The Southern African Development Community (SADC) is currently composed of 15 Member States, namely: Angola, Botswana, Democratic Republic of Congo, Lesotho, Malawi, Madagascar, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia and Zimbabwe. The SADC Vision is ‘one of a common future, a future in a Regional Community that will ensure economic wellbeing, improvement of the standards of living and quality of life, freedom and social justice and peace and security for the peoples of Southern Africa’.

The fisheries sector in SADC countries, comprising marine and inland capture fisheries and aquaculture, generates a variety of benefits, including nutrition and food security, livelihoods, employment, exports and foreign currency and conservation and biodiversity values that are of global significance.

In order to optimise benefits from the fisheries and aquaculture SADC Heads of State in 2001 endorsed the SADC Protocol on Fisheries. The Protocol aims to promote responsible and sustainable use of the living aquatic resources and aquatic ecosystems of interest to State Parties, in order to (i) promote and enhance food security and human health, (ii) safeguard the livelihood of fishing communities, (iii) generate economic opportunities from nationals in the region, (iv) ensure that future generations benefit from these renewable resources; and (v) alleviate poverty with the ultimate objective of its eradication.

Fish in Focus: Okavango Tilapia, *Tilapia ruweti*. The species originates from the swamplike high plateaus of the Congo-Zambezi watershed, including the Lufira River. Large populations have been reported in the Okavango delta. The cichlid is a perfect aquarium fish.
# Botswana Statistics @ a Glance

**Physical:** Botswana is a completely landlocked country in the centre of Southern Africa. One of Southern Africa’s longest rivers, the Okavango, flows into the north-western part of the country, forming the UNESCO World Heritage Site Okavango Delta. Botswana shares borders with South Africa, Namibia, Zambia and Zimbabwe.

The country covers an area of about 582,000 sq.km² and is relatively flat, at roughly 900 metres above sea level, with gentle undulations and occasional rocky outcrops. The Kalahari Desert occupies more than 70% of the country, with valleys and pans etched across the landscape. The eastern part of Botswana contains the highest (1,500 metres) and the lowest (500 metres) points of elevation, with hills and deep valleys, whereas the flat vast western portion of the country is semi-arid with rocky outcrops.

**Socio-economic:** The total population size and density as per the 2011 Census are 2,024,904 and 3.5 persons per square kilometre respectively. About 19% of the population lives below the national poverty line, less than half the regional average. The life expectancy is relatively low at 47 years, largely due to HIV/AIDS.

**Languages:** Setswana is the national language, while English is the official language used in business and most Government affairs. There are also some indigenous languages which includes several ethnic groups dominated by those who are Setswana speaking, all of which are known as Batswana.

**Fisheries production:** Botswana produces about 300 tons/year of fish, mainly from capture fisheries, and the contribution of fisheries to GDP is below 1%. The value of fish imports is USD 12 million, and only Lesotho and Swaziland export less fish than Botswana.

**Food and Nutritional Security and the Contribution of fisheries:** Botswana’s per capita fish consumption is 3 kg per person, and the contribution of fish to total protein and total animal protein intake is 1% and 3% respectively, both below the regional averages. About 24% of Batswana are undernourished.

**Botswana’s fisheries sector:** All fishing activity in Botswana occurs in rivers, lakes and waterways. The Okavango Delta supports a multi-species fishery exploited by five principal fishing methods, viz. hook and line, gillnet fishermen, baskets, spears and traps. The resource is exploited by three principal fisher groups, the artisanal or small-scale fishers, the commercial, and the recreational fishers. Surveys suggest that the number of fishers has decreased; resulting in decrease in motorised vessels, a reduction in the number of gillnets and a slight reduction in the size of gillnets used to illegally maximize catches. The legal size of nets is 100 mm and 150 mm mesh size nets. In recent times, the Government has prioritized aquaculture development and already new farms are opening up.

© FAO & SADC
President Khama starting the countdown to the Golden Jubilee of their Independence celebrations for the Republic of Botswana. Botswana’s Independence is celebrated on 30 September annually.

Fish Farming: profitability and potentials in Botswana by Lotana Nzegwu

In fish farming, the farmer grows fish in captivity, thus necessitating the need to pay adequate attention to the health, nutrition and propagation of the fish. More often than not, the farmer's objective is profit-making, in which case the farm has to be of a commercial scale.

Why farm fish?
Below are some of the reasons fish farming is important to Botswana; and these readily explain the need for investment in this virgin industry:

- All over the world, fish stock from the wild (oceans, rivers, lakes, and so on) has proven to be insufficient for mankind due to over-exploitation and pollution of natural waters. This stock insufficiency is aggravated in landlocked Botswana, what with its few perennial waters! It is, therefore, only through fish farming that enough quantity of fish may be produced to augment supplies.
- Unbeknown to a large segment of the public, there is a huge demand for fish in Botswana. This unfortunate ignorance is steadily playing to the advantage of the enlightened and rich few, who make a lot of economic profit from fish importation. Fish demand is far in excess of supply.
- At least 4000 tons of fish is consumed in Botswana each year. Out of this quantity, only a paltry quantity of about 300 tons is produced locally, leaving a whopping deficit of 3,700 tons to be supplied through importation, mainly from South Africa, Namibia, Zimbabwe and Zambia. Little wonder, therefore, that fish smuggling across those borders is said to be a thriving, though illicit, business. But, again, it is only fish farming which possesses the capability to cater for this huge demand.
- More than any other farming activity, fish farming generates the highest yield per area of land. Yields in excess of 50 tons of fish per hectare per annum are quite obtainable in aquaculture.
- Fish has potentials for perhaps the highest returns on investment among all agro-allied activities. This is more so with intensive culture practice under sound technical management. Aquaculture is a very secure investment with very regular and sustainable net income.
- Fish has a remarkable reproductive capability, compared to other reared animals. About 100,000 eggs can be produced by a single female cultivable carp. Fish is an excellent feed converter and, therefore, has a lower feed requirement than most reared animals.
- As a result of the obvious investment potentials obtainable therefrom, fish farming is one of the fastest-growing global industries, growing at a rate of 8% globally and about 11% in the SADC region. Globally, almost 50 percent of all food fish is produced by aquaculture.
- Fish farming exerts far less pressure on water conservation techniques than other farm and industrial usages. And because fish is a poikilothermic (cold-blooded) animal whose habitat is water, it doesn't develop thirst to drink the water in which it lives, unlike poultry and cattle, which need to drink a lot of water. Fish farming demands far less of the farmer's energy than any other farming activity. Consequently, less energy is required in aquaculture for protein production.
- Fish is a high quality food that is particularly rich in protein. And, in order to prevent the incidence of arthritis and some other health problems, one is advised to eat much fish and white meat. This applies more to those above 40 years of age. Fish is remarkably rich in omega-3, which is a group of essential fatty acids that are important in reducing cholesterol levels.

© Mmeqi
Botswana government to start fish farming

The Vice President, Mr. Mokgweetsi Masisi informed residents of Sehithwa and the surrounding villages that government intended to introduce fish farming with an aim to take fish business to another level. He said they intended to construct big industries which could feed Batswana first and sell surplus to countries such as the Democratic Republic of Congo.

The Vice President told residents during a kgotla meeting when briefing them about poverty eradication programme adding that fish farming and provision of layers (koko tsa mae) were new projects under the programme. He explained that fish farming was profitable and easily manageable. He said eventually they wanted communities to move away from the traditional way where they fished from the lake as they wanted them to do projects in their homestead.

"Rapelang gore lecha la Lake Ngami le tshele so that we expand fish by ensuring sustainability. We want fish to benefit the locals and foreigners should buy from Batswana," he added. He said even the pricing of fish should be the one that gives dignity and aims to take the industry to greater heights. He said if the lake dries up, beneficiaries should be able to sustain fish and ensure it multiply. He said to fast track implementation, they had allocated budget to district commissioner's offices and also hired some social workers to work hand in hand with district coordinators.

However, Vice President Masisi explained that the government was stepping up efforts of eradicating poverty country wide and urged the communities to take advantage of the packages in place as the programme was coming to an end next year March. He urged beneficiaries to show commitment so that the programme produced the expected results. He informed the gathering that the poverty eradication battle needed a collective effort between the government and the communities in order to win.

He further noted that if people could work hard and ensure good progress, they would come up with new initiatives to augment their efforts adding that they wanted to see Batswana graduate from poverty and their businesses grow so that they created jobs for others. Mr. Masisi said the government spent close to P1 billion every year to buy food for prisoners, hospitals, Botswana Defence Force and noted that they could benefit from the budget.

Earlier on, Village Development Committee chairperson, Ms. Maletelo Molatlhiwa complained about the slow implementation of the programme in Sehithwa and surrounding villages. She noted that most beneficiaries were assisted through LIMID programme. She said 153 were from Sehithwa, 55 from Bodiebeng, 88 from Semboyo, 71 from Kareng, 107 from Toteng, 32 from Makakung while 38 were from Bothatogo.

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Is Botswana suitable for fish farming?

Botswana, for sure, has a semi-arid climate with the inherent factors of low annual rainfall, high temperature, high evaporation rate and largely loose soil texture. But advances in aquacultural technology have taken adequate care of all these problems. There is, therefore, no aspect of Botswana's natural deficiency that cannot be sufficiently circumvented or mitigated through application of proven techniques in the effort to produce food fish. In countries like Israel, Saudi Arabia, Egypt and Morocco, to name but a few, all of which are sharing similarities with, or even have worse climate than Botswana's, are among countries where fish farming notably thriving. Fish farming is, therefore, unmistakably achievable in Botswana.

© Mmegi (Lotana Nzegwu)
The Okavango Delta: A1000th UNESCO World Heritage Site

The Okavango Delta lies in the sand-filled Kalahari Basin in north-western Botswana. It is a vast inland delta, created by movements in the Earth's crust which blocked the flow of the Okavango River some 40,000 years ago, forcing it to spread out across the Kalahari Desert sands. It has no outlet to the sea, so all its waters sink into the desert sands or are lost to evaporation.

The delta is made up of permanent swamps, islands and seasonally-flooded grasslands which are a haven for wildlife. It is a natural oasis in which the perennial cycle of flooding activity continually maintains and shapes the ecosystem. Its waters originate in the highlands of Angola, arriving in the delta at the height of southern Africa's dry season, providing a flush of new growth that attracts herds of elephants and grazing animals from a wide catchment area, at a critical time of year.

The Delta is an extensive pristine wetland with a wide diversity of wetland types in a continuous state of flux. The delta extends over an area half the size of Belgium, with 6,000 km² of permanent swamps and 7-12,000 km² of seasonally flooded grassland. Remarkably, it remains in a largely pristine condition, unaffected by any major developments either within the delta itself, or anywhere along the course of its inflowing rivers and their tributaries. The wetland ecosystem is in a constant state of flux as channels change their course, fires determine short-term grazing cycles and the elephants have impact trees and other vegetation.

It has a rich diversity of species across many taxa, with significant populations of African mega-fauna. The delta supports a high diversity of natural habitats including permanent and seasonal rivers and lagoons, permanent swamps with reeds and papyrus, seasonal and occasionally-flooded grasslands, riparian forest and woodlands, dry woodlands and island communities. Each of these habitats has a distinct species composition with strong representation of aquatic organisms across most taxa. A total of 1061 species of plants (belonging to 134 families and 530 genera), 71 fish, 64 reptiles, 482 species of birds and 130 species of mammals has been recorded. The Okavango supports significant populations of wetland-adapted mammals such as sitatunga, red lechwe and southern reedbuck, and serves as a core habitat for part of Africa's largest elephant population (with 200,000 individuals ranging across northern Botswana).

On 22nd of June 2014, in Doha, Qatar, Botswana's Okavango Delta became the 1000th site inscribed on the World Heritage List as a natural site by the World Heritage Committee.

© UNESCO
Ngami Lake illegal fishing spiralling out of control

Sehitlhwa Station Commander, Elias Malope, has revealed that since the ban of fishing at Ngami Lake a large number of people have resorted to illegal fishing. According to Malope, 150 cases of illegal fishing involving more than 200 persons were registered from April 2016: “There is no time that we do an operation at Ngami Lake and not catch illegal fishers, there are many of them and the situation keeps worsening as the lake is too big,” he said. Asked whether they patrol the lake to curb illicit fishing, Malope explained that they “continue to try and control the situation but it’s not easy as there are many of them and the lake is too big to be covered in one operation.” In fact, some reports suggest that illegal camps have now been erected in the forest not far from the lake: “We work shifts going there to check the alleged squatter camps erected in the forest,” he explained. It has been almost a year since the Ministry of Environment, Wildlife and Tourism outlawed fishing in the area, citing hygiene and pollution problems for which it wants measures like ablution facilities, zoning of fishing camps and camp sites put in place. According to ministry, the decision was reached after an environmental impact survey carried at the lake. Chairman for Ngami Lake Fishermen Association Loago Mokunki however partly pointed a finger of blame at "officers authorised to control the situation", including the police who he says fuel chaos at the lake. “It is total chaos at the lake, officers and fishermen fighting each other. Just recently I heard about an incident where officers used rubber bullets to fight the illegal fishers, and we are saying that is wrong,” he said. The best cause of action, he added, will be for the police to arrest law breakers and prosecute them accordingly. Monkuki says they have since appealed for help from the area Member of Parliament, Thato Kwerepe who has not yet replied them. The police however dismissed criticism directed to them saying it was untrue.

Contacted for comment, Lake Ngami Conservation Trust Chairperson, Frisco Gabokakangwe, said contrary to the claim that it wanted to protect the environment around the lake, pollution has in fact deteriorated, something which shows that the fishing ban has not served any purpose. “We have decided as the trust to lobby for the reopening of the lake to fishers again. This we are not saying will altogether curb illegal fishing, but it will be minimised only because licenses are paid for and those that poses licenses are going to help us control illegal fishers,” he explained. Gabokakangwe revealed that they had actually secured an appointment with the Vice President Mokgweetsi Masisi who they want to meet and lobby for the reopening of the lake. “We have decided that we will build the toilets and provide all that is recommended for the good of the environment once it is opened,” he said.

Illegal, Unreported and Unregulated (IUU) fishing costs African countries substantial amounts of money every year. West Africa alone loses US$1.3 billion annually, according a recently released African Progress Panel report. The situation is the same in Southern Africa. IUU fishing negatively affects the livelihoods of people who depend on fisheries in the SADC countries. Illegal fishing is a theft from national revenues. No less than non-renewable petroleum and metals, Africa’s renewable fishery resources are a potential source of wealth and opportunity. Governed wisely, they could support livelihoods, promote food security, generate export earnings and support vital ecological systems. SADC has identified measures to address this challenge, through the signing of the Statement of Commitment to combat IUU fishing, which identified priority areas as improving regional and inter-regional cooperation, strengthening fisheries governance and legal frameworks and developing a regional Fisheries Monitoring Control and Surveillance (MCS) strategy and a regional plan of action through the regional MCS Coordination Centre.

Some countries in Africa and beyond, including Mozambique, Senegal, the Seychelles, Indonesia and Argentina, are taking decisive action to monitor fishing in their waters. We need many more to follow their lead, but more so a regional approach is needed as this problem has a transboundary nature.

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**Fish Farm Opens in Chobe by Ludo Chube**

With fears of depleting fish stocks in Chobe River, an aquaculture fish farm in Chobe district could not have come at an opportune time. Opening of such a business in a district synonymous with fishing naturally left some fishermen uneasy as fish farming or aquaculture is a relatively new concept to Chobe, much less Botswana.

The South African owners, Mr. Pieter and Ms. Rici van Graan are well aware of this as the duo started Chobe Bream fish farm three years ago, acquiring female and male tilapia fish (bream) from Kachikau village. "We heard that the local fishermen were worried that we were going to kill their industry, but the truth is that demand for fish is so unlimited that we cannot be seen to be competing with them," explained Ms. van Graan.

She added that they would be looking into exporting to neighbouring countries like Democratic Republic of Congo (DRC), Zambia and Zimbabwe where demand is high. She said it will take place once production reaches a capacity of 35 000 fish per month, saying currently they stand at 20 000 fish per month. Demand for fish in Botswana is 4 000 tonnes annually but supply is currently 300, Ms. van Graan explained. "We have had one gentleman from Zimbabwe interested in buying all the stock we have in our farming, but we had to decline as we still cannot meet demand here in Botswana," she revealed.

Currently they supply retailers and individuals and her message to Chobe community is that they are welcome to come through and buy or appreciate the facilities. For them, Chobe was ideal as it is strategically placed as a gateway to the rest of Africa, providing a great opportunity for exporting.

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**The benefits of fish farming by Lotana Nzegwi**

In addition to the obvious financial profit accruable to the investor, below are some socio-economic benefits which may be further derived from fish farming:

* Improvement of family income and enhancement of national food security.

* Generation of gainful employment opportunities, especially in villages and rural areas where fish farms are usually located.

* Curbing rural-urban migration and improvement of social equity and environmental wellbeing.

* Diversification of national economy and of training and employment profiles; and conservation of scarce foreign exchange that is usually expended in fish importation.

* Possible reversal of Botswana’s current status of fish-importer nation to that of a net exporter of fish. In conclusion, fish farming is highly profitable, certainly achievable and is indeed an imperative mechanism to be employed in the bid to feed Batswana with the much-desired quality protein.

It is also a potent source of employment generation and economic empowerment of the citizenry, most especially the youth and the rural dwellers.

© Mmegi
### Fishing in Lake Ngami

Residents from the six villages under Lake Ngami Conservation Trust have called on government to officially open fishing in order to curb continued illegal fishing at the lake. They made the plea during a meeting addressed by the Vice President, Mr. Mokgweetsi Masisi.

They said some people continued to fish illegally, despite efforts to patrol the lake. Government had imposed a fishing ban in 2014, as it was noticed at the time that domestic fishing by locals was getting out of control due to mass influx of people who wanted to benefit by using the lake for commercial fishing.

After Lake Ngami started flowing in 2004 following the droughts, there was a rapid increase in commercial fishing. The commercial practice then attracted foreigners from Zambia and the Democratic Republic of Congo, and the two countries have a high demand for fish. The aroused market then resulted in influx of illegal fish traders at Lake Ngami.

According to Minister of Environment, Wildlife and Tourism, Mr. Tshekedi Khama, the situation had led to an increased number of applications for licensed fishing at the lake. In 2012 Department of Wildlife and National Parks (DWNP) took a decision to cease new license applications to control the situation, but this resulted in a high number of illegal fishing, with the numbers continuing to rise daily.

In 2015, Minister Khama explained that people started to forge the fishing licenses through photocopying them without their knowledge. He explained that in their inspections they also discovered that those who were licensed to operate were no longer following the regulations prescribed under the licenses. He underscored that the rate at which fish resources were removed from the lake in large quantities raised a lot of concern to government. He emphasized that the lake has not fully recovered, hence the decision to suspend fishing for another 12 months.

To this end, the ban is still active, but more and more people are taking to the lake to fish illegally, as they claim that since the district had been hard hit by severe drought, fishing was the only hope for communities to survive since they had lost their cattle.

Formation of community trusts like the Lake Ngami Conservation Trust will allow government and communities to co-manage the resources through implementation of the Community Based Natural Resource Management (CBNRM) programme, which resonates very well with the global best practice of Ecosystem Approaches to Fisheries (EAF). Government is currently working on the Environmental Management Plan (EMP), which will lead to establishment of fishing camps in Lake Ngami. The Office of the President has also allocated P4 million (~USD400 000) to the Lake Ngami Conservation Trust in order to finalise the logistics in order to start operations, which include to monitor and regulate fishing at the lake to ensure environmental compliance by all.

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The Southern African Development Community (SADC) is a Regional Economic Community (REC) comprising 15 Member States; Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. Established in 1992, SADC is committed to Regional Integration and poverty eradication within Southern Africa through economic development and ensuring peace and security.

The Secretariat of SADC is based in Gaborone, Botswana. The Secretariat, through the Directorate of Food, Agriculture and Natural Resources (FANR), is responsible for implementation of the SADC Fisheries Programme, which is based on the Implementation Strategy of the SADC Protocol on Fisheries. The programme consists of five focus areas: a) aquaculture, b) management of shared fisheries resources, c) combating IUU fishing, d) small-scale and artisanal fisheries, and e) fish trade.

During 2015/16, Botswana was the Chair of SADC, and this is during the period when the country celebrates the Golden Jubilee (50 years of Independence).

The Centre for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA) is a not-for-profit Sub-regional Organisation (SRO) of the Southern African Development Community (SADC) region. CCARDESA was established in July 2011 to coordinate the implementation of agricultural research and development (R&D) in the SADC region. CCARDESA’s goal is to sustainably reduce the food insecurity and poverty in the region as pronounced in SADC’s Regional Indicative Strategic Development Plan (RISDP), the Dar es Salaam declaration on food security, and the Comprehensive Africa Agricultural Development Programme (CAADP) developed by the African Union’s New Partnership for Africa’s Development (AU-NEPAD). It operates within the framework of CAADP Pillar 4 which has the objective of enhancing the livelihoods of African farmers and pastoralists. The strategic objective of CCARDESA is to increase smallholder productivity and competitiveness through the implementation of Pillar 4 of CAADP for the SADC region based on the Framework for African Agricultural Productivity (FAAP). Recently, CCARDESA started incorporating fisheries and aquaculture in their work, and culminated in the first ever report on the “Role of fisheries in food and nutrition security in the SADC region”

CCARDESA is also headquarted in Gaborone, hosted at the offices of the Ministry of Agriculture of the Republic of Botswana.
SADC Secretariat convenes the 35th Meeting of the Directors of Fisheries and Aquaculture, Grand Palm Hotel, Gaborone, Botswana, 9-10 June 2016

The SADC Directors of Fisheries and Aquaculture meet to discuss progress in the domestication of the SADC Protocol on Fisheries which was signed by the Heads of State and Government in 2001 and entered into force in 2003.

The SADC Technical Committee on Fisheries is the Committee established in terms of Article 19 of the SADC Protocol on Fisheries to oversee the implementation of the Protocol, mainly strategies, plans and programmes developed towards domestication of this Protocol. The Technical Committee meets annually to direct and review the SADC Fisheries and Aquaculture Programme of Work. Over and above the Technical Committee is a platform to network and share information and experiences, and has become an important institution to solicit support and propose cooperation with different partners.

In attendance are 12 SADC Member States, and these include Angola, Botswana, Democratic Republic of Congo, Malawi, Mauritius, Mozambique, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia and Zimbabwe. The following development partners: African Development Bank (AfDB), AU-IBAR, Centre for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA), FAO, Lake Tanganyika Authority (LTA), South West Indian Ocean Fisheries Commission (SWIOFC), Stop Illegal Fishing (SIF), WFC, World Wide Fund for Nature (WWF), and Zambezi Watercourse Commission (ZAMCOM), together with fisheries and aquaculture experts and consultants from Botswana, Kenya, South Africa and Uganda, and officials from the SADC Secretariat, are also in attendance.

The 2016 SADC Technical Committee on Fisheries objectives are to clear strategic documents for approval by the SADC Committee of Ministers of Environment and Natural Resources Management to take place later in the year, to review key SADC policy and technical documents, and to inform the delegates of key decisions from the SADC Committee of Ministers of Environment and Natural Resources Management and the SADC Council of Ministers. The meeting also provides a platform for popularization of the SADC Revised Regional Indicative Strategic Development Plan (RISDP), the SADC Industrialization Strategy and Roadmap and the SADC Regional Agricultural Policy (RAP) and its draft Regional Agricultural Investment Plan (RAIP). Also, updates on continental work towards implementation of the Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa (PFRS) are been discussed, mainly for the purpose of alignment between continental, regional and national approaches in the management and development of fisheries and aquaculture.

This meeting is also dedicated as a platform to commemorate the four SADC countries, Mauritius, Mozambique, Seychelles and South Africa, which have ratified the FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (PMSA), which entered into force on the 5th of June 2016, after reaching and surpassing the threshold of activation (25 countries).

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