Authority of India, in May- 1999, for development of International airport at Bangalore.* The expressions of interests were invited in June-1999. The bidders were asked to submit detailed project report, in November-2000. Seimen's led consortium was selected by Government of Karnataka on October 29, 2001.The shareholders agreement was signed on Jan 23, 2002. The concession agreement could be signed between State Govt., Govt of India and BIAL in July2004. The concession period was 30 years, with an option to increase it further for next 30 years. The final clearance for the project was given by state government on 21st December 2004. The state support agreement and land lease agreement was signed between State Government and BIAL on 20th January 2005. On March 11, 2005 EPC (Engineering Procurement Construction) contract was awarded to Siemens (Germany and India) and L&T. In next three months following agreements were also signed

1. April 8, 2005: Operation and maintenance agreement - BIAL & Unique Zurich
2. April 6, 2005: CNS/ATM agreement between BIAL and AAI
3. April 30, 2005: Land lease deed signed between BIAL and KSIIDC
4. June 10, 2005: Extension of shareholders' agreement
5. June 22, 2005: SBI guarantee to state support of Rs 350 Cr.

The financial closure of the project was declared by ICICI Bank on 23rd June 2005. Construction of the project was started on July 2, 2005. On March 7, 2008 first test flight took off from Bangalore HAL airport to BIAL. In brief, Project development took 108 months which can be divided into following four time stages (for detail refer figure-2),

- Conceptualization to signing of concession agreement = 63 Months
- Signing of concession agreement to land lease deed =10 Months

- Land lease deed to financial closure = 2 Months
- Financial closure to End of construction= 33 months

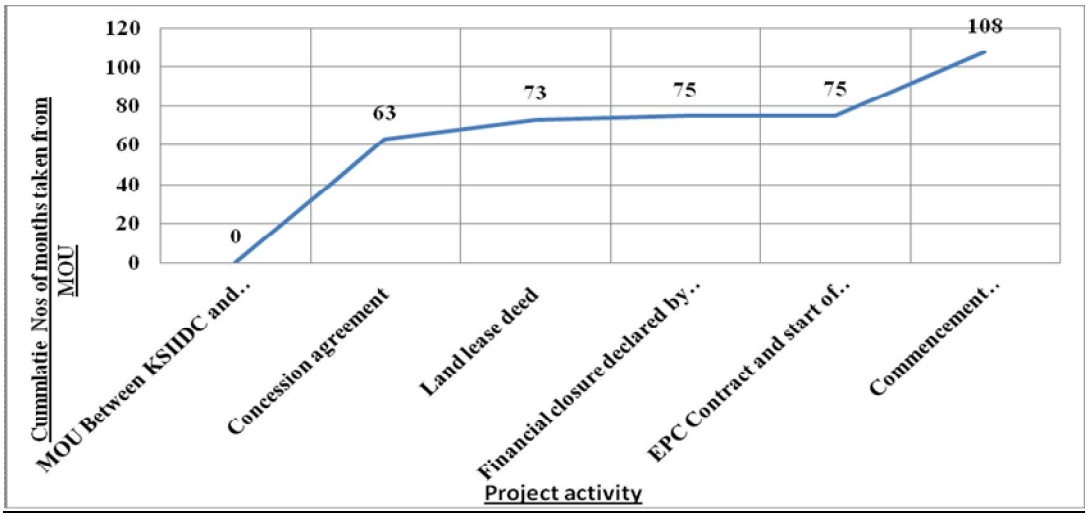

Figure-2. Cumulative Numbers of Months (taken from the day of signing of MOU)

The acquisition of land for BIAL project was done by the government, through state agency KSIIDC under state support agreement. It took 73 months (Refer Figure-2) from the date of **conceptualization of the project** to the **signing of land lease deed**. The time taken for land acquisition (73-Months) was more than the time taken for the construction (33-Months).

Concession agreement has no mention of time frame to hand over the unencumbered land. It has no clause to compensate the concessionaire for delay in land acquisition [8].

The financial closure for BIAL was achieved just after the signing of land lease agreement. It seems that lender did not want to shoulder the risk in land acquisition. They did not commit any financial resources (financial closure) till the time title clear land for green field projects were available [16, 32, 33].

The agreement provided time frame of 33 months, beyond financial closure, to complete the construction of project. CA has provision for payment of damages by defaulting party, if project extends beyond scheduled time. The BIAL project was completed within the defined timelines of 33 months.

3.7 Project Operation

The operation of BIA is to be carried out as per the guidelines of IATA. The airport is supposed to maintain operational performance of at least 3.5 point on 5-point IATA scales. Non achievement of service level agreement (SLA) is treated as default event. All such events attract penalties as per concession agreement [8].

The concessionaire may be debarred from continuance in case of service level default. But the services of the airport cannot be stopped in the public interest. The lender of the project shall be given 1st chance to redress the grievances. Otherwise public authority shall take over the operation of the airport. Such kind of provision in PPP is referred as substitution [32, 33].

3.8 Project Revenue

The cost incurred in airport development is allowed to be recovered through collection of user fees. User fees are decided based on user affordability, their willingness and public authority's value for money requirement. Various popularly known service charges at airport are *user development fees, user service charges, landing charges etc.* The part cost of the project can be recovered through non project aeronautical activities like retail activity, real estate rentals, restaurants, hotels, parking charges, advertisements, convention centre, etc.

BIAL intends to achieve non aeronautical and aeronautical income in the ratio of 60:40. The main sources of aeronautical revenue [7] are user development fees, Passenger service fees, Aircraft landing fees, Aircraft parking fees, Aerobridge charge. The source of Non Aeronautical Revenue is mainly the real estate development which includes development of hotel on 4-Acre land by L&T-Oberoi consortium. Land is given to consortium @Rs 35 Cr per Acre. About 515 acres more land is still available for further development of real estate. I.e. a **cargo** and logistics centre, hotel and conference centre.

The concession agreement of BIAL provides for two types of chargeable tariffs at airports, which are UDF (User Development Fee) and ADF (Airport Development Fee) (Table-1). The AERA (Airport Economic Regulatory Authority) has to decide about methodology for the tariff fixation which has come into being in 2010. Till formation of AERA, these charges were fixed up, on ad-hoc basis, by concessionaire with permission of Ministry of civil aviation [23].

Table 1

BIAL Tariff Guidelines (ICRA, 2008)

Charge type	Timing	Authority	Tariff criteria	Comments
Aeronautical Charges	Before AERA formation	Ministry of civil Aviation	AAI rates + inflation	BIAL remain unable to raise charges in tune with the inflation index and had continued with the 2001 AAI rates
	After AERA formation	AERA	Previous year rate + Inflation	
User Development Fee (UDF)	Before AERA formation	Ministry of civil Aviation	CA is silent on amount, Method of calculation	Ad-hoc UDFs were levied
	After AERA formation	AERA	CA is silent on amount, Method of calculation	Clarity needs to be brought in by AERA.

BIAL concession agreement is silent on tariff fixation methodology. It is obvious to have conflict after AERA comes into being. BIAL represented to AERA that the CAPM (Capital Asset Pricing Model) method cannot be used to calculate the WACC, as beta-value for airport industry is not available since no private Airport operator, at present, is listed on stock exchange. Realistic value for WACC needs to be calculated to arrive at IRR. The demand at airports has a strong correlation with the demand in aviation industry. The beta-value of aviation industry can be used to calculate WACC for airport industry.

BIAL also represented for the rate of return of 24% (proposed by various independent studies) [14].But opting high value of rate of return can results in high value of UDF which may unnecessarily burden the user. If high rate of return is not to be opted than better would be to increase the concession period so as to maintain user friendly UDFs [14].

BIAL represented that average national traffic growth, of last ten years, shall not be used for UDF calculation looking to wide variation in traffic year on year. BIAL had requested for independent estimation of traffic projection.

4.0 Lesson Learned from Case Study

Development of BIAL is a good example of Airport development under Public Private Partnership. It was the first airport project in India where private sector has shown its capacity to execute big projects in time bound manner with its own financial sources. The Concession agreement and shareholders agreement were used to distribute the project risk among the partners based on their ability. Many of the issues of the risk could be identified only during the execution and operation of this project as no history is available for this kind of project model. The Lesson learned during the course of project execution and operation can be helpful in better implementation of future green field airport development PPP projects in India.

4.1 Strengths

Airport development and operation involves many activities. To do all activities efficiently, a special kind of PPP structure was adopted for BIAL. There was an expert agency for each project activity. These expert agencies have an equity stake in BIAL. Their level of equity not only indicates the project risk profile but also indicate the level of interest that the sponsor has to take in project implementation. This kind of provision has been tried for the first time for airport development in India .It was intended to bring about ownership sense among partners to achieve highest level of efficiency and commitment. BIAL has provision for minimum shareholding of various investors upto predefined event with a view to ensure his

dedication for the success of the project. Investors have not been allowed to sale their equity during the phase of construction, the most risky phase in infrastructure project [1, 16].

BIAL concession agreement has flexibility for investors to exit from the project at some predefined moments so as to maintain their interest in high investment long duration airport projects. Simultaneously, an adequate exit barrier, for share holders, has been incorporated in concession agreement so as to maintain effective performance of the project.

The construction of the project was done efficiently by the private party in scheduled time period of 33 months. The possible reason for that could be the involvement of L&T, A Reputed and experienced construction firm, as one of the equity holder.

However to ensure adequate service level, the operation of airports is expected to be as per international standard. Performance during operation is governed by International Air Transport Association (IATA) guidelines. To measure operational performance IATA has provided for 5-point scale of measurement. An Airport can retain international standard only if it achieve 3.5 points on IATA scale.

Concession agreement of BIAL also ensures adequate long term political support to the private developers. It provides for adequate compensation in the event of loss to developer due to any change in law. To protect competitive position of BIAL, the government has agreed to grant non-compete status for BIAL airport.

BIAL is a perfect example of *two sided market. O*nly a part cost of the Airport development is recovered through tariff i.e. UDF/ADF. The loss incurred in providing airport services at reasonable rate is to be recovered through income from non aeronautical services like retail activity, real estate rentals, restaurants, hotels, parking charges, advertisements, convention centre etc.

An independent regulatory authority named Airport Economic Regulatory Authority (AERA) was set up to monitor and determine the user fee with a view to ensure reasonability & transparency.

4.2 Weaknesses or Internal Risks

It took 32 months (from the day of signing of MOU for development of Airport) for selection of concessionaire for BIAL. It was almost equal to the time taken for the construction of the airport. The **bidding process for selection of concessionaire** seems to be very long.

It was assumed that public authority can do land acquisition efficiently, so expert public agency, KSIIDC, was included as equity partner in BIAL. It took 73 months, for land acquisition, from the day of signing of Airport development MOU. Concession agreement has provided the timelines for construction by private party but it has not provided timelines for acquisition of land by public authority. Time taken for land acquisition was too high. This reflects the need for **improvement in land acquisition process**.

The **cost of the project** was not fixed at the time of signing of the BIAL concession agreement .The concessionaire were allowed to take the cost on the day of completion of the project as the project cost for setting up the airport tariffs. This was basically a **cost plus model** where the concessionaire was protected from cost risk due to likely time overrun caused by long bidding and uncertain land acquisition process. .

Project cost on completion can be specified only for the time certain contract. But the total timelines (total time for Land acquisition and construction) for the project was missing in the concession agreement. In view of that, may be, the total project cost on completion could not be provided in the concession agreement. Since project cost was not freeze initially as per the concession agreement, it is difficult to explicitly say anything about the cost efficiency achieved in the project.

Financial closure of the project could be done only after land lease agreement was signed between government and the concessionaire. It seems that the lender sees the acquisition of the land as the biggest pre construction risk in green field infrastructure projects. Lenders only like to finance projects which are free from pre construction risks.

Looking to the huge requirement of land, the new airport could be established at around 34 km away from the main city. This has put an additional cost on public for traveling from their respective locations to the airport. The additional travel time and cost in local movement may encourage passenger for nearby destinations i.e. Chennai, Hyderabad, Mysore etc to use road/rail system instead of air travel. This can be a revenue loss to the concessionaire. In addition the local government had to bear the additional costs associated with ensuring access to the airport from the main city by developing roads, transport facilities and other infrastructure.

Few of the foreign partners in BIAL had sold their equity just on completion of their minimum lock-in period. Foreign equity exits not only result in capital outflow but also results in loss of expertise, which can affect efficient operation of Airports. In airports, if investment is made in foreign currency and revenue is recovered in local currency then the investor interest will be adversely affected due to downward movement of local currency. The investors are subjected to financial risk on account of exchange rate variation [1, 16, 22].

4.3 Opportunities

India has huge potential for development of Green field airports. AAI has planned to modernise and expand 35 non-metros (including Kolkata and Chennai airports) during the next five years.

A green field airport is planned in Navi Mumbai as scope for expanding the current airport at Santa Cruz (Mumbai) is limited in long run due to its location amidst dense urban habitation and lack of available land for expansion requirements.

Expansion of Chennai Airport has been planned in phased manner. The Airports Authority of India (AAI) has planned to develop the new airport gradually so that it can be operated along with the existing airport. Once new airport is constructed fully, Chennai will become the first city in the country to have two international airports .Second airport for Chennai is planned to be located at Sriperumbudur. It will not be as grand as touted. It will have a runway, a terminal building, approach radar and an air traffic control unit basic facilities required to handle spillover traffic from Chennai airport.

AAI has plans for new airports in cities like Dabra (Madhya Pradesh), Saras (Rajasthan), Durgapur (West Bengal) Paladi Ram Singhpur (Rajasthan), and Karaikal (Puducherry), Kushinagarh in UP, Bikaner and Ajmer, both in Rajasthan. All these airports will be Green field projects.

4.4 Threats or External Risks

At the time(year 2004) of signing of concession agreement for BIAL (A PPP project for Airport development in Bangalore) the Air Traffic Movement (ATM) and passenger movement was growing at double digit. The ATM grew @17% CAGR during the period 2001-02 to 2007-08, which came down to growth rate of negative 0.1% during 2008-09. ATM during year 2009-2012 grew just @ 5.8% CAGR.

The passenger movements (PM) which grew at 20% CAGR during 2001-02 to 2007-08, saw a negative 6.8% growth during 2008-09 [23]. The passenger movement during 2009-2012 grew only @ 13% CAGR.

Prime risk in airport operation seems to be variation in demand (Traffic). The future cash flows for Bangalore international airport were projected considering only the positive growth in traffic. But this proved to be incorrect during the initial years of the BIAL concession period. Realization of projected demand during long duration of 30 years (concession period of BIAL) seems doubtful. Currently available statistical techniques may not be suitable for forecasting long duration demand. The Air passenger demand may get affected by economic slowdown, which is difficult to predict. There has to be some formula to take its effect into account for more realistic projection of traffic demand [14].

Sharp decline in traffic also affect non-aeronautical revenues such as those from retail, food and beverage, parking, and advertisement, which has a strong correlation with the volume of passenger traffic [23]. Revenues could be affected by the downturn in the real estate sector in 2008-09. The downturn has forced private airport concessionaires to look for alternative sources of funds. Earlier their business models were relying significantly on the development and sale of land adjacent to airports [23].

The concession agreement of BIAL is silent on the issues of traffic and revenue risks. These risks have to be borne by concessionaire.

In heavy debt projects, the cash flow should be sufficient to meet debt service obligation and maintain reserve fund. If not, then potential for liquidity risk exists. In such situation, either the sponsor shall provide cash in reserve or lender shall provide the additional finance [1, 16, 29]. Sponsor is supposed to maintain mandatory DSCR (debt service cover ratio) as per the agreement with project lender. If due to reduced cash flow DSCR falls below the mandatory requirement then no cash out of profit can be distributed to sponsor till the time mandatory requirement is fulfilled. In such case the cash flow after debt servicing shall be put in an

escrow account [25]. If the sponsor fails to generate sufficient profit it may be difficult to carry the project through the concession period. They may abandon the project and file for bankruptcy as it may not be possible to reduce level of services for cost saving and increase user charges beyond reasonable limits due to provisions of SLAs and the user charges regulation .

BIAL concession agreement does not have provisions to deal with the issue of *refinancing*. It may be one of the causes of future conflict among the partners. Debt refinancing is possible after end of construction phase of the infrastructure project when there is the substantial reduction in risk. After start of Airport operation, the PPP projects sponsor may resort to debt refinancing for financial gains. The gains may be on account of the change in terms and conditions of project loan [19],

1. Reduction in the interest rate
2. Increase in debt amount: Replacement of equity by debt results in reduction of financing cost of the project.
3. Extension of debt repayment period may reduce the project tail period
4. Improvement in loan terms i.e. reduction in reserve account requirement: This will increase the distribution to the investor that also reflects reduction in project risk.

The mechanism to share the risk and gain of project refinancing shall be clearly spelt out in shareholder's agreement of the PPP project to avoid likely conflicts among partners [19]. Ideally, in PPP projects, there should be provision for the sharing refinancing gains with public authority in following forms,

- Reduction in service fee
- Reduction in concession period
- Onetime payment to public authority

- Investment of the gain in project on behalf of public authority

The public authority and lender has to share *larger risk* in case of refinancing. Higher termination payment may be required to be paid by public authority. New lender may have higher risk due to their offering loan at low debt service cover ratio.

Non inclusion of provisions related to refinancing in BIAL CA may be a cause of conflicts in future [8].The conflict due to issue of refinancing is not visible currently because newly developed airports are not in high profit position. Once these airports stabilize and start generating adequate profit; the refinancing of projects would be possible which may generate high gains. That might cause conflicts in PPP due to silence in CAs on this issue.

Non clarity on tariff fixation methodology had resulted in conflict among public- private partners. The user charges for some airports in India were decided considering only average rise in whole sale price index/inflation in 2010[8]. AERA had considered average inflation of 5.33% for calculation of UDF for Hyderabad International Airport Limited (HIAL) in the year 2010. Unrealistic assumption of inflation for calculation of UDF may adversely affect the **cash available for debt servicing (CADS)**. The incumbent may not be able to fulfil its obligation towards lender in such situations [14].

UDF calculation for AAI run airports (in year 2010), like Ahmadabad and Trivandrum Airport was done by considering *Internal Rate of Return (*IRR) of 12% [2]. This IRR may not be attractive to private investor looking to their higher WACC (Weighted Average Cost of Capital). AERA had considered IRR of 18.33% in UDF calculation for HAIL in 2010. In view of no mention of IRR in concession agreement of BIAL it would be difficult for AERA to fix up IRR. It may be a cause of conflict among public and private partner.

The concession agreement of BIAL has no provision to mitigate the likely risk due to *foreign exchange rate variation*. Non existence of exchange rate protection may be one of the reasons

for early exit of foreign shareholders in BIAL. Possibly this might be the reason that the concessionaire remains unable to attract low cost foreign debt [11].

5.0 Policy Suggestions for Green Field Airport Development in India

Development of BIAL is a good example of Airport development under Public Private Partnership. Since no history is available for this kind of project model, many of the issues of the risk could be identified only during the execution and operation of the project. Policy suggestions are based on mitigation of the issues of risks identified in the case study of BIAL. These may be helpful in development of green field airport projects in India.

5.1 Project Bidding Process: Time frame for selection of concessionaire needs to be brought down. This could be done probably by pre-qualifying the bidders. Only these **prequalified bidders** shall be allowed to submit financial bid.

5.2 Project Cost: Financial bid shall be invited based on **fixed price rather than cost plus model**. This will help in achieving cost efficiency in projects.

5.3 Project Time Control: Land acquisition for development of Green Field Airport takes long time. Time efficiency of land acquisition process needs to be improved. It requires to be made transparent and time bound.

The probable reasons for that may be the highly regulated land transactions due to rigid government rules and procedure. Ownership of land has highly emotional, cultural, social political and economic attachment in India. Whenever one is asked to renounce the ownership of land in the interest of developmental projects he tends to oppose. The opposition is mainly due to ambiguous laws, inadequate compensation package and non transparent rehabilitation package. Airports are supposed to serve the affluent section of the society. The acquisition of the land for such purpose may be opposed citing that the interest of the poor public is hurt by such activity.

There is a need to motivate the land owner to surrender their land easily for infrastructure projects. . If possible then affected **land owners shall be made equity partners** to take care-off their long term interest. Land acquisition disputes can be probably minimised by offering **market liked compensation for the land acquired.**

Ideally the MOU for PPP projects shall provide timelines for acquisition of land for the project. The concession agreement shall be signed only after required land is acquired. Concession agreement shall have the predefined project schedule and fixed project cost on completion. If concessionaire is selected before the acquisition of land then cost escalated during period of *land acquisition* shall be capitalised in the project cost.

5.4 In airport development projects there is a need to do **pre construction activities in parallel**. Based on the learning's of BIAL experience one recommended sequence of activities for airport development could be as per Table-3.

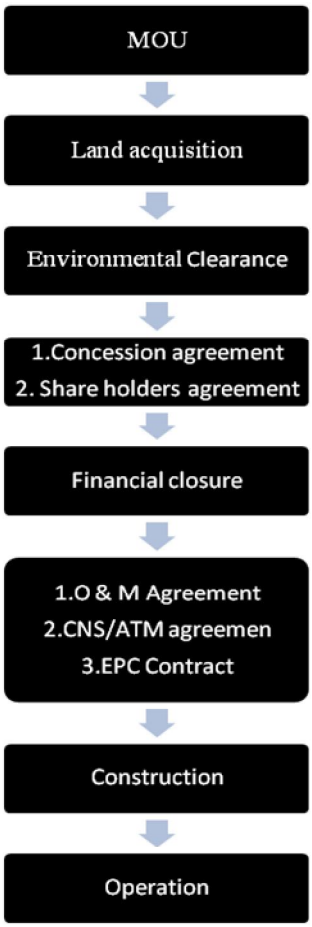

Figure-3. Recommended sequence of activities for airport development in India

As per that, the scope for doing parallel activities is minimal in airport development. Environmental clearances can be secured only after whole project land is in possession. It is possible to select concessionaire either before or along with land acquisition process. In such case it is difficult to specify the project cost on completion because land acquisition process is time indefinite. It is difficult to assess likely total construction cost escalation during the land acquisition.

If cost efficiency is to be achieve then better would be to select concessionaire after land acquisition only. Even lender does not commit finance before land acquisition. So it would be better to select concessionaire only after land acquisition is complete. In such case concessionaire will be able to quote the project cost realistically based on the risk likely during the construction only. There is a possibility of doing parallel activities after financial closure. During that stage o & m contract, EPC contract and CNS/ATM contract can be signed.

5.5 Concession Agreement for Airport Development: Following are some of the recommendations for modifying the concession agreement,

5.5.1 In high cost airport project, where proportion of project finance is very high, anything which is detrimental to timely loan repayment capability of sponsor must be taken care of adequately in concession agreement. **Tariff fixation methodology** should be clearly spelt out in concession agreement. Ideally there is a need to balance the interest of passenger (Public) and commercial interest of developer while deciding on tariff fixation model. The long term investment requirement of the airport industry shall also be kept in view while deciding on tariff methodology [10]. Worldwide two methodologies are used for tariff fixation.

- Single till model
- Double till Model

International Civil Aviation Organisation (ICAO) recognises Dual Till Model for tariff fixation as best practice. This model allows for the separation of aeronautical income from the non aeronautical one, for the calculation of UDF [14].

Dual Till Model is developer friendly due to its high profit margin. Its high profit prospects may be motivate developers to make more operating investment in aeronautical services which results in improved quality of service. This model has been adopted in the Countries like Switzerland, Netherlands, Australia and Most of the Asian countries, and proving to be successful in terms of service quality. High operating profit prospects of Dual Till Model can also acts as an incentive for attracting more private investment in Airport industry [10].

Single till model for tariff fixation may definitely help in bringing down the UDF charges, which may be in the interest of the passengers as well as the airlines operators. This model is practiced in UK and USA. Under this model operator might concentrate more on non aeronautical activity for revenue generation and, less on investment in aeronautical activity for improvement in service quality. The possible drawback of which could be capacity constraints and lack of service quality at the airports [10].

Tariff fixation is the area which requires high ***regulation***. Regulation of tariffs is important to balance the interests of passenger, airline and airport operators. Speed of investment has a direct correlation with availability of transparent regulatory mechanism for tariff fixation and rate of return [10].

Worldwide the tariffs for the airports are regulated based on two methodologies, one is *price cap regulation* and other is *cost plus regulation*. In ***price cap regulation***, tariffs are enhanced by factor WPI-X (X= Rate of growth of industry).This kind of regulation helps in achieving higher productive efficiency. Once the price is fixed, the

only way to increase operators profit shall be to reduce the cost which sometimes results in risks of reduced quality of service. But it is definitely price efficient for the users.

But setting the value of 'X' is an art. More value of 'X' can result into zero economic profit to the operator, which could create disinterest to the operator. In the initial years of privatization to succeed, the value of 'X' has to be set in such a way that the operator gets enough returns on their investments. This may helps in attracting more private investment in this sector.

To avoid such complications better would be to give **cost plus regulation** a chance in the initial years of privatization. In cost plus regulation, operator knows that the higher cost of operation will be reimbursed in the form of higher prices so they do not make efforts for cost cutting. This may also result in better quality of services.

Methodology for tariff fixation should so decided that it neither results in excessive burden on the user nor it results excessive private profit. Keeping this in view CA should have clear mention of **IRR allowed and Regulation to be adopted**.

Ideally, tariff fixation shall take into account the airport development cost and marketing strategies (premium charge for peak demand, offering bulk discounts) for enhanced business development. User fees shall be fixed to meet all cost i.e. operating costs, debt servicing requirement [4].

5.5.2 Financial risk in PPP projects is the result of macroeconomic variations in the economy. Prediction of these variations for long duration concession period is difficult for the sponsor. Only public authority has the capacity to take care of macroeconomic environment. It will be inappropriate to put all financial risks of PPP projects in the kitty of sponsor. **Sponsor shall be adequately protected from financial risks** i.e. interest rate risk, Foreign exchange rate risk, Inflation risk.

These risks can be mitigated either by currency hedging or by upwards revision of user charges or by certain kind of direct reimbursement from government so that developer may remain competitive [22].

Interest rate risk in project loans can be mitigated by hedging through interest rate swaps. Under swap agreement a base interest rate is agreed upon between two parties (swap holder and swap guarantor). On the base rate two other costs are also agreed, one is swap market premium and credit premium. Swap market premium is decided based on the demand & supply gap of financial resources and credit premium is decided based on the credit risk. The sum of market premium and credit premium is considered as the cost of interest rate swap. This cost can be built-in the user fees so as to minimize the risk [1, 8].

The financial loss or gain due to exchange rate risks shall be adequately shared between public authority & concessionaire. This may help in attracting low cost foreign debt required for better project cost efficiency.

5.5.3 The public authority should not expect any **profit sharing** out of **equity sale**. But the sale of equity in PPP project shall be done only with the prior permission of public authority. It's better if guidelines for equity sale are clearly spelt in the concession agreement.

It is necessary that adequate equity of the concessionaire is maintained in the project during the whole concession period so as to prevent concessionaire from filing for bankruptcy due to any arbitrary reason.

5.5.4 The **debt refinancing** of the Airport project shall be allowed only with prior permission of public authority. Profit due to debt refinancing shall be shared among public and private partners. Profit sharing mechanism shall be clearly spelt out in the concession agreement so as to avoid conflicts among PPP partners.

5.6 To maintain investment interest of private parties, in infrastructure PPP projects of long duration concession, it is necessary to **mitigate the demand risk** (Traffic variation). It should be adequately shared with public authority for long term sustainability of PPP projects in Airport in the following manner,

A. Sharing of profit and loss beyond the minimum threshold between public authority and concessionaire.

B. Provision to increase concession period to compensate for the loss.

C. Using full cost recovery model i.e. Annuity model used in highway projects

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