



Report of the Nautical Cartography WG

S100WG5, Taunton, UK, 3 - 6 March 2020



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MAIN TASKS

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- Maintain and extend S-4
- Develop new and revised symbology
- Maintain INT1, INT2, INT3
- Maintain and extend S-11 Part A
- Provide technical assistance to other IHO working groups and support regarding the implementation of S-100 Product Specifications



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MEMBERSHIP AND MEETINGS

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- Membership
 - 29 Member States
 - 3 Expert Contributor Organizations
- Meetings
 - NCWG5, 5 - 8 November 2019, Stockholm, SE
 - NCWG6, 3 - 6 November 2020, Cádiz, ES

S100WG5, Taunton, UK, 3 - 6 March 2020



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STATUS OF THE STANDARDS

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- **S-4, Edition 4.8.0 (October 2018)**
 - Available in English, French and Spanish

- **INT1**
 - English version (DE), Edition 9 (2018)
 - French version (FR), Edition 6 (2019)
 - Spanish version (ES), Edition 6 (2018)

- **INT2 (NL), Edition 4 (2007)**
- **INT3 (UK), Edition 5 (2011)**

- **S-11 Part A, Edition 3.1.0 (February 2018)**



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NCWG5 TOPICS

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Topics considered included

- Future of the paper nautical chart
- Automated production of paper charts from ENC data
- Simplified paper chart specification for back up purposes
- Future of the INT charting concept
- Charts for WIG craft
- Colour presentation of ZOC diagrams
- Charting guidance on swept depths, routing measures in conjunction with ASLs, seaweed cultivation, unexploded ordnance, etc.



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FUTURE OF THE PAPER NAUTICAL CHART

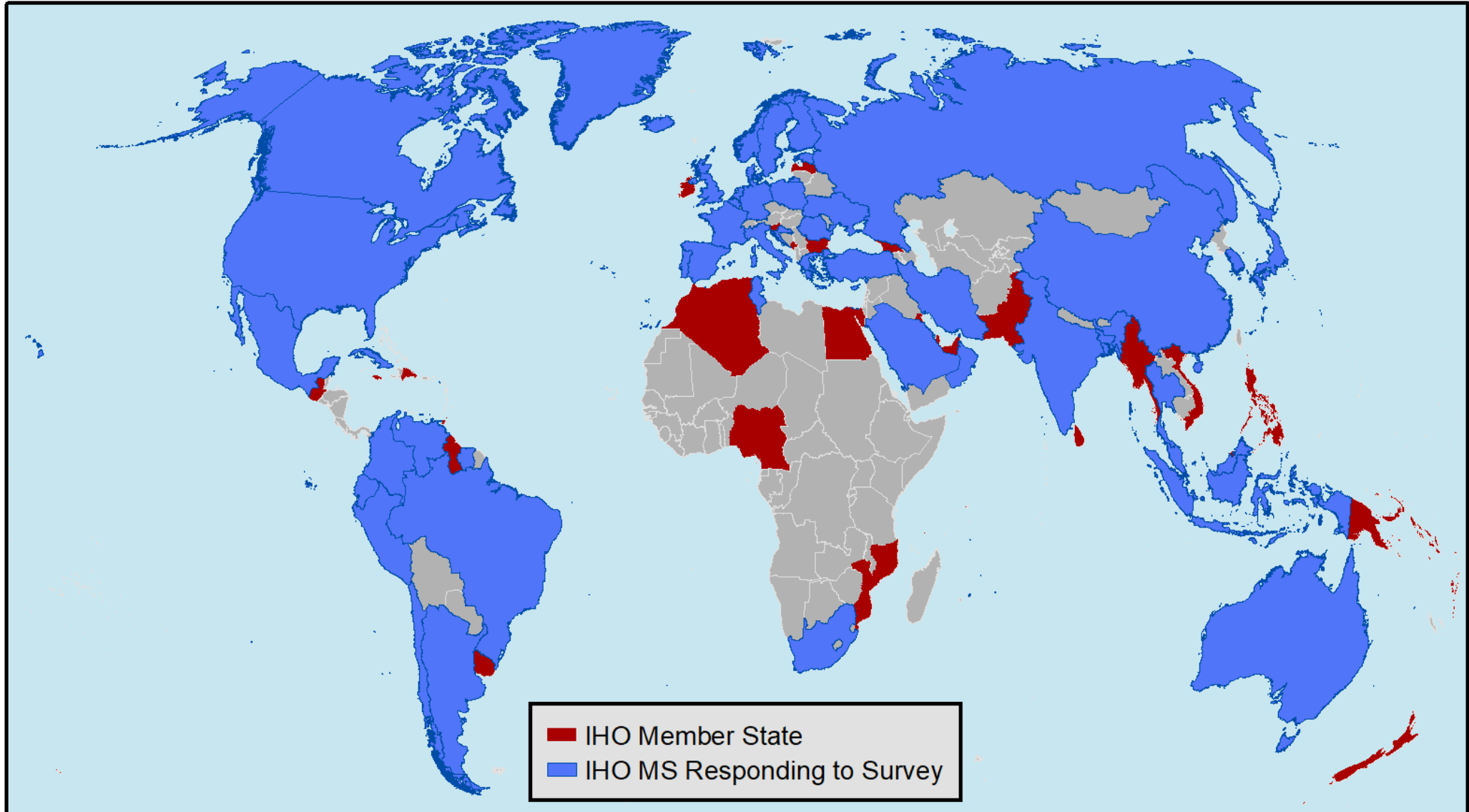
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- Preliminary report presented at HSSC11 in May 2019
- Future of the Paper Nautical Chart Survey of IHO Member States conducted (June-September 2019, CL29/2019)
- Final report to be presented at HSSC12 in May 2020



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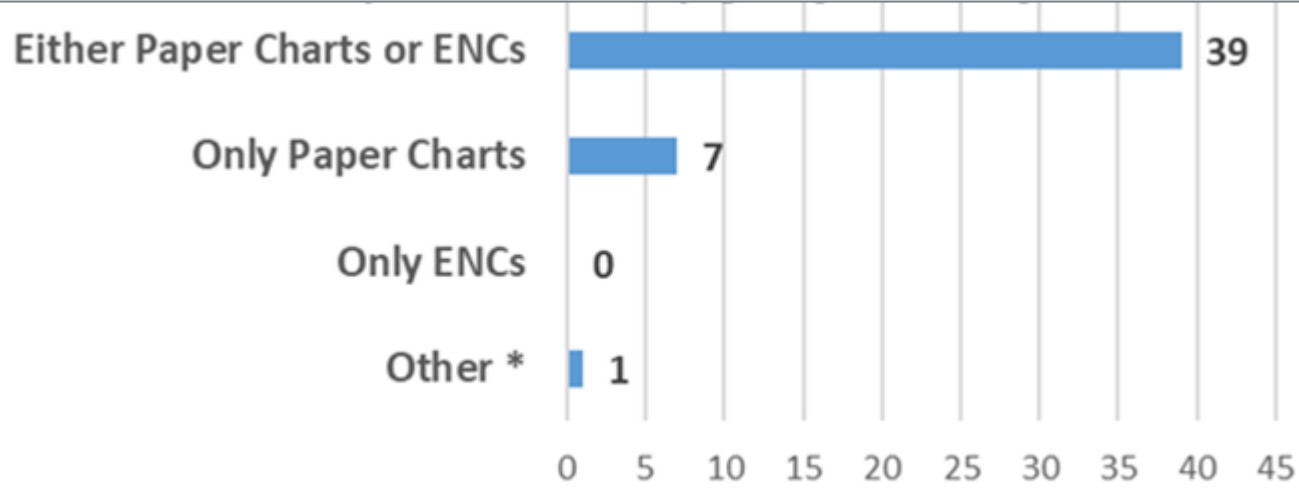
IHO MEMBER STATES RESPONDING TO THE SURVEY





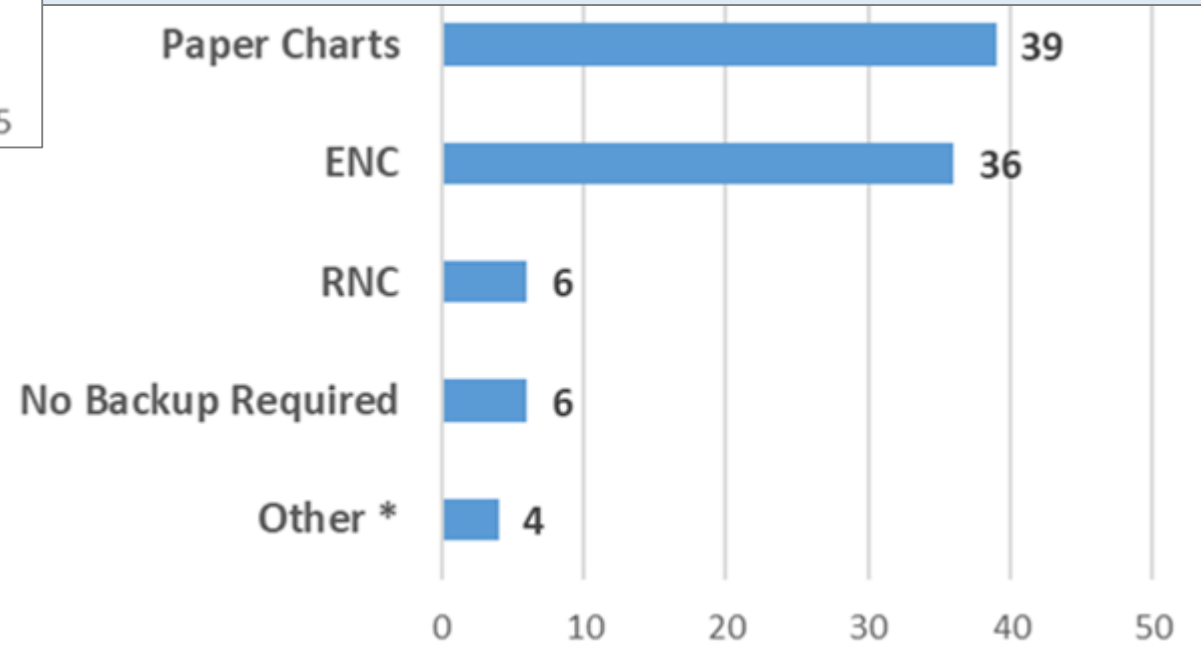
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CARRIAGE REQUIREMENTS FOR DOMESTIC VOYAGES



Primary - Required

* One member state responded "ENCs *and* Paper Charts."



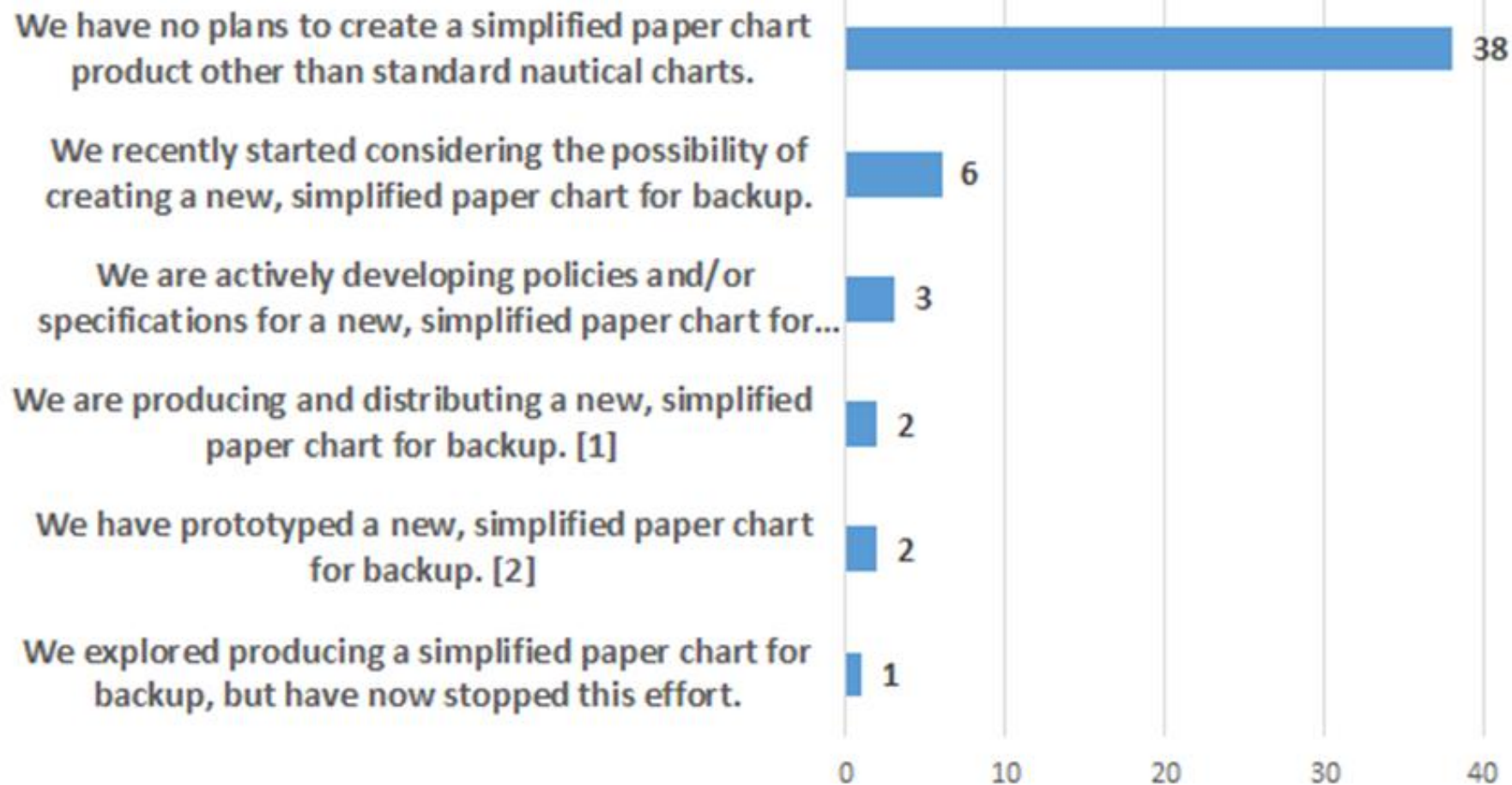
Backup – Allowed

* Four member states responded "Other" and referred to ECDIS or ECS usage.



PLANS FOR DEVELOPING SIMPLIFIED BACKUP

What actions or plans has your agency made to provide a simplified paper nautical chart specifically for use as a backup for electronic navigational systems (ECDIS, ECS, chart plotters, etc.)? [Check all that apply]



No – 39

Yes – 13



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SINGLE PRODUCTION DATABASE

Is your agency using, or moving toward the use of, a single production database that stores data to maintain both ENC and paper charts? [Check closest answer]

Have or are moving toward a single database

Our ENC and paper charts are produced from a single database.

24

Our ENC and paper charts are produced from separate databases, but we are actively migrating toward use of a single production database.

13

Our ENC and paper charts are produced from separate databases, but we are considering a move toward use of a single production database.

11

Other *

4

Our ENC and paper charts are produced from separate databases.

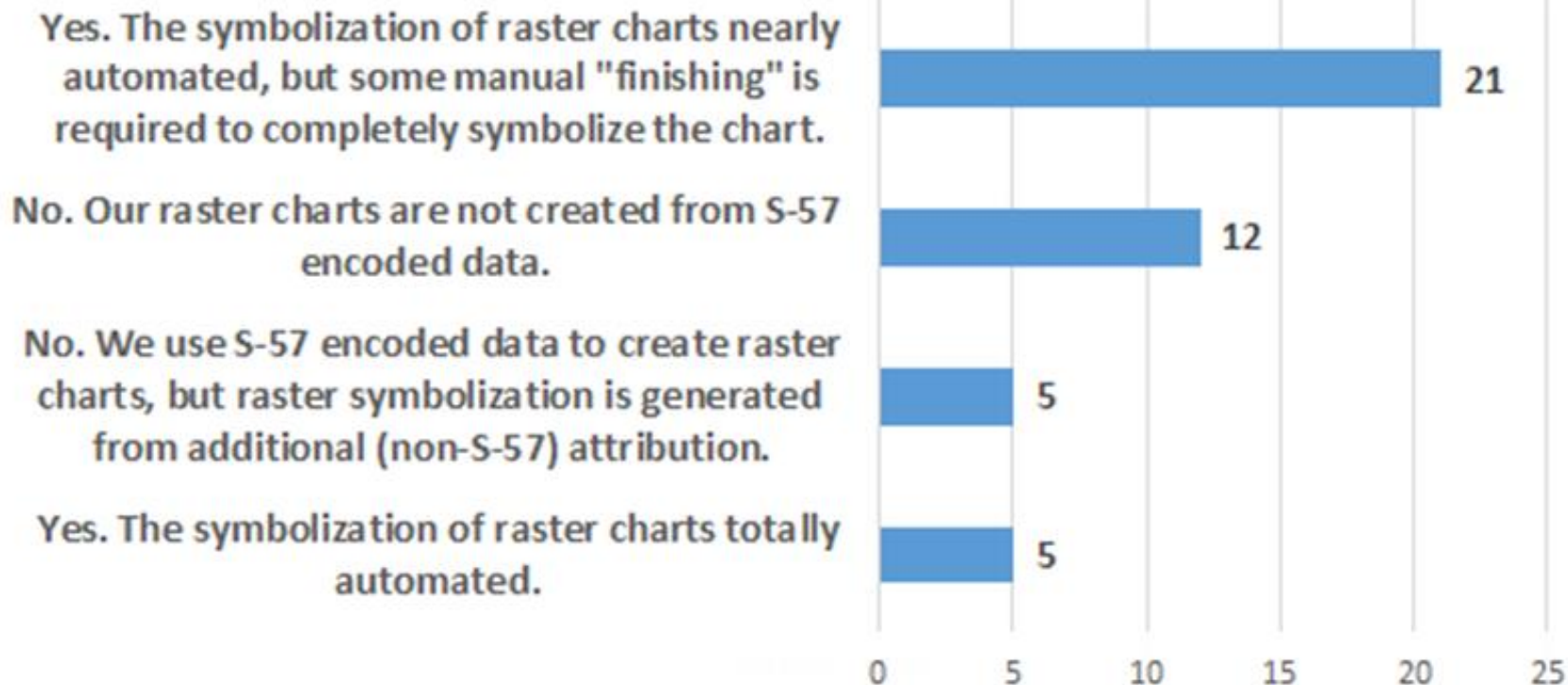
0

0 10 20 30



S-4 SYMBOLIZED RASTER CHARTS FROM S-57 DATA

Is your agency using S-57 encoded data to produce S-4 based symbolization on raster chart products? (Ref FPNC 2.4.b) [Check the closest answer]



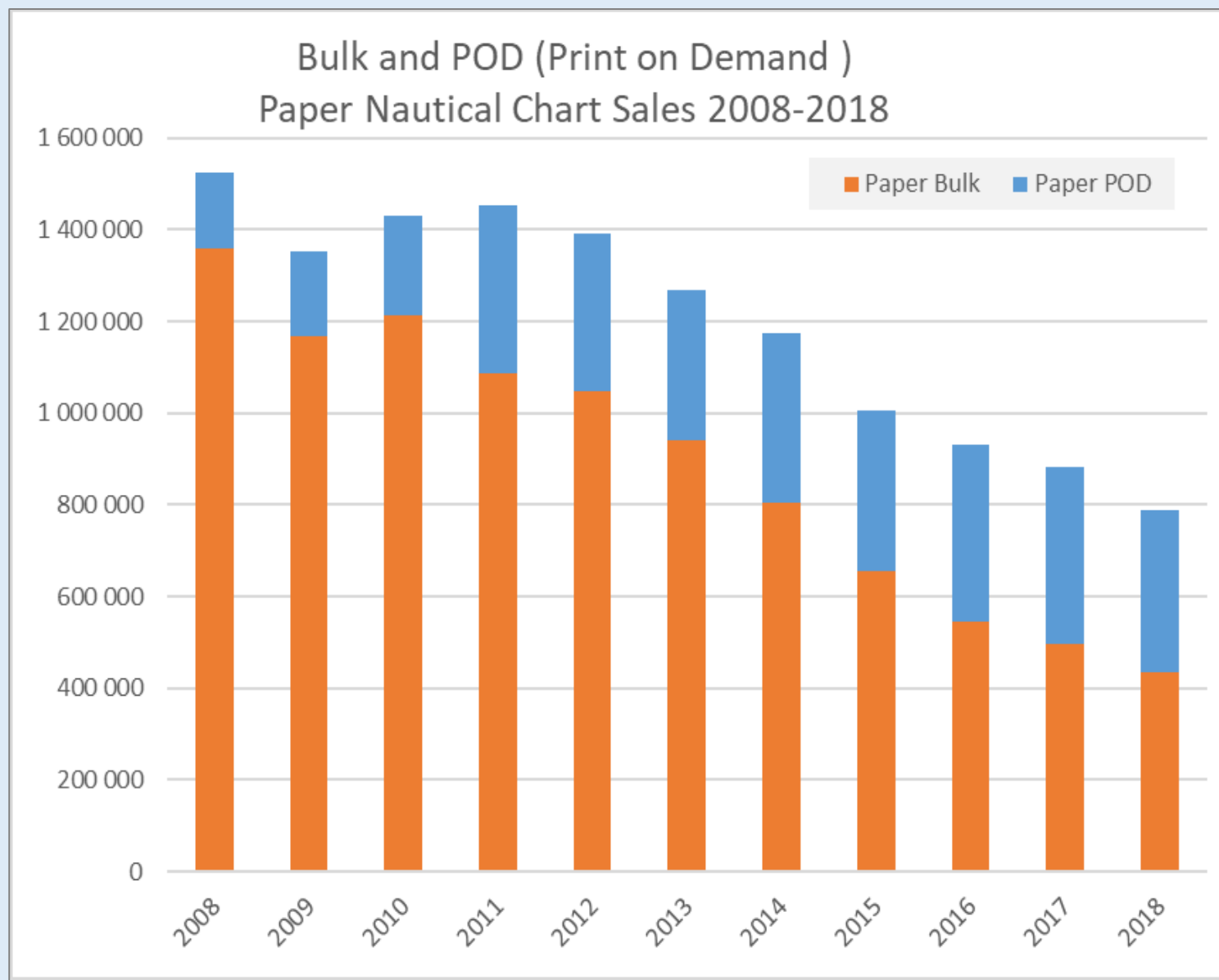
No – 17

Yes – 26



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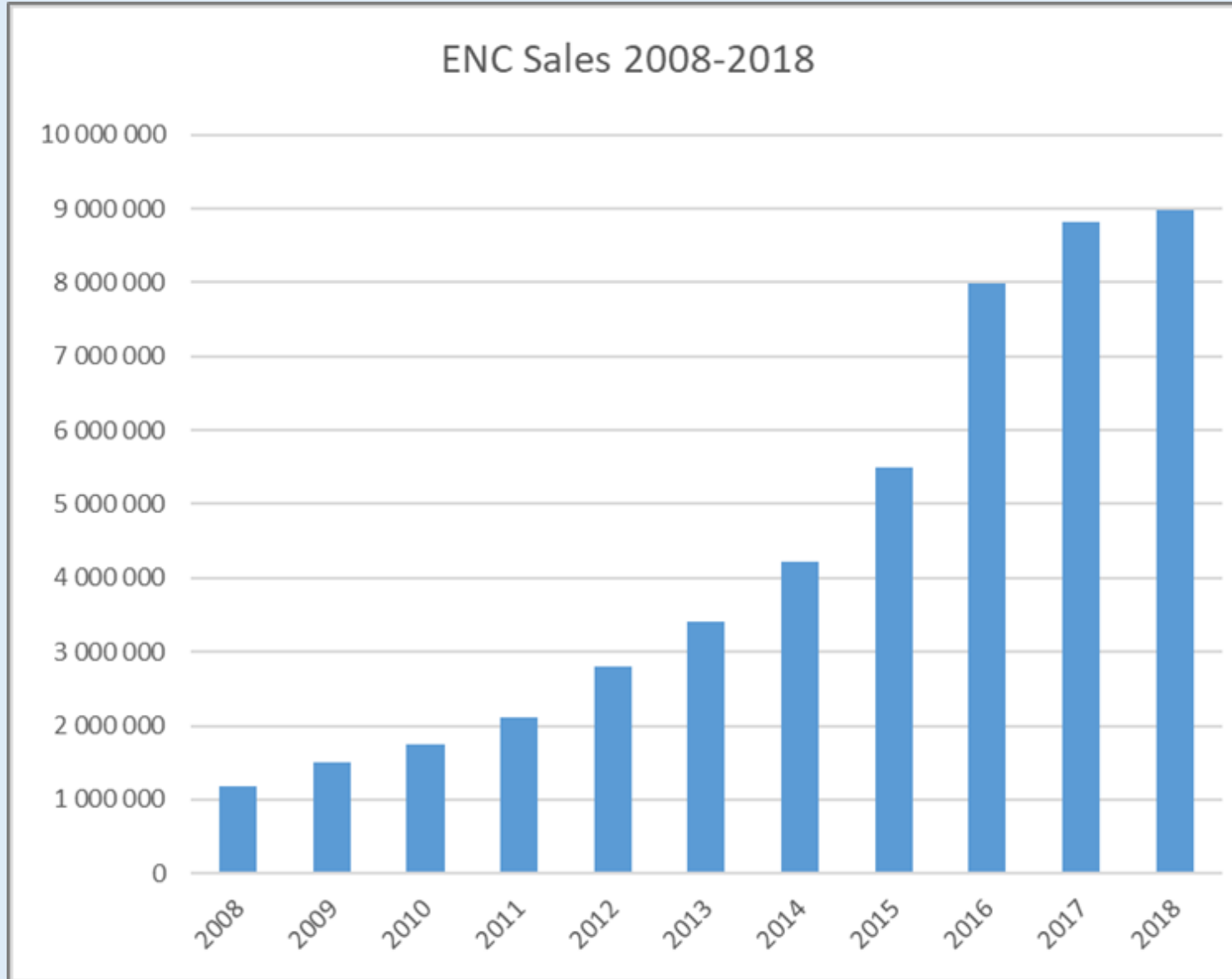
PAPER CHART SALES TREND





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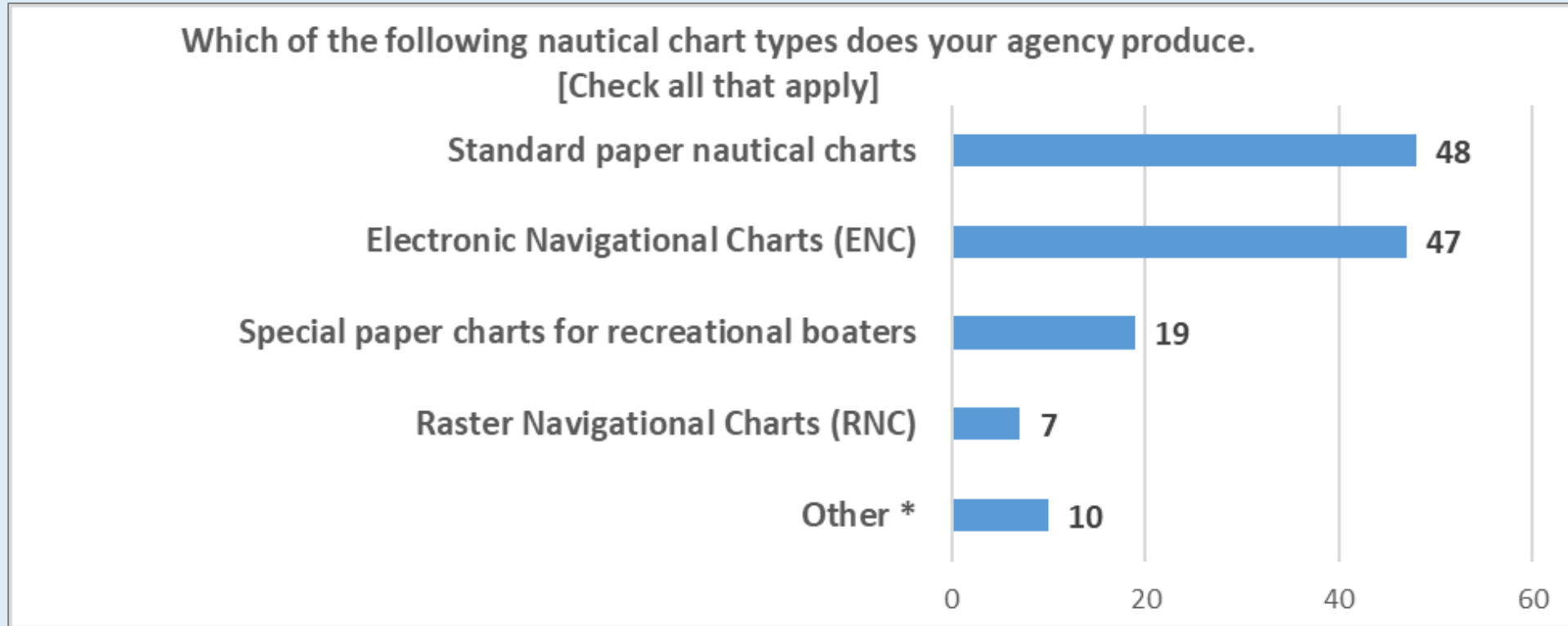
ENC SALES TREND





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TYPES OF NAUTICAL CHARTS BEING PRODUCED

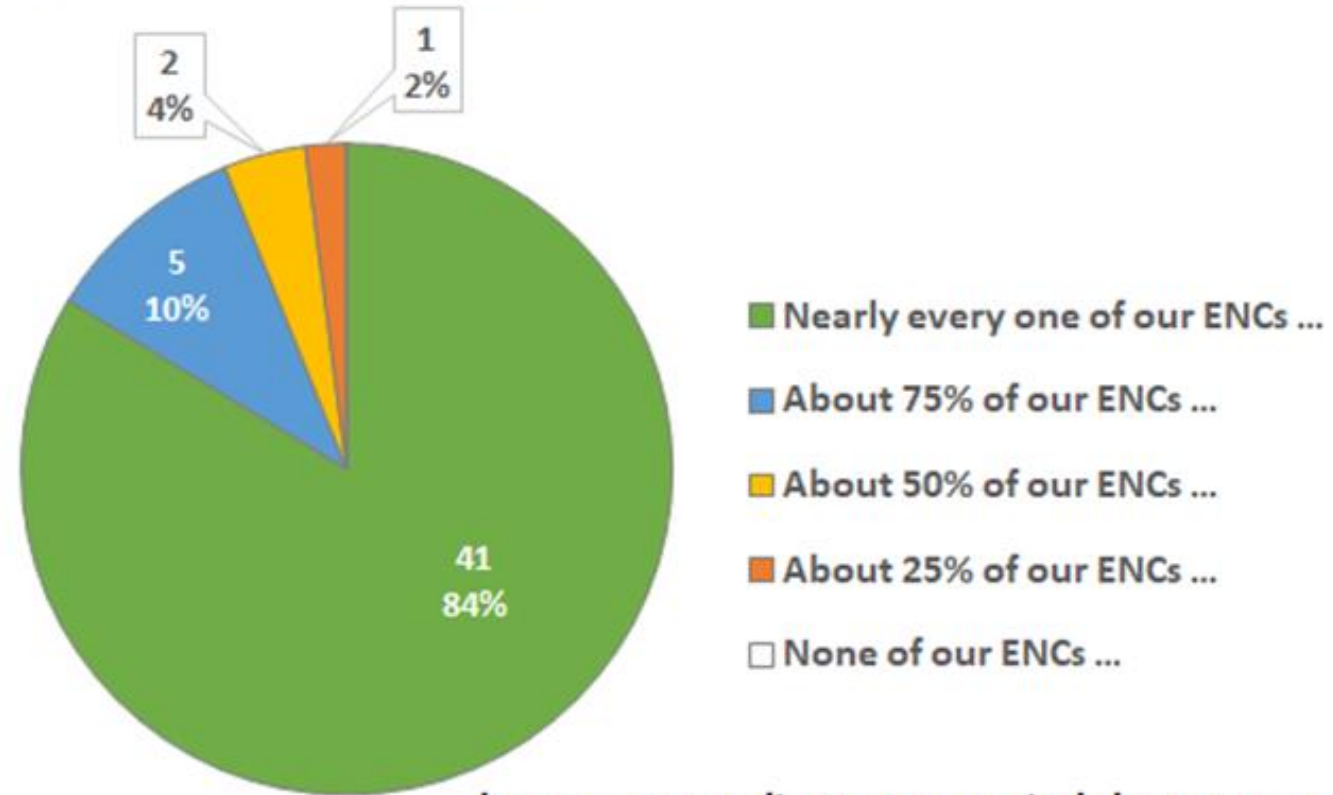




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CORRESPONDING PAPER CHART COVERAGE

Do you have corresponding paper nautical chart coverage for your ENC's? [Check the closest answer]



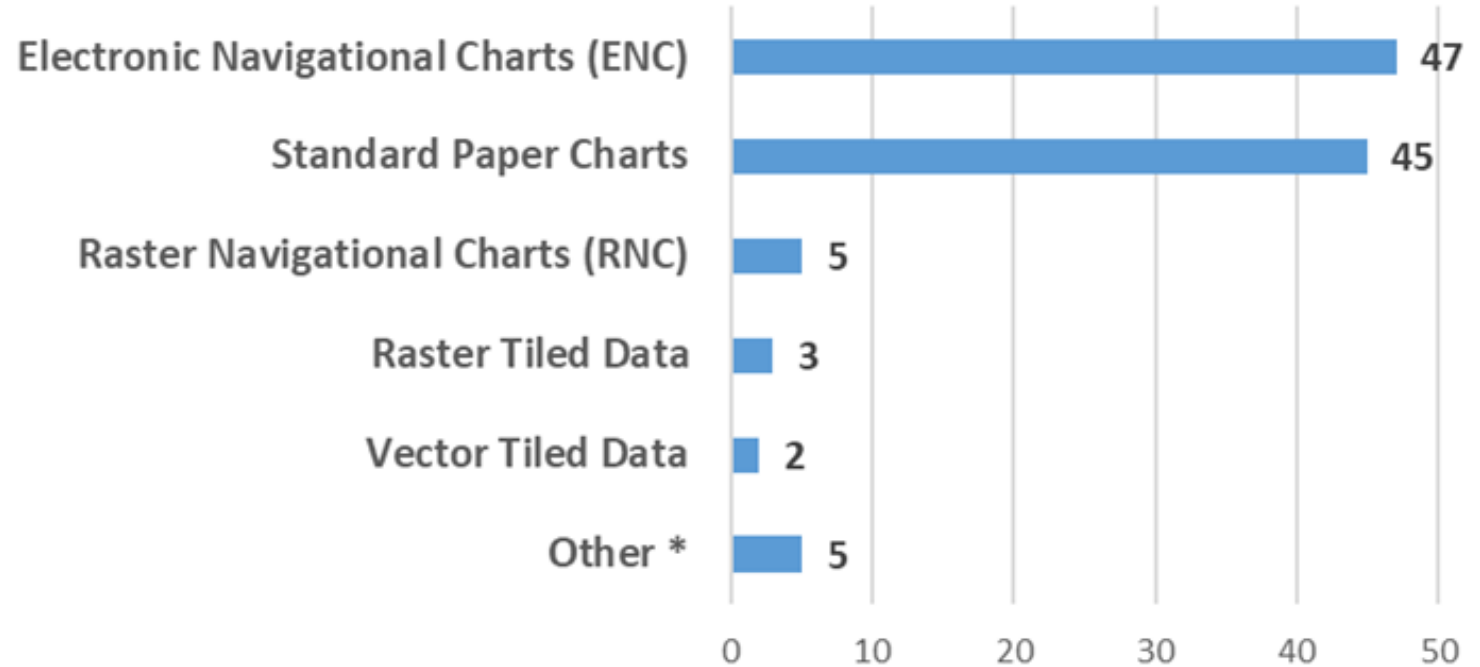
... have corresponding paper nautical chart coverage.



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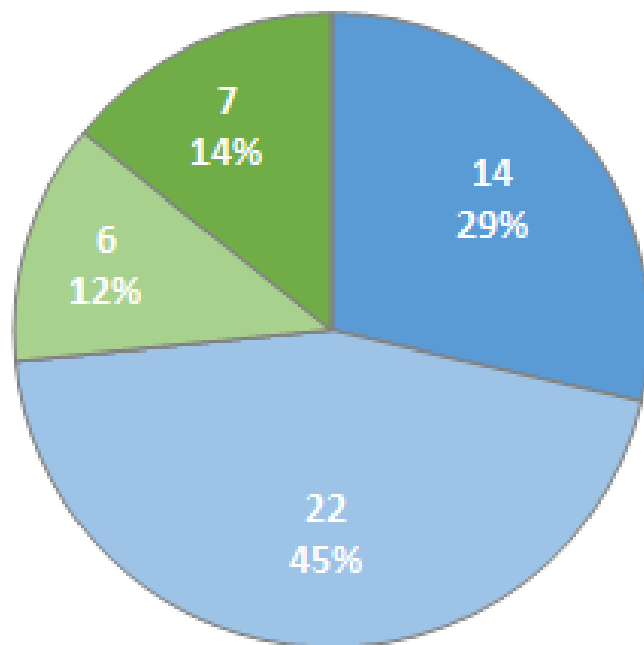
PRODUCTS CREATED FOR NEW COVERAGE

When you create new or larger scale coverage in an area, which nautical chart products do you produce? [Check all that apply]





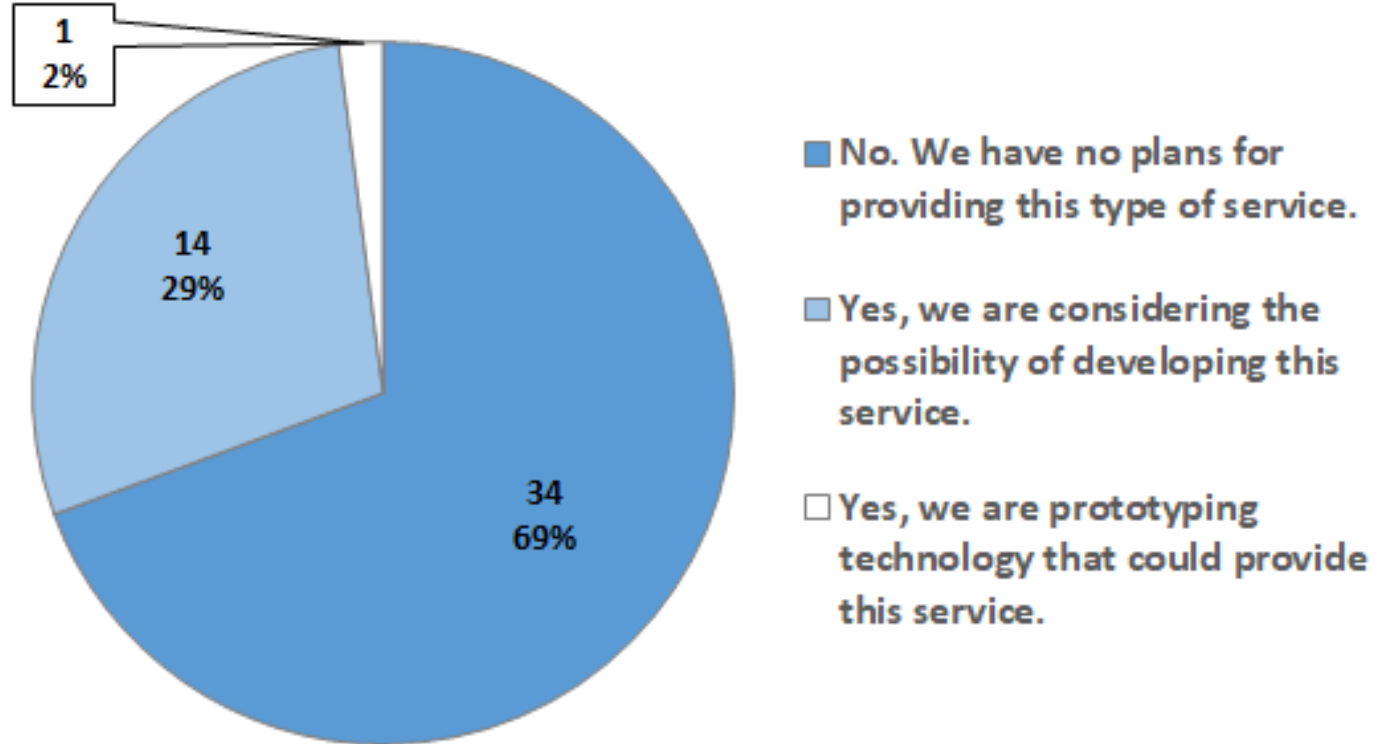
Are you using or planning to use any technology that would print paper charts directly from ENC data? [Check the closest answer]



- No. We have no plans on doing this.
- No, but we are exploring ways in which this might be done.
- Yes, we use a mostly manual process to do this.
- Yes, we use a semi-automated process to do this.
- Yes, we use a mostly automated process to do this.



Are you using, or planning to use, any technology that enables users to define their own paper chart extent and scale to output their own customized chart? [Check the closest answer]



69% – No

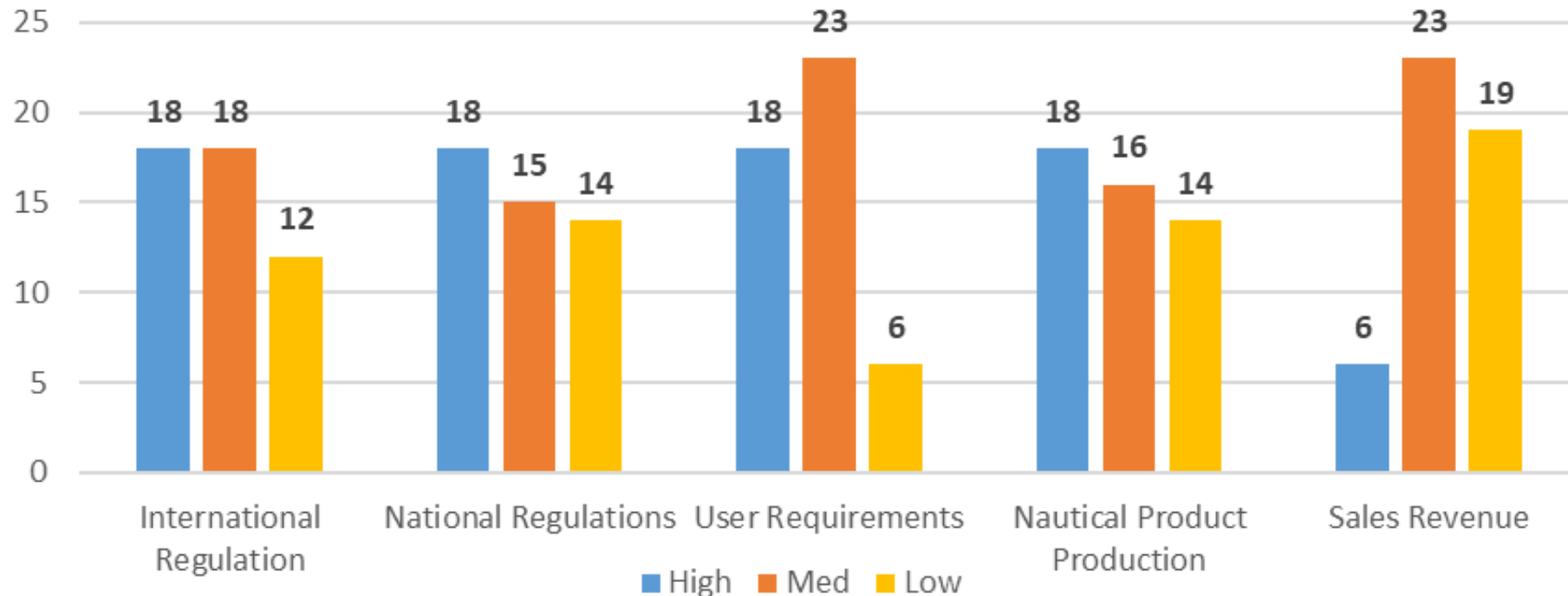
31% – Considering the option or already doing so.



PERCEPTION OF IMPACTS OF A PAPERLESS WORLD

What is your perception of the impact of a world without paper nautical charts would have on the following five areas?

That is, what degree of changes would be needed to accommodate paperless navigation or would result from paperless navigation





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THE PAPER NAUTICAL CHART - CHALLENGES

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- The sales of paper nautical charts is declining
- The sales of ENC's is increasing
- Benefit-cost ratio of the raster charts is getting too low
- Demand for paper charts still exists
- Each HO is affected differently



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POSSIBLE SOLUTIONS (NON-EXCLUSIVE)

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Optimize portfolio	Optimize content	Optimize portrayal	Optimize production
Reduce the number of charts available.	Reduce number of features in each chart.	Reduce manual cartographic editing.	Reduce duplicated work and parallel workflows.
May be done through reduced geographical coverage or reduced scales produced.	May be done through reduced level of detail or number of feature classes.	May be done with rule based cartography.	May be done through single source chart production database or similar solution.
Extreme case: Stop producing paper charts.	Extreme case: Reduce content to the minimum level still acceptable to IMO.	Extreme case: Chart creation if fully automated with no human interaction needed.	



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THE PAPER NAUTICAL CHART – PROPOSED WAY FORWARD

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- NCWG to develop ways to enable or enhance HO's ability to produce paper charts or raster chart images directly from (S-101) ENC data
 - Common 'baseline' symbology and portrayal rules, that HOs and system developers may use as a basis for their own development



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ACTION REQUESTED OF S100WG

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S100WG is invited to

- **Note** this report

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