National Report of Finland

Executive Summary

This Report highlights the main activities and achievements of the Finnish Hydrographic Office since BSHC 24nd Conference in September 2019.

- Reorganisation of the Finnish Transport and Communications Agency, Traficom.
- The focus of hydrographic surveys on shallow coastal and archipelago areas.
- A reduced production of new editions of nautical charts.
- The new Bathymetric Data Management System (MERTA) - migration of data to the system.
- The new Nautical Chart Production System (AHTI).
- The "New vertical chart reference N2000/BSHC2000" project – implementation phase.

1. Finnish Hydrographic Office

Reorganisation of the Finnish Transport and Communications Agency Traficom at the beginning of 2020.

The Finnish HO's tasks and personnel are reorganised into "Hydrography and Fairways" unit under "Transport System Services" business sector. The staff working for hydrography consist 55 experts. Annual budget for hydrographic activities is about 10 million euros.

The FHO has been performing according to the Quality Management System based on the ISO 9001 standard since 2011.

2. Hydrographic surveys

During 2019, hydrographic surveys projects took place in Oulu, Kemi and Tornio fairways on the Bay of Bothnia area. The resurvey of the Tornio fairway was done due to estimated sediment build-up in some parts of the fairway. LiDAR surveys commenced in the Archipelago Sea targeting full coverage from coastline down to 6 m of water depth. Ordinary inland lake surveys, project HAKO2018, on the Lake Saimaa commenced after a one year break.

Task	Surveyed by	Multibeam [km^2]	Line sounding [km^2]
Kemi, Oulu & Tornio BBTOK2019	*Meritaito Oy*	185	
Archipelago Sea areal surveys	*Meritaito Oy*		LiDAR 417
HAKO2018 inland lake surveys	*IIC Technologies Ltd*	67	

Table 1: Survey statistics for 2019.

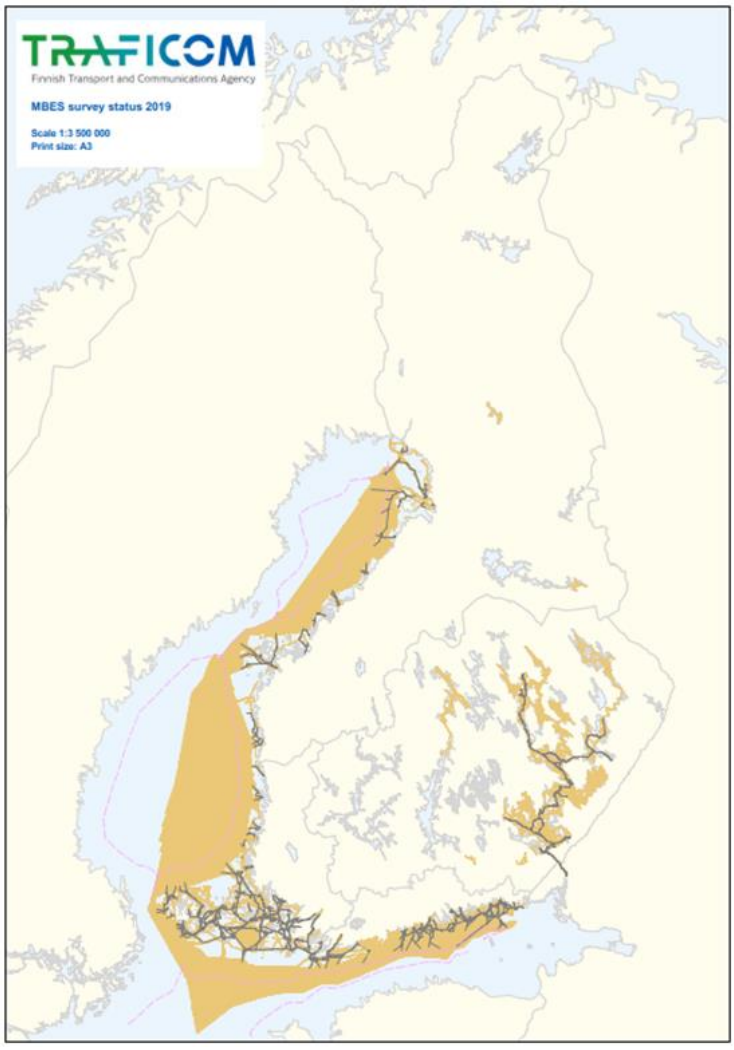

Fig. 2. Hydrographic re-survey coverage in 2019 surveyed according to IHO S-44 and FSIS-44 standards

The Finnish part of the HELCOM-BSHC Revised Harmonised Hydrographic Re-Survey Scheme has enhanced. The HELCOM survey plan was the driving force to perform the hydrographic surveys in Finnish waters until 2017. The focus of hydrographic surveys has now moved towards the inadequately surveyed nearshore coastal and archipelago areas. As a total Baltic Sea re-survey scheme, the requirements of the HELCOM Copenhagen 2013 Ministerial Declaration are in progress in all Baltic Sea countries. The Finnish shallow nearshore and archipelago HELCOM Cat III areas will be included into the next version of the updated Harmonized Re-Survey Scheme.

Finland has participated in the EU INEA CEF Transport TEN-T grant program FAMOS Odin (2016-2019) application, headed by Swedish Maritime Administration for support on renewing the bathymetric DB and chart production system. FAMOS Odin has provided fruitful co-operation platform for benchmarking various HO activities.

3. Nautical Charts

Printed charts

Due to the ongoing MERTA and AHTI systems development projects and a workload of the BSCD2000 project, only the most important printed charts for commercial shipping were published in 2019 (see Fig.3 and Table 2 below).

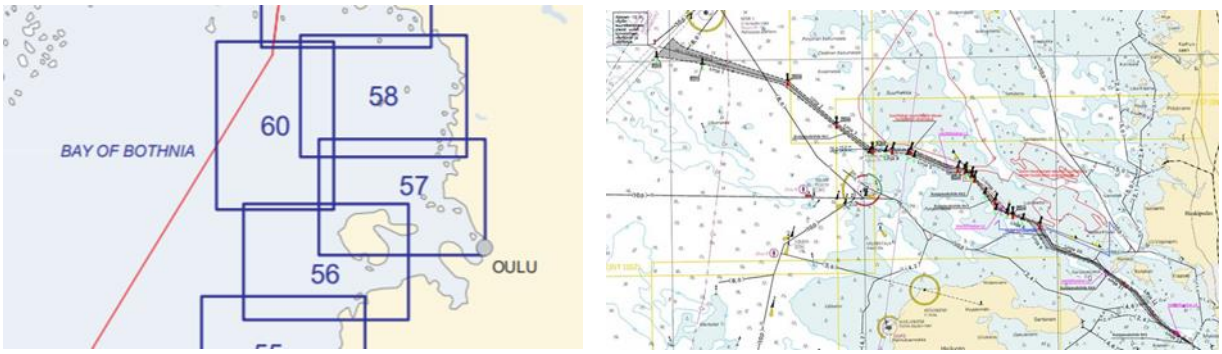

Fig.3. New editions of INT charts for new fairway to Oulu harbour 2019

Published printed charts	2012	2013	2014	2015	2016	2017	2018	**2019**
General charts	3	2	4	3	3	1	2	**1**
Approach charts	10	18	13	11	7	9	6	**3**
Harbour charts	6	10	8	2	4	9	1	**1**
Chart series	3	3	4	2	2	1	2	**-**
Other charts			**-**			1		

Table 2. Statistics of published New Editions of Finnish nautical charts in 2012 – 2019.

Fig.4. New chart catalogue 2019.

More information about Finnish charts for navigation here.

Statistics of sold printed charts are presented in the Table 3. In addition, there are many adopted printed charts from Finnish area of responsibility sold by UKHO. The overall sales in 2019 has decreased, as there has been only few new editions.

Printed paper charts	2013	2014	2015	2016	*2017*	*2018*	**2019**
AO-size	9186	10225	7330	5761	4656	5155	**4136**
Chart series	14892	16634	19738	9642	9899	9747	**7592**
Total sold copies	24078	26 859	27088	15043	14555	14902	**11728**

Table 3. Statistics of sold printed charts (number of copies).

ENC production and distribution

The number of sold ENCs increased about 10 % and amount of ships using ENCs increased about 5 % in 2019. The numbers of ENC Statistics are shown in *Table 4*, *Table 5*.

Releasd ENCs	2013	2014	2015	2016	2017	2018	**2019**
New ENCs	4	3	25	17	5	1	**-**
New editions	33	43	48	38	50	47	**13**

Table 4. Statistics of produced Finnish ENCs 2012-2018.

Use of ENC	2013	2014	2015	2016	2017	2018	**2019**
ENCs sold annually (excluded trial, training and demo usage)	61022	69982	77533	89927	95193	107101	**115462**
No of ships (annually)	1908	2270	2713	3212	3659	4492	**4698**
No of customers (annually)	669	793	898	1054	1232	1467	**1439**

Table 5. Statistics for the use of Finnish ENCs 2012-2018.

Quality control of ENCs has further improved in the chart production process. Some software tools for hydrographic data quality control and operation guidance has enhanced.

4. Nautical publications

Notices to Mariners are distributed via Traficom website as download service (PDF) and NtM Online web-service with capability of viewing the Notices filtered by time of publication, area or charts affected.

The Lists of Lights are published for coastal areas and inland waterways. The Lake Saimaa area is now included as a part of the publication for inland waterways. Lists of Lights are available as downloadable PDFs and in addition, information of lights can be search based on ID, area of interest or related chart product.

Publication /service	2013	2014	2015	2016	2017	2018	**2019**
Notices to Mariners, vol of publications	33	34	34	35	35	35	**35**
Number of NtM notices	422	397	391	366	388	366	**306**
Number of ER updates	431	534	605	504	668	776	**562**

Table 6. Statistics for nautical publications

5. MSI

TRAFICOM is responsible for safety radio communications in Finnish territorial waters and for distress radio communications in the deep channels of the Saimaa waterways system.

In total 84 navigational warnings were published during 2019.The number of warnings in 2019 is exceptionally low, partly because new criteria for issuing navigational warnings were tested, partly because, for example, there was less pipeline layoff in the Gulf of Finland.

Publication / Service	2013	2014	2015	2016	2017	2018	**2019**
Navigational Warnings	276	234	236	237	239	200	**84**

Table 7. Statistics for navigational warnings

6. C-55

Status of hydrographic Surveys

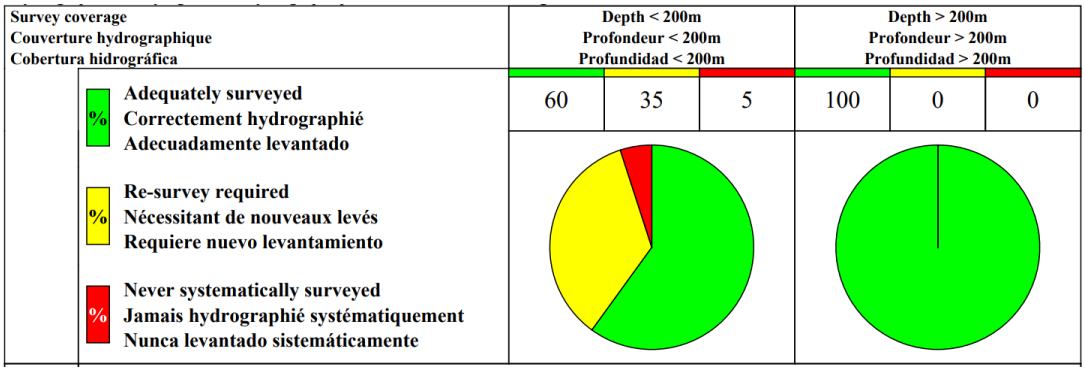

Fig.5. Survey coverage of the Finnish waters.

Status of Nautical Charting

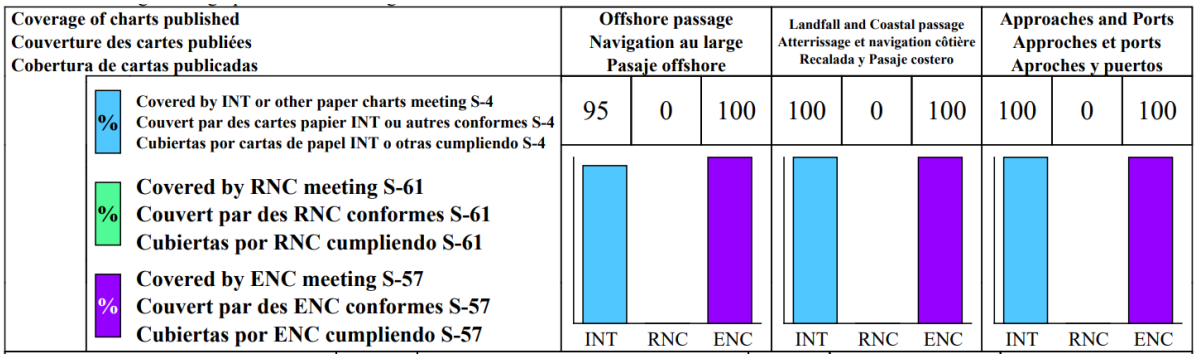

Fig.6. Nautical Chart coverage of the Finnish waters.

7. Capacity building

Nothing to report.

8. Oceanographic activities

The implementation plan for changing Finnish nautical charts and related hydrographic data to the common Baltic Sea Chart (vertical) Datum (BSCD 2000) has approved 2018. The first step of implementation consist reprocessing the data and informing maritime customers and other stakeholders. FHO is preparing to publish the first set of navigational products with the new vertical reference before end of 2020. An overall schelude for the implementation in Finland is presented below (Fig.7).

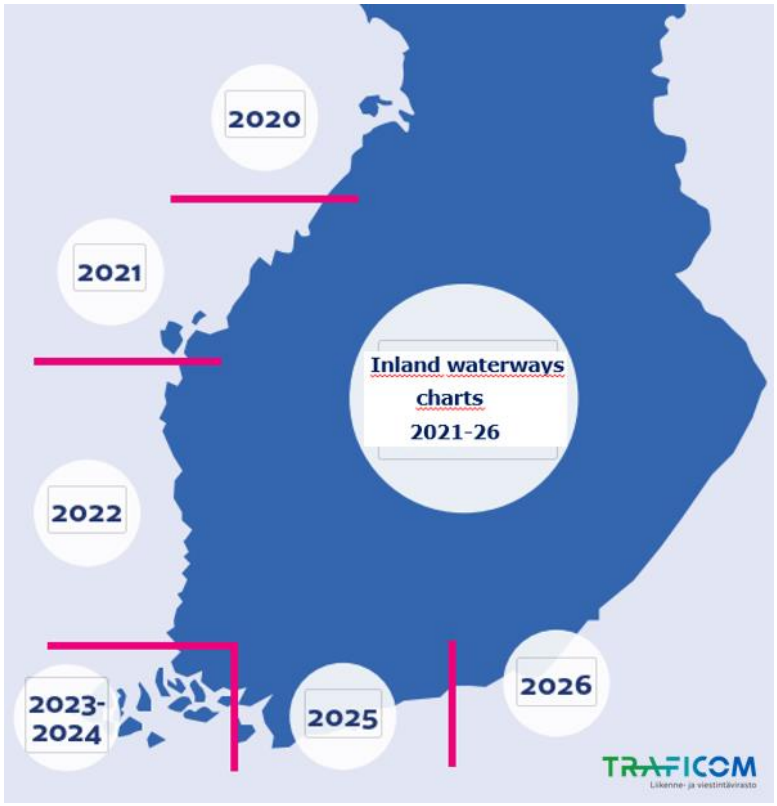

Fig.7. An implementation schelude of the Baltic Sea Chart Datum 2000 on Finnish waters.

9. Spatial data infrastructure

National Geodata Portal

The non-navigational use of hydrographic data has increased exceedingly. A viewing service is in use via the interface of National Geodata Portal providing Inspire specific national spatial data sets, for example. The FHO is actively supporting hydrographic data to the National Geodata Portal. The metadata of FHO is also available at the National Geodata Portal.

Open data view and download services

File download service for viewing and downloading datasets
- Web Map Service
- Web Feature Service
- Tiled map service (WMTS) for viewing FHO nautical chart data in raster format

The data available from these services is not suitable for navigation and does not meet the requirements for an official nautical chart.

Links:
Finnish Transport and Communications Agency (The new data viewing and download service)
https://julkinen.traficom.fi/oskari/?lang=en

National Geodata Portal Paikkatietoikkuna:
http://www.paikkatietoikkuna.fi/?lang=en

10. Innovation

Hydrographic data processing and management

Additional development of the new bathymetric data management system (MERTA) for FHO is finalised and deployed. The new tools and processes consist sophisticated methods for the management of bathymetric data. The system also includes high level automation when calculating bathymetric grids and surfaces, creating contours and selecting soundings for the navigational charts.

Chart data processing and management

The new system for chart data management and production has accepted for a production use (the production of paper charts will begin in August 2020). The data management part of the system has been in use since April 2019 after successful system integrations and data migrations.

The final development phase of the project is related to a paper chart production i.e. portrayal, tools for the cartography editing and migration of the cartographic edits and products from the legacy system.

The remaining project tasks also include additional development and bug-fixing for the ENC production and a charts for military e.g. AML production.

The final acceptance of the system delivery is expected to take place at the end of September 2020.

11. Other activities

FHO has Bilateral Arrangements with UKHO (adoptions of printed Charts), Norway (ENC RENC services), Sweden, Estonia and Germany.

Finland has been a member of the IHO Council and taking part of the HSSC and IRCC meetings.
Finnish experts are actively working in;

- HSSC/NCWG (as Chair)
- HSSC/ENCWG
- HSSC/S-100WG and HSSC/S-101PT
- HSSC/DQWG
- HSSC/NIPWG (as Vice Chair)
- HSSC/TWCWG
- IRCC/WEND-WG (representing BSHC)
- IRCC/MSDIWG
- Baltic Sea Hydrographic Commission including BSHC/BSICCWG (Chair), BSHC-HELCOM/MWG (Chair), BSHC/BSDIWG, BSHC/BS-NSMSDIWG, BSHC/CDWG
- Nordic Hydrographic Commission including NHC/NCPEG, NHC/NSEG
- Arctic Region Hydrographic Commission (as Associate Member) including ARHC/OTWG and ARHC/ARMSDIWG.

Finland is member of the PRIMAR and contribute actively the work of PRIMAR PAC and WGs.

12. Conclusions

This report highlights the main activities of the Finnish Hydrographic Office since BSHC24 Conference in September 2019.