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Fisheries and Management in Peru

The landmass of Peru, located in South America, is 1,285,216 square kilometers. Within that 1,285,216 square kilometers, there are 34,454,921 people calling it home. (Worldometers, 2025) Peru is the 47th largest country in terms of population. Of the 34,454,921 people living in Peru, 51.7% of the population are food insecure. Meaning that over half of the population are without the proper food they need to live their lives, and that they never know where or when they will eat next. Along with the 51.7% of people living their lives food insecure, there are 27.7% of people living in the rural areas of Peru, while 73.3% are living in the urban areas. (Project Peru, 2024) The Presidential Palace, located in Peru's capital Lima, is where the president stays. The government system of Peru is known as a presidential republic. In Peru's presidential republic, the president is elected by majority vote in two-rounds of voting.

There are 1,285,216 square kilometers that make up Peru, but only 18.8% of this land is used for agricultural practices. Within the 18.8% of agricultural land, 6% is used for commercial crops that get exported to other countries. These crop exports include avocados, grapes, and blueberries. Along with these fruits, Peru also exports many valuable metals such as copper ore and refined copper. Peru also produces lots of petroleum to export all around the world. One of the main shipping ports in Peru is Callao. Callao is located on the Eastern side of Peru by the Pacific Ocean, and was first built in 1537 by Francisco Pizarro. (Project Peru, 2024) To grow these many commercial crops farmers need a lot of land. Many commercial farm owners in Peru own around 50 hectares of land. While small farms only own about 10 hectares or less. One hectare is equal to about two and a half football fields. Along with the commercial crops, there are many other crops that are grown for the use of the citizens in Peru. These crops include citrus fruits such as lemons, limes, and oranges, potatoes, mashu, and yucca. (FAO, 2023) Agricultural land also includes forests and pastures. Peru is home to 84 of the world's 115 ecological zones. Some examples of this are Peru's coastal region, the Amazon region, the tropical areas in the East, the desert areas in the West, and the Andes Mountains region. This geography allows for lots of different species to thrive. Peru is the leading country in the variety of bird species with 1,701 different types of birds. Peru is also home to 361 different mammals, 297 species of reptiles, and 3,000 different species of plants.

Families in Peru can have a range of children. The average is about two to four kids, while it's not uncommon to have more than three children. Along with children families also consist of the parents and a lot of the time extended family such as aunts, uncles, cousins, and even grandparents. Having this many people in a house could lead to some challenges. One of the main challenges families in Peru face is family structure transition. Of the 34,454,921 people living in Peru, 22% of kids experience family structure transition. Family structure transition is the reorganization of roles within the family, the employment of the parents changing, and receiving social support. With having anywhere from two or more children, families will need to have access to healthcare and education. Most families do have access to good education, and it is affordable, as it is highly encouraged within the nation. Children typically start school when they are about six and will continue in their education until they are around sixteen. Though families have access to school systems, thousands of people are in need of good or

affordable healthcare. Seven out of ten people don't receive healthcare at all, or when they need it. Within these thousands of people in need of good healthcare, 93% of people do have access to a healthcare facility, but just can't afford it. (World Bank Group, 2023)

Careers in Peru can be hard or easy to find depending on your area. Most jobs in Peru are restricted to specific locations. Because of this, four out of ten people in Peru are unemployed. Common jobs in Peru include working for foreign companies, being a farmer, a fisherman, and working for a Peruvian company. Wages can vary dramatically depending on where you are located, your role, and even your gender. The average salary for men in Peru is about \$2,249 while the average women's salary is about \$1,658. (Statista, 2024) Income can impact a lot of people, 30% of people living in urban houses are without basic infrastructure. These things include low quality building materials, and lack of running water. While people living in rural areas also experience this, they also don't have easy access to road systems.

Peru is known for its unique cuisine as it is very flavorful and has an exceptionally distinctive style. Common ingredients for Peruvian dishes are rice, potatoes, chicken, fish, vegetables, and guinea pig. Though guinea pig may sound weird to the uneducated mind, it is actually a very common dish for Peruvian citizens. Roasted guinea pig is often served with potatoes and roasted vegetables. When served in Peru you will find a variety of foods on your plate typically including fruits, vegetables, meat, and grains. With all these different foods within a meal, it is not uncommon to have a lot of protein in your dish. Peruvian chicken has 21 grams of protein and Lomo Saltado (beef stir fry) has 11.7 grams of protein. Common dishes in Peru include Aji de Gallina, a dish of peppers, chicken, onions, garlic, cheese, and many spices. And, Paiche con Yuca, a dish of yuca, onions, garlic, vinegar, and olive oil. (Goshen College, 2025)

Peru, a leading country in the industry of fishing, and has a high possibility of developing further. This development possibility is improving, and is possible because of the good environmental conditions. These conditions allow for many different species of fish to thrive including striped marlin, black marlin, tuna, barracuda, and anchovies. Though anchovies are popular, their population is poorly managed. This is partly because of the varying climate that can limit the amount of fishing done at a time, and overfishing due to their high demand within the country. (Frontiers, 2020)

The fishing industry is an important asset to Peru as it helps to keep a supply of fish, and limit food insecurity. Even though it is so important, it is a somewhat costly business because of the equipment needed. As stated, fishing in Peru supplies the population, though some areas have easier access than others. People living near the Amazon region and the coasts have easier access to do fishing of their own, and the fish markets. While people not living in or near these areas do not have the same easy access. The rural areas of Peru may have easy access to the Amazons and fish there, but the urban areas have easy access to the coast and larger markets. People living near the Amazons can start their own fishery to supply themselves or a larger group because of the easy access to water and fish.

The start of Peru's success in the fishing industry is unknown, though it is increasing rapidly each year. The growing business of fisheries helps to keep the percentage of food insecurity low among the population. Though these small-scale fisheries help to feed the growing population of Peru, there are many negative impacts on the environment. Overfishing is one of the main limiting factors on the environment. Overfishing does not allow the fish population to continue growing at a reasonable rate. Instead, it limits the amount of reproduction and therefore limits the amount of fish left for catching. The

practice of small scale fisheries also disrupt the marine ecosystem. When one species is caught too much too often, it throws off the natural food chain. Anchovy fishing is one example of this. Since anchovies are in such high demand, the amount of fishing done for them is higher than with other species. With more and more anchovies being caught it limits the amount of food available to the sea birds that consume them. This also creates ecosystem imbalances. This is where there are too many of one species compared to another species. Ecosystem imbalances also create disruptions in the food chain just as overfishing does. Though there are many negative effects on the environment, management systems are working to improve the marine ecosystems and trying to better maintain these small-scale fisheries.

The vision in Peru is to keep small scale fisheries managed sustainably. This can only happen though if these few solutions work. One of the solutions is to reform the management of fisheries by reaching out to those that are currently being poorly managed. Another idea to keep fisheries managed properly is to improve the performance of the fisheries to bring in more fishermen. Along with reforming management and improving performance, fishing experts have also been brought in to help better manage the fisheries as well as the environment. These solutions have all been created through the idea of making sure there is a steady supply of fish while also maintaining the environment.

Of the three solutions, one of the most successful has been to access and manage the fisheries while also keeping the cost low and controllable. One reason this was successful was because of the software known as FishPath. FishPath is a decision-making software that helps to understand the characteristics of fishing as well as the history of local species. FishPath also helps to communicate any new or existing government regulations that could affect the fishery. (Revenga, C., 2025)

Accessing and managing fisheries, along with the introduction of FishPath have helped to ensure the supply of fish to the population. Therefore creating a society with less food insecurity. These solutions also increased the number of fishermen employed, which helps toward keeping that steady supply of fish. Any fish caught and brought back to shore have to be thoroughly assessed before they can go any further. This helps to create more control over fish stocks as well as fishing regulations. Some of the natural occurrences that have helped to address the issue of overfishing and better managing fisheries are the rich marine environment that Peru has along its coast, the good water currents, and the low cost of maintaining a running fishery. The current known as the Humboldt Current is extremely helpful in creating this rich marine ecosystem. (The Nature Conservancy, 2025) The Humboldt Current carries in valuable nutrients and creates a nutrient-rich environment. Some of the nutrients brought in by the current help anchovy thrive in the area.

Just as Peru struggled with managing and maintaining fisheries, Chile, just south of Peru, has also experienced some of these same challenges. Chile's solutions have looked both similar and different from Peru's. Some of the differences have looked like equipment restrictions, and bans on certain species. Chile has also issued territorial use rights that limit the areas that can be fished. These use rights help to maintain the environment and keep the population of Chile supplied. These solutions to Chile's problem could help Peru depending on how they issue the regulations. As of 2024, Peru and Chile were working together to try and create a sustainable fishing industry along the Eastern coast of South America. (Jiménez, R., 2024)

Peru has many of their own suggestions on how to better their fishing industry. A recommendation I have is to better analyze the fish stocks and to encourage the traditional fisheries to partake in the usage of FishPath. Although stocks are already analyzed, if they are looked over more thoroughly it could help to

better manage the fish population. Just as Peru has tried to reform management with FishPath, it could be even better if the older more traditional fisheries also get in on using FishPath. By doing these two things, Peru could have better managed fisheries and a better fish population.

Though better analyzing fish stocks and encouraging FishPath can be a great idea, it could result in some fisheries getting upset because they'd have to change some of their original ways. Even though there is this limitation, it would make the fishing industry of Peru better suited to feed the growing population. In order to carry out this plan of analyzing fish stocks and using FishPath, Peru would need to take into consideration the demand for fish among Peru's population. If fish stocks are more thoroughly analyzed, it could result in less fish being brought into shore. Peru would also have to look at the traditional ways of fishing. FishPath is a new technology that might not be as quickly accepted among the older and more traditional fisheries. You would also need people who can input the regulation of having to analyze fish stocks and encourage FishPath more intensely. In order to regulate fish stocks, the government would have to input a rule that says that fish brought into shore need to be thoroughly looked over before going further. Then people employed to analyze these stocks would have to check each stock of fish brought in on each boat. Also, anyone employed to help reform fishery management would have to majorly encourage FishPath to fisheries currently not using it. As fisheries are being reformed, \$200 billion dollars were needed to carry out the reformation. Just as this was costly, FishPath is also costly. To implement FishPath in more fisheries, the government would need to give more funds to the organizations reforming the fisheries. There would also need to be people in need of a job so that they could be hired to analyze the fish stocks. Along with this, fishermen would need to agree to FishPath being implemented into their system.

This recommendation can be possible because of the resources that already exist within Peru. Peru already has a rich and diverse ecosystem both in the water and on land. (Adaption Fund, 2024) Because of this, Peru is better able to fish so that there is enough for the population without overfishing. Another strength that is already in place is that most fisheries in Peru have been reformed in the management side of things. Even if they are not currently using FishPath. These two recommendations would suit Peru well, as they are sustainable in a way that allows the fisheries to feed the population, and manage the ecosystem more efficiently. They will also better the management of fisheries that have not yet been reformed. This is also a reasonable recommendation because it is similar to what has already been done, but this plan just allows for the management of the fisheries and the fish population to get that much better.

I have been asked how I can encourage fishermen to use FishPath though it is costly. An incentive could be data. To convince all fisheries that FishPath will benefit them we can reach out to large scale fisheries who will have the financial resources to implement the software in their equipment. By connecting with large fisheries and adding FishPath to their fishing resources we will be able to collect data and gather the clear benefits of FishPath. After a given amount of time we will be able to organize the information and later present it to the small fisheries, or the fisheries that do not want to partake in the usage of FishPath. By giving the fishermen data they will be able to better understand, and see the benefits of using FishPath.

Once Peru can get fishermen onboard with the usage of FishPath, the next step will be to fund it. There are organizations that would be able to come up with the sufficient amount of funding needed, but in the end it will rely on the Peruvian government as you can only get so far without the backing of the government. A way to get the Peruvian government onboard would be to connect with the countries of the Pacific Alliance who also face similar problems with their fishing industries, such as Chile. This will

prove to the government that it is not only them, and they can not only better just their part of the water, but all the surrounding areas.

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