



## China's seafood demand could triple, researchers predict

China's requirements for seafood imports could more than treble to as high as 18 million metric tons (MT) by 2030, according to a report published by the Royal Swedish Academy of Sciences, "China at a Crossroads: An Analysis of China's Changing Seafood Production and Consumption." Imports hit a high of 4.3 million MT in 2019, but fell 20 percent last year. The report was coauthored by Beatrice Crona, the executive director for Global Economic Dynamics and the Biosphere at the Royal Swedish Academy of Sciences, and Emmy Wassenius, a doctoral candidate at the academy. SeafoodSource interviewed them to find out how the 2030 figure was calculated and to ascertain the economic and political context of the report.

**SeafoodSource:** You have determined China will have a significant shortfall of seafood supply by 2030. How big will the shortfall be and how did you make that determination?

**Crona and Wassenius:** Our analysis shows that by 2030, China is likely to experience a misalignment of 6 million to 18 million tons as domestic seafood consumption outstrips production. This corresponds to a gap of 9 to 27 percent from the 2020 targets for production. We arrived at these figures through a series of simple steps. First, we synthesized national and international statistics to estimate total seafood production in 2014 – the most-recent year for which data was available – to compare Chinese seafood imports, exports, and domestic production, using Food and Agriculture Organization (FAO) and Sea Around Us data. This amounted to 63 million MT. We then estimated the projected production in 2020 based on the targets set in China's 13th Five-Year Plan. This amounted to 66 million MT. Next, we estimated a lower and upper range of Chinese domestic consumption for 2020 and 2030. The lower range was calculated from consumption



data from 1978 to 2016 and linearly extrapolated to 2020 and 2030. The upper limit assumed a more exponential growth, and consumption figures were therefore arrived at by calculating the overall average using the same 1978-2016 data and applying it as a yearly increase until 2020 and 2030, respectively. For 2020, the upper and lower consumption amount to 56 and 58 million MT, respectively. For 2030, the figures rise to 72 and 84 million tons in live weight.

It is important to note that the low-consumption scenario most likely underestimates future consumption by neglecting to account for the sharp upward turn seen in both rural and urban seafood consumption in the recent past. Conversely, the high-consumption scenario likely overestimates consumption closer to 2030. However, even if actual seafood consumption develops closer to the lower bound, this suggests that in 2030 China would need a minimum of 6 million MT – or 18 million MT as a maximum – of additional seafood to cover projected demand. These figures are arrived at by compare 66 million MT production in 2020 with 72 million MT –the lower consumption estimate – and 84 million MT, which is the upper estimate for 2030.

**SeafoodSource:** What will determine where China gets the supply it needs?

**Crona and Wassenius:** How China sources its projected seafood need will depend on domestic political landscape and whether domestic production is maintained or increased, or seafood [is] sourced internationally. China may aim to meet its own future seafood needs through domestic aquaculture. While China's food security concerns have declined since the 1980s, improved food security is a stated goal of [its] fisheries and aquaculture policy. However, the 13th Five0Year Plan targets simultaneously aim to reduce domestic capture and coastal mariculture area, while allowing only very limited increase in [distant-water fishing]. This leaves only fresh-water and offshore aquaculture as realistic sources of increased domestic production. Both will face constraints in growth potential and will most likely conflict with domestic sustainability ambitions.



Two trends suggest China may therefore take a different approach. First, a growing purchasing power among Chinese urban consumers and evidence of shifting preferences towards increasing consumption of seafood, and a shift towards more wild-caught and marine species, including salmon. Species which China currently cannot supply through only domestic production.

Second, a general increase in imports across a range of commodities. Agricultural products, including seafood, are one of eight major markets China intends to open to international trade. Chinese trade values of imported agricultural products reported by the World Trade Organization have increased from USD 20 billion (EUR 16.6 billion) in 2000 to USD 180 billion (EUR 149.4 billion) in 2016. Seafood imports have risen dramatically, ranging from a 26 percent increase to a 400 percent increase since 2014, depending on product type. A significant portion of this seafood is currently still reexported, but this could change with rising domestic demand. An import-oriented approach to satisfying growing domestic demand would reduce the tension between economic development and domestic environmental protection, and would mirror a strategy pursued by many industrialized economies over the last century to outsource domestic environmental footprints. Naturally, it will also be affected by global seafood supply and demand, which determines availability and prices.

**SeafoodSource:** Can you explain what's new or novel about your "bringing a transdisciplinary systems perspective" to the discussion of the topic of China's future seafood needs?

**Crona and Wassenius:** The novelty and added value of our approach lies in attempting to understand China's future seafood system – that is, production and consumption – more as a complex system, and not attempt to model it using general equilibrium models, which are conventionally used to estimate projections of supply and demand. These models invariably



struggle to account for all relevant variables, and to deliver reliable estimates under conditions of high uncertainty and lack of data, which tends to be the case in China. Instead we bring together a range of perspectives rarely treated together – fisheries and aquaculture production, policy analysis, ecology, and environmental anthropology – to raise plausible trajectories and discuss their implications for environmental sustainability and seafood accessibility for China’s consumers, and the world. We do this by estimating China’s projected seafood consumption and domestic production by 2030 and then qualitatively evaluating these in relation to stated Chinese policy targets, observed consumer trends, and dominant political narratives.

**SeafoodSource:** What are China's dominant political narratives surrounding seafood and how have these narratives shaped domestic policy?

**Crona and Wassenius:** Chinese national policy – focused on pursuing economic growth, food security, and social stability – has come at the cost of severe domestic environmental degradation. The Communist Party of China has responded by pursuing policies aimed at “building an ecological civilization”—a post-industrial civilization more in balance with the environment. However, despite this increased “greening” of political discourse, economic development, and national rejuvenation remain important sources of legitimacy for the CPC and were the two key goals president Xi Jinping laid out in his 2017 address to the Communist Party National Congress.

These two political narratives appear to be simultaneously shaping domestic policy of relevance to seafood. The “eco-civilization” was enshrined as one of the five pillars of “socialism with Chinese characteristics” in the 2018 constitution, and seafood related policy has mirrored this national-level development, as evident through the “Marine Ecological Civilization Building Policy,” announced in 2015. Simultaneously, growth of China’s ocean economy is promoted as a way to offset slowed economic growth on land and as a source of new resources. In fact, economic development is viewed as a means to ensure social stability



and achieve the goal of a “moderately prosperous society,” dating back to the “reform and opening up” under Deng Xiaoping, where high growth rates in production, including food, were central features. Blue[-industry] growth is also pursued as a way to further China’s ambition to regain international leadership and build China into a maritime power.

These two political narratives are an example of the inherent tension between economic and sustainability goals. In the coastal domain, this tension is exemplified by the trade-off between expanding sectors of the ocean economy, such as seabed mining, and their negative effect on production capacity of China’s fishing and aquaculture sector through degradation of fishing grounds, environmental quality, or competition for space. How the two policy narratives interact and play out will largely determine China’s domestic seafood production and affect decisions regarding how to bridge the likely seafood gap.

**SeafoodSource:** Can the projected seafood demand be supplied by domestic production alone?

**Crona and Wassenius:** It is highly unlikely for [several] reasons. First, the 13th Five-Year Plan states specific targets to decrease overall seafood production by 1 million MT and to decrease domestic capture by a minimum of 3 million MT. These policy ambitions suggest that a minimum of 2 million MT of additional seafood will have to be produced in other seafood subsectors – that is, aquaculture or distant-water fishing – to simply compensate for the projected shortfall from domestic capture.

Second, according to 13th Five-Year Plan targets, distant-water fishing vessel numbers are to be significantly reduced, while essentially halting production from this sector at 2015 catch figures. Based on this, it is hard to see how the DWF will be able to contribute to filling the seafood gap.



Instead, aquaculture will have to increase, from 49.4 million tons in 2015 to 53.7 million MT by 2020, and to approximately 60 million MT by 2030 – that is, an increase of 10.5 million MT. This is not impossible, but highly unlikely, as China faces a number of well-documented environmental challenges related to seafood production. These include competition for space and limited availability of land and water resources to expand. But Chinese aquaculture production growth could also be constrained by limited availability of imported fishmeal and fish oil for feed, or by increased competition for these feed inputs from livestock production. Production has already increased for some new feeds, such as microalgae and insect meal, but large uncertainties remain about implementation of this feed production at the scale needed.

Finally, offshore areas may offer alternative routes for expansion of innovative culture systems. But even though largescale systems have recently been installed, there are large uncertainties related to future development potential, including durability of the technology, cost-effectiveness, access to feed resources, and in some areas competition for space within the exclusive economic zone (EEZ).

**SeafoodSource:** How easy was it to get reliable data on Chinese seafood production?

**Crona and Wassenius:** We wanted to use the most up-to-date and detailed data possible and therefore decided to use data from a range of different sources. Our assessment was that we would get at the most reliable picture of what is going on if we used a range of different sources, instead of relying only on Chinese national reported statistics. For that reason, we used the Sea Around Us database as well as FAO data to get overall production patterns, and complemented this with Chinese Statistical Yearbooks for getting higher-resolution data. The Chinese Statistical Yearbooks are translated to English and available online; However, due to them being books, the format is not very accessible and there is no way to download the data digitally. We also used other yearbooks, such as the Yearbook on Household Surveys; However, this is not translated to

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English or freely available online. Therefore, having authors based in China and who speak Chinese was essential for accessing this data. This aspect of data – language and digital access to data files – necessarily hampers easy analysis in this domain.

Lien article :

<https://www.seafoodsource.com/news/supply-trade/chinas-seafood-demand-could-triple-researchers-predict>

