



THE NATIONAL  
RESEARCH INSTITUTE  
PAPUA NEW GUINEA

# DISCUSSION PAPER

AIRPORT GOVERNANCE AND  
PERFORMANCE IN PAPUA NEW  
GUINEA – A SCOPING PAPER

John Fallon  
Ronald Sofo

[www.pngnri.org](http://www.pngnri.org)



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First published in August 2022

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ISBN 9980 75 322 6

National Library Service of Papua New Guinea

ABCDE 202625242322

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Cover designed by PNG NRI Digital Media Unit

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### Acknowledgements

Thanks are extended to staff of the Papua New Guinea National Research Institute who provided valuable assistance and advice in preparing this report.

Thanks are also extended to the stakeholders who were consulted in the preparation of the report.

The report does not necessarily represent the views of any of those who were consulted in the preparation of the report

### Authors' Contributions

**Ronald Sofo:** conceptualisation, design, stakeholder consultation, data collection, draft review and input, and project management.

**John Fallon:** design, literature review, data analysis and writing.

## Abbreviations and Acronyms

ADB	Asian Development Bank
CAA	Civil Aviation Authority
CASA	Civil Aviation Safety Authority
CSO	Community Service Obligation
GBE	Government Business Enterprise
ICAO	International Civil Aviation Organization
ICCC	Independent Consumer and Competition Commission
KCH	Kumul Consolidated Holdings Limited
NAC	National Airports Corporation
NEC	National Executive Council
NTS	National Transport Strategy
PMIA	Port Moresby International Airport
PNG	Papua New Guinea
PNGASL	PNG Air Services Limited
SCNPMGTE	Steering Committee on National Performance Monitoring of Government Trading Enterprises
SOE	State-Owned Enterprise

## Abstract

Given the challenging topography of Papua New Guinea (PNG), air transport services play a critical role in economic and social development as alternative forms of transport are often not available. Air transport, for many parts of PNG, has been the only possible means linking them to the main business and government services. This research paper focuses on the governance and performance of the national airports in the country and in particular, whether some of these airports should be subject to some form of economic regulation of prices and services. The government-owned National Airports Corporation (NAC) is responsible for the provision, maintenance and development of 22 designated national airports. For the past decade, the emphasis in managing these airports has been on an investment program to ensure the airports are developed to meet internationally agreed safety and security standards. The legislative arrangements relating to the NAC, emphasise safety and security and although efficiency and service quality are referenced, it seems that a commercial focus is given limited consideration in the operations of the airports. This paper provides a number of recommendation including amendments to the Civil Aviation Authority (CAA) legislation to enable economic regulatory role in reviewing the performance of the NAC with respect to its responsibilities for the operations, costs and financial performance. It also recommends that NAC should develop non-aeronautical revenue sources to supplement its aeronautical revenue to be able to meet the increasing costs of management and maintenance of airports throughout the country.



# Introduction

This research paper focuses on the governance and performance of the 22 national airports in Papua New Guinea (PNG) and in particular whether some of these airports should be subject to some form of economic regulation of prices and services.

Most of the efforts in relation to improving airport operations in PNG for the past two decades have focused on safety and security and infrastructure investment to meet safety standards with more limited attention given to operational efficiency and efficient pricing of airport services. The focus on safety and security and infrastructure investment is understandable given the development situation in PNG and the need for safety and security in aviation services but funding constraints also mean that improving efficiency and pricing would be important for effective financing.

Due to time and resource constraints, the paper is in the form of a scoping report rather than a detailed review. The paper provides an update on the situation with respect to PNG's national airports that should be of interest to various airport stakeholders.

The structure of this report is as follows:

- A brief description of PNG's 22 national airports and the entities responsible for their management;
- Main features relating to the development and governance of airports internationally in order to understand key issues and lessons for PNG;
- Key public policy issues in relation to the performance and economic regulation of PNG's national airports; and,
- Main findings of the report and recommendations for the role and form of economic regulation and associated public policy that should be considered for improving the performance of PNG's national airports.

# PNG national airports

This section considers the role of the National Airports Corporation (NAC), the role of other institutions relevant to airport services, and the physical state of the 22 national airports that the NAC manages.

## The National Airports Corporation

### Background

Given the challenging topography of Papua New Guinea, air transport services play a critical role in economic and social development as alternative forms of transport are often not available. Air transport, for many parts of PNG, will continue to be the only possible means linking them to the main business and government centres of the country.

As a state entity, the NAC is responsible for the provision, maintenance and development of 22 designated national airports (14 jet airports and eight non-jet airports). The country also has hundreds of airstrips serving the rural and remote population, owned and operated mostly by provincial and local level government, private resource companies and civil society organisations.

In recent years, there has been a strong focus on improving the physical conditions of the airports given concerns that the conditions breached international compliance requirements for safety and security. This situation has been worsened by the introduction of Fokker 100 aircraft that are much heavier than the type of aircraft the pavements were originally built for. Without remedial action, there was a risk that some of the airports would have had to be closed. Thus, for the past decade, the Government has received support from Asian Development Bank (ADB) to address the state of infrastructure and other challenges in the civil aviation sector.

### Role of NAC and formal legislative arrangements.

The National Airports Corporation (NAC) was established with amendments to the Civil Aviation Act with a focus on providing and promoting safe, efficient aviation services to the aviation industry in PNG (Civil Aviation Act, 2000; Civil Aviation Amendment Act 2010). The NAC is a State-Owned Enterprise (SOE) and was incorporated under the Companies Act 1997 in 2009, as the owner and operator of PNG's 22 national airports.

The mandate and functions of the NAC are stipulated under Section 143 of the Civil Aviation Act, 2000. The NAC is required to provide services aimed at promoting a secure and dependable air transport system for the safe and efficient service to the international and domestic users of PNG airspace.

The NAC has primary responsibility as owner and operator of national airports and is responsible for all runway, taxiway, apron and airfield infrastructure, traffic control of aircraft on the ground, terminal buildings, landside facilities, control of leases and concessions and all airport land.

PNG is also a signatory to the International Civil Aviation Organization (ICAO) Convention which means that it is required to provide civil aviation services ensuring that international standards and regulatory requirements are met.

As a statutory corporation, the NAC is required under section 82 of the Civil Aviation Act 2000 to ensure the provision of 'non-discriminatory, equal and uniform access of aviation services'. These statutory obligations mean that the NAC cannot operate in a purely commercial manner because the unit costs (costs per flight) of some airports cannot be covered by uniform pricing.

Prior to the establishment of the NAC, which replaced the Civil Aviation Authority in 2010, the general objectives and functions of the Civil Aviation Authority included a specific requirement for the Authority to operate successfully by being 'profitable and efficient' in its commercial activities provided that it did not compromise aviation safety (*Civil Aviation Act, 2000, Section 11 (1) (a)*). However, the Civil Aviation Amendment Act (2010) replaced the reference to 'profitable and efficient' as an objective for the Authority (the NAC) with a requirement to be "efficient in its activities, provided that in pursuing this objective, the Authority does not compromise aviation safety or security" (*Civil Aviation Act, 2010, Section 11 (1) (a) and Section 11 (2) (a)*). Other changes were made that relate to improving security. The long title of the amended act referenced safety and security as well as efficiency and service quality in the civil aviation system (*Civil Aviation Act, 2010 p. 1*).

Although these changes may have been justified, given the state of the airport infrastructure for most of PNG's national airports, they do change the emphasis away from a commercial focus with respect to business operations, cost efficiency and pricing. However, even if there was a stronger commercial focus at NAC the cost differentiation across airports together with the statutory obligations for uniform access, which in effect means uniform pricing, mean that some form of subsidisation will be essential. This is discussed further below in the section on community service obligations.

## Other institutions

PNG Air Services Limited (PNGASL) is a separate SOE responsible as the sole provider of air navigation and communication infrastructure and services.

The Civil Aviation Safety Authority (CASA) is the safety and security regulator for aviation within PNG airspace, including airports, air operators and air crew, for PNG-registered aircraft and for safety and suitability compliance of overseas registered aircraft operating within PNG.

The Accident Investigation Commission (AIC) is responsible for investigating and reporting on the causes of air accidents on a no-fault basis with the objective of improving air safety.

The Air Transport Regulation Division of the Department of Transport provides policy analysis and advice and administers international air service agreements and market regulation of the aviation industry.

The NAC reports to the responsible Minister through the Department of Transport. The NAC is required under the *Civil Aviation Act 2000* to provide a draft performance agreement to the Minister no later than three months before the commencement of each financial year covering, inter alia, the proposed statement of objectives and how it intends to report on those objectives (*Civil Aviation Act 2000*, Section 36). The Minister is then required to approve or refuse to approve the agreement with instructions on how to amend it. However, the legislation does not specify any arrangements for monitoring how successful the NAC is in meeting its objectives each year.

The Independent Competition and Consumer Commission (ICCC) maintains a general monitoring role over market competition and service standards in civil aviation with reserve powers to intervene as provided for under its legislation. However, its role with respect to the NAC is limited to oversight only and it is not active in monitoring the performance of the NAC and the national airports.

Other SOEs report Kumul Consolidated Holdings Limited which is an SOE responsible for a portfolio of non-mining SOEs.

## The physical state of the airports

The physical state of the airports as of 2013 was described in detail in the National Transport Strategy (NTS) noting that there were several NAC airports that did not meet the safety certification requirements under the Civil Aviation Rules. A capital development program over a 20-year period for the rehabilitation and upgrading of the airports was developed as part of the NTS and has been largely funded by the ADB with an expectation that by the end of the NTS in 2030 the NAC would be able to recover infrastructure replacement and renewal costs from user charges across the airports under its ownership due to increased air traffic (Government of Papua New Guinea Department of Transport, (2013c Vol. 3, p. 168).

In 2009, the ADB, upon the request of the Government of PNG, provided loan support in the form of Multi-Tranche Financing Facility (MFF) to help address the aging and deteriorating civil infrastructures across the airports owned and operated by the NAC, which breached international compliance requirements for safety and security (ADB, 2016).

The ADB-funded Civil Aviation Development Investment Program (CADIP) were rolled out in three tranches, with the key objectives as follows;

- Improvements to airport and air traffic services infrastructure to ensure compliance with aviation safety and security standards. This include the International Civil Aviation Organisation (ICAO) Standards and Recommended Practices (SARPs);

- Upgrade of national airports to increase capacity to accommodate larger aircraft in response to growth in air transport; and,
- Capacity building and institutional strengthening of the National Airports Corporation, PNG Air Services Limited and the PNG Civil Aviation Safety Authority.

Ended in November 2021, the CADIP brought about significant redevelopment and revitalisation of the national airports throughout the country. According to ADB, assessment on its investment program in PNG, the CADIP, was rated satisfactory in its performance, contributing substantially to airport infrastructure update, improved operations and capacity development (ADB, 2019a). In particular, the investment program markedly improved operations through provision and installation of modernised equipment for navigation, surveillance, safety and rescue in compliance with air traffic management requirements. In addition, the program upgraded airside and landside infrastructure to meet safety and security certification requirements, as well as in anticipation of future operational and capacity. Further, through the reformed institutions in the likes of NAC, PNGASL and CASA, there are now sustainable and focused operational units established for airports, air traffic services, property development, and regulatory oversight.

The national airports that benefit from the CADIP through new terminal building, runway extension, pavement upgrade, and other related works, include Port Moresby International Airport, Tokua, Goroka, Hoskins, Mt Hagen and Gurney (CADIP Project Implementation Unit, 2017). However, it has been reported that there are a number of national airports that were not completed under the CADIP and would still need additional funding to progress the capital works following expiry of the ADB MFF loan (Post Courier, 2021). These airports with outstanding work mainly on terminal upgrade are Kavieng, Madang, Wewak, Wapenamanda, Tari and Mendi.

The NTS committed to CSO funding as necessary to fund the rehabilitation and improvement of these airports to meet the required certifiable standard and maintained at or above that standard by 2030 (Government of Papua New Guinea, Department of Transport, 2013c). We understand that most of the national airports still require substantial cross-subsidies and investment support to meet the required certifiable standard.

# Development and governance of airports

This section considers key aspects of the development and governance of airports including ownership structures and their implications for pricing of airport services and regulatory arrangements in relation to economic oversight of airports.

## Ownership structures

### Public ownership is the norm

Airports provide services that are heavily dependent on infrastructure that typically means some form of monopoly provision is the only viable option. In a developing country context, it is usually not feasible for major airports to be privately owned unless the airports are very large and effectively regulated.

Most airports in developed and developing countries became operational under public ownership (Kapur, 1995, p.9). Public ownership is still predominant in most countries, particularly for smaller airports and in developing countries (Button, 2006, p.6 and ICAO 2020, p.2-1). Most airports are owned by a department or authority of the national government or a local regional authority. Public airport corporations have been established in many jurisdictions to improve managerial autonomy and accountability and provide better access to finance (ICAO, 2020, p.2-2 and 2-15). However, even for many developed countries, airports are still government owned at either the national level or by local or regional governments. It is also the case that it may not be appropriate to establish an autonomous entity in situations where there is very limited aviation activity.

### Implications for pricing

When airports are government owned, there is little incentive to exploit any market power the airport may have by setting high prices. Typically, government ownership of airports means there is in effect quasi economic regulation of prices since the government will likely have development and non-commercial objectives that are given priority over commercial performance and will have the authority to set prices for airport services.

The ownership structure of airports has various implications for pricing of services and the financing of operations and investment (Kapur, 1995). Government-owned entities typically have a mix of commercial and non-commercial objectives that in effect weaken the incentives to generate revenues and minimise costs. Although this limits the likelihood that prices for airport services will reflect excessive or material exploitation of market power, it also means that incentives to generate revenues from airside (aeronautical) and landside (non-aeronautical) at airports will be limited and make it difficult to finance operations and investments.

Airside revenues comprise the revenues from services that are strictly related to servicing the operational needs of airlines (Kapur, 1995). Airside revenues are derived from aircraft landing and parking charges, passenger fees, terminal charges and charges for various airport services including safety and fuel provision and other freight and traffic-handling services. Landside revenues refer to non-aircraft related commercial activities in the terminals including rents from airlines, airport access and concessions.

In jurisdictions that have implemented effective corporatisation or privatisation of airports, there are much stronger incentives to increase revenues from both airside and landside sources and this has also typically meant the need for independent economic regulation of prices at airports. As is the case with many publicly-owned entities undertaking a mix of commercial and non-commercial activities. Publicly-owned airports have not performed at the same level of efficiency as airports with private participation (Kapur, 1995).

### Relevance to PNG

However, there are many factors that support the retention of a national single government entity responsible for managing PNG's airports consistent with the NAC arrangements. These factors include the development priorities with respect to regional airports; the advantages of a national integrated system particularly when many regional airports need considerable government support to remain viable, concerns about safety, and difficulties in effective privatisation of monopolies, particularly where effective institutional arrangements may still need development

(Gong et al., 2012; and Amos, 2004). Thus this paper is not examining the scope for privatisation of PNG's national airports.

However, recognising the need for funding of airport infrastructure investments and operations, the paper will consider the scope for improving commercial discipline in generating airside and landside revenues and containing costs as well as accountability for development and safety objectives.

## **Regulatory arrangements**

### **Separation of regulatory functions**

Airports have always been subject to a mix of technical, safety and economic regulations and in many cases, a single government department or agency has been responsible for all aspects of airport regulation as well as for operation of the airports. However, recognition of the potential conflicts in a single entity being responsible for all aspects of regulation has led to separation of regulatory and operational functions and this has also occurred in PNG.

Airports operate principally under monopolistic conditions similar to utilities providing essential services. Therefore, regardless of the form of ownership structure, policy-makers should be concerned about the extent to which they operate efficiently including the control of costs, the provision of services and pricing arrangements.

### **International Civil Aviation Organisation commitments**

As noted earlier, PNG is a signatory to the International Civil Aviation Organization (ICAO) Convention which means that it is required to provide civil aviation services ensuring that international standards and regulatory requirements are met.

What is known as the Chicago Convention of 1944 is widely recognised as the primary vehicle for establishing the basic regulations and institutions essential to the development of organised international aviation including various aspects relating to airports. This convention established the legal charter for the ICAO which is a quasi-independent organisation that is legally part of the United Nations (UN), with headquarters in Montreal, Canada. ICAO has been responsible for establishing guidelines and standards for navigational aids, technical characteristics for landing areas, aircraft certification, licensing of pilots and other specialised personnel, market access, safety supervision, and pricing schedules for both airlines and airports.

States that are a party to the Chicago Convention are required to publish their airport and air navigation charges and they can choose to have their charges reviewed by the ICAO, but States are not legally bound to apply ICAO's policies on charges. However, States are encouraged by the ICAO to incorporate the four key charging principles of non-discrimination, cost-relatedness, transparency and consultation with users in their national legislation, regulations or policies, as well as in their air services agreements (ICAO, 2020, pp. 1-2 and 1-3).

### **Economic oversight**

In relation to economic oversight of airports, the ICAO recommends that State should, in particular, ensure that airports consult with users and appropriate performance management systems are in place (ICAO, 2020, p.1-5 and 1-6). The ICAO sets out a range of forms for economic oversight ranging from reliance on competition law to direct regulation of prices. However, consultation, transparency and performance management systems are identified as key requirements whether a light handed or more stringent approach is adopted (ICAO, 2020, p.1-7).

As emphasised by the ICAO, important features of performance management are the feedback loop and continuous evaluation which requires identification, assessment and periodic adjustment of key performance indicators, performance targets and plans to achieve results (ICAO, 2020, p.3-6). The ICAO provides details of the key components of a performance management system including process, objectives, indicators for safety, service quality, productivity and costs, and guidelines for benchmarking and reporting for airports (ICAO, 2020, Appendix 1).

### **Pricing arrangements**

The ICAO considers that the cost base for airport charges should be the full cost of providing the airport and its essential ancillary services. This includes appropriate amounts for cost of capital and depreciation of assets, as well

as the cost of maintenance and operation, and management and administration expenses and that consistent with the form of economic oversight adopted, these costs may be offset by non-aeronautical revenues (ICAO, 2020, p. 4-26).

The reference to economic oversight by the ICAO refers to approval of three basic approaches for revenue recovery as follows:

- a. Under the single-till approach, the full cost associated with an airport and its essential ancillary services are included in the cost basis attributed to air traffic. These costs are then adjusted to reflect non-aeronautical revenues that accrue to the airport. Thus, aircraft operators and end-users benefit from a cost basis that is adjusted to reflect non-aeronautical revenues.
- b. Under the dual-till approach, the full costs associated with the airport and its essential ancillary services are allocated between the airport owner/operator and the airport users based on usage. The costs allocated to air traffic include only those costs associated with the facilities that are actually used by the aircraft operators and the end-users with no adjustment to reflect non-aeronautical revenues accruing to the airport. The airport owner/operator is free to direct the use of any revenues generated from its concessions, parking facilities, and any other non-aeronautical activities for use at the airport, as it deems necessary and appropriate. With the dual-till approach, regulation of prices can apply only to the function where there is clearly market power. That is, non-aeronautical functions may not be regulated if there is little concern about the scope to exercise market power for these functions.
- c. Under the hybrid-till approach, the cost basis is established based on a combination of the single-till and the dual-till approaches. For example, the airport owner/operator may choose to recover landing costs on the basis of the single-till approach while establishing and recovering terminal costs on the basis of the dual-till approach. Also, a proportion of non-aeronautical revenues and costs in addition to aeronautical revenues and costs may be subject to regulatory oversight.

There are various advantages and disadvantages from the three approaches. The single-till approach recognises that both the aeronautical and non-aeronautical functions at an airport may in effect have monopoly type features and the regulation of a single-till avoids the need to establish cost allocation that would be necessary for a dual-till approach. The single-till approach tends to mean that aeronautical charges can be kept lower than for a dual-till approach since overall revenues cannot exceed overall efficient costs for a single-till approach whereas this is not necessarily the case if a dual till approach does not regulate non-aeronautical charges. The dual-till approach allows regulation to focus on the main aspect of market power and may enable stronger revenue growth for non-aeronautical activities because it is still reasonable to assume that non-aeronautical activities will generate some economic rents whether or not one argues they are locational rents or monopoly rents. It is understood that the single-till approach tends to apply more for public airports in a developmental context.

The single-till approach in effect enables some airport functions to cross subsidise other airport functions. In many jurisdictions where airports have been publicly owned and relatively large, this has meant that the revenues from non-aeronautical functions have been in excess of non-aeronautical costs and used to subsidise aeronautical functions. However, once privatisation has occurred, airport operators have argued for dual-till regulation which has meant higher aeronautical charges as charges have been allowed to increase to cover allowed costs while retaining and often increasing the profitability of non-aeronautical functions such as parking and shopping where these functions have been unregulated (Productivity Commission, 2019). The single-till approach is typically applied for single airports but it can and has applied for a government portfolio of airports (Kapur, 1995). This was the case in Australia prior to a major corporatisation and privatisation program in the early 2000s.

### **Subsidies**

Generally, airports, except those under full private ownership, have received some form of government subsidy either directly or indirectly (Kapur, 1995). The most common form of subsidies have been in the form of direct investment grants for specific infrastructure. Indirect subsidies that are important include the use of airport land at less than market value rates and tax exemptions.

Under the single-till approach, cross subsidies can apply for both a single airport and across a portfolio of airports (Kapur, 1995). The ICAO pricing policies do not preclude cross subsidisation for a single-till approach at a single airport but are silent on cross subsidisation for a portfolio of airports.

The economic literature on subsidies emphasises the need for clear specification of the objectives for subsidies, demonstration of their justification and transparent funding. Community service obligations and associated subsidies are discussed in more detail in the context of the PNG situation in Chapter 4.

# Public policy issues for PNG

This section considers various aspects of NAC's operations and associated public policy issues; including cost recovery, community service obligations, cost allocation, subsidy issues and the scope for economic regulation.

## Cost recovery

It is costly to develop and maintain most of PNG's national airports to required standards. Thus, it is important to understand the extent of cost recovery that is achieved and how to finance airports so that they are able to provide required services of benefit to PNG.

The National Transport Strategy (NTS) confirmed that cost recovery from user charges has been insufficient to meet the recurrent costs of maintaining and operating the airports and air navigation infrastructure with cost recovery across CASA, NAC and PNGASL at about 50 percent of operating and maintenance costs (GoPNG DoT, 2013c). The NTS also noted that this low cost recovery was partly a result of Government's expectation that loss-making airports would be subsidised from the few profitable main airports, without a Government contribution in recognition of the community service obligation (CSO) being provided. The profitable airports include Port Moresby International Airport, Nadzab, Mt Hagen and Tokua. The less profitable airports identified in the NTS as of 2013 were Buka, Girua, Momote, Vanimo, Tari, Kiunga, Mendi, Chimbu, Daru, Kerema and Wapenamanda (GoPNG DoT, 2013c).

The NTS specified that the NAC would improve its efficiency through streamlining its operations, outsourcing and application of a fair system of user charges that reflect the costs of the services provided, with an expectation that it would be in a position of full cost recovery for all operating and maintenance costs across the 21 national airports that it owned at the time by 2015. If this was found to be impractical, the less profitable airports would be transferred to a CSO portfolio with a transparent government subsidy. It also noted that the NAC would exploit opportunities for non-aeronautical revenue, such as through landside parking, terminal concessions and leases or licences on airport land.

In the interim, the Government would cover NAC's operating cost shortfall from annual appropriations and a capital development program to rehabilitate and upgrade the national airports that would be funded by Government, utilising aid funding. The Government's expectation for the NTS was that by the end of the NTS in 2030, the NAC would have achieved a position where it is able to recover infrastructure replacement and renewal costs from user charges across the airports under its ownership, due to the increase in air traffic.

## Community service obligations and subsidies

### Concepts and policy for SOEs

A Community Service Obligation (CSO) is defined as a government requirement for an SOE to undertake activities that it would not elect to do on a commercial basis (Government of Papua New Guinea, 2012a; Industry Commission, 1997). It is well accepted in the economic governance literature that in order to ensure effective clarity of objectives and accountability for performance for SOEs, CSOs ideally should be separately identified, separately costed and transparently funded from general revenue in the form of a binding contract. To date, various SOEs in PNG (and other countries) have in effect typically delivered CSOs in their commercial activities through uniform pricing and cross subsidies (Fallon, 2017).

A formal CSO policy for SOEs was approved by the NEC in December 2013. The key features of the CSO policy are as follows (Government of Papua New Guinea, 2012a):

- The requirement that SOEs operate on fully commercial terms.
- Government direction from the NEC to provide the CSO in the form of a written, binding agreement including specification of the services to be provided, their price, economic and social benefits and performance measures relating to accountability.
- The application of CSO guidelines covering application process, prioritisation, documentation, costing, financing and monitoring and reporting arrangements (Government of Papua New Guinea, 2012b).

According to Asian Development Bank, the approved CSO policy reflects international best practice on CSOs but it has not been fully implemented (ADB, 2019b). It is relevant to note that the CSO policy elements as outlined above have been recognised in policy documents as far back as 1983 when the PNG Finance Department and the National Planning office developed and implemented a commercialisation policy based on an International Monetary Fund framework (Fallon and Sofo, 2019).

### The status of CSO policy at the NAC

KPMG was engaged by the Government to assist in a pilot study of the Government’s CSO policy for SOEs which was approved by the National Executive Council (NEC) on 5 December 2013 (KPMG PNG, 2014). The pilot study covered three SOEs including the NAC and provided assistance to the SOEs in identifying and costing CSOs and developing key terms for a performance-based CSO contract.

KPMG reported on NAC costings, including cost allocation for a uniform mark up of 30 percent of operating costs, to allow for indirect costs, plus capital expenditure to ensure minimum standards were achieved. The NAC costings showed that 15 airports were not commercially viable, six airports had the potential to be profitable in the medium to long term and only Port Moresby International Airport (PMIA) was profitable.

KPMG prepared costings based on direct costs and their estimates of fully allocated indirect costs. With this methodology, they found that the following airports were indicated to be financially viable: Port Moresby International Airport, Mt Hagen, Hoskins, Madang, Gurney, Kiunga, Wewak and Kerema.

It is understood that the main elements of the CSO policy and key recommendations made by KPMG have been accepted as NAC policy, but that implementation is far from complete.

Table 1 contains a classification by the NAC of the 22 national airports as documented in the KPMG report in 2014. It is understood that this classification is still broadly valid.

**Table 1: Classification of PNG’s 22 national airports by commercial viability**

	Class A	Class B	Class C
Definition	Operation is commercially viable.	Operation is currently not commercially viable but has potential to become so in the medium to long term.	Operation is currently not commercially viable and is not expected to become viable in the medium to long term.
Airports	Port Moresby International Airport (PMIA), National Capital District.	Goroka, Eastern Highlands; Gurney, Milne Bay; Hoskins, West New Britain; Madang, Madang; Mount Hagen, Western Highlands; Nadzab (Lae), Morobe; Tokua, East New Britain.	Aropa, ARoB; Buka, ARoB; Daru, Western; Girua, Oro; Kavieng, New Ireland; Kerema, Gulf; Kiunga, Western; Kundiawa, Simbu; Mendi, Southern Highlands; Momote, Manus; Tari, Hela; Vanimu, West Sepik; Wapenamanda, Enga; Wewak, East Sepik.

Source: KPMG PNG (2014).

The 22 national airports are classified into three categories in terms of viability. The category A airports are airports that are commercially viable. The Port Moresby International Airport is currently the only category A airport in PNG. The category B airports are those airports whose operations are currently unviable but have the potential to become viable airports within the short to medium term. These include the Lae, Mt. Hagen, Hoskins, Madang, Gurney and Goroka airports. The category C airports include all the other national airports that are currently unviable and likely to remain so in the medium to long term.

It is understood that there is little scope to increase charges at the regional airports and that to meet the internationally agreed service standards they require substantial subsidies. It is also understood that the financing of these subsidies has entailed and will continue to entail substantial financing from the ADB or other donors, mainly for infrastructure to meet specified standards, and also some financing from Port Moresby International Airport to cover operational and maintenance expenses. It is understood that while the program of rehabilitation of airport facilities that has been underway for the past decade or so will help to ensure specified standards are met, there will clearly be a need for ongoing budgetary support of most of the 22 national airports well into the future if they are required to continue to operate providing existing services. There is no scope for increased fees at the regional airports to raise the required additional revenue given capacity to pay for regional services.

The financial circumstances at most of the PNG's 22 national airports highlight the need for an effective CSO policy. As noted, all the main elements for an effective CSO policy have been recognised in various policy documents for some 30 years and a CSO policy with these elements was approved by the NEC in December 2013 but little progress has been made with implementation for all SOEs including NAC.

### **Cost allocation**

An important issue in the implementation of CSOs is the determination of their cost, in particular, the extent to which any indirect costs (overheads) related to the provision of airport services by the NAC should be allocated to all national airports. The Government's CSO guidelines provide definitions of the various cost concepts including comments on their suitability (Government of Papua New Guinea, 2012b). From an economic efficiency perspective the most appropriate concept is marginal cost which is defined as the additional cost of providing a unit of the service. It is appropriate because it reflects cost causality associated with providing an additional unit of service. However, this concept is difficult to implement in practice.

The two cost allocation methods that are of most relevance and their definitions are as follows:

- Fully distributed cost – This method takes all direct costs of the non-commercial obligation plus a pro-rata share of the SOEs indirect costs (e.g. overheads, shared staff, rent, assets). Governments often use the fully distributed cost method because it can be relatively simple to implement.
- Avoidable cost – The method measures all costs associated with the provision of an additional block of output. This concept is commonly used due to its similarity to the marginal cost concept and less difficulty in practical application.

From an economic efficiency perspective, the avoidable cost concept is the most appropriate and practical method for estimating the costs of a CSO because it measures cost responsibility in a causal sense, and this is not the case for fully distributed cost. This is explained in the Australian context as follows (Industry Commission, 1997):

- The SCNPMGTE (1994) recommended that CSOs be costed at their avoidable cost. The avoidable cost method measures the extra cost (net of extra revenue) incurred by the Government Business Enterprise (GBE) from providing the CSO (or alternatively, the net cost that would be avoided if the service was not provided). Thus, fixed costs which the GBE would have incurred without the CSO, even if that input is also used to provide the CSO, are not included in the avoidable cost.
- Fully distributed costs and stand-alone costs are not appropriate ways of measuring the economic cost of CSO provision. Fully distributed costs measure the variable costs of provision plus a proportion of the fixed costs which are not directly attributable to any particular activity. As such, a portion of any fixed cost necessary to provide a CSO is included as part of the fully distributed cost, even if the expenditure would have been required without the CSO. Consequently, fully distributed costs do not reflect accurately the cost attributable to CSOs.

KPMG (2014) recommended costing based on fully distributed cost. It is understood that this recommendation has been supported by the NAC although the status of implementation of CSO policy for the NAC has not been confirmed for this report. The fully distributed cost method will in effect allocate indirect fixed costs incurred by NAC irrespective of whether particular regional airports operate or not. To highlight the issue, consider all of the airports that are not considered to be commercially viable as presented in Table 1 and ask the question what costs would be saved if the airports did not operate? These costs are the avoidable costs including avoidable capital costs.

It is arguable that the avoidable cost approach is more meaningful from an economic efficiency/cost causality perspective and more reflective of capacity to pay for such airports than the fully distributed cost concept. The fully distributed cost concept also does not recognise that the profitable airports have some scope to cross subsidise at least some of the operational expenses of those airports that are not likely to be commercially viable over the medium to longer term, without materially impacting on the demand for their services. The counter argument in favour of fully distributed cost is that it might be perceived as fair since users of the airport services would pay the direct costs of the services they use plus a share of indirect costs that are incurred by the NAC but cannot be attributed to a particular service. However, this concept of fairness does not take account of capacity to pay for individual services nor cost causality.

### **Implications for subsidies, the budget, taxation and regulation**

To explore the implications for subsidies, consider all the airports that are commercially viable when costs are defined using the fully distributed cost concept. In this case, there would clearly be no CSOs for this grouping of airports and all the airports would share in some indirect costs that could not be attributed to particular airports in a causal sense. All of the revenues and costs (including capital costs) would be pooled into a single till and no subsidy would be provided. However, once those airports that are clearly not commercially viable are added, and assuming the required rate of return for the commercially viable airports is unchanged, then a separately financed subsidy would be required to support their operations. The alternatives would be to accept a lower rate of return across the whole airport portfolio or raise fares for those airports where there is sufficient willingness to pay higher fares.

As noted, the literature on the funding of CSOs typically proposes a preference for direct funding of CSOs from the Government's budget (or separate funding by a donor). In this respect, the PNG Government CSO Guidelines specify that the preferred funding mechanism for CSOs is through a direct appropriation to the Purchasing Department in the National Budget (Government of Papua New Guinea, 2012b).

Direct funding of CSOs together with pricing to reflect efficient costs avoids the exercise of market power in the setting of airport charges, offers greater transparency through the annual budget review process and allows for the possibility of competition in the provision of some services through a tender process (Industry Commission, 1997). However direct funding has a real resource cost, as it is financed through the tax system. The resource cost entails some combination of a displacement of other expenditure and higher taxes that impose their own deadweight economic efficiency costs.

If the key elements of best practice with respect to CSO policy, including transparent direct funding, have been recognised in PNG for almost four decades but not effectively implemented, it is natural to try to identify the key reason why that is the case. One fundamental factor that has been identified generally for the effectiveness of regulation in developing countries is 'limited fiscal efficiency' (Estache and Wren-Lewis, 2010). This refers to the severe constraints in developing countries to collect adequate revenue when capacity to pay for services is limited. To elaborate, it is very costly from an economic perspective to raise public funds in developing countries, but this factor is typically overlooked when providing advice on international best practice. For example, the marginal cost to the economy from raising funds is described as a 'deadweight' or economic efficiency loss – it reflects the lost value to the economy from a specific tax considered by itself. The deadweight loss in developed countries is typically 0.3 cents in the dollar meaning that it costs the economy 1.3 cents for every cent raised by taxation. In developing countries, the deadweight loss has been estimated to be much higher; for example, 1.2 to 2.5 meaning that it costs the economy 2.2 to 3.5 cents for every cent raised by taxation (Laffont, 2005). The benefits from spending the revenue need to exceed these costs to realise an overall net benefit for a country.

This, in turn means that for developing countries, it is likely to be very difficult to fund CSOs from the Government's budget. This proposition seems particularly apt for Papua New Guinea and also may explain the tendency to fall back on uniform pricing and cross subsidisation as the default action to SOEs providing essential services. It should also be recognised that the economic (deadweight) cost of allowing charges at Port Moresby International Airport (PMIA) to exceed efficient costs and using the surplus to finance cross subsidies may be relatively low when compared to the economic cost of raising the equivalent funds through general taxation.

In other words, in a developing country context as applies to PNG, it is especially relevant to compare the incremental economic costs of raising funds through taxation with the economic costs of using the pricing power of PMIA to generate some excess funds to support CSO funding for the development and maintenance of regional airports. It would be preferable if donors could provide the source of funding for airport development and where necessary, to help ensure continued compliance to meet safety standards but there is still likely to be an ongoing need for additional finance to help support continued operations. The economic cost of airport charges at PMIA in excess of efficient costs depends on the extent to which air traffic would be sensitive to price. Our a priori view is that the sensitivity of air traffic to price at PMIA would be relatively low but that would not be the case for most of the regional airports. It would be worth undertaking an empirical study to examine this proposition but for now we consider the proposition has sufficient validity to exercise caution in insisting that PMIA's charges should not exceed efficient costs and cost allocation of indirect costs of the NAC should be allocated on fully distributed cost basis as previously discussed.

In effect, continuation of cross subsidies means allowing PMIA and potentially some other regional airports to exercise market power, but the alternative of strict economic regulation would create budgetary pressures and economic costs associated with the combination of displacement of other government expenditures and higher taxes. This is a trade-off that would need further examination. However, there would seem to be some scope for improvement in the reporting of performance of the NAC including with respect to transparency as a form of economic oversight. This is discussed further below.

## **Performance reporting**

As explained earlier, the NAC reports to the responsible Minister through the Department of Transport and is required to provide a draft performance agreement to the Minister no later than three months before the commencement of each financial year covering, inter alia, the proposed statement of objectives and how it intends to report on those objectives (*Civil Aviation Act*, 2000, Section 36). However, the legislation does not specify any arrangements for monitoring how successful the NAC is in meeting its objectives each year.

In the course of undertaking research for this paper, we were not able to view any performance reports prepared by the NAC and this lack of transparency highlights weaknesses in the existing accountability arrangements. We also note that experience has shown the value of independent, transparent assessment of SOEs and particularly in the case of SOEs with market power.

In this respect, the benchmark for best practice regulatory governance is considered to be the 'independent regulator' model – encompassing organisational independence, financial independence and management independence. Policy and regulatory functions should be separated to ensure clarity and accountability, to avoid conflicts of interest and ensure equal treatment of private and publicly owned firms. The independent regulator model has been widely adopted and, although the degree of independence varies, there is empirical evidence to support its positive impact on overall economic welfare (Estache and Wren-Lewis (2010) in Fallon and Sofe, 2019).

## **Other SOE governance issues**

The current formal governance arrangements for other SOEs in PNG are as follows. Kumul Consolidated Holdings (KCH) operates as the holding company for the government's non-mineral, oil and gas assets through the General Business Trust (GBT). The GBT owns the government's shares in nine SOEs, five listed investments, six other assets, seven major projects. KCH is the corporate trustee of the GBT and is responsible for managing the SOE investments (ADB, 2019b). All mining interests of the State are held through a company called Kumul Minerals Holdings Limited and all petroleum interests are held through a company called Kumul Petroleum Holdings Limited (Fallon, 2017).

There have been various forms of corporatisation policy and privatisation policy focused on improving SOE governance that have been pursued in PNG since 1983 with varying degrees of success (Fallon, 2017). Various ADB and other reviews have confirmed that PNG SOEs consistently demonstrate poor operational and financial performance. The reviews have identified continuing deficiencies in the legal and governance framework for SOEs, including the absence of explicit commercial objectives and transparent and effective monitoring arrangements (ADB, 2019b; and Fallon, 2017). The most recent ADB review highlighted that direct oversight of SOEs by the NEC has eroded the oversight of SOEs and allowed political considerations to override commercial imperatives resulting in a sharp decline in the financial performance of SOEs (ADB, 2019b). The ADB has also noted that the Government's current CSO policy, designed to redress the current practice of opaque cross subsidisation and approved by the NEC in 2013, has not been made operational. ADB technical assistance is being implemented to provide advice on the legal framework and reforms for selected SOEs.

## **The scope for economic regulation**

### **The standard public policy paradigm for monopoly SOEs**

This section discusses the scope for economic regulation of the national airports. The national airports are monopolies but most of them in effect face capacity to pay constraints which means they have no meaningful market power to set prices in excess of what is required to finance efficient costs. Furthermore, for those airports that are not profitable, increasing prices is not likely to be effective in improving profitability given the very limited capacity to pay. For PMIA and other larger regional airports, there is more scope to use their market power to increase prices.

In addition, given NAC is an SOE and is focused on safety and security and characterised by de facto regulation by the responsible Minister. It is not likely to have fully exploited its potential market power although it may well be that charges at some of the airports are sufficient to raise revenues in excess of efficient costs. As discussed, the associated surpluses have been used to cross subsidise other national airports as part of a single-till type arrangement. If prices at all of the national airports were constrained by either demand or regulatory arrangements so that no single airport generated revenue in excess of efficient costs, the unprofitable airports would generally not be viable unless they receive subsidies or donor support or were able to generate their own additional aeronautical or non-aeronautical revenues.

Furthermore, as noted, it is not clear that the distortions created by the existing cross subsidy arrangements entail an economic cost that exceeds the likely economic cost if other government expenditure had to be reduced or taxes increased to finance unprofitable regional national airports. As also noted in this paper, the standard public policy paradigm is to set prices to cover efficient costs for SOEs with funding for CSOs to come from the national budget but this just does not seem feasible in PNG.

Nevertheless, there is a need to improve the operating and financial performance for the portfolio of airports that the NAC is responsible for and some of the regulatory mechanisms that are available may be helpful in improving that performance. The following section discussed an ICCC review of the aviation sector, including airports, that was undertaken in 2006 and which made a number of recommendations, some of which have been implemented and others which are still relevant and should be further considered.

### **The ICCC review of the PNG air transport industry**

On 26 January 2006, the PNG Treasurer formally referred to the ICCC a requirement to undertake a comprehensive review into the Air Transport Industry in PNG. The main purpose of the Review was to consider competition issues and the role and place of regulation within that industry. The review covered both airport and airline operations.

At the time that the ICCC undertook its review, the NAC did not exist in its current reform and in its place the Civil Aviation Authority (CAA) undertook the functions of the NAC plus safety and licencing regulation now undertaken by CASA and air navigation now undertaken by PNG Air Service Limited (PNGASL). The ICCC noted the potential conflicts and management difficulties for the CAA with these three key responsibilities and the inadequate financial information that was available including inadequate transparency (ICCC, 2006, p.7). It also noted industry concerns about the lack of information available on the rationale for increases to CAA's charges

and the services provided by the CAA. The ICCC also noted that “the debate and uncertainty within the industry regarding the legitimacy of the level of fees charged may warrant the involvement of the commission acting as an independent regulator and/or arbitrator in the setting of these fees (ICCC, 2006, p.8).

The ICCC further noted the advantages of independent assessment of fees compared with an arrangement where the responsible Minister had this responsibility along with other roles (that were potentially conflicting). It recommended the CAA legislation should be amended to provide an independent review provision nominating ICCC as the arbitrator should the stakeholders in the industry be unable to reach agreement on proposed fees and changes to charges. The ICCC review noted, however, that this model was less intrusive than having a formal regulatory contract as is in place for other SOEs with market power such as seaports and electricity.

The separation of functions has been implemented with the establishment of the NAC, CASA and PNGSAL, however, the recommendation for the ICCC to have an independent arbitrator role with respect to charges has not been approved by Government.

The ICCC (2006) made a number of other recommendations to improve the profitability of airports including: property development of the extensive land and other buildings incorporated into airport zones; additional leasing revenue associated with a wider range of economic activities other than simply providing airside facilities for passengers; improving security at the airport; and having large customers who value the convenience of a nearby airfield to partially underwrite services.

The ICCC also proposed that local communities should take greater responsibility in helping to establish self-sustaining airports to reduce their reliance on direct government assistance and that the government should limit its role to supporting the more marginal and isolated airports.

We have not had full access to information relating to the national airports to fully verify the extent to which these recommendations have been actioned. However, it is understood that many of the airports are still not profitable; that cross subsidies are still significant; that there is scope for generating more non-airside revenues; and that stakeholders consider that the performance of the national airports could generally be improved. We also note that the NAC is not regulated by the ICCC but rather its operations and performance are under the purview of the responsible Minister. Thus, with the exception of the recommendation on separate functional responsibilities, which has already been actioned, the other ICCC recommendations are still relevant and supported by the research undertaken for this paper.

The following section summarises our findings and recommendations.

# Findings and recommendations

## **PNG national airports**

The government-owned NAC is responsible for the provision, maintenance and development of 22 designated national airports. For the past decade or so, the emphasis in managing these airports has been on an investment program to ensure the airports are developed to meet internationally agreed safety and security standards. The ADB is providing continued support for this program of investment.

The legislative arrangements relating to the NAC emphasise safety and security and although efficiency and service quality are referenced, it seems that a commercial focus is given limited consideration in the operations of the airports.

Most of the 22 national airports are not profitable and not expected to be profitable over the medium to long term. The requirement to meet safety and security standards therefore, means that substantial subsidies are needed to support the rehabilitation and operation of the unprofitable airports. The subsidies are provided through a combination of investment grants and cross subsidies from the total revenue pool for the portfolio of airports. This means the major international airport, PMIA, and other moderately profitable airports have had to cross subsidise the loss-making airports. This raises the issue of whether this is the best approach for financing the operations of the 22 national airports.

## **Development and governance of airports**

### **Ownership issues**

Airports provide services that are heavily dependent on infrastructure that typically means some form of monopoly provision is the only viable option. In a developing country context, it is usually not feasible for major airports to be privately owned unless the airports are very large and effectively regulated.

However, when airports are government owned, there is little incentive to exploit any market power the airport may have by setting high prices and unless the airports are sufficiently large, they are often unable to cover their costs even if they are monopolies. Furthermore, typically development and non-commercial objectives are given priority over commercial performance and airport operations are financed through a combination of investment grants and cross subsidies from profitable airports to less profitable airports. Thus, when airports are publicly owned, incentives to generate revenues and minimise costs are typically weaker than under private ownership.

In jurisdictions that have implemented effective corporatisation or privatisation of airports, there are much stronger incentives to increase revenues from both aeronautical and non-aeronautical sources and this has also typically meant the need for independent economic regulation of prices at airports where market power is a concern.

Despite these general findings for airport governance, there are many factors that support the retention of a national single government entity responsible for managing PNG's airports consistent with the NAC arrangements. These factors include development priorities; the advantages of a national integrated airport system, concerns about safety, difficulties in effective privatisation of monopolies, and absence of credible alternative subsidy arrangements.

However, in the case of the NAC, there does appear to be scope for improving commercial discipline in generating aeronautical and non-aeronautical revenues and containing costs as well as accountability for development and safety objectives. There is also the issue of addressing potential concern about the exercise of market power for the profitable airports

### **Regulatory issues**

Airports operate principally under monopolistic conditions similar to utilities providing essential services. Therefore, regardless of the form of ownership structure, policy makers should be concerned about the extent to which they operate efficiently including the control of costs, the provision of services and pricing arrangements.

PNG is a signatory to the International Civil Aviation Organization (ICAO) Convention which means that it is

required to provide civil aviation services ensuring that international standards and regulatory requirements are met.

Governments are not legally bound to apply ICAO's policies on airport charges. However, they are encouraged by the ICAO to incorporate the four key charging principles of non-discrimination, cost-relatedness, transparency and consultation with users in their pricing arrangements. In relation to economic oversight of airports, the ICAO recommends that States should, in particular, ensure that airports consult with users and that appropriate performance management systems are in place.

Important features of performance management are the feedback loop and continuous evaluation which requires identification, assessment and periodic adjustment of key performance indicators, performance targets and plans to achieve results.

The ICAO considers that the cost base for airport charges should be the full cost of providing the airport and its essential ancillary services but consistent with the form of economic oversight adopted, these costs may be offset by non-aeronautical revenues.

For airports, a key consideration in relation to economic oversight relates to whether or not to adopt a single-till system, dual-till system or hybrid-till system in the regulation of overall revenues or prices for airport services. In the single-till system, both aeronautical and non-aeronautical revenues and costs are placed in a 'single-till' when regulating aeronautical charges. Thus, non-aeronautical revenues, depending on their quantum are used to offset some of the costs of aeronautical operations. The dual-till system separates aeronautical functions from non-aeronautical ones and only considers aeronautical revenues and costs in the determination of aeronautical charges for an airport. Under a hybrid-till approach, the cost basis is established based on some combination of the single-till and the dual-till approaches and a proportion of non-aeronautical revenues and costs in addition to aeronautical revenues and costs may be subject to regulatory oversight.

Generally, airports, except those under full private ownership, have received some form of government subsidy either directly or indirectly. The most common form of subsidies has been direct investment grants for specific infrastructure. However, cross subsidies have also been a prominent feature in the government ownership of airports.

Under the single-till approach, cross subsidies can apply for both a single airport and across a portfolio of airports. The ICAO pricing policies do not preclude cross subsidisation for a single-till approach at a single airport but are silent on cross subsidisation for a portfolio of airports.

The economic literature on subsidies emphasises the need for clear specification of the objectives for subsidies, demonstration of their justification and transparent funding but these principles are often not effectively implemented when governments own a portfolio of airports characterised by significant cross subsidies.

## **Public policy issues for PNG**

### **Cost recovery**

It is costly to develop and maintain most of PNG's national airports to required standards. The National Transport Strategy (NTS) has confirmed that cost recovery from user charges has been insufficient to meet the recurrent costs of maintaining and operating the airports and air navigation infrastructure, with cost recovery across CASA, NAC and PNGASL at about 50 percent of operating and maintenance costs. The NTS also noted the Government's expectation that loss-making airports would be subsidised from the few profitable main airports together with separate funding from a capital development program. The Government's expectation for the NTS was that by the end of the NTS in 2030, the NAC would have achieved a position where it is able to recover infrastructure replacement and renewal costs from user charges across the airports under its ownership, due to the increase in air traffic. Assuming constraints on aeronautical charges, increased effort to raise non-aeronautical revenues and reduce operating costs could assist in achieving higher cost recovery.

### **Community service obligations**

A Community Service Obligation (CSO) is defined as a government requirement for an SOE to undertake activities that it would not elect to do on a commercial basis. In order to ensure effective clarity of objectives and

accountability for performance for SOEs, best practice recommendations are that CSOs ideally should be separately identified, separately costed and transparently funded from general revenue in the form of a binding contract. A formal CSO policy for SOEs was approved by the NEC in December 2013 that contained the key features for best practice CSO policy, but it has generally not been made operational for PNG SOEs. It is understood that the main elements of the CSO policy have been accepted as NAC policy but that implementation is far from complete.

In developing a CSO policy for the national airports, the NAC has classified the 22 national airports into three categories in terms of viability. The category A airports are airports that are commercially viable. The Port Moresby International Airport is currently the only airport in category A in PNG. The category B airports are those airports whose operations are currently unviable but who have the potential to become viable airports within the short to medium term. These include the Lae, Mt. Hagen, Hoskins, Madang, Gurney and Goroka airports. The category C airports include all the other national airports that are currently unviable and likely to remain so in the medium to long term.

It is understood that there is little scope to increase charges at the regional airports and that to meet the internationally agreed service standards, they require substantial subsidies. It is also understood that the financing of these subsidies has entailed and will continue to entail substantial financing from the ADB or other donors, mainly for infrastructure to meet specified standards, and also some financing from PMIA to cover operational and maintenance expenses.

The financial circumstances at most of PNG's 22 national airports highlight the need for an effective CSO policy but effective implementation is likely to be a major challenge. In order to understand key elements in the costing of CSOs, it is important to understand key principles for cost allocation. It is also important to understand fundamental constraints that may prevent the implementation of the standard recommendations for CSO policy. Cost allocation and implications for subsidy, the budget and taxation are covered in the following discussion.

### **Cost allocation**

An important issue in the implementation of CSOs is the determination of their cost and in particular the extent to which any indirect costs (overheads) related to the provision of airport services by the NAC should be allocated to all national airports.

The two cost allocation methods that are of most relevance are as follows:

- Fully-distributed cost – The method takes all direct costs of the non-commercial obligation plus a pro-rata share of the SOEs indirect costs (e.g. overheads, shared staff, rent, assets).
- Avoidable cost – The method measures all costs associated with the provision of an additional block of output.

From an economic efficiency perspective, the avoidable cost concept is the most appropriate and practical method for estimating the costs of a CSO because it measures cost responsibility in a causal sense, and this is not the case for fully distributed cost.

It is understood that the NAC supports the fully distributed cost approach. The fully distributed cost method will in effect allocate indirect fixed costs incurred by NAC irrespective of whether particular regional airports operate or not. It is arguable that the avoidable-cost approach is more meaningful from an economic efficiency/cost causality perspective and more reflective of capacity to pay for such airports than the fully distributed cost concept. The fully distributed cost concept also does not recognise that the profitable airports have some scope to cross subsidise at least some of the operational expenses of those airports that are not likely to be commercially viable over the medium to longer term, without materially impacting on the demand for their services. We consider that the avoidable cost approach should be used given that it is economically efficient and better aligns with capacity to pay.

### **Implications for subsidies, budget, taxation and regulation**

As noted, the literature on the funding of CSOs typically proposes a preference for direct funding of CSOs from the Government's budget (or separate funding by a donor) and this policy has been proposed for PNG since 1983 and was formally approved by the NEC in 2013, but it has not been implemented.

Direct funding of CSOs together with pricing to reflect efficient costs avoid the exercise of market power in the setting of airport charges, and offers greater transparency through the annual budget review process. However, direct funding has a real resource cost, as it is financed through the tax system. The resource cost entails some combination of the economic effects from a displacement of other expenditure and higher taxes that impose their own deadweight economic efficiency costs. As highlighted in the body of this report, the deadweight economic efficiency costs from higher taxation are very high in developing countries and this is also likely to be the case in PNG. It is reasonable to draw the conclusion that a critical constraint in the implementation of the approved CSO policy is inability to source funds from the national budget.

We contend that there is a trade-off in terms of the economic costs of using the pricing power of PMIA to generate some excess funds to support CSO funding for the development and maintenance of regional airports and the economic costs if sourcing funds from the national budget. The underlying economic and political forces seem to be so strong that it is simply not feasible for direct funding of CSOs to be put in place in PNG even in the medium to long term.

In considering the opportunity cost of this situation, it is relevant to recognise that the economic cost of airport charges at PMIA in excess of efficient costs depends on the extent to which air traffic would be sensitive to price. Our a priori view is that the sensitivity of air traffic to price at PMIA would be relatively low but this would not be the case for most of the regional airports. We consider the proposition has sufficient validity to exercise caution in insisting that PMIA's charges should not exceed efficient costs, and supporting cost allocation of indirect costs of the NAC should be allocated on fully distributed cost basis as previously discussed.

In effect, the alternative of strict economic regulation would create budgetary pressures and economic costs associated with the combination of displacement of other government expenditures and higher taxes. This is a trade-off that would need further examination and careful consideration by policy makers. However, there would seem scope for improvement in the reporting of performance of the NAC, including in particular with respect to transparency as a form of economic oversight. This is discussed further below.

### **The scope for economic regulation**

Generally, most of the national airports face strong capacity to pay constraints on their ability to increase aeronautical charges. They may be monopolies, but they have no meaningful pricing power. However, the PMIA and a few other larger airports are likely to have some market power in setting prices.

But given that NAC is an SOE and is focused on safety and security and characterised by de facto regulation by the responsible Minister, it is not likely to have fully exploited its potential market power, although it may well be that charges at some of the airports are sufficient to raise revenues in excess of efficient costs. As discussed, the associated surpluses have been used to cross subsidise other unprofitable national airports as part of a single-till type arrangement and with budget and aid funds to finance capital development programs. The unprofitable airports would generally not be viable unless they received subsidies or donor support or were able to generate their own additional revenues.

Furthermore, it is not clear that the distortions created by the existing cross subsidy arrangements entail an economic cost that exceeds the likely economic cost if other government expenditure had to be reduced or taxes increased to finance unprofitable regional national airports.

However, experience with SOEs generally in PNG and feedback from stakeholder consultations suggests there is a need to improve the operating and financial performance for the portfolio of airports for which the NAC has responsibility.

In 2006 the ICCC completed a review of the air transport industry in PNG and made a number of recommendations for airports. These recommendations included the separation of safety and licencing regulation, air navigation and airport operations which has occurred through the creation of the CAA, PNGASL and NAC.

The ICCC report also noted industry concerns about the lack of information available on the rationale for increases to CAA's charges and the services provided by the CAA and recommended that the ICCC could be assigned a role

as an independent regulator and/or arbitrator in the setting of airport charges. It highlighted the advantages of independent assessment of fees compared with an arrangement where the Minister had this responsibility along with other roles (that were potentially conflicting).

The ICCC made a number of other recommendations to improve the profitability of airports including: property development and additional leasing revenue from non-aeronautical activities. The ICCC also proposed that local communities should take greater responsibility in helping to establish self-sustaining airports to reduce their reliance on direct government assistance and that the government should limit its role to supporting the more marginal and isolated airports.

In considering the ICCC recommendations we understand: that many of the airports are still not profitable; that cross subsidies are still significant; that there is scope for generating more non-aeronautical revenues; and that stakeholders consider that the performance of the national airports could generally be improved.

We also note that the NAC is not regulated by the ICCC but rather its operations and performance are under the purview of the responsible Minister.

## **Recommendations**

In the light of information presented in this paper our recommendations are as follows:

- Amend the CAA legislation to enable the ICCC to have an ongoing role in reviewing the performance of the NAC with respect to its responsibilities for the operations, costs and financial performance of the 22 national airports, including making its findings publicly available.
- Amend the CAA legislation, as necessary, to ensure there is effective consultation and transparency for stakeholders in relation to airport charges, investments and operations.
- Amend the CAA legislation to specify the ICCC to be an arbitrator should stakeholders in airport operations be unable to reach agreement on airport charges.
- Retain the single-till arrangement for the portfolio of 22 national airports until direct funding from the national budget is made available with a formal contractual arrangement together with donor funds to finance the operations of unprofitable airports.
- Use avoidable costs in the allocation of overheads and other indirect costs to unprofitable airports.
- Encourage the NAC to develop non-aeronautical revenue sources.

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