# Species Strategy for Kenyan Aquaculture

A technical note on candidate species, market fit, production infrastructure, and the rationale for a tilapia-first launch with catfish as a sequenced second species.

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## Tilapia First, Catfish Conditional

Kenya's fish economy is broad in consumption but narrow in farmable species. In 2024, total fish production reached 168,424 metric tonnes, with 86,527 MT from freshwater capture, 48,608 MT from marine fisheries, and roughly 33,423 MT from farmed output in the detailed aquaculture bulletin.

Within farmed output, Nile tilapia accounted for 78 percent of harvested volume, African catfish for 14 percent, rainbow trout for 4 percent, and other species for 4 percent. Kenya also imported 9,960 MT of fish and fishery products in 2024, including 5,594 MT of tilapia, a direct signal that domestic demand still exceeds local supply in the country's most scalable mainstream table-fish category.

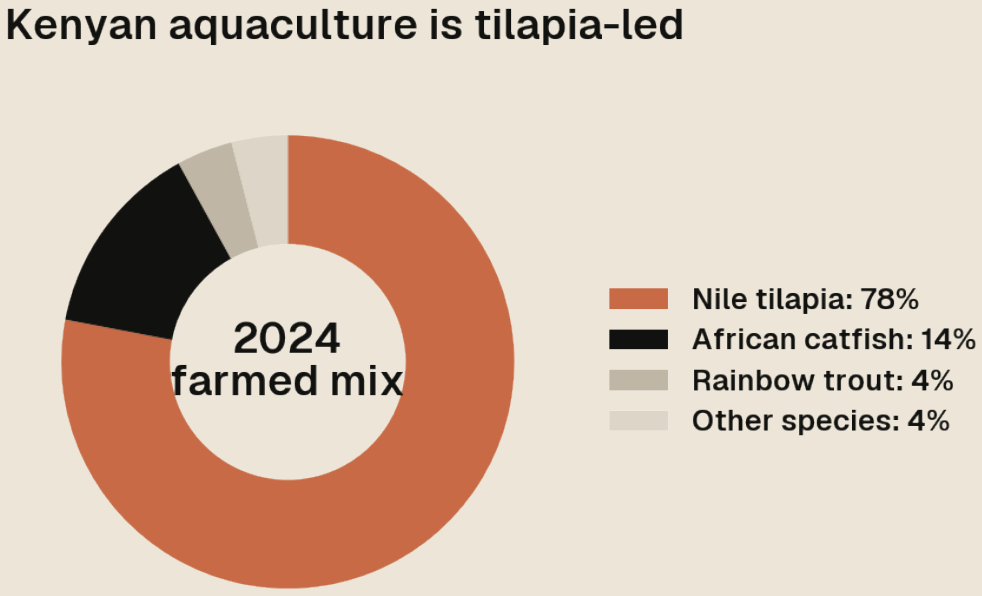
The evidence supports a staged recommendation rather than a permanent lock-in. For a company targeting mainstream Kenyan food-fish demand, the strongest early candidate is Nile tilapia because it matches existing consumption patterns, farm infrastructure, feed realities, and biological conditions better than any other option. African catfish should remain a real but conditional second species.

# Start from the Actual Kenyan Fish Basket

The starting point should be the Kenyan fish basket as it actually exists, not a narrow comparison between tilapia and catfish alone. Kenya consumes fish from many fisheries: Lake Victoria landings include omena, haplochromines, tilapia, and Nile perch; Lake Turkana is led by African characids and tilapia; Lake Naivasha includes tilapia, carp, and catfish; and marine artisanal catches are dominated by demersals and pelagics.

Yet the farmed side is much more concentrated, with tilapia far ahead of every other species and catfish a distant second. That distinction matters: the fish most common in national consumption are not automatically the fish most practical to farm at scale.

FARMED SPECIES MIX (KENYA, 2024)




For a commercial aquaculture company, the realistic shortlist narrows quickly. Kenya's own national aquaculture planning documents say the current farmed-fish supply chain is centered on two species, Nile tilapia and African catfish, because they are acceptable to consumers and easy to culture relative to alternatives. Trout remains a cold-water niche, and mariculture was still only 134 MT in 2024.

# The Broadest Demand Base

The market case for tilapia comes before the biological case. National documents estimate that reaching the African average of 10 kg per capita would imply roughly 510,000 MT of annual consumption at Kenya's 51-million-plus population, far above current output. Nairobi is identified in the national aquaculture plan as the country's largest domestic fish market, and tilapia there sells in a wide band of roughly KES 430 to KES 1,000 per kilogram.

Consumer studies in Kenya consistently place tilapia as the most frequently purchased and most preferred fish, usually bought fresh or fried through open markets, street vendors, and local retail points. Imported volumes reinforce the point: in 2024 Kenya imported 5,594 MT of tilapia, versus just 5 MT of catfish. The strongest unmet demand signal in the tradable farmed-fish segment is already tilapia-shaped.

> *"The strongest unmet demand signal in Kenya is already tilapia-shaped."*

The husbandry case is also strong. Nile tilapia is a warm-water, lowland-friendly fish that performs well in conditions common across much of inland Kenya. Kenyan pond guidance places normal water temperature at 20-30°C, says tilapia does best at pH 6-9, and notes that optimal dissolved oxygen is about 4 mg/L while fish can tolerate lower-oxygen episodes better than many cultured freshwater species.

Tilapia can derive 30-50 percent of growth from natural pond food, digest plant proteins efficiently, and succeed in semi-intensive systems using fertilization plus moderate supplemental feeding. In Kenya, commercial tilapia feeds usually contain about 24-30 percent crude protein, below the 30-40 percent commonly used for African catfish. That matters because feed is one of the largest cost lines in aquaculture.

# Known Problems, Solvable Stack

Tilapia also aligns with where Kenyan aquaculture is already going. The national 2024 aquaculture bulletin reports that cage production on Lake Victoria accounted for 76.4 percent of the country's aquaculture output, with 5,975 cages operating in 2024. That is evidence that the input ecosystem, workforce learning, and buyer expectations are already adjusting around tilapia-dominant production.

Tilapia-first does not mean tilapia is complication-free. The central operational risk is uncontrolled reproduction in ponds. Mixed-sex culture leads to overcrowding, stunting, and poor harvest size, which is why monosex fingerling supply, dependable hatchery management, and sex-control discipline are not optional details but core enabling assumptions.

| Tilapia requirement | Why it matters | Aqualabs implication |
|---|---|---|
| Monosex seed | Controls reproduction, stunting, and harvest-size variability | Secure certified fingerlings before scale-up |
| Moderate-protein feed | Improves margin relative to higher-protein species | Localize feed sourcing where quality is stable |
| Water-quality discipline | Protects growth and survival in ponds, tanks, or cages | Instrument basics: DO, pH, ammonia, temperature |
| Cold-chain access | Fresh and fried retail depend on reliable handling | Treat harvest logistics as core infrastructure |

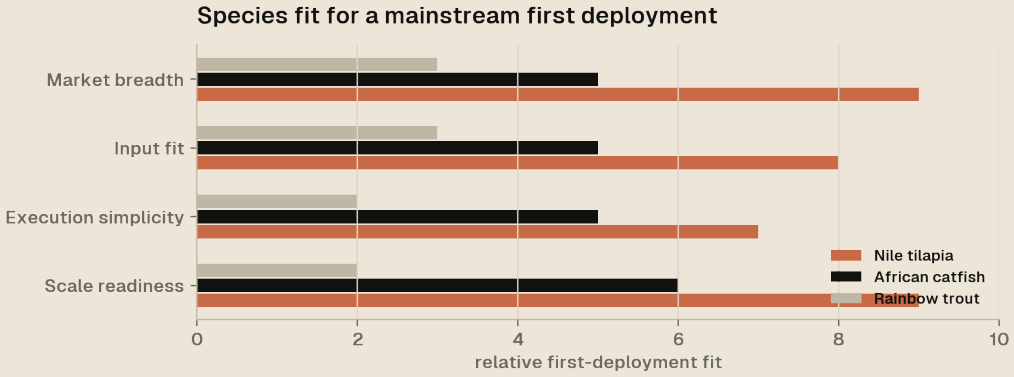
In cages and other intensive systems, disease and biosecurity rise in importance because open-water systems exchange pathogens with the natural environment and poor husbandry can quickly convert high stocking density into mortality and margin loss. Tilapia's problems are not trivial; they are simply better known, more broadly solvable, and already embedded in Kenya's production system.

# A Strong Second Species, Not the Default

African catfish remains strategically important because its biology solves some problems tilapia does not. Kenyan species guidance describes catfish as hardy, able to survive in low-oxygen water, capable of breathing atmospheric oxygen, and capable of fast growth if high-protein feed is available. It also has relatively few bones and a higher fillet yield than tilapia.

Feed and reproduction, however, move in the opposite direction. Commercial catfish feeds in Kenya usually contain 30-40 percent crude protein, versus 24-30 percent for tilapia. Kenyan guidance also notes that catfish does not breed in captivity under normal farm conditions and relies on artificial spawning. Recent work on catfish seed supply adds another constraint: high fry mortality and cannibalism still limit reliable seed availability.

RELATIVE SPECIES FIT FOR FIRST DEPLOYMENT




That combination explains why catfish should be treated as conditional rather than default. The demand base is real, but less uniform than tilapia's. Catfish becomes attractive when there is a pre-validated market for fillets, smoked product, fried portions, restaurants, or baitfish; when the production system can handle artificial breeding, tight size grading, and survival control; and when feed economics can tolerate a higher-protein ration.

# Species Choice Is Infrastructure Choice

A tilapia-first strategy points the company toward the parts of Kenya's aquaculture system that already have the strongest evidence of commercial fit: semi-intensive earthen ponds, lake and reservoir cages, and selective use of higher-intensity systems where water or land is constrained. It also points toward a retail model built around fresh or fried fish, matching documented purchasing behavior in Kenyan markets.

Operationally, that means prioritizing reliable monosex fingerling supply, moderate-protein feed sourcing, basic water-quality control, harvest logistics, and cold-chain discipline rather than starting with a highly engineered hatchery-processing complex. Kenya's species opportunity is not constrained only by biology; fish access is shaped by hygiene, cold storage, distance to market, and price volatility.

A catfish-led strategy shifts the infrastructure stack. Because catfish relies on artificial spawning and faces fry mortality and cannibalism, the company would need stronger hatchery management, stricter grading, and more disciplined nursery control from the start. Because feed protein requirements are higher, feed procurement, storage, and working-capital management become more sensitive.

A final infrastructure point is easy to miss: Kenya's sector is still underbuilt on inputs. The national aquaculture plan says the country has about 1.4 million hectares of fish-farming potential but is using only about 2 percent, largely because of inadequate certified fingerlings, low-quality or high-cost feeds, high input transport costs, weak extension, and poor marketing infrastructure.

# What Must Be Validated Before Lock-In

| Question | Why it matters |
| --- | --- |
| Which exact market comes first? | Whole fish, kiosks, restaurants, fillets, institutional buyers, and baitfish can imply different species choices. |
| What is the site's real water envelope? | Temperature, DO, pH, ammonia, and seasonality should drive final species lock. |
| How will fingerlings be secured? | Tilapia needs reliable monosex seed; catfish needs fry survival, grading, and hatchery skill. |
| What are delivered feed economics? | Tilapia and catfish sit on different protein-cost curves. |
| Which production system comes first? | Ponds, cages, and intensive land-based systems change both risk and species fit. |

> *The defensible launch strategy is tilapia first for mainstream food-fish demand, with catfish sequenced second after demand, hatchery survival, and feed-margin assumptions are validated.*

That conclusion is not final in an absolute sense, but it is the clearest conclusion the current Kenyan numbers support. The right strategy is not permanent species lock-in; it is staged learning with the simplest high-demand species first, then added complexity only where the evidence justifies it.