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Can Nepal Achieve Global Fish Consumption Levels Through Aquaculture While Boosting Ecosystem and Social Resilience in The Face of Climate Change?

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In Nepal, fish is culturally and nutritionally important, but annual per capita consumption is just 3.7 kg, significantly below the global average of 20.4 kg. The limited consumption of fish in Nepal is attributed to the limited supply from capture fisheries sources and the under utilization of aquaculture potential. While total fish production in Nepal from capture fisheries and aquaculture was estimated at 113,736 mt in 2023, it would need a supply of 0.64 million mt of fish to reach the global average per capita consumption. As capture fisheries decline due to overfishing, dams, and pesticide use, accelerating aquaculture growth is essential for boosting fish supply and reinforcing both ecosystem and social resilience. Additionally, aquaculture improves returns on land and labor while enhancing adaptation to climate change.

The under-performance of Nepal's aquaculture sector highlights the urgent need for a strategic overhaul. Current programs focus mainly on traditional carp polyculture, neglecting advanced species and technologies. Empirical evidence from various countries suggests that by enhancing fish productivity to 15 tons per hectare per cycle and reducing the culture period to 6 months to species like tilapia and pangasius, Nepal could potentially boost its annual fish production to 0.45 million metric tons without expanding its current aquaculture area of 15,000 ha. With a slight further expansion, this could reach 0.64 million metric tons, meeting global per capita consumption averages. Transitioning to fast-growing, stress tolerant species like tilapia and pangasius is essential for sustainable intensification. Drawing from our extensive experience in South and Southeast Asia, we propose a strategic model to unlock Nepal's aquaculture potential and diversify livelihoods amid climate chang

By leveraging our recent success in Timor-Leste - a country that gained independence in 2002, where we increased fish productivity at the farm level from 1 ton per hectare in 2012 to 15 tons per hectare in 2023 and reduced the culture period from 11 months to 6 months - we present a sustainable aquaculture development model aimed at enhancing fish supply, increasing per capita consumption, and improving livelihood diversity in Nepal. Key recommendations include developing a clear national aquaculture strategy, introducing advanced technologies and appropriate species, establishing sustainable input and marketing systems, and supporting the entire aquaculture value chain in Nepal to achieve global fish consumption levels through aquaculture.

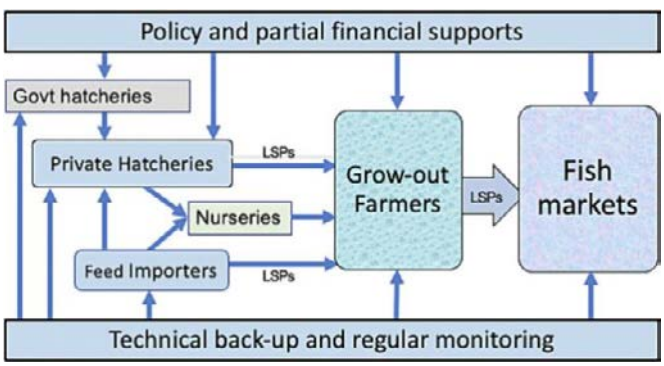

Figure: A business model illustrating the roles of the public and private sectors in scaling aquaculture in Timor-Leste (adapted from Pant et al., 2024). LSPs = Local Service Providers.