



International Civil Aviation Organization

**The Sixth Meeting of the APANPIRG ATM Sub-Group
(ATM/SG/6)**

Hong Kong, China, 30 July – 03 August 2018

Agenda Item 3: Performance Frameworks and Metrics

SEAMLESS ATM PLAN IMPLEMENTATION MONITORING UPDATE

(Presented by the Secretariat)

SUMMARY

This paper presents the status of the Seamless ATM reporting, reflecting the implementation progress of air navigation improvements in the Asia/Pacific (APAC) Region against the objectives set out in the Asia/Pacific Seamless ATM Plan V2.0.

1. INTRODUCTION

1.1 The ICAO Doc 9750 *Global Air Navigation Plan* (GANP) contained the vision of an integrated, harmonized, and globally interoperable ATM System until and beyond 2028. To achieve this objective, the involvement and active participation of States from each of the seven ICAO Regions is essential. To facilitate the adaptation process of global expectations, a regional plan was created.

1.2 The first version of the Asia/Pacific Seamless ATM Plan was published in 2013. In 2014, the APANPIRG/25 Meeting adopted Regional Priorities and Targets for the APAC Region through the following Conclusion:

Conclusion APANPIRG 25/2 – APAC Regional Air Navigation Priorities and Targets

That, the Regional Priorities and Targets contained in Appendix A to this Report on Agenda Item 3.0 be endorsed by APANPIRG.

1.3 After the creation a web-based reporting tool by ICAO, APANPIRG adopted the following:

Conclusion APANPIRG 25/5 – Web-based Seamless ATM Implementation Progress Reporting Process

That, States/Administrations be urged to report on their Seamless ATM implementation progress at least once a year through the ICAO online reporting process from November 2014 onwards.

1.4 The ICAO Regional Office also encouraged APAC States/Administrations to nominate their Points of Contact (POCs) as requested by ICAO State Letter. The POCs are responsible for submitting and updating their respective State's progress of implementing the Seamless ATM Plan.

2. DISCUSSION

Reporting Status

2.1 As a follow-up to Conclusion APANPIRG 25/5, a number of States/Administrations reported on their Seamless ATM implementation progress. The status of the reporting process as at 02 May 2018 is depicted in **Figure 1**.

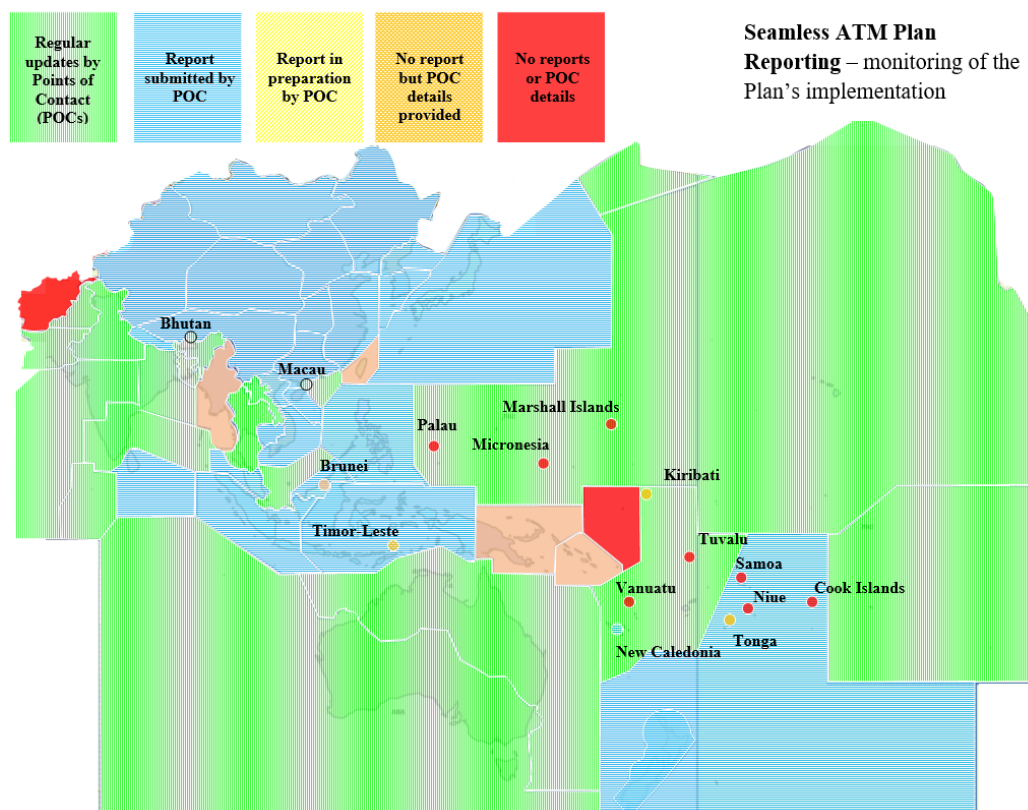


Figure 1: Seamless ATM Reporting

2.2 A total of **28** States/Administrations, i.e. 65% of the APAC States/Administrations, had submitted one or more report(s) on the ICAO Seamless ATM Reporting Portal (accessible through the ICAO Secure Portal). Among those 28 States/Administrations, 21 (75%) updated their progress on a regular basis, which was an excellent practice.

2.3 A total of **16** States/Administrations had not prepared Seamless ATM reports:

Afghanistan, Brunei Darussalam, Cook Islands, Kiribati, Marshall Islands, Micronesia (Federated State of), Myanmar, Nauru, Palau, Papua New Guinea, Samoa, Solomon Islands, Democratic Republic of Timor-Leste, Tonga, Tuvalu and Vanuatu.

2.4 Details of the reporting status of each State is provided in **Attachment A**.

2.5 A short training exercise had been organized by Regional Office after the APANPIRG/27 meeting (on the second day) to provide representatives present with the knowledge and skills regarding access to the ICAO secure portal and submitting the Seamless ATM report. Some States had also experienced difficulty in their interaction with the online reporting function, mainly for access authorization. The ICAO Regional Office had provided the concerned users with information and assistance.

Points of Contact

2.6 As per **Attachment A** to this paper, a total of **33** States/Administrations (77%) had nominated a POC, including Brunei Darussalam recently. A total of **9** States had not nominated any POC:

Afghanistan, Cook Islands, Marshall Islands, Micronesia (Federated state of), Nauru, Palau, Samoa, Tuvalu and Vanuatu.

Relation with the e-ANP

2.7 The introduction of the APAC e-ANP (Electronic Air Navigation Plan) took place at the end of 2015. Volumes 1 and 2 include regional requirements and were now approved, while the adoption of Volume 3 including the regional objectives was pending. The approved eANP Volume I and Volume II were now available at: <http://www.icao.int/APAC/Pages/APAC-eANP.aspx>.

2.8 All regional priorities and targets adopted through the Conclusion APANPIRG 25/2 were contained in the e-ANP Volume 3. All Seamless ATM objectives were also incorporated in the e-ANP Volume 3, which contained all priorities, targets, metrics and supporting documents within the APAC main planning table in accordance with the e-ANP template adopted by the Council.

Regional Picture

2.9 The purpose of monitoring the implementation progress is to determine the difficulties and issues, and take corrective actions at APANPIRG, Sub Group, and/or Task Force levels as appropriate.

2.10 The Regional Picture depicts the progress of States/Administrations against the GANP and e-ANP Volume III objectives. This picture is to be used as a tool by the different APANPIRG bodies (as per the Responsibility Matrix) to steer their action and take corrective actions as needed to ensure full implementation of the objectives. In order to improve the quality and accuracy of the data reported, the ICAO APAC Office interacted with POCs on an ongoing basis and cross checks the information available from other sources of collection.

2.11 The Regional Picture was presented to the APANPIRG/27 meeting to review the progress of implementation of the 45 Seamless ATM elements. As at May 2018, the implementation progress by States and Administrations is illustrated in **Figure 2**:

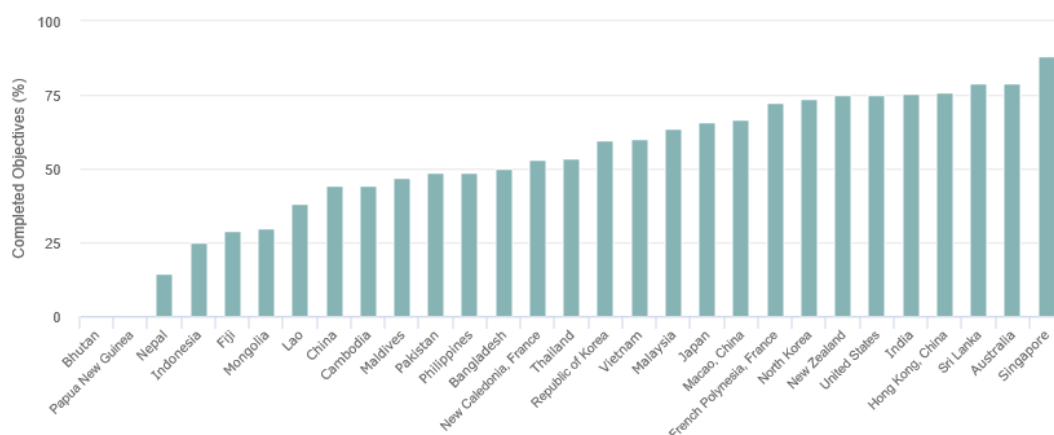


Figure 2: Percentage of Completed Applicable Seamless ATM Elements

2.12 States had been urged by APANPIRG/27 to give higher priority both at CAA and Air Navigation Service Provider (ANSP) levels, and to mobilize human and financial resources to complete the implementation of Phase 1 objectives. Notwithstanding this, Phase 1 was far from being implemented, even three years after the initial target date. Moreover, the meeting noted that in 2019, States were expected to start implementing Phase II elements, which was aligned with the Global Air Navigation Plan (GANP) Aviation System Block Upgrade (ASBU) Block 1.

2.13 The lowest implementation rates were noted for the following elements regionally:

- 60 (ATC Sector Capacity) – 0%;
- 130 (PBN Visual Arrival and Departure Procedures) – 0%;
- 430 (Air Traffic Situational Awareness) – 0%;
- 440 (Optimised Wake Turbulence Separations) – 0%;
- 450 (In-Trail Procedures) – 0%;
- 300 (Aeronautical Information Management) – 10.3%;
- 70 (Airport Collaborative Decision-Making) – 15.8%;
- 240 (ATS Surveillance Data Sharing) – 23.8%;
- 50 (Arrival Management and Departure Management) – 25%;
- 100 (Continuous Climb Operations) – 27.3%;
- 140 (PBN Routes) – 33.3%;
- 90 (Continuous Descent Operations) – 34.8%; and
- 40 (Safety and Efficiency of Surface Operations) – 38.9%;

2.14 **Figure 3** provides an illustration of the overall regional implementation, by Seamless ATM elements.

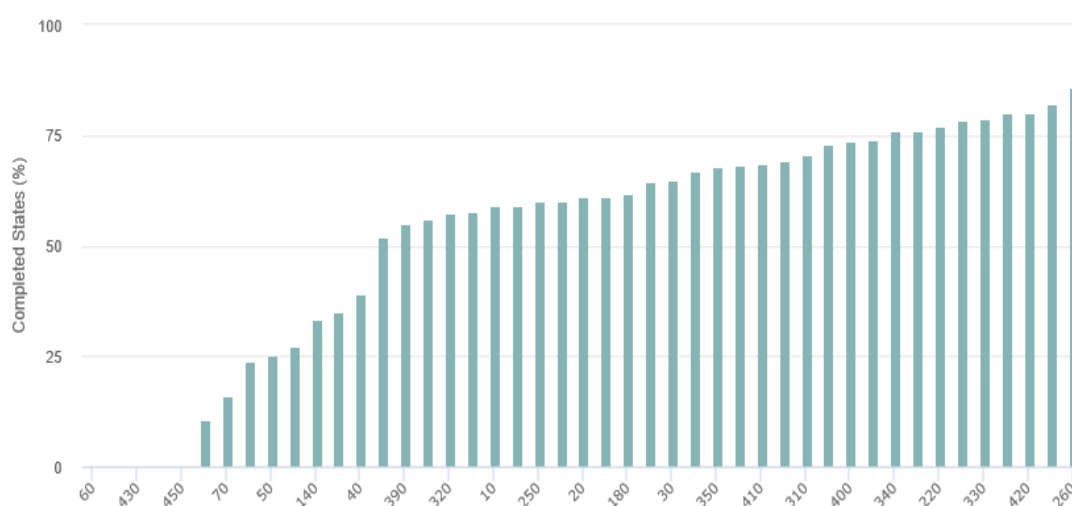


Figure 3: Percentage of Completed Seamless ATM Elements

2.15 In general, the ten priority regional targets planned for Phase I (November 2015–November 2019) had not yet been achieved (**Table 1**).

Acceptable Implementation	
ADS-C, CPDLC	B0-TBO
Partial Implementation	
Strategic Civil Military coordination	Regional
Tactical Civil Military coordination	Regional
ATS surveillance with data integrated	B0-ASUR
ATS Inter-facility Data-link Communications (AIDC)	B0-FICE
Partial and Slow Implementation	
Civil Military use of Special Use of Airspace (SUA)	B0-FRTO
Approaches, including PBN	B0-APTA
Air Traffic Flow Management/Collaborative Decision-Making (ATFM/CDM)	B0-NOPS
Unacceptable Implementation Progress	
ADS-B airspace	B0-ASUR
Aeronautical Information Management (AIM)	B0-DATM

Table 1: Summary of Priority Elements

Acceptable Implementation Elements

2.16 **B0-TBO** (*Automatic Dependent Surveillance and Controller Pilot Datalink Communications, ADS-C and CPDLC*): according to the data, this element is implemented in all the applicable Flight Information Regions (FIRs) except for New Zealand and the United States (this is probably incorrect as the element is understood to have been fully implemented within the Auckland Oceanic FIR and the Oakland Oceanic FIR).

Note: the Regional Picture figures should be used with caution, as there are some data errors, and some features are omitted (such as the FIR outline for Hong Kong, China). These shortcomings have been notified to ICAO HQ for rectification.

2.15

Figure 2 and Figure 3 provide information on reported implementation of B0-TBO.

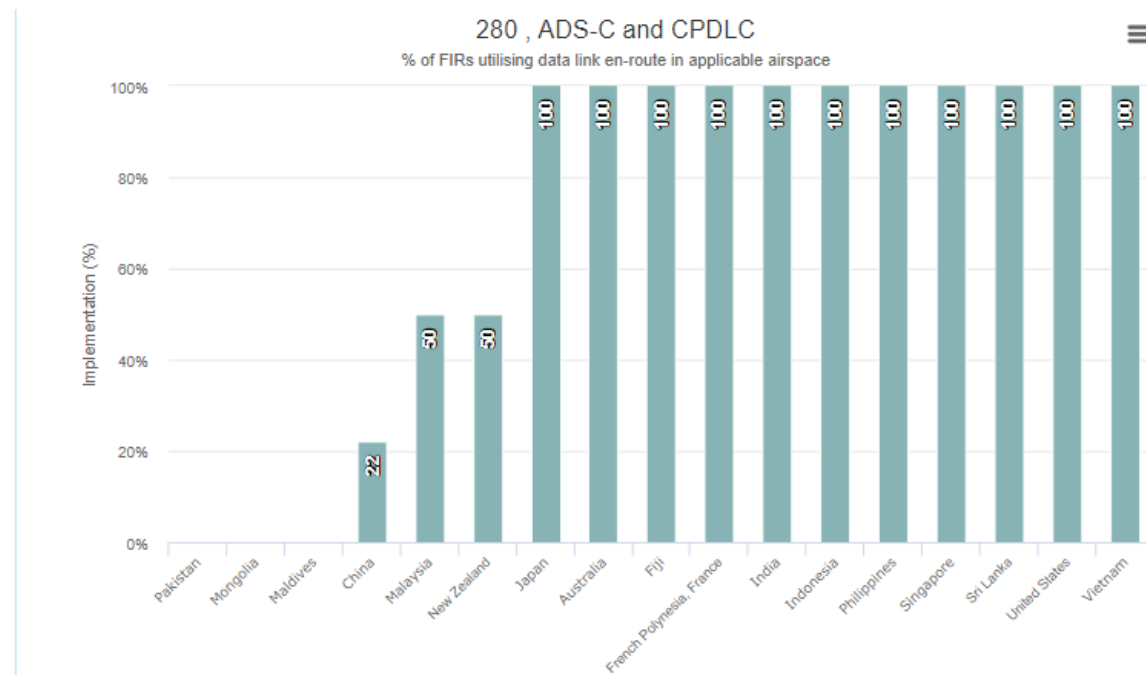


Figure 2: ADS-C/CPDLC Implementation Graph, as at 2 May 2018

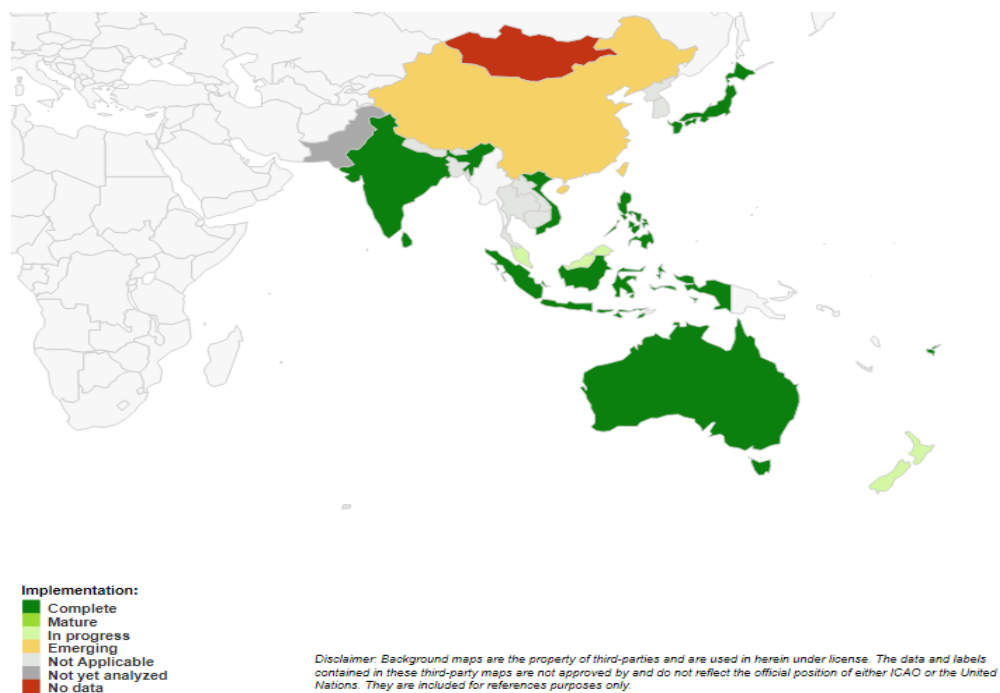


Figure 3: ADS-C/CPDLC Implementation Chart, as at 2 May 2018

- The Philippines had indicated 100% implementation but there was evidence to the contrary. Pakistan had announced at Afghanistan contingency planning meetings implementation of ADS-C/CPDLC services, even though the Karachi and Lahore FIRs were not category R (remote) airspace. However, this implementation had not been noted on the Seamless ATM Monitoring and Reporting Scheme.
- Overall, this element has been well implemented and may be considered for deletion from the list of Seamless ATM priority elements by APANPIRG/28.

Partial Implementation Elements

2.17 **Strategic Civil/Military Coordination** (Regional Element 370) and **Tactical Civil/Military Coordination** (Regional Element 380): 57% reported implementation for both these elements.

- **Figure 4, Figure 5, Figure 6 and Figure 7** provide information on reported implementation of Strategic and Tactical Civil/Military (CIVMIL) Coordination.

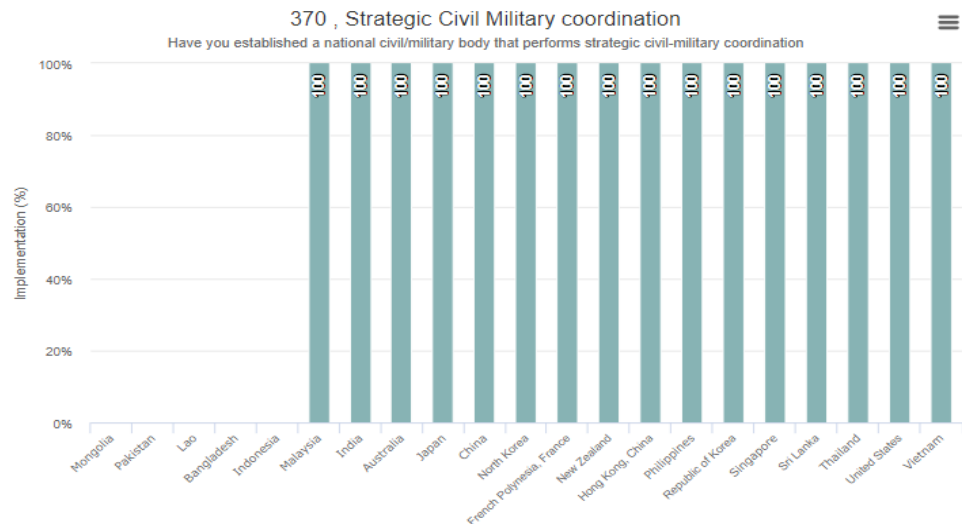


Figure 4: Strategic CIV/MIL Implementation Graph, as at 2 May 2018

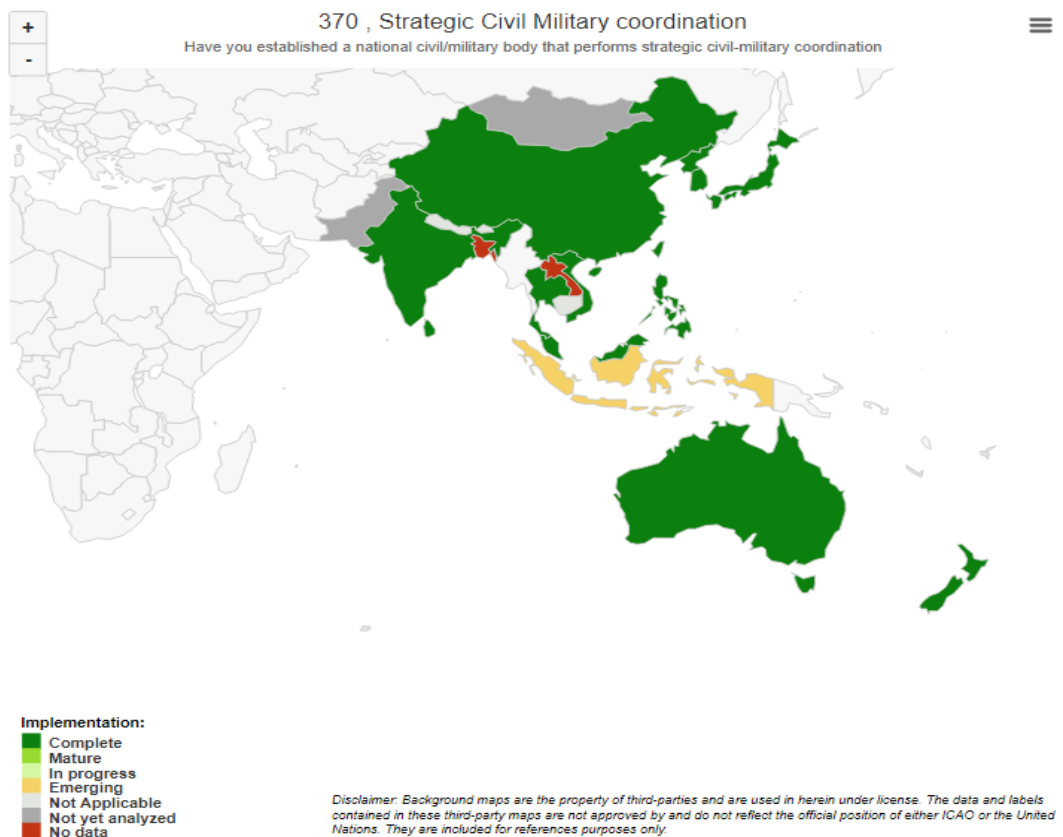


Figure 5: Strategic CIV/MIL Implementation Chart, as at 2 May 2018

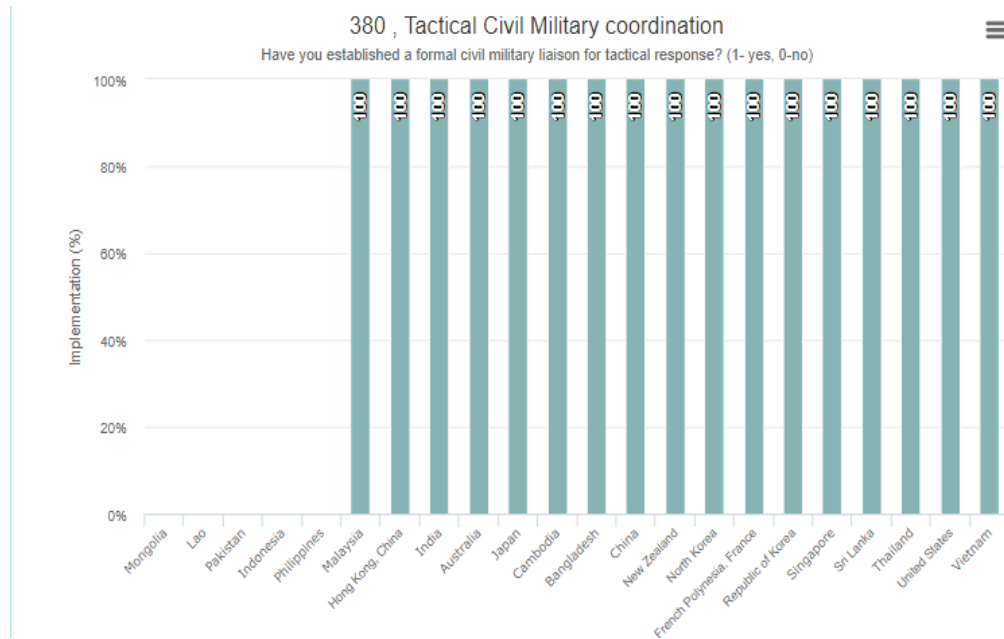


Figure 6: Tactical CIV/MIL Implementation Graph, as at 2 May 2018

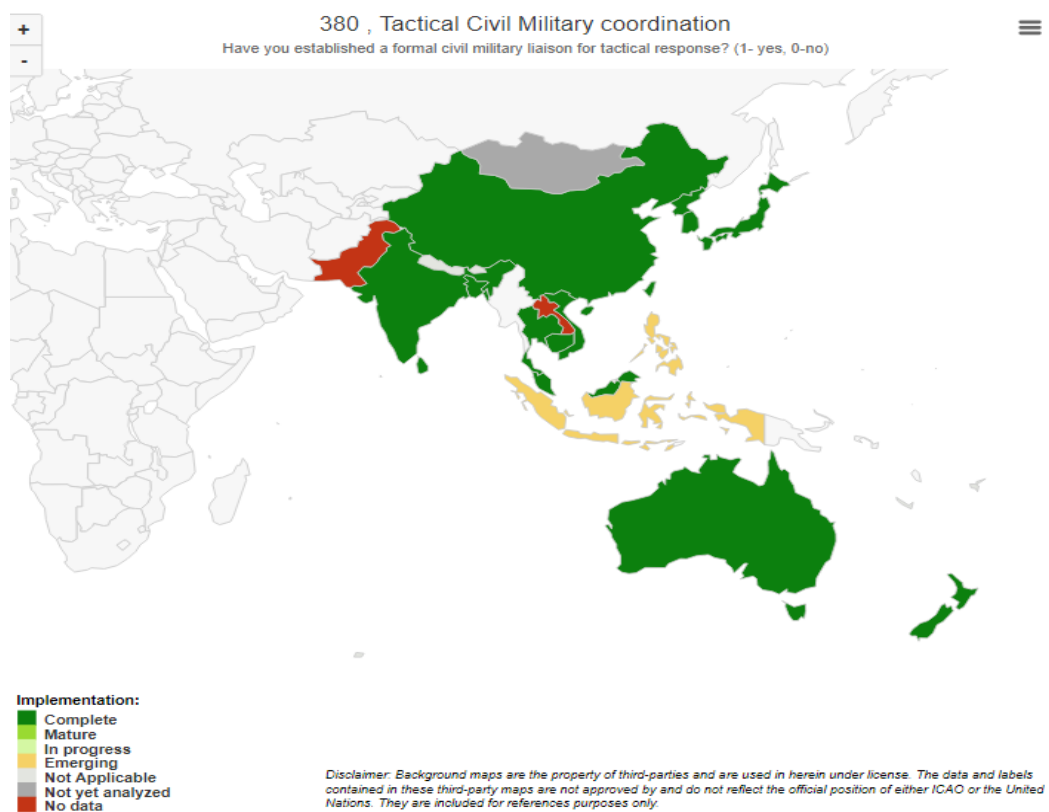


Figure 7: Tactical CIV/MIL Implementation Chart, as at 2 May 2018

2.18 No data was received from Bangladesh, Bhutan, Indonesia, Lao People's Democratic Republic, Mongolia and Pakistan.

2.19 Several administrations reported these elements as 'not applicable' in one of both elements: Cambodia, Fiji, Macao China, Maldives, Nepal, and New Caledonia. However, both elements were applicable to all administrations, whether they have a local military force or not, as any airspace may experience military operations from time to time, requiring some form of liaison.

2.20 One administration had stated that the implementation of this element was complete, although this was known to be not the case, with effective implementation being the key, to minimise short-notice delays and disruption to civil air traffic. Therefore, it was not just a matter of having a military liaison officer in the Area Control Centre (ACC) – the liaison had to be demonstrably effective, but in this case major delays and disruptions continued to be reported, and these had also affected other parts of the Asia/Pacific Region. Further information about this example is found in **ATM/SG/6/WP/26**.

2.21 Like all self-reporting systems, the quality of the output – and thus the benefit derived – depended on a transparent response. If respondents failed to indicate deficiencies within their area of responsibility, then there would be no compulsion on high level decision-makers to make any changes, especially with regard to areas such as civil/military cooperation and financial resources. Therefore, all States and Administrations were reminded to complete their responses accurately for their own benefit, as much as affected service providers and neighbouring States.

2.22 In summary, given that lack of civil/military cooperation was a significant factor in the Asia/Pacific's relatively poor ATM efficiency compared to more developed areas of the world, the regional progress was well behind APANPIRG's expectation for these critical elements.

2.23 **B0-ASUR (ADS-B Category S and T airspace supporting high density aerodromes):** where applicable, 46% (13) of the 28 administrations reported having advised implementation. **Figure 8** and **Figure 9** provide information on reported implementation of B0-ASUR (ADS-B airspace).

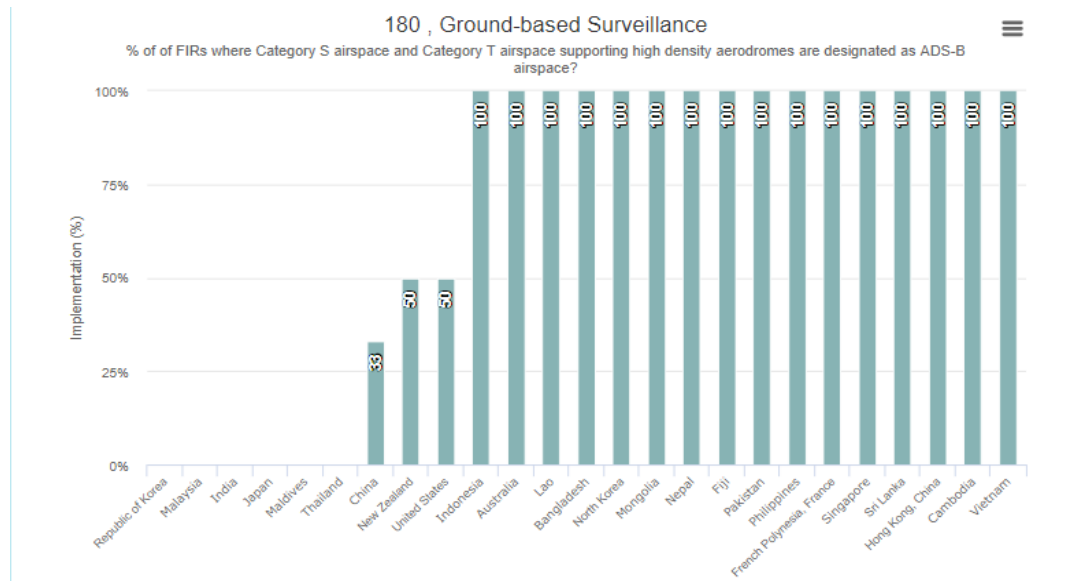


Figure 8: ADS-B Airspace Implementation Graph, as at 2 May 2018

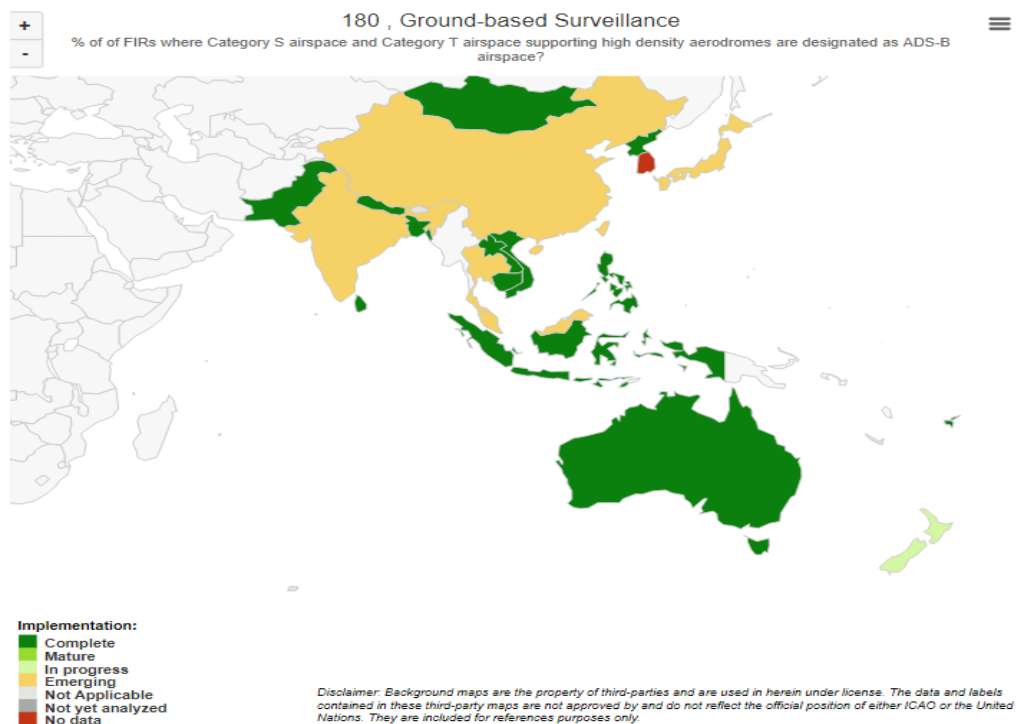


Figure 9: ADS-B Airspace Implementation Chart, as at 22 February 2017

- The ROK provided no data, although ADS-B was available in the Incheon FIR.

Note: this monitoring element needed to take into account when ADS-B was not planned but there was ATS surveillance (paragraph 7.6 of the Seamless ATM Plan refers).

2.24 In summary, the region was making progress with ADS-B airspace implementation, but further effort was required to take advantage of this technology for seamless tactical operations.

2.25 **B0-FICE** (*ATS Inter-facility Datalink Communications – AIDC*): where it was applicable, 64% of administrations reported implementation of this high priority element. **Figure 10** and **Figure 11** provide information on reported B0-FICE implementation.

Note: this element is applicable to States such as Bhutan even though the metric refers to ‘percentage of FIRs...’ because the Seamless ATM Plan’s expectation is generic:

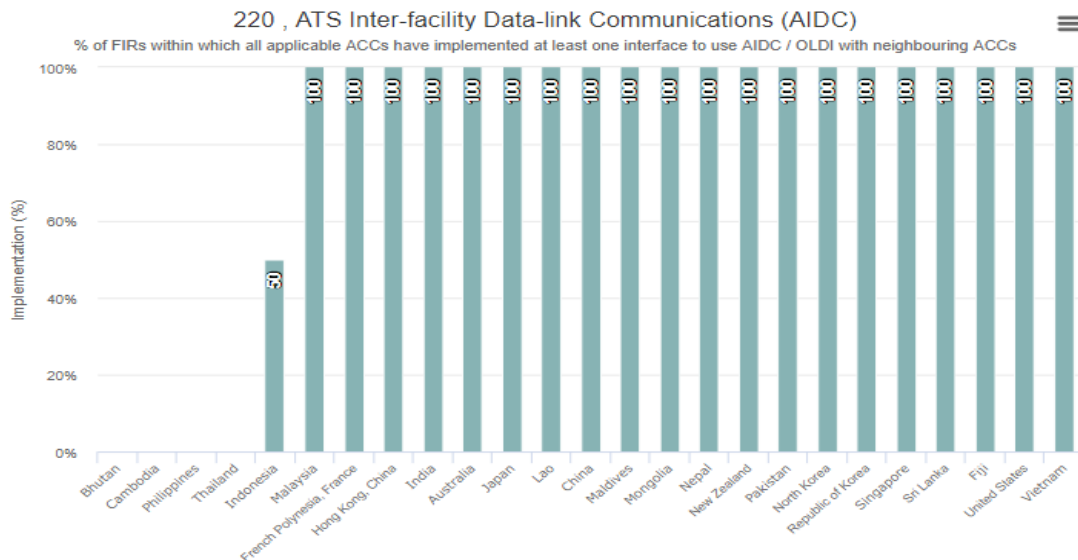


Figure 10: AIDC Implementation Graph, as at 2 May 2018

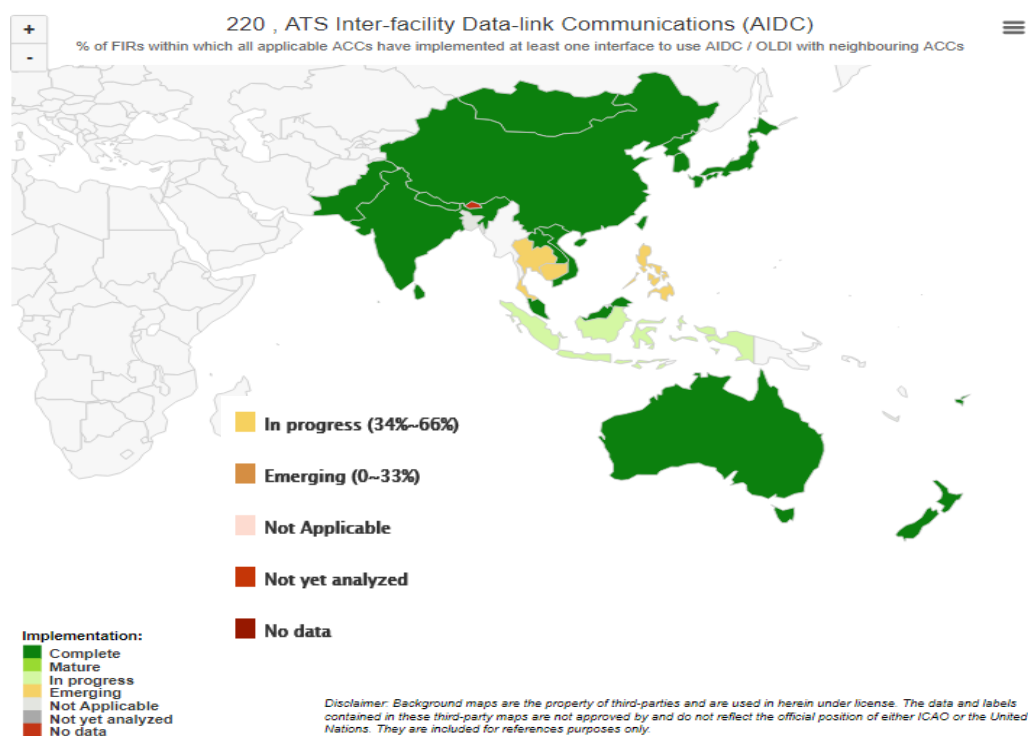


Figure 11: AIDC Implementation Chart, as at 2 May 2018

- The following reported as not fully implementing: Indonesia and the United States.
- The following provided no data: Bangladesh, Cambodia, Maldives, and Philippines.
- This element indicated a moderate implementation success, but a significant number of administrations remain that are behind the regional expectation.

Partial and Slow Implementation

2.26 **B0-FRTO** (*Implementation of Flexible Use Airspace*): 54% reported implementation of the appropriate management of military Special Use Airspace. **Figure 12** and **Figure 13** provide information on B0-FRTO implementation.

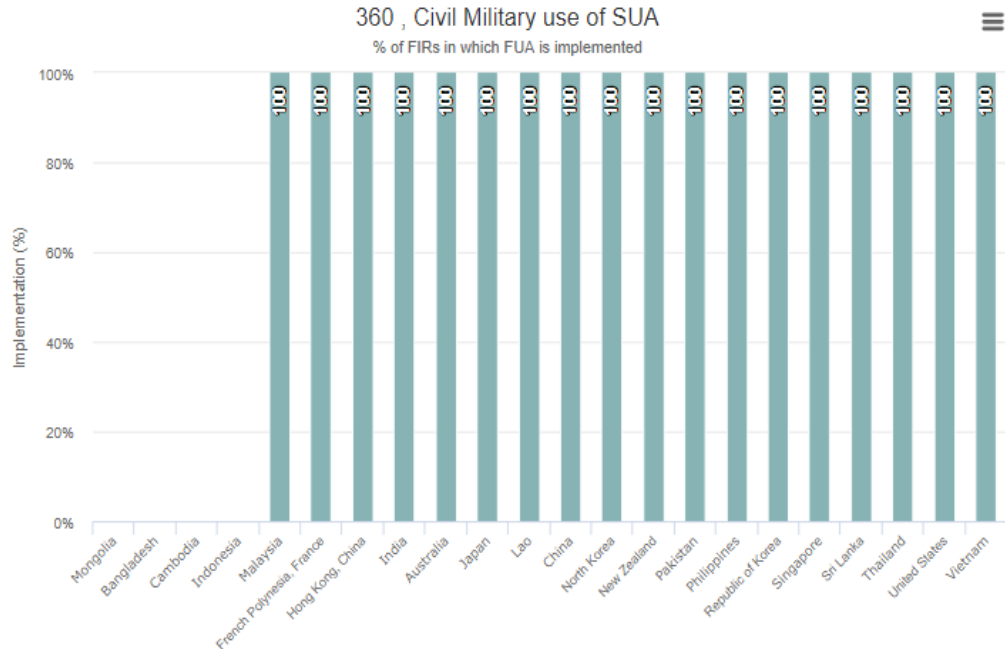


Figure 12: SUA CIV/MIL Implementation Graph, as at 2 May 2018

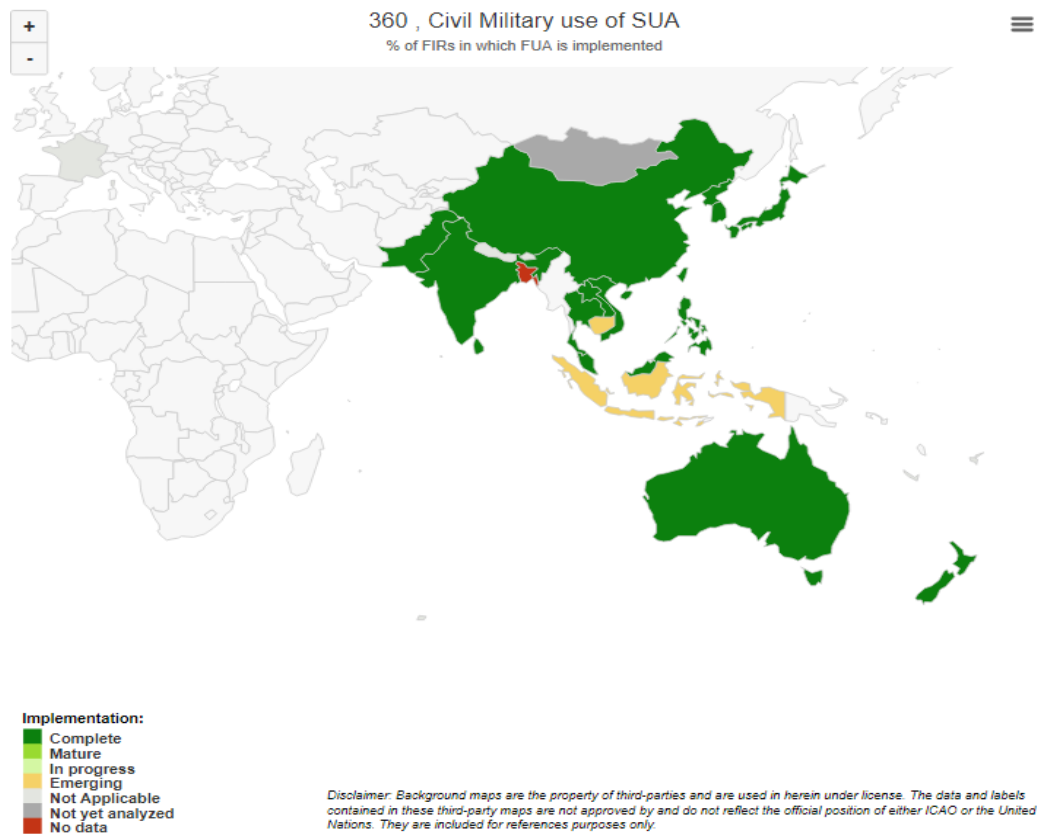


Figure 13: SUA CIV/MIL Implementation Chart, as at 2 May 2018

- Several administrations reported this element as ‘not applicable’, including, Bhutan, Fiji, Lao PDR; Macao China, Maldives, Nepal, and New Caledonia.
- No data was received on this element from Bangladesh, Cambodia, Indonesia, Mongolia and Sri Lanka.
- China indicated that this element was ‘not yet analysed’, even though the element is applicable to China, which has had on-going civil/military cooperation problems affecting the region for several years.
- In summary, the result for this element has been an uneven implementation, with progress noted in several airspaces which the element is applicable, and less than half of Asia/Pacific States overall had achieved the target.

2.27 **B0-APTA** (*Performance-based Navigation Approaches for high density aerodromes with instrument runways serving aeroplanes*): only **11** (39%) advised full implementation. **Figure 14** and **Figure 15** provide information on B0-APTA implementation.

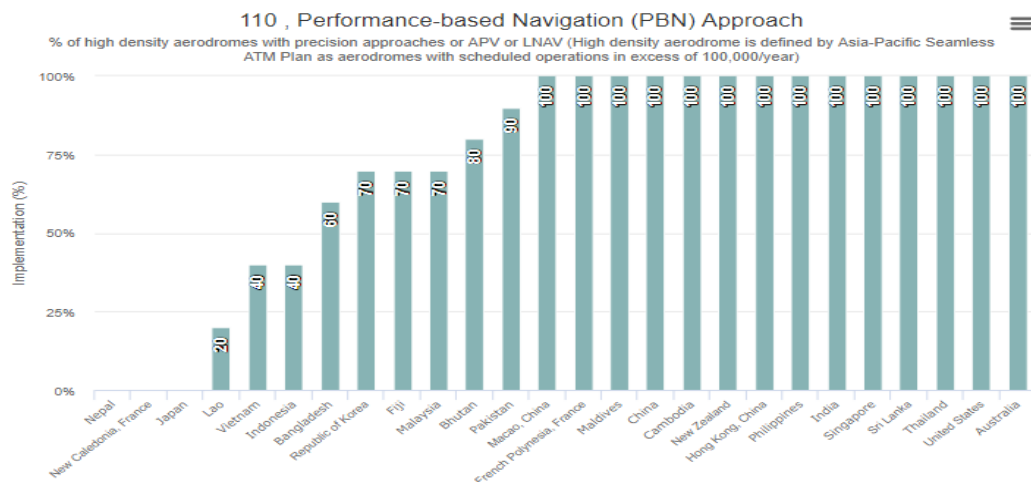


Figure 14: PBN Approaches Implementation Graph, as at 2 May 2018

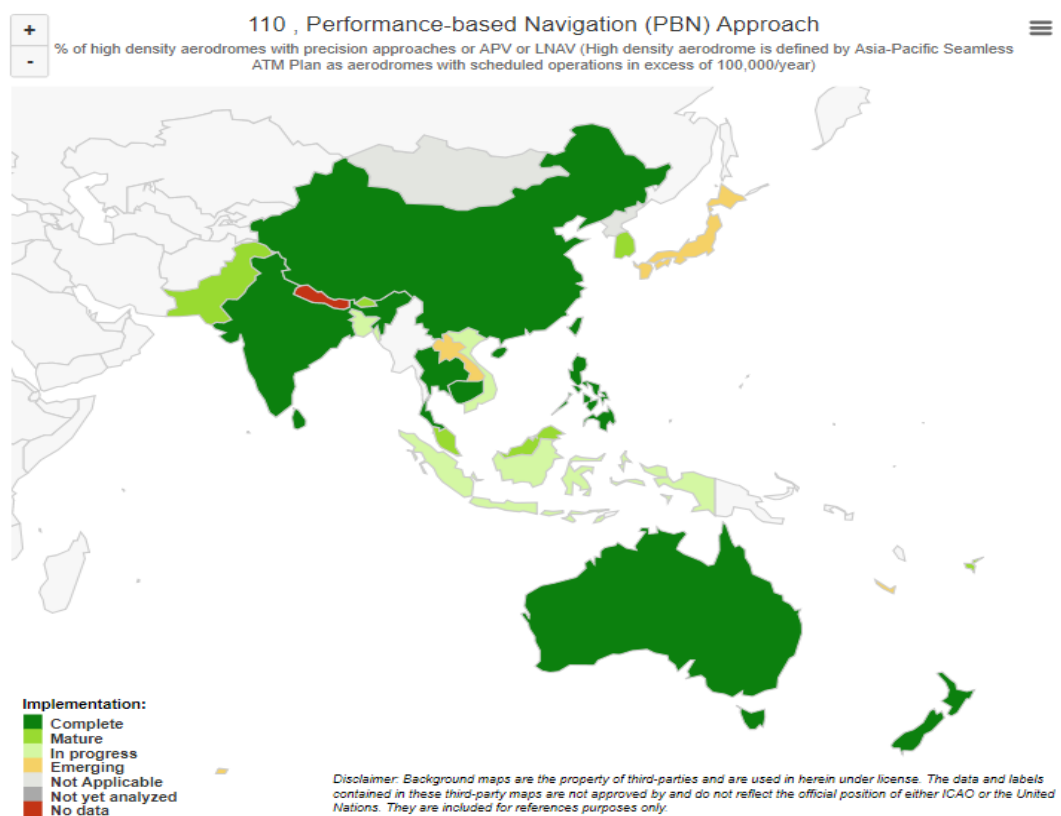


Figure 15: PBN Approaches Implementation Chart, as at 2 May 2018

- Two reports (Bhutan and Macau, China) indicated ‘no data’.
- The United States indicated ‘not applicable’ but it should apply (Honolulu, etc.).
- Overall, progress in this element for the region had been poor, given that this is a priority element and Assembly Resolution A37-11 required implementation of approach procedures with vertical guidance (APV) by 2016.

2.28 **B0-NOPS (ATFM/CDM for high density Flight Information Regions):** the region was well behind the implementation target of November 2015, although there were ATFM implementation programmes in China and India that were due to become operational soon. **Figure 16** and **Figure 17** provide information on B0-NOPS implementation.

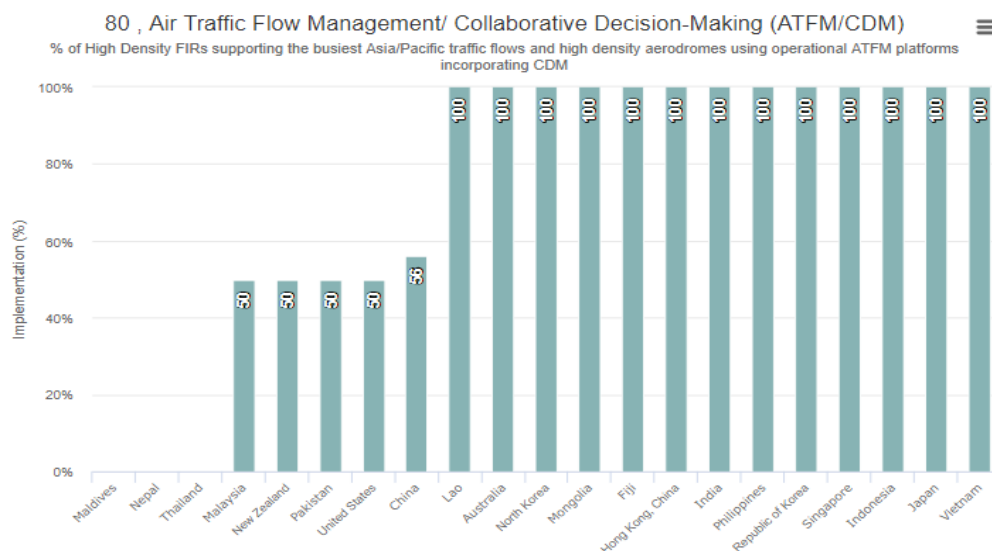


Figure 16: ATFM/CDM Implementation Graph, as at 2 May 2018

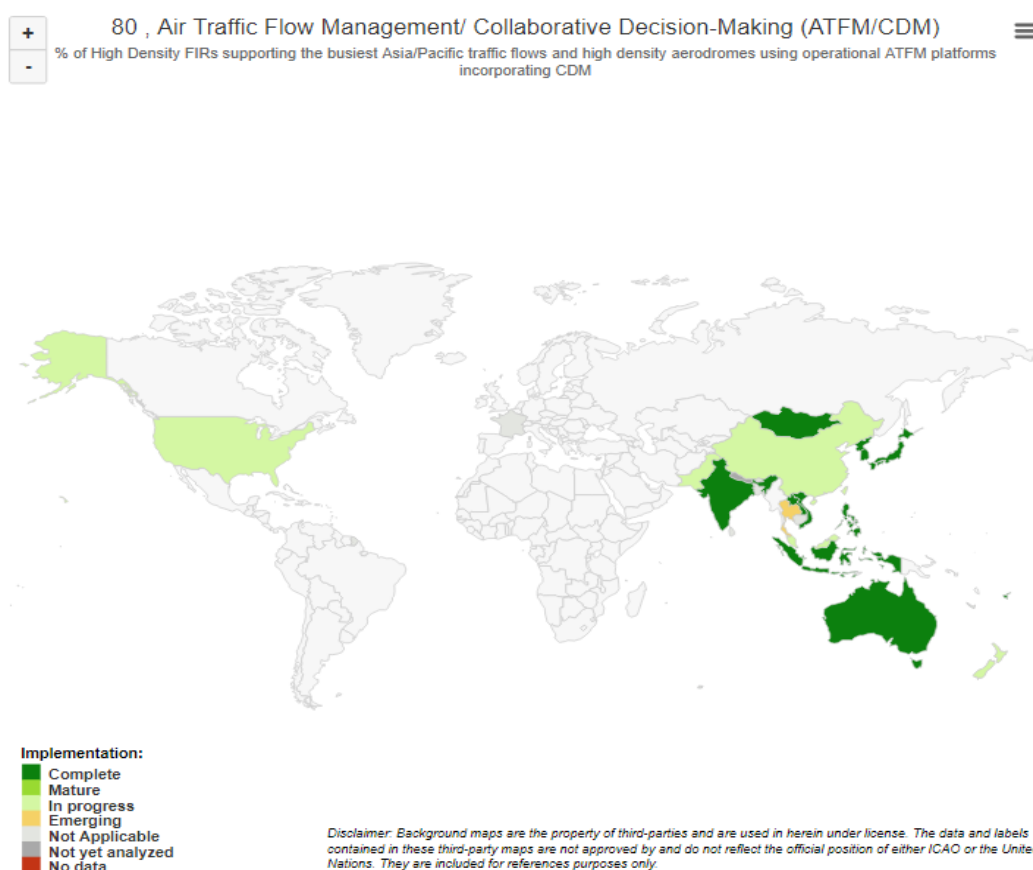


Figure 17: ATFM/CDM Implementation Chart, as at 2 May 2018

Note: Figure 17 should be understood as being incomplete, as only a few regions report data into the ICAO system at present.

- fully implemented – Japan (Fukuoka), Australia and Mongolia (although this Phase 1 element is not applicable for Australia and Mongolia).
- ‘fully implemented’ – Fiji, Indonesia (Jakarta), India (Delhi, Mumbai); Philippines (Manila), ROK (Incheon), and Hong Kong, China. However, these reports are not clear as it was understood that ATFM/CDM was only implemented for domestic operations in the Philippines, and the ATFM/SG had received no information on full implementation of ATFM in Fiji, Hong Kong China, Indonesia, ROK and Viet Nam.
- Not fully implemented – China (Sanya, Beijing, Guangzhou, Kunming, Shanghai, Shenyang, Taibei and Wuhan FIRs); Thailand (Bangkok); Malaysia (Kota Kinabalu).
- In summary, B0-NOPS and B0-DATM (AIM) were the most critical elements in the region which were well behind implementation expectations.
- The following States had not yet reported or appeared to have not met the Phase 1 ATFM expectations for high density FIRs (**Figure 18**):
 - South Asia: India (Delhi, Mumbai FIRs);
 - Southeast Asia: Thailand (Bangkok FIR), Viet Nam (Ha Noi and Ho Chi Minh FIRs), Indonesia (Jakarta FIR), Malaysia (Kuala Lumpur and Kota Kinabalu FIRs), the Philippines (Manila FIR), Lao PDR (Vientiane FIR); and
 - East Asia: China (Beijing, Guangzhou, Hong Kong, Kunming, Sanya, Shanghai, Shenyang, Taibei, Wuhan FIRs), ROK (Incheon).

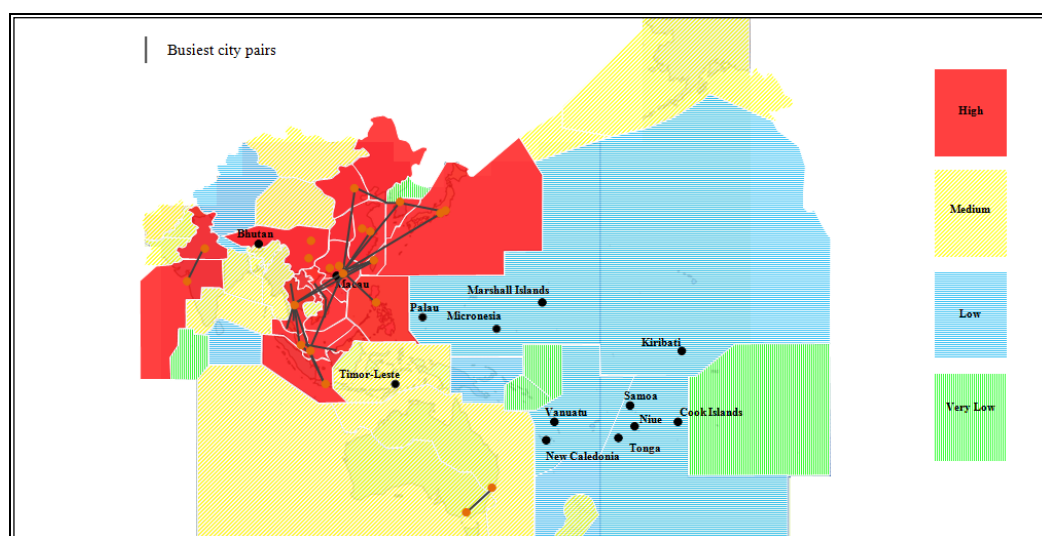


Figure 18: High Density FIRs

Unacceptable Implementation Progress

2.29 This is the second B0-ASUR element in the list of ten priorities (*ATS surveillance with data integration within all Category S airspace*): 58% of administrations reported completion. **Figure 19** and **Figure 20** provide information on reported implementation of B0-TBO.

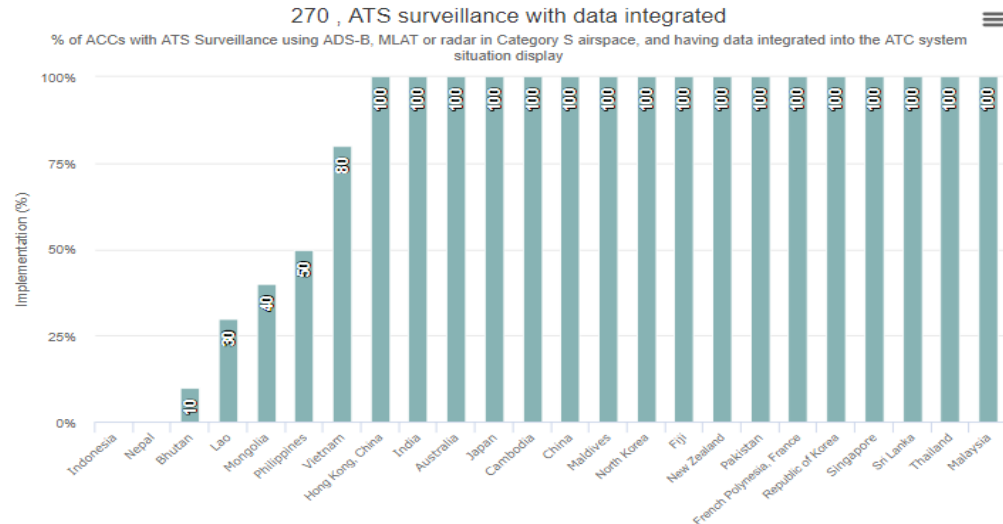


Figure 19: ATS Surveillance Implementation Graph, as at 2 May 2018

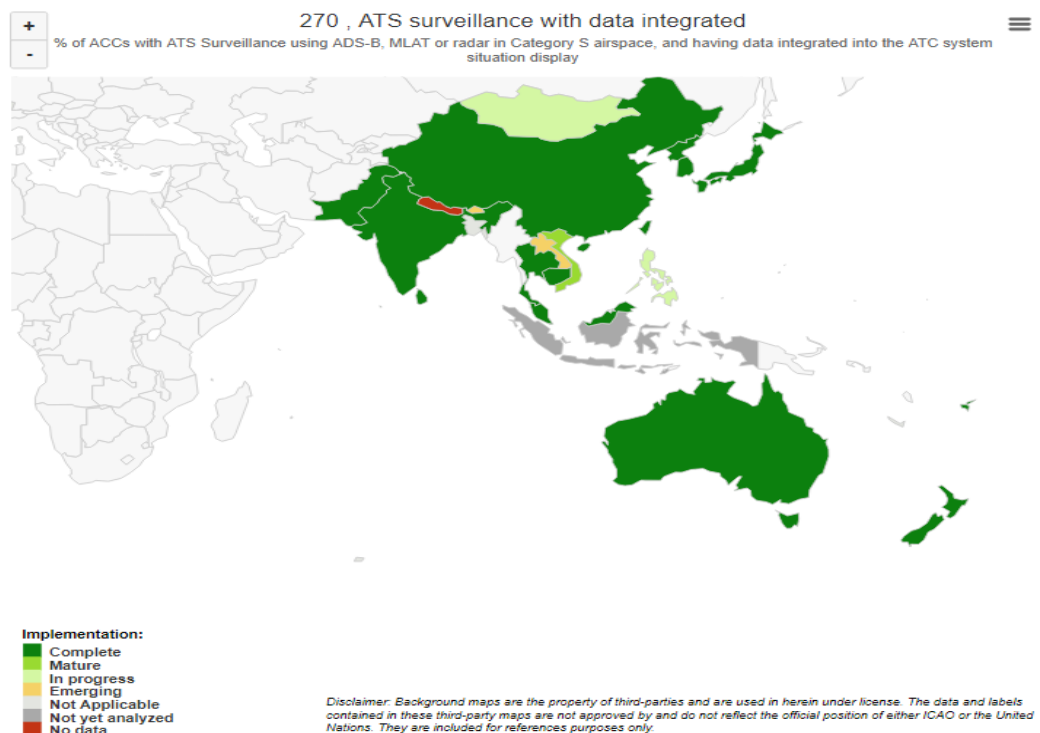


Figure 20: ATS Surveillance Implementation Chart, as at 2 May 2018

- Bangladesh, Bhutan, Hong Kong China, Mongolia, Lao PDR, Philippines and Viet Nam advised partial implementation. Indonesia indicated no progress, but the Jakarta and Ujung Pandang FIRs were known to have extensive ATS surveillance.
- Nepal did not provide data related to this element. The United States indicated ‘not applicable’ to the element, when it may be applicable to the Honolulu ACC.
- In summary, the Asia/Pacific was well behind the implementation schedule.

2.30 **B0-DATM (Aeronautical Information Management)**: this element has been the weakest area of Asia/Pacific implementation. **Figure 21** and **Figure 22** provide information on reported implementation of B0-DATM.

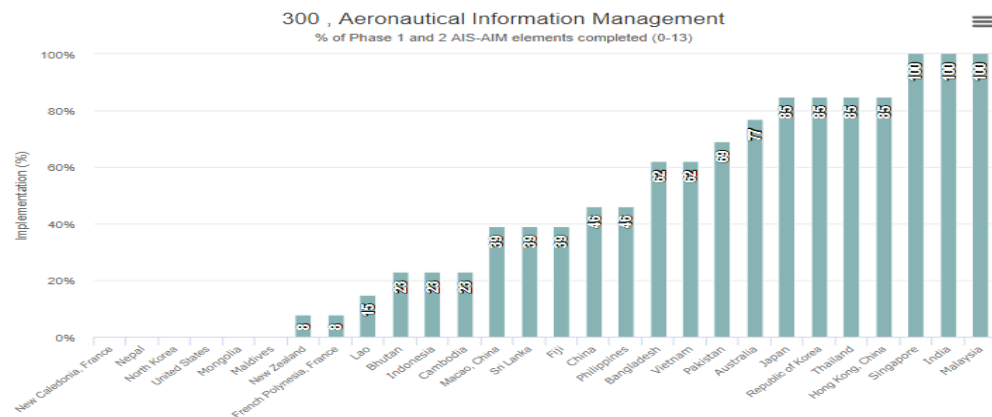


Figure 21: AIM Implementation Graph, as at 2 May 2018

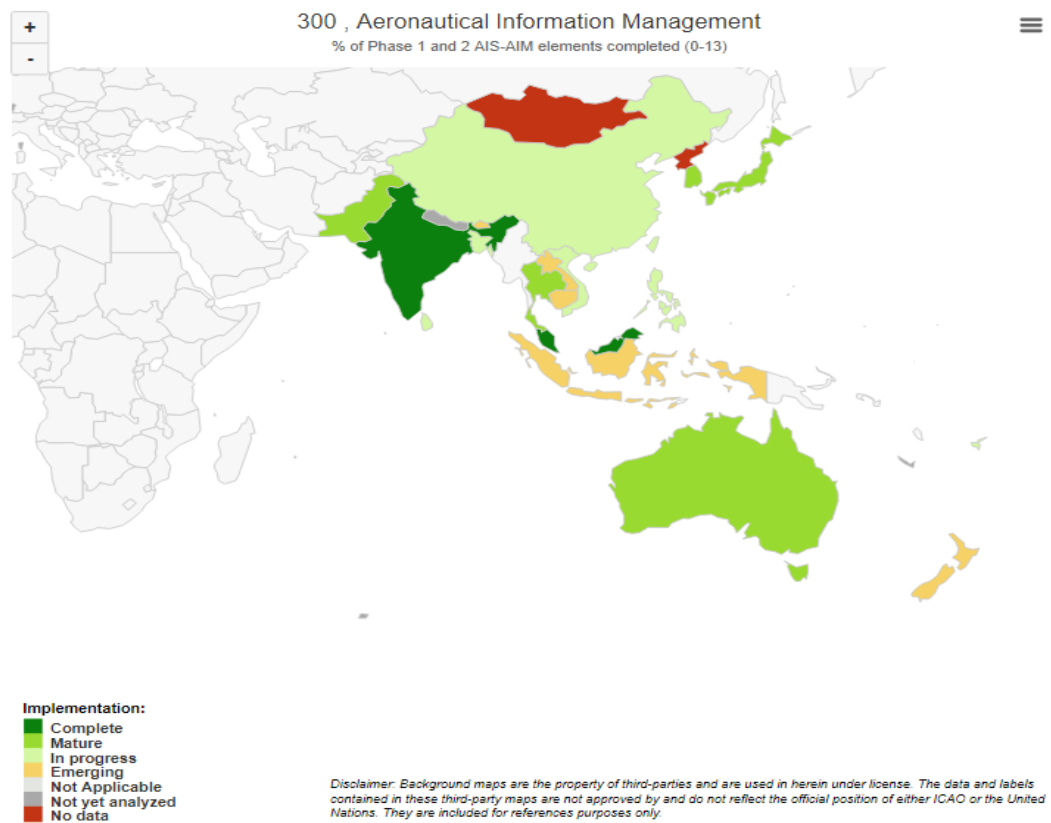


Figure 22: AIM Implementation Chart, as at 2 May 2018

- Only three States (India, Malaysia and Singapore) had reported Phase 1 and 2 completion (although Mongolia recently also reported completion at the recent AAITF meeting but recent updates indicated no data).
- However, the information provided to the AAITF meeting was that India had not completed Phase 1 and 2.
- The overall summary is that the Asia/Pacific Region's poor progress represented a major lack of prioritization by decision-makers on AIM.

- There was an apparent inconsistency between the AIS-AIM Transition Table (<http://www.icao.int/APAC/Documents/edocs/AIS%20AIM%20Implementation%20Table.pdf>) and the data indicated in the Seamless ATM Monitoring System. For example, New Zealand is shown as nearly completing Phase 2 in the Table but there was no progress reported in the Monitoring System.

Future Plans

2.31 A significant effort has been made by the ICAO APAC Regional Office to increase the number of points of contact, reporting States/Administrations and provide assistance as required. The different bodies under APANPIRG and their participants should also ensure that the data reported through the reporting system are consistently accurate.

2.32 While the ratio of reporting States and Administrations had increased to 67%, the remaining States must be urged to join the initiative in 2017 for their own benefit, since the solving of difficulties faced with regional implementation can only stem from a comprehensive detection and understanding of the gaps by regional bodies, and thus the need for reporting.

2.33 At present, the Seamless ATM Plan has several important subsidiary plans, namely the:

- Asia/Pacific Search and Rescue (SAR) Plan;
- Asia/Pacific Region ATM Contingency Plan; and
- Asia/Pacific Framework for Collaborative ATFM.

2.34 In 2018 a plan for regional AIM development is also anticipated. The intention is to develop implementation monitoring systems to enhance the current Seamless ATM Monitoring and Reporting Scheme. These subsidiary plans may have their own monitoring schemes conducted by State Letter survey and assessment at Task Force/Work Group level to look at dozens of specific elements related to the field concerned. However, it is necessary to prioritise some of these elements for inclusion in the web-based Seamless ATM Monitoring and Reporting Scheme if they are of utmost importance but implementation progress is poor. Therefore, APANPIRG can expect an update to the 45 element Seamless ATM Monitoring and Reporting Scheme in due course, to allow a greater focus on specific AIM, SAR, ATM Contingency and ATFM elements.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) discuss *Conclusion APANPIRG 27/1 - Mobilization of human/financial resources to achieve the seamless ATM Plan objectives* and the DGCA Action Item 53/9 on the matter, noting that States have generally not responded accordingly;
- c) discuss the nine elements which were indicated as not being implemented appropriately, with focus on B0-NOPS, B0-ASUR (ADS-B airspace) and B0-DATM (AIM);
- d) note that the majority of States which had not prepared Seamless ATM reports or provided POCs were from the Pacific;
- e) discuss the possibility of removing B0-TBO (ADS-C/CPDLC) elements from the list of ten APANPIRG Seamless ATM priorities, with a view to adding elements (such as from the SAR and ATM Contingency areas if appropriate) in due course; and
- f) discuss any relevant matters as appropriate.

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State/administration	Points of contact nominated?	Reporting Form submitted?	Regular updates?	Latest update
Afghanistan				
Australia	Yes	Yes	Yes	2016 - 3
Bangladesh	Yes	Yes	Yes	2018 - 1
Bhutan	Yes	Yes	Yes	2018 - 1
Brunei Darussalam	Yes	No	No	
Cambodia	Yes	Yes		2016 - 3
China	Yes	Yes	Yes	2018 - 1
Cook Islands				
Democratic People's Republic of Korea	Yes	Yes		2016 - 2
Fiji	Yes	Yes	Yes	2017 - 4
French Polynesia, France	Yes	Yes	Yes	2017 - 4
Hong Kong, China	Yes	Yes	Yes	2017 - 2
India	Yes	Yes	Yes	2017 - 3
Indonesia	Yes	Yes		2016 - 3
Japan	Yes	Yes	Yes	2017 - 4
Kiribati	Yes			
Lao People's Democratic Republic	Yes	Yes	Yes	2017 - 1
Macao, China	Yes	Yes	Yes	2017 - 1
Malaysia	Yes	Yes		2016 - 4
Maldives	Yes	Yes	Yes	2017 - 4
Marshall Islands				
Micronesia (Federated States of)				
Mongolia	Yes	Yes		2016 - 1
Myanmar	Yes			
Nauru				
Nepal	Yes	Yes		2016 - 1
New Caledonia, France	Yes	Yes		2015 - 2
New Zealand	Yes	Yes	Yes	2016 - 3
Pakistan	Yes	Yes	Yes	2017 - 3
Palau				
Papua New Guinea	Yes			
Philippines	Yes	Yes	Yes	2016 - 4
Republic of Korea	Yes	Yes	Yes	2016 - 3
Samoa				
Singapore	Yes	Yes	Yes	2017 - 4
Solomon Islands	Yes			
Sri Lanka	Yes	Yes	Yes	2018 - 2
Thailand	Yes	Yes	Yes	2018 - 1
Timor Leste	Yes			
Tonga	Yes			
Tuvalu				
United States	Yes	Yes	Yes	2017 - 2
Vanuatu				
Viet Nam	Yes	Yes	Yes	2017 - 4

Updated 25 June 2018