



Pacific Region
Infrastructure Facility



Scoping Study for a Pacific Aviation Regional Hub/Body



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Executive Summary

Introduction

The coronavirus disease (COVID-19) pandemic has caused massive disruption to air transport access to and within the Pacific. In response, the Pacific Region Infrastructure Facility (PRIF) Transport Working Group has been supporting intervention strategies for development partners to support the recovery process. This has led to a range of state-by-state interventions supporting airlines, airports, and sector regulators. During this process, some stakeholders have suggested that a regional approach to aviation recovery challenges could result in better outcomes. It has been proposed that consideration should be given to establishing a wider aviation-focused regional hub/body that might initially function as a Pacific aviation technical support services hub that would aid COVID-19 recovery and future development of regional air access. In response, PRIF has commissioned this study to explore the needs and opportunities for a hub and to examine possible institutional options for its implementation. This document presents the findings of that study. This is prepared concurrently with other studies examining regional procurement strategies and airline alliance options.

Services Required

There are several needs driving consideration of an aviation hub. Pacific-based airlines have sought greater collaboration to facilitate economies of scale in both the cost side and revenue side of airline businesses. Pacific Island country (PIC) airport operators and development partners have identified the potential to reduce costs and improve efficiency by pooling procurement of capital equipment, and by procuring airport maintenance on a regional basis. There are also substantive training and capacity-building needs for the region at all levels of the air transport sector, which warrants a coherent regional approach to improve effectiveness. When examined in aggregate, these needs translate into the following scope of services that might be more effectively addressed by a potential hub body.

Airline Support Services

Airlines have identified the following services and materials for which they are willing to support regional collaborative arrangements:

- Procurement of operations related services, e.g., maintenance repair and overhaul, spare parts and consumables, catering, ground handling, cargo handling;
- Procurement of training services, e.g., ab-initio and in-service training for pilots, cabin crew, maintenance engineers, ground handling staff and airline management disciplines;
- Assistance in aircraft selection, procurement/leasing/asset management;
- Clearing house for donor funding on a regional basis, e.g., air route subsidies;
- Technical assistance e.g., airworthiness, flight operations, information and communication technology, commercial, market analysis, regulatory compliance.

Airport Support Services

Airport operators have separately identified the following as potential areas for consideration:

- Regionally based procurement of technical facilities such as fire tenders, air traffic control, and air navigation equipment, security equipment;
- Regionally based procurement and management of maintenance/logistic support/asset management services;
- Regionally based procurement and delivery of training in the fields of technical maintenance, aviation security, airport rescue firefighting service, air traffic service, airport operations, airport management;
- Technical assistance covering planning, management, development and regulatory compliance of airports, air navigation service, aviation security, and airport rescue firefighting service;
- Clearing house for donor funding for airport development on a regional basis.

Sectoral Support Services

Some stakeholders have identified the potential value of regional collaboration in accessing services required by aviation sector officials at all levels of government. This includes civil aviation authorities, transport and economic policy ministries, finance and economic ministries, airport operators, air service operators, and other aviation industry participants. The type of regional collaboration contemplated includes:

- Coordination of procurement and delivery of training and institutional capacity building/structural reform services for aviation sector managers, technical and economic regulators, and policy makers;
- Technical assistance in the fields of research, aviation policy, strategy, and regulatory reform;
- Supporting economic policy, e.g., assisting PICs in development of regional aviation policy, supporting regional air route development, facilitating air services agreements, management of air route subsidies on behalf of donors or member countries, and reform and restructure of state-owned enterprises.

Regional Institution Options

The Terms of Reference for this study identified that a regional hub facility would be “in support of and beyond the present mandate of PASO [Pacific Aviation Safety Office]”. However, it is identified that, in addition to the PASO model, there is a range of other regional institutional options that could service the above needs, and all warrant study before converging on a single model. Some key options are summarized as follows:

- Cooperation through a formal collaboration agreement;
- PASO with an expanded mandate;
- Attached to another existing Council of Regional Organizations of the Pacific (CROP) agency;
- A new regional body (potentially a CROP agency);
- A regionally owned incorporated service provider owned by PIC airlines, airports, or PIC governments of hub member states;
- A major aviation industry partner (e.g., major airline, airport, or other aviation sector specialist firm serving the Pacific) where the partner takes on the hub function on behalf of Pacific airlines, airports, or governments;
- A donor-established project management unit;
- Multiple hub arrangements comprising a combination of the above.

Comparison of Options

A set of objectives has been developed as key performance criteria for hub models. These include financial sustainability, low complexity to implement, reduced cost of procurement services, improved access to expert resources, improved efficiency in delivery of training and other regional aviation projects, a mechanism for knowledge and resource sharing, applicability to all participants in the sector, respecting of national sovereignty and no conflict of interest. These criteria were used to analyze each of the institutional options considered and rank them according to how close they match.

This analysis comes up with five equal highest-ranked options namely the attachment to PASO, attachment to another CROP agency, incorporated service provider, major aviation partner and multiple hub options. There was also little difference in the score for the remaining two options. The conclusion is that each option has different strengths and weaknesses against each objective, with scores that tend to cancel out when aggregated against all objectives. The selection of a preferred model may therefore involve some trade-offs by weighting the importance of different objectives.

Financial Model

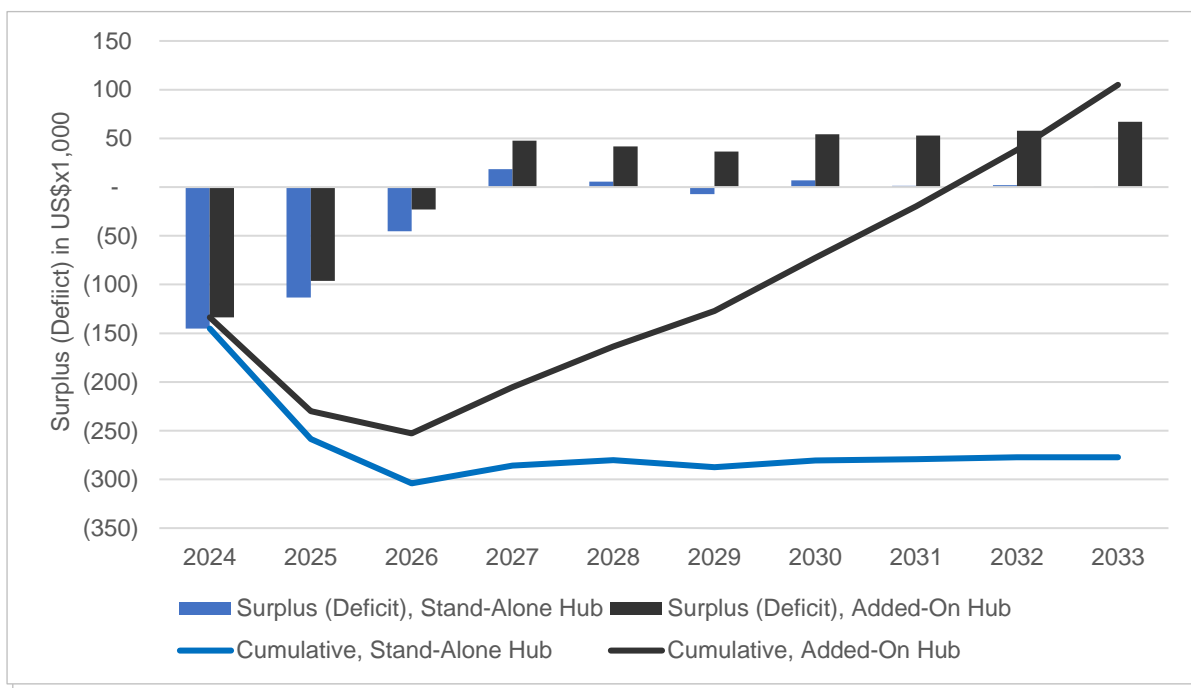
To assess the financing needs for a hub, a model of a generic business has been prepared. The model assumes five lines of hub functions: procurement services, technical services, investment project delivery, administration, and governance. The revenue model assumes commissions on procurement, member subscriptions, fees based on time charged for technical services, project management fees for

major programs contracted through the hub, and grant funding. Commissions are derived from an estimate of the commissionable volume of member business handled of initially \$2 million, growing to \$8 million over 10 years, of which 5% is retained.

The cost structure has been modelled to reflect the level of resources likely to be required to earn the estimated revenue, noting the not-for-profit nature of the business. Expenditure is comprised of salary and related costs, contractor’s fees, consulting firm fees, travel costs, rent, and other overheads. Salary costs have been derived from a hypothetical staffing model, with salaries based on an assumed mixture of international and locally recruited staff, individual contractors, and external consulting firm personnel.

Two institutional arrangements are modelled, namely the stand-alone model, and a model depicting the hub added-on to an existing organization. The outcomes of both models are presented in Figure ES-1. The bar charts show annual earnings before interest and tax for both the stand-alone hub model (blue column) and added-on model (black column). Also shown are the cumulative total earnings (or deficit as the case may be) for each of the two hub scenarios (black curve for stand-alone model and blue curve for added-on model).

Figure ES-1. Hub Financial Model, Annual and Cumulative Surplus (Deficit) for Both Stand-Alone and Added-On Hub



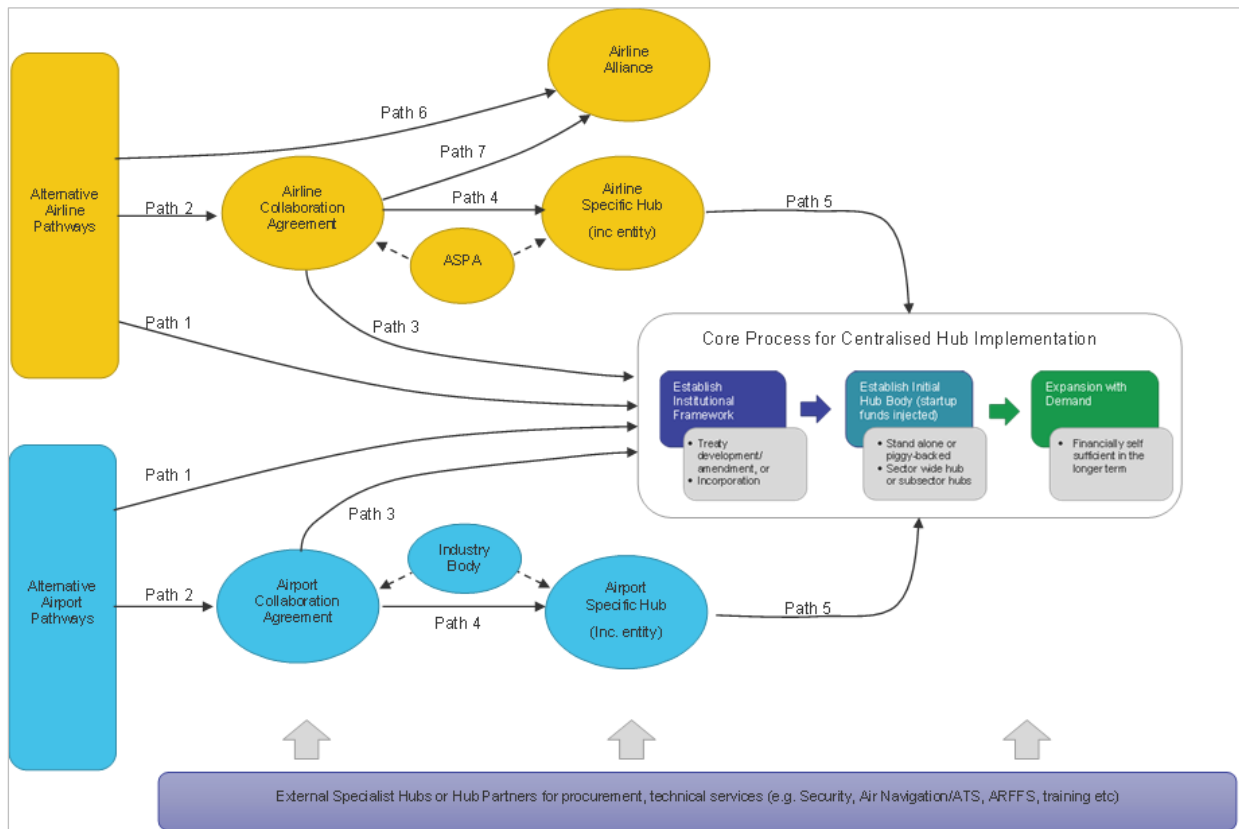
Source: Landrum & Brown analysis.

The results show that the stand-alone business model would initially operate at an annual deficit but could be expected to be financially self-sustaining on an annual basis after 3–4 years against a growing level of service. The cumulative deficit in this model is around \$300,000, which would effectively be a sunk cost. An initial donor grant or member investment (or combination thereof) for that amount would be needed to support the hub viability over the first 3–4 years, after which the hub should largely operate within its own means. Additional costs of a similar magnitude would likely be incurred pre-establishment, together with funding required for working capital, suggesting a total financing facility need of around \$1 million.

Implementation Strategy

There are several approaches to implementing a hub functionality as illustrated in Figure ES-2. The first is direct implementation (Path 1). This involves preparatory work in establishing the legal and governance framework for the hub, followed by the establishment of a basic hub functionality by securing a small workload, and recruiting minimal staffing initially. Beyond this, the hub would be expanded as opportunities are identified and as service delivery workload increases.

Figure ES-2. Hub Body Implementation Pathways



ASPAs = Association of South Pacific Airlines, ATS = air traffic services, ARFFS = Airport Rescue Fire Fighting Service.

Source: Consultant.

Alternative approaches contemplate getting to the same place but by indirect means. The starting place is the minimalist approach preferred by airlines and airport operators, i.e., establishing a collaboration agreement between airlines or between airports allowing pooling of resources and strengthening market power (Path 2). Such an agreement may be an end point in itself, or may articulate over time into the fully integrated hub, either directly (Path 3) or indirectly through first establishing (one or more) sector-specific hubs (Paths 4 and 5).

A separate pathway for airlines is the airline alliance, which could be a direct initiative (Path 6) or evolve through the collaboration agreement path. An alliance is considered an end in itself, with no articulation toward an integrated hub due to the highly commercially driven focus of airline alliances. An airport alliance is also a consideration, as is a strategic airline/airport alliance, although not considered here.

The concept of multiple independent hubs or centers of excellence is also considered. It is feasible that in the overall hub scheme, some agencies (donors, PICs, or even industry specialists) may take on the lead hub role in a particular aspect of aviation.

Recommendations

Based on the preceding analysis, the following recommendations are offered for stakeholder consideration:

Recommendation 1: Stakeholders support ongoing development of a hub.

Based on Pacific aviation stakeholder support, it is recommended that the regional aviation technical support hub concept be further developed, taking due consideration of the findings of this study.

Recommendation 2: Needs and opportunities for hub services.

That the design of any technical support hub contemplates including the following services for members in proportion to demand:

- Procurement agent for pooled procurement of goods and services;
- Procurement agent for pooled procurement of training, or actual delivery of training;
- Technical Assistance in all relevant aviation disciplines;
- Project preparation and management of donor/international finance institutions/other funded projects.

Recommendation 3: Long-term institutional arrangement for a hub.

That the institutional options identified in this scoping study be communicated to and debated in depth with Pacific governments, development partners, PASO, and aviation industry participants. The goal of this consultation is to establish an informed consensus on the optimum institutional framework for a hub, as the basis of a presentation to aviation ministers at the Regional Aviation Minister's Meeting.

Recommendation 4: Phased implementation strategy.

That an initial, low-cost, low-commitment step should be to establish separate collaborative agreements between Pacific airlines and between Pacific airports, with the expectation for articulation to more substantive hub arrangements in the future.

Recommendation 5: Establish an interim hub support person.

That as part of the phased implementation, an interim hub support person be appointed initially within an existing body (e.g., Pacific Islands Forum Secretariat, PASO, PRIF) to facilitate airlines, airports, and PIC governments in setting up and managing the collaborative agreements. The person would also chart/manage the articulation of the hub to other models, with the trajectory governed by the performance of the institutional models adopted, and evolving needs.

Recommendation 6: Financing.

That the operation of the hub function be designed to be financially self-sufficient in the longer term, with funding derived from (but not limited to): member's subscriptions, user derived time-charge fees and commissions, commercial bank finance, PIC governments, donors, and international finance institution grants and loans.

Recommendation 7: Seed funding.

That approximately \$1 million over 3 years be sourced for hub implementation.

Recommendation 8: Next steps.

That the findings of this study be reviewed by stakeholders in conjunction with the separate studies on regional procurement, airline alliances and route development, and further consultation be undertaken to establish stakeholder consensus/confirmation on the case to be submitted to aviation ministers at the third Regional Aviation Minister's Meeting on:

- The level of support for a regional aviation technical support hub;
- The desired range of hub services;
- The preferred institutional arrangement for the hub function;
- The preferred role of PASO in the above;
- Preferred implementation and transition paths;
- Level of funding required.

Glossary of Terms

Term	Description
ACSA	Agencia Centroamericana para la Seguridad Aeronáutica
ADB	Asian Development Bank
APTC	Australia Pacific Training Coalition
ARFFS	Airport Rescue Fire Fighting Service
ASECNA	Agency for Security of Air Navigation in Africa and Madagascar
ASPA	Association of South Pacific Airlines
ATC	air traffic control
ATS	air traffic services
COCESNA	Corporación Centroamericana de Servicios de Navegación Aérea
CROP	Council of Regional Organisations of the Pacific
DFAT	Department of Foreign Affairs and Trade, Government of Australia
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IFI	international financial institution
MFAT	Ministry of Foreign Affairs and Trade, Government of New Zealand
MRO	maintenance, repair, and overhaul
PAIP	Pacific Aviation Investment Program (World Bank funded)
PASO	Pacific Aviation Safety Office
PIC	Pacific Island country (PRIF member)
PICASST	Pacific Island Civil Aviation Safety and Security Treaty
PIFS	Pacific Islands Forum Secretariat
PMU	project management unit
PRIF	Pacific Regional Infrastructure Facility
RAMM	Regional Aviation Ministers Meeting
RSSOO	Regional Safety and Security Oversight Organization
SPC	The Pacific Community
TAL	Tonga Airports Limited
TFSU	Technical and Fiduciary Support Unit
TPAC	The Pacific Airways Corporation
TWG	PRIF Transport Working Group
USP	University of the South Pacific

1 Introduction

The coronavirus disease (COVID-19) pandemic has, since early 2020, had a significant impact on Pacific aviation and consequently on Pacific Island country (PIC) economies and the industries that depend on aviation. Recognizing that the resurgence of the aviation industry is crucial to post-COVID-19 economic recovery in the region, the Pacific Region Infrastructure Facility (PRIF) Transport Working Group (TWG) has throughout the pandemic been guiding research and analysis of intervention strategies for development partners to assist in the recovery process. This has led to a range of financial interventions, such as airline cashflow support, airport terminal modification, subsidized passenger and freight services, and support for safety regulatory services provided by the Pacific Aviation Safety Office (PASO).

While this ongoing support has been provided mostly through bilateral national-level efforts, several stakeholders have suggested that a regional approach for coordination and oversight in implementation of various donors' support can be cost-effective and could result in better technical outcomes. A concept has been raised for a one-stop-shop that would benefit from economies of scale, promote common procurement, facilitate shared resources, coordinate asset management, and harmonize capacity building. The Department of Foreign Affairs and Trade, Government of Australia (DFAT) first mentioned the concept of creating a Pacific aviation/aircraft facility support hub to encourage the use of common aircraft types, collective maintenance, collective procurement, and capacity training. Airlines that are members of the Association of South Pacific Airlines (ASPA) have also signaled the desire for greater regional collaboration on maintenance, crew and staff training, and aircraft financing. PASO has also identified the need for support across the region in implementing improvements in safety compliance. In recognition of these proposals, Pacific aviation ministers agreed at the recent Regional Aviation Ministers Meeting (RAMM) that there is a need for a wider, aviation-focused regional organization, to address aviation issues and opportunities, as a key regional priority.

In response to this need, PRIF has initiated a Technical Assistance project to specifically explore the needs and options for establishing a wider aviation-focused regional hub/body which might initially function as a Pacific aviation technical support services hub. This would be in support of and beyond the present mandate of PASO.

Work on this Technical Assistance commenced in July 2022 with desktop research, and consultation with a sample of regional airlines, airports, donors, and regional bodies, together with some PIC governments. Working papers were prepared on institutional options and needs and opportunities and distributed to the TWG members in September 2022 and October 2022 respectively. Subsequent work has involved the analysis of this data together with stakeholder feedback, leading to the ranking of institutional options, the development of a hypothetical structure and financial model for a hub, and identification of implementation issues and options. This material is assembled here together with conclusions and recommendations in the form of a draft final report for review and discussion by key stakeholders, prior to progressing to a final report.

This work is being undertaken in parallel with other consultancies commissioned by PRIF, separately addressing regional procurement strategies airline alliance and route development options, together with a PASO-commissioned Pacific Regional Aviation Strategy, funded by the World Bank.¹

¹ The Pacific Regional Aviation Strategy 2022–2032, launched by Pacific Aviation Ministers at the ICAO 41st Assembly, Montreal, September 2022.

2 Services Required

There are several drivers behind the need for an aviation hub body, arising out of the respective needs of airlines, airport operators, and other areas of government with an interest in the aviation sector. This section elaborates on these needs and identifies opportunities in each of these sectors that a hub-based support service might capture.

2.1 Airline Needs for Hub Support Services

Pacific airlines have long raised the need for a collaborative approach to overcoming low economies of scale arising from limited air traffic demand spread over the small fleets of the region's mostly nationally owned airlines. Indeed, several attempts at collaboration have been made in the past under ASPA auspices to reduce costs and improve efficiency. This has been in areas such as pooling spare holdings and joint procurement of supplies, through to aggregation of insurance procurement, common fuel purchasing arrangements, and the development of integrated Pacific fares. However, apart from the insurance initiative, ASPA advises that many of these initiatives have not lasted, attributed to the informality of the arrangements made, and the over-dependence on the sustained efforts of just a few individuals.

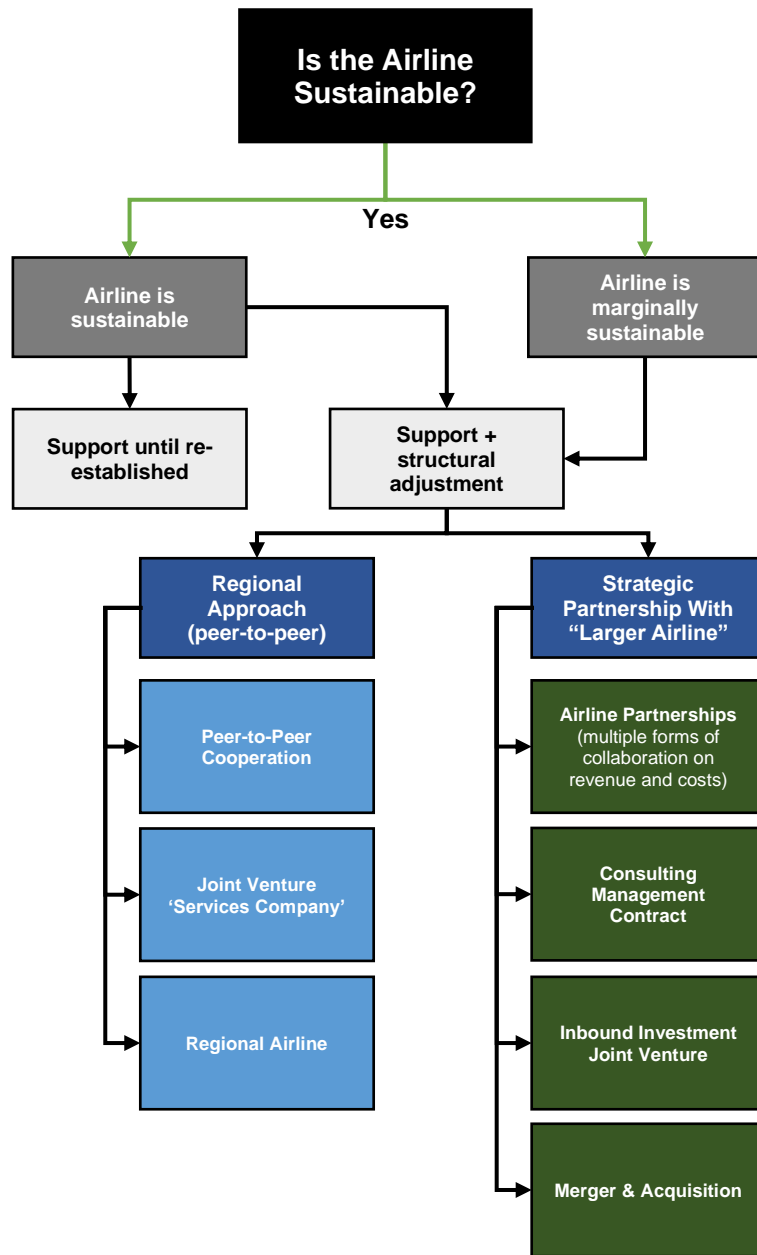
The disruption of air travel associated with the COVID-19 pandemic is seen by some airlines as a strong catalyst to revisit the prospect for structural reform through greater regional collaboration. In studies and workshops commissioned by PRIF in 2020 and 2021, ASPA members explored a wide range of possible responses to the pandemic and reaffirmed that such collaboration remains a high priority for action.

Two possible strategies for collaboration were converged upon in the workshops, depicted in Figure 1. One stream (the left-hand side of the Figure 1 diagram) contemplates a peer-to-peer collaboration framework among several similarly scaled regionally based carriers and using this to reduce costs, grow revenues, and improve service levels. This scenario would potentially articulate to a joint venture services company over time or consolidate into a regionally owned airline.

The other stream (the right-hand side of the Figure 1 diagram) contemplates a strategic alliance between one or more PIC airlines and a larger airline operating within the region or serving it from outside. This second strategy involves commencing with a relatively limited revenue and cost-driven alliance partnership with the larger airline, working on code share, route, and price alignment, and reducing costs through scale economies. This approach could reasonably evolve over time into more entrepreneurial relationships such as a joint venture or merger with the larger airline.

In both streams, ASPA members were cognizant of the political sensitivity of any structural change to airline ownership and control and thus favored cautious experimentation with basic collaboration arrangements initially, before considering more radical options.

Figure 1. Airline Responses to the COVID-19 Recovery Challenge



Sources: ASPA Workshops; PRIF ASPA Regional Options for Pacific Aviation Sustainability Post-COVID-19 (Dec. 2020).

2.2 Service Areas to be Considered for an Airline Hub

Regardless of the collaboration model that might be adopted, there have been a number of service areas identified by airlines where cost savings could be achieved, either by shared provision of services (e.g., common ground handling at ports serviced by member airlines) or through shared procurement of these services from third parties, e.g., procurement of training or maintenance, repair and overhaul (MRO) services by negotiation of a single provider agreement on behalf of multiple carriers at major ports. An assessment of the most likely areas for attracting airline interest are summarized in the following sections. It is important to note that this paper does not address revenue-sharing concepts, as these are being addressed in a separate project examining a Pacific region airline alliance.

2.2.1 Ground handling

Ground handling refers to the provision of a wide range of aircraft turnaround services encompassing some or all of the services identified in the International Air Transport Association (IATA) Standard Ground Handling Agreement, including the following:

- Station management;
- Load control, communications and flight operations;
- Security (additional to or where not provided by airport operator);
- Passenger services (check in, departure, arrival);
- Cargo- and mail-handling services;
- Ramp services (e.g., bag handling, marshalling, loading, and unloading, cleaning, toilet, and water services, etc.);
- Refueling;
- Support service (e.g., crew accommodation, fueling, surface transport, catering delivery, etc.);
- Aircraft turnaround maintenance (e.g., oils and fluids, routine, and non-routine services).

Most PIC airlines generally self-provide their ground handling in their home base and are usually a monopoly supplier of such services to foreign airlines also serving that destination. Fiji, Tonga, Vanuatu, and Samoa are exceptions to this. In Fiji, a separate company, Air Terminal Services (Fiji) Pty Ltd, is an independent, partly government-owned monopoly ground handling provider to Fiji Airways and to foreign airlines. The arrangement in Tonga is similar, where Air Terminal Services (Tonga) Ltd is the privately owned sole licensed ground handler for all domestic and international flights. In Vanuatu, an independent operator, Vanuatu Terminal Services Ltd (a subsidiary of the government-owned Airports Vanuatu Ltd), provides ground handling services to foreign airlines serving the country and competes with Air Vanuatu's ground handling service. In Samoa, Australian-based Oceania Aviation Services became (pre-COVID-19) a second provider of ground handling, operating in a joint venture with Samoa Airports Authority.

At ports outside of their home country, PIC airlines engage locally established ground handlers. Within the Pacific, this is mostly the resident national airline (e.g., Air Vanuatu acting as handler for Solomon Airlines and vice versa) while in the major metropolitan ports serviced, there are several independent ground handlers engaged by multiple airlines and who can be contracted by PIC carriers. Some of the larger firms serving many of the major airlines and airports on the Australian east coast and/or New Zealand ports include:

- Menzies Aviation;
- dnata Airport Services;
- Oceania Aviation Services;
- Swissport;
- Air New Zealand.

Collaboration on ground handling through a hub could be expected to entail:

- Pooling of services in PICs (i.e., ensuring hub members contract each other's services where available);
- Joint procurement of Ground Support Equipment (baggage trolleys, tugs, consumables);
- Joint procurement of training or consolidating delivery of training to ground handling staff;
- Joint procurement of third-party ground handling services at ports outside participating PICs.

It is not usual for all the IATA-listed ground handling activities to be provided by a single party, particularly at ports remote from the home base. For example, it is more common for check-in and passenger processing at some Pacific ports to be undertaken by the airline itself or by a separate entity such as a travel agent appointed by one or more airlines as a general sales agent. Ramp handling is also often undertaken by a partner airline while turnaround maintenance is at times conducted by a

separate engineering organization. Cargo handling can also be found supplied by the airport operator or through other specialist freight handling firms. Accordingly, any joint procurement or collaboration through a hub could potentially contemplate a different approach to each combination of ground handling service arrangements.

2.2.2 Aircraft Maintenance, Repair, and Overhaul

MRO of the larger aircraft types operated by airlines (i.e., jets and large turboprop aircraft) is governed by complex regulatory requirements and is subject to regulator-approved maintenance programs. MRO is generally carried out under the categories of light maintenance and heavy maintenance. Light maintenance includes line maintenance, which comprises routine inspections, fluid replenishment, and running repairs, all conducted during turnarounds as a ground handling function. This is normally delivered by an airline’s maintenance department at its home base. At remote ports, this may be contracted out to a local independent maintenance provider, or the maintenance department of the resident airline, or even self-provided if a flight engineer travels on the aircraft. Also considered light maintenance is the A Check; typically required every 8–10 weeks depending on hours flown and number of take-off and landing cycles. As PIC airlines (excluding Papua New Guinea [PNG]- and Fiji-based airlines and Air Rarotonga) generally do not have sufficient in-country facilities for servicing these larger aircraft, A Checks are usually contracted to an overseas MRO organization, undertaken on a 24-hour turnaround basis.

Heavy maintenance includes C Checks (a major service carried out around every 2 years), D Checks (major overhaul type service around every 6 years) and, separately, major engine overhauls (based on total engine time). Given the high cost of this, heavy maintenance can be sourced from further afield, including facilities in Asia. Some of the heavy maintenance cost is built into aircraft lease costs (“power by the hour”), while others would be on an event basis. A list of some of the major heavy maintenance organizations accessible to and used by PIC airlines is provided in Table 1.

Table 1. Sample Heavy Maintenance Organizations Accessed by PIC Airlines

Maintenance Organization	Indicative Locations
Air Terminal Services (Fiji) Ltd	Nadi
Qantas	Brisbane and Sydney
Jet Care Pty Ltd (Toll Aviation)	Brisbane
John Holland Aviation Services	Brisbane
Heston Aviation	Brisbane and all major airports
Pionair Australia	Sydney/Bankstown & Brisbane
Air New Zealand	Auckland and Christchurch
Air Tahiti Niue	Papeete

PIC = Pacific Island country.

Source: Consultant.

It should be noted that domestic aviation in PICs makes extensive use of light general aviation aircraft that have simpler maintenance requirements, and this generally needs to be conducted in-country. Accordingly, across the PICs, most airlines with a domestic network either operate their own maintenance facility for all domestic fleet requirements, or contract to a qualified private maintenance organization that has appropriate workshop facilities.

2.2.3 Catering

As with the general ground handling function, homebase catering for Pacific airlines is undertaken either on a self-provided basis (e.g., Air Niugini), or contracted to a local service provider, such as a major resort operator or local catering supplier (e.g., Aggie Gray Resorts in Samoa).

Airlines can cater on a round-trip basis or take on board return catering at the remote port. In the latter case, this usually involves contracting the catering provider used by major airline partners or planning with independent providers for the round trip. Catering organizations operating at ports serviced by PIC carriers are shown in Table 2.

Table 2. Sample Catering Providers at Ports Serviced by PIC Airlines

Provider	Relevant Locations
Gate Gourmet	Brisbane, Sydney, Melbourne, Auckland
dnata Catering (incorporating Q Catering)	Brisbane, Sydney, Canberra, Melbourne
Air Terminal Services (Fiji) Ltd	Fiji
Air Vanuatu Catering/dnata	Vanuatu
LSG Sky Chefs	Auckland
Pacific Flight Catering	Auckland
Grey Investment Group/Aggie Grey's Catering	Samoa (pre-COVID-19)
Air Niugini Catering	PNG
Air Rarotonga Catering	Cook Islands

PIC = Pacific Island country.

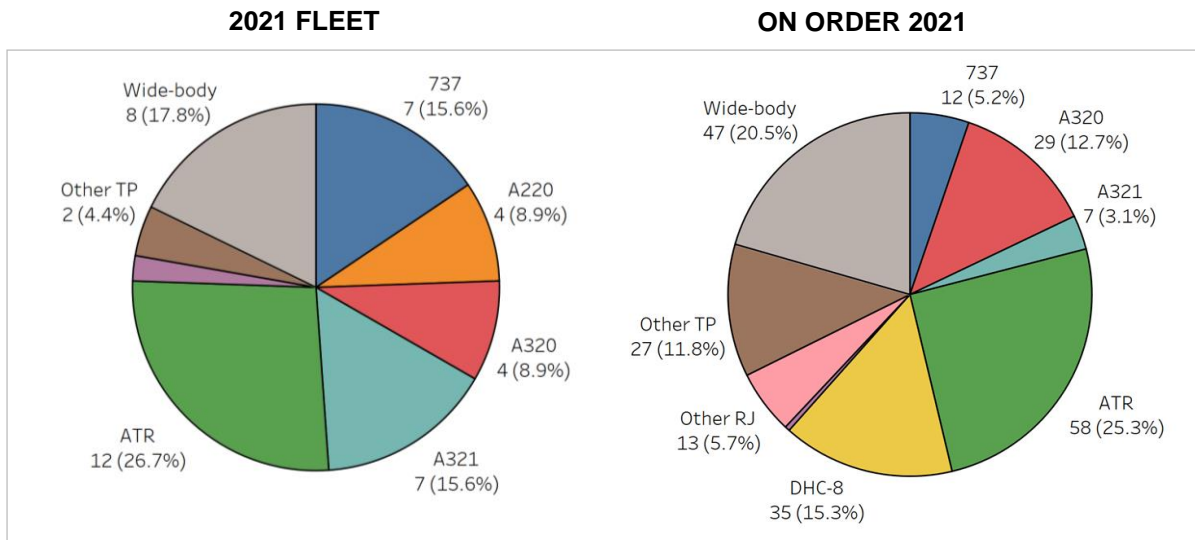
Source: Consultant.

The greatest potential for savings through a procurement hub is therefore the pooling of procurement needs for offshore catering, such that pricing reflects the aggregated demand of member airlines. Costs may be further reduced through shared menus, shared catering equipment, etc. Significant effort post-COVID-19 is being made to incorporate more local produce into in-flight meals.

2.2.4 Airline Training Services

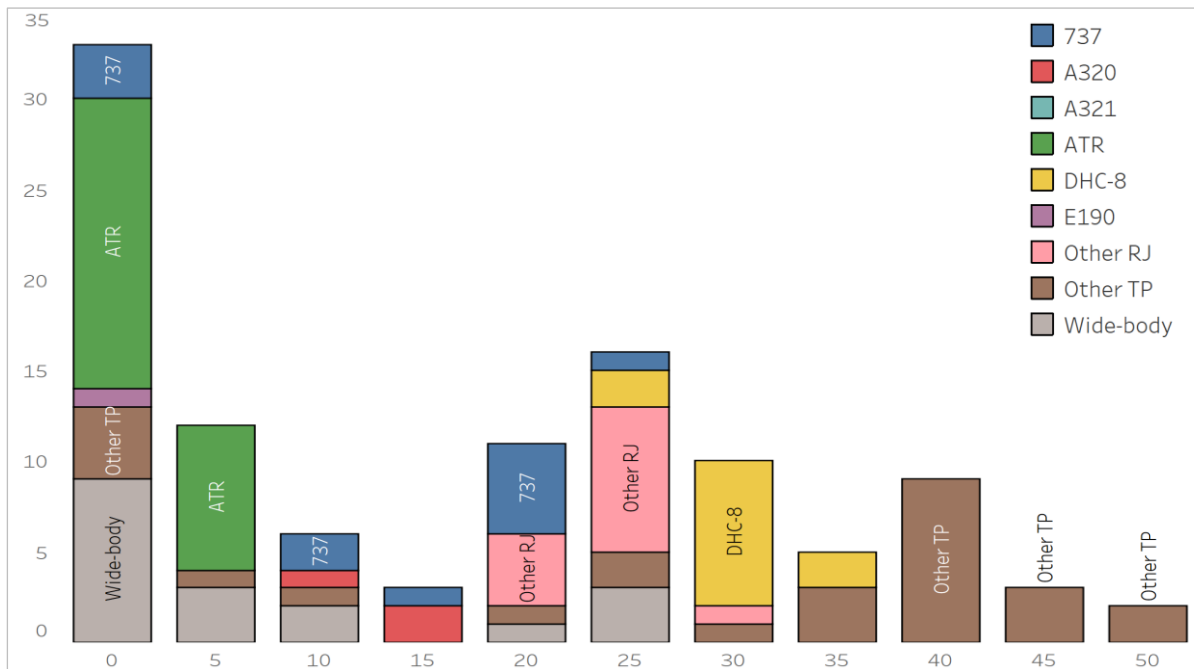
Airlines have a major recurrent training requirement due to aviation regulations. The training burden is particularly great in the Pacific, with a small population base and limited vocational education combined with a small number of jobs. This is further complicated by the diversity of aircraft types and ages of aircraft in use in the region (Figure 2 and Figure 3).

Figure 2. Aircraft Types in Use by Pacific-Based Carriers



Sources: CAPA Consulting.

Figure 3. Age of Aircraft in Use by Pacific-Based Carriers, 2021



Sources: CAPA Consulting.

Training is a particular burden for the Pacific as the region undergoes recovery from COVID-19 lockdowns, given the considerable number of staff at all levels that have left the industry, or been recruited to fill skill shortages in Australia and New Zealand. At a time when some pre-COVID-19 training initiatives have been suspended,² the region is facing up to the skilling of a new workforce, while being less able to rely on expatriate support to fill gaps.

² Courses provided under the IATA and other training funds have been suspended since the commencement of the pandemic.

The types of training normally required by airlines and support organizations such as ground handlers and caterers are summarized as follows.

2.2.4.1 Pilot Training

For most jet aircraft and large turboprop aircraft, Pacific airlines have to date used extensive direct hiring of expatriate pilots, due to the very small (albeit increasing) population of appropriately qualified and experienced Pacific Islanders. The situation is a little better for most domestic services in Twin Otter types and below where there is a greater proportion of local pilots, usually trained overseas. This reflects various government initiatives over recent years to offer scholarships at overseas flying schools in Fiji, Australia, New Zealand, the US, and elsewhere.

The availability of flying training within the Pacific is quite limited, as shown in Table 3. With three local flying schools to choose from, Fiji Airways has the best access to locally trained entry-level pilots. Also, privately owned Air Rarotonga conducts their own ab-initio training, and Tonga has recently announced its own small school. Most other regional airlines focus on recruiting already qualified and experienced pilots near ready for line work, leaving it to governments and private individuals to fund students getting to that level. There is no shortage of pilot schools in Australia, New Zealand and elsewhere willing to train Pacific Islanders for a fee. In many cases, these are large integrated flying schools offering courses from beginner to airline entry level, and in many cases including a university degree in aviation.

Table 3. Flying Training Schools within PICs

Country	Institution
Fiji	Advanced Aviation Training (Fiji) Pty Ltd
Fiji	Pacific Flying School
Fiji	South Pacific Aviation Institute
Fiji	Fiji Airways Flight Academy
Tonga	Kingdom Flight Training/Palu Aviation
Cook Islands	Air Rarotonga
PNG	MAF Aviation Training Centre

PNG = Papua New Guinea, PIC = Pacific Island country.

Source: Consultant.

After entry into airline employment, pilots have continuing training and recent experience obligations including minimum recent experience on endorsed types, and conversion of types (e.g., starting on a BN2 Islander, and graduation through a Twin Otter, then, e.g., ATR to a Boeing or Airbus jet).

Some of these check and training obligations can be addressed in-flight on normal line operations, but with limited flying hours in a small fleet, this only addresses part of the requirement (particularly during the pandemic when there has been little flying). As a result, aircrew are required to secure time on aircraft simulators. During the COVID-19 recovery period, access to simulators has been problematic due to the high volume of pilots worldwide refreshing their skills, and the geographic dispersion of simulator facilities for multiple aircraft types. The nearest facilities are in Fiji but are limited to A330, B737 MAX and DHC6-Twin Otter. The next nearest facilities are in New Zealand and Australia, but pilots have been forced much wider afield in recent years.

2.2.4.2 Cabin Crew Training

This work is generally undertaken in-house using a specialized training provider organization although again the Fiji Airways aviation academy in Nadi provides initial and recurrent cabin crew training. There is also significant training capacity in Australia (e.g., Aviation Australia, Pionair Australia) and New Zealand. Again, economies of scale can be generated by pooling the procurement of training services.

2.2.4.3 Ground Crew Training

An airline operators' certification is dependent on a regulatory-compliant ground handling capacity, which requires personnel trained in a range of disciplines from basic airport ground operations, ramp marshalling, load supervision, aircraft weight and balance, and safety management. Similarly, check-in staff require training on passenger and baggage processing systems, while freight terminal staff require training on goods handling processes and procedures. Entry to this area is often at the unskilled level with on-job training by local instructors, supported by participation on various IATA-accredited courses, with delivery ranging from individual instructors' attendance on-site, online learning, or attendance at overseas training institutions offering formal Certificate-level qualifications. In the latter case, training options include dedicated aviation training establishments in Fiji, PNG, New Zealand, or Australia or elsewhere.

2.2.4.4 Aircraft Engineering Training

Due to a shortage of in-country skills, the limited aircraft maintenance facilities in the Pacific tend to be staffed by a combination of expatriate licensed engineers, foreign-trained locally engaged staff and other locally recruited staff undertaking training. The range of skills required is quite large, including airframes, engines, hydraulics, instrumentation, electrical and avionics disciplines across multiple aircraft types. It is unlikely that all these skills will be found in PICs, and some international outsourcing will be required regardless of the level of maintenance being delivered in-country.

Entry to employment as an aircraft maintenance engineer is generally based on an apprenticeship scheme where candidates undergo a combination of theoretical training (Diploma in Aeroskills or Certificate II or III in Aeronautical Engineering) through an approved training organization and extended supervised work experience inside a licensed maintenance organization. Within the Pacific, Fiji and Papua New Guinea have national capacity for training engineers; otherwise, Pacific Islanders travel overseas for such training, typically to New Zealand. This is funded either privately, or by a local airline, or directly by a government scholarship scheme.

There is a desire by airlines and governments to decrease the dependence on expatriate engineers, although this is challenging with the small scale of the aviation industry and need for and high cost of overseas training for PIC candidates. An aviation support hub could contribute to overcoming these barriers through increasing the scale of engineering training, both offshore (more purchasing power) and in-country (e.g., through brokering relationships between foreign and local training institutions for the theoretical training component and brokering relationships with maintenance organizations for the practical training).

2.2.4.5 Airline Management and Other Training

Small PIC airlines have traditionally employed expatriates in senior management positions but have a desire to localize those positions as much as possible. While many locally employed senior and middle managers may have tertiary qualifications, often exposure to the air transport industry has been gleaned through working up the ladder within the same small national airline. As part of capacity building towards best practice, there are observed needs for further structured and continuous professional development across the key technical and commercial disciplines. There is scope for a hub-organized regional training program to be more comprehensive (and secure funding for same).

2.2.5 Fuel

Jet aircraft fuel is one of the largest expenditure items for airlines and has been notoriously difficult to manage amid fluctuating source costs, and often extreme fluctuations in supply. Up until the mid-2000s, jet fuel was delivered within PICs by a joint user hydrant installation arrangement between major fuel companies Shell, Mobil, and BP.

These interests were sold off to new entrants between 2005 and 2014 and there are now several independent fuel wholesalers and distributors as shown in Table 4. Some PICs have large in-country storage (e.g., Fiji), with direct supply by large tankers shipping direct from Asian refineries in Singapore and Republic of Korea. Others have limited storage capacity and require more frequent visitation by low-draft, inter-island shipping due to constraints on port access (e.g., Tonga, which secures its fuel via Fiji's Vuda Point facilities). PNG is in the fortunate position of having 100% of its aviation fueling needs supplied from its own refinery operated by Puma Energy Ltd.

The data in Table 4 show that, while some PICs have multiple suppliers, who, in many cases, cover several PICs, there are still those facing monopoly supply arrangements. In Samoa, the monopoly is established under a 5-year agreement between PPS/Exxon and the government, with the wholesale price regulated based on the monthly average of the daily Mean of Platts Singapore price plus the freight costs and local distribution costs. Fuel prices are also regulated in the Solomon Islands and PNG.

Table 4. Key Aviation Fuel Suppliers to PICs

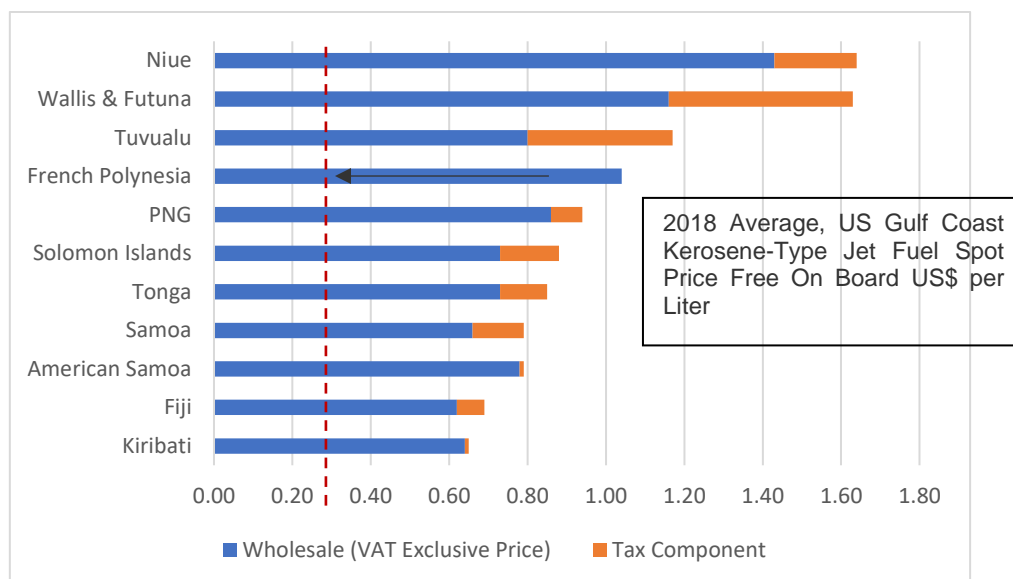
Fuel Company	PICs Served
Pacific Energy Group (through various subsidiaries)	Acquired various Shell, BP, and Mobil assets and now services French Polynesia, New Caledonia, Vanuatu, Fiji, American Samoa, Tonga, Tuvalu, Cook Islands, PNG, and Solomon Islands. The group has its own tanker system and extensive storage capacity throughout the Pacific.
Puma Energy Ltd	Sole refiner/supplier of jet fuel in PNG, supplying 100% of the local market.
South Pacific Oil Ltd	Owned by the Solomon Islands National Provident Fund, South Pacific Oil is one of two suppliers of aviation fuel for the Solomon Islands. The firm supplies Jet A1 through a depot at Henderson airport with a 20,000-liter carrying capacity, 600 lt/sec flow rate.
Markwarth Oil Ltd	The second Solomon Islands fuel supplier who also has a depot at Henderson Airport.
Total	Supplier of aviation fuel in Fiji and Tonga. As larger ships cannot access Tonga, much of the supply is consolidated on loads to Fiji's Vuda Point and distributed to Tonga on local coastal tankers.
Mobil	Third supplier to Fiji.
Kiribati Oil Co Ltd	One of two jet fuel suppliers in Kiribati.
Clipper Oil	Primarily a marine fuels specialist, also a supplier of jet fuel and avgas to Kiribati, Tuvalu, Marshall Islands, and Federated States of Micronesia.
Petroleum Product Supplies Ltd	In partnership with Exxon Mobil, Petroleum Product Supplies is the sole fuel supplier, terminal operator, and distributor for Samoa under a rolling 5-year contract with the government.

PNG = Papua New Guinea, PIC = Pacific Island country.

Source: Consultant.

Given the diversity of fuel supply arrangements, the cost and security of supply differs significantly across the PICs, as illustrated in the 2018 price for kerosene in various PICs presented in Figure 4 (jet fuel comprises about 20%). The differential between Pacific prices and the average global spot price for jet/kerosene for the same year is also shown (complete data on Pacific fuel prices post-2018 were not accessible, hence the use of 2018 as the benchmark year).

Figure 4. 2018 PIC Annual Average Wholesale Prices for Kerosene (US\$/liter)



Sources: SPC Pacific Fuel Price Monitor 2018, accessible on https://prdrse4all.spc.int/sites/default/files/pfpm_2018_final.pdf, accessed on 21 June 2023

US Energy Information Monitor. https://www.eia.gov/dnav/pet/pet_pri_spt_s1_a.htm accessed 21 June 2023

VEP VAT Exclusive Price

It is possible to surmise that price regulation, competition for monopoly rights, scale of infrastructure and shipping capacity have all influenced the wide spread of fuel supply costs across PICs, and the differential with world prices. The data also suggest that there may only be limited scope within the regulated pricing systems for airlines to secure price reductions through pooling their market demand. However, the Fiji price outcome illustrates that benefits can be obtained by large throughput volume combined with good infrastructure. The Samoan price outcome also suggests that there may be value in acting regionally to increase the use of multi-user terminals to lower the entry barrier to new suppliers, and to promote competition between potential suppliers by issuing periodic competitive bidding of supply contracts.

Overall, the cost of aviation fuel is an important and complex issue that requires governments, fuel suppliers and the aviation industry to work together on both supply and demand issues. On the demand side, it is logical that any technical support hub should include expertise to support PICs in negotiation of fuel supply agreements, establishing of collaborative “fuel tankering” policies,³ and examining the implementation of a regional fuel-hedging strategy.

2.2.6 Insurance

As advised earlier, ASPA has already successfully engineered a regional framework for procurement of airline insurance. This has been achieved procuring a single broker through whom each member airline can negotiate directly to secure their own insurance agreements but in accordance with a common agreement structure. ASPA reports this as a successful and ongoing arrangement, and an effective demonstration of a decentralized procurement framework based on the hub concept.

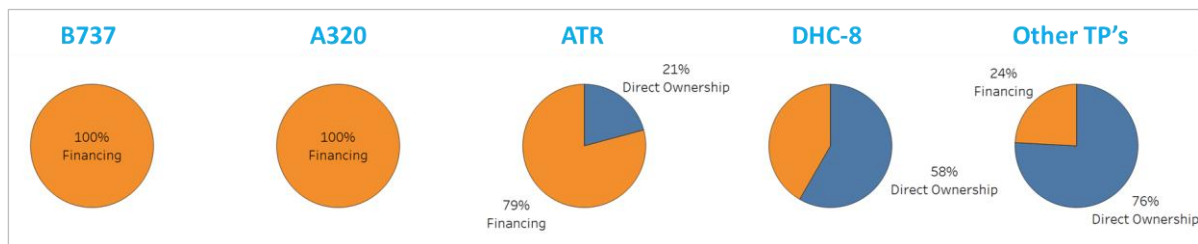
³ Referring to the practice of management of fuel volume uplifted at various ports based on fuel price, payload, and flight planning considerations.

2.2.7 Aircraft Leasing and Financing

As with most of the aviation industry, the majority of Pacific airlines lease or borrow funds for their larger aircraft, as shown in Figure 5. These transactions are negotiated individually between financiers, airlines, and governments. Financiers include major aircraft leasing companies, aircraft manufacturers (particularly for new aircraft), and export/import banks in the country of manufacture.

For government-owned airlines, these transactions tend to require deep involvement by PIC governments. This comes from the need for any explicit or implicit government guarantees, and the political significance to PICs of the selection of the national flag-carrying aircraft. This has led to a range of aircraft manufacturers and types, and a range of transactions involving different financing organizations, and financing arrangements.

Figure 5. Financing Arrangements for Pacific-Based Airlines in 2021



Source: CAPA consulting

This situation tends to work against the concept of regional financing. At the same time, it is recognized that, if agreement could be achieved across several PICs to align fleet composition and financing arrangements, then more favorable transactions might be achieved, together with reduced maintenance costs and enhanced asset management. Stakeholder advice is that PICs have limited expertise in aircraft procurement and financing, and an important role for the hub would be to facilitate enhanced access to such expertise.

2.2.8 Technical Assistance

Airlines are a consumer of technical expertise from multiple disciplines and can be hampered by lack of access to this, particularly the high cost associated with procurement of such services from the international market. A hub procurement framework could, in theory, improve this access through establishing a panel of service providers under competitive procurement. It could also streamline support services by helping airlines standardize their service delivery framework, for example, undertaking airline fleet assessments and developing re-fleeting strategies for common aircraft types, development of common reservation system solutions, etc. There are a range of disciplines that could be considered under this arrangement including specialist's expert in airworthiness, flight operations, information technology, commercial, marketing, governance, regulatory compliance, aircraft finance etc. Regarding regulatory compliance, PASO is already established as a technical assistance resource, albeit limited to assisting and improving regulatory oversight. It is anticipated that it would be a relatively simple process for PASO to expand the scope of technical services using its current business model. This would, however, require a change in PASO's mandate, as envisaged in the RAMM2 outcomes.

2.2.9 Disbursement of Aid Funding

Much of this section has been addressing how a regional technical service hub could assist in achieving cost savings and efficiency improvements through procurement of goods and services on a regional basis. Another potential function of a hub raised by stakeholders is that of provision of a management contractor/project management capacity for the delivery of aid/development financed projects.

The Pacific civil aviation sector is a significant recipient of aid and other development finance but traditionally arranged on a national basis. There are several ongoing regionally focused donor-assisted projects, particularly in the infrastructure area. However, these are usually planned regionally by the donor but operated on a country-by-country basis. As commercial entities, airlines do not feature as

strongly as recipients of donor or IFI funding, although the pandemic has drawn out some specific assistance measures, including the DFAT Pacific Flights program, and the New Zealand International Air Freight Capacity scheme. A significant amount of donor support for PASO is also a demonstration of a regionally based initiative to support safety oversight of airlines. In this context, a regional aviation support hub could increase flexibility in the delivery of development projects to the sector for those activities that more readily lend themselves to delivery to multiple PICs. The services raised for consideration include:

- Air route subsidization – the DFAT and Ministry of Foreign Affairs and Trade, Government of New Zealand (MFAT) subsidy schemes are intended to be ultimately phased out, although it is likely that some routes will need some form of financial support in the long term if they are to remain served. It is appropriate to contemplate the development of a regional framework for route development and subsidization through which PICs could channel aid funds from multiple sources, co-financing funds from governments and ultimately funds from community services obligation levies on profitable routes.
- Funding of Training and Capacity Development – as discussed above, training is a key need of the whole aviation sector and is likely to be seen as a key area for ongoing donor initiatives, with economies to be made by procuring and delivering such training as a collective regional task. There is also a desire to optimize access to within-Pacific training where some regional delivery framework is appropriate. This would need to be supported by pooled procurement of advanced training that could only be obtained out of the region. The case study of the Australian Pacific Training Coalition (APTC) has been identified later in this report as a relevant model of a regionally based managing agent delivering integrated training programs on a multi-country basis.
- Assistance in securing finance – there is recognition that a regional technical support hub might also provide the capacity to support aviation sector participants seeking access to finance for airline development, for example assistance in navigating Asian Development Bank (ADB), International Finance Corporation, and European Investment Bank private sector loans/equity, assistance in developing business cases, project preparation etc.

2.3 Airport Support Services

As with airlines, there are many aspects of PIC airport management, development, and operation where operators are struggling in the COVID-19 recovery process to maintain standards, manage costs, and plan and implement continuous development as demand evolves. This is attributed by stakeholders to limited financial and human resources, limited access to expertise within PICs, and the small scale of operation. There is recognition that a regional technical support/procurement hub could help address some of these needs. In particular, a hub may enable the cost-effective procurement of goods and services, the introduction of enhanced airport asset management, training, and development of technical and management personnel, and provide improved access to the wide range of technical expertise needed to run a modern airport.

2.3.1 Procurement of High-Value Capital Equipment

PIC airports have had (or are undergoing) extensive physical upgrades delivered in recent years with much assistance by aid donors and IFIs. However, upgrading of assets is an ongoing requirement, particularly with short life equipment such as air traffic control (ATC) systems, other electronic equipment, fire tenders and high value mechanical and electrical plant. PIC airport operators advise that they are constantly renewing items such as fire tenders, each committing considerable resources undertaking individual sourcing from multiple equipment providers. There is strong support for a hub functionality to assist the standardization of equipment specifications and to use pooled purchasing power to obtain the best possible outcome from the initial purpose and the ongoing support.

2.3.2 Airport Maintenance

Capital improvements alone do not address the development challenge, in that airport maintenance is largely reactive and there is little penetration of modern asset management methodology. This often results in critical unserviceability, long outage times, and reduced performance/capability of the airport or air navigation system. Key maintenance tasks carried out at Pacific regional airports include:

- Airport grounds maintenance – grass mowing, drain clearing, fencing repairs, landscaping, usually undertaken by airport staff or local contractors;
- Janitorial maintenance – plumbing, basic electrical, mechanical, and structural building maintenance, carpentry, etc., generally serviced by airport staff or locally engaged contractors;
- Pavement maintenance – condition monitoring and reporting, crack filling, small-scale repairs, larger-scale repairs (all usually undertaken locally with varying degrees of quality), cyclical resurfacing based on condition (usually contracted out internationally to experienced firms under capital works budgets);
- Mechanical plant maintenance – tractors, mowers, motor vehicles, fire trucks, standby generating plant, motorized ground support equipment (where owned by the airport operator). Basic preventative maintenance is generally conducted by airport maintenance staff, whereas more complex maintenance, particularly fire tenders, is carried out by either local mechanical repair contractors or by overseas specialists;
- Airport lighting and electrical back-up generation – preventative and reactive maintenance is usually carried out by local staff or overseas contractors for more complex issues;
- ATC/communications/navigation/surveillance – preventative maintenance and first-in fault maintenance is usually undertaken by airport staff, with reliance on specialist overseas contractors for more complex issues. The government-owned Airways Corporation of New Zealand is contracted by many PICs to provide flight calibration of navigation aids;
- Information technology equipment, including aviation security equipment, office telecommunications, flight information displays, and other applications – Usually supported by airport tech staff with back up of local contractors. It is noted that MFAT provides funding for maintenance of security equipment.

Common issues across PICs in the maintenance areas include:

- Lack of access to expertise required to maintain critical safety or operational infrastructure, particularly communications, navigation, and surveillance/air traffic management equipment, airport lighting, aviation security equipment, complex mechanical plant such as fire tenders, and information technology support;
- Lack of systematic approach to lifetime asset management. Maintenance is predominantly reactive, and facilities tend to be upgraded long after their natural lifetime, particularly electronic equipment, and pavements;
- Limited planning and engineering resources to plan, maintain and develop facilities.

It is identified that a regional aviation technical support hub can potentially help address some of these issues at an economic scale through regionally based procurement, management, and delivery of maintenance/logistic support/asset management services. In this context, the World Bank is preparing a Regional Airports Asset Maintenance Program (RAAMP) for technical and mechanical equipment maintenance for Tonga, Samoa, and the Solomon Islands. This is analyzed as a case study in the companion study of regional procurement frameworks.

2.3.3 Training

Because of the wide range of technical disciplines, particularly those related to aviation safety and security, there is a significant training load on airports. Like airlines, this load is significant in the face of long stand-downs of existing staff during the pandemic, as well as the load of replacing those that have permanently exited from the industry.

Key continuous training requirements for airports include:

- Aviation Security Training – Entry to an aviation security job is via a formal training course usually conducted by airport operators, together with refresher courses and courses upgrading qualifications, all supported by on-job training;
- Airport Rescue and Fire Fighting Service Training – Again entry is a formal training course usually conducted by airport operators. Also provided is routine proficiency training, including emergency exercises and on-the-job experience. Some PICs have also used secondment of

staff to larger, more advanced airport Airport Rescue Fire Fighting Service (ARFFS) facilities overseas as another form of on-job training;

- ATC Training – This very specialized area requires a candidate to undergo a formal International Civil Aviation Organization (ICAO)-accredited training course for entry-level service and advancement as an air traffic controller/flight service officer. This training can be undertaken in-country by qualified instructors with limited equipment, but is often better delivered overseas, commonly in New Zealand by commercial arrangements between the airport operator and Airways New Zealand. Issues attached to ATC training include the high attrition rate of candidates (reduced but not eliminated by systematic aptitude testing), and the cost of selection, and overseas training. Aid fund availability is often a determinant of the timing and amount of such training;
- Technical training in ATC systems – Technical staff are usually products of the local vocational education system, supported by on-job training, although there is greater involvement in overseas training in recent years, through scholarship schemes. This tends to be supported by short courses funded by equipment manufacturers when there is a major equipment procurement project, although this is relatively ad-hoc;
- Training in airport management and operations – There is little formal management training delivered to PIC airport management and operations other than the technical training as described above. There is also limited general tertiary education among management ranks as historically managers have entered the work force with basic vocational training and progressed through the organization to management level. This is changing, as more Pacific Islanders are graduating in relevant disciplines from national vocational training institutions, or the University of the South Pacific. There are a growing number of scholarships for tertiary education particularly in aviation disciplines at institutions in New Zealand or a range of institutions in Australia. Graduates from such institutions tend to easily find employment with airport operators.

As with airlines, a technical support hub could potentially facilitate a more effective training framework by pooling training needs across PIC airports. A hub could assist in designing delivery strategies in-country using overseas resources and/or online training or using out-of-country placements with qualified training organizations for ICAO- or IATA-accredited courses. The hub could also assist in securing appropriate funding. Of the training requirements listed above, the key areas of need seem to be air traffic controller training and technical training in ATC and security systems support, as well as refresher training for firefighting services. However, the post-COVID-19 skills shortage is driving a need for training in all disciplines.

2.3.4 Technical Assistance

As with airlines, Pacific airport operators have a regular need for technical assistance. Areas of greatest need are assessed to include airport planning, airport development, pavement engineering, air navigation services system development, airport firefighting facility standards, and safety management systems. A primary need is to have access to expertise in those disciplines requiring action to sustainably address safety and security compliance issues. As with airlines, it is envisaged that a regional hub could establish easier access to a pool of on-call technical specialists and a pre-vetted panel of consulting firms and contractors from a range of disciplines in much the same way as delivered by PASO at present, but with a wider scope of services.

2.3.5 Disbursement of Aid Programs

As discussed earlier, there is a flow of donor-funded airport development programs in each PIC, many with similar characteristics. While presently operating on a country-by-country basis, implementation costs would be reduced by centralization of administration, and standardization of procurement of goods and services. The recently completed World Bank Pacific Aviation Investment Program (PAIP) is an illustration of one methodology of working on a regional scale for delivery of IFI-funded airport development projects.

2.4 Sector-wide Support Services

Stakeholders have identified a need for a range of support services to be provided beyond airport and airline operators, to include government agencies that participate in the ownership, financing and governance of airline and airports. These include transport ministries, public infrastructure ministries, and finance ministries. Needs are identified in the fields of training and capacity building, and technical assistance services. The number of personnel in these PIC aviation oversight areas is small, making it inefficient to arrange access to such services on a national basis, when a wider range of services can be more effectively delivered on a regional basis.

2.4.1 Training and Capacity Building

While there is a high degree of education across the senior levels of government, outside the aviation regulators and operating entities, there is limited depth of expertise in aviation policy and aviation economic regulatory matters. While PASO works extensively with capacity building for aviation safety oversight, there are also extensive training needs in many other areas including the following:

- Fundamentals of the air transport system;
- The aviation technical and economic regulatory system;
- Airline and airport financing;
- Charging schemes for civil aviation infrastructure and services;
- International air service agreements;
- Business planning for airlines and airport operators.

Sector-specific training is usually undertaken in short courses at overseas institutions (including accredited ICAO and IATA courses), with the low number of participants making it difficult to justify any substantive training programs at home. Some stakeholders have identified the potential value of accessing a more structured and substantive capacity development framework by working on a regional scale. This would facilitate a better scale for a sustained region-wide training/capacity building program, including scope for extensive delivery within PICs. It would also allow more effective coordination of access to external training programs, and potentially reduce the unit cost of training.

2.4.2 Technical Assistance

As with airlines and airports, the wider government sector needs access to aviation sector technical assistance, particularly in the fields of economic research, aviation policy and strategy development, and economic regulatory reform, among other areas. This can be through short-term access to individual advisers, or through long-term delivery of reform programs with larger-scale external assistance. This expertise is often not readily accessible in-country and is often accessed through donors on a bilateral basis. As with other areas under discussion, there is logic in the development of an accessible pool of advisers sourced through a regional hub service provider who may be able to access such expertise more effectively than individual PICs can do on their own. Two particular areas raised for consideration are assistance in the development and management of a regional air route support scheme, and reform and restructure of state-owned enterprises.

2.4.3 Managing the Disbursement of Donor Funds

At the sector governance level, donor advisory projects typically support strategy development, institutional reform, and capacity building. With the aim for a greater regional approach to aviation espoused by the aviation ministers at RAMM2, it is logical that such programs be not only designed on a regional basis, but that a regional hub body could be considered an effective executing agency. Hub resources could be used for project preparation, sourcing of donor funding, and program management.

2.5 Risks and Challenges

The previous sections have been looking at PIC needs and opportunities that might be better served by a regional hub and are largely optimistic regarding what a hub might achieve. However, there is sufficient experience in the development of regional organizations to suggest that some of these benefits might not necessarily be achieved. Some of the key challenges are identified as follows:

- **Economies of scale may not produce lower cost or greater efficiency.** While the combined purchasing power of PICs may reduce procurement costs and open access to greater choice, these benefits may be eroded by the cost of the hub services and inefficiencies of business processes that the hub will need to introduce. PICs may in some cases be better off undertaking their own procurement;
- **A regional hub may not be financially self-sufficient.** Despite material benefits likely to be generated by the regional hub, self-funding mechanisms such as user charges, commissions on procurement, membership fees/shareholder funds and the like may be insufficient to cover costs. This would mean a hub function would be over-dependent on donor support, which is neither guaranteed nor desired over the longer term. The experience with PASO to date is relevant here;
- **Equity in the distribution of benefits.** It is likely that the benefits of a hub would be experienced differently in different PICs given the differing institutional capacity and differing size of the air transport sector in each PIC. Feedback from previous regionally delivered projects (e.g., World Bank PAIP) is that this imbalance is an issue with PICs, and waters down commitment to a regionally based solution;
- **PICs may experience greater costs.** Regional procurement initiatives (e.g., outsourcing maintenance/asset management services) may result in PIC participants incurring more expense than previously. This is not necessarily a disbenefit, but rather the cost attached to moving to a higher level of performance.

2.6 Summary of Needs and Opportunities

Bringing together the commentary from the preceding sections, Table 5 provides a list of the generic types of services an aviation hub might support, together with expected needs of airlines, airports, and other PIC participants in the aviation sector.

Table 5. Summary of Needs and Opportunities for a Regional Technical Support Hub

Hub Service	Services for Airlines	Services for Airports	Sector-wide Services
Pooled procurement agent for goods and services	Ground handling, MRO, catering, fuel, insurance, aircraft leasing and management	Contracts for the development and maintenance of airport pavements, communications, navigation and surveillance/air traffic management equipment, security systems, baggage handling systems, insurance	N/A
Pooled training procurement agent, or delivery of training to PICs where applicable	Pilots, cabin crew, ground crew, maintenance engineers, management	Air Traffic Controllers, ATC systems, Security systems, Asset management	Training in air transport system, technical and economic regulation; financing; charging schemes; air services agreements; airline and airport business planning
Technical assistance	Airworthiness, flight operations, information technology, commercial, regulatory compliance, aircraft finance, design of community service obligation and route subsidy schemes	Airport planning, airport development, pavement engineering, air navigation services system development, airport firefighting facility standards, safety, and	Economic research, aviation policy and strategy development, economic regulatory reform, reform and restructure of state-owned airlines and airports, capacity building

		security management systems	facilitating air services agreements and air route community service obligations
Project preparation and management of donor/IFI-funded projects	Reform and restructure of airlines, planning and strategy development, capacity building, assisting in securing finance	Airport development ATC systems planning and development, Airport security systems planning and development	Regional aviation strategy development and implementation, institutional reform, and capacity building

ATC = air traffic control, PIC = Pacific Island country.

Source: Consultant.

3 Institutional Options

The Terms of Reference for this study identify that a regional hub facility would be “in support of and beyond the present mandate of PASO.” However, it is recognized that, in addition to the PASO model, there are a range of other regional institutional options that could service the above needs, and all warrant study before converging on a single model. Some key institutional options identified to date are summarized as follows:

- Cooperation through a formal collaboration agreement;
- PASO with an expanded mandate;
- Added-on to another existing Council of Regional Organizations of the Pacific (CROP) agency;
- A new regional body (potentially a CROP agency);
- A regionally owned incorporated service provider owned by PIC airlines, airports, or PIC governments;
- A major aviation industry partner (e.g., major airline, airport operator, or other aviation sector specialist firm serving the Pacific) where the partner takes on the hub function on behalf of Pacific airlines, airports, or governments;
- A donor-established project management unit;
- Multiple hub arrangements comprising a combination of the above.

These options are explored below.

3.1 Formal Collaboration Agreement

As discussed under Section 2.1, Pacific-based airlines have previously attempted some forms of collaboration under the auspices of ASPA. This has involved a committee structure where airlines met to arrange pooling of their resources and to develop initiatives on a regional basis to reduce costs or to enhance revenue. There were no permanent staff, and advice from ASPA is that the successes were the result of the concerted effort of the individuals involved.

This form of collaboration is the simplest framework that could be contemplated for the delivery of hub services but given ASPA’s experience, it would need to be strengthened. Measures that would assist this would include the following:

- Development of a formal legal agreement identifying scope, resources committed, financing arrangements, governance arrangements, and committing to confidentiality;
- Commitment of dedicated human and financial resources by each participant in the work program under the agreement (including designation of a lead member, possibly by rotation);
- Formalize regular meetings for development and coordination of work programs;
- Engage external resources as needed (under member funding) to assist on work programs.

Given the difference in operation between airlines and airports, it is feasible that separate agreements may need to be established for each subsector. Although given the common interest in areas like procurement and training, there is a balancing argument that a single collaboration model may be less drain on resources.

An airline-only agreement structure could continue to operate through ASPA or at least receive support and coordination through ASPA support and coordination. A similar industry body does not exist for Pacific airports, but the establishment of such a body would be a desirable outcome of this model given that one of the key objectives is the fostering of knowledge sharing.

The advantages of the hub function being delivered by a collaboration agreement is that this form of hub is the easiest to implement, has minimal cost, and can build trust among participants to allow progression to more complex models. The major disadvantage is that it is dependent on the level of commitment of members to either directly support the work programs or to assist in the funding of an external resource for this purpose. Further, due to the simplicity of the model, it is likely that the achievements will be less than the higher-commitment models discussed here.

3.2 PASO with an Expanded Mandate

3.2.1 Current Role of PASO

PASO is an international body formed under the Pacific Island Civil Aviation Safety and Security Treaty (PICASST) signed by 10 member states. The organization is established as a member agency of CROP, acting in the capacity of what ICAO defines as a Regional Safety and Security Oversight Organization (RSSOO). PASO acts on a regional basis to assist member states in the delivery of their regulatory oversight of civil aviation, as required under the international Convention on Civil Aviation. Under the PICASST, PASO is required to assist in regulatory oversight in the following disciplines:

- Airworthiness;
- Flight Operations;
- Airports;
- Security;
- Personnel licensing for these subjects.

While not specifically identified in the PICASST, PASO's services have also been extended to include air navigation services, air traffic services, and aerodrome ground aids.

PICASST requires that PASO's service delivery be based upon fee-for-service provision of advice and technical assistance related to regulatory oversight, and to conduct aviation safety and security regulatory tasks as requested by member states, based on each state's regulatory framework.⁴ As part of this delivery, PASO delivers or arranges extensive training and capacity building for member state's aviation regulators. Its work has extended to assisting in the development of safety infrastructure (namely aviation satellite services). PASO is therefore already delivering under its existing mandate some of the services anticipated to be provided by an aviation support hub listed above. This is particularly the provision (or facilitation) of technical assistance and training for air service operators, airports, and government aviation regulatory bodies. However, the present mandate is limited to matters dealing with enhancing aviation safety and security regulatory compliance, whereas the expectations for the scope of a hub are much wider.

PASO is presently funded by a combination of user fees, member state subscriptions, and donor grants and loans. While intended to be self-funding, throughout its existence, PASO has been dependent on donor funds to cover shortfalls in revenue.

3.2.2 Proposed Expanded Role of PASO

Guided by a 2019 ICAO review of aviation safety effectiveness in the Pacific,⁵ a proposal has emerged to expand PASO's mandate to become what ICAO terms an "Enhanced RSSOO". This contemplates coverage of a wider range of safety regulatory disciplines and the possibility of PASO being delegated by some member states to undertake some regulatory services directly (issue of licenses and permits, and enforcement of regulations) for what are now functions of state regulators.

There are also plans for PASO to take on an even broader role. The PASO Corporate Plan⁶ states that "PASO remains the primary vehicle for pursuing and delivering collaboration in aviation as part of the Pacific's regional architecture". It goes on to state that:

"In line with the Pacific Regional Aviation Strategy⁷ priorities, the future RAO (Regional Aviation Organization) will work toward developing a business function to deliver a wider-focused centre of excellence for Members and industry. This function will enable Members and industry to access wider

⁴ Note that PASO is not presently a regulator and does not have the power to issue regulatory approval or enforcing regulatory compliance but is rather a service provider to the state entities (civil aviation authorities) that do have those powers and responsibilities. This may change with proposed changes in PICASST.

⁵ ICAO. 2019. *Pacific Small Island Developing States Aviation Needs Analysis* (PSIDS Study).

⁶ PASO. 2022. *Corporate Plan 2023-2027* (accessible on <https://paso.aero/publications/>).

⁷ PASO. 2022. *Pacific Regional Aviation Strategy 2022-2032*. Regional Aviation Ministers Meeting (accessible on <https://paso.aero/wp-content/uploads/Pacific-Regional-Aviation-Strategy-Report-web.pdf>).

consultancy services, separated from the organisation's regulatory oversight services which are focussed on maintaining the organisation's critical, independent compliance check and assurance role."

The PASO Corporate Plan, the overarching Strategic Plan 2023–2032,⁸ and the 2023 Business Plan⁹ all outline that, as it transitions to a multi-functional regional aviation organization, PASO will, among other matters, do the following:

- Deliver high quality and valued regulatory services and professional, aviation advice;
- Support members to establish national aviation strategies, plans and policies, and offer access to broad aviation sector knowledge and expertise, including access to a full-time PASO resource focused on international and regional issues of importance and policy matters;
- Play a central role in implementing and updating the Pacific Regional Aviation Strategy;
- Research members' aviation training and development needs and develop training programs to support State capability. This includes positioning PASO to become an accredited ICAO training provider;
- Research investment needs and identify opportunities for donors, and develop possible investment programs;
- Undertake procurement in accordance with donor requirements or PASO Procurements Policy.

To accommodate this transition, aviation ministers at RAMM2 in July 2022 endorsed a review of PICASST. According to the PICASST workshop chair, the changes are proposed to widen PASO's role to encompass support for "sustainable economic development, including COVID-19 recovery, air connectivity, modernization of Pacific aviation infrastructure, encouragement of new technology, commercial regulation, and service provision, oversee environmental management, facilitate border activities, and deliver search and rescue services and accident investigation."¹⁰

The work on the review of PICASST is ongoing at the time of preparation of this report, and details of proposed changes have not yet been publicly released. However, based on the above information, it is clear that, with ministerial support, PASO's planned mandate change may pick up many aspects of the services contemplated for a hub as described in Section 2 of this report. This is particularly in relation to the provision of technical services in areas outside regulatory oversight, project preparation and procurement for donor-funded works, and training across various aviation disciplines. This expansion will have some bearing on the choice of hub institution.

3.2.3 Commentary

PASO is perhaps a logical body upon which to base the concept of an aviation hub, given that:

- PASO is already an established regional body, committed to delivering the benefits of regionalization to the aviation sector. PASO is a CROP member, founded on a treaty arrangement. With small changes in the PICASST, PASO may easily have its responsibilities expanded to encompass engagement in the longer list of service needs identified in Section 2.
- PASO is already delivering some of the services envisaged by a regional hub, (e.g., technical assistance, training, improving safety infrastructure), albeit that this, to date, has been focused only on those aspects that pertain to ensuring effective regulatory oversight.
- ICAO guidance on RSSOOs is supportive of a wider role, stating that "*States need to focus on those activities that demonstrate a higher impact on regional safety oversight and contribute towards developing an effective aviation safety oversight framework. However, it is also important that, in developing a strategy, consideration should be given to the contribution of an*

⁸ PASO. 2022. *Strategic Plan 2023-2027* (accessible on <https://paso.aero/publications/>).

⁹ PASO. 2022. *Business Plan 2023* (accessible on <https://paso.aero/publications/>).

¹⁰ Vanuatu Daily Post. 2022. Quotation from PICASST working group chair, Mr John Hoskins, Secretary for Transport, Cook Islands, , published 7 April 2022 (prior to RAMM2), accessible on https://www.dailypost.vu/news/amending-the-pacifics-aviation-treaty-to-strengthen-regional-aviation/article_8d5d35ee-b02d-5624-85ba-807c9214b612.html, accessed on 21 June 2023

*RSSOO to the improvement of the wider economic, social, and environmental sectors of its member States.*¹¹

Notwithstanding these points, the selection of PASO for the regional hub function would encounter the following issues:

- The primary focus of PASO's limited resources is on aviation safety and security oversight. A newly expanded body could easily have its focus diverted onto the plethora of technical, economic and policy issues that impact regional aviation.
- PASO has had difficulty in sustainably funding its existence since its inception and has had difficulty in securing full regional take-up of its services. Some stakeholders argue that PASO needs to prioritize ongoing improvements to the effectiveness of the existing business model before embarking on new ventures, especially given that current cost recovery issues are likely to be exacerbated by any extra operating cost added by a hub function.
- There is a strong potential for a PASO hub role to introduce a conflict of interest between the regulatory oversight function and other user-funded services, potentially being paid for services under engagement to PIC parties that are under regulatory action (e.g., a PASO-run hub could be assisting the entry of a new aircraft for a regional airline, at the same time as assisting the national regulator certifying the carrier's operation).
- Member states may not be attracted to outsourcing some matters such as investment planning, procurement, aviation policy and strategy development or economic regulation to a regional body.

3.2.4 Case Studies of other RSSOOs

To place the PASO hub option in context, a brief review was undertaken of 13 RSSOOs established in other parts of the world, particularly the Caribbean, Latin America, and Africa. A summary of these entities is presented in Table 6.

A key finding of this comparison is that most of the RSSOOs examined (or those where security is undertaken elsewhere) have their functions limited to supporting member states' safety regulatory oversight functions, and do not provide services in areas such as has been suggested for a Pacific hub. There are several exceptions, however, including the following:

- *The African Civil Aviation Commission* is a coordinating body for the 23 member states of the single African aviation market. It has significant policy and economic regulatory functions in addition to its support to members' safety and security regulatory harmonization and oversight. The safety oversight function is treated as a separate program of the Commission.
- *The Caribbean Civil Aviation Safety and Security Oversight System* has provisions within its charter "to provide on-request technical guidance to States, Parties, Community Organs and Institutions on all matters within its competence relating to civil aviation." It facilitates the sharing of regional technical expertise and the mobilization of financial and other resources from the international aviation and donor communities and government agencies to support its activities.
- *The Agence de Supervision de la Sécurité Aérienne en Afrique Centrale* has, in addition to its RSSOO function, an overarching commitment to "develop policies on the development of safe, reliable, efficient and economically viable civil aviation with a view to developing appropriate infrastructure, aeronautical skills and technology as well as the role of civil aviation in support of other economic activities."
- *The Eastern Caribbean Civil Aviation Authority*, among its functions as a regulator, has to "undertake and coordinate studies for ensuring the sustained development of civil aviation in the region, and collaborate with national, regional and international agencies and organizations to further the development of civil aviation".
- *The Interstate Aviation Commission* services many of the central Asian republics and the Russian Federation and includes among its responsibilities "coordination of civil aviation development issues and coordination and harmonization of air traffic management systems development".

¹¹ ICAO. 2011. Document 9734, Safety Oversight Manual Part B Second Edition.

It is recognized that, for most RSSOOs, the core focus remains clearly the enhancement of member state safety. The wider responsibilities implied in the language above is seen in the context of setting the role of an RSSOO in a safe and secure aviation system. Nonetheless, this comparison shows that, within the ICAO RSSOO framework, there are precedents for having an RSSOO with a wider remit for aviation sector development, provided the safety oversight task is not diminished.

Table 6. Comparison of RSSOOs

No	Entity	Members	Functions
1.	Autorités Africaines et Malgache de l'Aviation Civile	17 West Africa states and Madagascar, all members of ASECNA	Harmonization of regulations and regulatory oversight support services on behalf of member states
2.	Agencia Centroamericana para la Seguridad Aeronáutica	Belize, Guatemala, El Salvador, Cost Rica, Nicaragua, Honduras (COCESNA members). Part of COCESNA (see below)	Harmonization of regulations and regulatory oversight support services on behalf of member states on all ICAO annexes. Embedded in but arms- length to COCESNA
3.	African Civil Aviation Commission - AFI Cooperative Inspectorate Scheme (AFI-CIS)	The 23 Member States of the Single African Air Traffic Market	<p>Coordinating civil aviation matters in Africa.</p> <p>Supervising and managing Africa`s liberalized air transport industry.</p> <p>Formulating and enforcing appropriate economic regulations that give fair and equal opportunity to all stakeholders and promote fair competition.</p> <p>Promoting understanding on policy matters between its Member States and States in other parts of the world.</p> <p>Fostering the implementation of ICAO Standards and recommended Practices for the safety, security, environmental protection, and regulation of the aviation sector. (AFI-CIS and Human Resources Development Fund)</p>
4.	Agence de Supervision de la Sécurité Aérienne en Afrique Centrale	Cameroon; Central African Republic; Chad; Congo; Equatorial Guinea; and Gabon	<p>To develop policies on the development of safe, reliable, efficient, and economically viable civil aviation with a view to developing appropriate infrastructure, aeronautical skills and technology as well as the role of civil aviation in support of other economic activities.</p> <p>Assist the Partner States in meeting their safety and security oversight obligations and responsibilities under the Treaty and the Chicago Convention and its Annexes.</p> <p>Provide the Partner States with an appropriate forum and structure to discuss, plan and implement common measures required for achieving the safe and orderly development of international civil aviation through the implementation of international standards and recommended practices relating to the safety and security of civil aviation.</p>

No	Entity	Members	Functions
5.	Banjul Accord Group Aviation Safety Oversight Organization (BAGAS OO)	Cape Verde; Gambia; Ghana; Guinea; Liberia; Nigeria; Sierra Leone	Harmonization of regulations and regulatory oversight support services (training, technical assistance) on behalf of member states
6.	East African Civil Aviation Safety and Security Oversight Agency (CASSOA)	Burundi; Kenya; Rwanda; South Sudan, Tanzania; Uganda	Harmonization of regulations and regulatory oversight support services (training, technical assistance) on behalf of member states
7.	Caribbean Aviation Safety and Security Oversight System (CASSOS)	Antigua and Barbuda, Barbados, Dominica, Grenada, Guyana, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago	
8.	European Union Aviation Safety Agency (EASA)	European Union and European Free Trade Area states	Full service civil aviation regulator
9.	Eastern Caribbean Civil Aviation Authority (ECCAA)	Antigua and Barbuda, St Kitts and Nevis, Dominica, Saint Lucia, Saint Vincent and the Grenadines and Grenada	<p>Full service civil aviation regulator responsible for:</p> <ul style="list-style-type: none"> Regulation of civil aviation safety and security Developing harmonized civil aviation regulations, policies, and practices by applying ICAO Standards and Recommended Practices (SARPs) uniformly Establishing and maintaining a regulatory environment that promotes safety and efficiency in the civil aviation industry Creating a secure environment for the civil aviation industry Providing technical and specialized civil aviation services Undertaking and coordinating studies for ensuring the sustained development of civil aviation in the region Collaborating with national, regional, and international agencies and organizations to further the development of civil aviation

No	Entity	Members	Functions
10.	Interstate Aviation Committee	Armenia; Azerbaijan; Belarus; Kazakhstan; Kyrgyz Republic; Republic of Moldova; Russian Federation; Tajikistan; Turkmenistan; Ukraine; Uzbekistan	Air accident investigation Coordination of civil aviation development issues Coordination and harmonization of air traffic management systems development Harmonization of regulations and regulatory oversight support services (training, technical assistance) on behalf of member states
11.	Interim SADC Aviation Safety Organization (iSASO)	Southern African Development Cooperation members: Angola; Botswana; Democratic Republic of the Congo; Lesotho; Madagascar; Malawi; Mauritius; Mozambique; Namibia; Seychelles; South Africa; Eswatini; Tanzania; Zambia; Zimbabwe	
12.	Latin American Regional Safety Oversight Cooperation System (SRVSOP)	Argentina; Bolivia; Brazil; Chile, Colombia; Cuba; Ecuador; Panamá, Paraguay; Perú, Uruguay; Venezuela	
13	Unité Régionale de Supervision de la Sécurité et e la Sûreté de l'Aviation Civile de l'UEMOA (URSAC)	Benin; Burkina Faso; Côte d'Ivoire; Guinea-Bissau; Mali; Mauritania; Niger; Senegal; Togo	

Sources: Agency websites, Consultant's database, ICAO, 2021, accessible on <https://www.icao.int/safety/Implementation/Pages/COSCAPs-RSOOs-RAIOs.aspx>

ASECNA = Agency for Security of Air Navigation in Africa and Madagascar – see section 3.4.1.1

COCESNA = Corporación Centroamericana de Servicios de Navegación Aérea - see section 3.4.1.2

3.3 Added on to an Existing CROP Agency

PASO have advised that a memorandum of understanding has been established with the CROP agencies that states that PASO is to be the sole regional body representing the Pacific aviation sector in CROP. Allowing that plans are already in place to expand PASO's mandate, some consideration needs to be given to the possibility that the addition of further hub functions could unreasonably constrain PASO or vice versa. In this case, a reasonable alternative approach would be to find another CROP agency to attach the hub to, or at least to operate some of the hub functions through. The CROP agencies that might have most relevance to aviation are the Pacific Island Forum Secretariat (PIFS), or the Pacific Community (SPC). Also, relevant but limited in scope to education/training is the University of the South Pacific (USP).

3.3.1 PIFS

PIFS is established to be the region's peak political and economic policy organization. It promotes Pacific regionalism in support of sustainable development, economic growth, good governance, and security. Its primary role is in policy advice and implementation of Forum Leaders' decisions.

PIFS comes under consideration as a possible base for an aviation hub due to its past hub-like role in the development of the Pacific air transport/civil aviation sector, initially under a separate Division of Civil Aviation, and later as part of its Economic Governance division. PIFS led the development of PICASST and had a key role in PASO's governance over many years. PIFS also led the development and implementation of the Pacific Islands Air Services Agreement and formerly convened the South Pacific Region Civil Aviation Council, a bi-annual meeting of Pacific aviation/transport ministers. This went into abeyance but resurfaced in 2021 in the form of the RAMM. The CROP 2021–22 Strategic Work Plan identifies both PASO and PIFS as delivery agencies for RAMM.

The limitation of PIFS as a potential hub is that its engagement in the aviation sector has declined in recent years, and it is understood from PIFS that there remain only limited pockets of expertise or corporate knowledge of the aviation sector, which in any event is directed at policy matters or the RAMM. This suggests that, if accepted by PIFS, any could be more of an administrative convenience than high strategy for tapping into an existing expertise base. Also, the wide range and scale of hands-on technical services sought from a hub, together with fee-for-service, means that a technical hub service may not closely align with PIFS's policy advice and implementation role.

3.3.2 SPC

With a wider membership than other CROP agencies, SPC positions itself as the principal scientific and technical organization supporting development in the Pacific region. Its strategic focus is on major cross-cutting issues, such as resilience and climate action, natural resources and biodiversity, food systems, equity education and social development, sustainable economies and livelihoods, and planetary health. SPC is directly engaged in the transport sector under its "sustainable economies" key focus area, where its priority is research in sustainable maritime transport and ports. Previously, SPC's work also extended to civil aviation, where it carried out research on air transport sector developments and maintained statistical databases, although that role has now ceased. As with PIFS, it is expected that an aviation technical hub may obtain some synergies from being embedded in SPC, but that the benefit would be in the use of the existing administration and governance framework.

3.3.3 USP

Owned by 12 PICs, USP has 14 campuses and 11 centers providing education and training in agriculture, computing studies, economics, law, environment, sciences, climate change, accounting, management, and teacher training. USP also undertakes research in all aspects of the Pacific islands and pursues strategic partnerships and linkages. Relevant to the training element of the aviation hub concept, the USP College of Continuing Vocational Education and Training offers vocational qualifications (certificate, diploma and professional diploma Levels) in a range of business, project management, procurement, and information technology disciplines relevant to some of the aviation sector training needs. While USP would not on the surface seem like an institution at which an aviation hub should be based, it may warrant consideration as a regionally focused training partner to any hub-managed training solution.

3.4 Create a New Regional Body

Outside of establishing a hub within PASO or other existing CROP agency, the next approach involving a treaty-based organization would be to establish a new regional body with international legal personality, formed under a separate treaty. Such a treaty could be crafted to enable the entity to either directly service the needs outlined for a hub, or to act as a procurement and project management agent. Funding would likely be a mix of user fee for service (or commissions based on transactions), member subscriptions, and donor grants and loans.

Given that this is an initiative of the Pacific Islands Forum arising out of the RAMM, it would be logical to contemplate that any such body might be formulated as a new CROP entity, although this is not necessarily an essential feature.

Arguments in favor of this approach are that such a new international body could:

- Be a key steppingstone for closer regional integration on aviation, complementary to but additional to PASO;
- Allow a much wider scope of services to member states across the aviation sector than might be afforded by being embedded in PASO;
- Avoid any conflict of interest that may be present with PASO's regulatory oversight role that would occur if the hub were to be embedded within PASO;
- Keep the true international legal personality envisaged for such a service provider;
- Leave PASO to focus its limited resources on the high priority safety and security regulatory oversight role.

Arguments against such an arrangement suggest that the new body would:

- Duplicate effort in terms of replicating all the setup costs, management functions and overheads that PASO or any other regional body already has in place;
- Either duplicate some of the technical assistance tasks that PASO is undertaking, or be itself limited in scope so as to ensure there was no overlap with PASO;
- Work against initiatives in recent years within the Pacific Islands Forum to rationalize the number of CROP agencies;
- Require processes to secure support for a treaty, drafting, and securing approval and ratification which can, on past experience, be expected to take considerable time, well beyond the prospect of having an impact on COVID-19 recovery.

3.4.1 Case Studies of Alternative Regional Bodies that Are Not RSSOOs

The concept of an independent regional aviation service provider organization operating alongside RSSOOs is not new. Two key examples exist in both Africa and Central America, where regional service organizations that have international legal personality are involved in ownership of and direct service provision in airports, air navigation services or similar front line aviation tasks, including procurement. There is also prior experience of attempting to set up a similar agency in the Pacific. These examples are described below. Note that these examples are not fully analogous to the proposed hub concept, in that, instead of providing a regional support service to the regional aviation sector, they are in fact an end participant in aviation service delivery.

3.4.1.1 The Agency for Security of Air Navigation in Africa and Madagascar

Agency for Security of Air Navigation in Africa and Madagascar (ASECNA) is an international public institution established by a Convention, originally signed in Senegal in 1959. It was subsequently amended then replaced by another Convention, the latest signed in 2010. ASECNA includes 18 member states: Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Comoros, Ivory Coast, France, Gabon, Guinea-Bissau, Equatorial Guinea, Madagascar, Mali, Mauritania, Niger, Senegal, and Togo.

The prime function of ASECNA is to provide air navigation services, aeronautical information services, and aeronautical information services in airspace of its member states and oceanic airspace in the central Atlantic Ocean, Gulf of Guinea, and the Indian Ocean. This is achieved from six ATS centers: Oceanic Dakar, Terrestrial Dakar, N'Djamena, Niamey, Brazzaville, and Antananarivo. ASECNA also provides air traffic services at 25 international airports and more than 100 regional and national airports and owns and manages all the associated communication and navigation facilities. ASECNA carries out some research and development on behalf of its member states and conducts installation of technical equipment and inspections of airport works for them. In addition, it competes for technical assistance and cooperation projects, under contract, to any state willing to use its services.

In addition, seven of the member states have devolved to ASECNA the commercial management of their airports. ASECNA also operates three technical training centers: the African School of Meteorology and Civil Aviation in Niamey (Niger), the Regional School of Air Navigation and Meteorology in Dakar (Senegal), and the Regional School of Fire Security in Doula (Cameroon). It also maintains a flight calibration unit with capacity to undertake flight calibration work for non-member states. In addition, ASECNA provides airport firefighting services at 32 aerodromes of member states. ASECNA offers assistance to the other non-member African states including technical training at its colleges, and technical support in the maintenance of airport and airways facilities, and flight calibration.

ASECNA derives most of its funding from aeronautical fees from airspace users supplemented by fees for its diverse services from contracts with individual states, by contributions from member states, as well as loans and grants. As an international organization, it enjoys tax-free status. Governance of ASECNA is through a Committee of the Ministers of Civil Aviation, an administrative council consisting of one representative per member state; and a Director General who is responsible for the day-to-day management of ASECNA. The member states of ASECNA have regulatory oversight by an RSSOO, i.e., Autorités Africaines et Malgache de l'Aviation Civile, as described in Table 6.

3.4.1.2 Corporación Centroamericana de Servicios de Navegación Aérea

Corporación Centroamericana de Servicios de Navegación Aérea (COCESNA) is a regional, not-for-profit public institution that provides air navigation services in Central America. It is an international organization of Central American integration operating under a constitutive agreement with legal status and financial autonomy. Formed in 1969, there are six members: Belize (joined in 1996), Costa Rica, Honduras, Guatemala, El Salvador, and Nicaragua. Under the Agreement, member states have delegated the administration of the upper airspace to COCESNA for the provision of air navigation services, air traffic services, aeronautical information services, aeronautical telecommunications, and other services. The Agreement allows that possibility of providing these services to other (non-member) states through bilateral and multilateral agreements. An interesting point is that, unlike ASECNA, embedded within the COCESNA organization is the Central American RSSOO, Agencia Centroamericana para la Seguridad Aeronáutica (ACSA), as described in Table 6. This is an example of a regional body that still mixes service provision with regulatory oversight. However, the ACSA regulatory function is operated autonomously, despite the common administrative arrangements.

COCESNA is governed by a Board of Directors, composed of the Directors of Civil Aviation of each of the member states. There is an executive president, appointed by the Board for a period of 5 years, operating on a rotation system established by member states.

3.4.1.3 The Attempted Pacific Airspace Corporation

Previous attempts have been made to establish a Pacific regional aviation organization, focused on air traffic management of the upper airspace. In 1996, well before the establishment of PASO, ADB assisted in the development of a plan¹² to establish the Pacific Airways Corporation (TPAC), whose primary function was to be the common management of a unified regional airspace. It was proposed to be owned jointly by participating member PICs, funded ultimately through overflight fees, and planned to generate a surplus for equitable distribution to members. Service provision was proposed to be undertaken regionally, either by TPAC itself, or by commercial arrangement with existing service providers, who would be recompensed for services and infrastructure provided.

¹² ADB. 1996. *Technical Assistance for Pacific Airports Facility Project*. Final Report, Ambidji Group. Manila.

While this is a dated example, it is a useful illustration of the difficulty of establishing a regional aviation body akin to COCESNA or ASECNA in the Pacific. Despite a strong need and widespread support from most PICs, the project did not proceed due to the inability to get the high level of consensus needed.

It is noted that the proposed TPAC charter included the provision of specialist technical and operational support essential to the aviation sector, the conduct of a regional safety oversight program and the development and coordination of various regional programs for the sector. Some of the above have subsequently been provided by PASO or are now proposed to be incorporated into an expanded PASO.

3.5 A Regionally Owned Incorporated Services Provider

The models described in the previous sections have or would have had the legal personality of an international organization established by treaty between member states. An alternative to this framework is an incorporated service provider with shareholders being privately or publicly owned entities from within the region such as airlines and/or airports, or possibly with direct shareholding by PIC governments. Structurally as an incorporated entity, it would need to be domiciled in a PIC designated as a principal place of business, governed by corporations' law of that country, and be registered in other member states where it undertook service delivery. The model could equally apply for a for-profit corporation, or a not-for-profit, the latter being perceived as more in alignment with the concept of a regional collaboration agency.

This model differs from the new regional body model only in the form of legal personality. The scope of services of an incorporated entity could similarly range from the direct provision of any or all of the proposed hub services, to simply being a managing agent to the member states for pooled procurement of the services and goods.

Arguments in favor of an incorporated body include:

- The body could be established in a short space of time with a small number of interested members (with others joining later according to need) when compared to the situation for a treaty-based organization requiring a treaty to be drafted and agreed, then to obtain sufficient signatories and have accessions in place before becoming effective;
- This approach is flexible regarding whether members are PIC governments, state-owned enterprises, or private sector parties;
- An incorporated body is more suited to the strongly commercial orientation of its airline and airport members.

Arguments against this proposition include:

- There is complexity in setting up the hub under a national legal framework then operating regionally, e.g., taxation, employment, employee mobility, etc.;
- There is political sensitivity in the choice of PIC for the principal place of business;
- There may be issues relating to the ability of donors to provide direct finance a non-sovereign entity.

3.5.1 Case Studies

3.5.1.1 Initial formulation of PASO as a Corporation

PASO was originally formed in 2003 as a not-for-profit corporation, incorporated under the laws of Vanuatu, the host country.¹³ Following a director's decision in 2004, PASO subsequently transitioned to full international organization status under PICASST, entering into force in June 2005 with five signatories.

¹³ ADB. 2011. *Completion Report: Establishment of the Pacific Aviation Safety Office Project (Pacific Region)*. Project no 37449, Loan No 2183. Manila.

3.5.1.2 Fiji Airways as Demonstration of a Regionally Owned Corporation

Fiji Airways is a regionally owned organization, namely a for-profit Fiji incorporated entity with equity from Qantas, Air New Zealand, and several PICs. More recently, it has taken on equity from the Fiji National Provident Fund and the Fiji Unit Trust. While this ownership framework has not fulfilled PIC aspirations of a truly regionally owned airline, it is a demonstration of one way in which PICs, government-owned airlines, and private investors have collaborated regionally.

3.5.1.3 Managing Agent Example – Crown Agents

It is recognized that any regional entity, however formed, could be either a service delivery entity in its own right, or a contract management entity, engaging one or more managing agents. It is therefore worth examining the role of managing agents. One relevant case study is Crown Agents. While this particular organization has had a complex background in the colonial era, the modern entity has the legal personality of an international development company incorporated under British law. It is 100% owned by the Crown Agents Foundation, a not-for-profit entity whose members include eminent charities and philanthropic organizations. Crown Agents has a long history acting as managers on behalf of governments for disbursement of government grants and carrying out procurement, managing logistics, and in later years carrying out development. Its current services include supply chain delivery, government system strengthening, and project and fund management. It works globally for multiple governments, aid donors, and international development finance institutions.

There are many other organizations that act as managing agents in similar roles, including many that include specialization in the support of aviation/aerospace sector.

3.6 A Major Aviation Industry Partner

This corporate host model has been conceived primarily in relation to the desire for regional collaboration between airlines, including the prospect of a regional airline alliance (being examined in depth in the companion study). It is envisaged that one of the alliance partners (the lead partner) might be a major airline, with the resources to be a key supplier of the type of services sought to be provided under a hub, particularly if the partner airlines have a common fleet type. The lead partner could be relied upon for in-depth technical support, all levels of training, assistance with aircraft financing, pooled fleet resources, and shared sales and distribution channels.

The scope and arrangements for such an alliance are the subject of the separate study, but it is expected that the arrangements would initially be a business-to-business commercial agreement, extending to joint ventures and investment opportunities. Potential host airline candidates would most likely be one of the larger airlines within the region such as Fiji Airways, or Air Niugini, or one of the airlines servicing the region (or potentially servicing the region) from Australia or New Zealand.

A similar concept is potentially transferrable to an airport's technical/commercial alliance, whereby a major airport engaged in the region might establish a commercial alliance with other PIC airports on its network. This would allow the partner to offer the envisaged support hub-type services, including commercially based support on procurement, maintenance and asset management, technical and management training, etc., and would be able to obtain economies of scale by servicing several regional airports in such an alliance. To a certain extent, this is already happening in the ATC/air navigation area where the New Zealand government-owned Airways Corporation of New Zealand provides technical support on a commercial basis to various PIC airports and offers tailored flight calibration services.

Beyond these scenarios there is also the possibility of airline/airport alliances. This applies particularly to hub-and-spoke networks where airlines and airports work together to optimize infrastructure and services for the most efficient interconnectivity. While noting the value of such alliances, this study concentrates the discussion more on the airline alliance model.

3.7 A Donor-Established Project Management Unit

Any sustainable regional hub institution needs to be structured to ultimately be independent of funding by donors and IFIs. However, as found with the PASO model, it is difficult to fashion a solution that is fully independent, and, in any event, the early stages of formation are likely to be heavily donor-dependent.

This leads to consideration of regional hub institutional options that capture the greatest efficiencies for delivery of donor programs on a regional basis, and which provide a framework for participation by multiple donors. The following are two examples of this type of arrangement, whereby a donor or group of donors appoint an overall program manager, often establishing a program management unit in one PIC as host country, and which delivers common-framework technical assistance or infrastructure development projects in multiple PICs through separate in-country project management teams.

3.7.1 Case Studies

3.7.1.1 Pacific Aviation Investment Project

Between 2012 and 2022, PAIP delivered more than \$300 million in improvements to airport and air navigation infrastructure at 12 airports in six countries across the region, including supplying significant technical assistance. It was funded by the World Bank, supported by other donor partners operating through the PRIF multi-donor trust fund. The project was planned and implemented on a regional basis through the following:

- A country-by-country finance agreement between the World Bank and each recipient PIC executing agency.
- A project agreement between the World Bank and Tonga Airports Limited (TAL) supplementing the Tonga Finance Agreement supporting Tonga's component. This supplemental agreement required TAL to establish a project implementation entity (Technical and Fiduciary Support Unit [TFSU]) to lead all aspects of procurement and implementation of PAIP across all program PICs.
- The establishment of separate service agreements between TAL and each of the participating PICs to specifically enable the TFSU to deliver services in PICs outside Tonga, and to enable TAL to recover costs in accordance with the financing agreement.
- The establishment of a cooperation agreement with PASO to provide aviation audit, safety and security oversight, and other technical assistance.

The TFSU function was time-limited; upon completion of the PAIP, the functions of the TFSU were returned to individual PICs.

3.7.1.2 Australia Pacific Training Coalition

APTC is a long-term, predominantly Australian, aid-funded development assistance initiative that provides Australian accredited training qualifications across the Pacific and Timor-Leste. It operates through partnerships and coalitions with vocational education stakeholders directed at achieving training outcomes and reforms of the Pacific vocational education system.

APTC is an aid program, not a legal entity. The program is delivered through a contract between the Australian government and a single managing agent, TAFE Queensland (an Australian registered training organization). On behalf of APTC, TAFE Queensland operates from country offices established in each of Fiji, Vanuatu, PNG, Samoa, and the Solomon Islands, together with a regional head office in Fiji. The legal personality in each country is that of managing contractor under the Australian aid program. APTC's strategic reviews have highlighted the desire in the long term for the program to be funded by Pacific governments, donor aid, industry/enterprises, and individual students (offered loans in lieu of scholarships).

Coincidentally, TAFE Queensland is a partner with the Queensland government-owned Aviation Australia that jointly provide a very extensive range of vocational training across the whole aviation sector and would be the type of organization that might be considered for involvement in any hub-driven training procurement.

3.8 Multiple Hub Arrangements

A variant on the above arrangements is a multiple hub concept raised by some stakeholders, whereby the functions of a regional hub are spread between more than one agency. Examples may include the following:

- An airline alliance to service airline-specific hub needs only;
- A hub arrangement with particular donors as a center of support in certain areas of specialty, e.g., MFAT as a hub for aviation security;
- A regional aviation training institution to be engaged on a multi-donor program to act as managing agent in the procurement and delivery of training.

4 Structuring a Hub

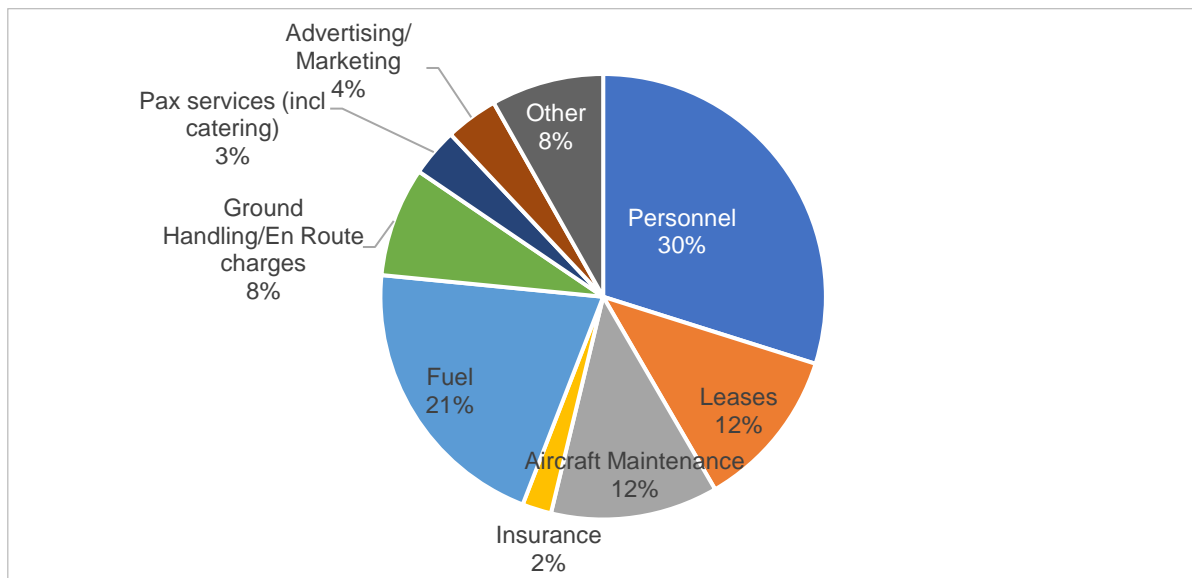
4.1 Size of the Hub Business Activity

To calibrate the scale of business activity a hub body might take on, some analysis has been undertaken of historical airline and airport expenditure on the services described in the previous sections.

4.1.1 Airlines

For airlines, publicly available financial reports have been used to estimate historical operating costs and their apportionment against some of the major expenditure categories. Figure 6 shows this apportionment, presented as the distribution of estimated aggregate operating expenditure across eight PIC-based airlines.¹⁴ Table 7 gives the numerical value in US dollars. The data are based on actual or estimated 2019 data to reflect a possible “back to normal” post-COVID-19 recovery situation. Averaged aggregated data are presented to preserve airline confidentiality.

Figure 6. Estimated Distribution of Aggregated Operating Expenditure Across Eight PIC-Based Airlines



PIC = Pacific Island country.

Source: Published and non-published financial reports and consultant's interpolation.

The analysis indicates that the annual aggregated operational expenditure across eight PIC-based airlines is in the vicinity of \$1.3 billion. Of this, there is potentially \$110 million in expenditure identified in areas where a regional hub may provide benefits (cost categories marked by an asterisk in the table). If Air Niugini and Fiji Airways are not included (given their large self-reliance), and if, for instance, 25% of the remaining items were procured through a hub, then it is estimated the potential airline business activity that could be targeted by a hub would be around \$22 million. It is emphasized that these figures are indicative only, based on interpretation of financial data from multiple sources. The figures also only represent the value of business that might be transacted by a hub, and not hub revenue. Moreover, there is no certainty that airlines would transact this level of business. Offsetting this, there is scope for the amount to be increased when items buried within the “other” category are considered, such as technical assistance, training, and disbursement of aid flows. The amount also does not include capital expenditure.

¹⁴Limited to PRIF member countries. Includes Fiji Airways, Air Vanuatu, Solomon Airlines, Air Niugini, PNG Air, Samoa Airlines, Air Kiribati, and Air Marshall Islands. Excludes Air Nauru, Air Rarotonga, and Lulutai Airlines due to insufficient data.

Overall, this analysis indicates that fuel, aircraft maintenance, and aircraft leasing costs are the most significant influences on airline operational expenditure budgets and have the potential to generate the most savings if a hub body can improve procurement outcomes in these areas. Notwithstanding this, all expenditure categories warrant examination as it may be possible to achieve efficiency gains on many smaller items like ground handling, in a way that might not be achievable for inelastically priced larger items like fuel.

Table 7. Estimate of Hub Airline Business by Major Expenditure Category

Cost Category	Indicative aggregated spend on key items across eight PICs	Indicative volume of business of technical hub at 25% of aggregate spend (Excl. Air Niugini, Fiji Airways)
Personnel	\$371.4m	Not Applicable
Aircraft Leases*	\$146.2m	\$4.1m
Aircraft Maintenance*	\$151.1m	\$4.2m
Insurance*	\$6.6m	\$0.7m
Fuel*	\$257.1m	\$7.2m
Ground Handling*	\$98.8m	\$2.8m
Catering/Pax Services*	\$43.5m	\$1.2m
Advertising/Marketing*	\$47.5m	\$1.3m
Other non-specified	\$101.7m	Not Applicable
Total Estimated Aggregated Operating Cost	\$1,243.1m	\$21.7m

PIC = Pacific Island country.

* Items included in assessment of hub business volume.

Source: Published and non-published financial reports and consultant's interpolation.

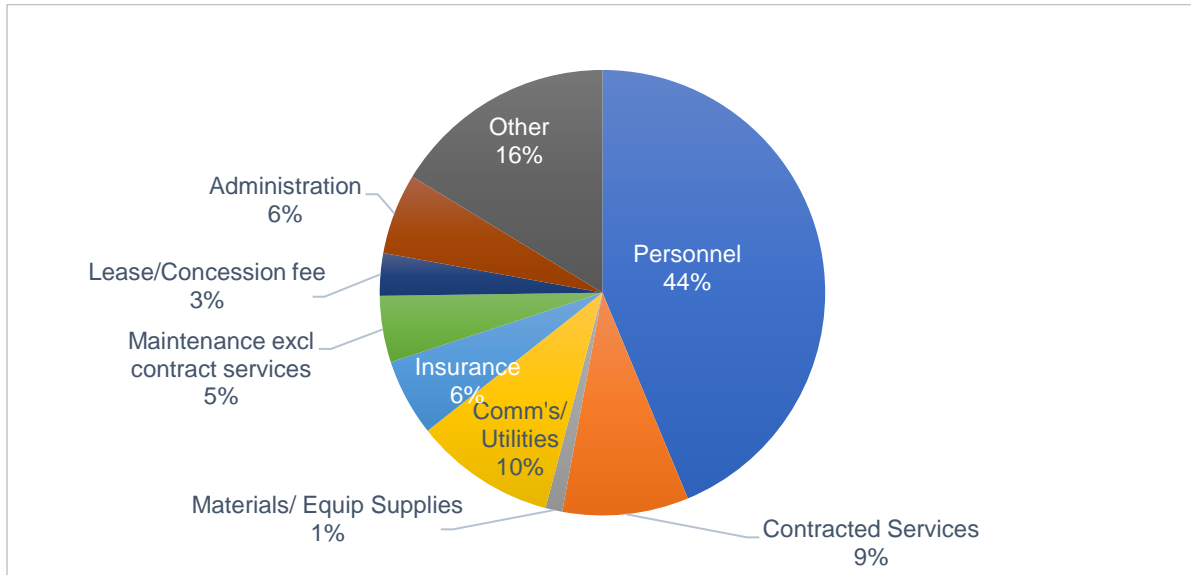
4.1.2 Airports

A similar approach has been adopted for airports. A first approximation of the 2019 aggregated annual operating expenditure and its apportionment by expenditure category has been determined for 14 PIC airport operators, as shown in Figure 7 and Table 8. The table also includes an indicative aggregated annual capital cost, an area where airport operators have indicated they are most likely to seek assistance. All this data has been developed using Airports Council International (ACI) benchmarks linked to traffic volume and validated against historical financial data to hand for some PIC airports, with some interpolation applied by the consultant.

The calculations show an indicative aggregate (pre-COVID-19) annual operating cost across all PIC airport operators of around \$85 million and an annual aggregated capital cost of around \$46 million. These figures include PNG and Fiji airports, this time following interest expressed from at least one of those PICs to explore the hub arrangement further. If again we only consider those expenditure categories that are most likely to be assisted by a regional hub, and only take 25% of the aggregate

expenditure, the size of the hub business transactions would be about \$7.9 million for operations-related services and \$11.4 million for capex-related services.

Figure 7. Indicative Aggregate Operating Cost Structure of PIC Airports as a Group, 2019 (pre-COVID-19)



PIC = Pacific Island country.

Source: Landrum & Brown estimates based on ACI benchmark low-income countries and PIC airport traffic with calibration against a sample of actual financial reports.

Given that the figures are dominated by the large airport businesses in Fiji and PNG, the operations figures may be on the low side, on the assessment that the smaller airport operators may in many cases be underspending on maintenance, training, and technical assistance. With improved access to such resources, airport operators may in fact end up spending more on an annual basis, in order to obtain long-term benefits in the management of asset life. Conversely, the capital expenditure-related hub business estimate is probably on the high side, noting that a large proportion of the capital costs are attached to civil works where the ratio of hub services business to total expenditure would be much smaller than 25%. The feedback from operators is that the greatest area of gains in pooling resources may be in collaborating on the procurement of equipment. It is interesting to note also that the ACI benchmarks are representative of a wide range of airports, with actual costs of any individual airport not necessarily following the benchmarks used here.

Table 8. Estimate of Hub Airport Business by Major Expenditure Category

Cost Category	Indicative aggregate spend on key items across 14 PICs	Indicative volume of business of technical hub at 25% of aggregate spend
Personnel	\$37.3m	Not Applicable
Contracted services (including maintenance, training, technical assistance etc.) *	\$7.8m	\$2.0m
Materials and equipment supply*	\$1.0m	\$0.3m
Communications, Utilities, energy, and waste	\$8.7m	Not Applicable
Insurance	\$4.8m	\$1.2m
Maintenance (excluding contracted services) *	\$4.1m	\$1.0m
Lease/Concession Fees	\$2.6m	Not Applicable
General and Administration	\$5.0m	Not Applicable
Other	\$13.9m	Not Applicable
Total Operational Costs	\$85.3m	\$7.9m
Capital Expenditure	\$45.7m	\$11.4m
Grand Total	\$131.0m	\$19.3m

PIC = Pacific Island country.

Source: Consultant's estimates based on ACI benchmark low-income countries and PIC airport traffic with calibration against a sample of actual financial reports.

4.1.3 Indicative Hub Size

This very simple analysis highlights that there is a sizeable level of spending among airports and airlines, in the region of \$40 million in total, where hub services may be able to add value. A hub turnover of around 5%–10% of this would calibrate the target size for a hub business in the range \$2 million to \$4 million per annum. This has been used to calibrate the hub size in the financial model presented later in Section 4.5.

4.2 Objectives for a Hub

In order to evaluate the preferred institutional arrangements and optimum structure of a hub organization, it is necessary to first clarify the objectives. A set of 10 objectives has been developed using a combination of the findings on user needs and opportunities outlined in previous sections, and from stakeholder expectations derived from consultations. These are outlined in the following sections.

4.2.1 Financial Sustainability

The hub solution needs to be financially self-sufficient. This may be difficult to achieve in the early stages, and there is an expectation that some start-up activities may need to be supported by donor funds. It has also been suggested that the hub support regional aid delivery tasks and be reimbursed accordingly. However, in the long term, the core hub activities need be funded from sources such as members fees (whether airlines, airports, governments, or private sector), fees, and commissions paid by users of hub services. These can be supplemented by commercial or concessional borrowings subject to debt servicing capacity.

4.2.2 Low Complexity to Implement

To minimize risk, the institutional arrangement adopted should be established initially on a small scale with limited membership, as proof of concept. Thereafter, the organization needs to be capable of being expanded on an incremental basis as confidence (and cash flows) build. This tends to favor an incorporated model or a model added on to an existing entity, as opposed to creating a new treaty-based organization.

4.2.3 Reduces the Cost of Procurement of Goods and Services

A primary objective is for the hub to secure better prices for a wide range of goods and services procured by PIC aviation enterprises, based on obtaining economies of scale through pooling demand across hub members. This could include direct procurement through a permanent establishment, indirect procurement through an agent or individual national procurement under a regional framework using standards established in the hub. A key part of this objective is that the cost of delivering the service must be significantly less than the savings to be made. This objective aligns with the Pacific Regional Aviation Strategy priority for “Sustainable Economic Development” through an “affordable, competitive and viable aviation market.”

4.2.4 Improves Access to Expert Resources

The hub is required to establish a simple and cost-effective framework for members to obtain access to expert resources through mechanisms that may include in-situ expertise (hub employees or long-term hub contractors), maintenance of a pool of individual specialists on call, and/or a panel of approved support firms. Access is required to a range of aviation-related disciplines including technical, operational, commercial, and general management aspects of airports and airlines as well as governance of the sector. This objective aligns with the “Regional Cooperation and Engagement” and “Aviation Safety and Security” priorities of the Pacific Regional Aviation Strategy.

4.2.5 More Effectively Coordinates Civil Aviation Training Programs

The hub is required to facilitate better access to a wide range of aviation-related training services. This may be achieved either through: i) direct procurement by the hub of places within existing training programs offered either within or outside of the region; or ii) through establishing partnerships with various training institutions and facilitating the development and delivery of bespoke training and capacity building programs within member PICs and online. Again, the use of pooling of demand would be sought to ensure best price and greatest match of training delivery with regional needs. There is a desire by stakeholders to maximize the potential for the delivery of training within the region, and an expressed preference to focus upon technical and vocational training ahead of management training. This objective aligns with the “Aviation Capability Development” priority of the Pacific Regional Aviation Strategy.

4.2.6 More Effectively Coordinates Other Regional Programs in the Aviation Sector

The hub is expected to have the capacity to effectively assist PICs to identify needs, then to develop, secure financing for, and manage the delivery of regionally based investment projects. This would be directed at programs for the enhancement of civil aviation services and infrastructure, and achievement of policy objectives such as institutional reform and capacity building. For financing of programs, the hub is expected to have the capability to act (with member agreement) as counterpart to development finance organizations, or as an agent to PIC members for the sourcing of project-specific finance.

This objective aligns with the “Sustainable Economic Development” priority of the Pacific Regional Aviation Strategy. It also links to the “Aviation Capability Development”, “Regional Cooperation and Engagement”, “Aviation Safety and Security” and “Environmental Protection” priorities.

4.2.7 A Mechanism for Exchange of Knowledge and Resource Sharing

Another objective is for the hub to be an effective think tank, analyzing aviation strategies according to regional priorities, including keeping and disseminating statistics, conducting targeted research, delivering seminars and workshops, establishing common-interest user groups and general facilitation of sharing of knowledge and resources. This supports the Pacific Regional Aviation Strategy priorities of “Regional Cooperation and Engagement” and “Aviation Capability Development”.

4.2.8 Applicable to All Sector Participants

The hub institution is expected to service all aspects of the aviation sector, including airports, airlines and aviation policy and economic regulatory agencies (allowing that aviation safety and security remains an ongoing PASO function regardless of where the hub is placed). This would tend to favor a single institution model compared to the multi-institution scenarios discussed.

4.2.9 Respect for National Sovereignty

The hub structure is required to support the national sovereignty of member states, particularly regarding economic regulatory and policy settings for the sector, and financing of state-owned enterprises. The objective includes ensuring the right to opt in or out of the hub function, and the equitable apportionment of hub benefits and costs to hub members.

4.2.10 No Conflict with Existing Institutions

This objective is included to take account of any conflicts that might arise from attaching an operationally focused, commercially oriented hub into an existing organization such as PASO (conflict between regulatory oversight function and operational function) or other CROP agency such as PIFS (conflict between policy function and operational function). New institutions would meet this objective as a matter of course.

4.3 Comparison of Institutional Options

These objectives provide a framework for a comparison of how well each of the institutional options might perform. This is achieved using a rudimentary multi-criteria analysis tool as presented in Table 9. This compares each of the objectives postulated in Section 4.2 with each of the institutional options put forward in Section 3. The table gives a score from 1 to 3, indicating how well each of the service delivery frameworks is perceived to contribute to each of the objectives, with the highest number supporting the closest match. The table applies equal weighting to each of the objectives.

The allocation of scores is based on feedback from consultations combined with the author’s judgment and should be considered subjective. Table 9 nonetheless provides a methodology for stakeholders to further evaluate the options, and to produce a possible a hierarchy of outcomes.

4.3.1 Ranking of Outcomes

This analysis comes up with five equal highest-ranked options, and with little difference in score from the remaining three options. The conclusion from this is that each option has different strengths and weaknesses against each objective, with scores that tend to cancel out when aggregated against all objectives. The selection of a preferred model may therefore need to involve some trade-offs by weighting the importance of different objectives.

Looking in more detail at the first ranked options, the strength of the “PASO-expanded mandate” option primarily relates to PASO’s established capacity as a regional aviation organization, the similarity of its current and planned technical expertise to that required of the hub, and the relatively similar service delivery model to that expected to be used for the hub. However, this option is significantly offset by perceived conflict of interest and risk of diversion of PASO’s focus, when compared to the other models. While the Terms of Reference for this study have envisaged that an expanded PASO could be a central platform for a hub, this analysis indicates that the other models warrant similar consideration.

The “Added onto Another CROP Agency” option differs from the expanded PASO mandate method primarily in the lesser pre-existing technical/operational/management knowledge of the aviation sector in the other agency compared to PASO, and which would need to be built up from scratch in the added-on model.

The “Incorporated Service Provider” is in the high-score category mainly because of its low complexity to implement and otherwise general matching of the other models against other objectives. As a new organization, it has less corporate knowledge and experience when compared to the PASO-embedded hub model, but it is free of the conflict of interest highlighted with PASO.

Table 9. Multi-Criteria Analysis of Alternative Institutional Models

Objectives	Collaboration Agreement	PASO (Expanded Mandate)	Added on to another CROP Agency	New Regional Body	Incorporated Service Provider	Major Aviation Partner	Donor PMU	Multiple Hub
Financial sustainability	3	2	2	1	2	3	1	2
Low complexity to implement	3	2	2	1	3	2	3	1
Reducing the cost of procurement	2	3	3	1	2	3	2	2
Improving access to expert resources	2	3	2	2	2	3	2	3
More effective coordination of civil aviation training programs	1	2	2	2	2	3	1	3
Effective coordination of other regional programs in the aviation sector	1	2	2	1	2	3	3	2
A mechanism for the exchange of knowledge and resource sharing	3	3	3	2	2	1	1	2
Applicable to all sector participants	2	3	3	3	3	1	3	3
Respect for national sovereignty	3	3	3	3	3	2	3	3
No conflict with existing institutions	3	1	2	3	3	3	3	3
Totals:	23	24	24	19	24	24	22	24
Rank:	2nd	1st	1st	4th	1st	1st	3rd	1st

PASO = Pacific Aviation Safety Office, CROP = Council of Regional Organizations of the Pacific, PMU = project management unit.

Source: Consultant.

The “Incorporated Service Provider” model gets its high score from the ease of implementation and lack of conflict compared to the PASO-embedded model, but scores lower in cost of implementation due to the need to build up the entity from scratch. The “Major Aviation Partner” model features strongly on

financial sustainability and in achieving the main technical objectives for a hub. It scored lower on the ability to service the whole sector needs as it is most applicable to either an airline alliance, or an airport alliance, but not necessarily both. The “Multiple Hub” model obtains its high-score category from the ability to flexibly provide a reasonable degree of satisfaction from almost all the listed objectives, albeit experiencing lesser-scale economies than a single hub model.

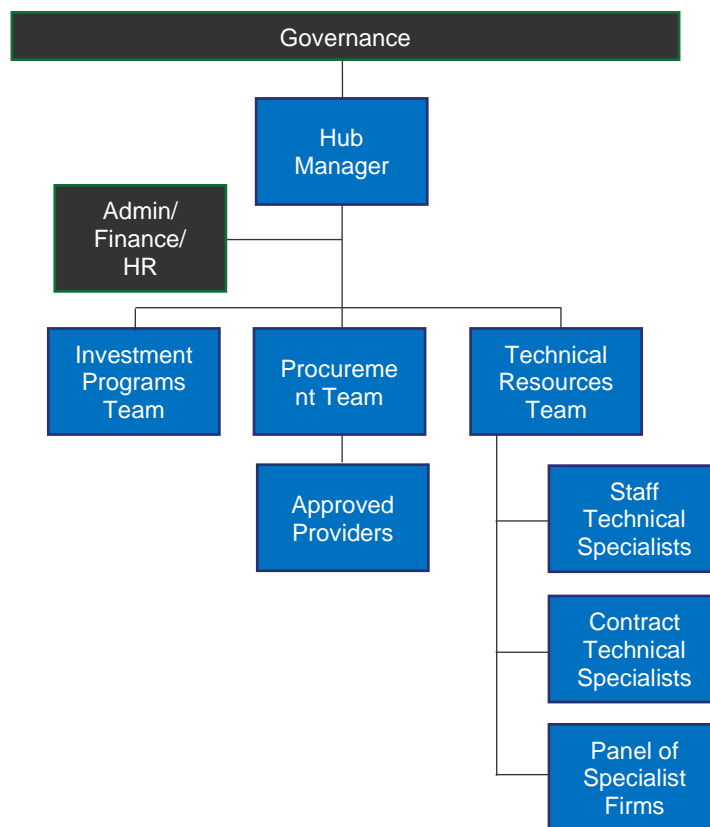
The “Collaboration Agreement” model is simple to implement but received second rank because of its limited ability to deliver on the key technical objectives, although this model has some distinct advantages in the transition strategy discussed below. The “Donor PMU” model scored as third ranked because of its limited financial sustainability and potentially limited coverage of all the key technical objectives. The “New Regional Body” scored fourth rank primarily due to its complexity to implement, combined with the need to build up the institution from scratch.

All the above centers on the concept of a single hub serving airlines, airports, and sector-wide needs. However, some of these needs may be better serviced individually, e.g., an airline alliance may address airline needs more than an all-encompassing hub structure, whereas a hub focused strongly on procurement may more readily service the remaining needs. If this unbundled approach were to be adopted, the “Major Aviation Partner” and “Incorporated Service Company” models would rise considerably in the ranking. This suggests that one of the earlier decisions in respect of the hub role and structure will be whether an airline alliance is adopted as a core part of the strategy.

4.4 Organizational Structure

There are many ways in which a hub could be established. To develop an understanding of what might be involved, an organizational concept for a hub is presented in Figure 8, based largely on stakeholder feedback and a review of relevant comparison case studies. This diagram represents a hypothetical mature hub, carrying out five major functions, namely procurement, technical services, investment project delivery, administration, and governance. These are discussed below.

Figure 8. Hypothetical Hub Structure



HR = human resources.

Source: Consultant.

4.4.1 A Procurement Services Function

The procurement function would entail the hub body working with airlines, airports, and PIC governments to standardize frameworks and specifications, develop work programs, and manage processes. This would include the establishment of a pool of preferred providers where appropriate. The procurement team would draw on the technical resources team for expertise to support the procurement process. The function would apply to goods such as technical equipment, spare parts, consumables, catering, as well as services such as maintenance, training, and technical assistance.

4.4.2 A Technical Services Function

This would entail the establishment of a capability to provide PICs with individual technical specialists or specialist firms provided by the hub on an on-demand fee-for-service basis. This capability would be developed by the hub recruiting a limited number of appropriately qualified employees, to which would be added specialists from a pool of pre-vetted individual contractors or engaged through a pre-vetted panel of approved specialist firms or strategic partners. The skills set established would be based on demand and could be expected to be quite wide, including all relevant airline and airport operations, engineering, and management and sector oversight disciplines.

4.4.3 An Investment Project Delivery Function

This function anticipates the planning, preparation, financing, and delivery of regionally based development projects in the aviation sector. These might include airport infrastructure development, airline fleet development, capacity building and structural reform, and may be funded by donors or by the private sector through commercial financing means or other means such as public-private partnerships. The hub function would be expected to include project needs identification, sourcing of finance, leading or assisting project preparation to the standards of the financing parties, and leading or assisting project execution.

4.4.4 Administration, Financial Management, and Human Resources Management Functions

These administration functions would come with any hub entity. If the hub is integrated within another entity, then these functions would already exist, and the hub function would add only incremental workload to this activity. If the hub were to be established as a new entity, then these functions would need to be added as overhead to the hub operation. In a peer-to-peer collaboration agreement, these functions would be distributed across the members of the hub agreement.

4.4.5 Governance Options

The governance structure used would be dependent on the institutional option adopted.

An entity operating under a collaboration agreement could be effectively governed by a management committee of participants. A hub function added to an existing entity such as PASO would fall under the existing governance arrangements of that body. In the PASO case, this would be the Board structured in accordance with a modified PICASST treaty, with day-to-day management oversight undertaken by the general manager.

For a new entity (incorporated or treaty-based), the governance would be based on the legal instrument establishing the body. A company constitution for an incorporated body would be expected to spell out rules for the number and composition of directors and shareholder rights. These rules would need to accommodate the following considerations:

- Level of equity funding/member dues (there may be different grades of membership);
- Number of investors per PIC (e.g., airline, airport, government, or other party, e.g., ground handling, freight terminal operator);
- Number of PICs participating at any one time;
- Entry and exit criteria.

Alternatively, a new treaty organization would appropriately follow other such organizations in the form of having the individual PICs as members, represented by the relevant aviation minister, and with the appointment of government aviation officials to a board of governance, on a rotating basis to ensure appropriate representation of members.

4.5 Financial Model

A financial model of a hypothetical hub business entity has been prepared and presented in Table 10. This is an indicative 10-year income and expenditure statement based first on a hypothetical stand-alone hub business structured as shown in Figure 8, then separately as hub business unit added-on to an existing organization such as PASO. The model calculates annual earnings before interest and taxation for the hub entity over the 10-year period from 2024.

This model comes with a disclaimer that it is intended only for scoping a possible scale of operation and indicative financing needs for a hub. As outlined below, it is heavily based on many assumptions, and there is no assurance that either the assumptions or the predicted overall financial performance will be achieved in a real-life situation.

4.5.1 Detailed Description of the Financial Model

There are five sources of revenue modelled, namely commissions on procurement, member subscriptions, fees based on time charge for technical services, project management fees for major programs contracted through the hub, and grant funding.

Commissions are derived from an assumption of the commissionable business volume of initially \$2 million, growing to \$8 million over 10 years, calibrated using the data provided in Section 4.1. A commission rate of 5% has been adopted. For member subscriptions, the PASO 2021 average was used as a guide and set at \$50,000 per member. Time charge income is based initially on an average of 3 person-months' full-time equivalent sold to each member annually at an average consulting rate of \$1,600/day. The level of person month input is increased by 10% per annum.

The cost structure has been modelled to reflect the level of resources likely to be required to earn the estimated revenue and reflects the not-for-profit nature of the business activity. Expenditure is grouped into salary and related costs, contractors' fees, consulting firm fees, travel costs, rent, and other overheads. Salary costs have been derived from a hypothetical staffing model with salaries based on an assumed mixture of international and locally recruited staff, individual contractors, and external consulting firm personnel.

The business is assumed to commence with four salaried staff, growing in 10 years to 19 staff, all the while making use of contractors and consultants to cover the workload beyond that which can be handled by salaried staff alone. Contracting and consulting staff costs have been derived assuming they comprise 30% and 60%, respectively, of the person days billed on the fee-for-service revenues. Travel, rent, and overhead costs have been scaled using PASO financial reports as a guide.

The added-on case study is derived by halving the overhead cost of the standalone model at the same time as allowing for a 5% decrease in hub revenue, associated with a lesser focus of management on hub activities in the added-on model.

Table 10. Indicative Hub Financial Model (all amounts x \$1,000 in constant 2022 prices)

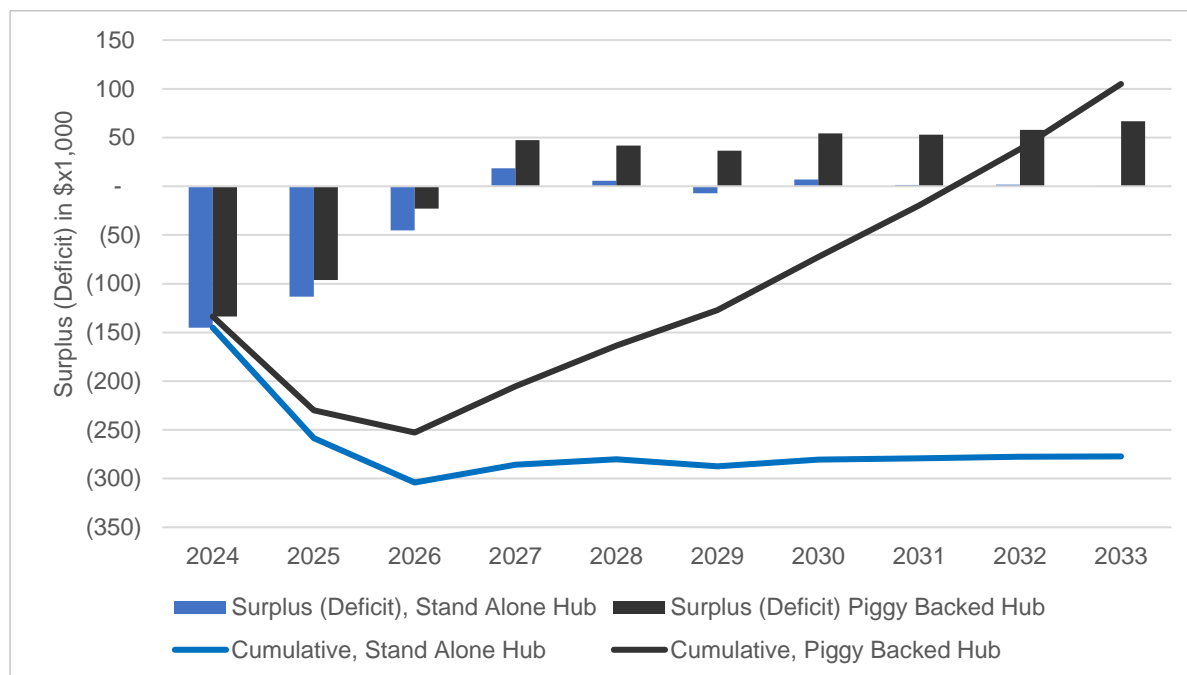
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Revenues										
Commissions on Procurement	100	125	156	195	244	269	297	331	372	420
Member Subscriptions	150	200	250	300	350	400	400	400	400	450
Fees for Services	336	493	678	894	1,148	1,443	1,587	1,746	1,921	2,377
Investment Project Management	0	75	75	113	113	150	150	188	188	188
Grants										
Total	586	893	1,159	1,502	1,854	2,262	2,435	2,665	2,880	3,434
Expenditures										
Salary and Salary-Related Costs – Admin	380	380	420	380	380	380	420	420	440	470
Salary and Salary-Related Costs – Options	0	130	130	260	410	560	560	660	710	860
Contractors' Fees	60	89	122	161	207	260	286	314	346	428
Consultancy Fees	161	237	325	429	551	693	762	838	922	1,141
Travel and Related Costs	9	14	19	24	30	36	39	43	46	55
Rent and Rent-Related Costs	50	50	50	50	50	70	70	70	70	70
Other Overhead Costs	70	107	138	179	221	270	291	318	344	410
Total before Interest	731	1,006	1,204	1,484	1,849	2,269	2,428	2,664	2,878	3,434
Surplus (Deficit) – Stand-alone Hub	(145)	(113)	(45)	18	6	(7)	7	1	2	0
Surplus (Deficit) – Added-on Hub	(134)	(96)	(23)	48	42	37	54	53	58	67

Source: Consultant's analysis.

4.5.2 What the Model Tells Us

The outcomes of the model are presented graphically in Figure 9. The bar chart shows annual earnings before interest and tax, for both the standalone hub model (blue column) and added-on model (black column). Also shown are the cumulative total earnings (or deficit as the case may be) for each of the two hub scenarios (blue curve for stand-alone model and black curve for added-on model).

Figure 9. Hub Financial Model, Annual and Cumulative Surplus (Deficit) for Both Stand-Alone and Added-On Hub



Source: Consultant's analysis.

The results show that the stand-alone business model would initially operate at an annual deficit, but based on the assumptions used, could be expected to be financially self-sustaining on an annual basis after 3–4 years against a growing level of service to the region's aviation sector. The cumulative deficit in this model is around \$300,000 which would effectively be a sunk cost. In other words, an initial donor grant or member investment (or combination thereof) for that amount would be needed to establish the hub over the first 3–4 years, after which the hub should largely operate within its own means. If the initial investment were to be a loan, then potentially fees to users, or membership subscriptions would need to be increased, or costs decreased, to service that debt.

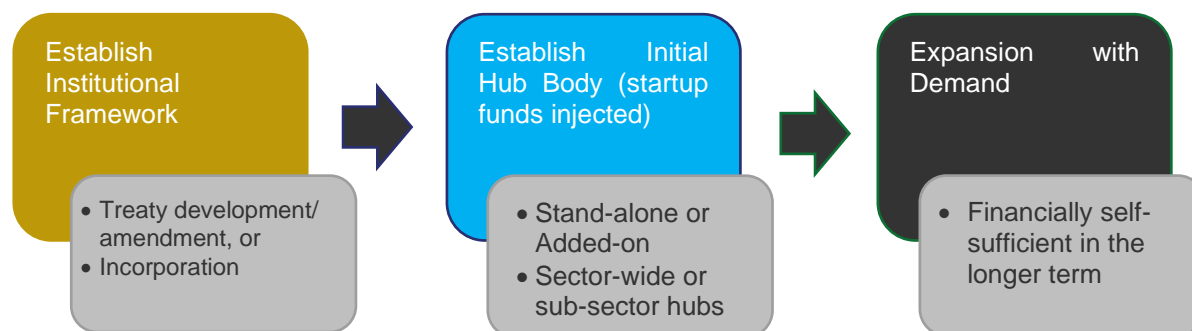
The impact of a cost reduction can be demonstrated by examining the plots for the added-on hub, which has reduced overheads (albeit with slightly reduced revenue in the model). This still shows a start-up annual deficit for the first 3 years, although a lower amount of around \$250,000 accumulating in that period. However, in the longer term, this variant of the model generates a small surplus annually, which would support repayment of the original investment over time and generate surpluses for reinvestment in services to the region. In practice, it is likely that a hub manager would adjust service charges and or membership subscriptions to keep the services affordable and maintain the status of a not-for-profit organization.

These results illustrate the concept that, with the assumptions used, a technical support hub could be established at a scale able to effectively provide needed services to the region and would have the potential to be ultimately financially self-sufficient, albeit needing support during start up. The analysis suggests that such a hub could be established at a lower cost by being added-on to an existing regional organization. However, it is emphasized that viability is strongly conditional upon participants paying both membership subscriptions and for substantive work programs, something that has been difficult to achieve for PASO.

4.6 Implementation Issues and Options

While the ultimate goal is to develop a fully staffed, highly focused aviation technical support hub as a single permanent establishment, there are several alternative paths to get there. Figure 10 identifies the core process for establishing the hub, while Figure 11 illustrates some of the possible alternative pathways.

Figure 10. Indicative Core Process for Establishing a New Aviation Technical Support Hub



Source: Consultant.

4.6.1 Core Process of Hub Implementation

The core process of setting up the hub is seen to comprise three phases. The first is the preparatory work required to establish the institutional framework. The second involves the establishment of a basic hub function with a small workload and with minimal staffing initially. The third involves expanding the hub as opportunities are identified and as service delivery workload increases.

The “institutional framework” phase would, for a treaty-based organization, involve work to either vary an existing treaty (e.g., PICASST) to accommodate the new hub functions, or establish a new treaty if required. For an incorporated organization, the work would instead involve establishing the legal entity, including establishing a constitution and ownership structure and place of business. In all cases, this preparatory activity would include securing membership, securing funding commitments, establishing governance arrangements, and developing initial business plans including operating budgets and work plans.

This phase has not been costed in the financial model or Section 4.5, but the consultant’s estimate is that this would potentially involve up to an additional \$300,000 in consulting fees and costs, to be incurred by whatever executing agency drives the initiative. Based on experience with the establishment of PASO,¹⁵ a period of 12 months is expected for this phase.

The “basic hub function” phase would entail identification of and recruitment of a hub manager, and a limited number of professional and support staff to address key projects identified in the foundation business plan. Without pre-empting that plan, it is anticipated that the initial entity would “cherry pick” a small number of projects that could provide “proof of concept” of the Hub, with a focus on regionally based procurement. It is expected that this would pick up projects under development such as the World Bank-supported RAAMP and ongoing activities such as the ASPA-supported airline insurance pooling. The basic hub service would also involve the facilitation of and coordination with the alternative pathways described in Section 4.6.2. It is anticipated that this small-scale hub operation would exist for around 12 months, with a key task being to build confidence in the hub function and position for growth.

¹⁵ ADB, *Completion Report: Establishment of the Pacific Aviation Safety Office Project*.

The “expanding hub opportunities” phase assumes the successful proof of concept, and success in attracting additional PIC participants to become members and regular users of hub services. It also assumes that per-member activity operating through the hub increases over time, and that the services offered will vary according to need.

4.6.2 Alternative Pathways to Hub Implementation

As advised in earlier sections, during the consultation process, PIC airlines and airport enterprises expressed interest in the hub possibilities but identified sensitivity to the prospect of large-scale change to business processes in the short term. The industry requested incremental processes to build trust and confidence in the new way of doing things before having to sell a new institutional arrangement to mostly government shareholders. To address this need, several alternative pathways to the establishment of the hub function have been identified, as shown in Figure 11, and discussed below.

4.6.2.1 Direct Pathway to a Hub Body

Referring to Path 1 in Figure 11, the simplest pathway is of course having all industry players across several PICs committing to establish and support an integrated, common-user, independent hub body. Thereafter, procurement, technical assistance, training, project management and other support would be provided from this single hub.

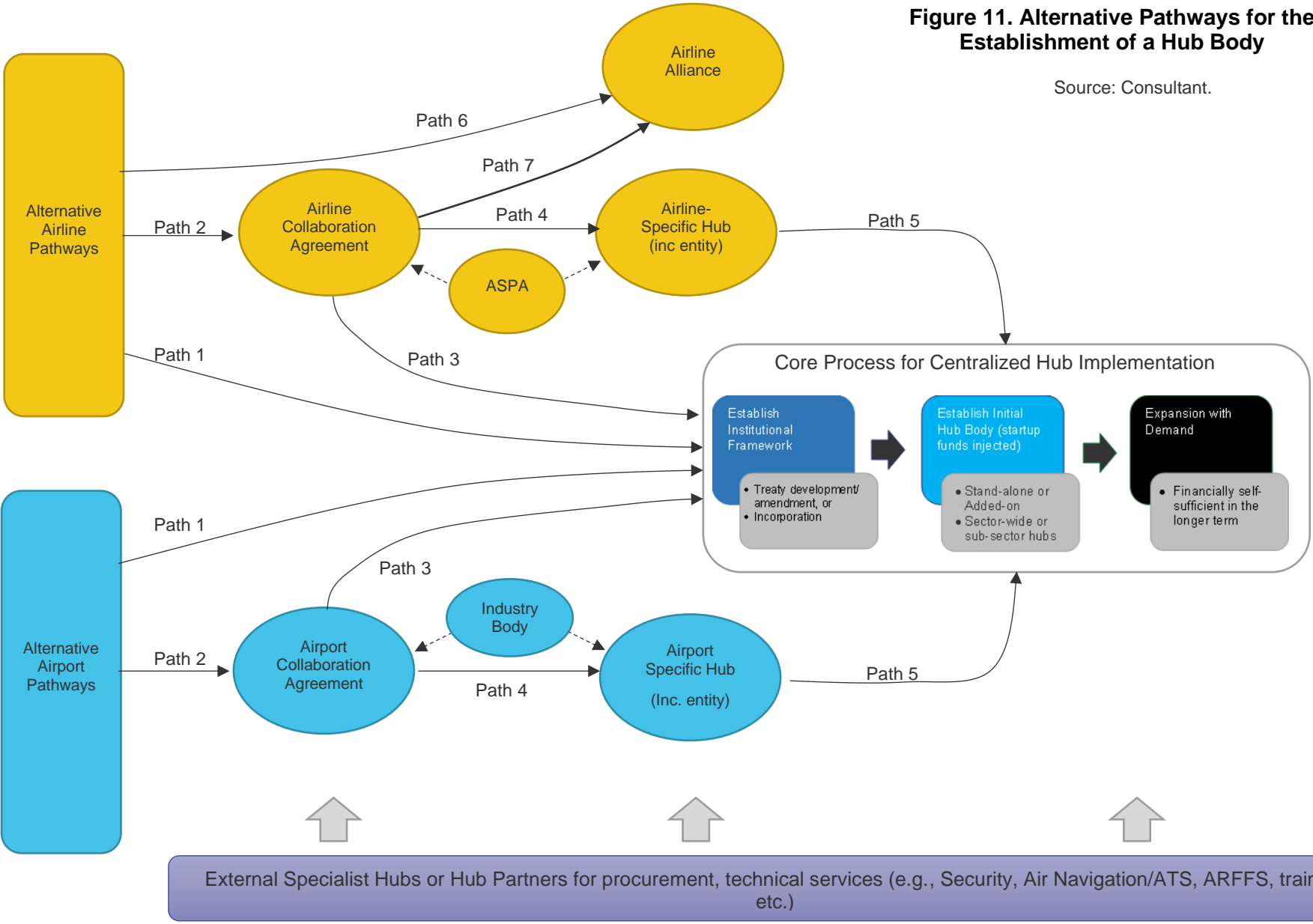
4.6.2.2 Incremental Approach to Implementing a Hub Body

At the other end of the spectrum, the least-intrusive method of adding hub functionality to the sector would be through the collaborative agreement path (Path 2). Recognizing the inherently different nature of an airport business and an airline business, Figure 11 shows the prospect of a separate such agreement for airports and airlines, although they could equally be considered under a single agreement. In recognition of the historically strong role of ASPA in building up such a collaborative framework, this pathway considers a role for that industry association in facilitating and governing the airline agreement. No equivalent organization exists for airports in the Pacific. However, some PICs highlighted that the Airport Association of Australia has expressed an interest in extending its support to include Pacific airports and would welcome them playing a similar role to ASPA. The New Zealand Airports Association could play a similar role. The hub project would therefore present an opportunity to develop a Pacific airports association.

The collaborative agreement path may be an end point in itself, or may articulate over time into the fully integrated hub, either directly (Path 3), or indirectly through first establishing a sector-specific hub (Path 4 and Path 5). In this latter option, separate sector-specific hubs are illustrated, potentially each established as an incorporated entity, reflecting the smaller-scale, commercially focused nature of the separate hub. While these subsector-specific hubs are shown to potentially articulate to the integrated single hub model, they may also be an end in themselves.

Figure 11. Alternative Pathways for the Establishment of a Hub Body

Source: Consultant.



4.6.2.3 Airline Alliance as Alternative to a Hub

A separate pathway considered for airlines alone is the concept of an airline alliance. A PIC airline may elect to enter directly into an alliance (Path 5), or again utilize the collaboration agreement path to move slowly towards such an alliance (Path 2 and Path 7). The alliance is considered an end in itself, with no articulation towards an integrated hub due to the highly commercially driven focus of airline alliances (the reader is referred to the business case for an airline alliance being prepared under a separate study).

The concept of an airport alliance or a multiple airline/single airport alliance was raised in earlier sections and could be considered in addition to the above. These are considered valid possibilities although for simplicity these have not been illustrated in the transition options.

4.6.2.4 Multiple Hub Pathways

Also considered in Figure 11 is the concept of multiple hubs or centers of excellence (referring to the purple box at the bottom of the diagram). As discussed earlier in this document, it is feasible that in the overall hub scheme, some agencies (donors, PICs, or even industry specialists) may take on the lead hub role in a particular aspect of aviation. A relevant example might be MFAT electing to continue its role as an aviation security technical support hub, or a logistics firm may be facilitated to provide long term asset management services for multiple countries. This is seen to be compatible with all the above-described pathways, in that no one institutional framework is likely to have the capacity to deliver all the services required in its own right. A hub manager would likely reach out to these complementary hubs and develop some form of strategic partnership to ensure coordinated and streamlined access to such complementary services.

4.6.2.5 Sequencing of Implementation

While Figure 11 is a sequential process diagram, some elements of the hub functionality may benefit from being implemented in parallel. For example, the initial establishment of a small-scale integrated hub (Phases 1 and 2 of Figure 10) might be necessary to provide a resource to help set up the desired transition processes. This might include support to the establishment and management of the collaborative agreements or facilitating the establishment of an airline alliance, while at the same time working on the establishment of an airport hub as the first element of the integrated hub model.

5 Conclusions and Recommendations

This section brings together the major findings of the study and presents a set of recommendations for further consideration by stakeholders.

5.1 Needs and Opportunities

Pacific aviation industry participants (defined loosely as air transport operators, airport operators, and aviation policy and regulatory bodies) broadly recognize the value that could be achieved through the establishment of a regional aviation technical support hub to support all parts of the Pacific aviation sector. The strongest support has come from donors and some ASPA members, both groups having long supported the concept of improving efficiency through operating collaboratively. Airport operators have some experience in executing regionally based programs but have not to date given a lot of thought to regional collaboration needs and opportunities, nor to what sort of institutional arrangements would be needed. However, they have expressed strong interest in the potential of a hub to achieve economies of scale in the procurement of equipment, technical support services and training, and would also like to explore further. This leads to the following recommendation:

Recommendation 1: Stakeholders Support the Ongoing Development of a Hub

Based on Pacific aviation stakeholder support, it is recommended that the regional aviation technical support hub concept be further developed, taking due consideration of the findings of this study.

Following on from this, Recommendation 2 below provides a list of services that stakeholders have identified may be sought through a hub. Not all these services would be needed by all stakeholders, but this list is expected to form the base menu of the services to be considered. This list would need to be firmed up in a detailed needs assessment as part of the preparation of any hub business plan and associated works program.

Recommendation 2: Needs and Opportunities for Hub Services

That the design of any aviation technical support hub contemplates inclusions of the following services to hub members, in proportion to demand:

- Procurement agent for pooled procurement of goods and services;
- Procurement agent for pooled procurement of training, or actual delivery of training;
- Technical Assistance in all relevant aviation disciplines;
- Project preparation and management of donor/IFI/other funded projects.

5.2 Institutional Options

This scoping study has identified a range of institutional options that could meet perceived stakeholder performance objectives for a hub. These options range from collaboration agreements through to an existing or new regional treaty-based body. Options in between include an incorporated not-for profit entity, or a strategic partnership with a major airline or airport, a donor PMU, or the use of multiple hubs. The multi-criteria analysis undertaken in Section 4 suggests, prima facie, that there is little difference between these options in terms of overall match to the nominated objectives, although each option has different combinations of strengths and weaknesses against each individual objective.

It is noted that many regional aviation stakeholders have had little exposure to the relatively complex concept of a support hub. In addition, there are differing stakeholder positions on the future role of PASO, the resolution of which is critical to the choice of hub arrangements. In this context, it is considered unwise to propose a recommended institutional framework on the strength of this study

alone. Instead, it is appropriate to first have deeper consultation with and debate among Pacific aviation stakeholders in order to formulate a position to take to RAMM. This leads to Recommendation 3:

Recommendation 3: Long-term Institutional Arrangement for a Hub

That the institutional options identified in this scoping study be communicated to and debated in depth with Pacific governments, development partners, PASO and aviation industry participants. The goal of the consultation will be to establish an informed consensus on the optimum institutional framework for a hub, as the basis of a presentation to aviation ministers at RAMM.

5.3 Phased Implementation Strategy

The direct establishment of a full capacity hub functionality goes against some stakeholders' desire to implement the hub in an incremental manner. To address this, reference is made to the alternative hub implementation pathways of Figure 11. It is suggested that the direct implementation method (Path 1) would not satisfy these stakeholder expectations, and that the collaboration agreement method (Path 2) would be an appropriate first step. This pathway also has the potential for articulating to the full hub functionality in due course, by whatever pathway is deemed appropriate as the hub service expands. This leads to Recommendation 4:

Recommendation 4: Phased Implementation Strategy

That a first, low-cost, low-commitment step should be to establish separate collaborative agreements between Pacific airlines and between Pacific airports, with the expectation for articulation to more substantive hub arrangements in the future.

5.4 Support During Transition

The establishment of a hub function initially under one or more collaboration agreements will not necessarily be sufficient in itself to fully achieve the desired objectives. The lessons learned from previous attempts at regional collaboration under ASPA are that the gains from collaboration require sustained and focused effort by one or more "champions" working across all participants. Consideration therefore needs to be given to some enduring support framework to the collaborating parties. This support would be to guide the development and implementation of the collaboration agreement(s), the development of hub services under such agreement(s), and to help steer the hub function through the alternative implementation pathways described in Section 4.6.

This support could be achieved by a stand-alone consultancy under the collaboration agreement(s). Alternatively, it could entail the recruitment of an interim hub support person, attached on a temporary basis to one of the existing institutions (e.g., PIFS, PASO, or PRIF), coincident with the formation of the collaboration agreement(s). This initial appointee would act as an adviser/facilitator to the collaborating parties, with the role ultimately folding into that of hub manager as the embryonic hub function is established under whatever institutional arrangement arises out of Recommendation 5.

A further part of the support framework for the embryonic hub would be the external hubs/hub partners described in Figure 11. These parties have the potential to provide hub-like services in their areas of specialty to the parties in the collaborative agreement(s), assisted by the hub facilitator embedded within the interim hub arrangement. Over time, these functions may also be folded into the centralized hub body, or remain at arm's length, according to need.

Recommendation 5: Establish an Interim Hub Resource Person

That as part of the phased implementation, an interim hub support person be appointed initially within an existing body (e.g., PIFS, PASO, PRIF) to facilitate airlines, airports, and PIC governments in setting up and managing the collaborative agreements. The person would also chart/manage the articulation of the hub to other models, with the trajectory governed by the performance of the institutional models adopted, and evolving needs.

5.5 Financing Requirements

The financial analysis prepared for this document identified that there is business activity by airlines and airports in excess of \$40 million, much of which could be supported by a hub. The conservatively drafted financial model of Section 4 suggests that a full-service hub could generate revenue from this of around \$500,000 in the first year, growing to around \$3–4 million in 10 years, a trajectory not dissimilar to PASO in its early days. The sources of revenue largely match those adopted by PASO, but with the addition of a markup on procurement costs. The model also demonstrates that a hub organization could be established to deliver this level of service and operate on a cost recovery basis in the long-term. If the hub were to be attached to another organization where overheads could be shared, the model indicates that it may be feasible for the organization to repay start-up funding.

Funding that the hub organization would require is estimated as follows:

- Pre-start-up consultancy \$300,000;
- Viability gap funding for the first 3 years as revenue is built up, i.e., \$300,000 (stand-alone hub) or \$250,000 (added-on hub);
- Working capital – \$150,000 at start-up, growing to \$500,000 in 10 years based on 60-day terms.

Under the recommended phased implementation, the viability gap and working capital funding would not be drawn upon initially, while any initial hub support resource and operating costs for the collaborative agreement path would be supported from the pre-start-up consultancy fund.

Recommendation 6: Financing

That the operation of the hub function be designed to be financially self-sufficient in the longer term, with funding derived from (but not limited to): member's subscriptions, user-derived time charge and commission fees, commercial bank finance, PIC governments, donors, and IFI grants and loans.

Recommendation 7: Seed Funding

That a line of finance of approximately \$1 million over 3 years be sourced for hub implementation.

5.6 Next Steps

This document is a scoping study, designed to develop a broad understanding of needs, and provide a generalized framework to understand possible institutional options, implementation strategies, and costs. It is a high-level building block on the path of development of a regional collaboration hub. Given that consultation was relatively limited and donor-focused, and given that the concept of a hub was new to some stakeholders, this report should be seen as a tool for analysis of the topic and a discussion starter, rather than a source of definitive solutions to regional aviation development. The study is also a companion to other scoping studies on airline alliances, air route optimization, and regional procurement strategies, all of which need to be considered jointly prior to establishing consensus on the future direction. This leads to Recommendation 8:

Recommendation 8: Next Steps

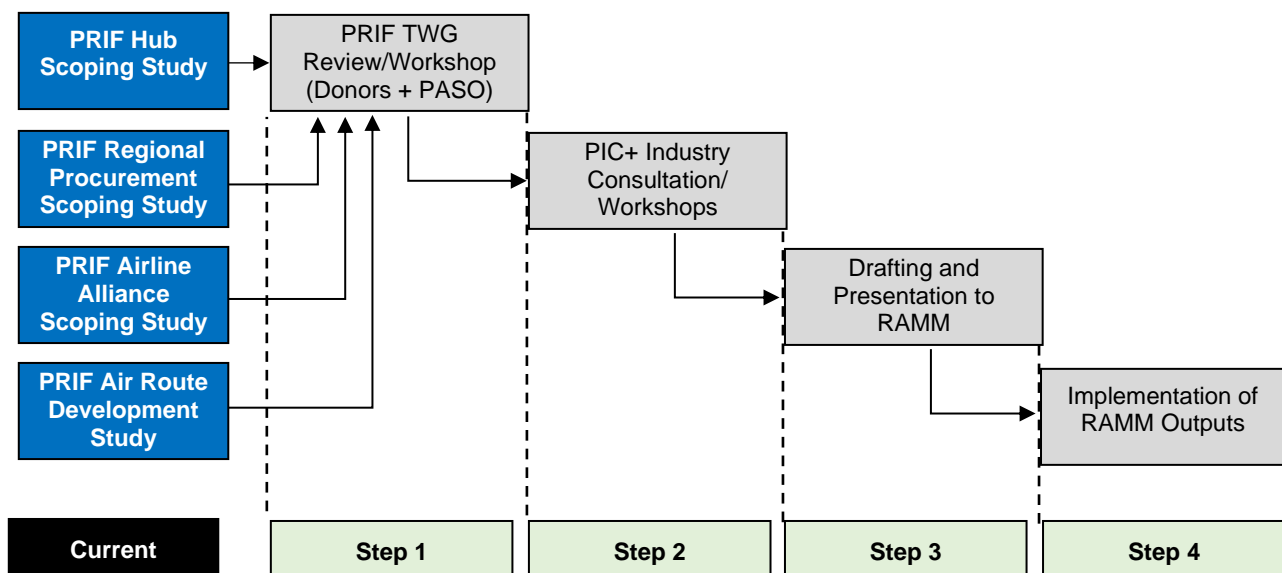
That the findings of this study be reviewed by stakeholders in conjunction with the separate studies on regional procurement, airline alliances, and route development, and further consultation be undertaken to establish stakeholder consensus/confirmation on the case to be submitted to aviation ministers at RAMM3 on:

- The level of support for a regional aviation technical support hub;
- The desired range of hub services;
- The preferred institutional arrangement for the hub function;
- The preferred role of PASO in the above;
- Preferred implementation and transition paths;
- Level of funding required.

A suggested road map for the implementation of Recommendation 8 is proposed in Figure 12. This shows four steps following from the completion of the current PRIF studies, comprising:

- Step 1: TWG to review and process the scoping study reports – It is suggested that the TWG carry out or facilitate a review of the outputs of this hub scoping study and the other three studies and prepare an agreed consolidated briefing material for detailed stakeholder consultation. It is proposed that PASO be involved in this process.
- Step 2: Carry out in-depth stakeholder consultation – The proposal is that PRIF should conduct an in-depth consultation process with PIC governments, airport operators, and airlines to educate the parties about the concepts that have been developed, and to facilitate an informed debate on the items outlined in Recommendation 8. The aim would be that at the end of the process there will be consensus on the topics listed in Recommendation 8, particularly the preferred institutional model.

Figure 12. Indicative Road Map for Implementation



PRIF = Pacific Region Infrastructure Facility, TWG = PRIF Transport Working Group, PIC = Pacific Island country, RAMM = Regional Aviation Ministers Meeting

Source: Consultant.

- Step 3: Drafting of RAMM documentation – It is proposed that the consensus developed under Step 2 be documented in the form of input documents to the RAMM and submitted for Ministerial endorsement. There may also be input required to the Forum Economics Ministers Meetings where a similar process may need to be adopted in accordance with Pacific Forum processes.
- Step 4: Implementation – In accordance with endorsement by RAMM and/or other forum as appropriate, this step refers to the implementation process, which will be driven by the selection of hub/alliance institutional model developed in the preceding steps.



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