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Airports Economic Regulatory Authority of India

In the matter of Normative Approach to Building Blocks in Economic Regulation of Major Airports

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1. BACKGROUND:

1.1. The Background of the determination of aeronautical tariffs including the "development fees" (both the airport development fee or the ADF and the user development fee or the UDF) has been summarised in Para 1.4 infra. The framework and philosophy for tariff determination decided for adoption by the Authority has been challenged by the private airport operators in the appellate tribunal AERAAT. There was also discussion in various fora, including the Government and the Planning Commission, on this matter. It has been felt that the Authority may also consider evolving a normative approach to the process of tariff determination at major airports. The following paragraphs analyze issues involved in such a normative approach and is put forth for stakeholders' comments after which the Authority will make the final decision in this matter.

1.2. **Letter from the Ministry of Civil Aviation-normative approach**: MoCA has recently indicated to the Authority give its consideration to developing norms with respect to the following items. The Govt. has indicated that by so doing all the stakeholders' would be aware of the boundaries within which they have to operate:

1.2.1. Debt-Equity ratio

1.2.2. Rate of return

1.2.3. Rate of depreciation

1.2.4. Operating expenditure

1.2.5. Procedure and norms for incurring additional capital expenditure.

1.3. In addition to the items mentioned above and based on the experience of the Authority in determining aeronautical tariffs of airports, the Authority has felt the need to also consider norms with respect to the following items. The Authority's analysis on the various issues given thereafter.

1.3.1. Capital Costs in Airport Projects

1.3.2. Asset allocation norm between aeronautical and non-aeronautical services.

1.3.3. Allocation of Operation and Maintenance expenditure between aeronautical and non-aeronautical services.

1.3.4. Estimation of Operations and Maintenance costs based on certain normative features like O&M costs per passenger.

1.3.5. Incentivisation of airport operator for increasing non-aeronautical revenues purely commensurable with the "efforts" of the Airport Operator

1.4. The Authority had issued its philosophy and framework for economic regulation of major airports vide its Order No. 13 of 2011 dated 12th January, 2011 (hereinafter called "Airport Order"). As indicated in Para 17.5.13 of the Airport Order, it had also indicated that it proposes to operationalize the regulatory philosophy and approach as decided in the Airport Order through detailed guidelines. The Authority had also stated that draft of the "Airports Economic Regulatory Authority of India (Terms and Conditions for determination of tariff for Airport Operators) Guidelines 2011" is being issued separately for stakeholders' consultation before its finalized. Accordingly, the Authority issued a Consultation Paper on 2nd February, 2011, for the purpose of Airport Guidelines. After stakeholders' meeting thereon (held on 14th February, 2011), it finally issued the Airport Guidelines vide its Order No. 14 of 2010-11 dated 28th February, 2011. The Authority has made it clear in both the Order and the Guideline that it is passing these in discharge of the legislative mandate under the AERA Act 2008.

1.5. **Timeline of consultations**: Both the Airport Order and the Airport Guidelines deal in detail the building blocks as well as procedure that the Authority would follow in the matter of economic regulation of major airports. Both were finalised after widely held consultations with stakeholders spreading over a period of over an year starting from the initial "White Paper" issued on 22nd Dec 2009 and finally culminating into the Airport Order (12th Jan 2011) and Airport Guidelines (28th Feb 2011). It would be seen that the work of finalizing the philosophy of economic regulation of the airports has had the benefit of diverse consultations and views. Secondly, the Airport Order and as well as the Airport Guidelines clearly delineate the principles of tariff determination in a clear, predictable and transparent manner. The Airport Guidelines indicate, inter alia, the definitions of the terms used, explanation of the regulatory building blocks, stylized illustrative calculations, detailed procedure and formats for submission of technical and financial information. The formats prescribe various financial items like Construction

cost, depreciation, forecast of passenger, ATM and Cargo traffic, forecast for non-aeronautical revenues, O&M etc. Clear principles and procedure were laid down for each element of the regulatory building block including Fair Rate of Return on Equity by adopting the Capital Asset Pricing Model (CAPM). The guidelines also give the protocol for meaningful, effective and constructive engagement of the Airport Operator with the stakeholders etc. The effective consultation with the stakeholders was prescribed to address issues of "gold plating" etc., and to take on board genuine and reasonable concerns of the stakeholders. In the appeals preferred by the private airport operators or associations of stakeholder like FIA, IATA with AERAAT, the issue of lack of clarity in the Authority's Guidelines has not been agitated. The timeline of consultation is given below:

Figure 1: Economic Regulation of Airports- Consultation and issue of orders Timeline for AERA

1.6. In accordance with the Airport Order and Airport Guidelines, all the major airport operators (both the AAI as well as private airport operators under PPP model) submitted their requisite proposals for determination of tariffs for aeronautical services. The Authority also issued vide Order No 12/ of 2011-12 dated 10.01.2011, the procedure that it will follow in respect of determination of tariffs for service providers of aeronautical services providing ground handling services relating to aircraft, passengers and cargo at an airport, cargo facility at an airport and supplying fuel to the aircraft at an airport (hereinafter called CGF Guidelines). The Authority, after appropriate procedure and stakeholders' consultation, has so far finalized the tariffs for aeronautical services as well as determination of development fees (that sometimes is called "Airport Development Fee or ADF" as well as "User Development Fee") (Refer Para 1.8 below). In addition to the determination of Airport Tariff(s), the Authority has also finalised tariffs for over 130 CGF Service providers.

1.7. While determining tariffs in accordance with the guidelines, the Authority has kept in focus the definition of *"airport user"* under Section 2(c) of the AERA Act meaning *"any person availing of passenger or cargo facilities at an airport".* It has therefore kept these two users in primary focus while discharging its function of determination of aeronautical tariffs as well as development fees.

1.8. As of date, the Authority has issued the final aeronautical tariff determination Orders (including UDF) in respect of the following Major Airports:

Table 1: Tariff Determination Orders issued by the Authority

Sl.No	Airports	Order No	Issue date
1	IGI Airport, New Delhi for the first Control period 2009-2014	03/2012-13	24th April, 2012
2	CSI Airport, Mumbai for the first Control period 2009-2014	32/2012-13	15th January, 2013
3	Netaji Subhash Chandra Bose International Airport, Kolkata, for the first Control period 2011- 2016	35/2012-13	24th January, 2013
4	Chennai International Airport, Chennai for the first Control period 2011- 2016	38/2012-13	4th February, 2013
5	Lokpriya Gopinath Bordoloi International Airport, Guwahati, for the first Control period 2011- 2016	34/2013-14	19th November, 2013
6	Rajiv Gandhi International Airport Hyderabad, for the first Control period 2011- 2016	38/2013-14	24th February, 2014
7	Kempegowda International Airport Bengaluru, for the first Control period 2011- 2016	08/2014-15	10th June, 2014

1.9. Apart from the final orders mentioned above, the Authority has issued consultation papers in respect of Chaudhary Charan Singh International Airport (CCSIA) at Lucknow vide Consultation paper No.01/2014-15 dated 21st April, 2014 and Cochin International Airport vide Consultation paper No.03/2014-15 dated 5th June, 2014. Analysis of the work of issue of consultation papers in respect of Ahmedabad International Airport, Calicut International Airport, Jaipur International Airport and Trivandrum International Airport are under consideration of the Authority. Additionally, the Authority has also issued a number of consultation papers for determination of tariffs of CGF service providers and after due stakeholder consultation issued the tariff determination orders/directions.

1.10. In the course of its determination of aeronautical tariffs for major airports, the Authority had reviewed the investments made by the airport operators. In all the airports mentioned above (both of AAI as well as those of private operators through

joint venture companies under PPP mode), the investments in airport facilities had commenced before the Authority had come into existence and in some of the cases contracts for the augmentation of airport facilities were already issued, at any rate, before the philosophy and framework of the Authority had been finalised. For this reason, the Authority reviewed the expenditures made by the respective airport operators and wherever necessary satisfied itself regarding its reasonableness through independent evaluation by Technical and Financial Consultants.

1.11. During the course of its analysis as well as subsequent to the orders issued by the Authority, the Authority has come across comments from certain stakeholders' that the investments that have gone into the airport facilities have been of a much larger magnitude (for example, in Delhi and Mumbai airports). The Authority has also received comments that the final costs in respect of Delhi and Mumbai airports have been much higher than what was initially contemplated. The Authority has given its detailed analysis on these points in its respective orders. There have been reports in some of the newspapers alleging high investment in airports, cost escalations in respect of Delhi International Airport and that higher investments by the airport operator will entitle him to higher profits. (Indian Express, Dec 13, 2013). As has been indicated above, all these investments were either already made or decided to be made much before the coming into being of the Authority. The projects were approved by the Boards of the respective airport companies with senior level representation from MoCA and Airports Authority of India. Even so the Authority after reviewing the results of the Independent study by Technical and Financial Consultants (as was also required under the communication of MoCA) had disallowed certain elements of the capital costs to arrive at the allowable project cost for the purposes of Regulatory Asset Base (RAB). The fair rate of return on equity that the Authority has so far given is 16% of the equity in the project based on proper risk-return analysis and the CAPM model.

1.12. Wherever new investments are now proposed to be made, for example, in respect of BIAL, the Authority has indicated in Para 5.44 of the Consultation Paper Addendum No.22/2013-14 dated 24th January, 2014 as to the necessity for stakeholders' consultation, appropriate preparation of detailed engineering and cost estimates with respect to publicly available standards as well as schedule of rates like

CPWD etc. The Authority has also clearly indicated in its Order No.08/2014-15 dated 10.06.2014 in respect of tariff determination of Kempegowda International Airport Bengaluru, for the first Control period 2011- 2016, vide Para 9.46 as well as Decision No.05 that the terminal area should conform to the norms that have been laid down in the Report of the Inter Ministerial Group – Norms and Standards for Capacity of Airport Terminals. As regards the stakeholders' consultation, the Authority had already given detailed protocol in its Airport Guidelines for making such consultation both meaningful and effective. In its tariff determination Orders and Consultation Papers the Authority has also indicated that it would review the reasonableness of costs incurred by the airport operator through independent Technical Consultants like EIL (for example, the expansion of T-2 at Mumbai and T1 expansion at Bangalore).

1.13. Apart from the issue of reasonableness of the capital costs incurred on the airport project, the Authority had to also review the asset allocation between aeronautical and non-aeronautical users, separation of costs between aeronautical and non-aeronautical activities (separation of Operations and Maintenance costs), etc., particularly when this became necessary on account of computations made on the basis of Shared Revenue Till. In respect of Delhi and Mumbai airports, the Operations Management and Development Agreement (OMDA) also refer to *"Efficient Costs"* of airport operations. The Authority has given these tasks to another expert agency like Institute of Costs and Works Accountants of India – Management and Research Foundation (ICWAI-MARF).

2. Benchmarking Airports:

2.1. Developing norms is a part of the exercise of "benchmarking" of airports. The Authority is aware of different benchmarking exercises like Airport Transport Research Society (ATRS), Civil Aviation Authority (CAA) just to name a few. ATRS publishes year-wise reports on airport benchmarking of over 220 airports around the world on different parameters. CAA has published, inter alia, "CAA Airport Operating Expenditure Benchmarking Report 2012, CAP 1060, in June 2013. In its literature review, CAA has listed various studies like Leigh Fisher Airport Performance Indicators 2011, Booz & Company European Airport Benchmarking Study 2012, Steer Davies Gleave Stansted mid Q6 Review. Prof Anne Graham, in her book "Managing Airports, 4th edition, 2013,

Chapter 3 gives operational parameters for different airports and lists factors influencing costs, revenues and efficiency levels. According to Prof Graham,

> *There is no 'typical' airport when it comes to looking at the services and facilities provided. Beyond the basic operational functions, different airports have little in common. The level of direct involvement will vary, with some airport operators providing activities such as security, air traffic control, handling, car parking, duty free shops and cleaning, while others will contract these out. In the extreme case, terminals may also be leased, as is the situation in the United States. All this will have an impact on both cost and revenue levels. F or example, Vienna airport generates over 30 per cent of gross revenues from handling. This is very different from airports, such as London Heathrow and Amsterdam Schiphol that generate a relatively small amount of revenues from this activity in the form of rents and concession fees paid by the airlines and handling agents. Handling services may even be produced jointly, for example with the airport supplying the check-in desks and the airlines staffing the desks. In some cases the situation may be even more complicated - the government may pay for the provision of certain services, as is typically the case with the provision of policing, security or fire and rescue.*
>
> *Economic comparisons in any industry must acknowledge the accounting policies adopted by individual operators. Within the airport industry, accounting procedures vary considerably, particularly as some airports adopt government or public authority accounting methods rather than commercial practices. With government-owned airports it is possible, for example, to find that the airport's land will not be considered to be an airport asset, and hence will not appear in any balance sheet. Views differ on how assets should be depreciated. For example, Zurich depreciates buildings for 40 years, Amsterdam for 20—40 years, Copenhagen 80 years. At Dublin, runways are depreciated for 10-50 years, at Amsterdam for 15-60 years, and at Copenhagen for 80 years. Airports are subject to different taxation regimes, with many public sector airports, for instance those in the United States, being exempt from most business taxes. This will have an impact on any comparative analysis of net profit levels*

2.2. Prof Odoni cautions about transferring practices from one region to another and that that "best practices" of one region may not be readily transferable to another.[1]. Airports Council International, in its "ACI Guide to Airport Performance Measures", (Oliver Wyman, Feb 2012)[2] lists the issues related to airport benchmarking. According to ACI, "Internal benchmarking, where an airport compares its performance with itself over time, is less complex than external benchmarking because the number of variables that change at an airport from one year to another is limited". It recognises

[1] "Airport Systems", 2nd edition, Mcgraw Hill, 2013, Page 70
[2] http://www.aci-lac.aero/Media/aci/downloads/ACI_APM_Guidebook_2_2012.pdf

the difficulties in airport benchmarking thus:

> *Airports are complex sets of businesses, and different airports operate in very different physical, financial, and governance environments. To make useful comparisons among airports, it is essential to compare similar sets of businesses operating in similar environments—which is easier said than done. When comparing one airport to another, some of the typical factors that drive different results and should be considered in making comparisons include: passenger volume, capacity constraints, mix of international and domestic traffic, mix of local and transfer passengers, mix of passenger carrier service (network, low cost, charter), mix of passenger versus cargo activity, degree of outsourcing, range of services provided by the airport, airport development program status, weather conditions, geographic location, urban versus rural location, physical size of the airport, public transportation access and usage, regulatory environment, local labour conditions, and ownership and governance structure*

2.3. The Authority has also noted that benchmarking tool has been generally applied to the individual "processes" at the airports (time for the first bag to arrive from the aircraft to the belt etc.) The Authority therefore concludes that while developing the norms for airport performance or its economic regulation, particular attention needs to be given to the objectives that the airport infrastructure is expected to fulfil and its relevance to the stakeholders.

Benchmarking and evolving norms for Regulatory Building Blocks

2.4. Having gained experience, in the tariff determination of different airports under the PPP mode, AAI Airports as well as private airports (Cochin), the Authority is proposing the following benchmarks on normative basis with respect to the different regulatory building blocks for stakeholders' consideration.

3. Debt-Equity Ratio and WACC

3.1. The Authority, in its analysis of airport submissions while determining the aeronautical tariffs for the first Control period, indicated that it will take debt equity ratio on actual for the purpose of calculation of Weighted Average Cost of Capital (WACC). WACC involves two elements, namely, (a) fair rate of return on equity and (b) cost of debt. The Authority has been taking the actual interest on debt for computing the cost of debt. For calculating fair rate of return on equity, Authority has adopted Capital Asset Pricing Model (CAPM). It has separately estimated the different elements or components of CAPM, namely, Risk Free Rate, Equity Risk Premium and Equity Beta

of the airport. The estimate of equity beta is based on the asset beta of the airport derived from a comparative set and then converted into equity beta.

3.2. During discussions with Planning Commission as well as mentioned in the letter of the Ministry of Civil Aviation, it is indicated that Authority may consider to take normative debt equity ratio, as is the case with Central Electricity Regulatory Commission (CERC). The Authority has noted that the actual debt equity ratio in respect of different airports vary widely. For example, Cochin is a debt free company as on 31st March 2014. AAI has minimal debt, around 7.9% in Chennai and Kolkata whereas in Guwahati it is 100% financed by equity. Similar is the case as indicated in the Consultation Paper of Lucknow airport. On the other hand, airports of Delhi, Mumbai, Hyderabad and Bangalore display a much higher proportion of debt in their capital structure.

3.3. In case of CERC, the WACC is calculated on debt equity ratio of 70:30, the equity of 30% being taken as a ceiling. If the actual equity is less than 30%, the actual percentage is taken for calculation of WACC. However, if actual equity is more than 30%, return on equity is limited to 30% of equity and excess proportion of equity beyond 30% is given the cost of debt.

3.4. The Authority proposes to follow the same methodology (Refer Proposal No. 1 below). For clarification if the actual proportion of equity is say 40%, only 30% would be entitled for FRoR on Equity and the balance 10% would be entitled to get weighted average cost of debt. Conversely, if the actual proportion of equity is less than 30%, say 25%, the entire 25% of equity would be entitled to get FRoR of equity.

Treatment of Retained Earnings

3.5. The Authority proposes to follow debt to equity ratio of 70:30 with the rider that this is the ceiling for the equity proportion and actual proportion of equity will be taken into account if it is lower than 30% (refer Para 3.3). The calculation of equity in the debt-equity ratio includes *"retained earnings"* which are shareholders' funds. In the normal accounting methodology, profit after tax in the Profit and Loss accounts of the company is transferred to the balance sheet (after effecting necessary appropriations which may include elements like dividends, transfer to any mandatory reserve

requirement, etc.) as retained earnings. The sum of equity and retained earnings is also sometimes called "*net worth"* of the company.

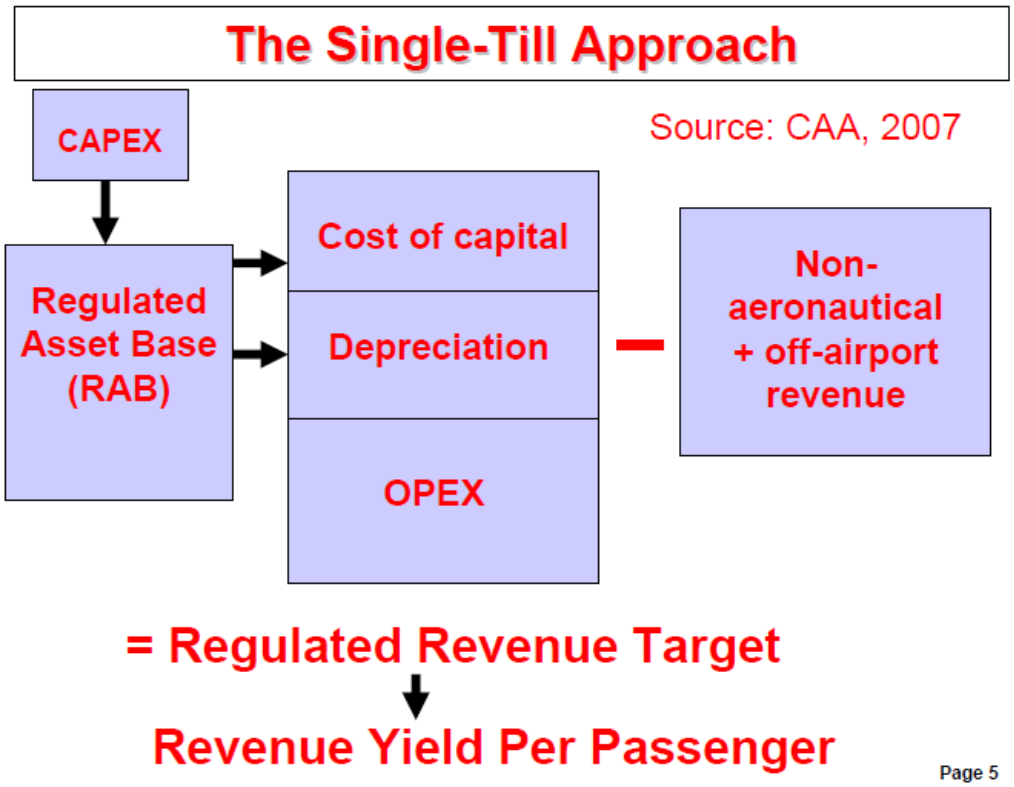
3.6. According to the Authority's framework, taxes as have been actually paid by the Company are regarded as a building block for aeronautical tariff determination. Retained earnings, or for that matter the "net worth" of the airport company may fluctuate from year to year on account of losses made in a particular year that could be on account of higher depreciation (on account of substantial expansion) or lower revenues (on account of general deceleration of the economies) etc. This could be particularly relevant in the initial periods of the airport project. However, the Authority has been of the view that as far as practicable, the financial statements of the company as have been certified by the statutory auditors would be relied upon in the Authority's analysis of tariff determination and calculation of debt to equity ratio (or gearing). Hence the calculations of debt-equity ratio would be based on the balance sheet numbers, equity representing, by and large, the *net worth* and debt representing the long-term debt contracted by the company.

Regulatory philosophy, Return on equity (net worth) and reduction of RAB over time

3.7. Under the tariff calculations that the Authority follows, Weighted Average Cost of Capital (WACC) based on the cost of shareholders' funds (equity plus retained earnings, subject to certain conditions on whether these are invested in capital expenditure at the airport) and that of debt. WACC is calculated for the airport company. This then is applied on RAB to arrive at entitlement of fair return on capital invested by the airport operator. The airport operator has got his investment returned through depreciation. The other means of finances like debt has also been accounted for through cost of debt as an element of WACC (apart from return on equity). Hence once the airport operator has got his capital investment returned, expectation of continuing to get return on equity even thereafter is not reasonable. The equity determines the ownership of the company that owns the various operational assets. In case of airports in particular, this ownership of assets entitles the shareholders to the substantial non-aeronautical revenues that will be generated at the airport even after the RAB has been substantially reduced or even when it has become zero (in the unlikely event of no fresh investment).

3.8. This can be viewed against the backdrop of the standard regulatory building blocks for tariff determination as given in Figure 2[3] (See also Para 10.14 below). In Authority's framework, however, **the tax actually paid is also an element of the building block**. Tax is a statutory payment to the exchequer. The Authority's framework can thus be depicted as in Figure 3 (Note the explicit inclusion of "tax" and that service quality has implications to CAPEX as well as OPEX). The Authority's approach to tax simplifies the calculation of the so called "vanilla" WACC[4] where the cost of debt is taken pre-tax. Otherwise in the post-tax cost of debt where actual tax paid is not an element of building block, the tax rate needs to be assumed ex-ante. Decisions and judgments need to be exercised if the tax rate to be considered is "standard" or "marginal". In cases where, in the Indian context, there are provisions like MAT etc. it is more transparent to take the tax actually paid and treat it as an element of building block of ARR.

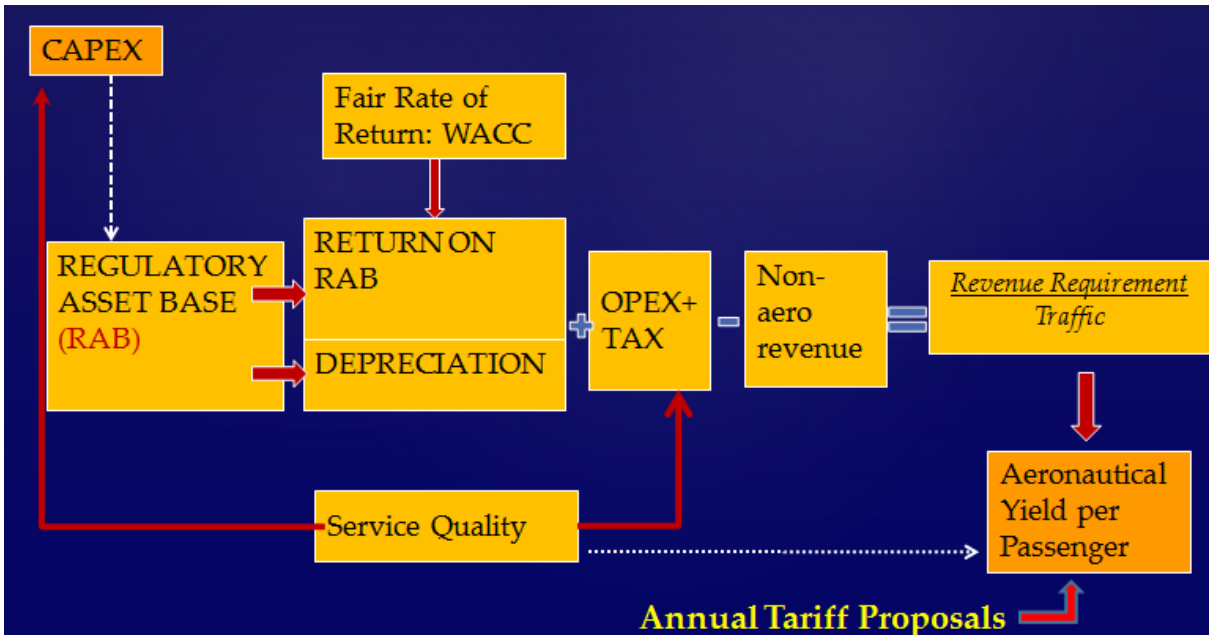
Figure 2: Regulatory Building Blocks (Odoni)



[3] "Economic Regulation and Capital Financing", Amedeo R. Odoni, 1.231J/16.781J/ESD.224J Airport Systems – Fall 2007

[4] $Vanilla\ WACC = g \times R_d + (1-g) \times R_d, g = gearing\ \left(\frac{D}{(D+E)}\right), R_d\ the\ cost\ of\ debt\ D,\ (pre-tax, nominal) \&\ R_e\ cost\ of\ equity\ E\ (Post\ Tax, nominal)$

Figure 3: AERA's Regulatory Building Block approach



3.9. Cost of capital is the WACC calculated by the Authority based on the proportion of equity (or more generally the "shareholders' funds"). For the reference to CAA 2007 in the Figure 2, the Figure 3.1 of Para 3.16 of Price control review – CAA recommendations to the Competition Commission for Heathrow & Gatwick Airports, March 2007 can be seen. In the next Para 3.17, the CAA explains the regulatory approach thus:

> *Under this approach, a regulated asset base (RAB) is defined and valued. As time progresses, capital expenditure (capex) is added to the RAB. The RAB drives two of the fundamental building blocks that make up the company's revenue requirement: the cost of capital[5] (the return on the RAB) and the depreciation allowance[6] (return of the RAB). These two building blocks are then added to the projected level of operating expenditure (opex) to calculate the total revenue requirement for the business.*
>
> *……*
>
> *The **key factors driving the regulated revenue requirement are therefore the prevailing value of the RAB, the regulator's assumed cost of capital**, (emphasis added) the scale of operating expenditure and the projected levels of other revenues*

[5] The cost of capital allowance is calculated by multiplying the regulator's assumed cost of capital (7.75% at each airport at the last review) by the average value of the RAB for each year. No adjustment is made to the RAB as a result.

[6] The depreciation allowance is determined by the overall value of the RAB, and the asset lives and age of the existing assets contained within it. The RAB is reduced annually by an amount equal to the annual depreciation allowance.

3.10. The Authority has been following similar approach that is consistent with the regulatory approaches followed by other airport economic regulatory bodies in Ireland and South Africa.

Proposal No. 1. Regarding Debt-Equity Ratio and WACC

a. **The Authority proposes to follow a normative debt to equity ratio of 70:30 for the purposes of calculation of Weighted Average Cost of Capital with 30% equity regarded as ceiling (refer Para 3.3) and true up WACC at the end of the control period depending on the actual proportion of equity (net worth) in the capital structure (based on the balance sheet numbers from year to year).**

b. **The Authority notes that in this approach, truing up is required for (i) debt equity ratio and (ii) cost of debt.**

4. Equity Rate of Return: CAPM

4.1. As mentioned above, the rate of return on equity is calculated according to the CAPM model. The private financial consultants engaged by the private airport operators have generally estimated the different components of CAPM in a certain manner. The Authority has relied on the estimates of National Institute of Public Finance and Policy (NIPFP) for this purpose. There has been a variation in the methodology adopted by the private financial consultants and NIPFP in respect to the choice of comparator set, risk free rate as well as equity risk premium. The private financial consultants have been taking the airports only from the developing regions as comparable whereas NIPFP has felt that a more robust estimate will be obtained by taking the comparative sets from both developing and developed regions. In respect of Hyderabad airport, for example, the financial consultants have also taken comparative set of airports both from developing and developed regions.

4.2. There has also been a difference in methodology adopted to calculate equity risk premium (sometimes also called Market Risk Premium) (which is an important component of the CAPM), between the private financial consultants and NIPFP. In order that these different approaches leading to different estimates and variability in expected rate of return is eliminated, the Authority proposes to adopt a rate of return at 16% as fair rate of return on equity. The Authority has also found that by and large and keeping into account the totality of the circumstances obtaining at different

airports, a 16% return on equity is fair and reasonable.

Proposal No. 2. Regarding fair rate of return on Equity

a. The Authority proposes to consider fair rate of return on equity (Shareholders funds, sometimes called Net Worth) at 16% as reasonable and on normative basis.

5. Rate of Depreciation (Useful life of assets)

5.1. Different airport operators have adopted different rates of depreciation over different elements that go into the Regulatory Asset Base (RAB). There has been an opinion indicating that the rate of depreciation adopted by AAI are on the higher side. The Authority had an occasion to go into these questions while analyzing the tariff determination in respect of Chennai as well as Kolkata airports. For example, it noticed that the rate of depreciation that AAI has adopted for runway is 13% (broadly equating it to the depreciation rate of 11% applicable to plant and machinery). AAI takes the life of a road at 7.5 years and depreciation rate at around 13%. On the other hand, airport operator like BIAL has provided depreciation at 3.3% (corresponding to useful life of 33 years) for Apron etc. (equating it to RCC road). Though the Authority, by and large, has been of the considered view that it would be preferable to leave depreciation rates for different items to the Board of the airport companies, the Authority feels that such wide variation needs to be adequately addressed. The Planning Commission had also felt that some reasonable uniformity in this regard could be considered.

5.2. The Authority has noted the latest depreciation rate mentioned in the Companies Act, 2013 effective from 1st April 2014, according to which, only to take an example, of roads, the depreciation rate for the concrete road is given as 10 years. By and large, the private operators have been taking runway equivalent to concrete carpeted road RCC. Bringing into force of the new Companies' Act and the Schedule indicating depreciation rates thereon, the individual discretion of the airport operator to apply its rates of depreciation, in Authority's opinion, can be said to have been considerably reduced. The Authority notes for e.g., that the category of runway, taxiway, apron is not mentioned specifically in the Companies Act, 2013. It was also not so in the previous Companies Act, 1956.

Table 2: Comparison between old and new depreciation rates

Asset Type (Details of Key assets)	Depreciation rates as per Companies Act 2013	Earlier Depn. rate
Apron (if equated with Concrete Road – useful life of 10 years)	10.00%	3.34%
Runway/ Taxiway (if equated with Concrete Road – useful life of 10 years)	10.00%	5.00%
Roads (other than concrete roads)	20.00%	3.34%
Buildings	3.34%	3.34%
Furniture & Fixtures	12.50%	6.33%
Small Vehicles	12.50%	9.50%
Airport Equipment/ Communication Equipment	13.33%	10.34%
Air-conditioning	13.33%	4.75%

5.3. The Authority has noted that the Schedule II (and particularly Part C thereof) of the Companies Act, 2013 indicates the useful life or residual value of any specified asset. Part B of Schedule II states that "*The useful life or residual value of any specific asset, as notified for accounting purposes by a Regulatory Authority constituted under an Act of Parliament or by the Central Government shall be applied in calculating the depreciation to be provided for such asset irrespective of the requirements of this Schedule*". After considerable deliberation, the Authority has separately initiated the process to issue such notification as appropriate on the useful life or residual value of an asset specific to the requirements of an airport. Such assets may either not have been clearly mentioned in the Schedule II of the Companies Act or may justifiably have useful life different from that mentioned in the Companies Act. For example, the Authority has noted that AC No: 150/5320-6E, dated 30th September 2009 issued by FAA of USA, gives certain design standards in respect of Airport pavements as follows: "*The FAA design standards for airport pavements use the 20 year structural design life criteria as a policy.*"

5.4. The Authority has been of the considered view that it would be preferable to have, as far as practicable, a broad year to year consistency in what depreciation is charged by the companies as certified by the relevant statutory auditors and what the Authority would take into account in its process of tariff determination. Issue of a notification will ensure this objective.

Proposal No. 3. Regarding Useful life of assets and Depreciation

a. The Authority proposes to lay down, to the extent required, the depreciation rates for airport assets, taking into account the provisions of the useful life of assets given in Schedule II of the Companies Act 2013 (Act 18 of 2013), assets that have not been clearly mentioned in the Schedule II of the Companies Act or may have a useful life justifiably different than what is indicated in the Companies Act, 2013 in the specific context to the airport sector. The Authority has initiated the process to enable it to issue a notification as appropriate, pursuant to the provisions Part B of Schedule II of the Companies Act 2013 for this purpose (refer Para 5.3)

6. Operation and Maintenance Expenditure

6.1. The operation and maintenance expenditure (O&M) is an important part of what can be called as 'benchmarking of airports'. (Refer Para 2.1 above for CAA's benchmarking of Operating Expenditure). The Authority has also gathered relevant data regarding operating and maintenance expenditures of different airports as also financial benchmarks based on opex and revenues per passenger, as given in the following tables. Table 3 is taken from the tariff submissions of Cochin International Airport (CIAL) and give data for FY 2013. Table 4 gives the calculations of the Authority in its various tariff orders and consultation papers and are the average figures for the five year period:

Table 3: Operation expense (opex) per passenger for some of the major airports

S No.	Airport	Opex for FY 2013 (INR crore)	Pax. for FY 2013 (million)	Opex per passenger
1	Mumbai	547	30.2	181
2	Delhi	821	34.4	239
3	Kolkata	261	10.07	259
4	Chennai	334	12.78	261
5	Cochin	86	4.9	176

6.2. It would be seen that the OPEX per passenger has a range or Rs. 176/PAX to Rs. 259/PAX.

Table 4: Average financial and operational figures for the first five year Control Period 2011-2012 to 2015-2016 (Based on the MYTO's issued by AERA)

	Financial Performance - Average figures for the first five year Control Period 2011-2012 to 2015-2016 (Based on the MYTO's issued by AERA)	(Figures in Rs)

	Parameter (Fig in Rs)	Chennai*	NSCBIA*	Guwahati*	Lucknow**	BIAL **	HIAL*	DIAL*	MIAL*
1	Aero Revenue/pax	453	242	171	247	399	456	468	230
2	Non-aeronautical revenue/ Pax	140	127	50	70	131	205	275	228
3	Opex costs/Pax	213	210	196	281	213	302	228	131
4	EBITDA/ Pax	379	159	(-) 37	36	316	358	322	167
5	Opex Cost/Sqmt (Terminal Building)	17787	12377	28312	23021	25502	25160	13267	9214
	* Tariff Determination Order								
	** Consultation Paper								

6.3. One could benchmark the operating and maintenance (O&M) expenditure on the basis of either (a) O&M per passenger or (b) O&M per sq.mtr of the terminal area. The Authority has data on both these approaches. Both approaches, however, are not without problems. The O&M costs per passenger or the per Sq. Mtr of each airport could differ on account of the scope of the aeronautical services being given by the Airport Operator himself or the concessionaire, level of capacity utilization etc. O&M may or may not linearly depend on passengers, as there may be some element of fixed cost that may be invariant with respect to passenger throughput across a range of number of passengers. As reported by Prof. Anne Graham (Managing Airports, 4th Edition, Page 77, quoting from a study by Steer Davies Gleave in respect to Stansted airport),[7]

> *"However, airport operators tend to have less scope to reduce staff costs compared with some industries, including the airline sector, as the majority of staff functions tend to be related to the essential safety and security aspects of operating an airport. In general, airports are fixed-cost businesses, having longer planning horizons than airlines and requiring major investments in runways, terminals and equipment. As a result, airports have limited flexibility to adjust these costs when traffic fluctuates. For example, for a sample of 10 UK airports between 2000/01 and 2010/11, the operating-cost- to-passenger-demand elasticity was calculated as 0.44 (Steer Davies Gleave, 2012). This*

[7] Steer Davies Gleave (2012) Review of Operating Expenditure and Investment,, http://www.caa.co.Uk/docs/5/SDGStanstedReport.pdf

means that if passenger demand falls by 10 per cent, the operating cost will reduce by just 4.4 per cent."

6.4. This number (of 0.44) may or may not represent universality and difficult to use in India to predict O&M expenditures based on passenger numbers. The CAA has rounded this number to 0.50. Similarly, O&M per square meter may not adequately capture the newly built or proposed to be built terminals (instances are Mumbai, Bangalore, Chennai, Kolkata, Guwahati, Lucknow, Goa, Cochin-proposed, Navi Mumbai-new airport, Ahmedabad, Trivandrum etc.). In fact most of the major AAI airports have recently undergone substantial expansion of Terminal Buildings. Extrapolation of such a number based on old terminal (that has been more or less saturated) may not correctly reflect O&M costs of the new terminal. It would be thus difficult for the present, to realistically project the O&M costs over the control period. If the ex-ante projections prove to be too generous, the passengers would have paid higher tariffs. Though the airport operator may well claim that the savings in the O&M costs (than projected) has been a result of efficiency gains, in the Indian context, this is more likely to be as well viewed as an unjust enrichment of the airport operator at the expense of the passengers. Conversely, if the actual O&M costs turn out to be higher than projected, the airport operator would have to suffer. The Authority therefore considers appropriate that at least during the next few years (encompassing the second control period up to say 2019-21), truing up of O&M costs would strike an appropriate balance between the interests of the passengers and those of the airport operator.

6.5. The Authority also notes that operating expenditure in different airports can be different on account of various factors like:

6.5.1. Some airports are performing all the operations whereas some has outsourced to other agencies, for example, Cochin airport performs the operations of Cargo as well as duty free shopping. Most of other airports have outsourced the same through concessionaires. The operating costs of these two items, therefore, would enter into the accounts of Cochin airport but not in other airports.

6.5.2. Some airports have recently constructed large terminal building (for example, Mumbai, Bangalore, Chennai, Kolkata, Goa, Lucknow, Guwahati, etc.). On the other hand, terminal building (T-3) at Delhi airport has been completed by June,2010 and has more or less stabilized in tariffs. This is also because the capacity utilization in

different airports will be different on this count. The operating costs can vary for this reason in different airports.

6.5.3. Configuration of different airports is very different. For e.g., the cost of approach road forming part of the airport project is larger for Delhi, Bangalore, Hyderabad as compared to say Chennai or Kolkata. Similarly, costs of maintaining the landscaping and horticulture may vary from airport to airport.

6.6. The Authority had considerable deliberation on whether to take normative operative costs for projections in tariff determination. The operating expenditure per passenger involves in the denominator in the passenger throughput. The Authority felt that for the purposes of projection, the operating expenditure can be taken to be increasing at, say, WPI + 1% to give allowance for any unforeseen expenditure that may arise. The Authority deliberated at length on the issue of taking a normative measure of operating expenditure. The Authority felt that operating and maintenance expenditure per passenger varies in different airports, as mentioned in the above Tables. Secondly, new terminal buildings of large dimensions are built in most of the major airports. Hence Authority feels that for the current and the next control period, the projections of operating and maintenance cost is not only difficult but may not be realistic. On balance, the Authority proposes to true up O &M expenditure in respect of major airports in the process of its tariff determination.

Proposal No. 4. Regarding Operation and Maintenance Expenditure

a. The Authority proposes to true up O&M expenditure in respect of major airports in the process of its tariff determination.

7. Norms for Incurring Additional Expenditure, Capital expenditure

7.1. The Authority has already indicated its procedure for assessing the capital expenditure in terms of need, scope, alternatives etc., as well as stakeholders' consultation in its Airport Guidelines. As far as the procedure for additional capital expenditure is concerned, the Authority believes that the only effective method to minimise the possibility of the so called "gold plating" is to engage stakeholders' in an effective, meaningful and constructive engagement. The Authority has already given detailed guidelines protocol for stakeholders' consultation in its Airport Guidelines. It would welcome any suggestions on the procedure that would, in the opinion of the

stakeholders', impart additional measures of such constructive engagement.

7.2. As far as the norms for incurring additional capital expenditure is concerned, the Authority addresses these under two approaches:

7.2.1. The Design of the terminal building as well as Air side developments like runway, taxiway and apron.

7.2.2. The capital expenditure therefor

7.3. **Design of the terminal building** - The Authority has come across the observations made by Profs. Odoni and Neufville on the need to balance the functionality with aesthetic design, in the second edition of their book "Airport Systems" page 44 McGraw Hill, 2014.

> *...airport planners and designers will have to think in terms of profitability, revenues, and service to users.*
>
> *The objectives consequently focus more on performance than on monuments. Airports will build more low-cost, efficient terminals. Value for money, good service, and functionality will become dominant considerations. Architectural significance and grand visions will be important but may become secondary considerations. In general, airport planning and design will become more democratic, more in tune with everyday needs, and less directive or technocratic.*
>
> *The criteria of excellence will correspondingly focus on cost- effectiveness, value for money, efficiency both technical and economic, and profitability. Airport planners and designers will have to factor these considerations into the purely technical analyses of traditional airport engineering.*

7.4. Furthermore, Odoni and Neufville continue highlighting the need for a balance to be struck between functionality and architectural aesthetics on Page 507 thus:

> *...The concept of the airport as a monument conflicts with economic efficiency. Magnificent curved structures (e.g., the Renzo Piano design for Osaka/Kansai) are difficult to construct, expensive to maintain, and nearly impossible to expand compatibly. Custom-tailored interior details (e.g., Sir Norman Foster's for London/Stansted) are correspondingly both expensive and difficult to maintain. These extra costs may be tolerable if the airport owners remain committed to maintaining a monumental concept. However, airport operators and their clients are typically more interested cost-efficient operations.*
>
> *Many airport operators aim to run their facilities economically. They neither want nor can afford to maintain airports as monuments."*

7.5. The Authority has also noted that IMG norms for Terminal building space plan

consider the need to have "*world class*" terminal buildings. The Inter Ministerial Group (IMG) has specified norms of Sq.mtrs per passengers based on expected level of service (the categorization is from A to E). The norm given for 'C' level of service has 25 Sq. mtrs per passenger for integrated (both domestic and international) terminal building. The Authority has also noted that the concept of "Value for money" in the matter of designing a Terminal building has been mentioned both in academic literature (Odoni et al) as well as its practical manifestation in the IMG report where it has been recommended that "*Value for money should be the motto*" for cost of construction. The Authority therefore, feels that the Airport Operator's concern to implement "International standards" is reflected in the IMG norms. The Authority, therefore, proposes that these norms should be adopted for the purposes of space design of new terminal buildings.

7.6. **Design of runways**: As far as the design for runway, taxiway and apron is concerned, the Authority understands that by and large the technical specifications or norms of these airside elements are fairly well understood and determined. For example, for Code-E compliant runway, the width is 45 meters with 7.5 meters shoulder on each side and a length of around 3.5 kilometers, depending, however, on the '*critical aircraft'* and *"Airport Reference level".* For a Code-F compliant runway, the width is 60 meter with a shoulder of 7.5 meters on each side and length similar to Code-E compliant airport. The other elements like visual aids (Runway/Taxiway/Approach Lighting etc.) are also fairly standardized. The other requirements that are based on weather conditions are also well understood and streamlined. In India, however, Civil Aviation Requirements (CAR) issued by DGCA also throws light on the technical requirements.

7.7. **Capital expenditure depends on scope and specifications**: As far as capital expenditure is concerned, this depends on the scope, engineering and specifications of the facilities proposed to be created. As far as the scope for terminal building is concerned, it is proposed that IMG norms should be followed. As far as the engineering and specifications are concerned, different airports have adopted different specifications, and consequently, have incurred different levels of capital expenditure. Most of the modern terminal buildings are using outer steel and glass coupled with

RCC. The structural designs of the terminal buildings also differ depending upon the architectural and aesthetical requirements as determined by the airport operator (for example, span, internal design, etc.). This has led to substantial variations of costs per sq. mtrs amongst different airports, as can be seen from the following tables. Table 5 gives the comparison of costs for passenger terminal development at major Indian airports that has been abstracted from the Tariff Order and Consultation papers issued by the Authority. Table 6, gives the Comparison of costs for passenger terminal development at some international airports as has been given by EIL in its report to the Authority as part of the review of allowable project cost for Delhi and Mumbai International Airports. The cost of the terminal buildings in some cases may incorporate different scope with respect to some additional and appurtenant items like flyover, roads, car park etc. These tables are therefore taken by the Authority as broadly indicative of the range of the cost per Sq. mts of terminal buildings both in India and abroad.

Table 5: Comparison of costs for passenger terminal development at major Indian airports

S No.	Airport	Newly constructed/ Proposed Terminal Building area (Sq mts)	Cost of Newly constructed/ proposed Terminal Building (INR crore)	Cost per Sq.mt of Newly Constructed/ proposed Terminal Building (INR)
1	IGI Airport, New Delhi - Terminal 3 & Associated Buildings	533,887	6,836	123,419
2	Bangalore – Terminal 1 expansion	85,000	1,235.2	145,318
3	Chennai – New Integrated Dom & International Terminal Building	133,142	1,547	116,156
4	Mumbai - New Terminal (T2), MLCP and Access roads	439,512	5,083	115,650
5	NSCBIA, Kolkata – New Integrated Terminal Building	198,692	1,553	78,167
6	Trivandrum – New Integrated Terminal Building *	23,000	289	125,652
7	Cochin – New terminal proposed	150,000	650	43,333
8	Guwahati Terminal Building **	2,005	26.83	133,815

S No.	Airport	Newly constructed/ Proposed Terminal Building area (Sq mts)	Cost of Newly constructed/ proposed Terminal Building (INR crore)	Cost per Sq.mt of Newly Constructed/ proposed Terminal Building (INR)
9	Lucknow	20,000	123.4	61,700
* In case of Trivandrum the scope includes apron, taxiway, open car park etc. ** In case of Guwahati the scope includes not only expansion (2005 sq. mtrs) of the Terminal Building but also modification of existing Terminal Building (14395 Sq.mtrs) in terms of segregation of domestic and International passengers . Hence, the expenditure incurred is not only for the expanded area of 2005 sq mtrs and therefore the cost per Sq. mtrs in case of Guwahati is not representative of the Construction of a new terminal building.				

Table 6: Comparison of costs for passenger terminal development at some international airports

Overall Cost Parameters	BKK - Bangkok	KUL – Kula Lumpur	PEK - Beijing	LHR - London	MAD - Madrid	IGIA, New Delhi	Revised Estimate CSIA Mumbai
Terminal Design Capacity (mppa)	45	25	43	28	42	34	40
Floor Area (in Sqmts)	563000	479404	900000	353020	757000	553887	439512
Total Actual Cost (in Million US$)	2800	1600	3800	4100	2948.2	1367.2	1129.55
Actual Cost per mppa (in Million US$)	62.22	64.00	88.37	146.43	70.20	40.21	28.24
Actual Cost /m2 of GFA (in US$)	4973.36	3337.48	4222.22	11614.07	3894.58	2468.37	2570.01
Actual Cost /m2 of GFA (in INR)*	298401.4	200248.8	253333	696844	233674	148102	154200

Terminal Costs in US $ (Conversion factor: 1 US $ = INR 45)
Source EIL - Verification of Project Cost Report (DIAL / MIAL)
*Conversion: 1 UD $ equals INR 60

7.8. As will be seen, the cost per Sq. mtrs of a modern airport terminal building in India varies between Rs.43,333 per Sq.mtrs (Cochin) to Rs.1,45,000 (Bangalore). On account of comparability issues, the Authority does not consider it appropriate to compare the Indian costs with those of foreign airports. The Authority is aware that these costs per Sq. mtrs as are given above (for India) may not be precisely comparable. Some of the airports may not have computed costs taking only the footprint or plinth area. Some may have also included the canopy in the cost of the terminal building. Some airports may, in their figures, have included some elements of city side

developments like flyover, car parking, etc. However, the above table does give a *range* of capital expenditure per sq. mtrs. that different airports have incurred in constructing modern terminal buildings.

7.9. Based on the above analysis and the feeling in some quarters that the costs of the airport need to be contained and rationalized, the Authority proposes that costs of new terminal buildings, including canopy which is primarily used by the passengers as well as meeters and greeters, as well as other utilities like air conditioning, water supply, equipment like Cargo belts (Carousel), Lifts, escalators, passenger boarding bridge (Aerobridge), passenger conveyors belt (walkalators), fire safety, signage and other safety equipments, ICT, furniture and fixtures etc., should not exceed Rs. 65,000 to Rs. 70,000 per Sq. mtrs. The Authority, therefore, proposes that it would take into account the allowable project cost with a ceiling of Rs. 65,000 per sq. mtrs or actual whichever is lower for the purposes of RAB. The Authority would welcome the stakeholders' comments on this figure.

7.10. **Scope of Capital Works in the Terminal Building:** The Authority has noticed that generally the Terminal Building per Sq. Mtr costs consists of services or facility packages, systems as indicated in Table 7 below:

Table 7: Terminal Building Facilities Scope

Elements	**Facility scope particulars**
Civil	All levels including basement construction. Firefighting system, Water & Sewerage distribution up to and including its main centre, Interior and Exterior finishes
Electrical, Fire HVAC	Internal electrification, light fixtures, power outlets up switch boards & Power distribution feeder cables up to main substation. HVAC system .Fire detection and alarm, other safety systems.
Security	Security surveillance system, Inline X-ray baggage system , DFMD HHMD
Passenger service	Flight information displays, Signage, Public address systems , ICT systems
Equipment	Escalators, Elevators, walkalators, baggage conveyors, carousal for arrival and departure systems, Aerobridges
Other items	Miscellaneous items within Terminals related to operation and maintenances

Elements	Facility scope particulars
Not included	Main electrical power receiving substation and its equipment. Approach and other Roads, elevated flyover before the Terminal building, landscape and horticulture

7.11. **Airside works (Runway/Taxiway and Apron) & Other Civil Works:** As far as airside development is concerned, the technical specifications have already been indicated above, the cost of construction of the runway, taxiways, apron are generally for the same critical aircraft (aircraft that requires highest airfield reference length & wingspan. It is the most demanding airplane (critical aircraft), which is currently using or is projected to use the facility on a regular basis (defined as 500 operations per year or more)[8]). All these items require standard materials and method of construction. The cost of these items are available under CPWD schedule of rates. Experience of AAI has shown that these costs are around Rs.7,000 per Sq.mtrs for the civil costs (excluding the costs required for earth filling, lighting and drainage, etc.). Cost of earth filling up to stage of including compaction and upto sub-grade level will be location specific. However, CPWD standard rates and schedule are available for earth filling, drainage and other incidental and related works. The cost estimates for these items should be made according to the CPWD for scheduled items. Any market rate item which are to be incorporated proper market rates analysis that are in line with CPWD standard engineering analysis shall be done.

7.12. As far as visual aids lighting and other incidental costs are concerned, market analysis in line with CPWD schedule and framework should normally be followed. However, it may not be possible to prescribe any ceiling for such items.

7.13. **Roads and Other Civil / Electrical works** : Apart from the construction items mentioned above, airport projects require construction of other civil works like perimeter roads, compound wall, drainage, approach roads, sewerage treatment plant, Non-Conventional Energy sources, Water Harvesting etc., The Authority does not propose any cost ceiling on such item as they may differ from airport to airport. However, the airport operator shall prepare the detailed engineering and cost estimates as per CPWD methodology (for Scheduled items CPWD schedule rates and for

[8] Airport Systems, 2nd Edition, Profs Odoni, and Neufville, P. 291, Ch 9, McGraw Hill, 2013

Market Items proper market rate analysis in line with CPWD framework).

Proposal No. 5. Regarding norms for capital costs:

a. **The Authority expects that while finalising the scope of future capital works the Airport Operator would abide by the indicated norms. As illustration,**
   i. **IMG Norms for Terminal Building (for eg., 25 sq. mts per passenger for integrated Terminal Building**
   ii. **Design criteria for Runway / Taxiway/ Apron (Airside works) as may be available in published literature on the subject (ICAO Documents, DGCA CARs as may be applicable)**

b. **The Authority proposes to consider capital costs of terminal building at a ceiling cost of Rs. 65,000 per square meter or actuals whichever is lower .**

c. **The Authority proposes to consider capital costs of Runway/Taxiway/ Apron at a ceiling cost of Rs. 7,000 per square meter or actuals whichever is lower (excluding earthwork upto the sub grade level). The expenditure on the earthwork will be carried out as per the CPWD methodology.**

d. **The Authority proposes to consider the capital costs of other works based on a publicly available standard like the CPWD methodology (for Scheduled items CPWD schedule rates and for Market Items proper market rate analysis in line with CPWD framework and methodology).**

8. Asset Allocation (between aeronautical and non-aeronautical assets, common assets)

8.1. The Planning Commission in its Report of the Task Force – Financing Plan for Airports, July 2012, has laid special emphasis on increasing non-aeronautical revenues. This is also one of the objectives of its support to privatisation of AAI airports so that the private operators would be able to increase non-aeronautical revenue. Authority's analysis of the allocation of space between aeronautical and non-aeronautical activities within the terminal building indicates that this ratio is around 85:15.

8.2. Car parking that is an important part of the airport facilities to the passengers, meters and greeters and in general, airport users. This is normally given out to third party concessionaires. In some airports, considerable investment is made (generally by the third party concessionaire) on multi-level car parking (e.g. Delhi and Mumbai). In some other airports (Kempegowda International airport at Bangalore), the car parking is

on open ground involving minimum expenditure. Revenues in the hands of the airport operator on account of revenue share from the third party a concessionaire is treated as non-aeronautical revenue. As far as air side is concerned, the Authority would take expenditure on runway, apron, taxiway, operational compound wall as aeronautical assets and aeronautical capital expenditure.

8.3. The Authority notes that proper separation of assets into aeronautical and non-aeronautical ones is relevant particularly if the Authority were to make computations of aeronautical tariffs (including User Development Fees) on the basis of "shared revenue till", as in case of Kempegowda International airport (where Authority has made computations on the basis of 40% "shared revenue till") or in Delhi and Mumbai airports (where shared revenue till is at 30%).

8.4. During its analysis of tariff determination, particularly, in respect of Delhi, Mumbai and Bangalore airports, it has noticed that the asset allocation between aeronautical and non-aeronautical activities particularly within the terminal building has generated different comments from different stakeholders like IATA, FIA, airport operators, etc. The Authority has noted that IMG report has suggested the non-aeronautical space allocation to go up to 20% of the terminal space. The Authority, therefore, proposes that asset allocation (both space and costs) between aeronautical and non-aeronautical activities/services within the terminal would be normatively fixed at 80:20. Similarly, the common use assets on the City side development (Roads, utilities like electricity, water, air-conditioning etc.) be also split in the same ratio of 80:20. Airside operational assets (including operational boundary wall and roads) that are meant for aeronautical services would not be subjected to this ratio and will be reckoned 100% as aeronautical assets.

Proposal No. 6. Regarding aeronautical and non-aeronautical asset allocation

a. **The Authority proposes to make the aeronautical and non-aeronautical asset allocation (wherever necessary, refer Para 8.3) in 80:20 ratio for the Terminal Building and common use assets.**

b. **The Authority proposes to consider the cost of Airside operational assets (including operational boundary wall and roads) that are meant for aeronautical services.**

9. Allocation of Operation and Maintenance expenditure between Aeronautical and Non-aeronautical Services.

9.1. The non-aeronautical services are rendered predominantly in the terminal building. The issues related to estimation of operating and maintenance expenditures is given in Para 6.3 above). On the issue of separating O&M costs between aeronautical and non-aeronautical services, under the normative approach, the Authority feels that the operating and maintenance expenditure can be apportioned between the aeronautical and non-aeronautical services and activities in the ratio of 80:20. As observed in Para 8.3, proper separation of operating expenditures into aeronautical and non-aeronautical ones is relevant particularly if the Authority were to make computations of aeronautical tariffs (including User Development Fees) on shared revenue till.

Proposal No. 7. Regarding allocation of O&M expenditure between aeronautical and non-aeronautical services

a. The Authority proposes to make the allocation of O&M expenditure between aeronautical and non-aeronautical services (wherever necessary) in 80:20 ratio.

10. Incentivising Non-aeronautical Revenue, their estimation and its role in determination of airport tariffs.

10.1. Non-aeronautical revenues occupy an important place in the aeronautical tariff determination. Roughly half of airport revenues are on account of non-aeronautical revenues. According to ACI Europe,

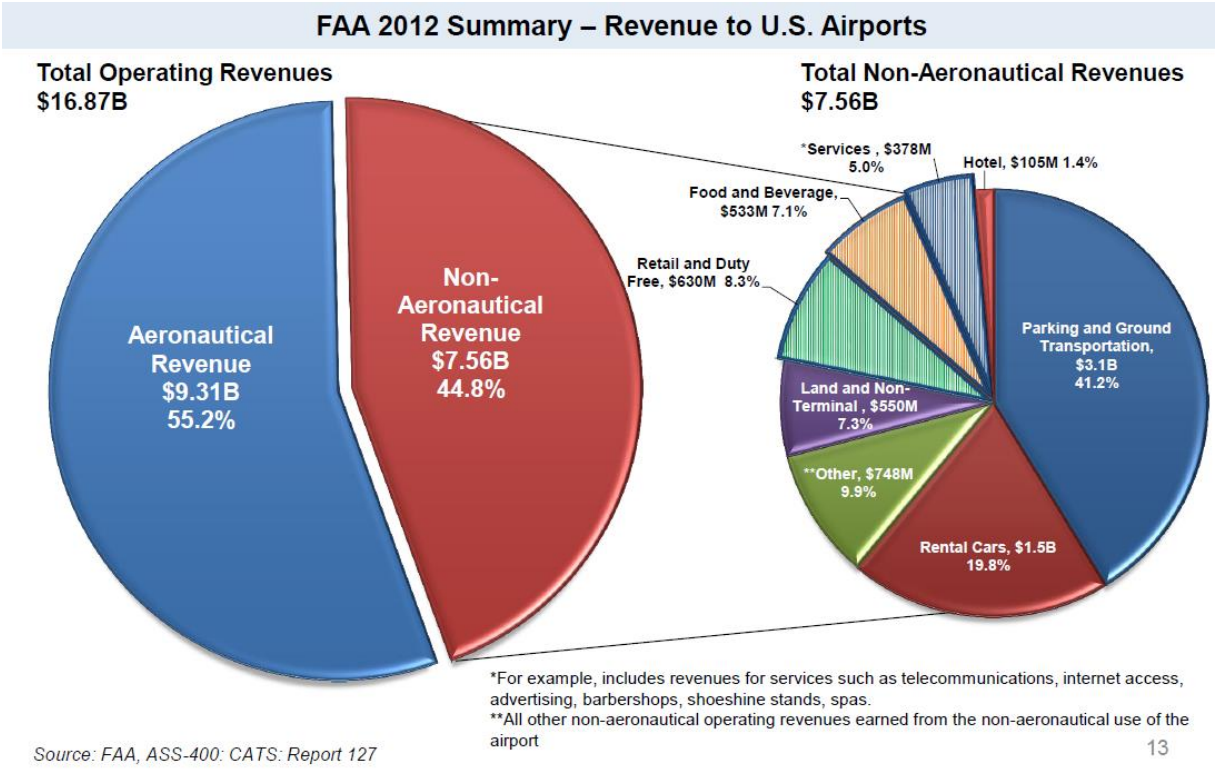
> *"48% of Europe's airports revenues are from non-aeronautical sources, such as retail, food & beverages, car parking, real estate, advertising, etc. Airport charges paid by airlines are well below the cost of the infrastructure they use. In 2009, airline related charges accounted for just 19% of airports' income[9]"*

10.2. ACI Council (North America) reports that "In 2012, according to the FAA, U.S. airports generated $9.31 billion in aeronautical revenue, and that was 55.2% of total operating revenue. Non-aeronautical revenue amounted to $7.56 billion, or 44.8% of total operating revenue." It is worth noting that parking and ground transportation account for 41.2% of the non-aeronautical revenues. Graphically, this is as the follows:

[9] https://www.aci-europe.org/policy/fast-facts.html

Incentivising Non-aeronautical Revenue, their estimation and its role in determination of airport tariffs.

Figure 4: Aeronautical vs. Non-Aeronautical Revenue in US Airports



10.3. A recently published ACI Economics Report 2013 (preview edition) gives details about the contribution of non-aeronautical revenues to the total airport revenues. It will be seen that globally, non-aeronautical revenues contribute 43.76% to the total income of airports. (Table 8). Some airports in India also have substantial proportion of non-aeronautical income in the total income of the airport. For example, this proportion is 57% in Cochin.

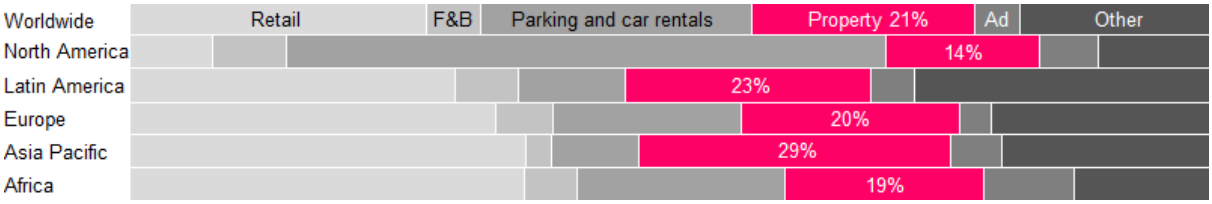
Table 8: Global Airport Income and Costs (2012 - million USD)

Region	Total Income	Aeronautical Income	Non-Aero Income*	% non-aero
Africa	2,800	1,900	900	32.14%
Asia-Pacific	31,600	15,800	15,800	50.00%
Europe	44,300	26,100	18,200	41.08%
Latin America-Caribbean	6,500	4,200	2,300	35.38%
North America	25,300	14,300	11,000	43.48%
Middle East	6,500	3,500	3,000	46.15%
World	117,000	65,800	51,200	43.76%
*Non-Aeronautical Income includes Non-Operating Income of USD 5.1 billion worldwide				

10.4. Different elements of non-aeronautical revenues are important for different

regions. In North America for example, parking and ground transportation is an important element of non-aeronautical revenue in an airport (See Figure 4). Comparative analysis of different regions is given in Figure 5 and the Authority notes that "*For example, Narita International Airport (IAT: NRT) runs a golf course, Dallas/Fort Worth International Airport (IATA: DFW) runs a medical clinic, Amsterdam Airport Schiphol (IATA: AMS) runs a casino and an annex of the Rijksmuseum, and Denver International Airport (IATA: DEN) runs oil and natural gas wells*" [10]

Figure 5: Non-aero revenue breakdown by region (Source ACI)



10.5. The Authority recognises the role played by the non-aeronautical revenues in economic regulation of airports, more so in India where the airport charges directly impinging on the passengers' viz. the User Development Fee bears a significant ratio to the airports revenue and higher than that from other aeronautical services and particularly the contribution of charges directly impinging on the airlines (Landing, Parking and Housing of aircraft).

10.6. A paper "Non-Aviation Revenue in the Airport Business – Evaluating Performance Measurement for a Changing Value Proposition" by Profs Max J. Zenglein and Jürgen Müller, of Berlin School of Economics, GAP[11], as well as a presentation based thereon by Max J. Zenglein (Performance Measurement of Non-Aviation Revenue in the Airport Business, GAP Berlin, Mar 10, 2007), lists the various issues of definition, methodology, data availability regarding the non-aeronautical revenues. Particularly noteworthy is the observation that there is no common definition of non-aeronautical activities in place and that there are issues of data availability as well as benchmarking of non-aviation performance:

[10] "Diversifying airport revenues" WOODS BAGOT, July 13, 2013, http://www.woodsbagot.com/blog/diversifying-airport-revenues

[11] http://userpage.fu-berlin.de/~jmueller/gapprojekt/downloads/gap_papers/Performance_Measurement_02_11_07.pdf

Incentivising Non-aeronautical Revenue, their estimation and its role in determination of airport tariffs.

10.6.1. Despite the importance of non-aviation activities for the airport business, there is no common definition in place

10.6.2. Problems of data availability contribute to the difficulty of benchmarking non-aviation performance. For example,

a. Some airports provide disaggregated non-aviation data, others provide only aggregated figures

Table 9: Data availability in selected German Airports as reported in financial reports, 2005

Airport	Aggregated	Disaggregated
Berlin	X	
Bremen	X	
Cologne	X	
**Dusseldorf* ** **		X
**Fraport AG* ** **		X
Hamburg*		X
Hanover*		X
Munich	X	
Stuttgart		X

Source: Annual Reports 2005.
* Indicates privatized or partially privatized airport.
** Consolidated annual reports.

b. More detailed breakdowns often lack n appropriate definition of individual data description

c. Variations in ownership structures result in different availability of detailed information

d. Consolidated financial reports of airport groups make it difficult to compare it with other individual airports

e. Reported data is not always consistent with previous years

10.6.3. No formal definition of non-aviation is in place:

a. Much leeway in financial reporting

b. Relatively unreliable data

c. Exact composition of non-aviation figures often not clear

d. Research delivers different results for the same airports

10.7. The paper as well as presentation gives a table to show the variation in calculation of Non-aeronautical revenues.

Table 10: Variations in the definitions of Non-Aeronautical data by different analysts

Overview of Various Non-Aeronautical Revenue Shares to Total Revenue 2003

Incentivising Non-aeronautical Revenue, their estimation and its role in determination of airport tariffs.

	Annual Report	ATRS	TRL
FRA	20.1%	54.0%	26.1%
Berlin	48.5%	43.0%	36.3%
Munich	44.8%	67.0%	32.7%
Source: Annual Reports 2003, ATRS 2005 and TRL 2005. The 2005 reports of ATRS and TRL base their analysis on 2003 financial data, therefore the relevant annual reports are considered			

10.8. According to the presentation, for example, different airports and consulting firms seem to follow different definitions of the non-aeronautical revenues:

10.8.1. Fraport: Retail + Real Estate + Parking + Others

10.8.2. Berlin Airports: Rents

10.8.3. Dortmund Airport: Rents + Advertisement + Parking + Other

10.8.4. BoozAllenHamilton: Retail + Conference Rooms + Parking

10.8.5. BCG: Retail+Advertising Space

10.8.6. ICAO: Restaurants + Retail + Parking + Aviation Fuel and Oil Concessions + Any other Concession or Commercial Activity, operated by the Airport

10.9. Profs. Max J. Zenglein and Jürgen Müller offer an alternative definition of non-aeronautical revenue that is broader and wider as under.

> *Any revenue not directly or indirectly associated with the handling of aircraft as well as getting anything (passengers, fuel, cargo) to and from the aircraft including any indirectly received revenue originating from providing necessary infrastructure and services for any kind of flight operation*
>
> *Most notably all commercial activity* ***within the perimeters of the airport as well as services to other external companies,*** *(emphasis added) as long as they are not part of the operational activity at the relevant airport (e.g. FBOs)*[12]

10.10. **All inclusive definition of Non-Aeronautical Revenue in AERA Act:** According to section 13(1) (a) (v) of the AERA Act, 2008, one of the elements that the Authority is required to take in to consideration while determining the charges for aeronautical services is "*revenue from services other than the aeronautical services*". This is similar to the statutory provisions of Federal Aviation Administration (FAA, USA) vide 14CFR[13] 158.3 [Title 14 Aeronautics and Space; Chapter I Federal Aviation Administration, Department of Transportation; Subchapter I Airports; Part 158 Passenger Facility Charges (PFC's); Subpart A General], Airport Revenue means "revenue generated by a

[12] Fixed Base Operators (FBO) refers to businesses which provide flight or aircraft support services, such as sale of aircraft fuel, maintenance or hangar facilities.
[13] Code for Federal Regulation.

public airport (1) through any lease, rent, fee, PFC or other charge collected, directly or indirectly, in connection with any aeronautical activity conducted on an airport that it controls; or (2) *In connection with any activity conducted on airport land acquired with Federal financial assistance, or with PFC revenue* under this part, or conveyed to such public agency under the provisions of any Federal surplus property program or any provision enacted to authorize the conveyance of Federal property to a public agency for airport purposes.[14]" Hence according to FAA, the revenues obtained in connection with an activity on airport land are to be reckoned as "airport revenue". AERA Act's definition of "revenues from services other than aeronautical services" is seen to be wider than FAA in that AERA Act's definition is not restricted to the revenues obtained in connection with an activity on airport land.

10.11. **Ring fencing of certain assets**: However, by non-aeronautical revenue, the Authority means the non-aeronautical services and activities generally **within the terminal building as well as car parking**. Revenues from the "real estate development" from land leased to the airport either by the Government or AAI would be reckoned separately as appropriate and thus do not form part of the "non-aeronautical" revenues as is commonly understood. Ring fencing of airports' assets may in some cases become necessary to protect the airport users from *unviable non-aeronautical investments* made by the airport operator and the costs thereof passed on the airport users. The Authority has noted instances where the airport operator proposes to include unviable investments on hotels etc. in RAB.

10.12. The Authority has requested the lessors (the State Governments) to indicate what proportion of the revenue from such "real estate development" should be considered for the purposes of aeronautical tariff determination (including UDF).

10.13. **Proper estimation of Non-Aeronautical Revenues**: The issue of proper estimation of non-aeronautical revenue has been engaging the attention of the Authority. The Authority has noted that the non-aeronautical revenues are an important part of the airport operations. The Authority has also been making it clear that non-aeronautical revenues at an airport are generated predominantly by the passengers. Hence the growth in the non-aeronautical revenues is correlated with the

[14] http://definitions.uslegal.com/a/airport-revenue-aeronautics-and-space/

passenger growth. It has also noted that if the non-aeronautical revenues increase, this should result in lowering of charges directly impinging upon them in the form of UDF that form a substantial proportion of the airport revenues. Hence non-aeronautical revenues generated at the airport should directly benefit the passengers.

10.14. Currently, the process of estimation of the non-aeronautical revenues is as follows. First the airport operator gives his assessment or estimation of the level of non-aeronautical revenues that according to the operator are likely to be generated at the airport during the control period in question. For this purpose, a fairly large number of "drivers" of non-aeronautical revenues are indicated by the airport operator. Different drivers have different weights for different non-aeronautical services and activities. Furthermore, different regions appear to the Authority to have different drivers (See Figure 4 on Page 29 and Table 8 on Page 29) impacting on the level of non-aeronautical revenues. Upon review, the Authority has been noticing that these involve substantial judgment both on the part of the airport operator and that of the Authority (for example construction of a new terminal as is the case with Bangalore, Mumbai, Chennai and Kolkata where populating it with non-aeronautical activities may not be estimated with any degree of precision).

10.15. Inasmuch as the Non-aeronautical revenues form an important building block in the estimation of the Aggregate Revenue Requirement (ARR) or for that matter, the yield per passenger (See Figure 2 on Page 11 giving the building blocks of the economic regulation of airports), lower ex-ante estimation of non-aeronautical revenue results into higher airport charges (particularly the UDF). Conversely, higher ex-ante estimation of non-aeronautical revenues will result in lower UDF. Any lower ex-ante estimates of non-aeronautical revenues may be viewed as an unjust enrichment of the airport operator should the actually realised non-aeronautical revenues turn out to be much higher (ex-post) than the ex-ante estimates. Conversely, any aggressive ex-ante estimation of non-aeronautical revenues will leave the airport operator with a deficit in fair rate of return on his investment should the ex-post non-aeronautical revenues actually realised turn out to be much lower than the aggressive ex-ante estimates. The Authority has been trueing up the non-aeronautical revenues at the end of the control period. Doing so does remove the inclination to adopt an overly cautious approach by

an airport operator and to conservatively estimate (ex-ante) the non-aeronautical revenues. However, according to the airport operator, truing up of non-aeronautical revenues also removes incentives to the airport operator to increase non-aeronautical revenues.

10.16. **Role of Airport Operator to increase non-aero revenues and Incentivisation for his "efforts"**: In its deliberations during evaluation of its framework for economic regulation of airports, it was represented to the Authority that airport operator should be incentivized to increase non-aeronautical revenues at an airport and that with such an incentivisation, according to the proponents, the airport charges are expected to *reduce* (see Para 10.18 below). The Authority has therefore been considering evolving a framework whereby the contribution of "effort" on the part of the airport operator in increased non-aeronautical revenues could be separated.

10.17. The Authority has noted that in most of the airports non-aeronautical activities have been concessioned out to third party concessionaire (excepting the airport of Cochin where the airport itself undertakes duty free shopping activities). It would thus be the primary responsibility of the third party concessionaire to increase non-aeronautical revenues and airport operator would also get higher revenues from the revenue share there for. The Authority has also noted that non-aeronautical revenue is generated mostly by the passengers who also contribute in substantial measure to the overall airport revenues through UDF. There is therefore, need to balance the interests of the passengers with incentivisation of the airport operator to increase non-aeronautical revenues commensurable with his "efforts" in doing so.

10.18. **Airport operators' objection to single till approach:** One of the main objections of the private airport operators and their financial consultants to the Authority's preferred approach of single till for economic regulation was that this form of regulatory till does not have any incentives for the airport operator to increase non-aeronautical revenues as there is no "*upside*" (as the private airport operators and their financial consultants wish to put it), for the private airport operator. The private airport operators have been asking for "dual till" as the regulatory approach. It was not clear to the Authority how dual till (that does not take into account any revenues from non-aeronautical services while determining aeronautical tariffs) can actually *reduce*

aeronautical tariffs even by incentivising airport operator to increase non-aeronautical revenues (refer Para 10.16 above). Since the Authority's aeronautical tariff determination is the ceiling prescribed by it (and the airport operator, in theory, may choose to levy aeronautical charges lower than this ceiling), the only inference drawn by the Authority is that the private airport operators, *in their discretion*, may necessarily draw (were dual till approach to be adopted as advocated by the private airport operators), some (and what is likely to be a substantial) portion of the non-aeronautical revenues into their actual charging of aeronautical tariffs (to make them *lower* than the ceiling determined by the Authority), though not necessarily in a transparent manner. In Authority's view this type of non-transparent adjustment is unlikely to bring down the aeronautical tariffs including UDF lowest for a given airport. *MoCA has also been not in favour of granting this discretion* to the private airport operators judging from its comments on the Authority's white paper where it was suggested that the Authority should limit itself to determine the Yield per Passenger (YPP) and leave the individual aeronautical tariffs to be suggested by the airport operator.

10.19. **Dual Till legally ruled out**: Since "dual till" is ruled out by the provisions of AERA Act (this has been adequately dealt with in the Authority's Airport Order as well as, for example, in its tariff determination of Hyderabad airport[15]), the private airport operators claimed that the Delhi and Mumbai regulatory till of 30% "shared revenue" from "revenue share assets as defined in the State Support Agreement as well as OMDA is the appropriate regulatory approach and should be followed by the Authority as its approach to the regulatory till. The differences in the situation in Delhi/ Mumbai and that obtaining in other airports (Bangalore or Hyderabad for example) have also been adequately discussed in the tariff determination order of Hyderabad as well as the Consultation papers in respect of Bangalore airport. Suffice it to note that in Delhi and Mumbai after 30% of the gross non-aeronautical revenue is taken into account for the purposes of aeronautical tariff determination, another large percentage of 46% is to be given by the airport operator to AAI in Delhi and 39% in Mumbai. The costs associated with generating the non-aeronautical revenues are not allowed as a pass-through. The *Ministry of Civil Aviation had estimated these costs between 10% to 20% of the gross*

[15] Shortly stated, dual till runs afoul of the express provision of Sec 13(1)(a)(v) of AERA Act which requires the Authority to consider revenues from services other than aeronautical services and dual till does not do so.

non aeronautical revenues generated at the airports. Hence effectively, a proportion of 86% to 96% in Delhi and 79% to 89% in Mumbai of the gross non-aeronautical revenue are effectively taken out of the hands of the private airport operator if one were to assume the costs of non-aeronautical revenues at 10% to 20%. (If these costs were to be say 20%, the percentage of non-aeronautical revenue taken out of the hands of the airport operator comes to 96% in Delhi and 89% in Mumbai). Not only that, the revenue share that the private airport operators of Mumbai and Delhi have to give to AAI on the *aeronautical revenues also* is not allowed to be a cost pass-through. Hence the Authority has concluded that the examples of Delhi and Mumbai airport regards the 30% shared revenue till are neither representative nor appropriate. Since the Authority has held that the 30% Shared Revenue Till be applicable in Delhi and Mumbai owing to the provisions of the State Support Agreement (SSA) and the bidding was done on this parameter, the incentivisation scheme now being proposed under this Consultation Paper (particularly para 11 below) will not apply to Delhi and Mumbai Airports.

10.20. **Difficulties in separation of costs in shared till:** During its analysis of tariff determination of Delhi, Mumbai airports (where computations were made on the basis of 30% shared revenue till and in accordance with the market discovered revenue share of 46% in DIAL and 39% in MIAL based on the various provisions made known, ex-ante to the prospective bidders), as well as the computations in the case of Bangalore airport (at 40% shared revenue till for reasons discussed in the consultation paper), the Authority has observed that separation of assets between aero and non-aero as well as operating costs of aero and non-aeronautical services poses considerable challenges that were entirely absent when the analysis was made on the basis of single till approach (Hyderabad as well as the AAI airports of Chennai, Kolkata, Guwahati and Consultation paper for Lucknow). Associations like IATA as well as FIA have questioned on the asset allocation ratios between aeronautical and non-aeronautical assets. They have also questioned on the allocation of operation and maintenance (O&M) costs associated with rendering aeronautical and non-aeronautical services at the airports under shared revenue till computations. This experience is not unique to Indian situation. The Competition Commission UK had, in 2002 did not accept the dual till proposal of the Civil Aviation Authority (CAA) of UK on more or less similar

considerations ("REPORT BY THE COMPETITION COMMISSION - NOVEMBER 2002, Para 2.221, "Conclusions on single/dual till" and Appendix 2.3).

10.21. Based on the Authority's experience of tariff determination under shared revenue till in respect of airports of Delhi, Mumbai and Consultation Paper for Bangalore and comparing it with the experience of tariff determination under single till, and noting the various issues involved that are similar to what the Competition Commission had observed in its report 2002, the Authority has come to the considered view that in the Indian context, single till is the appropriate regulatory approach. However, keeping in view the repeated representations from the private airport operators for the need to incentivise them to increase non-aeronautical revenues (that according to them will help passengers in reduced aeronautical tariffs as well as help the airport operator to get resources for capital needs at the airport), the Authority is proposing a transparent framework to incentivise the airport operator to increase non-aeronautical revenues. Similarly the Authority has proposed, for stakeholders' consideration normative approach for the two building blocks of the aeronautical tariff determination (including UDF), for asset allocation and allocation of O&M between aeronautical and non-aeronautical service, vide Para 8.4 and 9.1.

10.22. The Authority has given considerable deliberation to the issue of "incentivisation" of the airport operator to increase non-aeronautical revenues. The Authority has felt that the framework for such incentivisation should strike an appropriate balance between the interests of the passengers and those of the airport operator in an ex-ante predictable manner and have clear nexus with the efforts that may be put in by the airport operator.

10.23. **Projections of Non-Aeronautical Revenues - difficulties in the**: The Authority has also noted that in the current as well as the next control period, it is not possible to project the non-aeronautical revenues with substantial degree of precision. This is because of various factors. First, there is volatility in the passenger traffic and this traffic contributes to non-aeronautical revenues. Secondly, in most of the major airports, large terminal areas have been newly built and have not been populated by non-aeronautical services and concessionaires. The trend of how they would be so populated is, therefore, at the moment, unclear. Some airports like Delhi and Cochin have non-aero

activities which are mature. Even so Cochin is undertaking substantial terminal expansion of 1.5 lakh Sq. mtrs that according to it would be available for use in the first year of the next control period. Other airports like Mumbai, Bangalore, Chennai, Kolkata, Guwahati, Lucknow, Goa, etc. have recently completed large new terminal buildings that have not yet been fully populated by the non-aeronautical concessionaires.

10.24. **Growth in NAR and Passenger traffic**: According to 2013 Airports Council International-North America Concessions Benchmarking Survey, Passengers are spending more at airports. The report gives Figure 6 in this behalf.

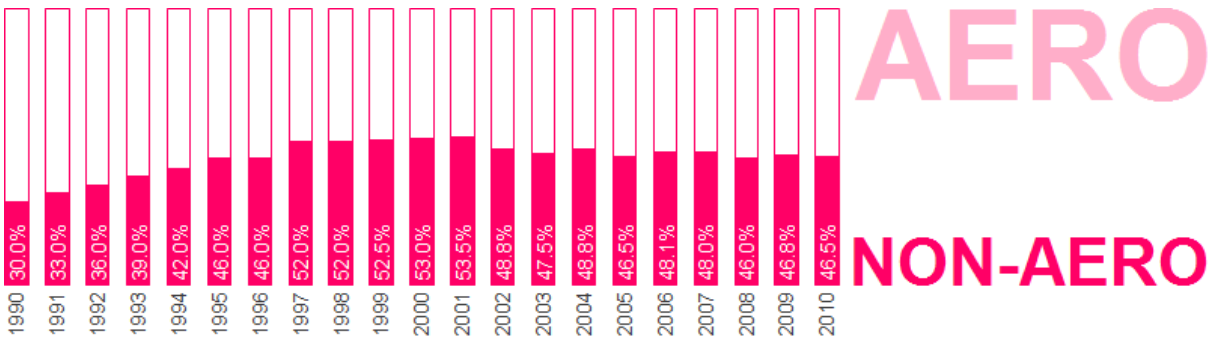
Figure 6: Median gross NAR per Enplanement, North American Airports

10.25. Non-aeronautical revenues are strongly correlated with passenger growth. Analysis of data of large international and domestic airports in North America as obtained from the ARN Factbook 2013, the total sales at the airport are seen to be strongly co-related with enplanements (passenger traffic). There is another study (Technopark[16]) that compares aeronautical revenues with non-aeronautical revenues for the period 1990-2010. It found that *"In 2002, for example, when passenger numbers*

[16] http://www.woodsbagot.com/blog/diversifying-airport-revenues

slipped slightly to 2.9 billion (from 3 billion in 2001), non-aeronautical revenue decreased to 48.8% (from 53.5% in 2001). And again in 2008, when times were tough, non-aero revenue slipped from 48% to 46%." It is stated in the report of Technopark that when passengers or aero revenue decreases so does the non-aeronautical revenues, indicating the strong relationship between passengers and non-aeronautical revenues. Graphically this is seen in Figure 7 below:

Figure 7: Historical breakdown of airport revenues. Source: Technopark



10.26. The growth in the NAR can be said to have occurred on account of three factors viz. (a) natural growth in NAR on account of passenger growth as well as increased incomes of passengers on account of growth in GDP, increasing the purchasing power of the passengers, thereby increasing the "propensity" of each passenger to make more purchases at the airport, (b) (i) "efforts" of the *third party concessionaires* that has increased the Non-aeronautical revenues and (b) (ii) the "efforts" of the *airport operator* that has contributed to the Non-aeronautical revenues. Effect of b (i) and b (ii) can be regarded as increased "penetration" resulting into higher non-aeronautical revenues. The airport operators have been requesting to incentivize them so that they make "efforts" to increase the non-aeronautical revenues. This distinction is important in calculating the justifiable incentive to the airport operator to reward him purely for his "efforts" in increasing the non-aeronautical revenues at the airport.

11. "Effort" of the airport operator to increase Non-aeronautical Revenue (NAR) and incentivisation based thereon

11.1. The Authority has data of growth in NAR as well as growth in passengers in respect of the five private airports (the 4 metro cities and Cochin). Generally, increased GDP is seen to give rise to increased number of passengers (often, the ratio of growth

rate of GDP to that of passengers is taken empirically at 1.5 for the long term projections of passenger growth over a reasonably *long term* horizon. (For example. in its report "Report of Working Group on Civil Aviation Sector", National Transport Development Policy Committee, MoCA, June 2012, certain elasticity of growth in passenger with respect to GDP is indicated. GDP elasticity of 1.5 in case of domestic passengers and global income elasticity of 3.1 in case of international passengers is applied to derive the numbers for domestic and international segments of air traffic. Domestic passenger traffic is relatively less sensitive to domestic GDP as compared to international passenger traffic to global GDP). In a shorter term of 5 years, however, this ratio may not hold). At any rate, the passenger growth primarily drives the NAR growth in the terminal building. Owing to the volatility of growth in passengers, the Authority has been truing up the traffic (PAX, ATMs and the cargo) and proposes to continue to true up the same. Since Passengers are the main driver of NAR, and in the newly constructed airport terminals, it is not possible to project the likely NAR, the Authority has decided to true up NAR in its airport tariff orders of Bangalore, Mumbai, Chennai, Kolkata and Guwahati and Consultation Papers of Lucknow and Cochin. The Authority proposes to true up the NAR.

11.2. **The Authority feels that in normal course, Non Aeronautical Revenues should grow, in any case, at least at the growth rate of the passengers**. The excess growth rate of NAR over that of passengers, in Authority's view, can be attributed to two factors – (a) increased *propensity* to purchase by the growing numbers of passengers (on account of increased GDP leading to increased incomes, etc.) and (b) increased *penetration* on account of both the efforts of the operator and that of the concessionaires. The Authority notes that as a general commercial practice, the term of the concessionaires is fixed for say 5 years or even longer and once the terms and conditions of the "revenue share" that the concessionaires give to the airport operator are fixed, it is the concessionaires who should be more interested in increasing the NAR and the airport operator will automatically gain through higher revenue share. Generally the terms and conditions incorporate some annual escalation of the revenue share to the airport operator. Yet some efforts on the part of the airport operator may also play a part, however, and the Authority is assuming that part (b) entirely

represents the "efforts" *only* of that of the airport operator. This can therefore be regarded as the upper limit of the entitlement of the non-aero revenues that can be retained by the Airport Operator as incentive on account of his "efforts" to increase non-aeronautical revenues.

11.3. **Proposed framework of incentivisation**: The Authority is thus proposing that *half* of the difference between the growth rate of NAR and that of the passengers can be ascribed to the increased *penetration* on account of the efforts of the airport operator to increase NAR (other half difference being the normal growth in NAR on account of increased *propensity* of the passengers on account of increased incomes). Since the Authority is required to incentivize each individual airport operator for his efforts to increase NAR, the calculations would need to be made for each airport individually and for each year.

11.4. At the end of the control period, the Authority would be truing up the different revenue elements that go into the computation of ARR and aeronautical tariffs. This true up is either ploughed back or added to the estimated ARR to the next control period. Since the airport operator is entitled to the incentive, the incentive amount would be added to the *first year ARR* of the next control period. The Authority is of the view that the above formulation takes into account the revenues generated by the airport operator for services other than the aeronautical services (Section 13(1)(a)(v) of the AERA Act, 2008). At the same time, however, it also incentivizes the airport operator commensurable with his "efforts" to increase non-aeronautical revenues which have direct impact on the aeronautical charges including the User Development Fees. The Authority has noted that with the exception of CIAL, the User Development Fees constitutes a substantial proportion of the revenues that go to make up the ARR requirements. Hence incentivisation of the airport operator in the manner proposed above and commensurable only with the efforts made by him to increase non-aeronautical revenues as well as disincentivise, as proposed, for lack of efforts, strikes an appropriate balance between the interests of the operator and those of the passengers that remain the primary focus of economic regulation of the airports for the Authority. The following abstract (Table 11) gives the results of the calculation of entitlement of incentives (disincentives) of the different airport operators that are

commensurable with the "efforts" of the respective airport operator. It is clear that all airport operators are not entitled, under the approach of incentivisation proposed by the Authority, for a uniform percentage of NAR that can be retained by them. These percentages vary from airport to airport, depending on the measured ë fforts" of that airport operator to increase non-aeronautical revenues.

Table 11: Abstract of the calculations of Incentive/Disincentive Airportwise for first Control period

Airport	Total NAR for 1st Control Period (Rs in Crore)	Cummulative Incentive (+)/ Disincentive (-) (Rs in Crore)	% of Incentive(+) / Disincentive (-) on NAR
BIAL	899.92	39.55	4.39%
HIAL	898.5	66.03	7.35%
CIAL	980.9	25.4	2.59%
AAI-Chennai	1134.92	30.4	2.68%
AAI NSCBIA	855.98	-0.7	-0.08%

11.5. **Analysis of Incentivisation commensurable with only "efforts" of airport operator:** Taking the example of BIAL (ref Table 12) for the purposes of analysis will show that in case of BIAL, the incentive amount during the current control period that will be added to the ARR of the first year of the next control period works out to Rs.39.55 crore. Since the total NAR for BIAL in the current control period Rs.899.92 crore, the incentive, works out to 4.39% of the NAR. The Authority notes that the incentive increases the ARR during the next control period resulting in increased aeronautical tariffs including UDF. This can be regarded as the *upper limit* (Refer Para 11.1 above of the incentive that can justifiably be considered as the entitlement of BIAL as commensurable with his "efforts". Conversely, this means that 95.61% of the NAR needs to be reckoned towards determination of non-aeronautical revenues. The private airport operators' continuous request to adopt shared revenue till with say 30% means that they want a much higher percentage (of about 70%) than 4.39% to be allowed to be retained by them to incentivize them for their "efforts". The above analysis seems to indicate that such a request is unwarranted. Any percentage higher than 4.39% can be viewed as unjustly rewarding the Airport Operator. Moreover, the incentives will have to be commensurable with the "efforts" of the airport operator at the specific airport. Request of adopting a uniform percentage of 30% for *all* airports does not address the different level of "efforts" that different airport operators will be making to increase the

non-aeronautical revenues during individual years of a control period.

11.6. **Nexus between incentivisation and public purpose**: The Authority will consider entire non-aeronautical revenues in calculation of the aeronautical tariffs and also account for the overall costs that may have to be incurred in generating the non-aeronautical revenues unless any non-aeronautical asset is "*ring fenced*" by the Authority, in which case neither the non-aeronautical revenue nor the associated costs will enter in the computation of the aeronautical tariffs (including UDF). Additionally, the Authority will calculate the entitlement of incentives (or disincentives) of the airport operator in accordance with the transparent procedure proposed above and adjust the incentives (or disincentives) in the first year ARR of the next control period. As the non-aeronautical revenues increase, both the passengers and the airport operator will stand to benefit. This will be a transparent ex-ante measure to incentivise the airport operator purely for his "efforts" (and no more) to increase the NAR without compromising the reasonable interests of the passengers. This procedure, in Authority's view, entitles the airport operator to retain a share of non-aeronautical revenues that is commensurable with his efforts". If any more share is held as his entitlement (without corresponding disincentive), this may be viewed as an unjust enrichment of the airport operator at the cost of passengers who will have to bear higher burden of aeronautical charges, especially the UDF. The above proposal of incentivisation of the Airport Operator to increase NAR, in the opinion of the Authority appropriately brings about nexus between grant of such incentives and underlying public purpose. Addition of the incentive amount in the first year of the next control period as proposed above, will no doubt increase the aeronautical charges that would have been levied in the absence of such incentive. But this increase is on account of measurable "effort" on the part of the Airport Operator.

11.7. **Case of Delhi and Mumbai**: The situation at Delhi and Mumbai, as mentioned in para 10.19 above is qualitatively different. The revenue share to AAI that has been agreed to be given by DIAL and MIAL was a result of market discovery through open bidding process. The Costs associated with generating the non-aeronautical revenues were also not to be a cost pass- through and are to be borne by the respective airport operators (This is different from BIAL and HIAL where the revenue share is 4%, is

allowed to be a cost pass-through and is deferred for ten years from the date of Airport Opening date. Hence the incentivisation scheme that has been proposed does not apply for Delhi and Mumbai.

11.8. **Case of CIAL** : The example given in Table 14 in respect of CIAL is illustrative of what would have been the entitlement of CIAL based on the proposed framework for incentivisation of the Airport Operator to increase non-aeronautical revenues. The Authority has issued a Consultation Paper No.03/2014-15 dated 5th June, 2014 proposing to continue the extant aeronautical tariffs. The Consultatipn paper also mentions that in view of this proposal, the question of truing up for various revenue elements that go in to the composition of the ARR does not arise. Accordingly the question of incentivisation of CIAL for the next control period based on the growth rates of NAR and Passengers during the current control period does not arise.

Proposal No. 8. Regarding incentivizing airport operator to increase NAR and Truing up

a. **The Authority proposes to true up the NAR**
b. **The Authority proposes to incentivize (disincentivise) the airport operator only for his "efforts" (or lack of efforts) to increase (or fail to increase) the non-aeronautical revenues at the airport.**
c. **The Authority proposes to operationalize Proposal No. 8 (b) by taking half the difference between the growth rate of increase of NAR and the growth rate of passengers, calculated each year, with carrying costs calculated at the WACC as applicable and add the cumulative incentive (disincentive) amount to the ARR of the first year of the next control period (refer Paragraphs 11.1 to 11.6 above for reasons and framework) and particularly with reference to the example given in Table 12 to Table 16.**
d. **The Authority proposes to adopt the proposal of incentivisation from the next control period viz., 1st April, 2016 to 31st March, 2021 based on the results of growth in NAR and growth in Passengers as obtained in the Current Control period. Therefore the incentive amount will be added to the ARR of the FY 2016-17.**
e. **The Authority under this approach proposes to take into account the costs of generating the NAR and treat them as a pass-through.**

f. **The Authority also proposes that it may need to ring fence the airport assets for reasons mentioned in Para 10.11 read with Para 11.6 above**

g. **The proposal of incentivisation of airport operators to increase non-aeronautical revenues will not apply to Delhi and Mumbai Airports (Refer paras 10.19 and 11.7 above).**

h. **In the case of CIAL, the Authority has issued a Consultation Paper proposing continuation of existing tariffs for the current control period. Hence, the question of any incentive pertaining to the current control period in respect of CIAL does not arise.**

12. Summary of Proposals:

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Table 12: Incentivisation of Airport Operator for "efforts" for NAR-BIAL (Rs in crore)

BIAL	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Pax (in crore)	1.163	1.27	1.2	1.31	1.46	1.63
NAR (Rs in crore)	117	154.32	158.5	167.16	198.67	221.27
Growth rate in NAR (YoY) % g_n		31.90%	2.71%	5.46%	18.85%	11.38%
Growth rate in Pax (YoY) % g_p		9.20%	-5.51%	9.17%	11.45%	11.64%
$(g_n - g_p)$ %		22.70%	8.22%	-3.70%	7.40%	-0.27%
Incentive (+)/ Disincentive (-) to Operator (Rs in Crore) ($\frac{g_n - g_p}{2}$) $\times NAR$		17.51	6.51	-3.09	7.35	-0.30
Incentive (+)/ Disincentive (-) with Carrying Cost (at WACC of 11%) (Rs in Crore)		26.59	8.91	-3.81	8.16	-0.30
Cumulative Incentive (+)/Disincentive (-)(Rs in Crore)						39.55

Table 13: Incentivisation of Airport Operator for "efforts" for NAR - HIAL (Rs in crore)

HIAL	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Pax (in crore)	0.76	0.86	0.84	0.84	0.90	0.96
NAR (Rs in crore)	106.97	156.65	186.23	164.37	184.48	206.77
Growth rate in NAR (YoY) % g_n	12.66%	46.44%	18.88%	-11.74%	12.23%	12.08%
Growth rate in Pax (YoY) % g_p	16.92%	13.19%	-2.63%	0.00%	6.89%	6.75%
$(g_n - g_p)$ %	-4.26%	33.25%	21.51%	-11.74%	5.34%	5.34%
Incentive (+)/ Disincentive (-) to Operator (Rs in Crore) ($\frac{g_n - g_p}{2}$) $\times NAR$	-2.28	26.05	20.03	-9.65	4.93	5.52
Incentive (+)/ Disincentive (-) with Carrying Cost (at WACC of 11%) (Rs in Crore)		39.54	27.40	-11.89	5.47	5.52
Cumulative Incentive (+)/Disincentive (-) Rs in Crore						66.03

Table 14: Incentivisation of Airport Operator for "efforts" for NAR- CIAL (Rs in crore)

CIAL	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Pax (in crore)	0.44	0.47	0.49	0.54	0.59	0.65
NAR (Rs in crore)	129	155	177	204.9	214.9	229.1
Growth rate in NAR (YoY) % g_n		20%	14%	16%	5%	7%

Summary of Proposals:

CIAL	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Growth rate in Pax (YoY) % g_p		7%	4%	10%	9%	10%
$(g_n - g_p)$ %		13%	10%	6%	-4%	-4%
Incentive (+)/ Disincentive (-) to Operator (Rs in Crore) ($\frac{g_n - g_p}{2}$) $\times NAR$		10.34	8.80	5.69	-4.71	-4.08
Incentive (+)/ Disincentive (-) with Carrying Cost (at WACC of 11%) (Rs in Crore)		15.69	12.03	7.02	-5.22	-4.08
Cumulative Incentive (+)/ Disincentive (-) (Rs in Crore)						25.4

Table 15: Incentivisation of Airport Operator for "efforts" for NAR – Chennai (Rs in crore)

Chennai	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Pax (in crore)	1.20	1.29	1.44	1.60	1.78	1.99
NAR (Rs in crore)	141.4265	158.34	212.81	232.44	253.92	277.41
Growth rate in NAR (YoY) % g_n		12%	34%	9%	9%	9%
Growth rate in Pax (YoY) % g_p		7%	11%	11%	11%	11%
$(g_n - g_p)$ %		5%	23%	-2%	-2%	-2%
Incentive (+)/ Disincentive (-) to Operator (Rs in Crore) ($\frac{g_n - g_p}{2}$) $\times NAR$		3.72	24.58	-2.43	-2.65	-2.90
Incentive (+)/ Disincentive (-) with Carrying Cost (at WACC of 11%) (Rs in Crore)		5.64	33.61	-3.00	-2.94	-2.90
Cumulative Incentive (+)/ Disincentive (-)(Rs in Crore)						30.4

Table 16: Incentivisation of Airport Operator for "efforts" for NAR - NSCBIA, Kolkata (Rs in crore)

Kolkata	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Pax (in crore)	0.96	1.03	1.16	1.31	1.48	1.68
NAR (Rs in crore)	131.25	119	144	180	197	216
Growth rate in NAR (YoY) % g_n		-10%	22%	25%	9%	9%
Growth rate in Pax (YoY) % g_p		7%	13%	13%	13%	13%
$(g_n - g_p)$ %		-17%	9%	12%	-4%	-4%
Incentive (+)/ Disincentive (-) to Operator (Rs in Crore) ($\frac{g_n - g_p}{2}$) $\times NAR$		-9.88	6.22	10.94	-3.47	-3.80
Incentive (+)/ Disincentive (-) with Carrying Cost (at WACC of 11%) (Rs in Crore)		-15.00	8.51	13.47	-3.86	-3.80
Cumulative Incentive (+)/ Disincentive (-) (Rs in Crore)						-0.7

13. Stakeholders Consultation Time

13.1. In accordance with the provisions of Section 13(4) of the AERA Act 2008, the proposal contained in the Summary of Proposals (Para 12 above) read with the Authority's analysis, is hereby put forth for Stakeholder Consultation. For removal of doubts, it is clarified that the contents of this Consultation Paper may not be construed as any Order or Direction of this Authority. The Authority shall pass an Order, in the matter, only after considering the submissions of the stakeholders in response hereto and by making such decision fully documented and explained in terms of the provisions of the Act.

13.2. The Authority welcomes written evidence-based feedback, comments and suggestions from stakeholders on the proposal made in Para 12 above, **latest by 7th July, 2014** at the following address:

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Yashwant S. Bhave
Chairperson