Aquaculture is booming – in 2014 nearly every second fish consumed by people came from a fish farm. The ecological and social problems caused by this aquatic stockbreeding are immense.

Per-capita fish consumption has doubled over the last 50 years. Demand has risen especially sharply in industrialized and developing countries. Aquaculture has been promoted as a solution since the 1970s and supported with massive state and development fund subsidies. In 1990 aquaculture produced approximately 500,000 metric tons of live weight, in 2014 that figure rose to 72.8 million metric tons, 88 percent of it in Asia. China alone produces 62 percent of the global production and is thus the most important aquaculture country.

Aquaculture takes place in ponds, irrigation ditch systems, integrated recycling systems, and large cage systems in the sea. Fish, shrimp, crabs, and mussels are the primary stock. Fish farming on the high seas and on the coasts accounts for 36 percent of total production. The hope is that it will satisfy the continually increasing global demand for fish and seafood as well as provide a solution to overfishing. However, the current industrialized aquaculture is hardly an answer to overfishing and food security needs, as it is often highly questionable – ethically, ecologically, and socially.

That’s because the fish and other animals require large quantities of food themselves: producing just one kilogram of shrimp, salmon, or other farmed fish requires 2.5 kilograms of wild-caught fish. The figure for tuna is even higher – closer to 20 kilograms. Raising red tuna in net-cages in the tropical waters near Japan can consume as much as 28 kilograms of fish for every kilogram of tuna produced. The growing demand for fish is reinforcing the demand for more feed, that is, for more fish.

Currently, aquaculture produces only a fraction of the fish and seafood the world needs, because the yields are still too low. Furthermore, the feed is usually produced by other fisheries. Aquaculture reduces the catches of the traditional coastal fisheries. The Philippines alone, two-thirds of the mangrove forests there, are kept downstream of fish farms. Raising red tuna in net-cages in the tropical waters near Japan can consume as much as 28 kilograms of fish for every kilogram of tuna produced. The growing demand for fish is reinforcing the demand for more feed, that is, for more fish.

If farmed fish are kept in nets or cages and actively fed, their excretions normally cause the environment to become overfertilized (eutrophication). The excretion: When other organisms on lower levels of the food chain are kept downstream, e.g., shrimp, crabs, or sea cucumbers, kept in cages eat particles that sink to the bottom. Mussels filter smaller particles out. And their excretions are metabolized by the algae and invertebrates. Unlike conventional fish farming, so-called integrated multi-trophic aquaculture is an environmentally friendly approach that actually takes the surrounding ecosystem into account. However, it represents only a marginal share of global aquaculture, and the use of fish oil and fishmeal remains problematic.

Aquaculture destroys the livelihoods of local populations and leads to local conflicts because it massively reduces the catches of the traditional coastal fisheries. People are driven away or forced into new employment models. Today around 19 million people work in this sector. The working conditions are nevertheless extremely precarious. Contracts are often only verbally agreed upon, the work is often physically demanding and dangerous. The working conditions are nevertheless extremely precarious. Contracts are often only verbally agreed upon, the work is often physically demanding and dangerous labor conditions by the global middle class must be reduced. The grave social and ecological consequences of current industrial aquaculture approaches cannot be halted by technical and ecological changes alone.

The demand for fish and other sea creatures is the main driver for further developing industrial aquaculture. It serves a profit-driven global market with a great hunger for cheap fish, primarily in the form of mass underwater factory farming. The consumption of fish and sea creatures by the global middle class must be reduced.

Another Way—Aquaculture as a Closed Nutrition Cycle

AQUACULTURE ARE FISH FARMS THE FUTURE?

Global View of the Largest Aquaculture Producers (2014)—Fish and Seafood

The quantity of fish farmed for human consumption rose steadily from 1954 to 2014. Today it actually slightly exceeds the quantity of wild-caught fish.