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WHITE PAPER

Slot allocation amidst COVID-19 recovery

Photo by Bradley Prentice on Unsplash

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Foreword

The Aviation Studies Institute (ASI), based within the Singapore University of Technology and Design, has been established to address the needs of aviation stakeholders and advance the development of aviation in the Asia-Pacific region. We aim to be a world-leading centre of aviation policy research and thought leadership.

One area of our research considers optimisation of slot allocation to meet the competing needs of various stakeholders from airports, airlines and air traffic management.

To complement our endeavour, we have commissioned this White Paper to analyse the impact of the COVID-19 pandemic on the existing slot allocation processes used across the Association of Southeast Asian Nations (ASEAN) and the perspectives of a range of stakeholders.

This paper has been developed by the International Air Transport Association, who are closely involved in the slot allocation process and interact with the broad variety of stakeholders who utilise and inform international guidance on the matter. The analysis within the paper builds upon interview comments from a number of these stakeholders and the latest passenger traffic forecasts for the region.

We hope that you find the analysis and recommendations provided useful.

Mr Jamie Bloomfield

At the Aviation Studies Institute we are keen to utilise research to solve real-world challenges and work with industry partners to translate our research outcomes into industry-wide capabilities. If there is an improvement you would like us to investigate, or a partnership opportunity you would like to discuss, please get in touch with me:

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You can also find more details on our website: https://asi.sutd.edu.sg/

If you are keen to learn more about our research into slot optimisation, please let us know. This work is led by Assistant Professor Nuno Ribeiro who has been working on the topic for the past 5 years. He has published several papers and received awards for his work. Prior to joining ASI, he developed a tool to help airport slot coordinators resolve imbalances in demand and capacity.

He received his Ph.D. in Transport Systems from the University of Coimbra (Portugal) in 2019 and has held visiting research positions in MIT (USA) and Carnegie Mellon University (USA).

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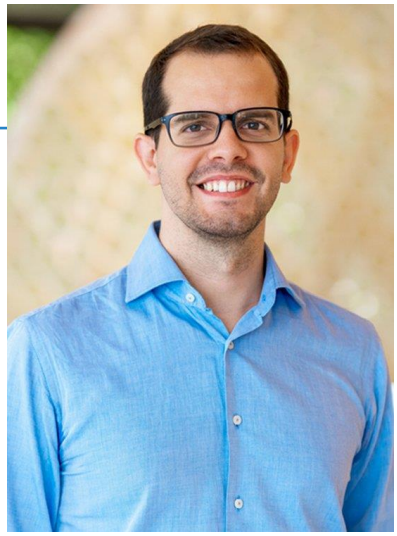


Assistant Professor Nuno Ribeiro

Executive Summary

COVID-19 has disrupted global aviation and led to governments restricting travel and applying health measures to control the virus. Consequentially, airlines are unable to service airport slot rules that support established airline networks, threatening the loss of the social and economic value that aviation delivers around the world. COVID-19 is expected to be a temporary concern, but its impacts may be long lasting and risk the loss of global connectivity without appropriate relief measures.

Airport slot rules ensure airport capacity is efficiently utilised at airports where capacity is insufficient to meet airline demand. The rules provide an approval for airlines to operate at an airport at a particular time, provide certainty that allows airline investment in route development and ensure other airlines receive access opportunities where slots are not utilised according to expectations. The rights to airport slots are therefore essential to airline and airport operations, and in ensuring flight connectivity relied upon by governments and the consumer.

Southeast Asia and some global stakeholders (airports, airlines, slot coordinators, regulators) have been interviewed to gauge opinion for the measures that have been introduced to help protect airlines from the loss of airport slots during the COVID-19 crisis. The aim has been to establish which measures have proved beneficial, what lessons may be learnt, and to identify the trade-offs of these measures. For example, protecting slot rights might seem fair and appropriate during disruption that is outside of an airline's control, but this may restrict competing airlines who are able to operate and wish to develop new services. Conversely, a lack of protection may result in airlines operating less sustainably to secure future slot rights. The slot rules aim to balance the needs of all stakeholders through a consideration of guidance provided by the Worldwide Airport Slot Board (WASB). The paper discusses how successful these, and other approaches have been.

WASB or similar guidance was identified as having been predominantly applied across Southeast Asia and around much of the world. This consistency has provided valuable support for airlines, and flexibility in how slots are used. For example, rising cargo demand has been met, offsetting the reduction in passenger demand and facilitated the utilisation of slots. Huge uncertainty of passenger demand now exists which has delayed or caused rapidly changing planning and scheduling decisions. Flexible rules are considered vital to help the industry act with agility to reschedule, identify new markets and adopt later airline planning timeframes, while acknowledging the need to provide sufficient time to plan airport resources. A related recommendation is for enhanced timely communication between governments and the industry when restrictions are to be applied. Expectations to implement travel restrictions without consideration for the practical challenges leads to excessive disruption to airport and airline operations while forcing last minute cancellations on passengers.

Of all the slot relief measures that have been adopted, there is almost unanimous opinion that the most useful has been the ability to return series of slots in advance of the season while protecting future rights to the same slots. This has provided clarity to airport planners, prevented airlines from being expected to fly unnecessarily, and provided other airlines with more access opportunities. Slot relief measures are identified as being supported by most interviewees, but some regulators globally are understood to have removed measures earlier than Southeast Asia regulators. The impact and trade-offs of this are discussed.

Other regions with faster recovery profiles and less flexible slot use relief measures pose a threat to the interests of countries in Southeast Asia. Greater collaboration across regions or adherence to a global standard is recommended to provide all countries with the same opportunities. The ability to operate in the future has been a key concern. Bilateral challenges have been made where measures appear to benefit home carriers at the expense of those from other countries. The departure of Europe from equivalent rules was highlighted as a key interviewee concern that could lead to reduced measures being considered for European airlines when operating to some Southeast Asia airports and risks the loss of connectivity between long established city pairs. It is generally understood demand will take time to recover and a sustainable recovery will follow the continuous use of flexible slot relief measures, the paper therefore warns against lifting slot relief measures prematurely, and instead supports the WASB industry guidance to lifting relief measures progressively and in alignment with the industry recovery.

Introduction

This white paper considers airport slot allocation amidst aviation's recovery from the COVID-19 crisis. The paper reviews the general impacts of the pandemic from the perspectives of regulators and aviation industry stakeholders. Consideration is given to the different forms of slot use relief provided by regulators regionally and globally, along with a review of the challenges resulting from the pandemic, and in some cases, the relief measures themselves.

Research, analysis, and discussion is principally focused on Level 3 Slot-Coordinated airports located within Southeast Asia (detailed within Appendix C) since it is the rules associated with Level 3 airports that are under consideration. Some global consideration is included for comparative purposes.

Industry stakeholder perspectives are key to this white paper and discussions within are based upon the feedback provided by 11 industry representatives interviewed in November and December 2021. "Respondent" representation is from Southeast Asia regulators, slot coordinators, airport, and airline respondents. To provide a comparison with other regions globally, international airport, airline, and coordinator representatives have been interviewed. Interview respondents are listed in Appendix A but individual respondents prefer feedback to be used in aggregate form for each stakeholder group due to the sensitivities of some information provided.

The paper makes frequent reference to the Worldwide Airport Slot Guidelines[1] (WASG) and WASB recommendations since this guidance is predominantly used as the reference for both airport slot legislation and procedures across Southeast Asia and globally. Similarly, responses from the region's regulators show an alignment with the WASB recommendations, making this guidance a useful point of reference and comparison.

The paper finishes by drawing together the lessons learnt by the respondents throughout the crisis to form recommendations for future consideration.

Overview of airport slot coordination

Airport coordination is a means of managing airline schedules at airports where there is insufficient capacity to meet demand. Airport coordination limits the number of schedule movements within a time by assessing the impact of requested demand on areas of the airport facility, typically, the use of the runway, terminal availability, and the availability of apron space for parking aircraft. Declared capacity limits prevent a planned over subscription of demand for the facility to prevent congestion, unacceptable delay, and operational disruption. Where possible, airlines will be offered alternative slot times if their requested times are fully subscribed, but it is not always possible to allocate suitable slots, meaning some airlines will not be approved to operate.

353 airports globally are identified as requiring airport coordination, 198 of which are designated as Level 3, the highest level of coordination. At airports with Level 3 Slot-Coordination it is necessary for all airlines to have an arrival and departure slot allocated to use the airport facility[2] at a specific date and time. Slot coordinators predominately allocate slots in accordance with industry agreed principles, procedures and in a neutral, transparent, and non-discriminatory manner.

An airport slot is the permission given by a coordinator for a planned operation to use the full range of airport infrastructure necessary to arrive or depart at a Level 3 airport on a specific date and time.

The main objective of airport slot coordination is to "ensure the most efficient declaration, allocation and use of available airport capacity in order to optimise benefits to consumers, taking into account the interests of airports and airlines."[3]

[1] **https://www.iata.org/en/policy/slots/slot-guidelines/**
[2] **Worldwide Airport Slot Guidelines, annex 12.7, Contact list for Level 2 and Level 3 airports.**
[3] **Worldwide Airport Slot Guidelines, published 1 June 2019, section 1.2.1**

The WASG is a live document that provides the aviation industry with a single set of standards for the management of airport slots. Based on analysis conducted, the majority of Level 3 airports worldwide are considered to apply the WASG in full, with a small proportion applying a subset.

WASG policy, principles and procedures are constantly under review by the WASB, a representative group of airlines, airports, and coordinators. As such, the WASG is published by Airports Council International (ACI), the International Air Transport Association (IATA) and the Worldwide Airport Coordinators Group (WWACG).

The following WASG principles are of particular importance to this paper:

Table 1 - Specific WASG principles

WASG principle	Explanation
WASG 8.5 Holding and returning slots	**To promote the utilisation of scarce capacity and competition, airlines may only hold slots they intend to operate, transfer, swap or use in a shared operation. Airlines are required to return series of slots not intended for operation before the Slot Return Deadline (SRD). Airlines retain no rights to series of slots that are returned and not operated. These slots are returned to the slot pool and reallocated to those seeking slots.**
WASG 8.6 Use it or lose it rule	**Airlines who utilise at least 80% of a series of slots are granted historic precedence for the future equivalent season. The principle provides a certainty of slots to airlines looking to invest and develop services at an airport. The principle of historic precedence is central to the WASG, but it should be noted that it is sometimes criticised by airlines seeking to gain access to an airport that is already fully subscribed at preferred times. The use it or lose it rule only applies at Level 3 airports.**
WASG 8.7 Eligibility for Historic Precedence	**WASG 8.7 provides guidance for determining eligibility for historic precedence, the number of operations required to satisfy the use it or lose it rule, and other principles like the influence of industry deadlines.**
WASG 8.8 Justified non-utilisation of slots	**Slots are counted as operated in the use it or lose calculation if airlines are prevented from operating for reasons that are unforeseeable, unavoidable and outside the control of the airline. This principle prevents the airline from potentially losing slot historic precedence when it has not been possible to operate. COVID-19 travel restrictions are an example for how airlines have been restricted from operating.**
WASG 10.2 Calendar of coordination activities	**Airport slot coordination activities are driven by a single calendar worldwide. The dates contained are published by the WASB and are mentioned here since some deadlines have been adjusted due to the impact of COVID-19 on demand and the lead times between schedule planning and operation.**

The WASG has proved its principles are proficient in providing flexible guidance to help the industry cope with industry disruptions like the impact of 9/11 in 2001, the severe acute respiratory syndrome of 2003, and the financial crisis of 2007/8. Despite this COVD-19 has had a greater and longer lasting impact on the industry, resulting in the temporary adjustment of WASG principles and procedures. The aim of these adjustments has been to support a balanced industry recovery with an adjustment to what the industry might become.

Background

The impacts of COVID-19 on airport slot coordination stem from the overall impact on the industry and the ability of existing procedures to manage such unprecedented circumstances. Respondents describe the macro impact on the industry as significant, unprecedented, and prolonged. International passenger traffic was almost eradicated across the region, and despite there being periods of recovery since the start of the crisis, recovery has been patchy, unreliable, starting and stalling as the pandemic has matured and mutated.

The State of the Industry section that follows provides trends on the impact to international flights, but there is no clear regional trend on the impact to domestic services. Globally, the industry has typically begun to recover

through domestic services first, but this has not been the case in countries like Cambodia, Thailand, and the Philippines. In the Philippines, international passenger traffic was reduced to repatriation flights alone, but domestic flights have also been adversely affected by intrastate restrictions. Cambodia and Thailand are similarly impacted but in contrast to other countries, domestic travel has been more seriously impacted than international travel since government policy has been for borders to remain open to international flights throughout the crisis.

Unilateral government policy, differing country states and demographics, makes it difficult to identify trends on the impact of COVID-19 on passenger services, but a consideration of cargo services does offer some regional consistency. Respondents report increases in international cargo flights across the region, and while cargo revenue is stated as a poor substitute for passenger revenues, additional cargo demand aids the utilisation of airport slots through the positive effect belly hold cargo can have on passenger flight viability, or where a passenger flight is replaced by a dedicated cargo flight.

The significance of COVID-19 on airport slots

"If you fail to plan, you are planning to fail" is a quote from Benjamin Franklin that summarises why the impact of COVID-19 on airport slot management is a concern. COVID-19 impacts prevent the ability of airlines to plan and operate efficient schedules in timeframes that best support airport and airline resourcing. The uncertainty of knowing if an airline can fly to a particular destination, whether demand will materialise to make it a commercially viable flight and what travel or health restrictions might be introduced at short notice, creates huge uncertainty for airline planners, airport resourcing teams, and the consumer.

An additional dynamic in the planning and operation of flights is a consideration of airport slot coordination rules, without which, the airline has no approval to operate. At times of demand uncertainty or restrictions to travel, understanding how to meet these rules is essential. For example, COVID-19 might have resulted in significantly reduced demand making it unviable to operate a flight, but the failure to operate might mean the loss of historic precedence to operate at a particular location in the future, and where there is competition for the same airport slots from other airlines, there may be no simple way to recover lost slot approvals. This forces airlines to consider some difficult trade-offs. For example, if an airline flies unprofitably, for how long is this sustainable? If the airline doesn't fly and it loses its rights to slots, what are the chances of gaining similar slots again in the future and what is the commercial impact of this? How do these slots contribute as part of a global network and what is the impact on the viability of other flights if these slots are lost? Decisions and trade-offs such as these form the basis of the discussion throughout this paper and are the reason for temporary slot rules being applied globally during the COVID-19 crisis.

At the start of the crisis the industry was quick to implement a slot use waiver, removing the need to operate a certain number of slots to retain the rights to slots. As the pandemic has progressed the industry has learnt to be more specific in its solutions and to balance airline planning needs with those of airports, the preferences of regulators and the speed of recovery at certain locations. The provision of slot use waivers and other measures has served airlines well where flights are not possible or not viable, but the trade-off has arguably been at the expense of other airlines who are able to operate and wish to develop services and gain historic precedence. Regulators therefore have the tough decision for how to fairly treat differing types of airlines that are impacted to differing degrees by COVID-19. What type of connectivity does a regulator desire in the future, and what is the impact on the consumer and the countries reliance on airline connectivity?

At the time of writing, diverging examples of slot relief are beginning to emerge. Southeast Asian countries are typically most impacted by COVID-19, the recovery has been slow, and regulators have been cautious to return to usual rules while the recovery begins. On the other hand, Europe and the United Kingdom have chosen to remove slot relief measures perhaps faster than the industry recovery, meaning airlines will have to consider flying unnecessarily to retain slot historic precedence or accept the loss of slots. History will show which countries have made the best decisions, but in the interim, the global nature of aviation means these diverging approaches must somehow work together.

State of the industry during COVID-19

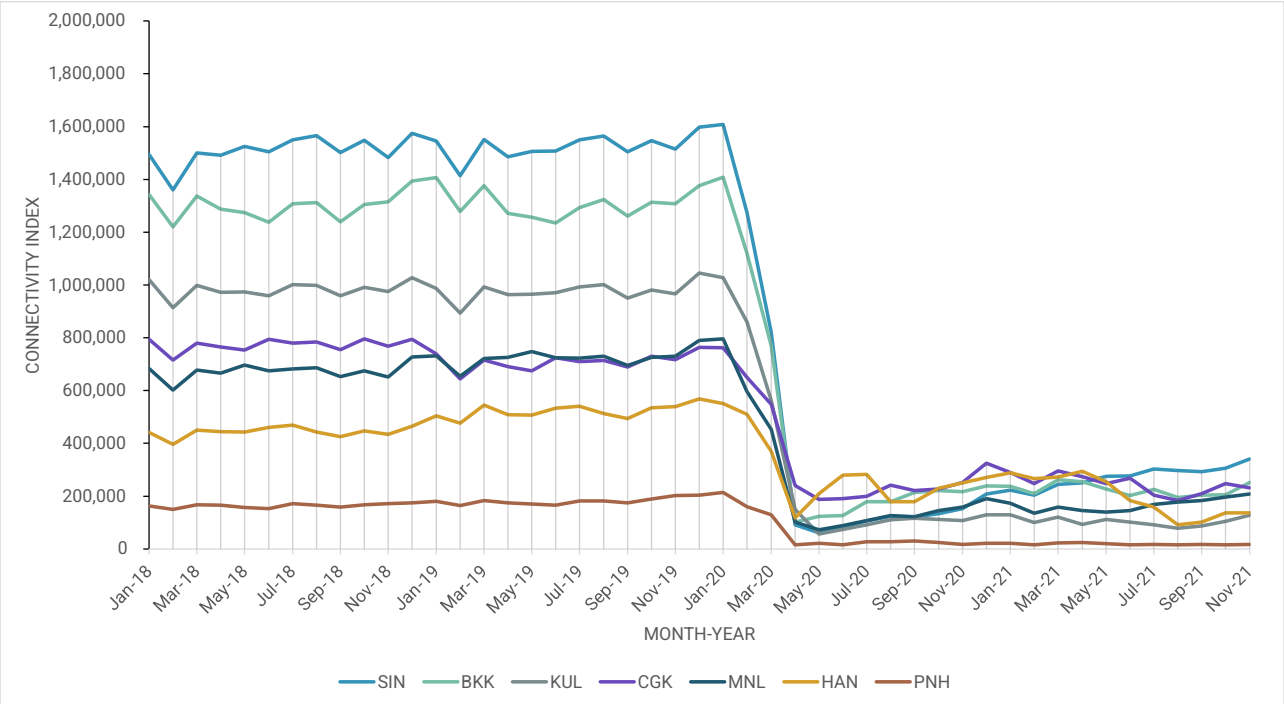
The COVID-19 crisis has resulted in a reduction of air connectivity. Unique city-pairs declined by 30% in 2020 when compared with pre-COVID-19 times and the first decline since the global financial crisis of 2007/8. 2021 saw some improvement in connectivity as airline networks began to recover, but passenger traffic measured in Revenue Passenger-Kilometres (RPKs), remains about 60% below 2019 levels. Respondents have referred to COVID-19 as causing unprecedented disruption, which is validated by IATA's analysis of previous shocks that saw RPKs fall by just 5-20% and the recovery completed in under 18 months (IATA, 2021).

Air transport connectivity

Connectivity is referred to throughout this paper and is a measure of value for many regulators. The IATA Connectivity Index[4] is a metric that quantifies how well-connected cities are to other cities around the world. It is a composite measure reflecting the number of seats flown to various destinations and the relative importance of those destinations. This approach to measuring air connectivity is described in detail in the IATA air connectivity report (IATA 2020).

Figure 1 shows the impact of COVID-19 on IATA's Air Connectivity index at major airports from across Southeast Asia. In all cases connectivity has dropped by at least 60% due to COVID-19 and strict border restrictions. Singapore Changi airport had the highest connectivity levels before the crisis and continues to have the highest absolute connectivity amongst these hub airports today, but initial trends suggesting a recovery are very slow.

Figure 1 - IATA Air Connectivity for hub airports in Southeast Asia, monthly Jan 2019-Nov 2022



Source: IATA Economics based on OAG data

In relative terms, Manila Ninoy Aquino airport has slightly improved in recent months with its connectivity level at 66% of 2019 levels, while connectivity levels at other major hubs have stagnated since the start of the crisis.

[4] **The Air Connectivity Index. IATA 2020. Available on: https://www.iata.org/en/iata-repository/publications/economic-reports/air-connectivity-measuring-the-connections-that-drive-economic-growth/**

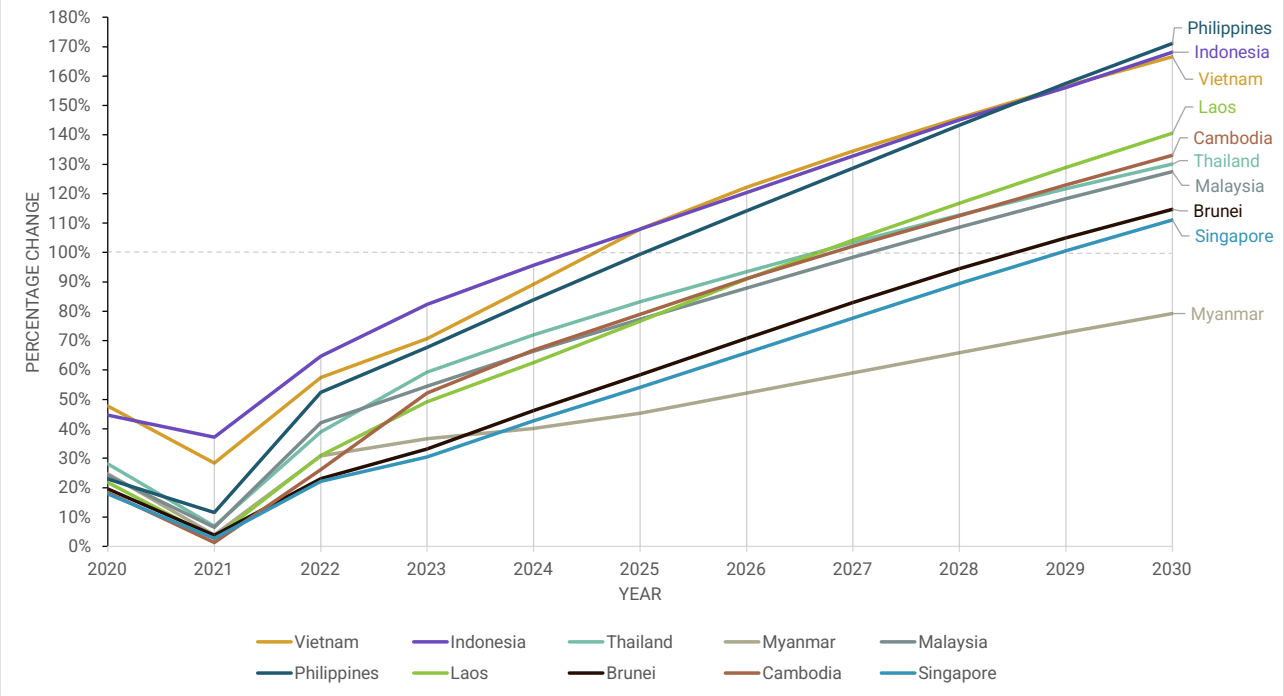
Singapore Changi airport has recovered the most, followed by Bangkok Suvarnabhumi airport. The recovery of connectivity at Kuala Lumpur International is lagging with the connectivity levels at -86% in comparison to pre-crisis levels.

It is worth noting that there is no significant seasonality in connectivity levels. This points to the need for slot management protocols and relief that is consistent throughout the year.

Passenger demand and forecast recovery

Passenger demand across countries in Southeast Asia has dropped by around 90% since 2019. This is illustrated by Figure 2[5] which demonstrates the trend on countries within Southeast Asia. Figure 2 is complemented by Appendix D which includes a broader range of countries and detail. Our analysis primarily focuses on countries where Level 3 airports are based. Regional hubs such as at Singapore are particularly dependent on the reopening of international borders but all Southeast Asia countries are forecast to recover by 2027. The Philippines, Thailand and Vietnam should experience the fastest recovery by 2025. Quicker recovery such as in Thailand is expected to be the result of international restrictions being lifted, complemented by strong economic performance and a rebound in tourism.

Figure 2 - Passenger forecast as % of 2019 levels



Source: IATA Economics/Tourism Economics, February 2022 forecast update

Domestic vs. international passenger traffic recovery patterns

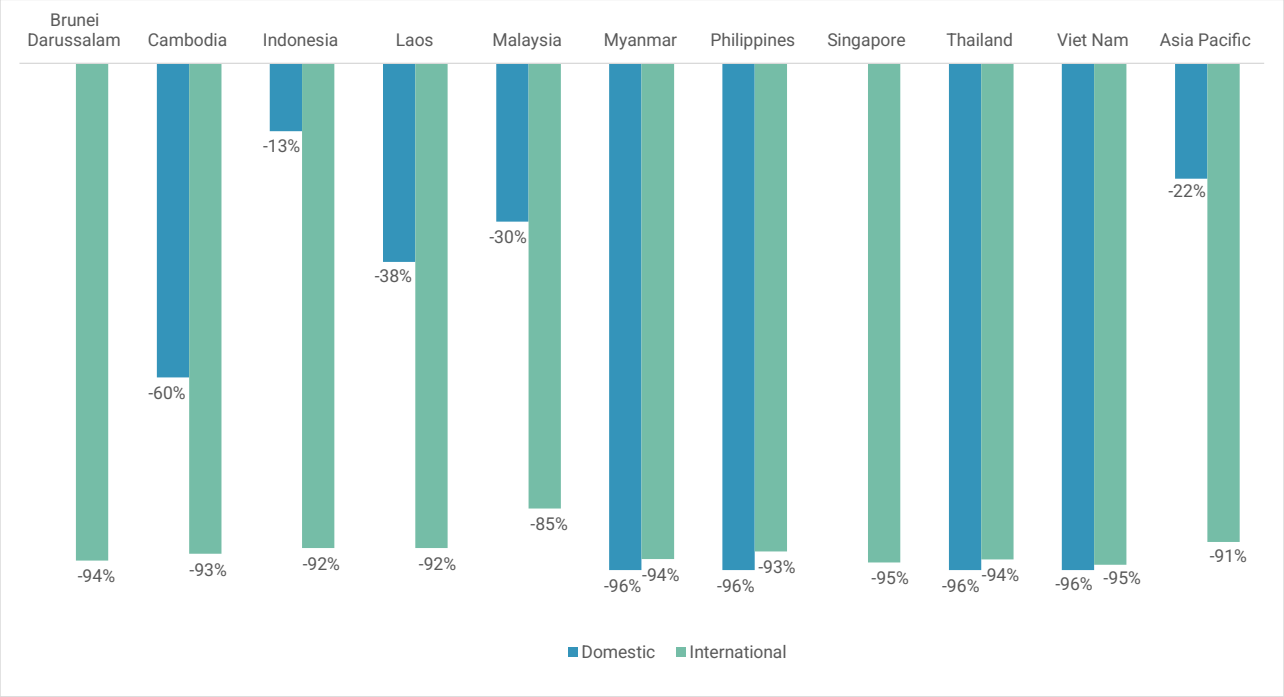
No consistent international or domestic recovery trend has emerged across Asia Pacific, as illustrated by Figure 3. Domestic travel[6] has seen a steady recovery, currently at 78% of pre-crisis levels overall. However, the domestic recovery varies across the region ranging from 4% to 87% of pre-crisis levels. Indonesia, Malaysia, and Australia have reached domestic recovery levels of respectively 87%, 70% and 63% of 2019. Cambodia is still less than half of pre-crisis levels which corresponds with the feedback from Cambodia based respondents.

[5] **Air Passenger Market Analysis October 2021. Available on: https://www.iata.org/en/iata-repository/publications/economic-reports/air-passenger-monthly-analysis---october-2021**

[6] **Domestic traffic can be defined as all domestic flights within a country**

Thailand and the Philippine domestic markets have essentially remained closed, which again aligns with the feedback provided and discussed later in this paper. On the other hand, international passenger traffic[7] in the Asia Pacific region is currently only at 9% of 2019 levels without any significant differences across the countries.

Figure 3 - YoY change in O-D passenger traffic in selected countries, by type (2021 vs 2019)



Source: IATA Economics based on data from DDS

It is worth noting that domestic recovery is stronger in countries where domestic air passenger traffic represented most of the total air travel (Table 2) prior to COVID-19. Malaysia, Australia, and Indonesia have all experienced a rapid domestic recovery to pre-crisis levels and at the same time, the domestic air passenger traffic accounts for the majority of the total air passenger traffic. Even this domestic recovery can be fragile, as has been seen in Australia where internal travel restrictions caused a drop in domestic operations for a period in 2021. The Australian domestic recovery is expected in 2023, but until then, different states are impacted to different degrees. The Philippines has also experienced domestic air passenger traffic reductions at Manila Ninoy Aquino, caused by both capacity reductions and differing provincial policies. Despite the large domestic markets of these two countries, international air passenger traffic remains crucial for these countries and airlines will need flexibility to accommodate the demand once the borders reopen.

Table 2 - % share of domestic and international passenger demand in 2019

	Domestic	International		Domestic	International
Cambodia	7%	93%	Laos	19%	81%
Malaysia	33%	67%	Indonesia	69%	31%
Singapore	0%	100%	Philippines	46%	54%
Thailand	28%	72%	Asia Pacific	66%	34%
Myanmar	39%	61%	Viet Nam	48%	52%

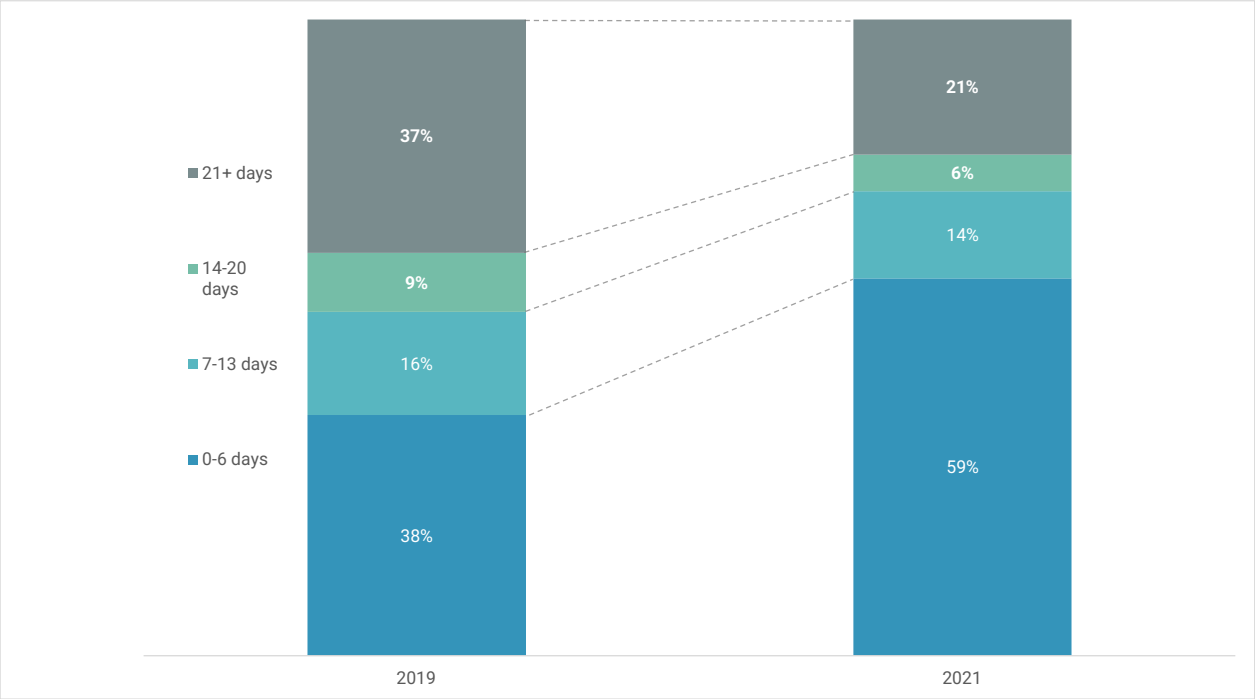
Source: IATA Economics based on DDS data

[7] **International traffic can be defined as any flight departing from a country in Asia-Pacific and arriving outside the borders of this country (not limited to Asia-Pacific region)**

Evolution of booking lead times

Later in the paper reference is made to the way in which demand for flights is delayed and the impact this has. This trend is verified by reduced passenger booking lead times. Passengers book tickets for both international and domestic journeys closer to the flight date. As shown in Figure 4, the number of days between booking and travel have diminished significantly in 2021. The data suggests this change is primarily driven by shorter domestic booking lead times due to the proportion of domestic bookings compared with international, but airlines advise of similar trends to international booking lead times. More than 79% of tickets sold in Asia Pacific were booked less than 3 weeks before the travel date. Shorter lead times present capacity scheduling challenges for airlines as they are associated with a higher degree of uncertainty and airlines do not know until the very last minute whether they will sell the tickets on flights they plan to operate. This departure from the calendar of coordination activities suggests traditional planning timeframes may no longer be relevant.

Figure 4 - Number of days between booking and travel time in Asia Pacific, bookings in October 2019 vs. 2021



Source: IATA Economics based on OAG data

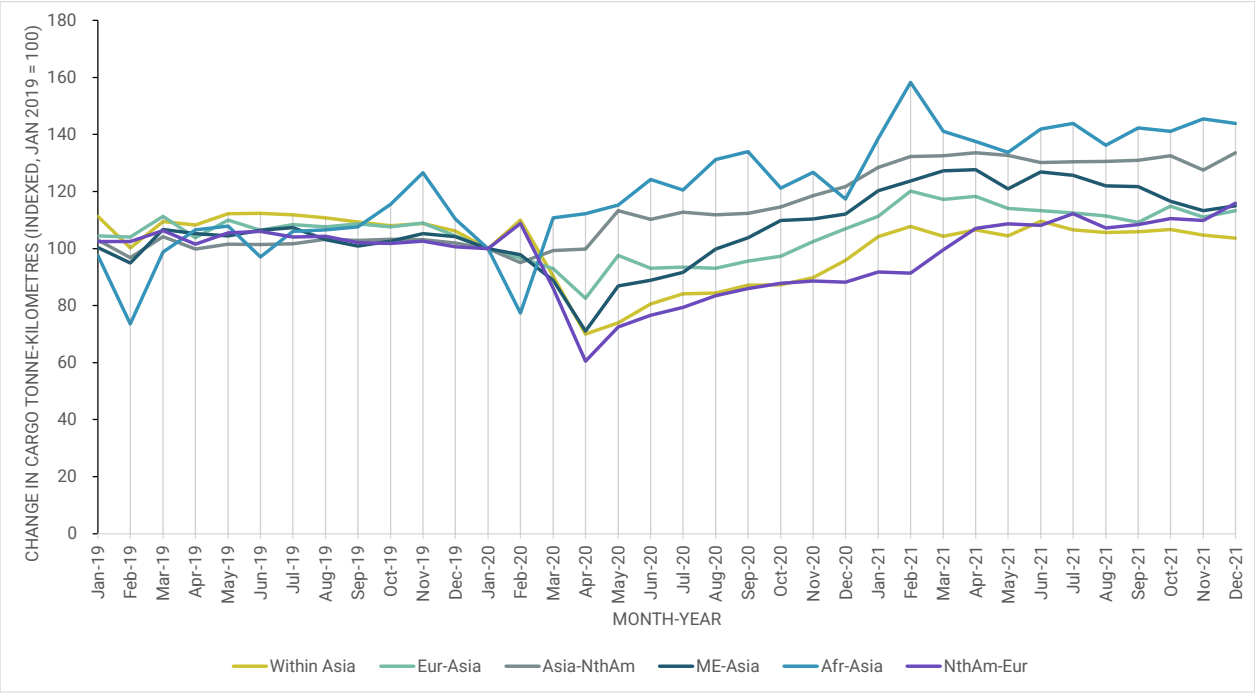
Recent trends in the cargo market in Asia-Pacific

IATA analysis identifies the relative demand for cargo flights has been outperforming that of passenger flights, which verifies the feedback received from respondents. Cargo traffic in October 2021 reached 113.5% of October 2019 levels (IATA 2021). This trend is likely to continue over the next few months and as discussed later, provides airlines with an opportunity to offset or to supplement passenger demand with cargo where the flexibility is in place to alter the use of a slot.

There was a 10.4% increase in global international Cargo Tonne-Kilometres (CTKs) in October 2021 versus the same month in 2019, slightly more than the industry-wide rate of growth. Airlines based in Asia Pacific saw their international CTKs rise by 7.9% in October 2021 versus the same month in 2019, following a 4.0% growth rate in September. The Europe-Asia market was an important contributor to the above, partly due to the reopening of some international passenger routes. Belly cargo capacity on passenger flights between Europe and Asia was down only 28.3% on 2019 levels in October, compared to 37.9% in September, which accounts for feedback suggesting belly cargo on passenger flights has become an important factor in the viability and decision to operate some passenger flights.

Cargo performance was mixed across the regions, with strong gains in Europe, Asia Pacific and Latin America partly offset by deteriorations in Africa and the Middle East. Moreover, most of the major cargo trade lanes are connected with Asia and they are all above pre-crisis levels[8] (Figure 5). Cargo aircraft movements in Asia will therefore be holding up much better than passenger movements. Based upon the feedback of respondents, increased freighter movements were made possible by reduced passenger movements through the change of use of slots from passenger flights to dedicated freight flights.

Figure 5 - Seasonally adjusted segment based CTKs for the main trade lanes (indexed, Jan 2019 = 100)



Source: IATA Economics, IATA Monthly Statistics by Route

Analysis of the impact of COVID-19 on individual airports and airlines

The Southeast Asia region experienced a significant decrease in passenger flights as shown by the 12 most affected Asia Pacific airports (Table 3). Both international and regional airports have been affected by the low demand. The data provided in Table 3 provides context to the feedback of respondents and the resulting recommendations of this paper.

International hub carriers in Southeast Asia have been dramatically affected by the closure of borders. However, domestic airlines have been slightly less affected, but neither category of flights are anywhere close to 2019 levels. Domestic vs international traffic patterns are discussed earlier in this paper.

[8] **Air Freight Monthly Analysis. Oct 2021. https://www.iata.org/en/iata-repository/publications/economic-reports/air-freight-monthly-analysis---october-2021/**

Table 3 - Top 12 most affected airports[9] and airlines in Asia Pacific calculated as YoY change in passenger traffic (Jan-Aug 2021 vs 2019)

Airport Code	Airport Name	Country	% change	Airline	Country	% change
REP	Siem Reap	Cambodia	-100%	Air Asia X	Malaysia	-100%
SIN	Singapore Changi	Singapore	-97%	Thai Airways	Thailand	-99%
PNH	Phnom Penh	Cambodia	-97%	SilkAir	Singapore	-99%
UTP	U-Tapao–Rayong–Pattaya	Thailand	-96%	Singapore Airlines	Singapore	-96%
ICN	Incheon	South Korea	-95%	Malaysia Airlines Berhad	Malaysia	-95%
KUL	Kuala Lumpur International	Malaysia	-95%	Nok Air	Thailand	-94%
HKT	Phuket	Thailand	-94%	Cebgo	Philippines	-90%
BKK	Bangkok Suvarnabhumi	Thailand	-94%	Philippine Airlines	Philippines	-89%
NRT	Narita	Japan	-93%	PT. Garuda Indonesia	Indonesia	-83%
KIX	Kansai	Japan	-93%	Virgin Australia	Australia	-65%
MNL	Manila Ninoy Aquino	Philippines	-86%	Batik Air	Indonesia	-62%
CGK	Jakarta Sukarno-Hatta	Indonesia	-56%	Qantas Airways	Australia	-60%

Source: IATA Economics based on DDS data

Passenger traffic at Jakarta Sukarno-Hatta (CGK) appears much less affected than at the other airports included in Table 3. This is due to the high proportion of domestic flights. Before the pandemic the domestic to international split was 69% to 31% respectively. Almost all flights are now domestic with the split changing to 95% and 5% respectively. This trend may still seem unusual compared with other countries like the Philippines or Thailand, but we understand these domestic markets may have been impacted by domestic travel restrictions to a greater extent.

The state of the industry analysis provides complementary information that substantiates the feedback provided by the industry respondents. The following sections place a greater focus on feedback.

[9] Slots coordinated airports

Industry challenges caused by COVID-19

Interview respondents from Southeast Asia have shared the challenges they have experienced in their roles as a result of COVID-19. These challenges are not thought to be exclusive to this region since similar feedback has been shared with IATA globally since the start of the crisis. The challenges have been categorised by stakeholder groups to help provide an understanding for how different groups are affected.

Airport challenges

The challenges to airports are summarised well by a respondent advising "there has been no roadmap to manage a crisis like this". This suggests the challenges have been significant and the industry was not prepared for such a crisis. The challenges have been categorised for ease of reference and explanation.

Table 4 - Summary of Airport Challenges

Challenge	Explanation
Government requirements	Government requirements change frequently and are often announced at short notice, meaning there is little opportunity to plan for the changes. Airports have had to be quite reactionary and there has been a lack of clarity for what is required of airports. Airport respondents advise the intent of announcements makes sense, but the operational implementation and impact was not understood.
Airport resourcing	The pandemic has reduced the pool of available trained airport staff. Regional airport respondents advise it has become difficult to scale up to the required resource at short notice, partially because of illness, but also because some airports employ staff from other countries in the region who have since been repatriated. The challenge to resourcing airport operations is complicated further by unreliable airline schedules and slot allocations. Regional airport respondents highlighted commercial and uncertain planning impacts caused by airlines requesting slots, and then cancelling at short notice prior to operation.
Airport-airline communication	There has been a change in the way airports and airlines communicate, highlighting that some of the tools and fora used before the crisis are now less effective. It was suggested airports and airlines need to consider how best to interact in this new environment.
Commercial considerations	Cost controls have become more challenging and necessary. Various airports have reduced available facility capacities and reduced staff levels. Singapore Changi airport for example, temporarily closed two of its four terminals. It is a challenge to relocate flights to different terminals, but of equal concern is the ability to plan for the ramping up of services alongside an uncertain speed of recovery.
Domestic and international	Airports opined that these challenges may sometimes be thought exclusive to international services, but this is not the case. Domestic services have become equally challenging where domestic rules have emerged, for example between different provinces of the Philippines.
Type of operation	Throughout the crisis there is consistent opinion from the airline respondents that demand for cargo flights has increased and temporarily replaced or made some passenger flights viable. However, this has posed its own challenges to some airports who opined that it has been especially challenging to manage the change of service type. The airport representative mentioned that the airport has developed to handle narrow body passenger flights, but airlines are now asking to operate wide body cargo flights, posing capacity, resource, and handling challenges.
Demand exceeding capacity	An airport representative highlighted the change in the way terminal capacity is being used. Physical distancing measures are a challenge to implement, and this has forced schedule changes to times of greater slot availability. Similarly, apron capacity has become more congested and less available to those who can operate due to grounded aircraft being parked up during the crisis, and aircraft turnaround times being extended to accommodate additional health and safety aircraft cleaning requirements. Ironically, at a time of reduced demand, some airport facilities are finding it more challenging to accommodate flights.

Airline challenges

"All projections and forecasts did not come. All plans for Winter 2020 and Summer 2021 did not materialise" advised one of the regional airline representatives. A statement that is at the core of the challenges faced by airlines. The challenges have been categorised for ease of reference and explanation.

Table 5 - Summary of Airline Challenges

Challenge	Explanation
Government requirements	Some government requirements are announced and implemented on the same day. The stabilising COVID-19 situation has improved communication, but announcements remain late, and especially in some smaller countries who have rolled out restrictions with no notice and sometimes for just one month at a time. This has really impacted passenger confidence. Passengers are instead choosing alternative destinations to fly to where there is more certainty, creating increasing challenges for airlines to understand where demand exists. One of the greatest challenges to airlines has been to understand new demand profiles and how these are being influenced by external factors like government restrictions.
Planning timeframes	Long-term planning has become a huge challenge since airlines advise they can no longer rely on demand forecasts. This means some airlines are not able to consider future aircraft utilisation, fleet plans and network flows. In some cases, airlines have developed a range of forecast profiles to best meet future planning needs, but the impact and recovery from the crisis remains too unstable to provide any certainty. Short-term planning has instead become the area of focus, but these decisions are also delayed since travel and health restrictions are updated at short notice and passenger demand is materialising within a few days of operation. New tactical planning considerations have also emerged. An airline mentioned a situation where they have had to plan the allocation of passengers onboard the aircraft. Local and connecting passengers have had to be kept separate, as well as vaccinated and not vaccinated. It is not simple to prevent passengers from moving around once on the aircraft. The distribution of passengers is further complicated because government lists impact who should be separated and change at short notice, meaning your flight which is planned for tomorrow, might no longer be compliant at the time of departure.
Additional approvals	Other approval requirements are not typically considered a factor in airport slot coordination, but airline respondents raised these as an additional challenge. The need to supply additional passenger data or to provide diplomatic notes is onerous, but from a procedural perspective, late demand, typically being within three weeks, creates a need to act with agility, but some authorities are taking five days to provide approvals.
Coordinators	At a time when airlines are attempting to plan with agility and in accordance with late demand, some coordinators take three days to respond to a slot request. It was suggested coordinators don't appear to understand that demand is sometimes known as little as 48 hours before operation. Contrary to the timing of demand, airlines mentioned that coordinators are often pushing for earlier commitment to schedules and the return of slots. International coordinators from outside of the Southeast Asia region were identified as being most challenging in this regard.
Commercial considerations	Airline profits are renowned for being thin but the decision to fly has become more challenging than ever before. Travel restrictions such as at Singapore Changi airport include a cap on the number of passengers that may be flown. At Sydney Airport, airlines have been informed daily on how many inbound passengers are permitted to arrive, which at times has meant removing all passengers from the flight on the day of operation, and the flight either being cancelled or operated as cargo only. With passenger limits regularly being advised within 24 hours of arrival to Sydney, the challenge poses greater risk to long haul operations and passengers who may already be in transit. Operational efficiencies are also challenged. For example, additional aircraft cleaning requirements increase ground times, reduce aircraft utilisation, and create additional planning complexity as alternative slot times are required. It is suggested that at some airports, increased numbers of aircraft are parked for the long term that would usually be flying,

Challenge	Explanation
	resulting in reduced apron availability. Ironically, at a time when there is less demand for flights, it can be more difficult to secure the slots required to operate. In many cases it might appear to make commercial sense not to operate, but this comes at the risk of not utilising slots. Additionally, aircraft are designed to be flown and not to remain grounded for extended periods of time where the associated maintenance costs for grounded aircraft have become a significant factor. The overall financial health of the airline must also be considered. A Southeast Asia network carrier mentioned that they are choosing to fly in the knowledge that the operation will not be profitable, but the overriding need is to generate cash.
Where and how to fly?	Regional and global network carrier respondents considered the decision for where to fly as one of the greatest challenges. Travel restrictions have an overriding impact and often dictate the ability to fly to a particular location, but where there is a choice, conflicting strategic and commercial preferences force challenging decisions. A Southeast Asia network carrier used its operations to London Heathrow Airport as an example of a vital hub connection for the carrier that they have operated for 40-50 years. The airline believes this connection is strategically important for the recovery of the airline from the crisis, but demand for flights is very low. The airline has been told by the slot coordinator that if slots are not utilised, historic rights will be lost and there is little chance of gaining access to this airport again within the next 15 years. Relief measure reciprocity is not recognised in this case and the UK slot use relief rules are more restrictive than those provided by the base country of this carrier. With limited aircraft and funds now available the airline is encouraged to fly unsustainably; the alternative use of the aircraft is to fly to other European destinations where demand makes flying more viable. In this case the airline is having to consider the short-term viability as an airline, alongside its longer-term ability to recover to pre-COVID-19 levels. The airline emphasised this as the type of scenario airlines must handle when overly restrictive slot relief measures are included at some locations. The need for flexibility was emphasised by another regional airline respondent who mentioned that their historic schedules are usually static from one season to the next, but in the past season alone they have had to make about 1,400 schedule changes due to the uncertainty of operations and efforts to find a way to fly. Managing this level of change is another significant challenge and flexibility should include the ability to change destinations, timings where available and aircraft types. Another regional network carrier described themselves as having been very lucky so far. The increase in cargo revenues has enabled them to keep flying and to utilise slots at strategic network locations. If it had not been for the ability to change the way slots are operated from passenger to cargo, the airline would also have to consider operating unsustainably or to lose slots. The trade-off between immediate commercial needs where airlines are trying to fly viable commercial operations, and the longer-term ability to recover, since key destinations may have to be operated if historic slot rights are to be retained is not isolated and appears to be the result of slot relief measures that have the effect of forcing a recovery and thereby intervening in the market, rather than allowing the flexibility for airlines to meet market demand as it recovers. Another regional carrier shared an example of how their cargo flight frequency has increased to Hong Kong International Airport, but they have now cut this frequency since they must operate the slots held in the EU, despite low loads making the EU routes unprofitable in the short-term.
Justified non utilisation of slots (JNUS)	The WASB detailed interpretation of JNUS has been adopted by the region's authorities but due to the existence of full series returns, airlines advise they have rarely requested JNUS eligibility within the region. The challenge has been for the interpretation and application of JNUS outside of the region, and the uncertainty that creates for airlines operating from the Southeast Asia region. The WASB definition of JNUS is considered very good. It is very detailed, but some coordinators are taking the unilateral decision not to apply it. Some JNUS interpretations have been very restrictive and JNUS is only applied when there is a specific travel restriction issued by the responsible authority. They don't consider travel advisories or World Health

Challenge	Explanation
	Organization advisories that also affect demand for air travel. When operating to a region like the EU it has become a challenge to know if slot rights are protected or at risk.
Recovery	**Airline respondents have seen some limited recovery but warned against a reliance on pent-up demand. Two examples were shared, one where pent-up demand for a "bubble" route never materialised and the route has since become restricted again. The other example was for a very short-term surge in demand, but demand has now stabilised at much lower levels.** **Trying to recover routes and networks is considered by airlines as a long-term challenge. Recovering route frequency is likely to take time. An example was shared where before the crisis a route was serviced by an airline with eight flights per day. In NW21 the airline saw a temporary surge of pent-up demand. Two frequencies were restarted but demand has since stabilised with low load factors. Right now, the airline is concerned about how to operate in NS22 since if restrictions remain lifted then the expectation is for the airline to operate all eight services from the end of March 2022, but without a recovery in demand. The respondent mentioned that time is required to help restore demand, reminding that some markets have now been closed for almost two years. They will need to be rebuilt over time.** **A coordinator respondent also referred to the relief measures which provide airlines with a grace period of six weeks from the time restrictions are lifted and slots are expected to be operated again, but the coordinator mentioned that a couple of years is probably more realistic for some of these routes. Six weeks is so short it has little relevance at this stage of the crisis. It is often not enough time for airlines to bring aircraft out of maintenance and it is not realistic to expect demand to be fully restored in this time frame.**

Slot coordinator challenges

Consideration has been given to the role of the slot coordinator as the stakeholder responsible for airport slot allocation. Despite the downturn in flights, coordinator respondents mentioned that their workload has increased significantly. Airline schedules and airport capacity declarations do not typically change too significantly from one season to the next, but the pandemic has changed everything, resulting in an increased workload for the slot coordinator.

Respondents referred to airport capacity parameters being changed part way through the coordination process, resulting in allocated slots having to be adjusted. Similarly, new travel restrictions require the adjustment of allocated slots. Meanwhile, updates to airline schedules are more frequent due to the shorter notice planning timeframes, causing more changes to slot holdings and slot coordinator responses being required. Demonstrating the types of changes coordinators are required to manage, at Manila Ninoy Aquino Airport in the Philippines runway capacity was advised to have been reduced from 46 to 20 movements per hour for most of the pandemic. For a highly congested airport this creates the coordinator with a significant challenge.

The situation is exaggerated further with some of the Southeast Asia slot coordination organisations advised to be understaffed, and in comparison, to some of the larger global slot coordination organisations, less able to absorb the increased workloads and additional complexity caused by various slot relief measures, travel restrictions and capacity parameter changes.

Managing the different waivers and measures from different states was thought to be one of the biggest challenges, since to apply their role correctly, they need an understanding for the type of restrictions and measures in place at the other end of every route. The Chair of Asia Pacific Airport Coordinators Association (APACA) mentioned that this is a lot to maintain, especially where states have differed from the WASB slot use relief measures. The Chair also highlighted how difficult it has become for airlines to gain matching pairs of slots at each end of a route.

Coordinator respondents also raised concern for the timing of government restrictions and mentioned that they receive two days' notice at best to work with airlines to adjust schedules. This was advised to be a common problem across the region and globally. The removal of travel restrictions at an airport has also been challenging since airlines have typically sought to fly at their original and more efficient slot times, but previous changes in slot allocation have made these slots temporarily unavailable. Coordinators are sometimes having to carry out

time consuming re-coordination exercises of all allocated slots at an airport to achieve the best results, but this is still made more complex by travel restrictions that remain at the other end of the route. The result has been airlines are often required to remain at the less efficient slot times until restrictions are lifted from both ends of the route.

Impacts of COVID-19 on airport slot coordination

Worldwide Airport Slot Guidelines (WASG) relevance

The WASB publishes the WASG which is relied upon to provide guidance on the consistent management of slots globally. The policy is flexibly written to ensure the guidance is adaptable to most scenarios, but respondent feedback has consistently opined additional guidance is required to best manage the COVID-19 crisis. The State of the Industry analysis demonstrated the significance of this crisis compared with previous disruptions and explains why the crisis places pressure on WASG policies and leading some to consider the WASG was not developed to manage such a crisis. Differing interpretations of key WASG policies and the absence of any other contingency plan therefore resulted in additional guidance being created by the WASB.

Travel and health restrictions

Since all respondents opined of a negative operational impact caused by the way restrictions are imposed on the industry, it seems appropriate to expand on this item. Communication between authorities and the industry has often been poor, with one airline respondent sharing that they find out about the introduction of new restrictions that immediately impact operations quicker through the press, rather than through approved channels. The problem is compounded through the exclusion of industry consultation which led to a lack of understanding of how some restrictions may be applied and when. Short lead times and poor communication reflected the chaos experienced in many countries at the start of the crisis, and while countries have established internal processes, task forces and controls, respondents mentioned that there has been little improvement in communication with the industry since the start of the crisis. This problem is experienced across various countries, but in some it appears to be caused by central government task forces where the aviation representation is just one small factor being considered.

The introduction of health authorities in industry planning processes was raised by all respondent types. General opinion was shared that health authorities typically have less understanding of industry operations and while health authority involvement is understood, they may not understand the immediate operational impact their decisions might have on airports, airlines, and passenger confidence to travel.

Procedural impacts

The high-level impacts signify the uncertainty that has entered airport slot coordination procedures. More specifically, the slot coordination process has been developed to best balance the timing of consumer demand with the need to plan airport and airline resources well in advance of operation. However shorter passenger booking lead times mean this balance is lost and the usual planning timeframes, as detailed in the WASG Calendar of Coordination Activities[10], no longer fully consider demand, creating huge uncertainty for airport and airline planners. Table 6 summarises the impacts to the WASG Calendar of Coordination Activities.

[10] **https://www.iata.org/contentassets/4ede2aabfcc14a55919e468054d714fe/calendar-coordination-activities.pdf**

Table 6 - COVID-19 impacts to the Worldwide Airport Slot Guidelines Calendar of Coordination Activities

Activity	Impact	Cost/benefit
Slot Historic Listing (SHL) Deadline	Slot relief measures have the effect of protecting historic schedules for future seasons, resulting in SHLs with little change from one season to the next.	Unchanged SHLs from one season to the next reflects the protection of historic precedence. Some stakeholders consider this essential to help the industry recover. Other stakeholders advise it restricts new airlines from securing their own rights to slots due to the rights remaining with other airlines.
Agreed Historics Deadline	Eligibility for historic precedence discussions between airlines and slot coordinators have become dominated by the interpretation and implementation of relief measures and how they impact the slot use calculation. This may represent an additional risk to the agreement of historic rights[11] if reliant on individual slot coordinator application of justified non-use when appropriate, as opposed to the full waivers which result in little interpretative risks.	Establishing historic precedence is based upon a range of WASG policies, some of which may be interpreted differently by different stakeholders. JNUS (justified non utilisation of slots) eligibility for example is considered differently by different coordinators with the result of some offering more flexibility than others, and therefore more historic rights than others.
Confirmation of final coordination parameters and details of available capacity	Less reliance on the coordination parameters and details of available capacity. Declared capacity is regularly superseded by later capacity restrictions caused by sanitary measures and during the usual planning process.	The coordination parameters detail the range of airport facility capacities available for slot allocation. The parameters are usually agreed according to known demand and operational restrictions in advance of the coordination process, but delayed demand and changing travel and health restrictions means parameters may have to change at short notice, adding an additional layer of uncertainty to the process. In the worst cases where capacities are reduced, allocated slots may have to be withdrawn and flights cancelled.
Initial Submission Deadline	Airline initial seasonal slot requests better reflect desired long-term plans by securing historic precedence, rather than temporary divergences caused by the impact of COVID-19.	The initial airline slot submission (slot request) takes place about 6 months in advance of the start of the next season. Submissions are usually based upon a good understanding of demand and the ability to fly, but since demand is delayed and travel restrictions are unknown at this time, airlines may be inclined to request the slots that hold historic precedence to secure future rights and to facilitate a recovery towards established networks. Updates to slot holdings are then made as the planning process develops and demand and travel restrictions are better understood. This approach reflects the uncertainty within the industry, is positive for the recovery of established airline networks, but may delay slot reallocations to airlines who are able to operate.

[11] Historic rights refer to slots allocated on the basis of historic precedence, making the airline eligible to the same slots in the next equivalent season if at least 80% of the series of slots is operated. WASG 8.7 details this principle in detail.

Activity	Impact	Cost/benefit
Slot Allocated Listing (SAL) Deadline	SAL is less representative of progression towards schedule finalisation compared with pre-COVID-19 schedules.	The SAL represents the results of the slot coordinator's initial slot allocation exercise, providing airlines with the rights to operate. This is usually a significant step in the development of airline schedules, but the underlying uncertainty of demand and travel restrictions means the slot allocations at this key stage of the process is less credible and can't be relied upon as quality information to base associated airport or airline resourcing planning decisions.
IATA Slot Conference (SC)	The June 2020 event was cancelled, the following two conferences became virtual conferences. In November 2021, a hybrid conference took place with most delegates attending face to face, but with comparatively few Southeast Asia representatives.	The slot conference meets twice a year and is attended by slot coordinators and airlines with the aim of optimising slot allocations. Restrictions on travel to the SC and the need to hold a virtual or hybrid SC has limited participation, as has the impact of delayed demand. Nevertheless, delegates continue to find the SC of great benefit to schedule improvements during the crisis, and with the majority of delegates attending the hybrid event in person, the continued value of the SC has been realised.
Series Return Deadline (SRD)	Slot relief measures have predominantly required slots to be returned by later deadlines, removing some emphasis from the SRD. Schedules and slot allocations are less likely to be finalised by the SRD.	Where demand exceeds capacity it is important that slots that are no longer required are returned to the coordinator as soon as possible for reallocation to other airlines. This helps improve airport capacity utilisation, may improve aircraft utilisation, facilitate greater alignment with demand and permit operations at more commercially beneficial times. For the Summer season, the SRD is 15 January and for the Winter season the SRD is 15 August. Delayed demand again means airlines do not know which flights will be operated and which slots can be returned. The SRD therefore has not provided the same benefit during the crisis as in pre-COVID-19 times. More slots have been held beyond the SRD and returned later whilst schedules have been finalised. Slot reallocations have taken place later and at shorter notice to operation.
Historic Baseline Date (HBD)	HBD has remained a key date in the process, but some authorities globally have temporarily set the historic reference dates earlier or later. Schedules and slot allocations are less likely to be finalised by the HBD.	Eligibility for historic precedence is subject to the operation of 80% of a series of slots allocated at the HBD (31 January for Summer season, 31 August for Winter season). Outside of the crisis, schedules would usually be finalised by this deadline. Since visibility of demand during the crisis arises later than the HBD, airlines are subject to greater risk of miscalculation by this deadline. If the calculation is set at the usual date, airlines must still operate 80% of the series of slots to retain historic precedence, despite not having visibility of demand at that date. This may risk unsustainable flights being flown to meet the slot rules. Some authorities have changed the timing of the HBD or other principles during the crisis to provide the airlines with increased flexibility in managing this situation.

Activity	Impact	Cost/benefit
Start of Season	**Schedules and slot allocations are mostly finalised for the immediate few weeks of operation, but the start of season may not reflect subsequent slot allocations for later in the season.**	**Short lead times between visibility of demand and operations are again recognised at the start of season, demonstrated by schedules being finalised for just a few weeks at a time and then updated on a rolling basis through the season. The ongoing impact of this is the same as for other points in the calendar of activities - the ability of airports and airlines to efficiently plan and provide resources for future operations is constrained.**

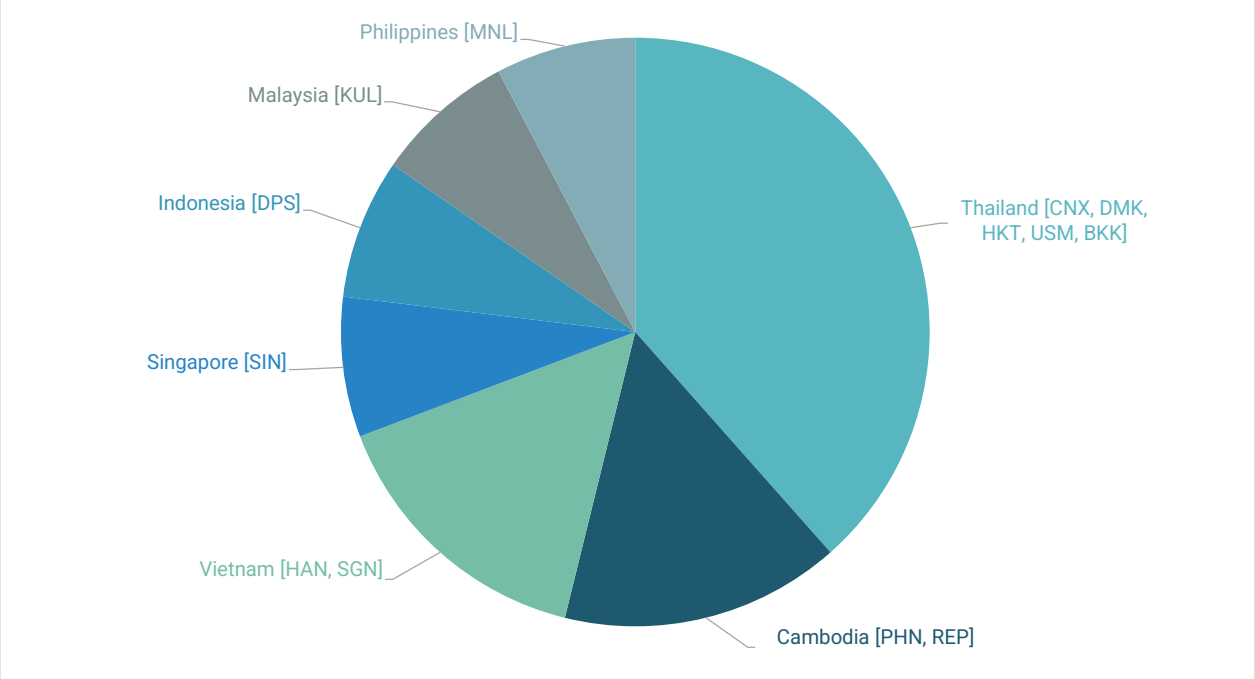
Beyond the usual planning activities, the processing of ad hoc changes has become more complex. Slot applications for some jurisdictions now require additional applications and approvals, along with additional information like passenger lists.

Slot allocation responses to COVID-19

Since the start of the crisis, all 198 Level 3 airports globally, 13 of which are in Southeast Asia and 42 in broader Asia-Pacific, have had slot use relief measures approved to support the restart and recovery of the industry by the responsible authority. Approval has generally been provided by the country regulator, but in a few cases where no legislation exists, approval has been provided by the slot coordinator. All authorities have shared the slot relief measures with IATA which supports the analysis provided in this paper.

At the start of the crisis, relief measures were consistent globally with a full waiver of the slot use requirements being applied. As the crisis has developed, some regions have been impacted more than others and the speed of recovery has subsequently differed. These differentials along with varying government policies has led to alternative types of relief measures being approved in later seasons. This paper predominantly **focuses on the current northern hemisphere winter season 2021/22 (31 Oct 2021-26 Mar 2022) (NW21)** since this provides us with the greatest variance and experience for which to make comparisons and is also the most recent at the time of writing this paper.

Figure 6 - Level 3 Slot Coordinated Airports in Southeast Asia



Worldwide Airport Slot Board (WASB) recommendations

The Northern Winter 2021/22 (NW21) WASB recommendation for airport slot use alleviation measures[12] is considered in this paper since the guidance has formed the basis for slot relief measures across the region and the rest of the world (and has been a continuation of the recommendation put forward by WASB for NS21). It is therefore useful to review this guidance to consider how alternative responses compare.

[12] **https://www.iata.org/contentassets/4820c05b19f148e2855db91f2a579369/wasb-northern-winter-2021-slot-relief.pdf**

As the COVD-19 crisis has matured, the WASB recommendations have also evolved as lessons have been learnt and WASB perceived levels of required relief have changed. The full NW21 WASB recommendation detail is available at the IATA website[13]. Key WASB recommendation features are included in Table 7.

Table 7 - Key features and benefits of the NW21 WASB recommendation

WASB recommendation feature	Airline benefit	Airport benefit
Ability to return full series of slots between HBD and HBD+7	**Airlines may secure historic rights for the future without having to operate.** **Other airlines may operate returned slots and receive high priority for slot reallocation in the future season.**	**Timely schedule reduction data for airport resourcing purposes.** **Potential for improved utilisation of airport capacity.**
Series utilisation ratio reduced to 50:50	**Airlines are not expected to operate as though demand had returned to pre-COVID-19 levels.** **Avoids encouraging airlines to operate with low loads to secure historic rights.**	**Encourages early airline planning decisions to either operate and utilise capacity or return a full series of slots.** **Potential for slot return and reallocation for better utilisation.**
Additional guidance for the implementation of WASG 8.8, Justified non-utilisation of slots (JNUS)	**Encourages consistency of coordinator application.** **Provides a level of protection against the uncertainty of operations of travel or health restrictions that prevent the flight from operating.** **Provides a 6-week window to begin operations again following the removal of restrictions**	**Provides a 6-week window for airports to resource in line with the reinstatement of flights**

At the time of writing this paper the WASB agreed a new recommendation[14] for the Northern Summer 2022 season (NS22). The key difference is the responsible authorities will be asked to identify the type of market that best represents their country. The aim of this approach is to recognise the differing speeds of recovery globally. The market types are detailed in the NS22 WASB recommendation[14], but in summary there are four market types ranging from "severely restricted", were a full waiver of slot use rules is possible along with unlimited series of slot returns, to the "open market" option which is a return to normal WASG principles, including the 80% usage ratio and no allowance for the return of a series of slots.

The WASB expects the NS22 recommendation to be considered more complex in its implementation than the previous COVID-19 slot relief recommendations because not only might you have different market types at each end of a route, but those market types might also have different slot use ratios and varying series of slot return limits. Nevertheless, the WASB considers this complexity as necessary since it provides a path back to the normal WASG principles and procedures. Helping to bring global reciprocity to this guidance are recommendations for reciprocal treatment of airlines between different market types. For example, an airline operating from a severely restricted market to a partially restricted market should be provided the ability to return all their full series of historic slots (which is only a feature of the severely restricted market) to ensure equal treatment at origin and destination.

Southeast Asia responses

Appendix B summarises the slot use relief measures applied across Level 3 airports in Southeast Asia for Northern Winter 2021. The region demonstrated good consistency with a general alignment to the guidance provided by the WASB, but most countries included a reciprocity clause.

[13] **https://www.iata.org/contentassets/4820c05b19f148e2855db91f2a579369/wasb-northern-winter-2021-slot-relief.pdf**
[14] **https://www.iata.org/contentassets/4820c05b19f148e2855db91f2a579369/wasb-slot-alleviation-measures-for-ns22.pdf**

Airline opinion

Southeast Asia airline respondents perceived slot use relief measures to have been well managed across the region. They referred to some lack of clarity at the start of the crisis and there was some initial concern for the inclusion of relief reciprocity clauses, but the relief measures have become clear, and the existence of reciprocity clauses is considered to have helped in providing a consistent and reliable level of relief across the region. Airlines mentioned that they are not sure how the different states are applying the reciprocity clause, but it appears as though regulators have asked their based carriers if they consider themselves to be fairly treated at their destinations and this has led to increased alignment and flexibility over time. Some coordinators however have been more proactive in checking reciprocity is being considered across the region.

When asked which WASB recommendation features have been most useful, all respondents replied **the ability to return full series of slots** due to the certainty this provides. The reduced slot use ratio is also considered useful. There appears to have been less reliance on JNUS than in other regions since full series return also applies, but also in contrary to other regions, airlines opined that JNUS has been applied fairly, flexibly, with common sense and sometimes proactively.

The reduced slot use ratio is considered to support recovery. Respondents think it has allowed airlines greater flexibility in the use of an historic schedule. For example:

The NW21 utilisation rate is 50% instead of 80%. Airlines may therefore avoid operating more unsustainable flights without the risk of losing historic precedence.

Slots are not route specific, which means multiple services to different destinations may be flown off a single historic slot precedence. For example, 15 weeks of a 30-week series must be operated, but of that 15 weeks, there could be a flight lasting eight weeks to one destination, followed by a flight lasting seven weeks to another destination. The advantage of this is airlines may test demand on various routes to identify new or temporary demand, return more series of slots to the coordinator for reallocation to other carriers, and secure historic precedence without having to operate unsustainably.

The six-week recovery period is appreciated by airline respondents, but it is not considered particularly useful since, in general, six weeks is advised to be too far from reality. Demand is not considered to return to pre-COVID-19 levels in six weeks.

Airport opinion

Southeast Asia airport representatives also supported the level of relief measures provided across the region. Of particular importance was the ability for airlines to return full series of slots early in the process since this helped to provide some resourcing certainty. When asked if JNUS was also valued, there was a clear preference for earlier full series returns since JNUS was considered to encourage airlines to hold slots until close to the time of operation.

Coordinator opinion

The Southeast Asia coordinator respondents confirmed they have mostly followed the WASB recommendation. They mentioned that they have received few JNUS applications from airlines, but this is probably because they have received high levels of full series returns. The need for consistency has also been recognised by the coordinator community in this region. The Chair of APACA mentioned that the region's coordinators met regularly throughout the crisis to share learnings and to support each other. This too has supported consistent rather than unilateral approaches to the interpretation and application of slot use relief measures.

Regulator opinion

Southeast Asia regulator respondents shared their support for the slot relief measures. Some were less concerned with the detail of what has been implemented, preferring instead to direct us to the coordinator for

opinion, but there was consistent interest for reciprocity and mentioned few bilateral concerns to have emerged within the region. It was felt generally the slot relief measures adopted have been appropriate and necessary. They voiced their support for preserving connectivity against a collapse in demand and subsequent prolonged restrictions preventing recovery thus far.

One Southeast Asia regulator mentioned the overriding priority in airport slot coordination matters is for all authorities to apply a single global process and to avoid acting unilaterally. The regulator has adopted the WASB recommendation with a reciprocity clause, but also mentioned that slot use relief is not their preference because airlines have been requesting and returning too many slots during the crisis. This appears to be an isolated opinion since this was the only regulator to raise this concern during the interviews. Other stakeholders have suggested the holding of too many slots can prevent other airlines from gaining access, but this regulator mentioned that other airlines have not been blocked from gaining slots. This regulator's concern was related to the planning and resourcing of airport operations since the uncertainty of demand has led to a preference for normal services to be resumed. The same regulator went on to advise they would prefer to see the removal of all slot historic rights at airports globally and for slots to be allocated on a first come first served basis for each future season. These marginal comments and preferences appear to be an anomaly and were in clear contrast to most other respondents and reflect the preferences of a regulator where no travel restrictions have been introduced due to the importance of international tourism. Encouraging airlines to fly during the pandemic is considered by this regulator as positive for this country. No other regulator interviewed shared any support for the removal of slots or an alternative allocation process. The other regulators shared a balanced opinion and understood slot use relief provides airlines with the ability to recover or develop connectivity over time.

Alternative approaches

The Philippines is the only country to depart from the WASB guidance in NW21 by choosing to extend the full waiver from slot use requirements and a later slot return requirement, thereby offering a greater level of relief than other parts of the region. Interviews were held with both the Philippine Civil Aeronautics Board and the slot coordinator for Manila Ninoy Aquino Airport. Both respondents mentioned that they feel the additional flexibility was appropriate and has met the needs of both airports and airlines. Maintenance works have also been carried out during the crisis which has led to many forced domestic flight cancellations. A full waiver has therefore been a simple way to ensure no airline has lost slot historic precedence unfairly.

Global airline opinion

A global airline respondent was asked for their opinion concerning slot relief across Southeast Asia. The respondent mentioned that the Southeast Asia region was the first region to be reasonable. When the US for example only gave a two-month waiver at the start of the crisis, Southeast Asia authorities provided a full season waiver, which was appropriate at the time with so much uncertainty materialising as the crisis emerged. From the broader region, coordinators from Hong Kong, Singapore and the Republic of Korea were identified as having been especially supportive and the application of slot relief measures in a balanced and timely manner was appreciated.

The respondent went on to explain that the region's coordinators have acted with understanding and flexibility. One coordinator has even been proactive when travel restrictions are implemented and contacted the airline to advise which flights are likely to be impacted. This sort of approach shows a partnership and supportive understanding of how to work together. The airline has received JNUS confirmation on a few occasions to which the respondent mentioned that the coordinators have acted with common sense and pragmatism. This has been appreciated and a great relief in comparison to coordinators of some other regions.

Global responses

Europe

At the start of the crisis the airlines were provided with a full waiver. The flexibility was later reduced to permit 50% full series returns, a 50% slot use rate, and most recently the removal of full series returns relief altogether. The latest European Union (EU) slot use relief measures for NW21 are published by the European Airport Coordinators Association[15], but for ease of comparison with Southeast Asia the main features are summarised:

- All slots held are subject to a 50:50 slot usage ratio,
- Carriers should return slots not planned for use at least 3 weeks prior to operation,
- JNUS conditions are detailed in relation to COVID-19 restrictions.

It has not been the intent of this paper to seek respondent opinion for the EU measures, but respondents have been keen to demonstrate appreciation for Southeast Asia measures in comparison with EU measures that have caused concern.

Airline respondents are not satisfied with the measures provided by the EU, advising the EU has tried to force a recovery that the industry is not yet ready for. The concern is this could have devastating impacts on the slot situation in the EU and impact connectivity, while shaping the structure of the industry rather than allowing it to rebuild sustainably. This has caused fragmentation in slot relief measures, additional complexity, and due to an absence of full series return capability, an overreliance on JNUS. JNUS has neither been applied in a timely nor a consistent manner by coordinators who cannot agree on its interpretation. Airline opinion is that the unreasonableness doesn't only seem to be coming from the authorities, but also from empowered coordinators. They are described as having no stake in the game, no risk, but are making very arbitrary decisions. This is in stark contrast to Southeast Asia where coordinators are so understanding, flexible in their administration of JNUS and able to apply more flexible slot use relief measures than those provided in the EU.

It has become a challenge for airlines to fly sustainably and slots are delayed in their return which impacts reallocation and ultimately the airport capacity utilisation. With no full series returns and a usage level that became unrepresentative of the situation in Europe[16], airlines have to make last minute decisions and hold on to slots awaiting JNUS decisions to be made in the EU. Airlines are required to operate at least 50% of all slot series held at EU airports, but Southeast Asia respondents highlighted there appears to be no consideration for the continued impact of the pandemic in Southeast Asia, by the EU coordinators. EU airlines may have more choice as to how they operate their slots, but Southeast Asia airlines operating to EU destinations seem required to operate or lose slots. Most Southeast Asia regulators have included a reciprocity clause to be eligible for the relief measures and to promote the equitable treatment of airlines, but despite recent challenges[17], these conditions have not influenced the treatment of airlines flying to EU destinations.

One regional network carrier explained they have been very lucky since the increase in cargo flights has been sufficient to meet the slot use requirements at its EU destinations, highlighting the importance placed on the ability to change the use of slots from passenger to cargo. In contrast, another regional carrier expects to lose historic rights at EU destinations.

Airline and coordinator respondents mentioned that the diverging levels of relief between the EU and other countries is causing disparity under air service agreements by removing fair and equal access. This has resulted in some jurisdictions holding the EU accountable. One airline suggested this could become an ICAO concern based upon bilateral processes being sidestepped.

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[15] **https://www.euaca.org/up/files/European-Commission-delegated-act-on-slot-21-22.pdf**
[16] **Europe experienced a significant fourth wave of COVID in mid-November 2021 with COVID cases surging just as the Omicron variant was identified.**
[17] **Reuters, 17 September 2021, EU airport slot rules trigger Asia retaliation threat, risk industry trade war, https://www.reuters.com/business/aerospace-defense/exclusive-tougher-eu-airport-slot-rules-trigger-asia-retaliation-threat-risk-2021-09-17/**

The Southeast Asia airline opinion is that the EU appears to have greater leverage in bilateral discussions since it is acting as a Union of countries and multiple airlines. One regional airline mentioned that they feel bullied by the EU since they don't have the leverage that other Southeast Asia hubs might have in bilateral discussions.

The reciprocal treatment of airlines is regularly affected by the consistent interpretation and application of relief measures by slot coordinators. Where there is an alignment of slot coordinator views there is greater consistency of policy application. From the regional coordinator perspective there appears to be good alignment within the Asia pacific Airport Coordinators Association (APACA). Coordinators advise regular APACA meetings have been held throughout the crisis to help coordinate slots in a consistent way, but it was also suggested this is not representative of collaboration with the European Airport Coordinators Association (EUACA), or within the Worldwide Airport Coordinators Group (WWACG) which includes representation from both Europe and Southeast Asia.

USA

At the start of the crisis the USA appeared cautious to provide slot use relief by only providing a waiver for two months, but the US Government has since confirmed slot relief for international slots for each subsequent season.

No respondent to the development of this paper raised any concern for the US approach. However, a global airline respondent mentioned that the US Government has been proactively engaging countries where slot use relief measures do not offer equal opportunity for US airlines. This is thought to be like the reciprocity clause included in many Southeast Asia relief conditions.

China

China provides an international waiver for the non-operation of slot series, but regardless of demand airlines are subject to the "Five One" policy. The policy restricts all airlines to a single departing flight from China to a particular destination each week. The policy was considered a missed opportunity by the two regional airline respondents, both of whom represent airlines who have not been able to fly a surplus of demand. In both cases the respondents were satisfied that historic rights to slots remain protected.

Canada

A WASB respondent raised that the slot usage rule has been applied differently at Vancouver International Airport and Toronto Pearson Airport. Rather than calculating the usage rule for each series, the calculation considered an airline's total slot holding at Toronto airport. The coordinator apparently believed this was a successful approach, avoided significant levels of slot adjustments and provided a high level of flexibility to the airlines. It is one of the flexibility options that could be considered further in slot policy generally.

The respondent mentioned that the idea did not gain support from the WASB since some stakeholders believed it offered airlines too much flexibility and might not result in accurate scheduling required at the busiest of airports.

NS21 slot allocation in NW21

An airline respondent mentioned one location where due to the uncertainty of what will be operated and there being a preference for slots to be returned early, the coordinator only allocated NW21 slots that were operated in NS21. The airline has since requested slot changes to match its intended schedule. For NW21 this approach has not caused too much concern since the airline is assured historic precedence remains protected, but the airline advised this might cause concern if the future season was expected to provide a stronger recovery.

Other Level 3 airports

IATA publishes the full range of slot relief measures[18] provided by authorities globally. There are no other significant divergences from the Southeast Asia approaches that are not already included in this paper. The WASB has formed the basis for almost all forms of relief, but some jurisdictions have implemented full slot waivers instead. The reasoning to do so has generally been for the simplicity of administering a waiver over more technical measures, and especially in countries where the pandemic continues to have a significant impact.

Alternative allocation procedures

Applied alternative approaches to those found in Southeast Asia are included in the Global responses section of this paper, but a WASB respondent has shared one additional idea raised for consideration by the WASB but not implemented. This was to consider no full series return capability, a 60:40 usage ratio requirement and potential JNUS eligibility for closed markets. The idea was not supported since the administration for managing JNUS and a usage ratio was considered too onerous on airlines and coordinators, when the ability to return full series of slots has the same effect in a closed market.

WASB NS22

At the time of writing this paper the WASB agreed its WASB recommendations for the NS22 season.[19] Considering the differing speed of recovery of different countries and regions, the recommendation is for markets to be categorised. Within the categories, combinations of full series return, usage ratio and JNUS continue to be recommended. The agreement is not used in this paper for comparison since we cannot gauge the application of the recommendation at this early stage.

A regional coordinator respondent regarded the WASB NS22 recommendation as a step in the right direction to balance the needs of all stakeholders. The end goal of the recommendation is to provide the industry with a set of principles and procedures that balance the interests of all stakeholders, while considering the differing speed of industry recovery globally. It seems reasonable to assume that if this recommendation proves successful in NS22, it might form the basis of recommendations for future seasons. The structure of the recommendation considers four different market types by their levels of restriction from the "severely restricted market" to "open market" types. Local authorities may choose the level of market restriction that applies until such time as the "open market" applies, thereby representing a return to normal slot coordination principles.

The identification of the market type is crucial and could form the basis for future edits to the WASB COVID-19 recommendations. For example, should authorities consider markets based upon their level of restrictions, or perhaps by the willingness of people to travel? Understanding the drivers of demand typically goes beyond current slot coordination principles but might prove relevant. An example of this situation may be developing at this time of writing where the Omicron variant of COVID-19 is rapidly spreading across nations, but jurisdictions appear to be lifting travel restrictions. If the recovery of demand therefore lags behind the removal of travel restrictions, this suggests a new dynamic could emerge that might see temporary consumer opinion for travel as a characteristic to be considered in future slot use relief recommendations.

Regional coordinator respondent also raised the level of complexity in the recommendation and mentioned that some jurisdictions might still apply full waivers for simplicity and to make sure the industry receives full flexibility. IATA has begun to receive slot relief approvals for NS22 and there appears to be some merit in this opinion, but this is probably not a significant issue because the flexibility of the WASB recommendation means most NW21 slot relief solutions are already represented in the NS22 WASB recommendation.

[18] **https://www.iata.org/contentassets/4820c05b19f148e2855db91f2a579369/global-slot-use-relief-status-northern-winter-2021-level-3.pdf**
[19] **https://www.iata.org/contentassets/4820c05b19f148e2855db91f2a579369/wasb-slot-alleviation-measures-for-ns22.pdf**

With regards to expectations of complexity, coordinators will be expected to know the category of the market at each end of all affected routes to aid reciprocal treatment of airlines. Acknowledging that this same respondent had previously mentioned that their organisation's workload had already increased 300% since the start of the crisis, the WASB NS22 recommendation is expected to add some burden to the coordinator's already busy workload. To this the respondent opined that it will be a huge challenge for coordinators, but their efforts will be for the good of the industry.

Stakeholder perspectives

Southeast Asia airline and airport respondents are aligned in their preference to reduce cost and to identify new markets. Both stakeholder groups support the region's close alignment with the WASB recommendations, although an airport respondent suggested local solutions that depart from the rest of the region might help better identify new markets. This difference might suggest airports and airlines are not always aligned in their identification of preferred markets.

Airport

Airport respondents were generally satisfied with the type of relief provided at Southeast Asia airports. The main emphasis has been on having early enough visibility of schedules for the airport to adjust its use of the facility and to reduce cost. The symbiotic relationship between airport and airline appears most apparent closer to the time of operation when there is greater certainty of operations and interests are aligned in ensuring the few operations that are taking place do so efficiently.

Some airports consider local circumstances to be more important during the pandemic, at the expense of global consistency of principles and procedures since they advise it has become very difficult to remain aligned with the rest of the world amidst varying travel restrictions. At times, airports have wanted to differentiate between markets, but slot alleviation measures were thought to have prevented this. Without slot alleviation measures, other airlines might gain better access to service new markets.

Airline

Airline respondents were generally satisfied with the type of relief provided at Southeast Asia airports. The main emphasis has been on the protection of historic rights to facilitate network recovery and having enough flexibility to meet late demand to test new markets. Flexibility should therefore include the ability to change aircraft types, timings and destinations to best meet demand.

The inclusion of reciprocity clauses in slot relief measures has been considered helpful in encouraging the implementation of consistent levels of relief. General airline opinion is that the region needs a single understanding which is aligned to the WASB recommendations since this is expected to facilitate the ability of airlines to react to the market.

Uncertainty

The outlook of the pandemic remains highly uncertain. "Where are we going?" asked one respondent, summing up the level of uncertainty shared by all respondents. At the time of writing, some responsible authorities appear to view vaccinations as the key to travel again, but airline and airport concern exists that this may ultimately suppress travel due to a smaller pool of people being able or willing to travel. Leisure destinations are currently replacing city destinations, but this might only be a temporary change. The industry simply does not know where there will be sustainable markets, or how markets will continue to be impacted by travel and health restrictions.

The need to identify viable markets during this period has led to increased airline agility to find a viable way to fly. This frequent change of routes, timings and frequency is unlikely to reflect a preferred way of operation for airlines and airports in the future, if only for the loss of efficiency in aircraft and airport facility utilisation. The consistency of core global networks has helped drive efficiencies, broader connectivity, and ultimately lower prices. From a passenger perspective, ticket cost is a concern, but so too is the reliance on regular services to a destination at a particular time. If we expand this to the need for regular freight services, or cargo in the belly hold of daily passenger flights, we begin to see the lost reliability of time sensitive goods, medicines perhaps, or fresh foods from other parts of the world. Reliable connectivity is often understood by regulators as hugely valuable to their country and is recognised by most of the regulators considering slot use relief measures.

Sectors of aviation perhaps more reflecting charter services will probably continue to plan with agility since this is closer to their established model. Low-cost carriers (LCC) may also have a greater ability to plan with agility and to alter plans at short notice. If following a point-to-point model, they are usually less reliant on connecting traffic and operating from less congested airports where schedule flexibility exists and approval more obtainable, the ability to change is improved, but they too will probably prefer the certainty of regular and efficient aircraft utilisation. Airline agreements on airport charges could potentially be less attractive if the certainty of operation is reduced, and to remain competitive, airlines can't ignore the customer who in pre-pandemic times has typically booked flights much further in advance. Part of a competitive offering is perhaps reflected in the reliability and consistency of service.

It is probably reasonable to assume all airline business models are likely to revert to their pre-pandemic schedule and route planning strategies after the crisis under the assumption that market demand will recover, once travel restrictions are removed, and passenger confidence to travel returns.

Coordinator

Coordinators within Southeast Asia referred to the WASB recommendation as a good starting point for further discussion within the region, but regulators are likely to makes some changes to suit what they believe is best for their country. Reciprocity clauses were recognised by the coordinators, and some mentioned that they have been contacted by other coordinators to check how relief measures are being applied.

Some of the region's coordinators considered the general waiver at the start of the crisis to have been useful, but this was flawed by late slot returns. This opinion was not consistent for all Southeast Asia coordinators since some believe later slot return times are important due to the timing of demand. The current WASB full series return option by a certain date draws most coordinator support.

Coordinators were asked about their opinion for the balance between protecting historic rights for existing carriers and providing certainty of access to other airlines that may be able to operate. Coordinator opinion was that the WASB measures strike a good balance by providing a high priority to new services, but the measures do not strip airlines of rights for reasons such as the implementation of government restrictions that are outside of an airlines control. One coordinator went on to advise that from a capacity efficiency perspective, a new carrier might make best use of capacity now, but it might not once the industry has recovered.

Coordinators felt that there have been insignificant differences across Southeast Asia coordinators. There has been good cooperation within the region, but this was not thought to extend to the European Airport Coordinators Association (EUACA), or the Worldwide Airport Coordinators Group (WWACG). Regional coordinators mentioned that there has been little collaboration with the WWACG or other regional coordinator groups in other parts of the world.

Recommendations

It remains too early to know how the industry will look, plan, and operate following the crisis. Based upon the region's support for relief measures, high levels of flexibility and communication are vital for the industry to work together and seize any opportunity to either recover or develop. This is, therefore, not a time to rewrite the rules for fear of constraining the industry with so many unknowns. Instead, continued contemplation for temporary measures that support the industry in finding its recovery seems appropriate at this time.

Southeast Asia opinion supports consistent and appropriate levels of slot use relief regionally and beyond. Bilateral considerations demonstrate the need for fair, neutral and non-discriminatory relief measures and an avoidance of anti-competitive or protective practices that may cause bilateral concern. Where bilateral concern exists, it seems fitting for governments to play a role and to help "level the playing field" through the encouragement of consistent slot relief measures in other regions.

Slot coordinators globally have differing interpretations of common relief measures. Regional legislative or political influences may exist that impact coordinator activities, but even within regions like Europe where there is a single regulation, coordinator interpretations and the management of slot relief measures differ. These differences should ideally be resolved and better interaction between EUACA, WWACG and APACA encouraged to benefit the implementation of interregional measures and to help avoid bilateral frustrations. EUACA was asked to provide consistent interpretations of JNUS which still resulted in unilateral European coordinator interpretations. This seems to be a key area for improvement.

The application of the WASB recommendation, often with a reciprocity clause, is working well within the region and suggests Southeast Asia authorities will continue to support this guidance. Unilateral alternatives should therefore be avoided and where there is flexibility in WASB guidance, a cautious and flexible position should probably be considered to help provide regional alignment.

The ability to return full series of slots early in the planning is rated highly by all industry respondents. This item should remain at the core of any future slot relief considerations for the region.

Of all the WASB recommendation features, full series returns are considered the most useful element that best meets the needs of airports and airlines. As for JNUS, no change is required in its application with Southeast Asia, but authorities should avoid placing a reliance on JNUS instead of other WASB recommendation features.

Demand remains volatile and cannot be predicted. The industry is planning and operating with agility to follow demand and continued flexibility is required to achieve this. The alternative approach, like the EU, is to intervene in the market by removing flexibility and slot relief measures to force the utilisation of slots but adopting the EU approach would probably carry a risk to the Southeast Asia region. The paper describes how this removes the ability of the industry to try new things, test new markets, maximise the potential to provide sustainable services, and to walk away if it is not working. An understanding that demand will take time to recover is recommended, and that a sustainable recovery will follow the sustained use of flexible slot relief measures that allow flights to redevelop in step with demand.

WASB recommendations are recognised to have balanced the needs of different stakeholders, the latest recommendation for Summer 2022 may therefore be used as a template for future disruptive events due to its adaptability for different circumstances. The WASB is understood to consider simplification of the recommendation into a matrix which may then be included in a future WASG annex. This guidance has been developed based upon lessons learnt over the past two years of managing the COVID-19 crisis, it therefore incorporates the levels of flexibility and principles that support the certainty of planning. This may benefit consumer confidence through improved planning of flights and allow airlines to act nimbly, adjusting to passenger or cargo demand as it materialises.

It appears that airlines with the most comfortable financial position have the best ability to survive and deliver on commercial strategies through their ability to utilise slots, despite the lack of short-term sustainability. Retaining the flexibility in the slot use measures will again help "level the playing field" and provide the worst affected airlines with the best ability to survive and compete.

Consistency of slot relief measures is desirable, but so too is the consistency of travel and health restrictions. From the industry perspective, improved timing of communication and consultation of restrictions at airports or onboard aircraft, is vital across the Southeast Asia region to ensure government restrictions are most effectively implemented and passenger disruption avoided.

Key stakeholders should continue to consider the impact of disruptive events on consumer confidence with an understanding that prolonged impacts appear to result in the prolonged recovery of demand. Responsible authorities should therefore remove planning flexibility and relief measures cautiously and in a manner that supports the sustainability of flights, provides passengers with the certainty of regular and reliable services, and regulators with the connectivity countries rely upon.

Understanding the impact of COVID-19 has been vital for identifying if the WASG was sufficient to manage these circumstances. A great deal of time has been spent by the industry in attempting to find a way forward, in balancing the needs of the different stakeholders, and in addressing the varying approaches to airport slot coordination. The variety of different relief measures that have since evolved with the maturity of the pandemic provide the industry with valuable lessons that may form the basis of guidance for such occurrences in the future.

Glossary

Ad hoc slot:	an allocated slot which is not eligible for historic precedence.
Agreed Historics Deadline:	the deadline date, as set out in the Calendar of Coordination Activities, by which airlines must raise any disagreements with the coordinator's determination of historics. It is 7 days before the Initial Submission Deadline.
Airport Slot:	a permission given by a coordinator for a planned operation to use the full range of airport infrastructure necessary to arrive or depart at a Level 3 airport on a specific date and time
Asia Pacific Airport Coordinators Association (APACA):	the APACA is an international association representing airport coordinators and schedules facilitators from the Asia Pacific region.
Calendar of Coordination Activities:	the events and industry deadlines governing the coordination process for each season.
Coordination Parameters:	the maximum capacity available for allocation at an airport considering the functional limitations at the airport such as runway, apron, terminal, airspace, and environmental restrictions declared by the airport or other competent body.
European Airport Coordinator Association (EUACA):	the EUACA is an international association representing airport coordinators and schedules facilitators from the European region.
Full Series Return	the return of an entire series of slots to the slot pool, as referred to in WASB guidance and therefore throughout this paper. Partial series returns are subject to different treatment.
Historics Baseline Date:	the reference date used for the 80% usage calculation to determine historic precedence, being 23:59 UTC on 31 January (summer) and 23:59 UTC on 31 August (winter).
Historic Precedence:	the principle whereby airlines are entitled to a series of slots that were operated at least 80% of the time during the period allocated in the previous equivalent season.
Historic Slots (or Historics):	slots allocated on the basis of historic precedence.
Initial Submission Deadline:	the deadline of 23:59 UTC on this date, as set out in the Calendar of Coordination Activities, by which airlines must submit their planned operations to coordinators and facilitators at Level 3 and Level 2 airports.
Level 2 Airport:	an airport where there is potential for congestion during some periods of the day, week, or season, which can be resolved by schedule adjustments mutually agreed between the airlines and facilitator.
Level 3 Airport:	an airport where it is necessary for all airlines and other aircraft operators to have a slot allocated by a coordinator to arrive or depart at the airport during the periods when slot allocation occurs
Responsible Authority:	the government department, directorate, authority or agency with responsibility for oversight and regulation of the airport concerned.
Series of Slots (or slot series):	at least 5 slots allocated for the same or approximately the same time on the same day-of-the-week, distributed regularly in the same season.
Series Return Deadline:	the date by which airlines must return series of slot that they do not intend to operate, as set out in the Calendar of Coordination Activities.
Shared Operation:	a generic term referring to various types of operational or commercial arrangements between two or more airlines.
Slot Conference:	a forum organised by IATA for the coordination of planned operations at Level 2 and Level 3 airports, held twice each year for the summer and winter seasons.
Slot Swap:	a process whereby allocated slots are swapped on a one-for-one basis between airlines at the same airport.
Slot Transfer:	a process whereby allocated slots are transferred from one airline to another airline.

Use it or Lose it:	the principle whereby historic precedence is only granted for a series of slots if an airline can demonstrate to the satisfaction of the coordinator that the series was operated at least 80% of the time during the period allocated in the previous equivalent season.
Worldwide Airport Coordinators Group (WWACG):	an international association representing airport coordinators and schedules facilitators around the World.
Worldwide Airport Slot Board (WASB):	a joint forum of airports, airlines, and slot coordinators/facilitators to address slot-related matters such as the development and approval of amendments to the WASG on identifying ways to improve the slot allocation system and processes and suggesting areas for policy development, and to provide guidance on industry scheduling and slot matters the Airport Slot Working Groups (ASWG).
Worldwide Airport Slot Guidelines (WASG):	a live document that provides the aviation industry with a single set of standards for the management of airport slots.

Appendix A: Interview respondents

Interviewee	Organisation	Stakeholder category	Position	Interview minutes
Petra Popovac	ACA and Asia-Pacific Airport Coordinator Association (APACA)	Slot Coordinator	ACA Chief Executive Officer, Chair of APACA, MNL Slot Coordinator	45 minutes
Mr Vann Chanty	Cambodia State Secretariat of Civil Aviation	Regulator	Director of Air Transport	50 minutes
Donald Tan	Changi Airport Group	Airport	Vice President (Airline Development) at Changi Airport Group, ACI World Expert Group on Slots Asia-Pacific regional representative	45 minutes
Wahyu Yusuf Ashari	Indonesia Airport Slot Management	Regulator/Coordinator	DGAC Slot Coordinator	Email response
Dimiter Zahariev	International Air Transport Association	WASB/Airline	WASB Secretariat	57 minutes
Fadli Yusuf	Malaysia Airlines	Airline	Airline network and scheduling	35 minutes
Eldric Paul Peredo	Philippines Civil Aeronautics Board	Regulator	Head of Air Operating Rights	35 minutes
Ser Yi Lee	Singapore airlines	Airline	VP Network Planning	50 minutes
Rob Wood	Sydney Airport	Airport	General Manager Aviation at Sydney Airport, WASB airport member,	20 minutes
Thiti Arayakhun	Thai Airways International	Airline	Director	35 minutes
Michele Boyce	United Airlines	Airline	WASB Chair for airlines	52 minutes

Appendix B: NW21 Southeast Asia slot use relief measures

Country	Airport code	Predominant relief type	Notes and conditions
Cambodia	PNH REP	WASB	Following the Worldwide Airport Slot Board (WASB) recommendation for Northern Winter 2021 conditionally on the principle of reciprocity: 1. Full series of slots (other than newly allocated series) for which a carrier wishes to claim full season alleviation should be returned between the Historic Baseline Date (HDB) and HBD+7 days. 2. Series of slots held at HBD that are not returned or are only partially returned at the deadline of HBD+7 days will be subject to the utilisation requirement set for that season to secure the historic entitlement in the subsequent equivalent season. 3. The utilisation rate should be set at 50:50; and WASG art. 8.7.2.2 shall be suspended. 4. Airline must hand back slots not intended for utilisation as soon as possible, but not later than four weeks prior to planned operation. Retiming and repurposing of slots within the four-week period is allowed. 5. Series operated as approved on a non-historic basis in NW21 should have priority over new demand for the same timings in the next equivalent season subject to capacity and any other legal conditions. 6. This slot use relief is conditioned on the basis that Cambodia based carriers are provided with reciprocal relief at the other airports. The relief may be retracted for carriers if the home jurisdiction where the carriers are based does not provide reciprocal relief to Cambodia based carriers.
Indonesia	DPS	WASB	Close alignment with the Worldwide Airport Slot Board (WASB) recommendation for slot use relief measures for NW21 for international flights on the principle of reciprocity. A lower use threshold is provided for domestic. International flights: 1. Full series relief is provided for slot series returned before 3 October 2021. 2. Full or part slot series not returned by 3 October 2021, are subject to a 50/50 slot use threshold. 3. Slot cancellations are required at least four weeks in advance of operation. 4. Returned slots are allocated on a non-historic basis, but the operating carrier will receive priority allocation status in the next equivalent scheduling period. 5. Slot relief is provided on a reciprocal basis.
Malaysia	KUL	WASB	Alignment with the Worldwide Airport Slot Board (WASB) recommendation for NW21: The Principles, Justified Non-Utilisation of Slots (JNUS) and Conditions from the WASB Recommendation for NW21 (as linked) shall be upheld except for item 2.1.5, whereas airlines can hand back unutilised slots not later than two (2) weeks prior to planned operations.
Philippines	MNL	FW	Conditional waiver for NW21 (for COVID-19) on the principle of reciprocity: 1. Slot returns must be made no less than 14 days before the scheduled departure date.
Singapore	SIN	WASB	Following the Worldwide Airport Slot Board (WASB) recommendation for Northern Winter 2021 conditionally on the principle of reciprocity: 1. Airlines' appeals based on "JNUS" will only be considered if evidence related to new/further tightening of restrictions after HBD +7 are provided. 2. SIN will reciprocate with waivers of the same nature when carriers update the coordinator on the type of waiver applied at their home jurisdiction. This same waiver should apply to SIN-based carriers as well.

Country	Airport code	Predominant relief type	Notes and conditions
Thailand	CNX DMK HKT USM BKK	WASB	Alleviation mostly aligned with the Worldwide Airport Slot Board (WASB) recommendation for NW21 (for COVID-19), but with the following changes: 1. Full series of slots for which a carrier wishes to claim full season alleviation should be returned from now (Jan 2021) until the deadline on 7 September 2021 at 17:00 UTC 2. Coordinators are encouraged to grant alleviation during a recovery period of up to 6 weeks following the announcement of the ending of any relevant restrictions that are considered justified non-utilisation of slots in para.8 of the official CAAT announcement. 3. CAAT reserves the right to cancel the above conditions and waiver if the Slot Coordinator in countries where Thai operators exercise its discretion differently. In such case, the decision will be made on reciprocal basis.
Vietnam	HAN SGN	WASB	Following the Worldwide Airport Slot Board (WASB) recommendation for Northern Winter 2021 on the principle of reciprocity.

Appendix C: Southeast Asia Level 3 airports

The following list details the Southeast Asia airports designated as Level 3 by country authorities. The paper predominantly focuses on the larger and busier airports in this list. IATA publishes a listing of all Level 2 and 3 airports in WASG Annex 12.7[20].

Country	Name	IATA Code
Cambodia	Phnom Penh International Airport	PNH
	Siem Reap International Airport	REP
Indonesia	I Gusti Ngurah Rai International Airport	DPS
Malaysia	Kuala Lumpur International Airport	KUL
Philippines	Ninoy Aquino International Airport	MNL
Singapore	Singapore Changi Airport	SIN
Thailand	Suvarnabhumi Airport	BKK
	Chiang Mai International Airport	CNX
	Don Mueang International Airport	DMK
	Phuket International Airport	HKT
	Samui Airport	USM
Vietnam	Noi Bai International Airport	HAN
	Tan Son Nhat International Airport	SGN

[20] **https://www.iata.org/contentassets/4ede2aabfcc14a55919e468054d714fe/wasg-annex-12.7.xlsx**

Appendix D: ASEAN Member Countries Passenger Forecast (% change against 2019)

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Brunei	19%	6%	35%	70%	84%	93%	102%	110%	118%	125%	131%
Cambodia	18%	9%	39%	68%	82%	93%	105%	116%	125%	134%	143%
Laos	22%	18%	39%	67%	84%	97%	112%	126%	140%	152%	165%
Myanmar	25%	5%	44%	65%	74%	83%	94%	105%	116%	126%	135%
Philippines	23%	6%	53%	81%	95%	109%	123%	137%	151%	165%	178%
Singapore	17%	5%	32%	64%	81%	93%	105%	117%	128%	139%	149%
Thailand	28%	5%	44%	73%	89%	100%	111%	121%	130%	139%	148%
Vietnam	47%	4%	61%	83%	98%	113%	127%	140%	152%	163%	172%