

WG2 ASBU Case study

ICAO

Template for good practice examples of environmental assessment (Draft V1.0)

Note: The italicized text is for guidance only and merely indicates the kind of information that is likely to be of value for users of the ICAO assessment guidance. You do not need to cover all points if some are not applicable to your case study.

Organisation/Company: *(The name of the body that undertook or sponsored this assessment)*
ICAO CAEP WG2 ASBU Task Group

Project Title: *(The title of the project being assessed)*
Aviation System Block Upgrade (ASBU) Analysis

Date of Assessment:
Ongoing

ASBU Module Code(s)¹:
CDO; APTA

State's Action Plan²:

Project Description: *(Briefly describe the project or proposed operational change to be assessed for its environmental implications; Please when possible, use schematics for illustration.)*

In 2013 the CAEP WG/2 ASBU Task Group undertook a high level analysis of the fuel saving benefits of ASBU Block 0. This analysis concerned reviewing the Block 0 Modules to first of all identify the operational improvements (OIs) of each Block 0 module. The subsequent step was to assess whether these OIs would potentially have an impact upon fuel burn / CO₂. Following these steps, a set of 'rules of thumb' were developed for a generic application of the OI(s) so that potential global fuel saving benefits could be estimated following the receipt of current and planned implementation data of the ASBU Block 0 modules.

Reason for the environmental assessment: *(Explain why the environmental assessment was undertaken and, if applicable, include any specific regulation, policy, or rule that requires the assessment to be undertaken)*

There were no specific regulative requirements for this analysis but it was planned to follow directly the environmental assessment methodology where relevant.

Client or competent Authority: *(Explain which body the assessment will be submitted to for their approval or decision making. Was the assessment internal or public? What audience is it intended to inform?)*

The study will be submitted to ICAO-CAEP Steering Group for approval and will likely be then released and published.

It is intended that the results of this analysis will inform global ATM Stakeholders in particular those who may be unsure as to what environmental benefits may be possible following ASBU implementation or those where evidence needs to be gathered to justify an implementation business case.

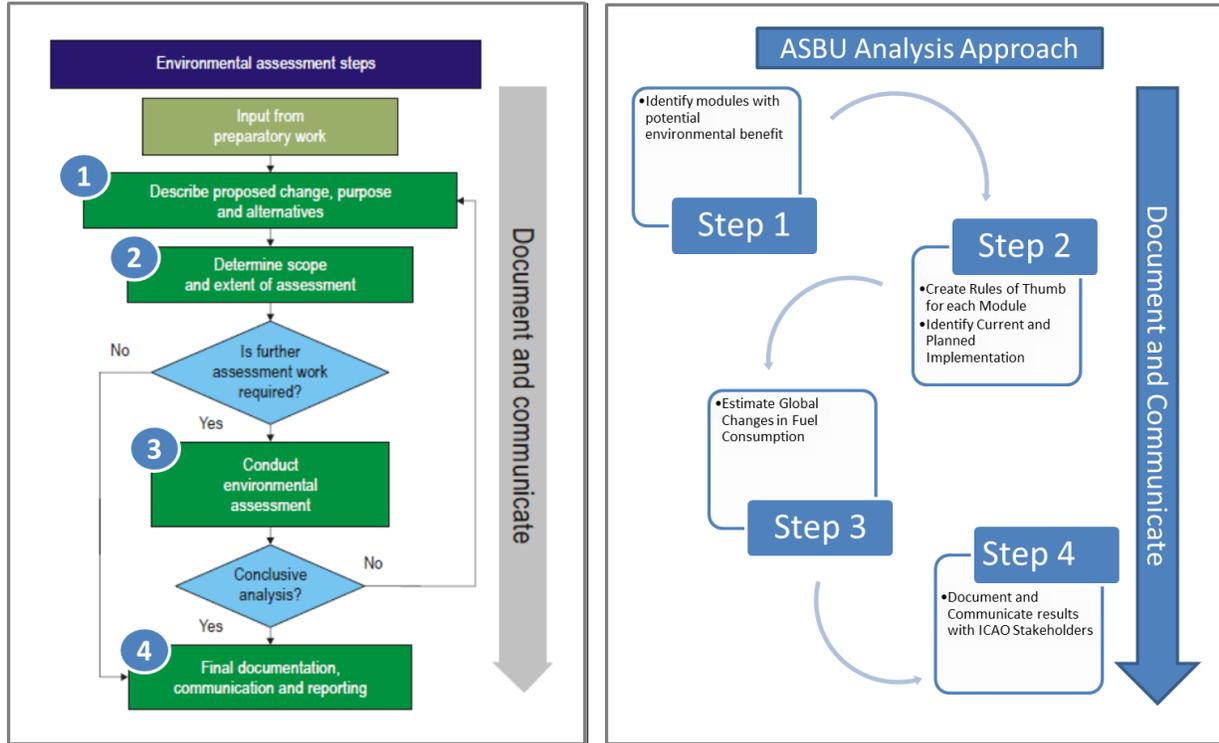
Assessment Approach: *(This section asks for a brief description of your application of the ICAO guidance for each main assessment step. If a step was not undertaken, give a brief explanation of why the step was omitted or is*

¹ APTA-Approach procedures including vertical guidance; WAKE-Wake vortex; RSEQ-AMAN / DMAN; SURF-A-SMGCS, ASDE-X; ACDM-Airport CDM; FICE-Increased efficiency through ground - ground integration; DAIM-Digital AIM; AMET-Meteorological information supporting enhanced operational efficiency; FRTO-En route Flexible Use of Airspace and Flexible routes; NOPS-Air Traffic Flow Management; ASUR-ADS-B satellite based and ground based surveillance; ASEP-Air Traffic Situational awareness; OPFL-In-Trail procedures (ADS-B); ACAS-ACAS improvements; SNET-Ground based safety nets; CDO-Continuous Descent Operations, PBN STARS; TBO-Data link en-route; CCO-Continuous Climb Operations

² <http://www.icao.int/environmental-protection/Pages/action-plan.aspx>

not applicable to this assessment example. Please complete each section individually. In this box you can explain why the ICAO approach to assessment was chosen. If you did not apply the ICAO methodology, please explain how your methodology differed from the ICAO approach.)

ASBU Block assessment process was aligned to generally follow the approach found in Figure 3-1 of ICAO Doc. 10031. Figure 1 below presents the ASBU Analysis approach alongside the Doc. 10031 Environmental Review Process.



Preparatory Work: (Briefly explain the relevant background activities that have been undertaken to prepare for the assessment. This may include decisions or processes such as, deciding that an environmental assessment is required, identifying the assessment client, gathering base data, deciding on years to be assessed, deciding on assessment methods or standards to be applied. There is no need to cover all possible information, simply provide a sufficient explanation of the reasons why the assessment steps and approach were selected. How did you establish which rules, regulations, or standards applied to the assessment?)

The CAEP Steering Group asked that a group be formed in CAEP to fully scope the requirements of assessing the environmental benefits from Aviation System Block Upgrade (ASBU) Block 0 in cooperation with the ASBU module experts. The group drafted a Terms of Reference document to present a proposed scope, schedule, and resource requirements for the consideration of the CAEP Steering Group for approval. The Terms of Reference document was developed by a team composed of experts in environmental analysis from CAEP, experts in the definition of the ASBU modules, experts in operations, and the ICAO Secretariat. Ultimately, the CAEP Steering Group approved the Terms of Reference as developed.

Describe the proposed [operational] change, its purpose and alternatives: *(Explain what will change as a result of the proposal to be assessed – this may repeat the information in the earlier project description. Explain why this project is required and what purpose it serves, and what alternatives have been considered. Information on why these alternatives were rejected is useful but not essential)*

The first part of the guidance was to describe the proposed change. The ASBU TG interpreted this as gaining understanding of the definitions of the Block 0 modules. To do this a review of each module was undertaken to identify the following:

- Module description
- Potential interdependencies with other modules
- Details of the information available
- Assumptions to be taken into consideration
- Implementation information
- References
- Any other pertinent information

To aid this process, a review template was developed to ensure that reviews of different modules followed the same format and contained all of the relevant information.

The objectives of this task was to ensure that all information regarding the operational impact and the changes that would take place following implementation could be shared with, and understood by, the task group.

There were no alternatives to be considered as an assessment of global fuel bur savings was required and the method undertaken was considered the only way that such an estimation could be realistically achieved.

Describe the scope and extent of the assessment: *(How was it decided that this assessment was needed – “screening”. Describe the impacts to be assessed, for example, aircraft noise, CO₂ or NO_x emissions, climate impacts or air quality impacts. Explain the decision making process that determined this scope and the level of detail to be used in the assessment – “scoping”. Also describe any formal processes to consult upon or agree on the scope, for example, via a nominated competent authority if applicable. Explain, for example, if the scope was set using expert judgement or a pre-assessment checks or information gathering. Also describe how the decision to undertake a more detailed assessment, or not, was taken. How were the base-case and proposed case(s) determined, why were particular years chosen?)*

See Section “Reason for the environmental assessment” and “Preparatory Work”

The second step was to determine the scope and extent of assessment. In the context of the ASBU task, the ASBU TG interpreted this screening process as identifying which modules would have an operational improvement that could provide an environmental saving in terms of fuel burn. Fuel burn was the only environmental impact that was included in the terms of reference of this analysis so there was no need for such a prescriptive scoping process should be undertaken. There were several other factors to take into consideration however. It had to be discussed whether not only could an environmental saving be identified but whether the benefit could be isolated from a system benefit that may include the benefits of multiple operational improvements. Furthermore, discussion also involved

whether there was sufficient information available to identify a possible benefit and whether there would be sufficient implementation data for an OI in the case that an environmental benefit be identified.

There was no official requirement for consultation because an actual assessment was not being undertaken however in order to ensure that all relevant stakeholders were involved in the review of the modules and the entire decision making processes, representatives from all the relevant stakeholder groups (i.e. pilots, ATC, airports and airlines) were encouraged to participate in the working group.

The analysis was principally undertaken based on a review and knowledge of actual information that was either in the public domain or available from existing studies or other from the TG members.

Therefore, the analysis was based upon an expert judgement process of existing material.

It should be highlighted that there was no plans for the ASBU to undertake an environmental assessment themselves but to follow the same methodology process to identify existing data, studies and information that could enable the identification of a realistic generic benefit of the module.

The baseline and future state were fixed at the start of the analysis.

Describe the assessment itself: *(Describe any standards or mandatory requirements for the assessment to be undertaken together with the methodology, monitoring or model used to determine the extent of the environmental impacts for the proposal. Give an indication of the extent or time-horizons that were chosen (if not already described earlier). Was quality management applied? For example, was there a process to ensure that the input data for the environmental assessment was consistent with other parallel assessments? Were interdependencies encountered and how did you address any trade-off issues? Was the expertise for this assessment available from internal resources or procured externally?)*

The assessment was undertaken as detailed above.

Quality management was applied by getting an ANSP group from CANSO to review the rules of thumb after being developed. The aim of this oversight was to ensure that there were no obvious errors in the analysis and that any information from ANSPs that could be pertinent to the analysis, was included.

Interdependencies were considered in the analysis and where identified, as far as possible, it was ensured that there would be no double counting of benefits. In addition, the general idea was to identify a conservative level of benefits to ensure that in the case of possible double counting, the overall benefits would not be overestimated.

All resources were from CAEP WG/2 or from colleagues / organisations of the WG/2 members.

Describe the results and how they were communicated: *(Explain in general terms what the results of the assessment were, how this was used, for example to what extent it informed decision making or approval for the project. Was it produced as a draft for consultation or simply as a final report? Were the results validated or verified in any way – for example were the assessment processes or quality management processes independently audited? Did the results feed into a wider process, for example, a business case assessment?)*

The results of the analysis were developed by individuals who were volunteers to lead the review for each module and these rules of thumb were discussed during teleconferences open for all WG/2 members. Any contentious issues were discussed on a one to one basis with the individuals concerned to ensure that there was consensus. The results were communicated, discussed and followed up with the work group and relevant bodies, in particular, the CAEP Modelling and Databases Group (MDG) who had the responsibility to model the benefits of the OIs by putting the rules of thumb into their models.

During the analysis, the ASBU Tasks leads from WG/2 were in frequent communication with MDG to ensure that the information that had been transferred to them had been interpreted correctly. Despite this,

there were still some little misunderstandings between some of the assumptions behind the rules of thumb and the interpretation of the estimated savings.

Following the initial study by MDG, there were a couple of verification checks undertaken. At the project level, a separate group undertook a verification check to ensure that the data had been calculated and interpreted correctly. At the system level, a reality check was undertaken to ensure the results of the analysis were in the correct 'ball park' by checking to see whether or not the estimated fuel savings fell within the range of total possible available fuel saving benefits that had been previously been estimated in a previous study.

It is expected that in the future, information gleaned from this study will be used to provide supporting data for business case analyses.

Lessons learned: *(Explain here what worked well, what could be improved, what you would do differently next time –If applicable please explain if you think the ICAO assessment guidance could be improved and in what way. If you did not use the ICAO methodology can you identify aspects of your methodology that could provide benefits to future iterations of the ICAO guidance? What aspects of the ICAO guidance would you apply to your own methodology for future assessments?)*

In general, the task leads consider that the work has been carried out to the highest degree possible taking into account the remit of the terms of reference, the information available, the timeframe and the resources available.

Two issues were identified:

1, The task was quite complex and involved detailed technical discussions in places. Therefore, it became apparent to the task leads that there was a general reluctance for new people to become involved in the task once it had been initiated as they felt it was too technical.

2, It would be more valuable to have a wider working group to be involved in the project particularly from additional States of regions.

3, Coordination with supporting and collaborating groups was important for the successful completion of the ASBU Analysis. This coordination was important to ensure that the analysis approach and schedule was agreed to and the results of the analysis present the consensus of each participating group.

Comments: *(Optional - Offer here any other advice or hints that may be of value to others using ICAO environmental assessment guidance.)*

A box in this document should be added for the 'document and communicate' process.