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Thin Ice

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Near the entrance to Mr Damith's office is a glass tank full of ornamental fish and a row of shoes, as the staff of the Peliyagoda Central Fish Market must remove their footwear before entering. Inside, the air conditioning is turned up and Mr Damith, the Operations Manager, sits opposite a massive screen broadcasting live CCTV from across the largest fish market in Sri Lanka. It is 10.30am and the market is winding down, the screen showing birds scavenging scraps, vendors counting cash and cleaners hosing down bloody floors. Even so, when a staff member briefly stands in front of the screen, blocking it for a few seconds, Mr Damith waves him away.

The Peliyagoda Central Fish Market (henceforth, the Market) was built in 2011 on reclaimed marshland 5 kilometres outside Colombo. Its construction was partially funded by the Asian Development Bank (ADB), which stated that the old wholesale market – St John's Fish Market – lacked the facilities to ensure "high-value fish production" (ADB 2007: 4). The new Market promised a 25-tonne flake ice factory, three cold storage rooms, better parking and a wastewater treatment plant. The ADB (2007: 5) predicted that these facilities would "induce an increased supply of fish for the export market." Such modernising as per Global North standards reflects the hold that lengthening supply

chains have on markets in the Global South. Revamped cold-chain infrastructure is intended to maintain quality suitable for consumers in the EU, Japan and the USA, who make up the bulk of Sri Lanka's seafood export markets. Drawing from fieldwork conducted across the supply chain in Colombo over 2022–2023, this article explores how local understandings of freshness and preferences with regard to types of fish influence how different actors use, ignore and subvert cold-chain infrastructure at the Market.

Scholars have noted how artificial coldness and the infrastructures of the cold chain enable a certain mastery over time, space and entropy (Twiley 2012; Thiemann 2024). The cold chain has lengthened supply chains and increased market penetration, initially resulting in the delocalisation, industrialisation and standardisation of food across geographies (Freidberg 2009). The value addition to products generated by cold-chain infrastructure is usually collected by retailers and cold-chain entrepreneurs rather than farmers, rural labourers and logistics workers (Thiemann 2024; Sánchez-García 2025). Cold-chain infrastructure has changed the quality and materiality of fresh produce, and reconfigured expectations and conceptions of freshness among consumers (Freidberg 2009).

For most of history, the consumption of fresh fish was limited to local populaces or elites, constrained by geography and by the seasons. It is ice that keeps fish colder, moister and fresher than mere refrigeration, thereby expanding the limited geography of fish consumption (Freidberg 2009). In doing so, ice changed understandings of freshness. The freshness of fish is socially constructed by humans and emerges through socio-material arrangements that include certifications, shelves, labels, ice and the fish itself (Truninger et al. 2020).

Fish displayed on ice at a wholesale section of the Market.
Photo: Anisha Gooneratne, 2023.

In an island nation such as Sri Lanka, consumers are accustomed to steady supplies year-round and they expect and prioritize fresh fish (Bimalka et al. 2025). However, prior to the advent of railway infrastructure, fish could only be sold within a day's journey of the coast, with the majority of the inland population consuming dried fish. The introduction of ice plants between 1940 and 1960 increased the processing and dissemination of fresh fish (Alexander 1977). By delaying decay, ice lengthened the span of time in which fish could be considered fresh. Yet frozen fish was not acceptable – a survey of residents in Colombo in 1951 found that over 80 percent of consumers who had bought frozen fish would not do so again (Petersen 1951). Clucas and Bennett (1991) noted that more and more retailers and shops were using ice to display and preserve fish, and today it is employed universally, as demonstrated by Ravi, a fish-seller from a low-income settlement:

> *Ice keeps the fish moist and fresh, even overnight. When you pack it into the rigiform*[1] [box] *it's ok, I mean even with fish when you are in the boat, it's on the ice for a year right*[2]*? The fridge will dry it out, it won't taste right. People are idiots for buying fridges* (Fieldwork interview, June 2022).

[1] Ravi is referring to an insulated cool box made of styrofoam that is locally branded as 'rigifoam'.

[2] Ravi is referring to multi-day fishing vessels which sometimes spend up to a month at sea.

Ice is essential at every stage of the seafood supply chain. Suppliers transporting produce from the beach to the Market require 75 kilograms of ice for every 100 kilograms of fish. Despite having cold-storage facilities, wholesale vendors at the Market prefer Ravi's method, packing fish with ice and salt in rigiform boxes. The reliance on ice for preserving fish generates complications as it collides with standardized infrastructure that does not cater to local preferences. The president of the Fish Trader's Association explained that cold storage was better for large fish like tuna, but that smaller species such as goldstripe sardinella were better preserved in ice. The two methods of preservation reflect two different markets, as tuna is one of Sri Lanka's most popular seafood exports, while goldstripe sardinella is an extremely cheap fish widely consumed across the country and referred to by Ravi as "the poor man's friend."

The variety of ice is also crucial, as fishers and vendors have long preferred to use block ice instead of flake ice (Senanayake 1978). According to ADB estimates, the new flake ice factory at the Market would generate 28 million Sri Lankan rupees (LKR) in revenue through sales of ice.[3] Yet these estimates do not consider that there is no demand for flake ice, despite it being considered industry best practice. For fishers and vendors both wholesale and retail, flake ice melts too fast and is not suitable for preserving fish for long periods of time in the way of block ice. The Market Board decided to build a block ice factory in July 2015, but no action has yet been taken due to a land dispute. However, mismatched cold-chain infrastructure has still proved useful to commercial interests. In 2019, Ceylon Fish Market Group (Pvt) Ltd, was awarded the tender for operating all cold-chain infrastructure. Citing the high costs of maintaining the flake ice factory, particularly in light of the low demand, the company asked Fishing Ministry officials for a reduction in the rent, manipulating the tender to save 30 million LKR.

[3] During the time of fieldwork the exchange rate was 323 LKR to 1 USD. In March 2023, a kilo of rice was 195 LKR and a kilo of sugar 237 LKR.

> *There are no power cuts here. But we have generators and enough diesel to power five or six markets* (Interview with the Operations Manager of the Market, February 2023).

Sacks of ice in lorries behind the retail stalls. Photo: Anisha Gooneratne, 2023.

Maintaining coldness is an energy-intense affair, with ice production and refrigeration dependent on energy infrastructures. Sri Lanka's 2022 economic crisis triggered a complete breakdown in the energy landscape with fluctuations in the supply of kerosene and diesel, and daily power outages. Electricity tariffs were increased by 75 percent in August 2022 and a further 65 percent in January 2023.

At that time, a single company had been supplying block ice for two years, amidst procurement irregularities flagged by auditors in 2021. At the height of the crisis, vendors at the Market reported that the ice supplier was price gouging and selling 50kg blocks for 1,000–1,600 LKR compared to the earlier price of 300 LKR. Vendors frequently referred to this monopolistic behaviour as the work of the "ice mafia." One vendor harboured a suspicion that the company running the cold storage was shutting off the electricity at night to lower costs after the tariff hikes. There was a disjunction in the management's faith in the strength and resilience of Market infrastructure and the real and imagined inadequacies that concerned vendors. The uninterrupted supply of electricity meant little to them in the absence of facilities to produce the type of ice they wanted. The lack of foresight left vendors and retailers vulnerable to compounding shocks, and price gouging on ice impacted fish prices throughout the value chain.

Faced with rigid Market infrastructure, vendors created their own localized cold chain, packing leftover fish in rigiform boxes with ice and storing it in freezer trucks stationed overnight in the carpark. This alternative cold chain was cobbled together as vendors embraced, rejected or repurposed Market infrastructure to make it work for local sellers and consumers. The pricing of storage differed, with cold rooms charging by the kilo while freezer trucks charged 100 LKR for a 25kg container. Freezer trucks were thus repurposed from transport to storage, and vendors took advantage of the increased

Frozen seafood displayed on deep freezers in the retail section.
Photo: Channaka Jayasinghe, 2023.

parking space that enabled freezer trucks to park overnight. Parking rates were 200 LKR a day for the first three days, increasing to 1,000 LKR on the fourth day. Freezer trucks often circumvented this fee by driving out of the parking lot on the third day and returning a few hours later.

Cold-chain infrastructure made for the export market and hijacked by local commercial interests increased the vulnerability of vendors to shocks like the energy crisis. However, vendors were also able to make Market infrastructure work for them, devising an alternative cold chain that aligns with local ideas of freshness. Rather than simply accelerating and intensifying the flow of fish to the Global North, cold-chain infrastructure is re-engineered and localized, as vendors continue to keep fish from spoiling in the way that they think best.

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