EVALUATION OF OCCUPATIONAL SAFETY AND HEALTH IN THE GLOBAL FISHING SECTOR

Veysel TATAR

Artvin Coruh University, Department of Maritime and Port Management, Artvin-Turkey

vtatar@artvin.edu.tr

Abstract: Commercial fishing is one of the most hazardous occupations causing over 24,000 fatalities each year, the large majority of which occur aboard small fishing vessels. The International Maritime Organization (IMO), which is the United Nations body that has the primary responsibility for maritime safety and the protection of the marine environment, has taken on the responsibility of redressing the situation. Occupational Health and Safety (OHS) can simply be defined as providing secure working conditions for the employees. Employee safety issues are becoming more and more important every day, not only in working environments but also in every activity within the societies. Safety can be considered at both individual and institutional levels. The fishing industry (or fishing sector) is extraordinarily diverse. At one extreme are large, multinational joint ventures, utilizing large factory trawlers and numerous other vessels, employing thousands of workers on several oceans. At the other are small, wooden canoes and other boats used by individual fishermen' to catch sufficient food for their families and perhaps more to sell in their local communities. Most fishing operations fall somewhere between these extremes. The technology used can be simple and traditional, or it may be highly sophisticated, incorporating the most advanced electronic and other equipment. This paper analyses the role of OHS, occupational accidents, occupational diseases, risks and legislation are mentioned in the fishing industry.

Keywords: Fishing, Occupational Health and Safety, Maritime Legislation

Introduction

Occupational Safety and Health (OSH) is a discipline dealing with the prevention of work related injuries and diseases as well as the protection and promotion of the health of workers. It aims at the improvement of working conditions and environment. Occupational safety and health (OSH) is generally defined as the science of the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into ac-count the possible impact on the surrounding communities and the general environment (Alli, 2008). According to ILO, every year, 2.2 million employees all around the world die beca-use of accidents and diseases related with work. 270 million employees have accidents, 160 million employees suffer from diseases related with work. Occupational health and safety imposes on enterprises an expected penalty that is positively related to the presence of unsafe working conditions for firms not in compliance with the standards (Viscusi, 1986). Hazard control and prevention strategies to as-sure every working man and woman safe, healthful workplace conditions regard training as anaxiomatic part of all such efforts (Cohen and Colligan, 1998). Some of the common features of these industries are improper workplace design, ill structured jobs, mismatch between worker abilities and job demands, adverse environment, poor human-machine system design and inappropriate management programs (Shikdar and Sawaqed, 2003). Occupational safety and health is an extensive multidisciplinary activities such as ergonomics, physics and chemistry (Holmes et al. 1999). The main elements of the OSH management system for the workplace,), are shown in figure 1. Occupational Health and Safety is based on:

> Hazard identification – The process of recognizing that a hazard exists (source or situation with the potential to cause harm in terms of human injury or ill-health)

> Risk assessment – The process of evaluating the risk arising from the hazard (combi-nation of the likelihood of a hazardous event or exposure and the severity of injury or ill health that can be caused by the event of exposure)

> Determination of applicable controls – Measures relevant to eliminate or reduce risk to an acceptable level.

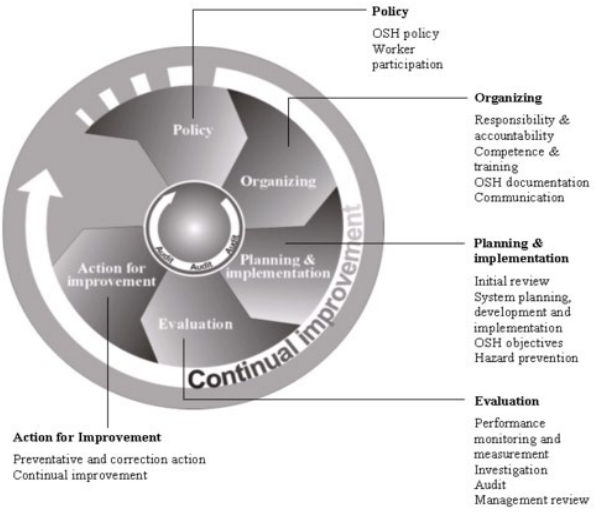
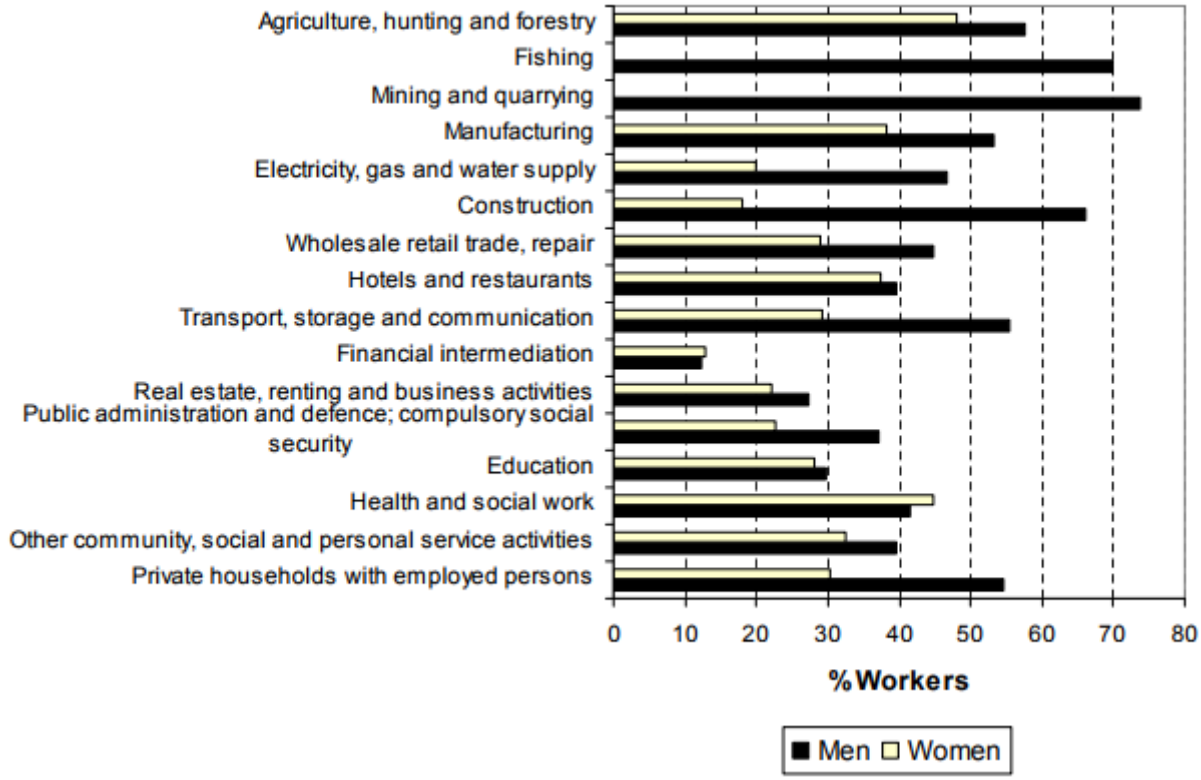


Figure 1. Main elements of the OSH management system (ILO, 2001)

The fishing industry (or fishing sector) is extraordinarily diverse. At one extreme are large, multinational joint ventures, utilizing large factory trawlers and numerous other vessels, employing thousands of workers on several oceans. At the other are small, wooden canoes and other boats used by individual fishermen' to catch sufficient food for their families and perhaps more to sell in their local communities. Most fishing operations fall somewhere between these extremes. The technology used can be simple and traditional, or it may be highly sophisticated, incorporating the most advanced electronic and other equipment. The International Maritime Organization has the primary responsibility for maritime safety and marine pollution prevention. The safety of fishing vessels had been a matter of concern to IMO since the Organization came into existence, but the great differences in design and operation between fishing vessels and other types of ships had always proved a major obstacle to their inclusion in the Conventions on Safety of Life at Sea (SOLAS) and Load Lines: while other vessels load cargo in port, fishing vessels must sail empty and load their cargo at sea. FAO and IMO have estimated that commercial fishing is one of the most hazardous occupations in the world with more than 24,000 fatalities per year, the large majority of which occur aboard small fishing vessels. Available statistics for countries with significant commercial fisheries indicate that fishing occupational fatalities and injuries occur at rates much higher than national averages for occupational fatalities and injuries, regardless of the level of industrialization (FAO, 2001). These high rates of fatalities and injuries can be partially attributed to the inherently dangerous working conditions involved in the industry. These include: an unpredictable and often hostile marine environment; unstable work platforms; resources that are mobile, variable, diverse, often dangerous (bites, poison, allergies) and often located in remote offshore areas; moveable and often heavy equipment, and a dependence on vessels for shelter and survival. Furthermore, shift work and the intense and prolonged working activity typically associated with fishing can cause fatigue, a common factor in many fishingrelated incidents (ILO, 1999).

The potential importance of interactivity among factors has been used to argue for social-ecological approaches to understanding health in fisheries (Dolan et al. 2005). The latest publication, jointly developed by the three organizations, is the FAO/ILO/IMO Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels which was recently published. This international instrument applies to more than 90% of the world fishing fleet and is therefore an important step in improving the safety of small fishing vessels and the crews serving on board those vessels. Among men, most exposure was reported in the sectors Mining and quarrying, Fishing, and Construction. Among women, most exposure was experienced in the sectors Agriculture, and Health and social work (Graph 1).



Graph 1. Workers exposed to one or more factors adversely affecting physical health in different sectors (Eurostat (Statistics in focus Contact: 63/2009)

Analysis Of The Global Fishing Industry

Global fish production1 peaked at about 171 million tonnes in 2016, with aquaculture representing 47 percent of the total and 53 percent if non-food uses (including reduction to fishmeal and fish oil) are excluded. The total first sale value of fisheries and aquaculture production in 2016 was estimated at USD 362 billion, of which USD 232 billion was from aquaculture production. With capture fishery production relatively static since the late 1980s, aquaculture has been responsible for the continuing impressive growth in the supply of fish for human consumption (Figure 2). Between 1961 and 2016, the average annual increase in global food fish consumption2 (3.2 percent) outpaced population growth (1.6 percent) (Figure 3) and exceeded that of meat from all terrestrial animals combined (2.8 percent). In per capita terms, food fish consumption grew from 9.0 kg in 1961 to 20.2 kg in 2015, at an average rate of about 1.5 percent per year. Preliminary estimates for 2016 and 2017 point to further growth to about 20.3 and 20.5 kg, respectively. The expansion in consumption has been driven not only by increased production, but also by other factors, including reduced wastage. In 2015, fish accounted for about 17 percent of animal protein consumed by the global population. Moreover, fish provided about 3.2 billion people with almost 20 percent of their average per capita intake of animal protein. Despite their relatively low levels of fish consumption, people in developing countries have a higher share of fish protein in their diets than those in developed countries. The highest per capita fish consumption, over 50 kg, is found in several small island developing States (SIDS), particularly in Oceania, while the lowest levels, just above 2 kg, are in Central Asia and some landlocked countries. Global capture fisheries production was 90.9 million tonnes in 2016, a small decrease in comparison to the two previous years (Table 1). Fisheries in marine and inland waters provided 87.2 and 12.8 percent of the global total, respectively (FAO, 2018).

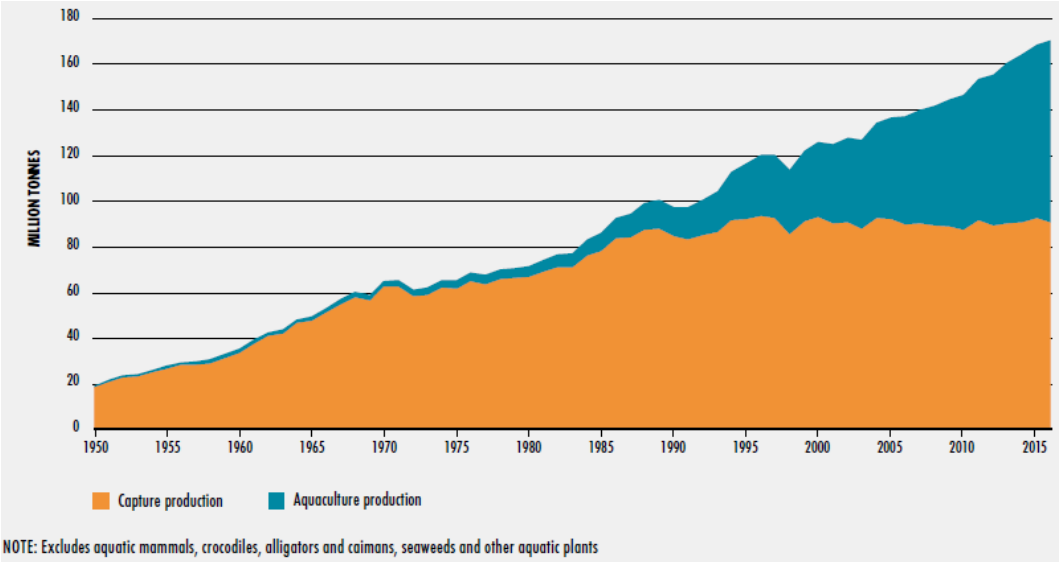


Figure 2. World capture fisheries and aquaculture production (FAO, 2018)

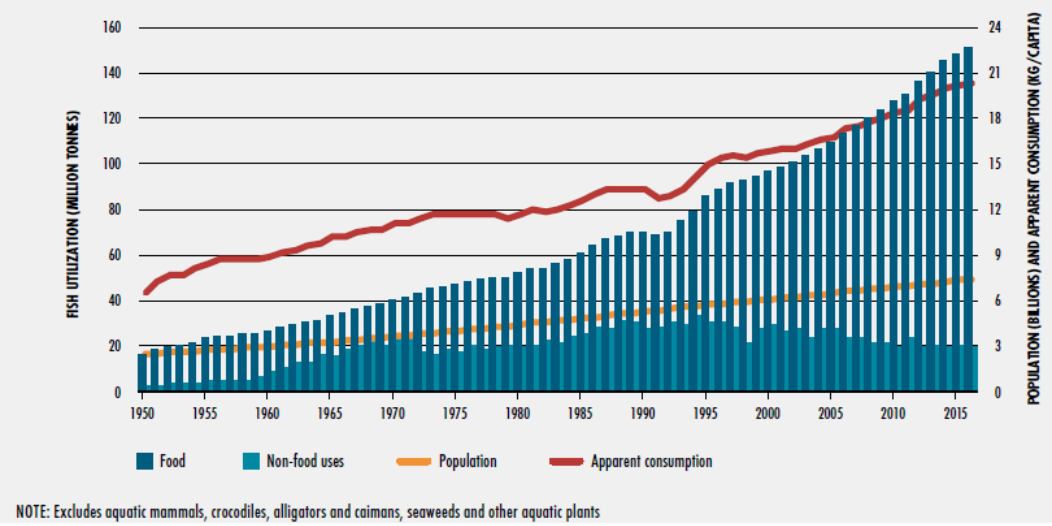


Figure 3. World fish utilization and apparent consumption (FAO, 2018)

Table 1. World fisheries and aquaculture production and utilization (million tonnes)[a] (FAO, 2018)

Category	2011	2012	2013	2014	2015	2016
Production						
Capture						
Inland	10.7	11.2	11.2	11.3	11.4	11.6
Marine	81.5	78.4	79.4	79.9	81.2	79.3
Total capture	**92.2**	**89.5**	**90.6**	**91.2**	**92.7**	**90.9**
Aquaculture						
Inland	38.6	42.0	44.8	46.9	48.6	51.4
Marine	23.2	24.4	25.4	26.8	27.5	28.7
Total aquaculture	**61.8**	**66.4**	**70.2**	**73.7**	**76.1**	**80.0**
Total world fisheries and aquaculture	**154.0**	**156.0**	**160.7**	**164.9**	**168.7**	**170.9**
Utilization[b]						
Human consumption	130.0	136.4	140.1	144.8	148.4	151.2
Non-food uses	24.0	19.6	20.6	20.0	20.3	19.7
Population (*billions*)[c]	7.0	7.1	7.2	7.3	7.3	7.4
Per capita apparent consumption (*kg*)	18.5	19.2	19.5	19.9	20.2	20.3

[a] Excludes aquatic mammals, crocodiles, alligators and caimans, seaweeds and other aquatic plants.
[b] Utilization data for 2014–2016 are provisional estimates.
[c] Source of population figures: UN, 2015e.

World total marine catch was 81.2 million tonnes in 2015 and 79.3 million tonnes in 2016, representing a decrease of almost 2 million tonnes. Catches of anchoveta (Engraulis ringens) by Peru and Chile, which are often substantial yet highly variable because of the inf luence of El Niño, accounted for 1.1 million tonnes of this decrease, with other major countries and species, particularly cephalopods, also showing reduced catches between 2015 and 2016 (Tables 2 and 3). Decreasing catches affected 64 percent of the 25 top producer countries, but only 37 percent of the remaining 170 countries.

Table 2. Marine capture production: major producer countries (FAO, 2018)

Country	Production (tonnes)			% Variation		Variation, 2015 to 2016 (tonnes)
	Average 2005–2014	2015	2016	2005–2014 (average) to 2016	2015 to 2016	
China	13 189 273	15 314 000	15 246 234	15.6	–0.4	–67 766
Indonesia	5 074 932	6 216 777	6 109 783	20.4	–1.7	–106 994
United States of America	4 757 179	5 019 399	4 897 322	2.9	–2.4	–122 077
Russian Federation	3 601 031	4 172 073	4 466 503	24.0	7.1	294 430
Peru Total	6 438 839	4 786 551	3 774 887	–41.4	–21.1	–1 011 664
Excluding anchoveta	989 918	1 016 631	919 847	–7.1	–9.5	–96 784
India	3 218 050	3 497 284	3 599 693	11.9	2.9	102 409
Japan[a]	3 992 458	3 423 099	3 167 610	–20.7	–7.5	–255 489
Viet Nam	2 081 551	2 607 214	2 678 406	28.7	2.7	71 192
Norway	2 348 154	2 293 462	2 033 560	–13.4	–11.3	–259 902
Philippines	2 155 951	1 948 101	1 865 213	–13.5	–4.3	–82 888
Malaysia	1 387 577	1 486 050	1 574 443	13.5	5.9	88 393
Chile Total	3 157 946	1 786 249	1 499 531	–52.5	–16.1	–286 718
Excluding anchoveta	2 109 785	1 246 154	1 162 095	–44.9	–6.7	–84 059
Morocco	1 074 063	1 349 937	1 431 518	33.3	6.0	81 581
Republic of Korea	1 746 579	1 640 669	1 377 343	–21.1	–16.0	–263 326
Thailand	1 830 315	1 317 217	1 343 283	–26.6	2.0	26 066
Mexico	1 401 294	1 315 851	1 311 089	–6.4	–0.4	–4 762
Myanmar[a]	1 159 708	1 107 020	1 185 610	2.2	7.1	78 590
Iceland	1 281 597	1 318 916	1 067 015	–16.7	–19.1	–251 901
Spain	939 384	967 240	905 638	–3.6	–6.4	–61 602
Canada	914 371	823 155	831 614	–9.1	1.0	8 459
Taiwan, Province of China	960 193	989 311	750 021	–21.9	–24.2	–239 290
Argentina	879 839	795 415	736 337	–16.3	–7.4	–59 078
Ecuador	493 858	643 176	715 357	44.9	11.2	72 181
United Kingdom	631 398	65 451 506	701 749	11.1	–0.4	–2 753
Denmark	735 966	868 892	670 207	–8.9	–22.9	–198 685
Total 25 major countries	**65 451 506**	**66 391 560**	**63 939 966**	**–2.3**	**–3.7**	**–2 451 594**
Total other 170 countries	**14 326 675**	**14 856 282**	**15 336 882**	**7.1**	**3.2**	**480 600**
World total	**79 778 181**	**81 247 842**	**79 276 848**	**–0.6**	**–2.4**	**–1 970 994**

Table 3. Marine capture production: major species and genera (FAO, 2018)

Scientific name	FAO English name	Production (tonnes)			% Variation		Variation, 2015 to 2016 (tonnes)
		Average 2005–2014	2015	2016	2005–2014 (average) to 2016	2015 to 2016	
Theragra chalcogramma	Alaska pollock (=walleye pollock)	2 952 134	3 372 752	3 476 149	17.8	3.1%	103 397
Engraulis ringens	Anchoveta (=Peruvian anchovy)	6 522 544	4 310 015	3 192 476	–51.1	–25.9%	–1 117 539
Katsuwonus pelamis	Skipjack tuna	2 638 124	2 809 954	2 829 929	7.3	0.7%	19 975
Sardinella spp.[a]	Sardinellas nei	2 281 285	2 238 903	2 289 830	0.4	2.3%	50 927
Trachurus spp.[a]	Jack and horse mackerels nei	2 463 428	1 738 352	1 743 917	–29.2	0.3%	5 565
Clupea harengus	Atlantic herring	2 111 101	1 512 174	1 639 760	–22.3	8.4%	127 586
Scomber japonicus	Pacific chub mackerel	1 454 794	1 484 780	1 598 950	9.9	7.7%	114 170
Thunnus albacares	Yellowfin tuna	1 219 326	1 356 883	1 462 540	19.9	7.8%	105 657
Gadus morhua	Atlantic cod	995 853	1 303 726	1 329 450	33.5	2.0%	25 724
Engraulis japonicus	Japanese anchovy	1 323 022	1 336 218	1 304 484	–1.4	–2.4%	–31 734
Decapterus spp.[a]	Scads nei	1 394 772	1 186 555	1 298 914	–6.9	9.5%	112 359
Sardina pilchardus	European pilchard (=sardine)	1 098 400	1 174 611	1 281 391	16.7	9.1%	106 780
Trichiurus lepturus	Largehead hairtail	1 315 337	1 269 525	1 280 214	–2.7	0.8%	10 689
Micromesistius poutassou	Blue whiting (=poutassou)	1 054 918	1 414 131	1 190 282	12.8	–15.8%	–223 849
Scomber scombrus	Atlantic mackerel	822 081	1 247 666	1 138 053	38.4	–8.8%	–109 613
Scomberomorus spp.[a]	Seerfishes nei	889 840	903 632	918 967	3.3	1.7%	15 335
Dosidicus gigas	Jumbo flying squid	855 602	1 003 774	747 010	–12.7	–25.6%	–256 764
Nemipterus spp.[a]	Threadfin breams nei	541 470	629 062	683 213	26.2	8.6%	54 151
Brevoortia patronus	Gulf menhaden	464 165	536 129	618 719	33.3	15.4%	82 590
Sprattus sprattus	European sprat	567 697	677 048	584 577	3.0	–13.7%	–92 471
Portunus trituberculatus	Gazami crab	414 034	560 831	557 728	34.7	–0.6%	–3 103
Acetes japonicus	Akiami paste shrimp	582 763	543 992	531 847	–8.7	–2.2%	–12 145
Sardinops melanostictus	Japanese pilchard	257 346	489 294	531 466	106.5	8.6%	42 172
Scomber colias	Atlantic chub mackerel	314 380	467 796	511 618	62.7	9.4%	43 822
Rastrelliger kanagurta	Indian mackerel	324 049	498 149	499 474	54.1	0.3%	1 325
Total 25 major species and genera		**34 858 465**	**34 065 952**	**33 240 958**	**–4.6%**	**–2.4**	**–824 994**
Total other 1 566 species items		**44 919 716**	**47 181 890**	**46 035 890**	**2.5%**	**–2.4**	**–1 146 000**
World total		**79 778 181**	**81 247 842**	**79 276 848**	**–0.6%**	**–2.4**	**–1 970 994**

Table 4 shows the top exporters and importers. China is the main fish producer and since 2002 has also been the largest exporter of fish and fish products, although they represent only 1 percent of its total merchandise trade. After exceptionally rapid gains through the 1990s and 2000s, the average annual increase in the value of Chinese exports of fish and fish products dropped from 14 percent in 2000–2008 to 9.1 percent in 2009–2017. In 2017, Chinese exports of fish and fish products reached USD 20.5 billion, with an increase of 2 percent relative to 2016 and of 4 percent relative to 2015.

Table 4. Top ten exporters and importers of fish and fish products (FAO, 2018)

Country	2006		2016		APR* (%)
	Value (million USD)	Share (%)	Value (million USD)	Share (%)	
Exporters					
China	8 968	10.4	20 131	14.1	8.4
Norway	5 503	6.4	10 770	7.6	6.9
Viet Nam	3 372	3.9	7 320	5.1	8.1
Thailand	5 267	6.1	5 893	4.1	1.1
United States of America	4 143	4.8	5 812	4.1	3.4
India	1 763	2.0	5 546	3.9	12.1
Chile	3 557	4.1	5 143	3.6	3.8
Canada	3 660	4.2	5 004	3.5	3.2
Denmark	3 987	4.6	4 696	3.3	1.7
Sweden	1 551	1.8	4 418	3.1	11.0
Top ten subtotal	**41 771**	**48.4**	**74 734**	**52.4**	**6.0**
Rest of world total	**44 523**	**51.6**	**67 796**	**47.6**	**4.3**
World total	**86 293**	**100.0**	**142 530**	**100.0**	**5.1**
Importers					
United States of America	14 058	15.5	20 547	15.1	3.9
Japan	13 971	15.4	13 878	10.2	-0.1
China	4 126	4.5	8 783	6.5	7.9
Spain	6 359	7.0	7 108	5.2	1.1
France	5 069	5.6	6 177	4.6	2.0
Germany	4 717	5.2	6 153	4.5	2.7
Italy	3 739	4.1	5 601	4.1	4.1
Sweden	2 028	2.2	5 187	3.8	9.8
Republic of Korea	2 753	3.0	4 604	3.4	5.3
United Kingdom	3 714	4.1	4 210	3.1	1.3
Top ten subtotal	**60 533**	**66.6**	**82 250**	**60.7**	**3.1**
Rest of world total	**30 338**	**33.4**	**52 787**	**39.3**	**5.7**
World total	**90 871**	**100.0**	**135 037**	**100.0**	**4.0**

* APR: average annual percentage growth rate for 2006–2016.

The total number of fishing vessels in the world in 2016 was estimated to be about 4.6 million, unchanged from 2014. The fleet in Asia was the largest, consisting of 3.5 million vessels, accounting for 75 percent of the global fleet. In Africa and North America the estimated number of vessels declined from 2014 by just over 30 000 and by nearly 5 000, respectively. For Asia, Latin America and the Caribbean and Oceania the numbers all increased, largely as a result of improvements in estimation procedures. Globally, the number of engine-powered vessels was estimated to be 2.8 million in 2016, remaining steady from 2014. Motorized vessels represented 61 percent of all fishing vessels in 2016, down from 64 percent in 2014, as the number of nonmotorized vessels increased, probably because of improved estimations. Generally, motorized vessels make up a much higher proportion in marineoperating vessels than in the inland water f leet. However, data reporting was not of sufficient qualit y to disaggregate marine and inland water f leets. The proportion of motorized and non-motorized vessels by region. The motorized fleet is distributed unevenly around the world with Asia having nearly 80 percent of the reported motorized fleet in 2016 (2.2 million vessels), followed by Africa with about 153 000 powered vessels. In Europe, the fleet capacity has continued to decline steadily since 2000 as a result of management measures to reduce the fleet capacity. This region has the highest percentage of motorized vessels in the overall fleet.

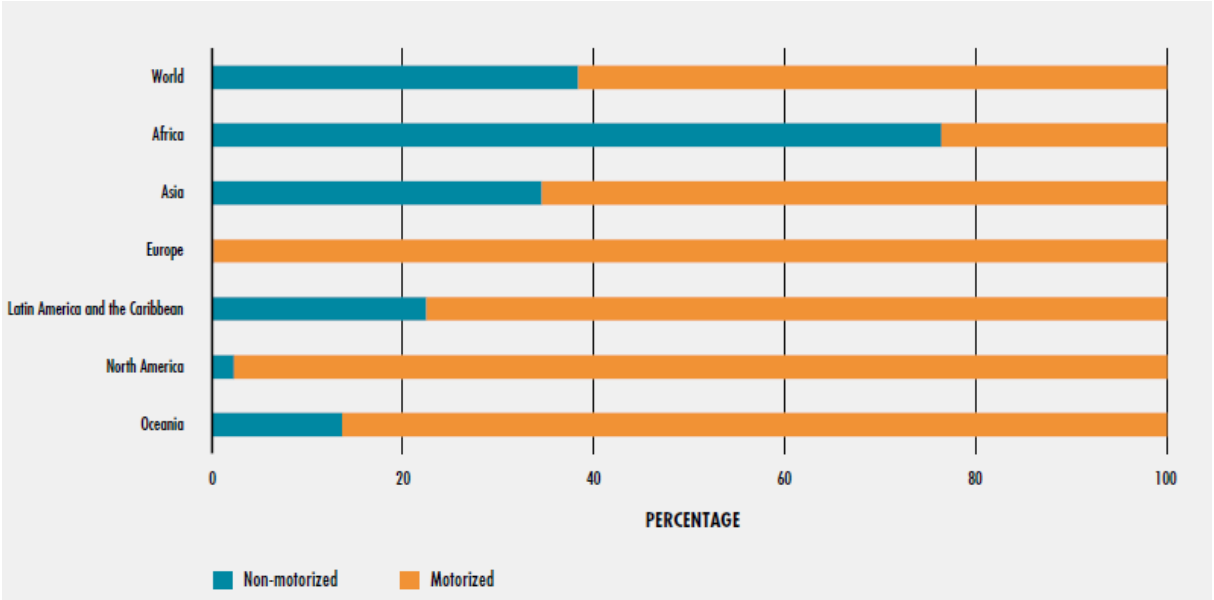


Figure 4. Distribution of motorized and non-motorized fishing vessels by region, 2016 (thousands) (FAO, 2018)

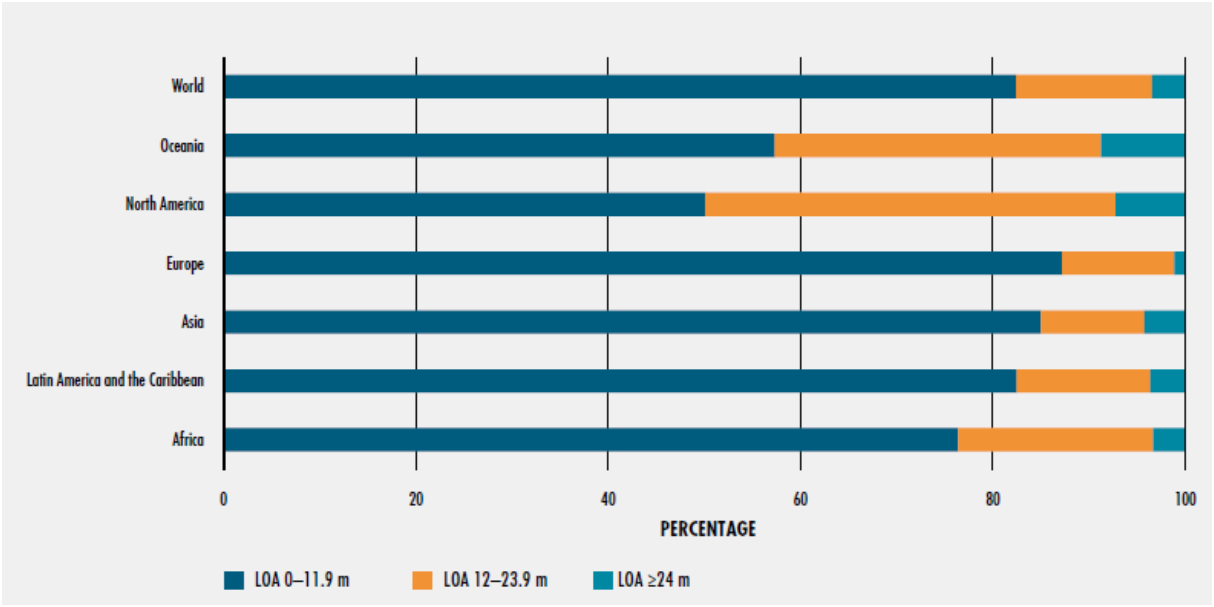


Figure 5. Size distribution of motorized fishing vessels by region, 2016 (FAO, 2018)

Safety And Health In The Fishing Industry

Internationally the sea fishing sector is recognised worldwide as the most hazardous industry to work in, accounting for significantly higher rates of fatal and/or serious accidents when compared to other sectors such as agriculture or construction (ILO, 1999). Sadly, each year within the industry the same accidents tend to reoccur often arising from fatigue, poor decision making, taking chances or not following basic precautions such as heeding weather forecasts, wearing Personal Flotation Devices or guarding and maintaining machinery. It is difficult to measure the degree of suffering and hardship that the victims of accidents and their families endure. Within fishing, hazards can be broadly classified into four categories.

1. Biological hazards, for example, risk of infection from handling dead fish or slime on live fish or an injury from fish bones, scales or fish hooks becoming infected.
2. Chemical hazards, for example exposure to poorly vented engine exhaust gases.
3. Physical hazards, for example, exposure to unguarded machinery.
4. Health (including psychosocial) hazards, for example, work related stress.

Fishing is a hazardous occupation when compared to other occupations. Sustained efforts are needed at all levels and by all parties to improve the safety and health of fishermen. The issue of safety and health must be considered

broadly in order to identify and mitigate – if not eliminate – the underlying causes of accidents and diseases in this sector. Consideration also needs to be given to the great diversity within the industry based on the size of the vessel, type of fishing and gear, area of operation, etc.

1.The areas of priority for improving occupational safety and health in the fishing industry are:

Implementing and improving safety and health training;

Enhancing social dialogue at all levels in the sector;

Extending social protection to cover fishermen where it does not exist;

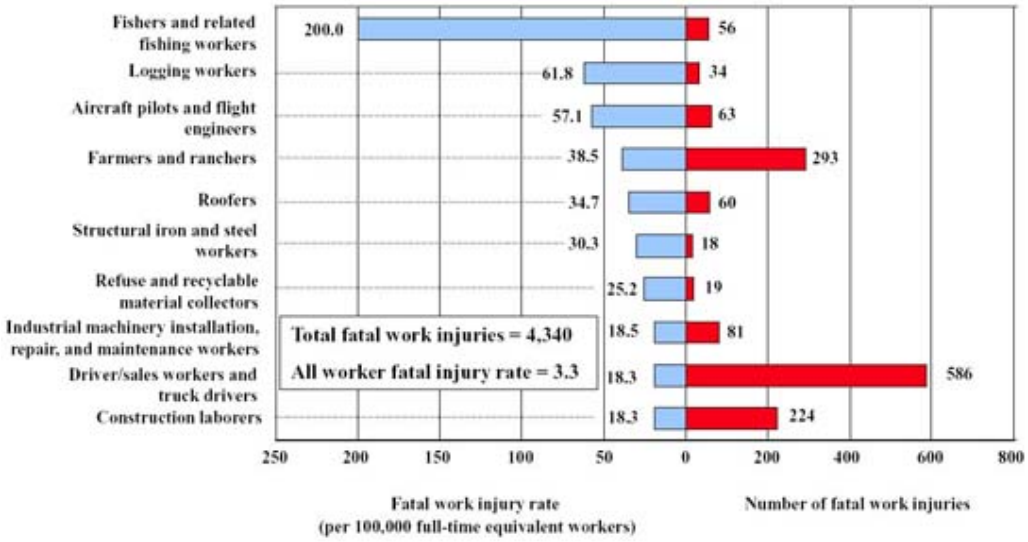
Collecting and disseminating statistics, data and safety information;

Promoting appropriate international standards;

Providing international guidance for the safety and health of fishermen, particularly on vessels under 24 m in length;

2. International standards concerning the safety of fishing vessels should be ratified and fully implemented, in particular, the STCW-F Convention.

3. Safety and health improvements cannot be achieved solely through legislation. A safety culture should be promoted in the fishing industry, including the use of safety management systems appropriate to the enterprise and the dissemination of safety information. Governments, employers and workers' organizations should be involved in the development and implementation of such systems.



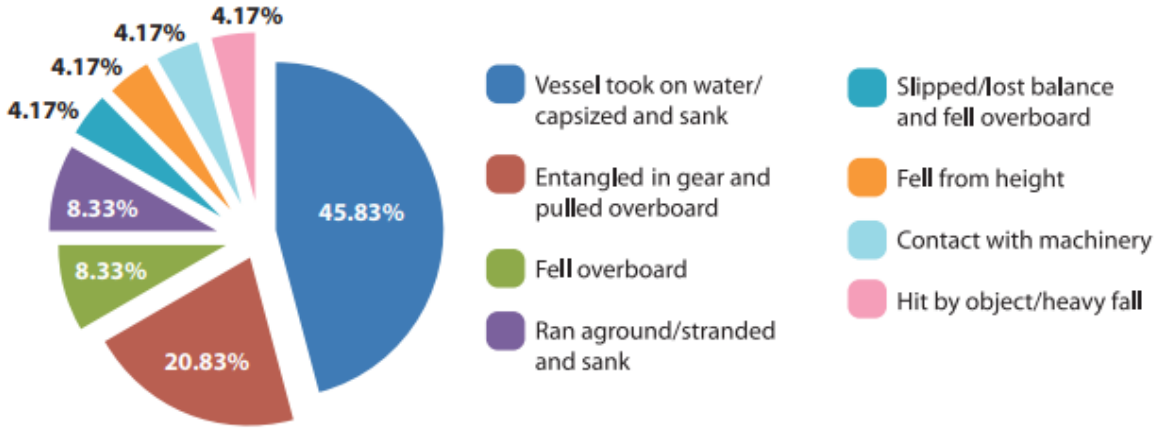
Graph 2. Fatal work injury rate U.S. 2009 (per 100.000 full time equivalent workers)(U.S. Bureau of Labor Statistics, U.S. Department of Labor, 2010)

Cuts, scratches, injuries, lashes and bruises are generally not even considered as accidents, but simply as part of the job. The risk of being involved in a non-fatal accident is 2.4 times greater in the fishing activity when compared with other industrial sectors. The scale of employment in the sector alone does not explain these results. According to research, almost 70% of the accidents happen at sea. In a 2009 survey, 69% of persons working in the sector reported that their most recent accident at work or in the course of the work resulted in sick leave in the past 12 months. Because of the seriousness of the accidents occurring in the sector, workers are normally absent longer than in other sectors. Out of 4,453 total non-fatal accidents in the sector, a large proportion led to 7 and more days of absence in 2012, whereas the proportion of accidents leading to less than 6 days of absence was relatively small. This leads to increased social security costs and reduced output for the employer.

Annually, around 13,000 workers in the Agriculture, forestry and fishing sector in Great Britain were suffering from an illness they believe was caused or made worse by their work. Around a third of these cases were new conditions which started during the year, while the remainder were long-standing conditions. Musculoskeletal disorders was the most common work-related ill-health condition in workers in the sector. Annually around 16,000 'Skilled agricultural and related trade' workers in Great Britain were suffering from an illness they believe was caused or made worse by their work (many of these employed in the agriculture, forestry and fishing sector but also in other sectors especially 'Landscape service activities) (Graph 3) (HSE, 2015).

Graph 3. Estimated annual number of cases of selfreported work-related illness in the agriculture, forestry and fishing sector (HSE, 2015)

An analysis of 24 Irish fatal fishing incidents which occurred over an 11 year period and resulted in 42 fishermen losing their lives, showed that the main cause of the incidents was the vessel taking on water or capsizing and then sinking. The next most common cause of fatalities was entanglement in nets or other gear and being dragged overboard. In many cases these fishermen were wearing no form of Personal Flotation Device (PFD). This made their recovery from the water slow and difficult for those involved with the search and rescue operations and in some cases impossible. In a quarter of the cases, no bodies were ever recovered (HSA, 2014).



Graph 4. Main causes of fatalities (HSA, 2014)

The IMO has collected information from member States on the primary causes of casualties which led to the death of fishermen (Table 5) (IMO, 1999). The table divides primary causes into a number of categories covering both vessel and human factors. Human error, fishing gear incidents and adverse weather appear as important Primary causes in the accidents reported to the IMO. As will be seen later in this report, new investigation techniques are helping investigators obtain a better understanding of what causes accidents.

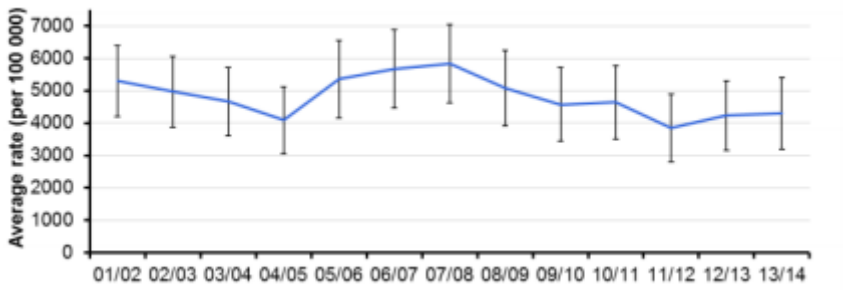
Table 5. Primary causes of fatalities of fishermen (IMO)

	1995			1996			1997			Total
	<12	12<<24	>24	<12	12<<24	>24	<12	12<<24	>24	
Human error	13	6	6	12	1	5	8	7	1	59
Steering gear failure										
Fishing gear incident	1	2	1	4	1	3	2	7	4	25
Other failure of vessel, its machinery or equipment	1	1	2					2	1	7
Adverse weather	11	6	2	9	1	3	7	6	1	46
Icing						1				1
Other	4	2	1	9	1	9	3	4		33
Unknown	50	11	14	23	12	5	29	13	15	172
Subtotal	80	28	26	57	16	26	49	39	22	
Total		**134**			**99**			**110**		**343**

Provisional figures show over 900 employer reported non-fatal injuries to employees in the Agriculture, forestry and fishing sector in 2014/15. Reported non-fatal injuries are categorised as either specified (a pre-defined list of certain injury types which includes for example fractures, amputations, serious burns5) or as resulting in over 7-days off work. Around 40% of the injury reports in 2014/15 were for specified injuries (Graph 5).

Graph 5. Employer-reported non-fatal injuries to employees in the agriculture, forestry and fishing sector (HSE, 2016)

Since 2001/02, the annual average rate of self-reported non-fatal injury has fluctuated between 3,840 and 5,830 per 100,000 workers (3.8% to 5.8%) with no overall clear trend (Graph 6).



Graph 6. Incidence rate of all self-reported workplace injury in the agriculture, forestry and fishing sector (HSE, 2016)

There is a long-standing cooperation between IMO, ILO, and FAO in developing guidelines and standards on the safety of fishing vessels and fishermen. The first attempt to address the safety of fishing vessels and fishermen on an international level took place in the early 1960s when the three organizations entered into an agreement to co-operate, within their respective fields of experience. The agreement acknowledged that the respective areas of competence were (FAO, 2016, FAO/ILO/IMO, 2012):
FAO – fisheries in general (which includes areas such as safety in fishing operations and the relationship between fisheries management and safety at sea);
ILO – labour in the fishing industry; and
IMO – safety of life, vessels and equipment at sea. The voluntary instruments that have been jointly developed by IMO, ILO and FAO are the following:
• Code of Safety of Fishermen and Fishing Vessels, Parts A and B;
Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels;
• Document for Guidance on Training and Certification of Fishing Vessel Personnel;
• Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels; and
• Guidelines to Assist Competent Authorities in the Implementation of Part B of the Code of Safety for Fishermen and Fishing Vessels, the Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels, and the Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels (The Implementation Guidelines).

Conclusions

Fishermen accept the danger associated with their chosen occupation, but some may not take the danger as seriously as they should (Kaplan and Kite-Powell, 2000). Convention No. 188 and Recommendation No. 1999 replace five of the existing seven ILO instruments specific to the fishing sector. The adoption of this instrument is a very important step in improving the working and living conditions on board fishing vessels of all sizes everywhere in the world. It is envisaged that the Convention is likely to achieve widespread ratification and should, therefore, soon enter into force. Although fisheries management policies are enacted primarily to achieve fishery management goals, they may affect fishing safety indirectly. Other policies, undertaken for goals other than safety or fisheries management, may also affect fishing safety indirectly. Examples include marine liability laws, unemployment insurance laws, and economic development policies (Figure 6) (FAO, 2016). The International Maritime Organization (IMO), the ILO, and the Food and Agriculture Organization (FAO) to improve fishing OHS are important but more needs to bedone, at multiple levels, to monitor and promote fishing OHS, particularly in the smaller scale fisheries thatcomprise the bulk of the world fishing fleet (Windle et al. 2008). Results from this international comparison of northern countries and regions confirm that fishing-related workplace death is a major occupational safety and health problem in many northern nations. There are similar causes and circumstances responsible for fishermen's occupational traumatic injuries in each country, but close comparison is not always possible because categories may be different for each countries (i.e., capsize vs. foundering vs. sinking) (Abraham, 2001).

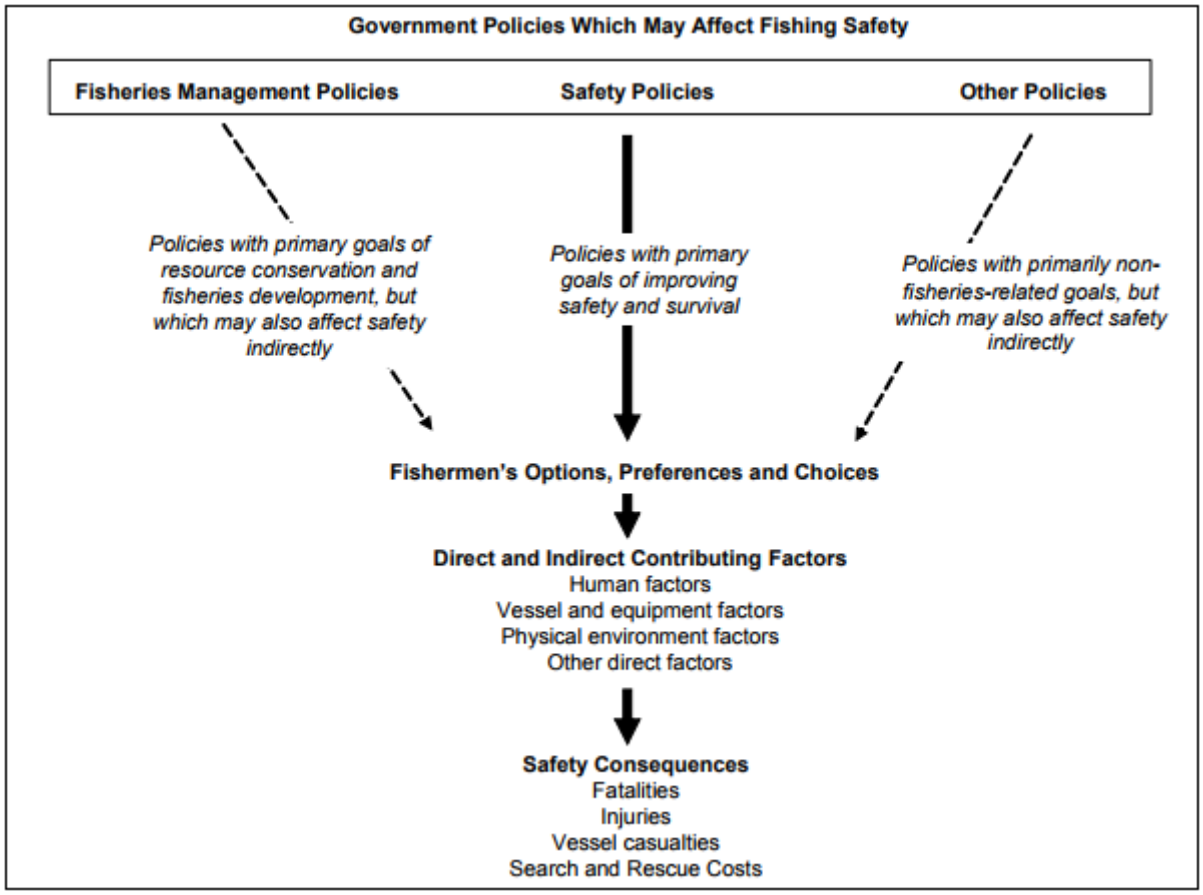


Figure 6. Pathways of how government policies affect fishing safety (FAO, 2016)

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