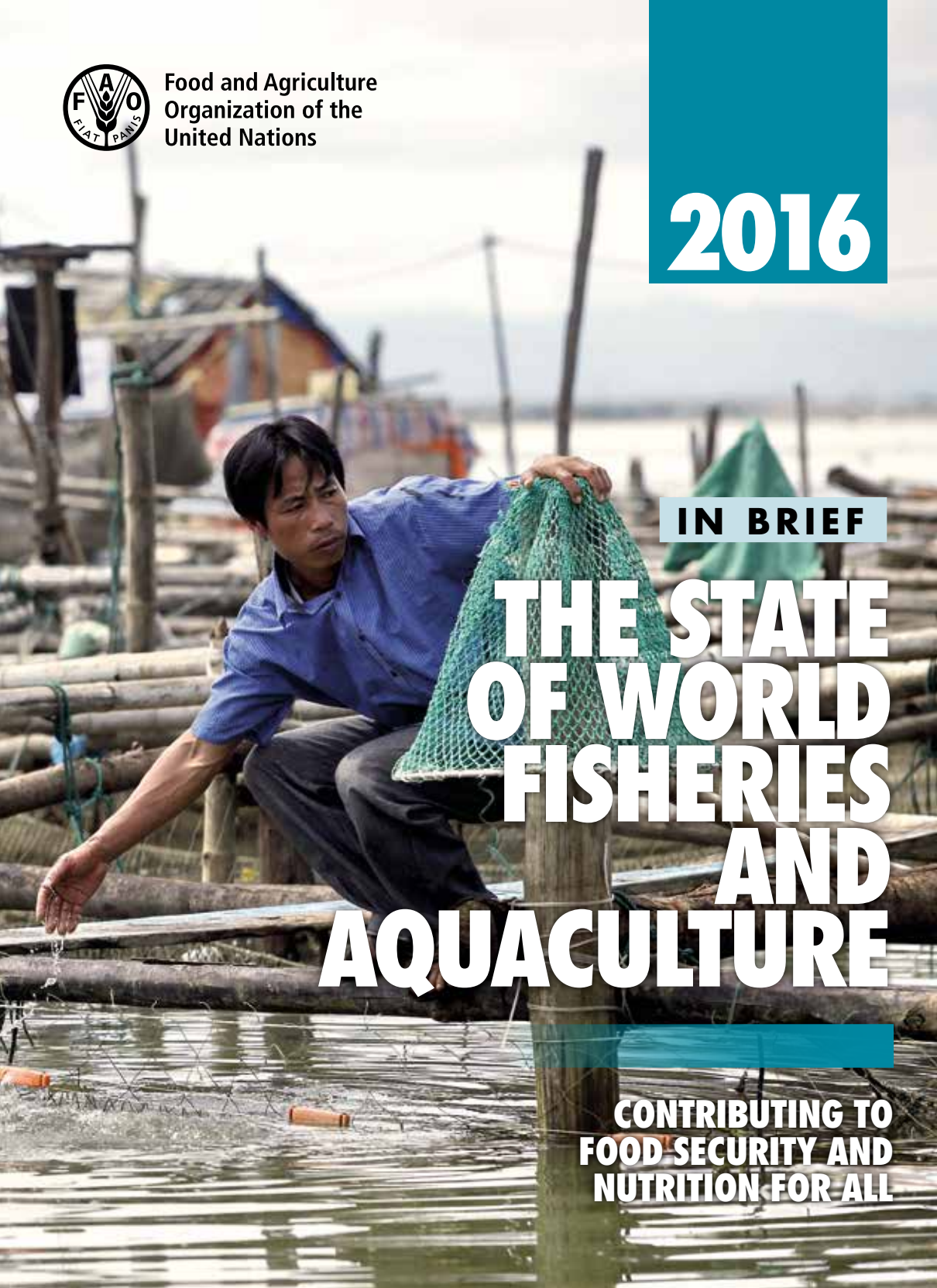


Food and Agriculture Organization of the United Nations

2016

IN BRIEF

THE STATE OF WORLD FISHERIES AND AQUACULTURE

CONTRIBUTING TO FOOD SECURITY AND NUTRITION FOR ALL

CONTENTS

This booklet contains the main points of Chapter 1 (*World Review*) and Chapter 4 (*Outlook*) of the publication, ***The State of World Fisheries and Aquaculture 2016.*** The numbering of the tables and figures corresponds to this publication.

COVER PHOTOGRAPH

HAI TIEN VILLAGE, VIET NAM. A beneficiary of an FAO TeleFood project that uses fish cages. ©FAO/Pham Cu

FOREWORD

Fisheries and aquaculture remain important sources of food, nutrition, income and livelihoods for hundreds of millions of people around the world. World *per capita* fish supply reached a new record high of 20 kg in 2014, thanks to vigorous growth in aquaculture, which now provides half of all fish for human consumption, and to a slight improvement in the state of certain fish stocks due to improved fisheries management.

Moreover, fish continues to be one of the most traded food commodities worldwide, with more than half of fish exports by value originating in developing countries. Recent reports by high-level experts, international organizations, industry and civil society representatives all highlight the tremendous potential of the oceans and inland waters to now, and even more so in the future, contribute significantly to food security and adequate nutrition for a global population expected to reach 9.7 billion by 2050.

It is in this context and with this high expectation that the 2016 edition of *The State of World Fisheries and Aquaculture* is being launched. Several recent major international developments will further strengthen its key function as a provider of informed, balanced and comprehensive analysis of global fisheries and aquaculture data and related issues.

First, the **second International Conference on Nutrition** (ICN2), held in Rome in November 2014, adopted the *Rome Declaration* and the *Framework for Action*, whereby world leaders renewed their commitments to establish and implement policies aimed at eradicating malnutrition and transforming food systems to make nutritious diets available to all.

The conference confirmed the importance of fish and seafood as a source of nutrition and health for many coastal communities that depend on their proteins and essential micronutrients, in particular for women of child-bearing age and young children. It stressed the unique window of opportunity that fisheries and aquaculture can provide for ICN2 follow-up towards achieving

healthy diets. With this greater awareness of the sector's important role in nutrition comes greater responsibility for how resources are managed in order to ensure nutritious and healthy diets for all the world's citizens.

Second, on 25 September 2015, Member States of the United Nations adopted the **2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs)**, a set of 17 aspirational objectives with 169 targets expected to guide actions of governments, international agencies, civil society and other institutions over the next 15 years (2016–2030).

The SDGs are the first global development push in history led by the Member States. They set out specific objectives for countries, developed and developing, to meet within a given time frame, with achievements monitored periodically to measure progress and ensure that no one is left behind. Several SDGs are directly relevant to fisheries and aquaculture and to the sustainable development of the sector, and one goal expressly focuses on the oceans (SDG 14 *Conserve and sustainably use the oceans, seas and marine resources for sustainable development*).

To achieve the global transition to sustainable development, countries are now establishing an enabling environment of policies, institutions and governance – grounded in a sound evidence-based approach that takes into account the three dimensions of sustainability (economic, social and environmental) – with closely interwoven targets.

FAO and *The State of World Fisheries and Aquaculture* will play a frontline role in monitoring and reporting on specific targets relevant to FAO's mandate under SDGs 2 and 14.

Third, on 8–9 October 2015, 600 delegates representing 70 Members of FAO, the private sector, non-governmental organizations and civil society organizations met in Vigo, Spain, to celebrate the twentieth anniversary of the adoption of the **Code of Conduct for Responsible Fisheries** (the Code),

and to take stock of its achievements and the obstacles encountered in its implementation. The meeting confirmed both the central role of the Code for the sustainable management of living aquatic resources, and the need to accelerate its implementation to meet the relevant SDG targets, in particular those of SDG 14. The move from commitment to action to implement the Code entails an upscaled responsibility for analysis, monitoring and reporting for FAO and *The State of World Fisheries and Aquaculture*.

Fourth, the twenty-first session of the **Conference of the Parties (COP21) of the United Nations Framework Convention on Climate Change** was held in Paris, France, in December 2015. It witnessed an unprecedented international agreement, the Paris Agreement. Its aim is to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by holding the increase in the global average temperature to well below 2° C above pre-industrial levels, increasing the ability to adapt to the adverse impacts of climate change, and fostering climate resilience in a manner that does not threaten food production.

COP21 prominently featured the role of oceans, inland waters and aquatic ecosystems for temperature regulation and carbon sequestration, and highlighted the urgency of reversing the current trend of overexploitation and pollution to restore aquatic ecosystem services and the productive capacity of the oceans. Current and future editions of *The State of World Fisheries and Aquaculture* will be a key source of information on progress in implementing the Paris Agreement and its pertinence to oceans and inland waters.

Fifth, FAO's efforts to address **illegal, unregulated and unreported (IUU) fishing** have yielded real results. The 2009 *Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (PSMA)* entered into force on 5 June 2016. This is a milestone and will prove a key driver in the international community's fight against the scourge of IUU fishing.

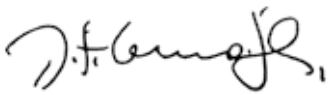
Illicit fishing may account for up to 26 million tonnes of fish a year, or more than 15 % of the world's total annual capture fisheries output. Besides economic damage, such practices can threaten local biodiversity and food security in many countries. The PSMA, which creates binding obligations, sets standards for the inspection of foreign vessels that seek to enter the port

of another State. Importantly, the measures allow a country to block ships it suspects of having engaged in illicit fishing and thereby prevent illegal catches from entering local and international markets. This will be a turning point in the long struggle against illegality in the fisheries and aquaculture sector.

Finally, following the adoption in July 2014 of the **Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries** in the Context of Food Security and Poverty Eradication, an umbrella programme has been launched to support governments and non-state actors in their implementation of initiatives to strengthen small-scale fisheries communities, their food security, and their resilience. Small-scale fisheries provide work to 90 % of the people employed in capture fisheries. Now, their voices will be increasingly heard, their rights respected and their livelihoods safeguarded. More broadly, decent work in fisheries and aquaculture is an important part of FAO's strategic approach to the sector.

FAO has taken into account the above developments within the framework of its own **Blue Growth Initiative** to accelerate its work in support of sustainable management of living aquatic resources, balancing their use and conservation in an economically, socially and environmentally responsible manner.

Awareness of the vital part that oceans and inland waters must play in providing food, nutrition and employment to current and future generations and in meeting commitments under the 2030 Agenda for Sustainable Development and the Paris Agreement re-focuses the role of this publication as a unique source of global analysis and information on fisheries and aquaculture development. It is my sincere hope that *The State of World Fisheries and Aquaculture 2016* will make a valuable contribution to meeting the challenges ahead and advance understanding of the drivers shaping the fisheries and aquaculture sector, aquatic ecosystems and their contribution to meeting the related SDG targets.



José Graziano da Silva

FAO Director-General

OVERVIEW

Aquatic food production has transitioned from being primarily based on capture of wild fish to culture of increasing numbers of farmed species. A milestone was reached in 2014 when the aquaculture sector's contribution to the supply of fish for human consumption overtook that of wild-caught fish for the first time.

1 CAPTURE FISHERIES PRODUCTION

Global total capture fishery production in 2014 was 93.4 million tonnes, of which 81.5 million tonnes from marine waters and 11.9 million tonnes from inland waters. China remained the major producer followed by Indonesia, the United States of America and the Russian Federation.

For the first time since 1998, anchoveta was not the top-ranked species in terms of catch as it fell below Alaska pollock.

Four highly valuable groups (tunas, lobsters, shrimps and cephalopods) registered new record catches in 2014. Total catches of tuna and tunalike species were almost 7.7 million tonnes.

The Northwest Pacific remained the most productive area for capture fisheries, followed by the Western Central Pacific, the Northeast Atlantic and the Eastern Indian Ocean. The situation in the Mediterranean and Black Sea is alarming, as catches have dropped by one-third since 2007, mainly attributable to reduced landings of small pelagics such as anchovy and sardine but with most species groups also affected.

TABLE 1

WORLD FISHERIES AND AQUACULTURE PRODUCTION

	2009	2010	2011	2012	2013	2014
			(Million tonnes)			
PRODUCTION						
Capture						
Inland	10.5	11.3	11.1	11.6	11.7	11.9
Marine	79.7	77.9	82.6	79.7	81.0	81.5
Total capture	**90.2**	**89.1**	**93.7**	**91.3**	**92.7**	**93.4**
Aquaculture						
Inland	34.3	36.9	38.6	42.0	44.8	47.1
Marine	21.4	22.1	23.2	24.4	25.5	26.7
Total aquaculture	**55.7**	**59.0**	**61.8**	**66.5**	**70.3**	**73.8**
TOTAL	145.9	148.1	155.5	157.8	162.9	167.2

TABLE 2

MARINE CAPTURE PRODUCTION: MAJOR PRODUCERS

COUNTRY OR TERRITORY	AVERAGE 2003–2012	2013	2014	VARIATION		
				AVERAGE (2003–2012) – 2014	2013–2014	2013–2014
		(Tonnes)		*(Percentage)*		*(Tonnes)*
China	12 759 922	13 967 764	14 811 390	16.1	6.0	843 626
Indonesia	4 745 727	5 624 594	6 016 525	26.8	7.0	391 931
United States of America	4 734 500	5 115 493	4 954 467	4.6	–3.1	–161 026
Russian Federation	3 376 162	4 086 332	4 000 702	18.5	–2.1	–85 630
Japan	4 146 622	3 621 899	3 630 364	–12.5	0.2	8 465
Peru	7 063 261	5 827 046	3 548 689	–49.8	–39.1	–2 278 357
	918 049[1]	*956 416*[1]	*1 226 560*[1]	*33.6*	*28.2*	*270 144*
India	3 085 311	3 418 821	3 418 821[2]	10.8	0.0	0
Viet Nam	1 994 927	2 607 000	2 711 100	35.9	4.0	104 100
Myanmar	1 643 642	2 483 870	2 702 240	64.4	8.8	218 370
Norway	2 417 348	2 079 004	2 301 288	–4.8	10.7	222 284
Chile	3 617 190	1 770 945	2 175 486	–39.9	22.8	404 541
	2 462 885[1]	*967 541*[1]	*1 357 586*[1]	*–44.9*	*40.3*	*390 045*
Philippines	2 224 720	2 130 747	2 137 350	–3.9	0.3	6 603
Republic of Korea	1 736 680	1 586 059	1 718 626	–1.0	8.4	132 567
Thailand	2 048 753	1 614 536	1 559 746	–23.9	–3.4	–54 790
Malaysia	1 354 965	1 482 899	1 458 126	7.6	–1.7	–24 773
Mexico	1 352 353	1 500 182	1 396 205	3.2	–6.9	–103 977
Morocco	998 584	1 238 277	1 350 147	35.2	9.0	111 870
Spain	904 459	981 451	1 103 537	22.0	12.4	122 086
Iceland	1 409 270	1 366 486	1 076 558	–23.6	–21.2	–289 928
Taiwan Province of China	972 400	925 171	1 068 244	9.9	15.5	143 073
Canada	969 195	823 640	835 196	–13.8	1.4	11 556
Argentina	891 916	858 422	815 355	–8.6	–5.0	–43 067
United Kingdom	622 146	630 047	754 992	21.4	19.8	124 945
Denmark	806 787	668 339	745 019	–7.7	11.5	76 680
Ecuador	452 003	514 415	663 439	46.8	29.0	149 026
Total 25 major producers	**66 328 843**	**66 923 439**	**66 953 612**	**0.9**	**0.0**	**30 173**
WORLD TOTAL	80 793 507	80 963 120	81 549 353	0.9	0.7	586 233
SHARE 25 MAJOR PRODUCERS (PERCENTAGE)	82.1	82.7	82.1			

[1] Totals excluding catches of Peruvian anchoveta (*Engraulis ringens*) by Peru and Chile.
[2] FAO estimate.

World catches in inland waters were about 11.9 million tonnes in 2014, continuing a positive trend that has resulted in a 37% increase in the last decade. Sixteen countries have annual inland water catches exceeding 200 000 tonnes, and together they represent 80% of the world total.

2 AQUACULTURE PRODUCTION

Aquaculture has been responsible for the impressive growth in the supply of fish for human consumption. Whereas aquaculture provided only 7% of fish for human consumption in 1974, this share had increased to 26% in 1994 and 39% in 2004.

Production of aquatic animals from aquaculture in 2014 amounted to 73.8 million tonnes, with an estimated first-sale value of US$160.2 billion.

China accounted for 45.5 million tonnes in 2014, or more than 60% of global fish production from aquaculture. Other major producers were India, Viet Nam, Bangladesh and Egypt.

Aquatic plant farming, overwhelmingly of seaweeds, has been growing rapidly and is now practised in about 50 countries.

FIGURE 1

WORLD CAPTURE FISHERIES AND AQUACULTURE PRODUCTION

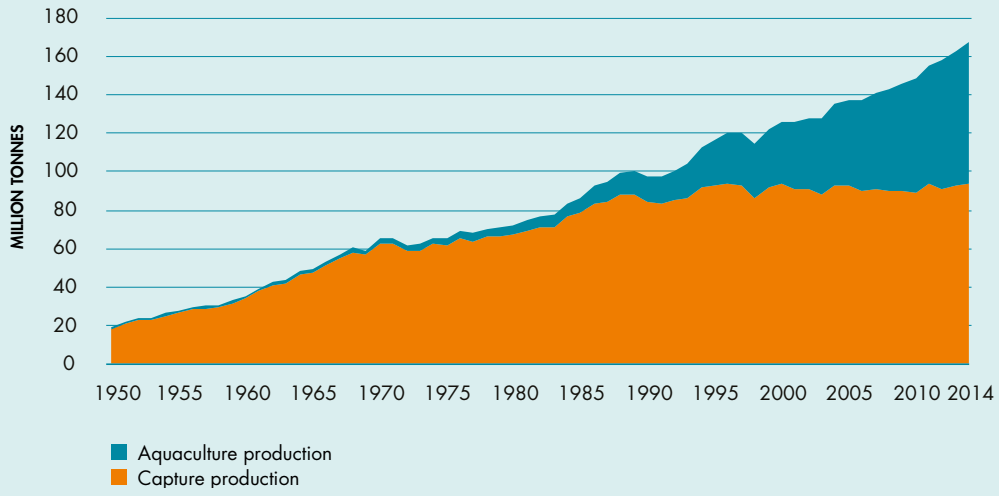


TABLE 9

TOP 25 PRODUCERS AND MAIN GROUPS OF FARMED SPECIES IN 2014

MAJOR PRODUCERS	FINFISH		MOLLUSCS	CRUSTACEANS	OTHER AQUATIC ANIMALS	TOTAL AQUATIC ANIMALS	AQUATIC PLANTS	TOTAL AQUACULTURE PRODUCTION
	INLAND AQUACULTURE	MARINE/ COASTAL AQUACULTURE						
	(Thousand tonnes)							
China	26 029.7	1 189.7	13 418.7	3 993.5	839.5	**45 469.0**	13 326.3	**58 795.3**
Indonesia	2 857.6	782.3	44.4	613.9	0.1	**4 253.9**	10 077.0	**14 330.9**
India	4 391.1	90.0	14.2	385.7	...	**4 881.0**	3.0	**4 884.0**
Viet Nam	2 478.5	208.5	198.9	506.2	4.9	**3 397.1**	14.3	**3 411.4**
Philippines	299.3	373.0	41.1	74.6	...	**788.0**	1 549.6	**2 337.6**
Bangladesh	1 733.1	93.7	...	130.2	...	**1 956.9**	...	**1 956.9**
Republic of Korea	17.2	83.4	359.3	4.5	15.9	**480.4**	1 087.0	**1 567.4**
Norway	0.1	1 330.4	2.0	...	...	**1 332.5**	...	**1 332.5**
Chile	68.7	899.4	246.4	...	...	**1 214.5**	12.8	**1 227.4**
Egypt	1 129.9	...	...	7.2	...	**1 137.1**	...	**1 137.1**
Japan	33.8	238.7	376.8	1.6	6.1	**657.0**	363.4	**1 020.4**
Myanmar	901.9	1.8	...	42.8	15.6	**962.2**	2.1	**964.3**
Thailand	401.0	19.6	209.6	300.4	4.1	**934.8**	...	**934.8**
Brazil	474.3	...	22.1	65.1	0.3	**561.8**	0.7	**562.5**
Malaysia	106.3	64.3	42.6	61.9	0.6	**275.7**	245.3	**521.0**
Democratic People's Republic of Korea	3.8	0.1	60.2	...	0.1	**64.2**	444.3	**508.5**
United States of America	178.3	21.2	160.5	65.9	...	**425.9**	...	**425.9**
Ecuador	28.2	0.0	...	340.0	...	**368.2**	...	**368.2**
Taiwan Province of China	117.3	97.8	99.0	21.9	3.6	**339.6**	1.0	**340.6**
Iran (Islamic Republic of)	297.5	0.1	...	22.5	...	**320.2**	...	**320.2**
Nigeria	313.2	...	...	...	...	**313.2**	...	**313.2**
Spain	15.5	44.0	222.5	0.2	0.0	**282.2**	0.0	**282.2**
Turkey	108.2	126.1	...	...	0.1	**234.3**	...	**234.3**
United Kingdom	13.5	167.3	23.8	...	...	**204.6**	...	**204.6**
France	43.5	6.0	154.5	0.0	...	**204.0**	0.3	**204.3**
TOP 25 SUBTOTAL	42 041.2	5 837.5	15 696.7	6 638.3	890.9	**71 058.2**	27 127.2	**98 185.4**
WORLD	**43 559.3**	**6 302.6**	**16 113.2**	**6 915.1**	**893.6**	**73 783.7**	**27 307.0**	**101 090.7**
PERCENTAGE OF TOP 25 IN WORLD TOTAL	96.5	92.6	97.4	96.0	99.7	**96.3**	99.3	**97.1**

Note: ... = production data not available or production negligible.

3 FISHERS AND FISH FARMERS

An estimated 56.6 million people were engaged in the primary sector of capture fisheries and aquaculture in 2014, of whom 36% were engaged full time, 23% part time, and the remainder were either occasional fishers or of unspecified status.

The proportion of these workers engaged in aquaculture increased from 17% in 1990 to 33% in 2014. For the first time since the period 2005 – 2010, the total engagement in fisheries and aquaculture did not increase. Overall, employment in the sector decreased, almost entirely due to a decrease of about 1.5 million fishers, while engagement in aquaculture remained more stable.

In 2014, 84% of the global population engaged in the fisheries and aquaculture sector was in Asia, followed by Africa (10%), and Latin America and the Caribbean (4%). Of the 18 million people engaged in fish farming, 94% were in Asia.

Women accounted for 19% of all people directly engaged in the primary sector in 2014, but when the secondary sector (e.g. processing, trading) is included women make up about half of the workforce.

TABLE 10

WORLD FISHERS AND FISH FARMERS BY REGION

	2000	2005	2010	2012	2013	2014
			(Thousands)			
Africa	4 175	4 430	5 027	5 885	6 009	5 674
Asia	39 646	43 926	49 345	49 040	47 662	47 730
Europe	779	705	662	647	305	413
Latin America and the Caribbean	1 774	1 907	2 185	2 251	2 433	2 444
North America	346	329	324	323	325	325
Oceania	126	122	124	127	47	46
WORLD	46 845	51 418	57 667	58 272	56 780	56 632
OF WHICH, FISH FARMERS						
Africa	91	140	231	298	279	284
Asia	12 211	14 630	17 915	18 175	18 098	18 032
Europe	103	91	102	103	77	66
Latin America and the Caribbean	214	239	248	269	350	356
North America	6	10	9	9	9	9
Oceania	5	5	5	6	5	6
WORLD	12 632	15 115	18 512	18 861	18 818	18 753

4 THE STATUS OF THE FISHING FLEET

The total number of fishing vessels in the world in 2014 is estimated at about 4.6 million, very close to the figure for 2012. The fleet in Asia was the largest, consisting of 3.5 million vessels and accounting for 75% of the global fleet, followed by Africa (15%), Latin America and the Caribbean (6%), North America (2%) and Europe (2%).

Globally, 64% of reported fishing vessels were engine-powered in 2014, of which 80% were in Asia. In 2014, about 85% of the world's motorized fishing vessels were less than 12 m in length overall (LOA).

The estimated number of fishing vessels of 24 m and longer operating in marine waters in 2014 was about 64 000, the same as in 2012.

TABLE 13

TOTAL OF FISHING FLEETS BY REGION, 2014 (POWERED AND NON-POWERED VESSELS COMBINED)

	VESSELS	PERCENTAGE OF TOTAL
	(Thousands)	
WORLD	4 606.0	
Africa	679.2	14.7
Asia	3 459.5	75.1
Europe	95.5	2.1
Latin America and the Caribbean	276.2	6.0
North America	87.0	1.9
Oceania	8.6	0.2

5 THE STATUS OF FISHERY RESOURCES

The state of the world's marine fish stocks has not improved overall, despite notable progress in some areas.

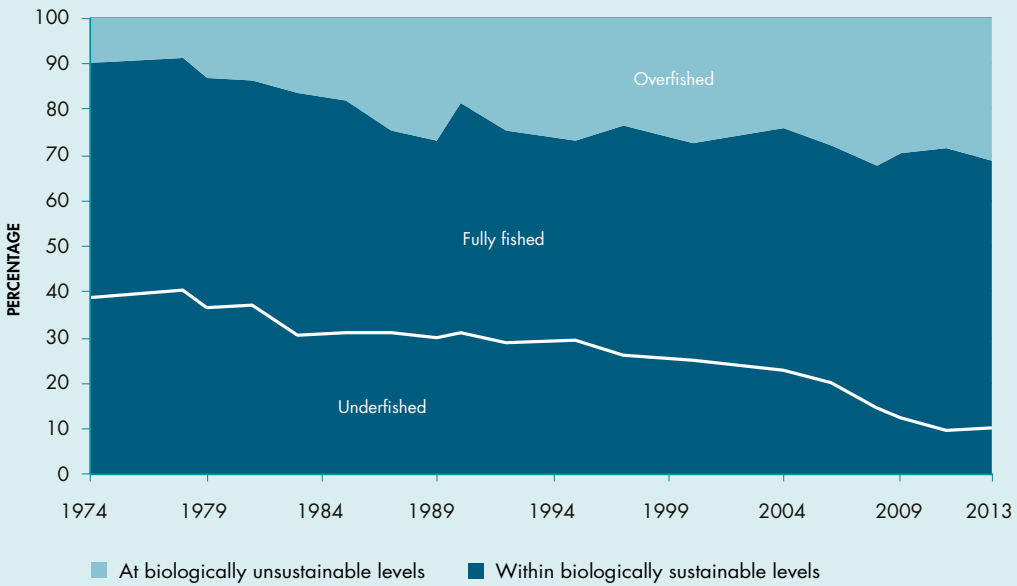
31.4% of assessed fish stocks were estimated as fished at a biologically unsustainable level and therefore overfished. Fully fished stocks accounted for 58.1% and underfished stocks 10.5%.

The ten most-productive species accounted for about 27% of the world's marine capture fisheries production in 2013.

However, most of their stocks are fully fished with no potential for increases in production.

FIGURE 13

GLOBAL TRENDS IN THE STATE OF WORLD MARINE FISH STOCKS SINCE 1974



Notes: Dark shading = within biologically sustainable levels; light shading = at biologically unsustainable levels. The light line divides the stocks within biologically sustainable levels into two subcategories: fully fished (above the line) and underfished (below the line).

TABLE 3

MARINE CAPTURE PRODUCTION: MAJOR SPECIES AND GENERA

SCIENTIFIC NAME	FAO ENGLISH NAME	AVERAGE 2003–2012	2013	2014	VARIATION		
					AVERAGE (2003–2012) –2014	2013–2014	2013–2014
			(Tonnes)		*(Percentage)*		*(Tonnes)*
Theragra chalcogramma	Alaska pollock (= walleye pollock)	2 860 840	3 239 296	3 214 422	12.4	–0.8	–24 874
Engraulis ringens	Anchoveta (= Peruvian anchovy)	7 329 446	5 674 036	3 140 029	–57.2	–44.7	–2 534 007
Katsuwonus pelamis	Skipjack tuna	2 509 640	2 974 189	3 058 608	21.9	2.8	84 419
Sardinella spp.[1]	Sardinellas nei	2 214 855	2 284 195	2 326 422	5.0	1.8	42 227
Scomber japonicus	Chub mackerel	1 804 820	1 655 132	1 829 833	1.4	10.6	174 701
Clupea harengus	Atlantic herring	2 164 209	1 817 333	1 631 181	–24.6	–10.2	–186 152
Thunnus albacares	Yellowfin tuna	1 284 169	1 313 424	1 466 606	14.2	11.7	153 182
Decapterus spp.[1]	Scads nei	1 389 354	1 414 958	1 456 869	4.9	3.0	41 911
Scomber scombrus	Atlantic mackerel	717 030	981 998	1 420 744	98.1	44.7	438 746
Engraulis japonicus	Japanese anchovy	1 410 105	1 329 311	1 396 312	–1.0	5.0	67 001
Gadus morhua	Atlantic cod	897 266	1 359 399	1 373 460	53.1	1.0	14 061
Trichiurus lepturus	Largehead hairtail	1 311 774	1 258 413	1 260 824	–3.9	0.2	2 411
Sardina pilchardus	European pilchard (= sardine)	1 088 635	1 001 627	1 207 764	10.9	20.6	206 137
Dosidicus gigas	Jumbo flying squid	778 384	847 292	1 161 690	49.2	37.1	314 398
Micromesistius poutassou	Blue whiting (= poutassou)	1 357 086	631 534	1 160 872	–14.5	83.8	529 338
Scomberomorus spp.[1]	Seerfishes nei	834 548	941 741	919 644	10.2	–2.3	–22 097
Illex argentinus	Argentine shortfin squid	446 366	525 402	862 867	93.3	64.2	337 465
Nemipterus spp.[1]	Threadfin breams nei	536 339	581 276	649 700	21.1	11.8	68 424
Cololabis saira	Pacific saury	465 032	428 390	628 569	35.2	46.7	200 179
Portunus trituberculatus	Gazami crab	356 587	503 868	605 632	69.8	20.2	101 764
Acetes japonicus	Akiami paste shrimp	580 147	585 433	556 316	–4.1	–5.0	–29 117
Strangomera bentincki	Araucanian herring	580 805	236 968	543 278	–6.5	129.3	306 310
Sprattus sprattus	European sprat	611 525	394 405	494 619	–19.1	25.4	100 214
Clupea pallasii	Pacific herring	330 017	510 025	478 778	45.1	–6.1	–31 247
Gadus macrocephalus	Pacific cod	373 547	464 367	474 498	27.0	2.2	10 131
Total 25 major species and genera		**34 232 526**	**32 954 012**	**33 319 537**	**–2.7**	**1.1**	**365 525**
WORLD TOTAL		80 793 507	80 963 120	81 549 353	0.9	0.7	586 233
SHARE 25 MAJOR SPECIES AND GENERA (PERCENTAGE)		42.4	40.7	40.9			

Note: nei = not elsewhere included.
[1] Catches for single species have been added to those reported for the genus.

6 FISH UTILIZATION AND PROCESSING

The share of world fish production utilized for direct human consumption has increased significantly in recent decades, up from 67% in the 1960s to 87%, or more than 146 million tonnes, in 2014. The remaining 21 million tonnes was destined for non-food products, of which 76% was reduced to fishmeal and fish oil in 2014, the rest being largely utilized for a variety of purposes including as raw material for direct feeding in aquaculture.

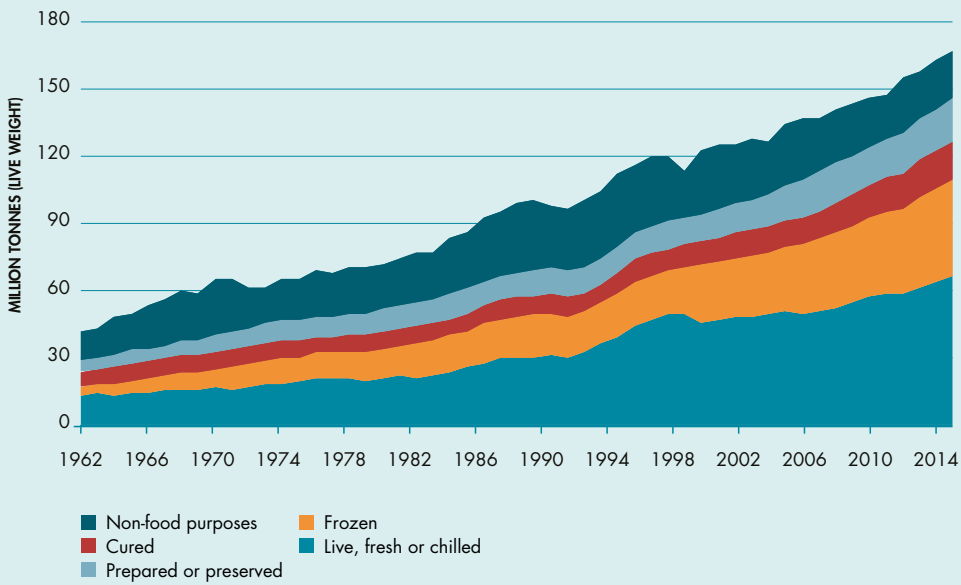
In 2014, 46% (67 million tonnes) of the fish for direct human consumption was in the form of live, fresh or chilled fish, which in some markets are the most preferred and highly priced forms.

The rest of the production for edible purposes was in different processed forms, with about 12% (17 million tonnes) in dried, salted, smoked or other cured forms, 13% (19 million tonnes) in prepared and preserved forms, and 30% (about 44 million tonnes) in frozen form.

Freezing is the main method of processing fish for human consumption, and it accounted for 55% of total processed fish for human consumption and 26% of total fish production in 2014.

FIGURE 14

UTILIZATION OF WORLD FISHERIES PRODUCTION (BREAKDOWN BY QUANTITY), 1962–2014



7 FISH TRADE AND COMMODITIES

International trade plays a major role in the fisheries and aquaculture sector as an employment creator, food supplier, income generator, and contributor to economic growth and development, as well as to food and nutrition security.

China is the main fish producer and largest exporter of fish and fishery products. It is also a major importer due to outsourcing of processing from other countries as well as growing domestic consumption of species not produced locally.

Norway, the second major exporter, posted record export values in 2015. In 2014, Viet Nam became the third ma-

TABLE 15

TOP TEN EXPORTERS AND IMPORTERS OF FISH AND FISHERY PRODUCTS

		2004	2014	APR
		(US$ millions)		(Percentage)
EXPORTERS	China	6 637	20 980	12.2
	Norway	4 132	10 803	10.1
	Viet Nam	2 444	8 029	12.6
	Thailand	4 060	6 565	4.9
	United States of America	3 851	6 144	4.8
	Chile	2 501	5 854	8.9
	India	1 409	5 604	14.8
	Denmark	3 566	4 765	2.9
	Netherlands	2 452	4 555	6.4
	Canada	3 487	4 503	2.6
	Top ten subtotal	34 539	77 801	8.5
	Rest of world total	37 330	70 346	6.5
	WORLD TOTAL	71 869	148 147	7.5
IMPORTERS	United States of America	11 964	20 317	5.4
	Japan	14 560	14 844	0.2
	China	3 126	8 501	10.5
	Spain	5 222	7 051	3.0
	France	4 176	6 670	4.8
	Germany	2 805	6 205	8.3
	Italy	3 904	6 166	4.7
	Sweden	1 301	4 783	13.9
	United Kingdom	2 812	4 638	5.1
	Republic of Korea	2 250	4 271	6.6
	Top ten subtotal	**52 119**	**83 447**	**4.8**
	Rest of world total	**23 583**	**57 169**	**9.3**
	WORLD TOTAL	75 702	140 616	6.4

Note: APR refers to the average annual percentage growth rate for 2004–2014.

jor exporter, overtaking Thailand, which has experienced a substantial decline in exports since 2013, mainly linked to reduced shrimp production due to disease problems.

In 2014 and 2015, the European Union was by far the largest single market for fish imports, followed by the United States of America and Japan.

Developing economies, whose exports represented just 37% of world trade in 1976, saw their share rise to 54% of total fishery export value and 60% of the quantity (live weight) by 2014.

Fishery trade represents a significant source of foreign currency earnings for many developing countries, in addition to its important role in income generation, employment, food security and nutrition. In 2014, fishery exports from developing countries were valued at US$80 billion, and their fishery net export revenues (exports minus imports) reached US$42 billion, higher than other major agricultural commodities (such as meat, tobacco, rice and sugar) combined.

8 FISH CONSUMPTION

In the last two decades, dramatic growth in aquaculture production has boosted average consumption of fish and fishery products at the global level. The shift towards relatively greater consumption of farmed species compared with wild fish reached a milestone in 2014, when the farmed sector's contribution to the supply of fish for human consumption surpassed that of wild-caught fish for the first time.

World per capita apparent fish consumption increased from an average of 9.9 kg in the 1960s to 14.4 kg in the 1990s and 19.7 kg in 2013, with preliminary estimates for 2014 and 2015 pointing towards further growth beyond 20 kg.

Although annual per capita consumption of fish has grown steadily in developing regions (from 5.2 kg in 1961 to 18.8 kg in 2013) and in low-income food-deficit countries (LIFDCs) (from 3.5 to 7.6 kg), it is still considerably lower than that in more developed regions, even though the gap is narrowing.

In 2013, per capita apparent fish consumption in industrialized countries was 26.8 kg. This significant growth in fish consumption has enhanced people's diets around the world through diversified and nutritious food. In 2013, fish accounted for about 17% of the global population's intake of animal protein and 6.7% of all protein consumed.

Moreover, fish provided more than 3.1 billion people with almost 20% of their average per capita intake of animal protein. In addition to being a rich source of easily digested, high quality proteins containing all essential amino acids, fish provides essential fats (e.g. long chain omega-3 fatty acids), vitamins (D, A and B) and minerals (including calcium, iodine, zinc, iron and selenium), particularly if eaten whole.

Fish is usually high in unsaturated fats and provides health benefits in protection against cardiovascular diseases. It also aids foetal and infant development of the brain and nervous system. Fish can also play a major role in correcting unbalanced diets and, through substitution, in countering obesity.

TABLE 16

SHARES OF MAIN GROUPS OF SPECIES IN WORLD TRADE, 2013

	SHARE BY VALUE	SHARE BY QUANTITY (LIVE WEIGHT)
	(Percentage)	
Fish	**67.7**	**80.6**
Salmons, trouts, smelts	16.6	7.2
Tunas, bonitos, billfishes	10.2	8.3
Cods, hakes, haddocks	9.6	14.4
Other pelagic fish	7.5	12.7
Freshwater fish	4.0	4.8
Flounders, halibuts, soles	1.6	2.1
Other fish	18.1	31.2
Crustaceans	**21.7**	**8.2**
Shrimps, prawns	15.3	6.0
Other crustaceans	6.4	2.1
Molluscs	**9.8**	**10.4**
Squids, cuttlefishes, octopuses	5.6	4.0
Bivalves	3.0	5.6
Other molluscs	1.1	0.7
Other aquatic invertebrates/animals	**0.8**	**0.9**
TOTAL	100.0	100.0

SALMON AND TROUT

The share of salmon and trout in world trade has increased strongly in recent decades, becoming the largest single commodity by value in 2013. Demand is growing steadily, in particular for farmed Atlantic salmon. Prices of farmed salmon have fluctuated during the last two years, but overall remained at high levels, in particular for Norwegian salmon, which is expected to represent a growing share in major markets.

OUTLOOK TO 2025

The projections are elaborated annually and published in the *OECD-FAO Agricultural Outlook* publication. They provide, for a ten-year horizon, an outlook for the sector in terms of potential production, use (human consumption, fishmeal and fish oil), prices and key issues that might influence future supply and demand.

That said, the results should not be considered as forecasts but as plausible trends that provide insights into how the sector may develop.

9 PRODUCTION

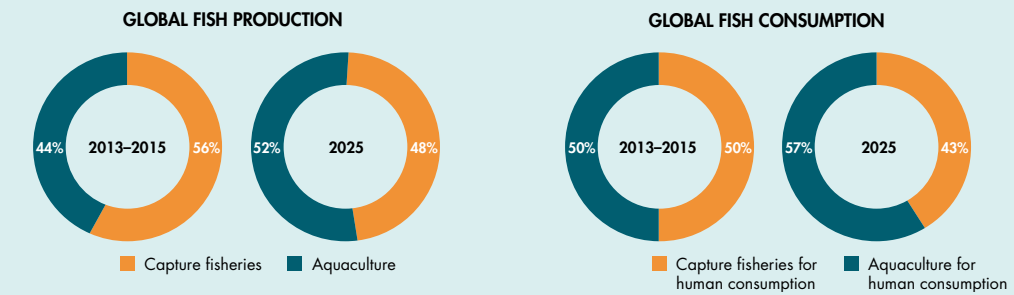
Total world fishery production (capture plus aquaculture) is projected to expand over the period, reaching 196 million tonnes in 2025. This represents an increase of 17% between the base period (average 2013–15) and 2025, but indicates a slower annual growth compared with the previous decade (1.5% versus 2.5%).

Almost all of the increase in production will originate from developing countries. Their share in total output will increase from 83% in the base period to 85% in 2025. A more marked expansion is expected in Asia, with its share in total production rising from 70% to 73%. Surging demand for fish and fishery products will mainly be met by growth in supply from aquaculture production, which is expected to reach 102 million tonnes by 2025, 39% higher than the base period level.

Although its annual growth rate is estimated to decline from 5.4% in the previous decade to 3.0% in the projection period.

FIGURE 38

RELATIVE SHARES OF AQUACULTURE AND CAPTURE FISHERIES IN PRODUCTION AND CONSUMPTION



SOURCE: OECD and FAO.

Asian countries will remain the main producers, representing 89% of total production in 2025, and with China alone accounting for 62% of world output. Other major increases are expected in Latin America, in particular in Brazil (104% higher) due to significant investments in the sector.

The share of aquaculture in total fishery production will grow from 44% on average in 2013–15 to surpass capture fisheries in 2021. In 2025, this share will reach 52%. This development highlights a new era, indicating that aquaculture will increasingly be the main driver of change in the fisheries and aquaculture sector.

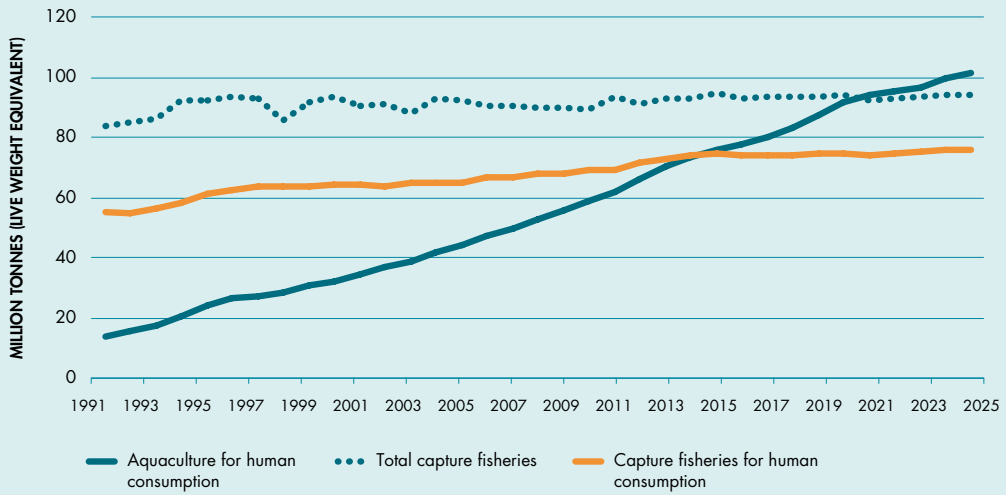
10 PRICES

On average, fish prices were lower in 2015 compared with the peaks recorded in 2014.

In nominal terms, average fish prices are all expected to decline further in the first part of the projection period due to slower economic growth, sluggish demand in some key markets, and lower input costs. However, in the last five years of the outlook period, prices are expected to subsequently stabilize and grow slightly, and then remain on an elevated plateau by the end of the decade.

FIGURE 34

GLOBAL CAPTURE FISHERIES AND AQUACULTURE PRODUCTION TO 2025



SOURCE: OECD and FAO.

Capture fisheries are expected to remain under restrictive production quotas while demand for certain species continues to be sustained. In nominal terms, the average price for wild fish (excluding fish for reduction) is projected to grow by more than that for farmed fish (7% compared with 2%).

However, the overall price of fish caught in the wild will remain lower than that for farmed fish. This is partially explained by the increasing share of lower-value fish in overall catches.

In real terms, both capture and aquaculture prices are expected to decline by about 13% and 17%, respectively, during the outlook period.

11 CONSUMPTION

Fish is expected to remain predominantly utilized for human consumption, making a valuable and nutritious contribution to diversified and healthy diets.

The main utilization for non-food uses will continue to be reduction into fishmeal and fish oil, and other uses will be for ornamental purposes, aquaculture purposes (fingerlings, fry, etc.), bait, pharmaceutical purposes and as direct feed for aquaculture, livestock and other animals.

World apparent fish consumption is projected to increase by 31 million tonnes in the next decade to reach 178 million tonnes in 2025. On a per capita basis, apparent fish consumption will be 21.8 kg (live weight equivalent) in 2025, 8% above the base period level of 20.2 kg. The driving force behind this increase will be a combination of rising incomes and urbanization interlinked with the expansion of fish production and improved distribution channels.

Per capita fish consumption is expected to increase in all continents, with Asia, Oceania and Latin America and the Caribbean showing the fastest growth. In particular, major increases are projected in Brazil, Peru, Chile, China and Mexico. Apparent fish consumption will remain static or decrease in a few countries, including Japan, the Russian Federation, Argentina and Canada.

Disparities in fish consumption will remain between developed and developing countries, with the latter having lower levels of consumption, although the gap is narrowing.

Consumers, especially in more developed economies, are increasingly concerned about sustainability issues, animal welfare and food safety, which may also affect their consumption patterns, including for fishery products.

12 TRADE

Fish and fishery products will continue to be highly traded, fuelled by increasing consumption of fishery commodities, trade liberalization policies, globalization of food systems, and technological innovations in processing, preservation, packaging and transportation. About 36% of total

fishery production including trade between member States of the European Union (intra-EU trade) is expected to be exported in the form of different products for human consumption or non-edible purposes in 2025.

World trade in fish for human consumption is expected to exceed 46 million tonnes in live weight equivalent in 2025, up 18% from the base period.

The next decade will be characterized by an increasing role of developing countries in fishery trade, and a corresponding decline in the share of developed economies. In the next decade, developing countries will continue to lead fishery exports of fish for human consumption. Asian countries will account for about 67% of the additional exports by 2025.

At the country level, China, Viet Nam and Norway will be the world's largest fish exporters.

Demand for seafood in major developed economies in Japan and in Europe and North America is expected to be revitalized, with growing imports of fish for human consumption.

13 MAIN UNCERTAINTIES

Illegal unreported and unregulated (IUU) fishing and the overcapacity of fishing fleets globally are other important threats affecting the sustainability of fisheries resources. In addition, the ongoing practice of fleets moving their operations from depleted areas to new areas can cause a long-term decline in global catches as overfishing spreads.

In more affluent markets, consumers are increasingly requiring high standards of quality assurance and demanding guarantees that the fish they purchase are produced sustainably.

Future prices might be influenced not only by higher feed prices but also by the introduction of more rigorous regulations on the environment, food safety, traceability and animal welfare.

FACTORS THAT MIGHT AFFECT THE PROSPECTS FOR THIS SECTOR:

- land and water and associated conflicts;
- feed, seed supply and genetic resources;
- environmental integrity and disease problems;
- development and adoption of new and improved farming technologies;
- market, trade and food safety;
- climate change;
- investment capital impediments;
- problems that can originate from unguided and unmonitored aquaculture practices.

2016
THE STATE OF WORLD FISHERIES AND AQUACULTURE
CONTRIBUTING TO FOOD SECURITY AND NUTRITION FOR ALL

This issue of *The State of World Fisheries and Aquaculture* aims to provide objective, reliable and up-to-date data and information to a wide range of readers – policy-makers, managers, scientists, stakeholders and indeed all those interested in the fisheries and aquaculture sector. As always, the scope is global and the topics many and varied.

This edition uses the latest official statistics on fisheries and aquaculture to present a global analysis of trends in fish stocks, production, processing, utilization, trade and consumption. It also reports on the status of the world's fishing fleets and analyses the make-up of human engagement in the sector.

Twenty years on from the introduction of the Code of Conduct for Responsible Conduct, and now with the recently adopted Sustainable Development Goals, 2030 Agenda for Sustainable Development, Paris Agreement, and the Small-Scale Fisheries Guidelines, the focus on governance and policy has never been greater. This edition covers recent developments as they relate to fisheries and aquaculture, and reports, *inter alia*, on the Common Oceans ABNJ Program, FAO's Blue Growth Initiative and efforts to combat illegal, unreported and unregulated fishing. It also discusses issues such as valuing inland fisheries, cutting bycatch and promoting decent work. Other topics highlighted include: nutrition; aquatic invasive alien species; responsible inland fisheries; resilience in fisheries and aquaculture; and governance of tenure and user rights.

2016 The State of World Fisheries and Aquaculture (full version)