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Paper for Consideration by CBSC17

**A quantitative analysis of a capacity building activity, the IHO-Nippon Foundation
CHART project**

Submitted by:	IHO Secretariat
Executive Summary:	Progress of a capacity building activity, the IHO-Nippon Foundation CHART project, was quantitatively analysed using the IHO C-55 database. It is suggested that there is: (1) general improvement of world charting coverage and (2) significant contribution of the CHART project Alumni to their countries compared to countries that did not received such cartographic education.
Related Documents:	C-55, P-5, and CL20/2019
Related Projects:	CHART Project

1. Introduction / Background

The Cartography, Hydrography and Related Training (CHART) Project is a capacity building programme for nautical cartographers under the partnership between IHO and the Nippon Foundation of Japan. More than 70 cartographers from 40 countries have graduated from the CHART project and its predecessor, the Japan Capacity Building Project since 2009. The 16-week programme has been conducted by the United Kingdom Hydrographic Office (UKHO) in Taunton. Average number of applicants in the past 10 years has been more than three times the available seats. This is an indication that there has been a strong demand for such education programme. The second phase of the CHART project will end in 2019 and for further continuation, coordination between IHO and Nippon Foundation is underway.

The IHO Publication C-55 "Status of Hydrographic Surveying and Nautical Charting Worldwide" shows progress in various aspects of hydrographic survey and charting as well as maritime safety information provision for each region of coastal States' waters. The publication has been provided in the current PDF format since 2016 based on the IHO internal database "Country Information System" with the technical support of the Project Officer of Japan, working in the IHO Secretariat. The IHO uses the publication as a progress indicator of the world's hydrography and cartography.

It is therefore appropriate timing to conduct a quantitative analysis of the outcome of the CHART project based on the IHO C-55 dataset and to investigate the possibility of such quantitative criteria for allocating capacity building resources of the IHO to various projects.

2. Analysis/Discussion

The IHO Secretariat started to organize C-55 in its current database format in 2014. The dataset in 2014 was compared to the latest C-55 dataset as of March 2019. In C-55, charting coverage (%) for each coastal State is shown in three categories: International Charts (INT), Raster Charts (RNC) and Electronic Navigational Charts (ENC) for each of the three scale groups (offshore passage, landfall and coastal passage, approaches and ports) as shown in

Figure 1 below. The sum of those six figures was defined as the indicator for this quantitative analysis.

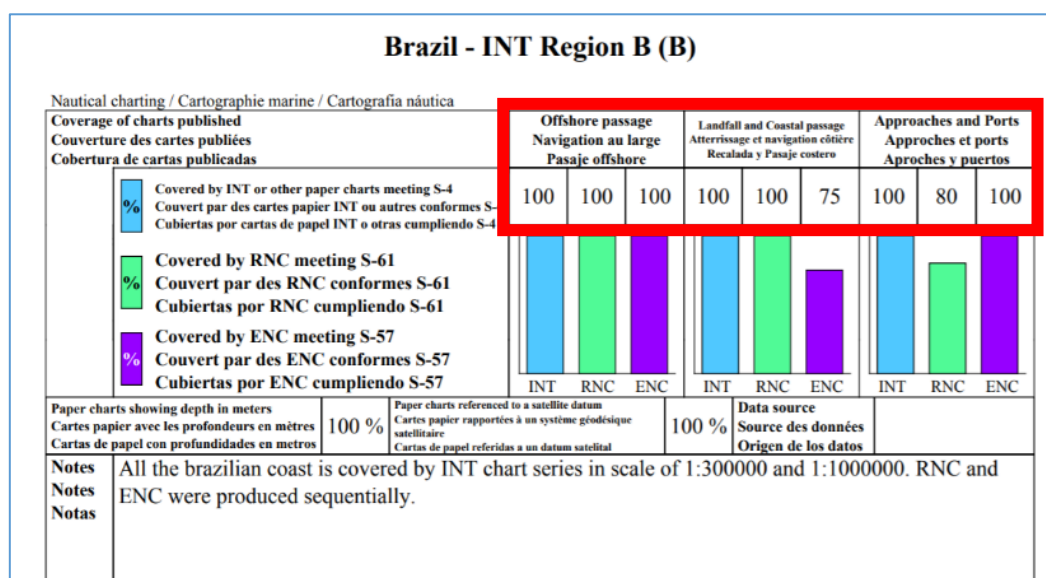


Figure 1: example of chart coverage from C-55

As of 2019, 40 countries are categorized as having CHART Alumni. However, 10 countries are omitted from the analysis for the following reasons: (1) inconsistent data in the datasets, (2) no information updated since receiving the alumni, and (3) relatively new alumni (in 2017 and 2018) that is too early to assume that they had impact on charting coverage. With those premises, the progress of CHART project Alumni countries was assessed. The averages of the total sum of charting coverage are:

- For non-Alumni countries: average increase of 17 points
- For Alumni countries: average increase of 41 points

It is important to consider that the figures above are calculated as the sum of charting coverage percentages taking into account progress in the three types of charts (INT, RNC and ENC). Though the sum can vary theoretically from 0 to 900 points, it does not mean any actual percentage of world's charting. Even so, the gap between the two groups is suggesting how the capacity building project has contributed to the world's chart coverage.

Additionally, progress made with the creation of new ENCs replacing RNCs are not reflected in the figures as this does not change the total amount.

3. Conclusions

The analysis indicates that (1) the world charting coverage has generally improved in the five years and (2) the CHART project has especially boosted the charting coverage of the Alumni countries.

Considering that Capacity Building is a medium to long term investment, the continuation of the CHART project has the potential to significantly increase the impact in chart coverage in the near future for those countries benefiting from this education opportunity.

Furthermore, the quantitative analysis presented in this paper shed light on the role of objective assessment of the outcome of capacity building projects. It would be possible to apply a similar approach to other continuous capacity building projects by measuring their outputs.

Current C-55 database relies on Member States' spontaneous updating of the IHO database. As announced in CL20/2019, the IHO Secretariat recently launched an "IHO Online Form System" that allows easier data input to update C-55 and the IHO Publication P-5 "Yearbook" as well as the response collection for the IHO Circular Letters. The operation of this system enables Member States to update those IHO publications more frequently, reducing the errors and inconsistencies that may happen through manual inputs via the IHO Secretariat.

It is necessary to review the validity of the indicators to assess the general direction of hydrography and cartography as it is currently over simplified. For instance, the efforts to replace RNC with ENC is not reflected in the total sum of percentages. In addition, the current C-55 dataset does not provide any information related to other outputs of Capacity Building and other parts of the IHO Databases could be considered in the future.

The historical datasets available in the IHO in paper and other digital formats could also be used for further analysis if resources are made available to ingest them into the IHO Country Information System.

4. Recommendations

It is recommended that the CBSC encourages Member States to perform more frequent updating of the C-55 dataset as well as P-5, through the IHO Online Form System.

It is recommended that the exercise described in this paper is considered as an appropriate starting point for future analysis of the impact of Capacity Building towards the objectives of the IHO.

5. Action Required of CBSC

The CBSC is invited to:

- a) note the report,
- b) acknowledge the progress in chart coverage and the significant impact of the CHART project,
- c) encourage Member States to update C-55 and P-5 regularly, using the IHO Online Form System, and
- d) take any other action as considered appropriate.