NATURE'S BENEFITS:

Latin America's Blue Biotrade Delivered to Society by Valuable Ecosystem Services

DEVELOPMENT BANK OF LATIN AMERICA

CONTENTS

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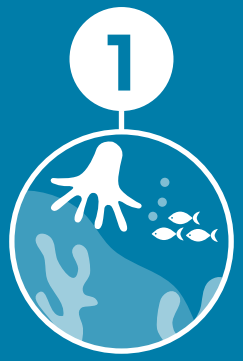
ABBREVIATIONS

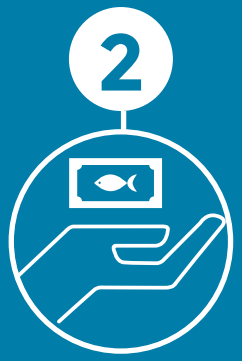
AMLC	Association of Marine Laboratories of the Caribbean
ASC	Aquaculture Stewardship Council
CARICOM	Caribbean Community and Common Market
CARICOMP	Caribbean Coastal Marine Productivity Program
CARPAS	Regional Fisheries Advisory Commission for the Southwest Atlantic
CAF	-Development Bank of Latin America-
CEPAL	Comisión Económica para América Latina y El Caribe
CESI	Committee for Environmental and Social Impact
CBD	Convention on Biological Diversity
CPPS	Permanent South Pacific Commission
CSD	Commission on Sustainable Development
DFID	Department for International Development
EBSA	Ecologically or Biologically Significant Area (under CBD)
EEZ	Exclusive Economic Zone
ENSO	El Niño-Southern Oscillation
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GEF	Global Environment Facility
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IDB	Inter-American Development Bank
IOCARIBE	Intergovernmental Oceanographic Commission's Regional Commission for the Caribbean and Adjacent Areas
ITQ	Individual Transferable Quota
MDG	Millennium Development Goals
MIF	Multilateral Investment Fund
MPA	Marine Protected Area
MSC	Marine Stewardship Council
MSP	Marine Spatial Planning
MSY	Maximum Sustainable Yield
NGO	Non-Governmental Organization
OECD	Organization for Economic Cooperation and Development
OLDEPESCA	Organización Latinoamericana de Desarrollo Pesquero
PES	Payment for Ecosystem Services
PPP	Purchasing Power Parity
UNCED	United Nations Conference on Environment and Development
SDG	Sustainable Development Goals
TURF	Territorial Use Rights Fisheries
UNCLOS	United Nations Convention on Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
USAID	United States Agency for International Development
WECAFC	Western Central Atlantic Fishery Commission
WTTC	World Travel and Tourism Council

OUR GOAL

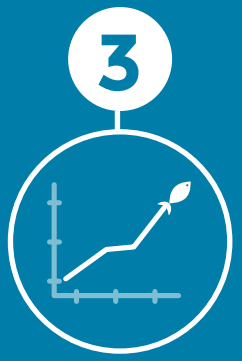
TO DEMOSTRATE THE VALUE
OF MARINE AND COASTAL NATURAL CAPITAL AND TO SPUR INVESTMENT IN ITS PROTECTION



Marine and coastal areas provide a wide variety of benefits to humans, many of wich have economic value and are essential for sustainable development



Recognizing these values allows targeted investment in managing marine and coastal systmems so these services can be enhanced

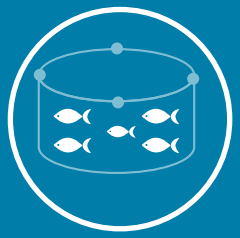


The paybacks to society include economic growth, enhanced livelihood oppotunities, diversified employment, reduced risk, and maintenance cultural values

VALUES

LATIN AMERICA AND THE CARIBEAN IS A REGION RICH MARINE ECOSYSTEM SERVICES THAT SUSTAIN HUMAN WELL-BEIN

Coral reefs in the Caribbean support the nearly $50 billion tourism industry an the 25 million visitors that visit the Caribbean region each year.



Marine fisheries and aquaculture export contributed nearly $15 billion to GDP in 2011

The market for certified seafood is growing rapidly in LAC, now nearly 10% of fisheries trade

Marine habitats like seagrass beds, salt marshes and mangrove protect property and infraestructure from flooding, erosion, and natural hazards like hurricanes. The LAC region host 1/3 of the worlds mangrove - a significant source of climate change mitigation thanks to mangrove´s high carbon fixing rates.

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ABSTRACT

NATURE'S BENEFITS: LATIN AMERICA'S BLUE BIOTRADE DELIVERED TO SOCIETY BY VALUABLE ECOSYSTEM SERVICES

Marine and coastal ecosystems provide valuable biotrade resources and investment opportunities throughout Latin America Mangrove forests, coastal wetlands, estuaries, coral reefs, sea grass beds, macro-algae assemblages and upwelling areas all support social cohesion, leisure, and economic activities in the region. Sustainable fisheries and aquaculture, and marine eco-tourism, are two sectors that are entirely supported by coastal ecosystems. In addition, these coastal and marine habitats contribute to culture and identity, support agriculture, mitigate the effects of climate change, provide educational opportunities, and safeguard sacred sites. These ecosystem services are currently undervalued, yet their contribution toa healthy planet, income generation, national economies, and a positive climate change agenda is significant – and cannot by substituted.

This document has been produced with the kind contribution of David Vivas – UNCTAD.

Photo: Pixabay.com

...Sustainable fisheries and aquaculture, and marine eco-tourism, are two sectors that are entirely supported by coastal ecosystems.

OCEANS, LIVELIHOODS, AND BLUE BIOTRADE IN LATIN AMERICAN

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Latin America and the Caribbean (LAC) is an ocean-dominated region.The vast majority of its countries and the bulk of their populations are coastal, with economies inextricably tied to the health and productivity of marine ecosystems. This region's seas and coasts are filled with valuable assets that generate substantial revenues for economic development, support livelihoods, improve the well being of local communities and visitors, and have a key role in climate change mitigation. The values of some of these assets are recognized, while other opportunities for sustainable use have been left untapped.

Healthy marine and coastal ecosystems are vital for maintaining the marine fisheries and aquaculture sectors in the LAC region. They are likely to be increasingly important as populations grow, land becomes scarce, the climate changes, and new markets for seafood and marine products emerge. While Latin Americans have already capitalized on the existence of the marine resources that these ecosystems have provided, there are many new opportunities for investment in the green and blue economies.

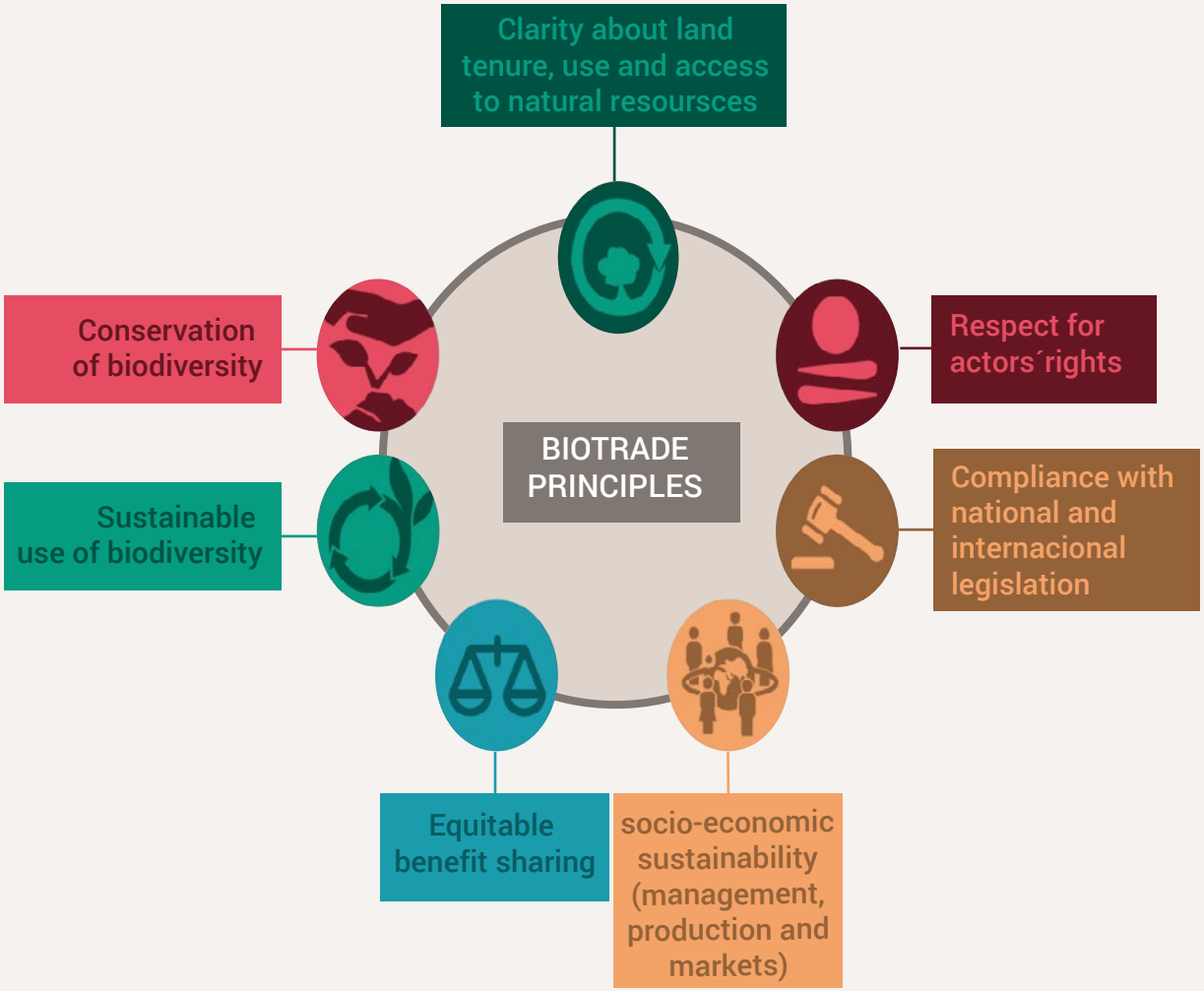
Fish is one of the most highly traded commodities worldwide

In the LAC region, as in the rest of the world, fisheries are an engine of economic growth. Fish is one of the most highly traded commodities worldwide. In the record-setting year of 2013, global exports reached US$136 billion (UNCTAD and the Commonwealth Secretariat 2015). While the Latin American and Caribbean fish harvest between 1970 and 1996 fluctuated widely, it still

contributed from 9 to 24 per cent of the world fisheries catch (FAO, 1996). Although a regional assessment of fisheries has not yet been completed, the most recently compiled annual FAO data show that in Latin America export values for fisheries products (including wild capture and aquaculture) amounted to approximately US$14.5 billion in 2011. Notably, LAC regional exports accounted for nearly a quarter of all fish traded from developing countries worldwide.Fisheries are a significant contributor to the economies of LAC nations (see Table 1 shows LAC GDP at purchasing power parity and fisheries export figures for 2011). The seafood value chain is long and lucrative; with additional earnings generated by value-added industries that process both domestic and imported seafood products.

The economy of the LAC region is uneven, with five countries (Brazil, Mexico, Argentina, Colombia and Venezuela) accounting for more than two-thirds of the region's economic output. The contribution of fisheries exports to the overall GDP also varies significantly. **Chile and Peru are the top fisheries exporters in the region, accounting for more than half of the fisheries exports in LAC.** While fish exports from LAC represent less than 1 per cent of the regional GDP, their contribution in terms of food security, jobs and livelihoods are far more important for the region as a large share of the harvest and processed products are kept in local and regional markets.

There are interesting subregional patterns as well. While the total fisheries export values of Caribbean Island States represent just 1 per cent of regional exports, they have vibrant, ocean-based societies with great cultural diversity. Both fisheries and aquaculture are expanding rapidly in the Caribbean region, and even in its most developed countries fish consumption is increasing both per capita and in absolute terms, with implications for food security, trade and social stability.



"BioTrade refers to those activities of collection, production, transformation, and commercialization of goods and services derived from native biodiversity under the criteria of environmental, social and economic sustainability (UNCTAD 1996)"

TABLE 1. INDICATIVE RELATIONSHIP BETWEEN 2011 GDP AND FISHERIES EXPORTS, IN THOUSANDS OF USD, FOR TRADING NATIONS IN THE LAC REGION (WORLD BANK DATABASE /FAO STATISTICAL SUMMARY)

Country	GDP (PPP)	Fisheries exports	Fisheries: GDP %
Brazil	2,615,234,935	242,543	<1
Mexico	1,169362,160	1,122,897	<1
Argentina	557,890,204	1,471,838	<1
Colombia	335,415,157	188,791	<1
Venezuela	316,482,191	23,566	<1
Peru	170,564,249	3,164,417	1.9
Chile	250,832,363	4,630,913	1.8
Ecuador	79,276,664	2,496,615	3.1
Dominican Republic	58,361,929	14,783	<1
Guatemala	47,654,787	106,199	<1
Panama	33,270,500	126,122	<1
Costa Rica	41,237,294	132,369	<1
Uruguay	47,962,439	234,559	<1
El Salvador	23,139,000	79,151	<1
Trinidad and Tobago	24,409,842	14,786	<1
Honduras	17,710,315	144,222	1
Nicaragua	9,755,620	132,992	1.4
Jamaica	14,396,817	11,991	<1
Haiti	7,516,834	10,116	<1
Suriname	4,422,277	71,548	1.6
The Bahamas	7,889,750	75,293	1.0
Guyana	2,576,598	53,619	2.1
Barbados	4,358,000	536	<1
Belize	1,487,005	25,408	1.7
Antigua and Barbuda	1,129,918	899	<1
Grenada	778,649	5767	<1
Saint Kitts and Nevis	728,051	719	<1
Saint Vincent	676,129	270	<1
Dominica	501,481	12	<1
Latin America / Caribbean	**$5,845,021,158**	**$14,582,955**	**2.5%**

Cont.

Fisheries play a key role in ensuring food security, which may be even more important than their export value or direct economic output to GDP. Seafood, whether procured through capture fisheries or via aquaculture, is a major component of food security in Latin America as local populations are highly dependent on these resources.

Per capita fish consumption is significantly higher in the Caribbean than the global average. In addition, **food for subsistence and much-needed cash provide social benefits in areas where coastal communities are marginalized or in rural locations** (FAO, 1996). In the less developed countries of the LAC region, and particularly in remote coastal areas, fish is not only the major source of animal protein, it is also a critical source of micronutrients essential to people with otherwise deficient nutrition (Pauly and Zeller, 2016). For these reasons, it will be increasingly important to bring together governments, companies and local communities to engage in sustainable and innovative fisheries exploration practices, where ecosystems restoration and sustainable fisheries harvesting go hand in hand.

Seafood and fishing are also culturally important to the region, with millions of people engaged in artisanal fishing as part of traditional and recreational uses that appeal to urbanites as well as those living in rural areas.

From a cultural perspective, **seafood has played a central role in the development of traditional gastronomy,** which has become a fundamental part of cultural pride and identity. Regional seafood dishes range from “muqueca” in Brazil, "ceviche" in Mexico, Ecuador and Peru, conch chowder and fritters in the Caribbean, to other local specialties. This supports not only cultural identity, but also the growing marine and cultural tourism trade.

Photo: Walter H. Wust

The fisheries and aquaculture sectors provide employment as well as a source of livelihoods in coastal and island nations across the LAC region. As a mainstay of many coastal communities, small-scale fisheries and aquaculture play an important role in the social fabric of society (FAO 2014). In other parts of the region, especially in the Humboldt Current area (Pacific), large-scale commercial fisheries are targets for business investment and major contributors to GDP. Stock assessments and subsequent quota determinations to maintain catch at a maximum sustainable yield is accomplished by national fisheries ministries and regional fishery organizations and arrangements in LAC, including the Western Central Atlantic Fishery Commission, the Regional Fisheries Advisory

From a cultural perspective, seafood has played a central role in the development of traditional gastronomy, which has become a fundamental part of cultural pride and identity.

Commission for the Southwest Atlantic, the Organization of Eastern Caribbean States, the Caribbean Community and Common Market, the Latin American Organization for Fisheries Development and the Permanent South Pacific Commission. However, most of these organizations deal only with migratory species such as tuna.

In some places competition over access to resources between large-scale commercial fisheries and small-scale artisanal or subsistence fisheries has created conflict. This trend may accelerate throughout the region if stocks become more overexploited, and if perverse subsidies that drive over capitalization resulting in even more over exploitation are not reined in. Insufficient investment in monitoring and surveillance, along with effective enforcement, threaten to diminish the likelihood that the blue economy will be harnessed in a sustainable way.

These issues can also signal opportunities, however. Latin American and Caribbean nations are taking steps to mitigate these conflicts through formal regional environmental agreements such as the Cartagena Convention for Caribbean Regional Seas, as well as informal regional discussions on combatting illegal, unreported and unregulated (IUU) fishing (FAO 2015).

Several countries, including Mexico, Ecuador, Peru and Chile, are also making efforts to address IUU by revising their regulatory and administrative measures. While these measures are positive, much remains to be done, especially when it comes to the fisheries industry's adoption of benchmarks and best practices from other industries that have emerged from the intensive overexploitation of natural capital. Feasibility studies and opportunity assessments can point to investments that will not only diminish conflicts and degradation, but also yield large returns.

In some places competition over access to resources between large-scale commercial fisheries and small-scale artisanal or subsistence fisheries has created conflict.

With the adoption of more ethical and sustainable fisheries practices, there are good possibilities that the conflict between local communities and mainstream fisheries will be minimized. Direct fisheries management (controlling catch) goes hand in hand with the protection of habitats that maintain this resource. Fisheries management organizations are utilizing tools such as Marine Protected Areas, green financing mechanisms (for instance, payments for ecosystem services) and certification schemes to ensure that management is more committed to eco-efficiency and a holistic ecosystem-based approach (Potts et al. 2016).

Photo: Pixabay.com

Good business practices increase benefits haring along the value chain and revenue flows to operators, investors and governments.

Aquaculture operations are also improving, due in part to the 2009 establishment of the Aquaculture Stewardship Council (ASC) and its standards for the 12 most commonly farmed fish and shellfish species. Many Latin American aquaculture operations have already moved to get ASC or Best Aquaculture Practices (BAP) certification.

For instance, in January 2015, Makro Supermayorista SA – a major Latin American wholesaler with operations in Argentina, Brazil, Colombia, Peru and Venezuela – moved to get BAP certification for its farmed seafood as part of a company-wide sustainability initiative. Schemes such as these provide measurable standards and third-party verification in order to ensure that their aquaculture operations adhere to best practices and are attractive to the industry due to the marketing opportunities that certification can provide. **Several Latin American countries, such as Ecuador, have already developed strategies for sustainable seafood and aquaculture** (see UNCTAD/DITC/TED 2015). Nonetheless, there is scope for improvement, both to increase efficiency and net benefits to society, and to ensure that economic development in the fisheries sector does not constrain other maritime industries and benefits in the long run.

Countries adjacent to rich upwelling systems like the Humboldt Current (e.g. Peru and Chile) take advantage of the naturally high production in most years; other Latin American and Caribbean countries have developed high value commodities that contribute significantly to GDP (e.g. Bahamas with its export of conch and lobster).

However, the contribution that trade in fisheries products makes to GDP masks the fact that certain LAC countries have a high dependence on fisheries.

Fisheries management organizations are utilizing tools such as:

- Marine Protected Areas
- green financing mechanisms
- certification schemes

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SPECIFIC FISHERIES OF VALUE TO LATIN AMERICAN AND CARIBBEAN COUNTRIES

Fish products provide essential proteins for human consumption globally, with regional variations (see Figure 1). While the proportion of food protein provided by fish is significantly smaller than that provided by meat and dairy products (see Figure 2), its share will increase rapidly around the world as global populations grow from 7.4 billion to 9 billion by 2050.

The importance of some fisheries products for food security is larger than it appears. For instance, the **Peruvian anchovy fishery is a crucial component of both animal feed and crop fertilizers.** As technologies for sustainable agriculture improve in both scale and effectiveness, industries should reduce the use of fish for feedstock (indirect human consumption) and the production of fertilizers, substituting them by more effective and less strategic natural resources. Through development and industrialization, LAC countries may shift progressively from exports of fish commodities to emerging and more attractive fisheries-related markets.

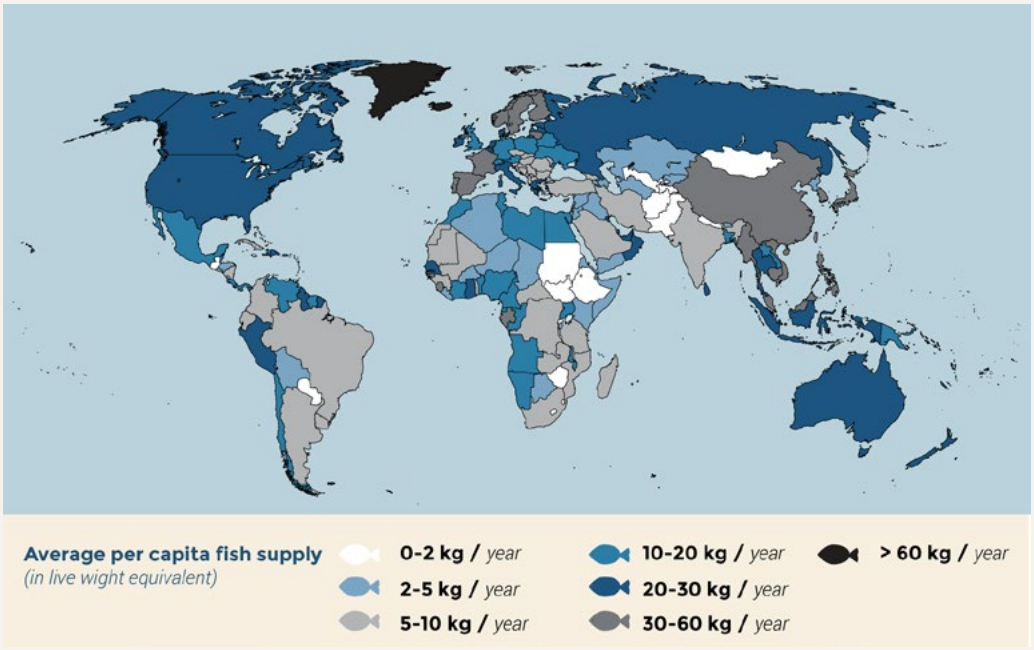


FIGURE 1. AVERAGE PER CAPITA FISH SUPPLY (FROM FAO 2014)

Fisheries, and by extension, aquaculture, are thus major economic drivers in Latin America and the Caribbean, however based on minimal industrial value added, low investment in applied research, and insufficient attention given to protection of habitats that support fisheries as well as sustainability issues, fisheries contribution to regional wealth is below its capacity.

Historically, much of this sector's economic value lies in international trade. The total export value of marine fisheries and aquaculture products across the Latin America and Caribbean region (excluding Cuba, for which data are unavailable) was over $14 billion in 2011 (see Table 1)

The main seafood products driving this trade are the high value commodities: farmed salmon and shrimp, wild caught shrimp, snapper, lobster, and conch, and high volume small pelagics such as anchoveta, sardines, and larger pelagics like mackerel, and tuna. Approximately two thirds of the region's landings are small pelagics, and the volume coming from the region is about three quarters of the global catch in small pelagics, this context brings important inputs to better understand fisheries economics in LAC and its potential as a driver for new and more innovative applications for fisheries output.

Latin American trade in fisheries product is not only robust, but increasing, with a surplus that has been rising over recent years (see Figure 3; FAO 2014).

As marine ecosystems are pushed to extreme conditions by climate change, acidification of oceans and exponential loss of marine biodiversity, promoting a holistic, ecosystem-based approach to management will become a necessity.

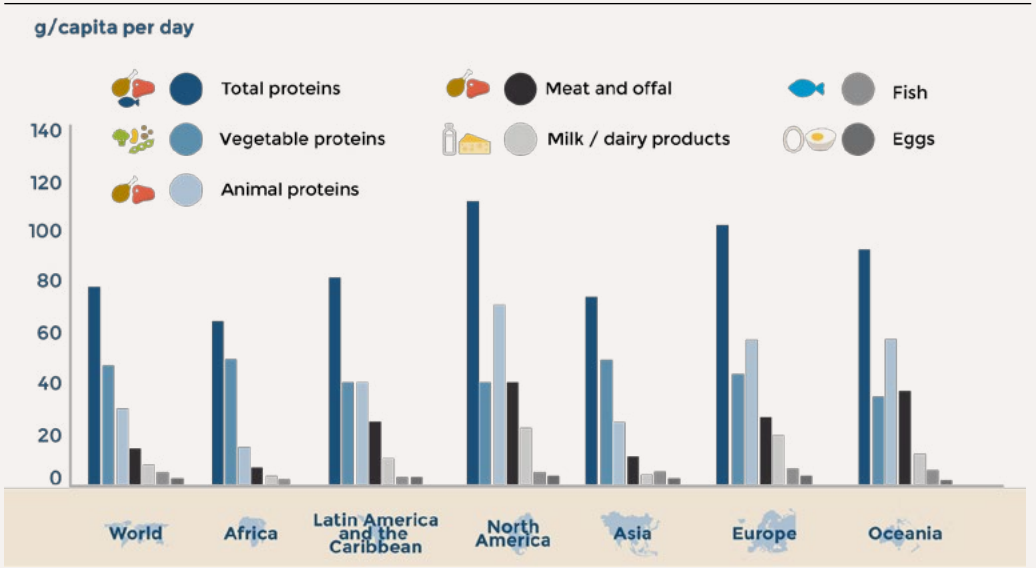


FIGURE 2. DERIVATIONS OF GLOBAL PROTEIN SUPPLY, AVERAGING 2008-2010 DATA (FROM FAO 2014)

The speed with which the adoption of more ecosystem- and social resilience-based approaches in the fisheries value chain takes place will depend primarily in the capacity of local governments to understand marine ecosystem services strategic role for long-term performance. The trade-off is not whether LAC countries should use fisheries as a driver for more consistent growth or remain exploring fisheries in the same way they have been doingfor decades. **The trade-off is whether LAC countries shift from a quantitative performance output for fisheries to a qualitative, or potentially face the loss of comparative advantage.**

The huge variation in export figures among Latin American and Caribbean countries belies several complexities inherent in assessing marine fisheries value. Countries

- The main seafood products driving this trade are the high value commodities:
  - farmed salmon
  - wild caught shrimp
  - snapper
  - lobster
  - conch
- High volume small pelagics such as:
  - anchoveta
  - sardines
- And larger pelagics like:
  - mackerel
  - tuna

for which fisheries (and aquaculture) produce a significant proportion of GDP are economically reliant on consistent catches and market demand.Paradoxically, many of the most lucrative fisheries are also the most dynamic, exhibiting boom and bust cycles tied to oceanographic features such as the El Niño Southern Oscillation (ENSO) events (Cashin et al 2015).

Those LAC countries such as Peru and Chile that tap the highly productive upwelling systems like the Humboldt Current, or those like Ecuador and Chile that practice large scale aquaculture of shrimp or salmon, or those such as the Bahamas or Mexico that export high value commodities like conch and lobster, recognize the value of oceans in providing resources to support these operations.

But smaller countries such as the Caribbean Island States, while hardly visible in terms of international trade statistics, are nonetheless reliant on fisheries. Taking Dominica as an example, Boyd (2010) shows that local reef fisheries provide employment to fully 11% of the working population – a significant engine of economic well-being for which substitution will hardly be available. In nations such as Trinidad and Tobago, fisheries support a high per capita GDP, suggesting that even in countries where fisheries revenues are limited, low population density can lead to a very high per capita contribution to GDP for fisheries.

Fisheries have been increasing in importance in LAC. From 1973, fisheries contributions to GDP increased steadily, in part to expanding effort in small pelagic fisheries (especially Peru and Chile), but also due to expansion of the sector into other products: demersal fishes, crustaceans, mollusks (primarily squid), and large pelagics, as well as aquaculture (see below). Fisheries contracted a bit between 1984 and 1990, but have been increasing in both value and contribution to employment in recent years (FAO 2014). Since 1991, the value of regional exports has grown faster than world value (FAO, 1996; FAO 2015).

In recent decades, **aquaculture has expanded in response to new market demand and a new spate of investors. Chile, Ecuador, Mexico, Brazil, Colombia, and Cuba account for the vast bulk of production.** Shrimp and salmon aquaculture targeting markets in the US, Japan, and Europe account for over 80% of regional aquaculture production (FAO 1996; 2014). In Ecuador, shrimp production has topped 300,000 metric tons, with exports generating some $2.6 billion in 2014 (The Fish Site 2015). Strong and increasing US demand for shrimp, combined with a drop in Asian shrimp production due to early mortality syndrome, underlies this growth. In addition to Ecuador, other major shrimp producers in the region include Mexico, Colombia, Honduras, and Panama.

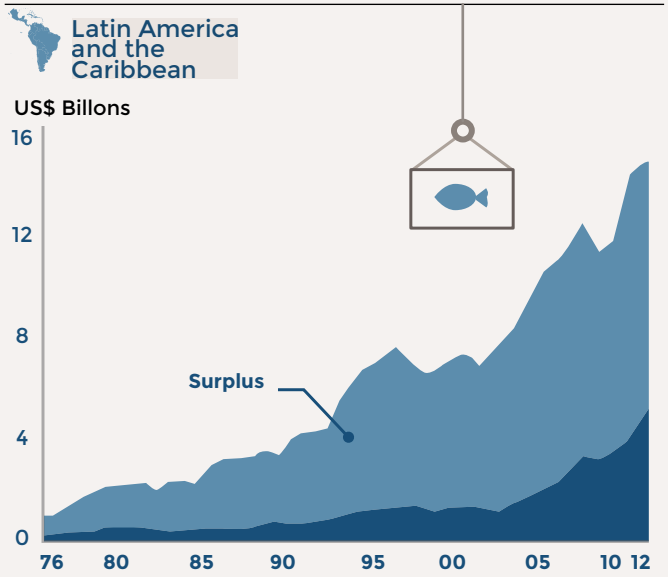


FIGURE 3. IMPORT/ EXPORT OF FISHERIES PRODUCTS FROM LATIN AMERICA (FROM FAO 2014)

In contrast, Chile is the sole large-scale developer of salmon farming, accounting for over 10% of the world salmon supply. As in other parts of the world where industrial aquaculture exists, the farming operations are vulnerable to disease outbreaks. Farming operations have been the source of large-scale habitat destruction (especially the destruction of mangrove forests for shrimp ponds, see UNEP 2014), as well as degradation tied to release of fishery waste products, antibodies and other medicines, and nutrients into local waters. This situation has, however, been steadily improving through the application of international certification, emerging regulation and a rising interest of governments for protecting and managing coastal and marine ecosystem services in more environmentally sound ways. (Gunther 2015).

On the opposite end of the commodity spectrum, **fisheries targeting small pelagics for fishmeal represent high volume, low value fisheries.** These fisheries represent close to three quarters of the LAC's production in the sector. While these fisheries cause less concern about environmental effects than do shrimp and salmon farming operations, **the large-scale harvest of small pelagics does have destabilizing effects on marine food webs, especially in periods of El Nino.** In addition, by-catch (catch of non-targeted fish, shellfish, marine turtles, marine mammals, and seabirds) in these and other wild capture fisheries can have profound effects on marine biodiversity, though this pressure is abating as LAC countries take measures to reduce by-catch and increase efficiency.

Although intra-regional trade is still quite limited, the setting up of the MERCOSUR common market opened up the Brazilian market for duty-free fishery products from Uruguay and Argentina and the regional trade of canned pilchard from Peru to other South American countries (FAO 1996).

Trade in fisheries and aquaculture products originating in Latin America flows across the globe. According to 2014 FAO statistics, approximately 6% of South American marine fisheries products are exported to Africa, 13% to North America, 11% to Asia, 8% to Europe, and 4% to Australia. Intraregional trade in South America accounts for 61% of exports (see Figures 4 and 5).

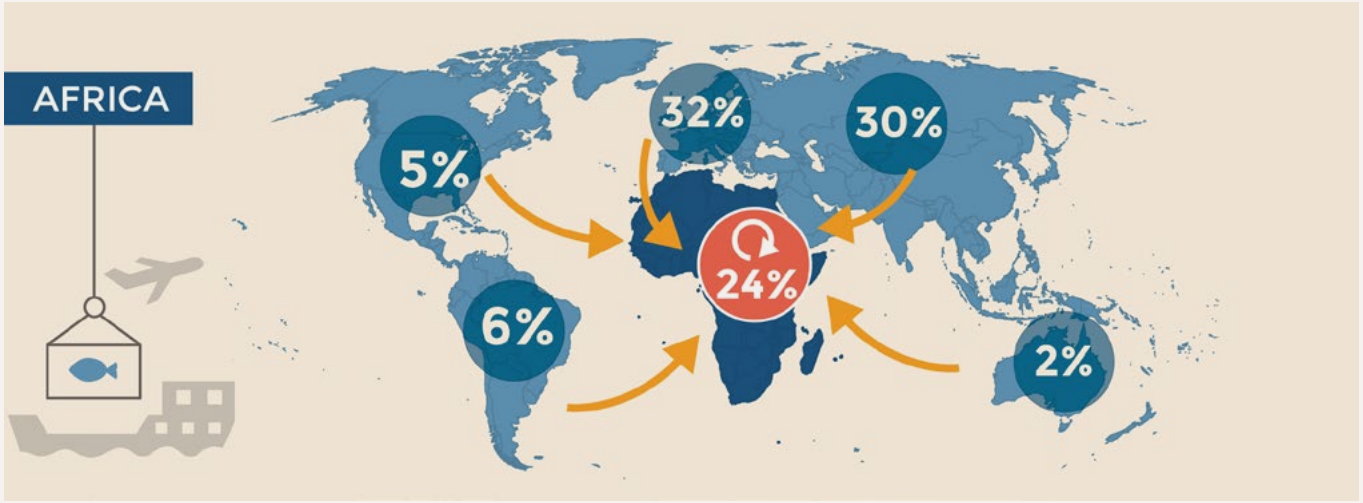


FIGURE 4-A. FISHERIES EXPORTS FROM SOUTH AMERICA TO AFRICA AND NORTH AMERICA, AND INTRAREGIONAL TRADE (FROM FAO 2014).

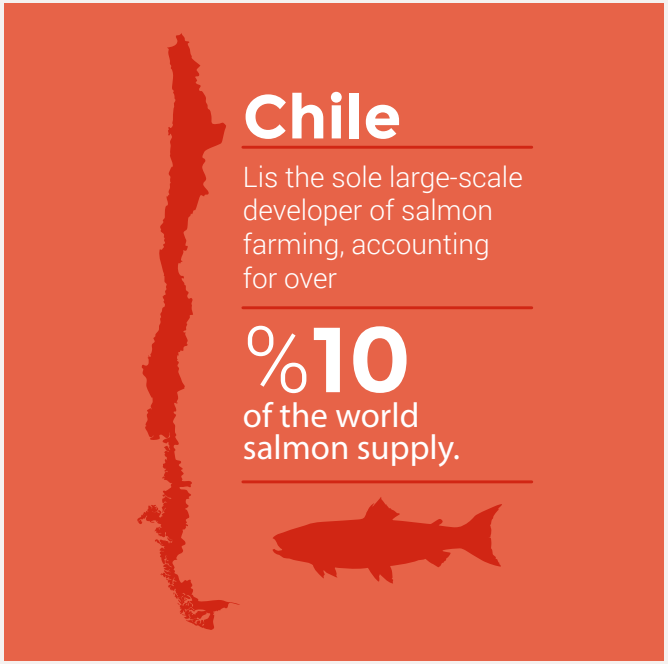


FIGURE 4-B. FISHERIES EXPORTS FROM SOUTH AMERICA TO AFRICA AND NORTH AMERICA, AND INTRAREGIONAL TRADE (FROM FAO 2014).

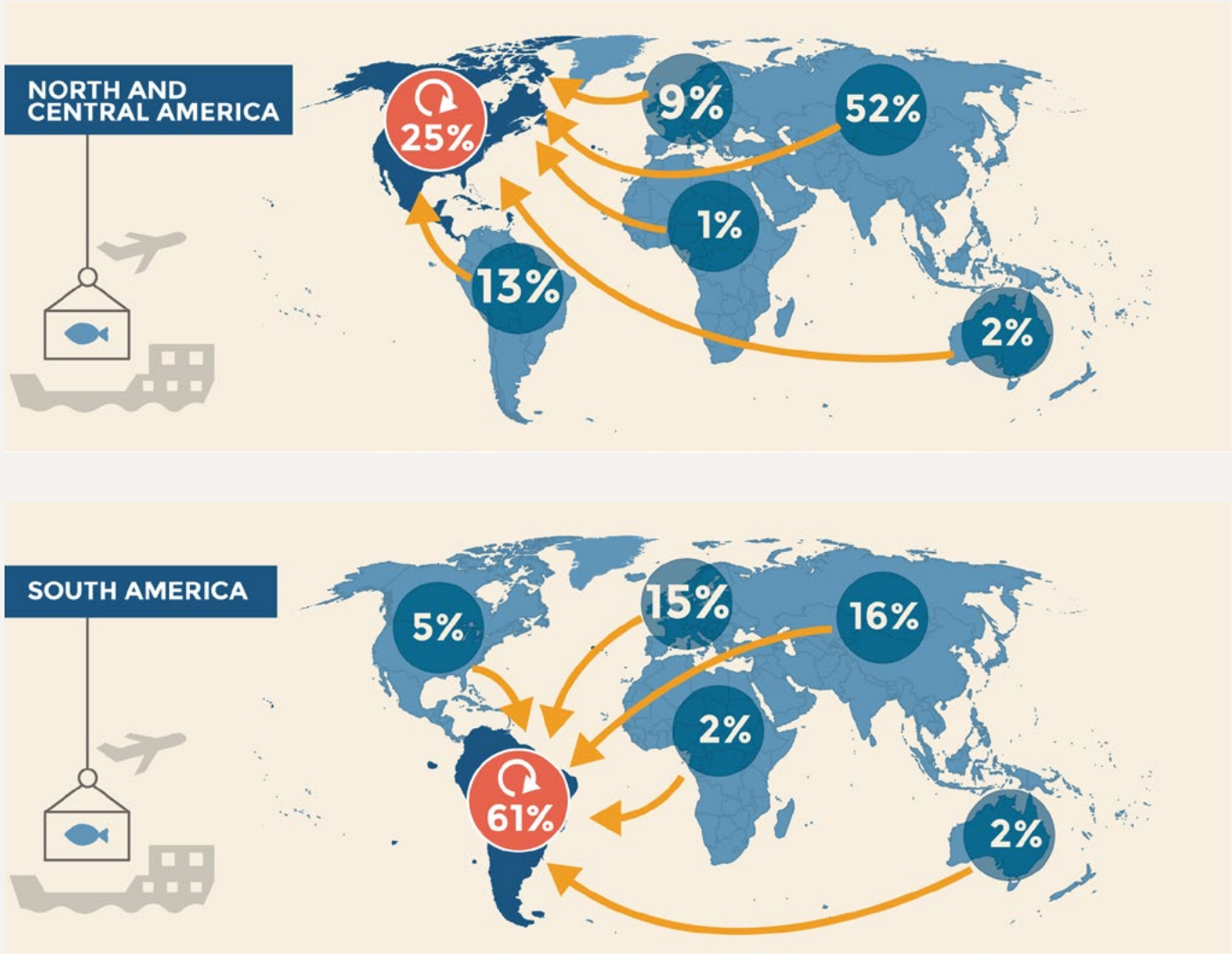
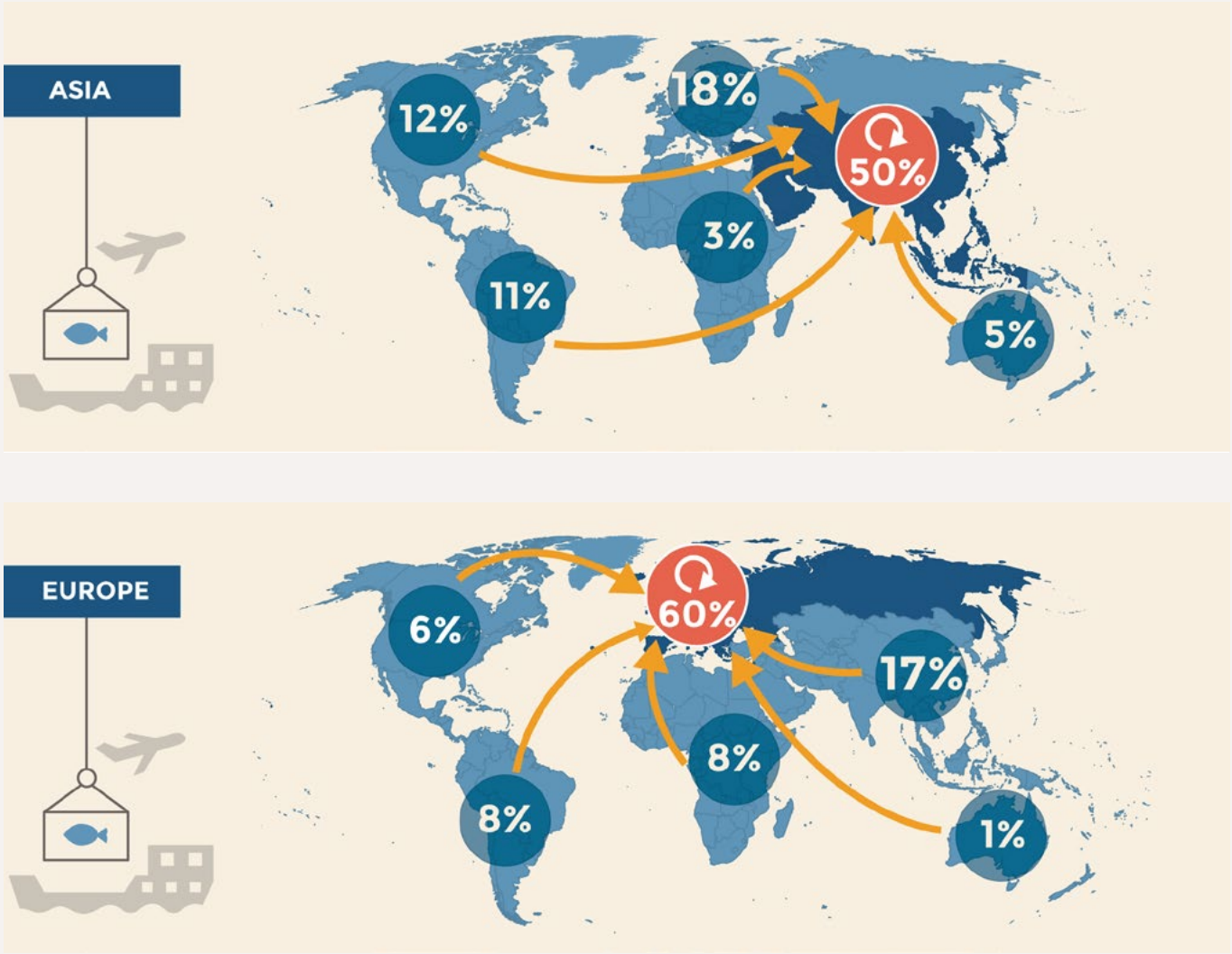


FIGURE 5-A. EXPORT OF FISHERIES FROM SOUTH AMERICA TO ASIA, EUROPE, AND AUSTRALIA (FROM FAO 2014).



Yet even these trade figures do not tell the whole story. Export values – the most easily obtained metric for fisheries valuation, do not indicate true contribution to GDP, since neither the sum of private and government consumption, capital formation, employee compensation, insurance, nor subsidies are calculated (World Bank 2012). Import / export figures also shed no light on domestic commercial markets, small and informal markets, or subsistence reliance on marine resources (including fisheries products not only used directly for food, but also for bait as well as fertilizer for household crops and feed for fish ponds). According to the FAO, fisheries contribute nearly 10% of the food supply in Latin America (FAO 2014, see Table 2). In addition to this direct value, there are spin-off effects on the value chain. **In Peru, for instance, fisheries contribute to 232,000 jobs, 35% of which are in restaurants (Christensen et al. 2014).**

In addition, fisheries can also boost the revenues of other industries in Latin America and the Caribbean. Across many localities, tourism drives demand for local fisheries products, and when such seafood is made available it is not only sold at a premium, benefitting the fisheries businesses, but can also allow for more high-end, profitable tourism. In some places fishers engage with tourism, taking visitors in their boats on tours when not fishing – this provides additional employment and diversifies their livelihoods, reducing risk. In this context fisheries spin off impact on jobs at the based of the pyramid are probably as significant if not more than the direct impact of mainstream fisheries.

Marked differences exist between and within countries in terms of quantity and variety of fisheries products consumed per capita, depending on availability, cost,

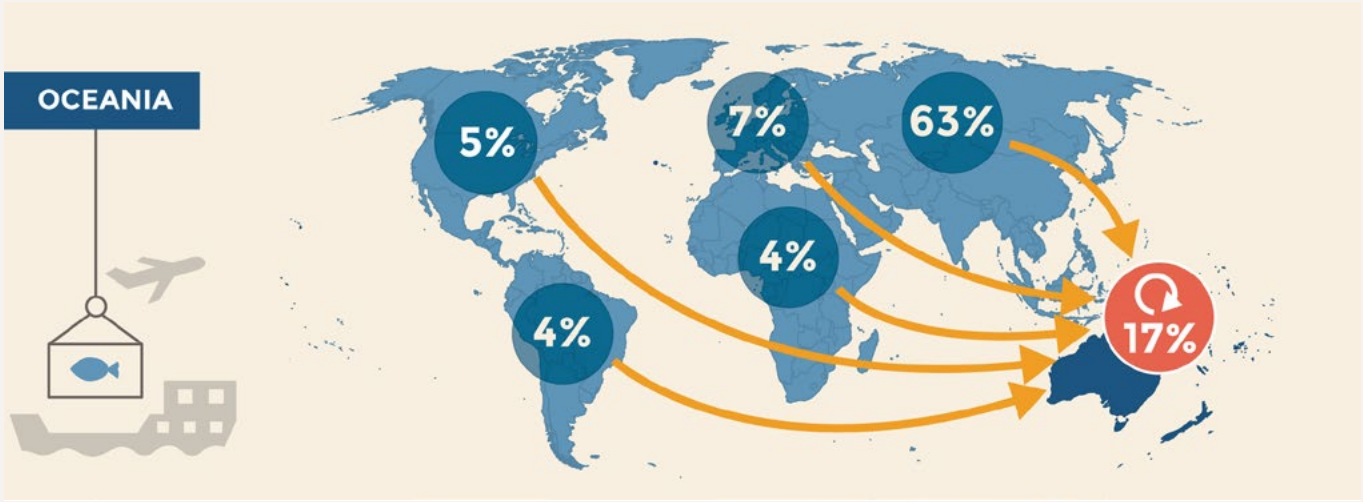
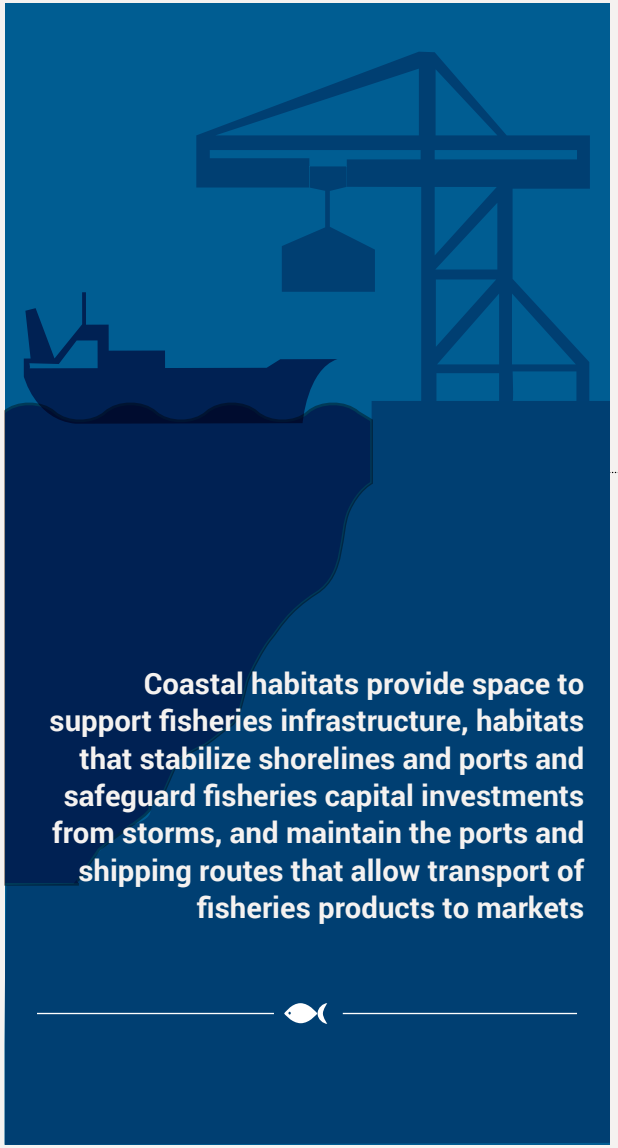


FIGURE 5-B. EXPORT OF FISHERIES FROM SOUTH AMERICA TO ASIA, EUROPE, AND AUSTRALIA (FROM FAO 2014).

alternatives, income, and cultural factors such as food traditions and tastes (FAO 2014). Nonetheless, fisheries and aquaculture combine to form an undeniable mainstay in Latin American culture, trade, and economy.

Nature's role in providing these resources is obvious – without healthy, productive oceans, marine and coastal fisheries resources would not be available for harvesting. But nature does more than provide living resources for today– coastal and marine habitats also maintain the potential for food, livelihoods, and contributions to GDP in the future. Critical habitats for fisheries – the places without which there would be no fisheries production, and thus no fishing industry – include not only marine areas where fishing takes place, but also nursery areas in mangrove, seagrass, and estuaries, spawning grounds, and migration corridors (UNEP 2014). Coastal habitats provide space to support fisheries infrastructure, habitats that stabilize shorelines and ports and safeguard fisheries capital investments from storms, and maintain the ports and shipping routes that allow transport of fisheries products to markets. Coastal habitats also provide waste management for fish processing and both space and waste management for fish and invertebrate aquaculture operations **Finally, coastal and marine habitats support other growth industries in Latin America, such as tourism,** which in turn act to create more demand for fisheries product and potentially more profitability.

Photo: Pixabay.com



Coastal habitats provide space to support fisheries infrastructure, habitats that stabilize shorelines and ports and safeguard fisheries capital investments from storms, and maintain the ports and shipping routes that allow transport of fisheries products to markets

THE CHALLENGE

Among the major challenges facing the Latin American fisheries industry are

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1 Lack of an adequate assessment of the current situation of marine fisheries and aquaculture

2 what additional potential exists for investment in the sector.

3 the inability to form an accurate picture of the condition of fish stocks,

4 how the sector benefits society,

Photo: Pixabay.com

The last regional appraisal of the sector was conducted using data now a half a decade old (Salas et al. 2011). One of the main messages of that assessment was that information on fisheries, and smaller scale fisheries in particular, was sorely lacking for the LAC region.

As in other regions of the world, significant challenges remain for the management of marine fisheries even in areas where a scientific stock assessment has been performed and a framework exists for joint management through regional fisheries management organizations (RFMOs). Many stocks are overexploited, and IUU fishing remains a challenge even in countries with strong fisheries regulations (Pauly and Zeller, 2016). Developing countries have even greater challenges than developed nations in building capacity for monitoring and enforcing regulations, especially in offshore areas.

Some of the fisheries of greatest commercial value in the region are also those facing significant ecological pressures, particularly with regard to straddling and migratory stocks in the high seas, including the tuna fishery in the Eastern Pacific, the Peruvian/Chilean anchovy fishery in the Humboldt Current, and the southern ocean tooth-fish and squid fisheries (World Bank and FAO 2009). The high degree of unpredictability concerning population sizes challenges fisheries managers and governments alike. Add to this the fact that many stocks are trans boundary in nature, and shared threats need to be addressed collectively makes the situation even more

Developing countries have even greater challenges than developed nations in building capacity for monitoring and enforcing regulations, especially in offshore areas.

challenging (UNCTAD 2014). In the Caribbean sub-region, fisheries are characteristically shared between localized small-scale fishers (Hoffman, 2010).

As fisheries expand in the region, emerging potential economic related conflicts may increase. These potential conflicts include competition between operators, displacement of fisheries due to conservation-related protections or allocations made for other interests (tourism, energy development, etc.). **With the expansion of large-scale commercial fisheries, conflicts between industrial and artisanal fishers can only increase** (Jarroud, 2015). For marginalized coastal communities, these conflicts can exacerbate poverty and further disenfranchise societies. All evidence points to the fact that the adoption of ethical and science-based best practices is fundamental to the fisheries industry.

Conflicts may also occur between actors in fisheries value chains, post-harvest and sometimes away from the sea and coasts. Asymmetry in the capacity to develop or expand businesses by different actors in fisheries value chains leads to further inequities. Well-financed businesses, whether domestic or foreign, can more easily gain access to capital and the knowledge investments needed for efficient processing facilities. They can also invest in marketing/advertising, as well as establish the most efficient modes of delivery to markets. In contrast, many developing countries lack the capacity to comply with environmental, safety and trade regulations and standards, which limits their ability to access markets.

There are opportunities embedded in these challenges. For instance, the Marine Stewardship Council (MSC) and other sustainable marine certifications can help in keeping to standards for sustainability and equity. Many NGOs offer assistance in getting community-based fisheries products certified. Yet, even in cases where

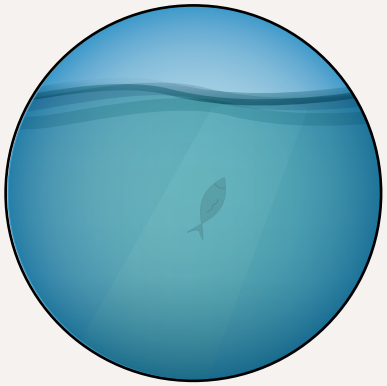
Photo: Pixabay.com

training and technical assistance increase this capacity, well-financed investors can "corner the market". In the worst case, the economic and social benefits flowing from commons property such as marine fisheries stocks may end up in the hands of only a few (Pinkerton and Davis 2015).

A final challenge is the uneven treatment of opportunities for improving and investing in the sector. Growth in fish and seafood products certified as sustainable has occurred throughout the world, and there is great potential to amend operations to conform to best practices, as well as expand and diversify industries as new markets emerge. One important way in which Latin American countries (and the investors they hope to woo) can increase production and profitability is to invest in the marine and coastal ecosystems themselves, thus ensuring continued production of wild stock and food for aquaculture operations, as well as the myriad ecosystem services that nature provides.

Many developing countries lack the capacity to comply with environmental, safety and trade regulations and standards, which limits their ability to access markets.

THE OPPORTUNITIES



Latin America has a great chance to take full advantage of nature's potential, delivering marine and coastal ecosystem benefits and promoting more equitable benefit sharing. These opportunities occur on both the supply and the demand side. Throughout the region, there are possibilities to maintain or enhance production, improve quality and increase profitability in five related ways:

1. Improving management in order to increase efficiency and profitability in the use of blue biotrade related product and services,

2. Enhancement of production through protection or restoration critical marine ecosystems in specific blue sites and the spawning and nursery habitats to restore fish stocks,

3. Development of fisheries businesses that generate profits through certification, utilization of bycatch and value-added processing of specialty products,

4. Expansion of export and domestic markets, and

5. Implementation of land and marine use policies that maximize blue biotrade values alongside other benefits provided by nature, including the carbon sequestration needed for climate mitigation (blue carbon), flood control and disaster risk mitigation, tourism and recreation as well as support to regional and global biodiversity.

Photo: PROMPERU

Donor interest in the region is strong. Conservation funding has been available for marine ecosystem services enhancement, especially in the Caribbean sub-region (Hoffmann 2012). Multilateral support for fisheries reform and projects in the form of loans and grants has been provided by development banks and the OECD, as well as bilateral funding from USAID, DIFD (UK overseas development agency), GIZ (German development agency) and others. These grants have supported assessments of local and sub-regional fisheries issues and studies related to the livelihoods of fishers, including their contributions to households and general wellbeing. Other project funding has allowed the identification of Ecologically and Biologically Significant Areas under the Convention on Biological Diversity, as well as priority areas for Marine Protected Areas (MPAs) and other spatial management measures specifically aimed at maintaining or enhancing sustainable development activities such as tourism, applied research and fisheries. These grants have helped communities to better manage their marine ecosystem services related businesses and the attendant impacts on the environment, including through MSC certification. Private sector and foundation funding has also supported the development of rights-based fishing in the region, including the use of Territorial Use Right Fisheries (TURFs) in Chile and Mexico, and Individual Transferable Quota systems (ITQs) throughout the region. CAF -Development Bank of Latin America- is currently evaluating opportunities for innovation to support sustainability, promoting both conservation and sustainable use of marine ecosystems and fisheries.

Despite this historical aid, many more opportunities to enhance marine ecosystem services, mainly related to fisheries & tourism and benefit sharing in the LAC region seem to have been overlooked. Outcome-oriented investments could facilitate access to capital, training and technology transfers focused on gear new ethical and biotrade related practices to improve and boost new sustainable business models, inclusive value chains and participatory governance platforms that could lead to a more holistic approach for coastal and marine ecosystem services planning and management, and through this approach, stimulate new productive models committed to long term sustainable development.

Tourism policy should also stimulate coastal and biodiversity remediation and restoration as a way forward to maintain tourism destinations long term competitiveness and to landscape deterioration that may undermine tourism development capacity in the long term.

Trade and sustainable tourism policies should also be evaluated and possibly revamped. For fisheries policies, special attention on the emphasis on measures that reduce IUU fishing, decrease reliance on fisheries subsidies, and address tariffs that disadvantage small-scale or local fishers are key (for global recommendations and greater detail, see Sumaila 2016). In the case of sustainable tourism, policies should have in consideration the need to support tourism development zoning and investment in well-documented technical evaluations of marine and coastal ecosystem services evaluation. Tourism policy should also stimulate coastal and biodiversity remediation and restoration as a way forward to maintain tourism destinations long term competitiveness and to landscape deterioration that may undermine tourism development capacity in the long term.

Photo: Pixabay.com

Many Latin American countries are already investing in improving the management and efficiency of increased fishing and aquaculture (World Bank 2005; Wiefels 2005). More effective management can generate revenues for individuals and businesses, as well as increase the economic standing of coastal communities and their ability to contribute to GDP. In addition, improved management can enhance the sustainability of revenue generation by allowing foreign fleets to fish within the Exclusive Economic Zones of coastal nations. Finally, improved management can increase regional fisheries' productivity through strengthened regional management organizations as well as bilateral or multilateral agreements that pool resources for fisheries research and harmonize fisheries legislation.

A shift from low value-added commodity fisheries used for animal feedstock and fertilizers to other applications better able to capture more of the economic output to the benefit of producer countries presents an opportunity to improve food security and climate change mitigation provided that adaptation funds are available. This leap from quantitative to qualitative output in the fisheries value chain could have a significant impact on restoring ecosystems capacity to perform in the long term.

One management tool that has gained traction in recent years is the establishment of marine reserves – a form of Marine Protected Area where extractive uses are prohibited. Fisheries managers have utilized marine reserves to protect spawning stock, increase recruitment and catalyze spillover in which fisheries productivity outside the reserve is enhanced by production that "spills" over the border. The FAO has helped countries develop marine reserves and networks by providing guidance in the form of publications and training workshops (see for example FAO 2011; Sanders et al. 2011). The most effective protected area measures are those embedded in wider-scale marine spatial planning and ocean zoning (Agardy 2011; Agardy et al. 2012; UNCTAD 2014). These measures are particularly effective if they are placed within multilateral agreements that protect shared marine regions (UNCTAD, 2014).

Other management measures that can enhance productivity and maintain the sustainability of fisheries include rotating harvest schemes and seasonal closures, regulations requiring by-catch reduction and efficiency enhancement gear, size or slot limits that protect spawning stock, and property rights schemes such as Territorial Use Right Fisheries, and Individual Transferable Quotas. Interestingly, Latin America lags behind many other regions of the world in adopting measures for improved fisheries management and increased efficiency.

Efficiencies can also be improved post-harvest as exemplified by new initiatives aimed at utilizing currently wasted fisheries byproducts. For instance, the Iceland Ocean Cluster has launched a program that trains fishing businesses to utilize 100 per cent of their catch – not only producing high-quality fish for human consumption, but also turning fatty tissue byproducts into fish oil for

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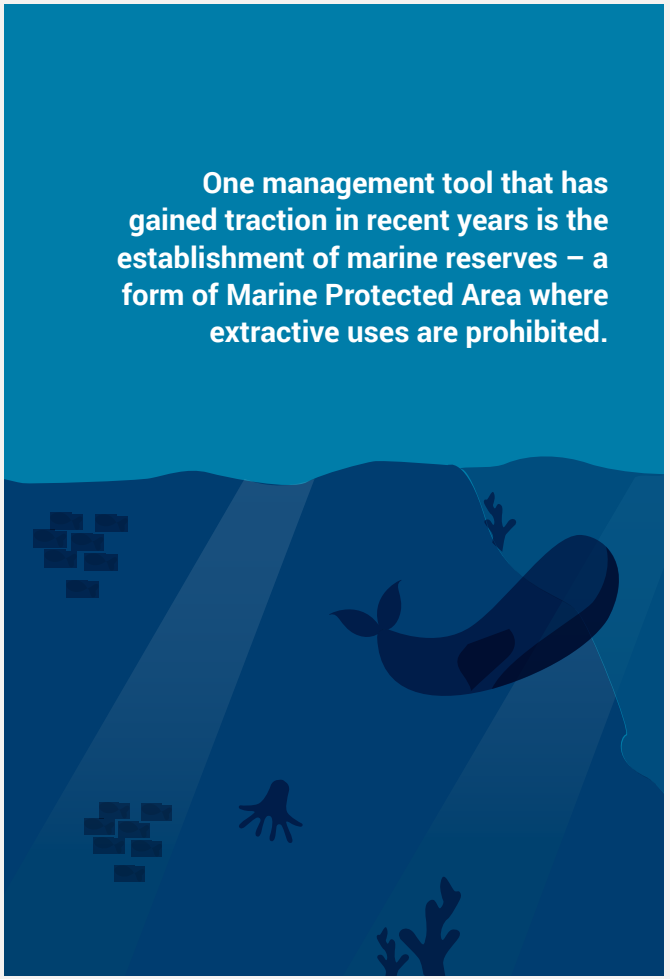

medicinal use, and scales and organs into fish meal. Other fisheries utilize unwanted by-catch (low-value fish species, invertebrates, jellyfish, seaweeds) in addition to targeted fisheries stocks. In 2015, the FAO and the Global Environment Facility (GEF) launched a five-year project to promote the sustainable management of by-catch in LAC trawl fisheries involving Brazil, Colombia, Costa Rica, Mexico, Suriname and Trinidad & Tobago (GEF allocation US$5.8 million; total budget of nearly US$23 million).

This project will support the implementation of the 2015 International Guidelines on By-catch Management and Reduction of Discards as well as the Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the Context of Food Security and Poverty Eradication. Together, they provide another international instrument of high relevance to the trawl fisheries in the LAC region (GEF, 2015).

There are even greater opportunities if one considers the international context and the many policies and initiatives that are catalyzing improvements in fisheries (Deere, 2000). For instance, Goal 14 of the recently adopted Sustainable Development Goals (SDGs) commits UN Member States to: "conserve and sustainably use the oceans, seas and marine resources for sustainable development" (UNCTAD and Commonwealth Secretariat, 2015). Under the Convention on Biological Diversity (CBD), ecologically or biologically important areas (EBSAs) have been identified for the region. These will receive special attention aimed at ensuring that the fisheries within EBSAs are sustainable. Parties to the CBD have also committed to the Aichi targets on conserving biodiversity. Target 11 calls specifically for the establishment of marine protected areas and other effective area-based conservation measures that will enhance fisheries productivity once Target 11 implemented.

The Latin America and the Caribbean region has a great opportunity to unlock its vast potential for blue growth and maximize the profitability of their fisheries while at the same time safeguarding biodiversity and the marine environment that supplies all this potential wealth.

Targeted investment in the ecosystems that support fisheries and trade policies that bolster sustainability in both fisheries and tourism will help achieve this. Conservation can be made to pay for itself through directed investments that divert a portion of beneficiaries' funds flows back to the ecosystem (Credit Suisse and McKinsey 2016). Subsequent returns on these investments, including through increased trade in properly valued product and through enhancement of supporting ecosystems will accrue not only to investors but, most importantly, to the Latin American and Caribbean communities as a whole.

Photo: Walter H. Wust

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Those who benefit from coastal and marine ecosystems and the services that they provide can profit even more from investing in their protection. This assures benefits will continue to flow, and can even lead to enhanced benefits and increased profitability from sustainable fisheries, blue tourism, and other forms of marine biotrade. Through innovative financing schemes like marine payments for ecosystem services (MPES), biodiversity offsets, public / private partnerships, Marine Conservation Agreements, Trust Funds and other endowments, and impact investing, the costs of effective marine management can be shared by the public sector and the private sector (both businesses and communities).

Innovative financing and private sector investment in coastal ecosystems that provide goods and services is springing up around the world, especially where the capacity exists to assess marine ecosystem services, determine their value, and ascertain what factors affect ecosystem services delivery. New rapid assessment techniques for quantifying and valuing marine ecosystem services, from blue carbon to shoreline stabilization, have now come on line. The location of concentrations of ecosystem service-delivering habitats can be mapped, as can benefits flows across broader landscapes. This can set the stage for innovative financing mechanisms like PES, and get the not only investments, but returns on those investments, rolling.

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