THE PATH TOWARDS SUSTAINABLE FISHERIES THROUGH ONE DATA IMPLEMENTATION IN THE MINISTRY OF MARINE AFFAIRS AND FISHERIES (MMAF) REPUBLIC OF INDONESIA

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Background

Indonesia is the 15th largest country in the world. According to the Indonesian Coordinating Ministry for Maritime Affairs, 17,504 islands are officially listed within Indonesia's territory. It is consists of 5.80 million km2 are oceans ; 9th largest ocean area in the world. Indonesia coastline: 99.093 km2 or as the second country with the longest coastline in the world . Capture fisheries are supported by 648 Fishing Ports in Indonesia consisting of 6 Ocean Ports (PPS/Pelabuhan Perikanan Samudera), 15 Archipelagic Ports (PPN/Pelabuhan Perikanan Nusantara), 45 Coastal Ports (PPP/Pelabuhan Perikanan Pantai), 580 Landing Ports (PPI/Pangkalan Pendaratan Ikan) and 2 ports functioning as general landing places.

Why collecting Fish Data catch?

Based on Data Law No.45 Year 2009 on Fisheries, mentions:
Article 1, paragraph 7: "Fisheries management shall be all efforts, including integrated processes in the collection of information, analysis, planning, consultation, decision-making, allocation of fish resources, and the implementation and enforcement of legislation on fisheries, or other authority directed towards achieving the survival of the marine living resources productivity and agreed objectives'.
Article 7 paragraph 1: "In order to support the policy of fish resources management, the Minister shall determine the potential and allocation of fish resources in the fishery management area of the Republic of Indonesia".

In early 1990, the data collection of fish catches in Indonesia was initiated by Mr. Yamamoto through the United Nations Development Program (UNDP) project in Indonesia and this methodology was implemented until 2016. Since the One Data policy planned by the President of Indonesia in mid-2016, there was management reformation in data collection, starting with the data collection, processing and presentation. Furthermore, this paper focuses on the roadmap of the One Data implementation and its influence within the Indonesian reporting process as IOTC membership.

Nation One Data Policy

"**Satu Data**" or "**One Data**" is a phrase, firstly coined by **President Jokowi, April 13, 2016** which refers to a single set of data agreed upon by every stakeholder as a reference for national planning. He was speaking at a limited cabinet meeting on presidential instructions draft for synchronization of planning and budgeting for national development at the Presidential Palace: *"We do not want to repeat the old tradition where planning and budgeting are incongruous and disconnected, out of sync ... and this I emphasize, things like this should not*

happen again. Planning must be integrated, consolidated, organized, inter-sector, inter-regional, and central, and there is no such thing as sectoral egos …"

MMAF Data Collection System before One Data Applied (before 2016)

Data collection system processes are established under the coordination of Capture Fishery General Directorate MMAF, data collection approach taken from industrial port sampling, Auction place samplings and fishing villages surveys, all raw data collected in Regency fisheries office's report. From Regency report goes to Provincial Fisheries Office's report and finalized by Capture Fisheries as annual report. While the scientific data serves to analyze and confirm the results of data collection and analysis produced by the directorate general of capture fisheries, using and considering 4 aspects, namely Log sheet data, Vessel Monitoring System, Regional Observer and Port Sampling. The regional observer supervised under Research and Human Resources Development MMAF. Those two units working together providing report for IOTC by coordinating of Fish Resources Directorate MMAF. The Diagram flow of Tuna Catch Report Pre-Data One as shown in figure 1.

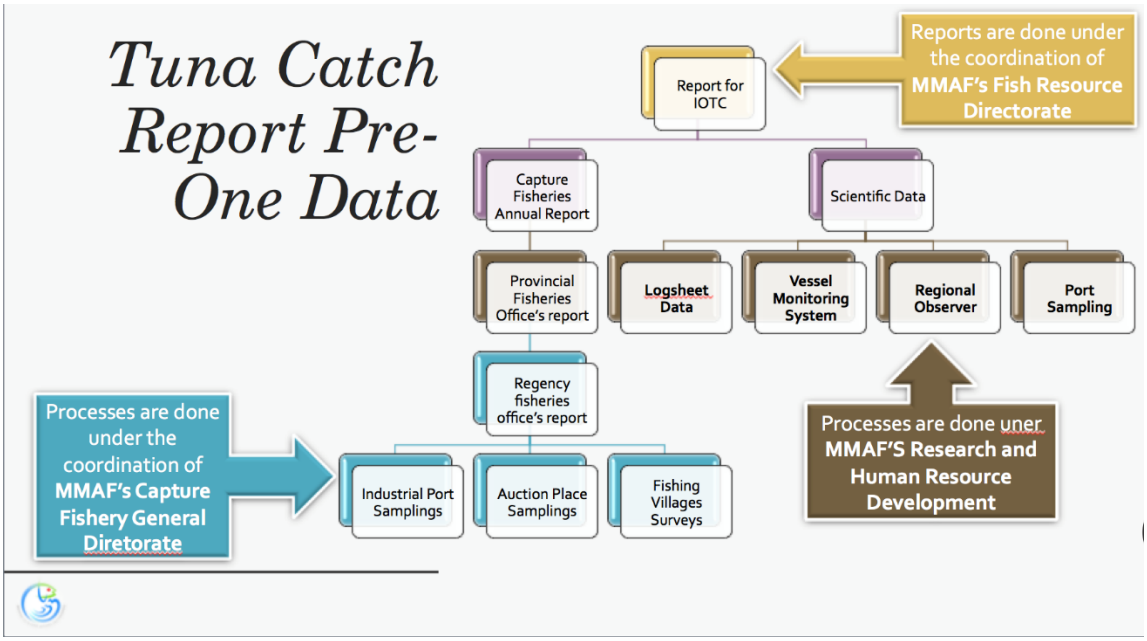


Figure 1. Tuna Catch Report Pre-One Data

Following up the Indonesian President's Speech, seven government institutions and ministries were selected for the One Data pilot project. The Ministry of Marine Affairs and Fisheries (MMAF) is one of the selected Ministries to implement One Data policy. Starting with methodology of data collection preparation, providing human resources and capability of technology support. Since March 2017, the fishery data collection process has been using a single data system.

MMAF Data as National Pilot

There are 3 pillars of the Vision of MMAF: Sovereignty, Sustainability, Prosperity, and to achieve that vision, MMAF embarked on the One Data initiative. Some challenges were found as multiple data sources were in use; Quality and validity of the data, bureaucracy and

data updating. So that, to answers those challenges One Data set up One Data Standard, One Metadata standard and One Data Portal. One Data Standard means the same object has the same meaning nationwide (including definitions and units of measurement); One metadata standard which describes the version, relationshipss and other characteristics of each data, and Standardized metadata depicts a complete profile for each data; so that One Data Portal means One place to store, retrieve and publish data on easy access for public interest, with involving public participation, also data release and dissemination

Implementation of one data is initiated by process, technology and human resources. The Process started with consolidation of master data and data trustees and standardized process of data collection, while technology means the way of integrating the applications and infrastructure as well as enhancement of applications and infrastructures used. This system supported by adequate and competent human resources from districts, provinces and central government in the roles of enumerators and validators of data. Total human resources involved in managing One Data amounted to 7,054 people consisting of 27 central validators, 68 provincial validators spread in 34 provinces, 1,005 regency validators distributed to 514 cities/regencies, and 5,954 enumerators.

To achieve a high quality and timely data, all people involved must follow the Standard Operational Procedure, where from data collection, data input, data processing until reporting we use one standard method and tools, competent people and integrated information system. One data provides data which has reliable, standardized, up-to-date and comprehensive information on fishery data as the basis to design policies and regulations as well as program planning, while stakeholders will also have resourceful information about fishery data and access to public services such as permits, government aids and grants, community empowerment, and up skilling programs. Maintaining maritime sovereignty, while ensuring sustainable fishery management for the prosperity of its community. However, work procedure for implementing One data activity is briefly explained as follows:

First, data collection training for field officers was held at the beginning of the year. The data collection officer is hereinafter referred to as Enumerator and authorized by MMAF Decree concerning duties and functions of Enumerators. After the training session, enumerators collect and retrieve primary data using production questionnaires (sampling) and KUSUKA (listing); *Next*, input data into the SATU DATA Application. The data must be input to application within 3 (three) days after the data collection; after that, Central validator verifies the data that has been input into the application with regard to the completeness, accuracy, and logic of the data, which is done by respondent level. This process should be done within 10 (ten) days; Moreover, any sampling data that passes verification by the Central Validator, will be drawn by the application to estimate the production value based on the aggregate formula as follows: $(N / n) \bullet P$, where N: population, n: sample, and P; sample production. This process is carried out by application system within a day; *Next*, the production estimation results from the previous point will be reviewed by the Central Validator in order to see the suitability of the value compared to the production values in the previous years. This process must be finished within 8 (eight) days. *Finally*, The review results of Central validators will be used as an input (Substantive) for National Validation Meeting. The National Validation Meeting will be jointly carried out with Central and Provincial Validators. This meeting will discuss the technical reasons for possible data changes. This meeting will be held for 5 (five) days; After the Final Production Values are agreed by The Central and Provincial Validators, Data, Statistic, and Information Centre MMAF (Pusdatin) will close it and this process must be finished within one day. The scheme of One Data workflow, as shown in figure 2.

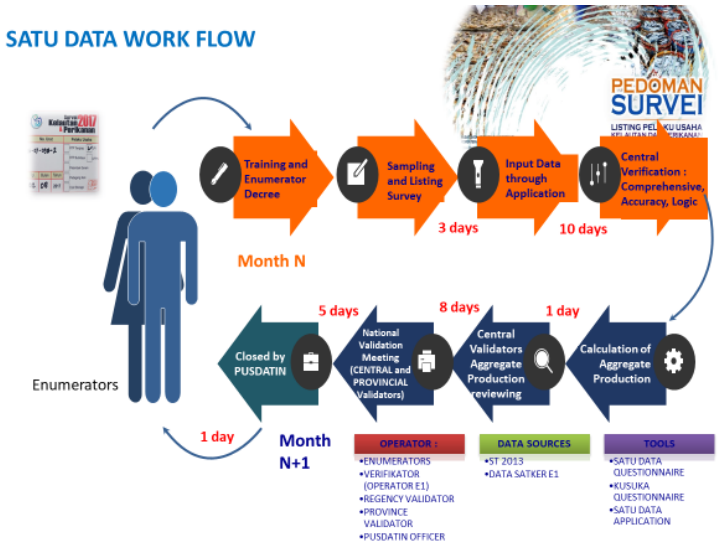


Figure 2. One Data Work Flow

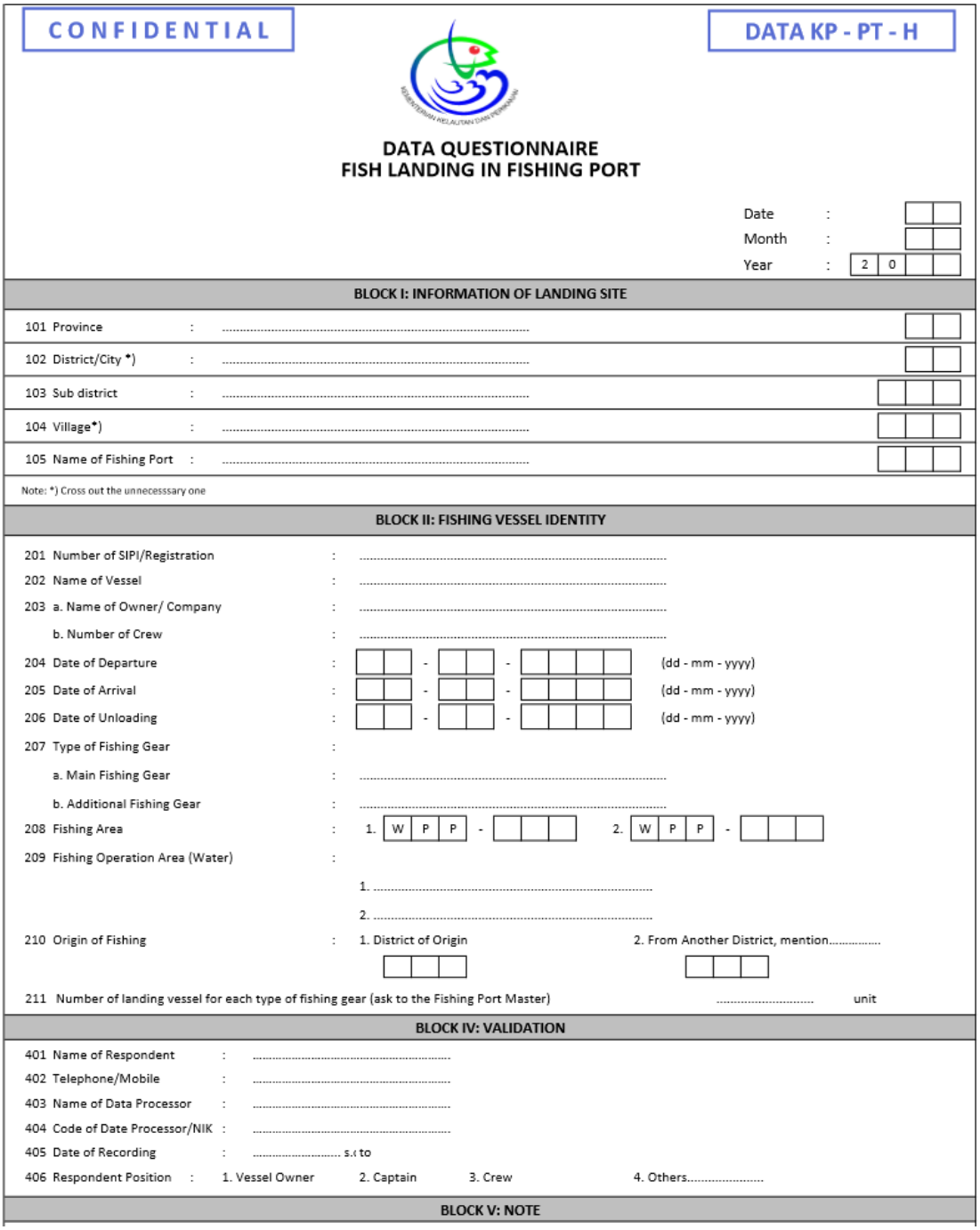
Legal Framework

The implementation of one data based on at least 3 Ministrial decrees called , Ministerial Decree on One Data declared on 17 January 2018; *Berita Negara regarding to the Permen Kusuk*a; Ministerial Decree on KUSUKA; published by 5 September 2017; Ministerial Decree on Government Aid, 12 Dec 2017; Ministerial Decree on MMAF IT Master Plan Aid declared on 30 December 2017;

One Data Support Tracebility : Fishery Online Scale (located in Karangantu Fishing Port)

Having more than 25 years, Indonesia recorded the fish catch landed using an old version methodology, also the lack of data capacity and data communication to national data founded as challenges, for examples, enumerators in the sub district and operators of Data Statistics Centre shall be upgraded to comprehend new methodologies; the capacity for data processing and analyzing in the district and provinces shall be enhanced; the data communication to national data center shall have capability of more than 90% uptime;

Then, the methodology of One Data, formulated as one Standard of Data means Standardized instruments (questionnaire) ; Standardized procedures; standardized the meta data; well-trained enumerators and automated processes where data input and store in one portal . The questionnaire for data collection of fish caught and the updating of fishery house hold as shown below**:**



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DATA QUESTIONNAIRE
FISH LANDING IN FISHING PORT

Date :
Month :
Year : 2 0

BLOCK I: INFORMATION OF LANDING SITE

101 Province :
102 District/City *) :
103 Sub district :
104 Village*) :
105 Name of Fishing Port :

Note: *) Cross out the unnecesssary one

BLOCK II: FISHING VESSEL IDENTITY

201 Number of SIPI/Registration :
202 Name of Vessel :
203 a. Name of Owner/ Company :
b. Number of Crew :
204 Date of Departure : - - (dd - mm - yyyy)
205 Date of Arrival : - - (dd - mm - yyyy)
206 Date of Unloading : - - (dd - mm - yyyy)
207 Type of Fishing Gear :
a. Main Fishing Gear :
b. Additional Fishing Gear :
208 Fishing Area : 1. W P P - 2. W P P -
209 Fishing Operation Area (Water) :
1.
2.
210 Origin of Fishing : 1. District of Origin 2. From Another District, mention.....
211 Number of landing vessel for each type of fishing gear (ask to the Fishing Port Master) ..... unit

BLOCK IV: VALIDATION

401 Name of Respondent :
402 Telephone/Mobile :
403 Name of Data Processor :
404 Code of Date Processor/NIK :
405 Date of Recording : ..... s.d to
406 Respondent Position : 1. Vessel Owner 2. Captain 3. Crew 4. Others.....

BLOCK V: NOTE

Figure 3 : The questionnaire for data collection of fish caught

As mentioned, the Mandatory Data" within a Capture Fisheries Questionnaire include: Vessel ID; Vessel Owner; Fishing Gear; Fishing Ground; while , estimated aggregate production numbers are published in the One Data Dashboard.

RAHASIA

DATA KP - PT - T

KUESIONER PEMUTAKHIRAN
RUMAH TANGGA/PERUSAHAAN PERIKANAN (RTP/PP) TANGKAP

Tahun :

BLOK I: KETERANGAN TEMPAT

101 Provinsi :
102 Kabupaten/Kota *) :
103 Kecamatan :
104 Jumlah Desa Perikanan Dalam Satu Kecamatan : ..... Desa

Keterangan: *) Coret yang tidak sesuai

BLOK III: PENGESAHAN

301 Nama Pengolah Data :

BLOK II: PEMUTAKHIRAN

Jenis perairan : Laut/Sungai/Danau/Waduk/Rawa/Genangan air lainnya *)

No	Nama RTP/PP termasuk yang tidak menggunakan perahu/kapal motor	NIK/ SIUP***)	Desa	Alamat	Umur (tahun)	Jenis Kelamin	Pendidikan yang ditamatkan	Status Usaha
							1. Tidak 2. SD	
						1. Laki-laki 2. Perempuan	3. SMP 4. SMA	1. Aktif 2. Non Aktif
							5. PT	3. Baru
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

Figure 4 : The questionnaire for data collection of Fishery household

Fishery Online Scale

Considering the high complexity of marine and fisheries data and as a form of One Data implementation, the MMAF applies fishery data collection with information technology support called Fishery Online Scale. The excellence of Fishery Online Scale are fish catch data can be traced, recorded not only landing time but also volume of catches, fishing gear used, and fishing area, included countable of fish species, all data collected are stored in one portal named One Data.

The Fishery Online Scales System is an integrated digital scale with various components to form a single unit to record the weight of fish and other information, and will be stored in database, managed and utilized for public benefit. A set of online scales consists of a platform scale, its size 1 m x 1 m containing one unit load cell in the middle; another component part such as an embedded pc, keypad, LCD display, printer, Radio Frequency Identification (RFID) scanner and other support components are put inside the *kiosk*, located next to the scale. The picture of Fishery Online Scale as shown in figure 5.

Figure 5. Fishery Online Scale

There are many expected benefits for the users. For customers, the location for transactions is cleaner and more convenient, also the results of the measurements are more accurate, and the process of weighing is faster than the conventional one. Whereas for enumerators, only validating incoming data, and not necessarily to be on-site, and for PPN officers, the results of the scales as well as the amount of fish landed can be monitored in real-time. Fish landing process flow is the expected condition when the Online Scale is implemented. The steps in the process can be described as follows:

1. When the vessel needs to enter the port, the captain contacts the fisheries port master by radio to notify of the vessel's arrival;
2. The fisheries port master allocates space for the vessel to dock at the port;
3. The vessel enters the port and docks at the assigned place;
4. The captain or other crew member prepares the vessel's documents (vessel's book, fishing license/SIPI, port clearance letter/SPB) and brings them to the port master's office to report its arrival;
5. Portmaster staff verifies the documents and the technical requirements such as vessel's size, fishing gear, etc.;
6. After verifying the documents and the vessel's physical parameters the fisheries portmaster issues the Blue Fish Landing Control Card as queue number for the vessel to unload its catch;
7. Fisheries portmaster issues letter of notification of fishing vessel arrival (STBLKK) as directed by ministerial decree No. 3/PERMEN-KP/2013 about portmaster of fishing port;
8. Vessel crew collects the Blue Card and STBLKK. He hands the Blue Card to the enumerator; (the one responsible for input data fish landed into the application.)
9. Vessel crew sorts the fish according to type and quality and put them into baskets which are then moved to the dock by conveyor belt;
10. Online Scale consists of a digital weighing scale and the Online Scale application. The value shown on the scale will be directly stored in the database;
11. Enumerator performs the initial settings of the Online Scale application. She/he selects the vessel name according to the Blue Card from the crew. At this stage she/he also signs the Blue Card;
12. Each fish basket is weighed one by one on the digital weighing scale. The result of the weighing will appear on the Online Scale application. On the application, enumerator will choose the fish type, enters the distribution destination, and enters correction and conversion figures based on the physical condition of the fish. Afterwards enumerator presses the "record" button then prepares for the next basket;
13. Fish that's already been weighed is put in container car or truck for transport to the destination. Steps (12) and (13) are done repeatedly until all the catch on the vessel have been landed;
14. When the weighing process is finished, enumerator will print the tally sheet as summary of all the fish captured. Tally sheet is given to the fish buyer and the vessel owner. The Blue Card, as shown below is used to control vessels that are landing their catch at the dock of the port. The Blue Card contains information on the vessel such as the name, the owner, the gross tonnage, date of arrival, and the volume of fish landed.

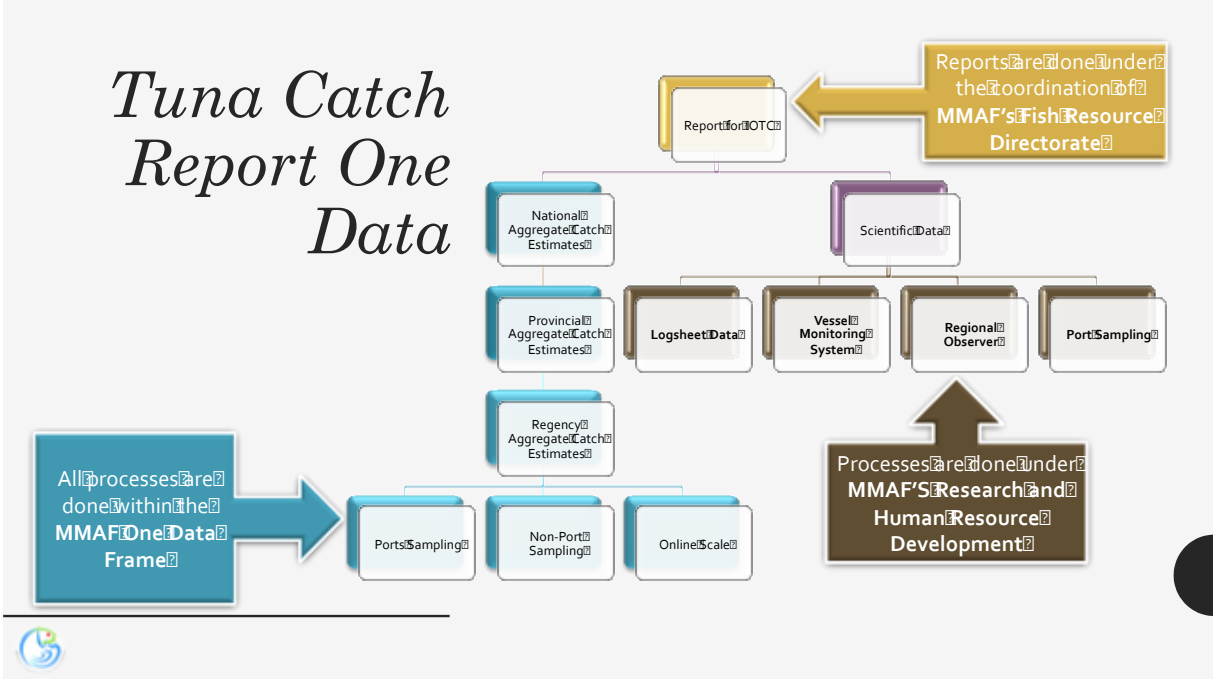
The Importance of Fishery online scale is that Online Scale data enhance traceability of capture fisheries, and it helps in evaluation and improvement of fisheries policies, supporting sustainable capture fisheries. The implementation of Fishery Online Scale helps reduce statistical uncertainties of capture fisheries, providing more accurate fisheries stock estimates; timely data allow for more accurate lifecycle estimates and better sustainable policies. It is also important that fishers' direct involvements increase their sense of belonging, improving cooperation and data accuracy.

Process of Tuna Data report and Quality Assurance

As an archipelagic state and developing country with an abundance of natural resources, Indonesia gradually become the top tuna production country after 2004. Indonesia has actively participated in International society to grant tuna catch opportunities from Tuna RFMOs and also compliance level report Indonesia as a member of RFMOs. These experience and improvement through One Data Applied and Fisheries Online Scale tools encourage Indonesia to continue and further develop its tuna fisheries and could provide an example to other counties.

One data provides data which reliable, standardized, up-to-date and comprehensive information on fishery data as the basis to design policies and regulations as well as program planning, while stakeholders also will have resourceful information about fishery data and access to public services such as permits, government aids and grants, community empowerment, and up skilling program. And maintaining maritime sovereignty, while ensuring sustainable fishery management for the prosperity of its community. Then, report of tuna caught ,describe in the figure below,

Figure 5. Tuna Catch Report Pre-One Data



The information of the marine and fishery stakeholder could be access through : Kusuka Blok Umum : https://satudata.kkp.go.id/dashboard_kusuka

***) Ismayanti** *: The head of Data Statistics division for The Centre of Data Statistics and Information, Ministry of Marine Affairs and Fisheries*

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