



## **A DESCRIPTION OF THE DISTRIBUTION SYSTEM FOR EXPORT AND REJECT QUALITY TUNA LANDED AT PORT OF BENOA**

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## Abstract

The ways tunas (yellowfin, big-eye, and southern bluefin) are processed and distributed at Port of Benoa are determined by size and quality of the fish, and a grading system operates for large (> 20 kg) 'exportable' tuna – Grades A, B, C, and 'Reject', in decreasing order of quality. Grade A and B tuna are exported (> 90% to Japan) whole, unfrozen as sashimi quality product. Grade C tuna follow the same route except when overseas market price is depressed and then 'C' becomes 'Reject'. The fate of reject tuna follows different routes depending on quality: 1. Processed into loin, toro, steak etc. and distributed either fresh or frozen to overseas or domestic markets, or 2. Distributed to local processing factories, including canning.

## Processing and Distribution

The separation of tunas and billfish into product suitable or not suitable for export is either done at sea, prior to landing, or at the time of catch unloading. This varies from company to company. Generally all fish of less than 20 kg individual weight are classed as not suitable for export i.e. 'non-exportable' (Figure 1). The 'exportable' tuna are usually gilled, gutted and tailed, and then weighed. These larger fish are graded, by buyer/exporting agents in the processing rooms, as "A" (highest quality), "B", or "C" (lowest export quality) grade, depending on the quality of the flesh (based on inspection of colour and fat content) and the overall condition of the carcass. Some of the processing companies are also the exporters, but often the buyer/exporter agent will be from an export company that is using the processing rooms of another company.

Not all of the larger tuna will be of sufficient quality for export. 'Reject', non-exportable (i.e. less than "C" grade) whole tuna, are usually placed off to one side of the processing room while the export quality fish are placed into an ice slurry, prior to being packed into cardboard cartons with dry ice, ready for export. As Japan is the primary destination (see below) for whole, sashimi quality, fresh tuna the market price of tuna in Japan on any particular day has an impact on whether all, or only some of grade C tuna is exported whole. If the current market price is depressed, and the freight costs and overheads associated with export begin to outweigh the likely returns on these lower quality fish, the grade C tuna may not be exported whole and instead be classed as reject, non-exportable fish.

Up until recently there has been no export of whole frozen tuna to international destinations from Bali, largely because Indonesia's fishing vessels have not had the  $-60^{\circ}\text{C}$  (or colder) on-board freezer facilities required to store sashimi grade, whole tuna as frozen product. However, at least one Benoa-based company (PT. Damarina) now has one large (500 GT) long-liner vessel with such facilities and is sending frozen whole tuna to Japan.

The reject whole fish (including billfish) are generally processed into loin, toro, steak and fillet products, either at the same processing company where the export fish have been processed, or at other Benoa based processing companies. There are at least 10 processing/export companies in Bali that specialise in processing reject quality fish purchased from other processing companies. These tuna or billfish products are either exported fresh, or frozen and placed into cold storage, before export as frozen product. Loin is exported both fresh and frozen, whereas steak and fillet for international destinations (see

below) is generally all frozen product. Some of the fresh loin, toro, steak, and fillet product supply the domestic (Bali and Jakarta) restaurants, hotels, and supermarkets. The reject fish of lowest quality are sent direct to cold storage without being processed into the smaller products. Most of these fish go to canning, but also to local traditional markets and processing (e.g. boiled and salted “pindang”). Reject whole fish in poor condition are sometimes also sent unfrozen, direct to canning and to the traditional markets.

The small (< 20 kg) non-exportable tuna either go through cold storage or direct (fresh) to canning and local traditional markets and processing.

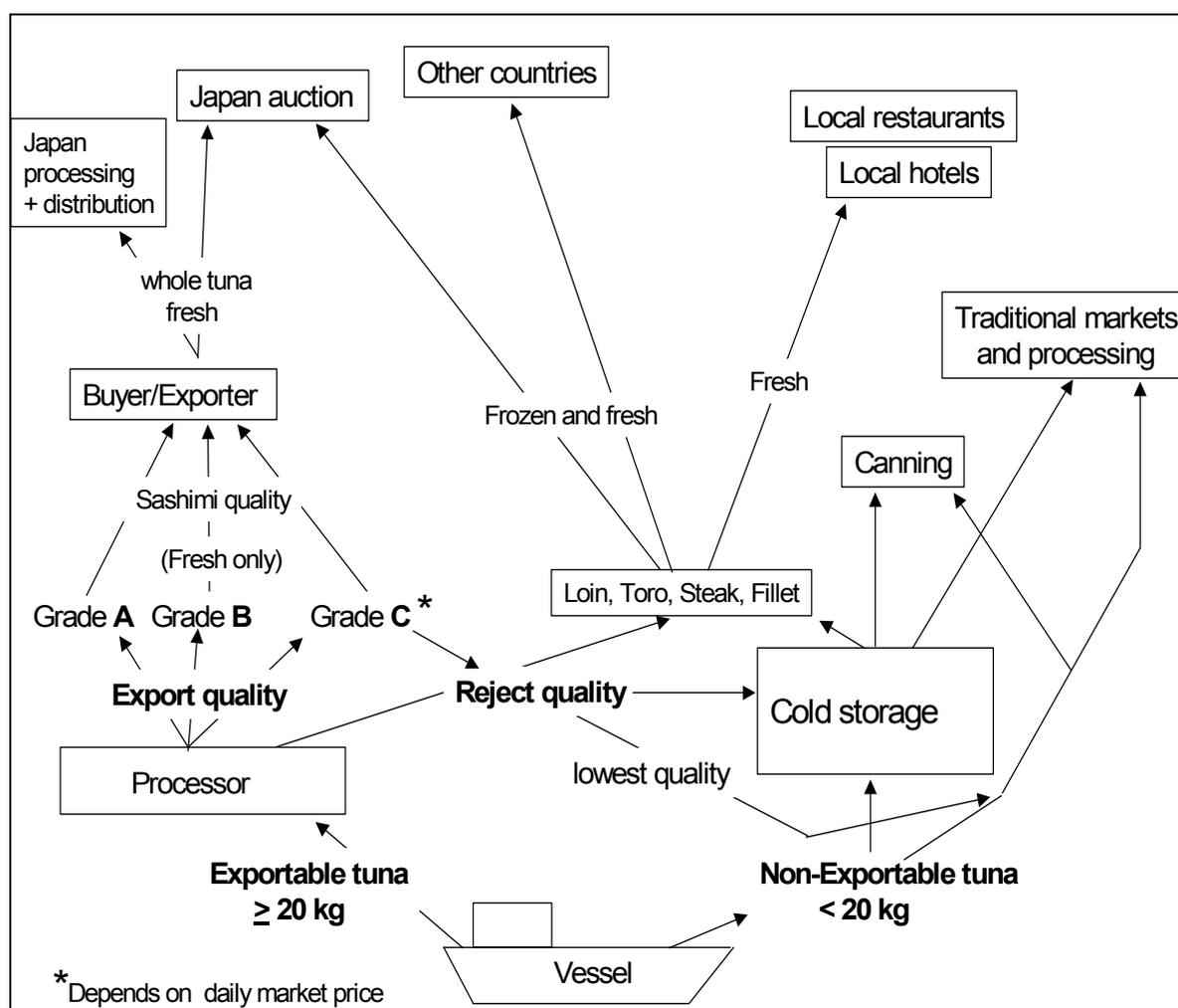


Figure 1. Processing and distribution of tuna landed at Port of Benoa

## Export destination

The following analysis is based on data recorded at Dinas Provincial, Laboratory for Quality. The data was obtained through Japanese agencies, the Fishery Agency of Japan and the National Research Institute of Far Seas Fisheries, as part the CCSBT Indonesian Catch Monitoring Review Workshop and recommendations held in Queenstown, New Zealand 10-11 March 2003.

The tuna exported as fresh and frozen by month and year is presented in Table 1. The largest fraction of tuna is exported as fresh product, usually whole. Exports rose steadily from

14,734 tonnes in 1996 to a peak of 20,411 tonnes in 1999. Since then exports have declined but remain above 18,000 tonnes in 2002.

The countries of destination to which fresh tuna are exported are presented in Table 2. Japan is the main importer of fresh tuna at 94% (actually about 95% as the 2002 countries category would be mainly Japan). About 1% is also exported to the UK and USA. The countries of destination to which frozen tuna are exported are presented in Table 3. Japan was the main importer of frozen tuna from Bali up until 1998 but has been second to the USA since then. 34% of frozen tuna exports from Bali go to USA, followed by Japan (27%), Singapore (8%) and the Netherlands (7%). Most frozen tuna is exported as loin, and the majority of export to the USA is frozen loins of yellowfin tuna (Davis and Andamari, 2003b<sup>1</sup>).

Table 1. Tuna (tonnes) exported by month and year from Bali to all countries (data obtained from Dinas via Fishery Agency of Japan).

Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	total
1996	Fresh	802.2	1,088.3	1,280.5	775.3	802.1	648.3	570.1	574.7	875.3	958.4	1,118.5	1,351.4	10,845.2
	Frozen	323.3	329.3	681.3	198.1	344.3	250.5	179.1	186.8	385.7	262.2	394.5	354.0	3,889.2
	total	1,125.5	1,417.5	1,961.8	973.4	1,146.4	898.9	749.2	761.5	1,261.0	1,220.7	1,513.0	1,705.4	14,734.4
1997	Fresh	1,598.1	778.9	527.2	1,524.9	742.4	686.6	834.7	537.3	798.8	795.1	1,220.9	1,310.7	11,355.6
	Frozen	943.9	135.7	150.5	506.0	251.3	161.5	335.2	498.7	463.3	517.2	393.6	213.8	4,570.9
	total	2,542.0	914.6	677.7	2,030.9	993.7	848.1	1,169.9	1,036.0	1,262.2	1,312.3	1,614.5	1,524.5	15,926.5
1998	Fresh	1,247.4	1,023.9	963.3	1,113.8	1,203.2	978.8	1,135.4	1,023.9	1,042.6	1,366.9	985.4	1,397.9	13,482.4
	Frozen	376.7	306.3	524.9	349.3	364.1	236.7	997.1	513.0	891.8	273.9	890.9	458.1	6,183.0
	total	1,624.1	1,330.2	1,488.1	1,463.1	1,567.3	1,215.5	2,132.5	1,536.9	1,934.4	1,640.8	1,876.4	1,856.1	19,665.4
1999	Fresh	1,341.5	1,425.5	1,370.0	1,078.3	1,394.6	1,514.3	1,338.4	820.2	912.1	807.0	1,227.4	1,168.3	14,397.6
	Frozen	457.2	317.0	737.2	346.5	333.9	578.9	555.1	470.4	409.3	435.8	643.4	729.4	6,014.2
	total	1,798.8	1,742.5	2,107.2	1,424.8	1,728.5	2,093.2	1,893.6	1,290.5	1,321.5	1,242.8	1,870.8	1,897.7	20,411.8
2000	Fresh	1,091.4	1,152.4	1,061.6	1,136.3	999.2	1,293.3	926.4	741.6	696.2	551.6	1,129.6	920.7	11,700.1
	Frozen	571.0	576.0	487.4	587.8	930.0	388.3	898.7	954.6	391.6	741.9	323.3	346.1	7,196.6
	total	1,662.4	1,728.4	1,549.0	1,724.1	1,929.2	1,681.5	1,825.0	1,696.2	1,087.7	1,293.5	1,452.9	1,266.7	18,896.7
2001	Fresh	1,344.3	1,294.8	636.1	462.4	557.0	608.6	907.3	844.8	791.6	927.1	946.3	1,351.6	10,671.9
	Frozen	304.0	313.8	240.6	845.3	323.8	433.4	430.3	944.4	761.0	560.2	884.6	560.6	6,601.9
	total	1,648.3	1,608.6	876.7	1,307.7	880.8	1,042.0	1,337.6	1,789.1	1,552.6	1,487.3	1,831.0	1,912.2	17,273.9
2002	Fresh	1,053.6	1,230.9	1,540.9	947.7	625.3	1,013.1	660.7	869.9	746.1	788.9	807.1	837.7	11,122.0
	Frozen	767.3	847.3	622.1	478.7	651.9	386.0	870.2	397.2	559.5	545.5	327.6	436.2	6,889.5
	total	1,820.9	2,078.2	2,163.0	1,426.5	1,277.3	1,399.1	1,530.9	1,267.1	1,305.6	1,334.5	1,134.7	1,273.8	18,011.5

<sup>1</sup> Davis T.L.O and Andamari R. (2003) Analysis of 2001 Dinas export packing list data by species, product and destination. CCSBT-ICM/0304/7.

Table 2. Fresh tuna exports by destination and year (data supplied by Dinas via National Research Institute of Far Seas Fisheries, Japan). Countries refers to data in January 2000 in which no destination information was recorded.

Destination	1996	1997	1998	1999	2000	2001	2002	Total
Arab								
Australia	1.4	22.2	6.8	5.0	0.2		1.4	36.9
Belgium	14.6	58.0			0.0			72.7
Brazil								
China			0.4	1.4	2.2	0.5	0.4	4.9
Countries					1,091.4			1,091.4
Denmark								
Finland							0.1	0.1
France	9.1	4.1	5.1			9.2	0.6	28.0
Germany	3.7	1.5	4.1	126.4	20.1	46.5	123.9	326.3
Greece								
Hong Kong	3.1	134.0	40.1	3.8	5.2	3.8	6.1	196.1
Italy			25.9	60.4	0.8		9.2	96.2
Japan	10,427.4	10,844.8	12,982.2	13,600.4	10,334.0	10,124.3	10,386.0	78,699.0
Korea	0.9	0.0		3.9	32.0	2.1	3.1	42.0
Malaysia	1.6	3.0	77.9	92.9	7.0	1.3	0.0	183.8
Netherlands	54.9	54.3	177.0	97.6	26.0	82.9	175.1	667.9
Philippine								
Portugal								
Re Union								
Russia								
Singapore	67.4	36.5	65.9	154.4	36.6	9.4	56.5	426.7
Spain				8.4				8.4
Sweden					1.0	1.5	5.9	8.4
Swiss						27.0	23.2	50.2
Taiwan	22.7	4.4		0.5		5.8	1.3	34.6
Thailand						13.3		13.3
UK	3.6	25.8	12.5	178.1	98.7	296.7	247.9	863.3
USA	234.9	167.0	84.4	64.4	44.8	47.7	81.4	724.7
Grand Total	10,845.2	11,355.6	13,482.4	14,397.6	11,700.1	10,671.9	11,122.0	83,574.9

Table 3. Frozen tuna exports by destination and year (data supplied by Dinas via National Research Institute of Far Seas Fisheries, Japan). Countries refers to data in January 2000 in which no destination information was recorded.

Destination	1996	1997	1998	1999	2000	2001	2002	Total
Arab							0.2	0.2
Australia	8.1	16.5	17.4	15.0	30.8	70.5	8.4	166.7
Belgium	55.0	131.0	115.6	106.3	190.7	190.7	234.0	1,023.2
Brazil		171.1						171.1
China		3.5	6.4	44.2	77.2	58.4	27.6	217.3
Countries					571.0			571.0
Denmark						32.2	88.5	120.7
Finland								
France	29.8	32.7	130.0		33.8			226.3
Germany	109.2	90.2	73.4	245.4	10.0	1.0	62.0	591.3
Greece	12.8	107.8	51.3	9.3		31.5	47.3	259.9
Hong Kong	21.0	106.7	108.8	63.4	47.2	180.1	158.5	685.7
Italy			11.5	63.1	245.5	200.0	77.4	597.5
Japan	2,146.6	1,286.4	2,178.1	1,531.5	1,172.8	1,456.5	1,272.8	11,044.8
Korea	35.7				26.1	16.5		78.2
Malaysia	19.3	0.5	26.1	21.5	87.2	141.8	11.5	307.9
Netherlands	89.0	113.7	703.7	584.4	296.2	513.0	487.8	2,787.8
Philippine	0.7	37.7	62.5	38.4			10.7	150.0
Portugal					6.7			6.7
Re Union			45.0		10.3	10.0		65.3
Russia							2.6	2.6
Singapore	680.2	1,031.6	798.3	234.6	319.1	105.7	218.0	3,387.5
Spain		52.3	19.2	150.7	419.1	392.7	463.4	1,497.4
Sweden						35.7	11.9	47.6
Swiss								
Taiwan	90.9	208.7	298.2	256.2	225.3	31.3	117.8	1,228.4
Thailand		336.6	18.5	333.6	174.0	75.9	101.4	1,040.1
UK	84.4	104.0	167.8	256.1	100.3	108.1	52.7	873.4
USA	506.5	740.0	1,351.0	2,060.4	3,153.2	2,950.3	3,435.0	14,196.5
Grand Total	3,889.2	4,570.9	6,183.0	6,014.2	7,196.6	6,601.9	6,889.5	41,345.2