

Logistik yang Terlupa: Peran Distribusi Produk Peternakan dalam Ketahanan Pangan Nasional

The Overlooked Logistics: The Role of Livestock Product Distribution in National Food Security



Dr. (Cand). Ir. Andri Hanindyo Wibowo, S.Pt, M.Si

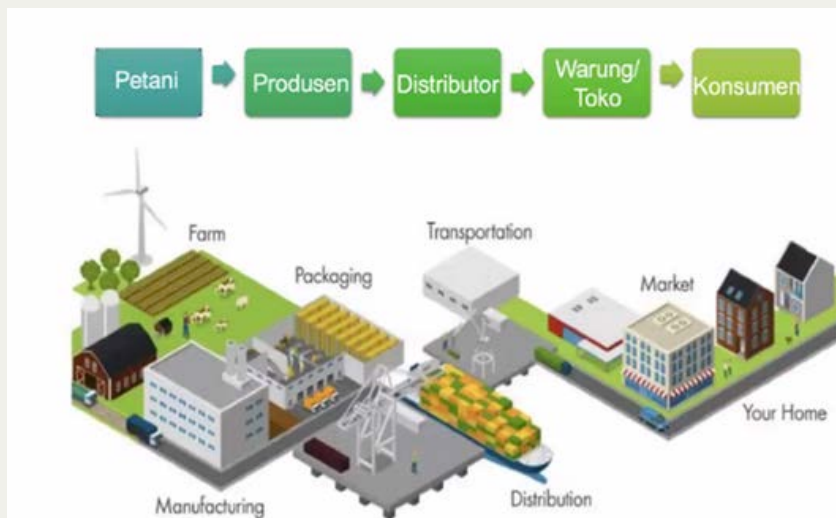
Ketua Kelompok Pemasaran

Ketahanan pangan sering kali dipahami sebagai persoalan produksi. Ketika angka produksi daging, telur, dan susu meningkat, ketahanan pangan dianggap telah tercapai. Namun, realitas di lapangan menunjukkan cerita yang berbeda. Di satu wilayah terjadi surplus produk peternakan, sementara di wilayah lain harga pangan hewani tetap tinggi dan pasokan tidak stabil. Paradoks ini menegaskan bahwa ketahanan pangan tidak hanya berhenti di kandang atau di angka statistik, melainkan juga ditentukan oleh kemampuan sistem distribusi mengalirkan pangan secara merata.

Dalam konteks Indonesia sebagai negara kepulauan dengan lebih dari 17.000 pulau dan 38 provinsi, logistik memegang peran sentral. Produk peternakan yang mempunyai sifat mudah rusak (perishable), sensitif terhadap waktu dan suhu, serta memerlukan penanganan khusus, hal ini menjadikan logistik sebagai faktor penentu utama apakah pangan bergizi benar-benar sampai ke meja makan masyarakat. Sayangnya, aspek logistik sering kali menjadi dimensi yang terlupa dalam perumusan kebijakan ketahanan pangan

Food security is often understood primarily as a matter of production. When the output of meat, eggs, and milk increases, food security is assumed to have been achieved. However, realities on the ground tell a different story. In some regions, there is a surplus of livestock products, while in others, prices of animal-based foods remain high and supplies are unstable. This paradox underscores that food security does not end at the farm gate or in statistical figures; it is also determined by the capacity of the distribution system to deliver food evenly.

In the context of Indonesia as an archipelagic country with more than 17,000 islands and 38 provinces, logistics plays a central role. Livestock products are perishable, highly sensitive to time and temperature, and require special handling. These characteristics make logistics a decisive factor in determining whether nutritious food truly reaches people's dining tables. Unfortunately, logistics is often an overlooked dimension in the formulation of food security policies.



Gambar 1. Ilustrasi Rantai Pasok Pangan, *Farm to Table*

Kinerja Logistik Nasional sebagai Cermin Tantangan

Kinerja logistik Indonesia secara umum masih menghadapi tantangan. Logistics Performance Index (LPI) Bank Dunia pada tahun 2023 menempatkan Indonesia pada peringkat ke-63 dari 139 negara dengan skor 3,0 (skala 1–5), menurun dibandingkan capaian tahun 2018. Penurunan ini mencerminkan masih terbatasnya efisiensi logistik nasional, khususnya pada aspek infrastruktur, keandalan pengiriman, dan sistem pelacakan. Dalam konteks pangan, terutama produk peternakan, kondisi ini berdampak nyata. Harga daging, telur, dan susu dapat berbeda signifikan antarwilayah, bukan semata karena perbedaan biaya produksi, tetapi karena distribusi yang mahal dan tidak efisien. Bagi produk peternakan, keterbatasan logistik bukan sekadar persoalan biaya, tetapi juga menyangkut kualitas dan keamanan pangan. Keterlambatan distribusi atau gangguan rantai dingin dapat langsung berdampak pada mutu produk, yang pada akhirnya merugikan produsen dan konsumen. Dengan kata lain, logistik menjadi faktor penentu yang sering kali luput dari perhatian dalam diskursus ketahanan pangan.

National Logistics Performance as a Reflection of the Challenges

Indonesia's logistics performance continues to face significant challenges. The World Bank's Logistics Performance Index (LPI) in 2023 ranked Indonesia 63rd out of 139 countries, with a score of 3.0 on a scale of 1 to 5, representing a decline compared to its 2018 performance. This decline reflects the continued limitations in national logistics efficiency, particularly in infrastructure, delivery reliability, and tracking systems. In the context of food, especially livestock products, these conditions have tangible impacts. Prices of meat, eggs, and milk can vary significantly between regions, not solely due to differences in production costs, but also because distribution remains costly and inefficient. For livestock products, logistical constraints are not merely a matter of cost, but also relate directly to food quality and safety. Delays in distribution or disruptions in the cold chain can immediately affect product quality, ultimately disadvantaging both producers and consumers. In this sense, logistics is a decisive factor that is often overlooked in discussions on food security.

Skala Ekonomis Logistik di Negara Kepulauan

Salah satu persoalan mendasar logistik di Indonesia adalah sulitnya mencapai skala ekonomis. Skala ekonomis logistik tercapai ketika biaya distribusi per unit menurun seiring meningkatnya volume dan keterpaduan jaringan. Namun, kondisi geografis Indonesia justru mendorong fragmentasi volume dan rute distribusi. Sebaran pulau menyebabkan volume muatan per rute relatif kecil, banyak rute bersifat satu arah, dan perjalanan balik sering kali kosong. Biaya tetap (fixed cost) logistik—seperti kapal, pelabuhan, cold storage, dan armada berpendingin—akhirnya harus ditanggung oleh volume yang terbatas. Ketimpangan produksi dan konsumsi antarwilayah semakin memperkuat persoalan ini. Sebagian provinsi menjadi sentra produksi peternakan, sementara provinsi lain berfungsi sebagai sentra konsumsi, tanpa arus balik barang yang seimbang. Dominasi peternak rakyat berskala kecil juga menjadi tantangan tersendiri. Produksi yang tersebar dan bervolume kecil menyulitkan konsolidasi muatan, sehingga logistik berjalan parsial dan mahal. Akibatnya, pangan tersedia secara nasional, tetapi tidak selalu terjangkau secara wilayah.

Perdagangan Antarwilayah: Potensi yang Belum Optimal

Secara konseptual, perdagangan antarwilayah merupakan mekanisme alami untuk menyalurkan surplus produksi ke daerah defisit. Indonesia memiliki potensi besar untuk memanfaatkan perdagangan antarprovinsi sebagai penyangga pasokan dan stabilisator harga produk peternakan. Namun, dalam praktiknya, mekanisme ini belum berjalan optimal. Tingginya biaya logistik, keterbatasan cold chain, serta lemahnya koordinasi antar pelaku rantai pasok menyebabkan perdagangan antarwilayah belum sepenuhnya mampu menurunkan disparitas harga dan meningkatkan pemerataan pasokan. Tanpa penguatan logistik, perdagangan antarwilayah sulit

Economies of Scale in Logistics within an Archipelagic State

One of the fundamental logistical challenges in Indonesia is the difficulty of achieving economies of scale. Economies of scale in logistics are realised when distribution costs per unit decrease as volumes increase and networks become more integrated. However, Indonesia's geographical conditions instead encourage fragmentation of volumes and distribution routes. The dispersion of islands results in relatively small cargo volumes per route, many routes being one way, and return journeys often running empty. Fixed logistics costs, such as vessels, ports, cold storage facilities, and refrigerated fleets, therefore have to be borne by limited volumes. Imbalances between production and consumption across regions further exacerbate this issue. Some provinces function as livestock production centres, while others act as consumption hubs, without balanced return flows of goods. The dominance of small scale smallholder farmers presents an additional challenge. Scattered and low volume production makes cargo consolidation difficult, leading to partial and costly logistics operations. As a result, food may be available nationally, but not always affordable across regions.

Interregional Trade: Untapped Potential

Conceptually, interregional trade is a natural mechanism for channelling production surpluses to deficit areas. Indonesia has substantial potential to leverage interprovincial trade as a buffer for supply and a stabiliser of livestock product prices. In practice, however, this mechanism has not yet functioned optimally. High logistics costs, limited cold chain infrastructure, and weak coordination among supply chain actors mean that interregional trade has not been fully effective in reducing price disparities and improving supply equity. Without strengthened logistics, interregional trade will

berfungsi sebagai instrumen ketahanan pangan yang efektif. Terdapat 10 titik kritis dalam logistik antar wilayah yang perlu mendapatkan perhatian yaitu : Aksesibilitas dan Infrastruktur, Biaya Logistik, Kapasitas dan Ketersediaan Armada, Kondisi Sosial Ekonomi Masyarakat, Kebijakan dan Regulasi, Kolaborasi Multi Pihak, Teknologi dan Informasi, Keamanan dan Resiko, Manajemen Persediaan dan Gudang, serta Aspek Lingkungan.

struggle to serve as an effective instrument of food security. There are ten critical points in interregional logistics that require attention, namely accessibility and infrastructure, logistics costs, fleet capacity and availability, the socioeconomic conditions of communities, policy and regulation, multiparty collaboration, technology and information, security and risk, inventory and warehouse management, and environmental aspects.

Good Food Practice sebagai Fondasi Distribusi

Dalam menghadapi tantangan tersebut, Good Food Practice (GFP) menjadi fondasi teknis yang tidak dapat diabaikan. GFP di dalam Supply Management System (SCM) antara lain terdiri dari Good Farming Practice, Good Handling Practices, Good Distribution Practices, Good Warehouse Practices, Good Retail Practice.

Good Food Practice as the Foundation of Distribution

In addressing these challenges, Good Food Practice (GFP) constitutes a technical foundation that cannot be ignored. Within the Supply Management System (SCM), GFP encompasses Good Farming Practice, Good Handling Practices, Good Distribution Practices, Good Warehouse Practices, and Good Retail Practice.



Gambar 2. Ilustrasi Kebutuhan Good Food Practice dalam Rantai Pasok Pangan

GFP memastikan produk peternakan ditangani secara higienis, disimpan pada suhu yang sesuai, dan didistribusikan dengan prosedur yang benar sejak dari hulu hingga hilir. Lebih dari sekadar standar mutu dan keamanan pangan, GFP berperan sebagai “bahasa teknis bersama” yang memungkinkan konsolidasi produk dari berbagai sumber dan wilayah. Tanpa penerapan GFP yang konsisten, investasi logistik seperti cold chain dan transportasi berpendingin tidak akan menghasilkan efisiensi yang diharapkan.

GFP ensures that livestock products are handled hygienically, stored at appropriate temperatures, and distributed using proper procedures from upstream to downstream. Beyond serving as standards for food quality and safety, GFP functions as a “shared technical language” that enables the consolidation of products from diverse sources and regions. Without consistent implementation of GFP, logistics investments such as cold chains and refrigerated transport will not deliver the expected efficiency gains.

Tabel 1. Matrik Peran *Good Food Practice* (GFP) dan Dampaknya pada Logistik dan *Supply Chain Management* (SCM) serta Implikasi pada Ketahanan Pangan

Tahapan Rantai Pasok	Peran <i>Good Food Practice</i> (GFP)	Dampak pada Logistik & SCM	Implikasi bagi Ketahanan Pangan
Produksi di tingkat peternak	Penanganan awal produk secara higienis dan terstandar	Mutu produk lebih seragam dan mudah diperdagangkan	Pasokan lebih andal dan berkelanjutan
Pengumpulan & agregasi	Standar sanitasi dan suhu saat pengumpulan	Konsolidasi produk lebih efisien	Biaya distribusi menurun
Penyimpanan sementara	Pengendalian suhu dan kebersihan	Risiko kerusakan produk berkurang	Ketersediaan produk lebih stabil
Transportasi antarwilayah	Prosedur angkut berpendingin dan tepat waktu	Distribusi lebih cepat dan terjadwal	Disparitas harga antarwilayah menurun
Distribusi ke pasar	Penanganan bongkar muat sesuai standar	Pasokan pasar lebih terprediksi	Harga pangan lebih terkendali
Pengolahan (hilirisasi)	GFP sebagai dasar keamanan pangan	Integrasi hulu-hilir lebih kuat	Nilai tambah produk meningkat
Perdagangan antarwilayah	Jaminan mutu selama lintas wilayah	Arus barang lebih lancar	Akses pangan lebih merata
Digitalisasi & ketertelusuran	Pencatatan asal dan penanganan produk	SCM lebih transparan dan adaptif	Kepercayaan konsumen meningkat

Table 1. Matrix of the Roles of Good Food Practice (GFP) and Its Impact on Logistics and Supply Chain Management (SCM), and Implications for Food Security

Supply Chain Stage	Role of Good Food Practice (GFP)	Impact on Logistics & SCM	Implications for Food Security
Production at farmer level	Hygienic and standardised initial handling of products	More uniform product quality and easier trade	More reliable and sustainable supply
Collection & aggregation	Sanitation and temperature standards during collection	More efficient product consolidation	Lower distribution costs
Temporary storage	Temperature control and cleanliness	Reduced risk of product spoilage	More stable product availability
Interregional transportation	Proper and timely refrigerated transport procedures	Faster and more scheduled distribution	Reduced interregional price disparities
Distribution to markets	Standard compliant loading and unloading handling	More predictable market supply	Better controlled food prices
Processing (downstreaming)	GFP as the basis for food safety	Stronger upstream-downstream integration	Increased product value added
Interregional trade	Quality assurance during cross regional movement	Smoother flow of goods	More equitable access to food
Digitalisation & traceability	Recording of product origin and handling	More transparent and adaptive SCM	Increased consumer trust

Efisiensi Pengelolaan Pangan dalam Perspektif Supply Chain

Dalam perspektif supply chain, efisiensi pengelolaan pangan ditentukan oleh kemampuan sistem logistik menjaga empat pilar ketahanan pangan: ketersediaan, perolehan (akses), keterjangkauan, dan kualitas. Ketersediaan pangan baru tercapai ketika produk dapat mengalir dari wilayah produksi ke wilayah konsumsi secara tepat waktu. Akses pangan bergantung pada keteraturan distribusi dan jangkauan layanan logistik. Keterjangkauan sangat dipengaruhi oleh biaya logistik sepanjang rantai pasok. Sementara itu, kualitas pangan ditentukan oleh keandalan logistik dan penerapan standar seperti GFP dan cold chain. Keempat pilar ini hanya dapat berjalan beriringan jika didukung oleh konektivitas dan pelayanan logistik yang baik—baik secara fisik, regulasi, informasi, maupun operasional.

Logistik dalam Kerangka Makro-Mikro: Siapa Berperan, Siapa Menanggung Biaya

Dalam kerangka kebijakan, logistik bekerja pada dua level. Secara makro, logistik merupakan domain pemerintah, mencakup penyediaan infrastruktur, regulasi, standarisasi, koordinasi antarwilayah, serta penjaminan stabilitas sistem distribusi. Peran makro ini sangat penting di negara kepulauan untuk memastikan keterhubungan wilayah dan keadilan akses pangan. Sebaliknya, secara mikro, logistik merupakan domain perusahaan dan pelaku usaha. Pada level ini, fokus utama adalah efisiensi operasional, pengelolaan biaya, dan kepatuhan terhadap standar. Di antara kedua level tersebut terdapat dimensi jaminan—jaminan waktu, mutu, keamanan, dan kontinuitas layanan. Jaminan ini selalu membawa implikasi biaya. Ketika jaminan sistemik belum sepenuhnya disediakan pada level makro, beban biaya bergeser ke level mikro dan akhirnya tercermin dalam harga pangan.

Efficiency of Food Management from a Supply Chain Perspective

From a supply chain perspective, the efficiency of food management is determined by the ability of the logistics system to uphold the four pillars of food security: availability, access, affordability, and quality. Food availability is only achieved when products can flow from production areas to consumption areas in a timely manner. Access to food depends on the regularity of distribution and the reach of logistics services. Affordability is strongly influenced by logistics costs along the supply chain. Meanwhile, food quality is determined by the reliability of logistics systems and the implementation of standards such as Good Food Practice (GFP) and the cold chain. These four pillars can only function in tandem when supported by strong connectivity and effective logistics services—physically, regulatorily, informationally, and operationally.

Logistics in the Macro-Micro Framework: Who Plays a Role and Who Bears the Cost

Within the policy framework, logistics operates at two levels. At the macro level, logistics falls within the government's domain, encompassing the provision of infrastructure, regulation, standardisation, interregional coordination, and the safeguarding of distribution system stability. This macro role is particularly critical in an archipelagic country to ensure regional connectivity and equitable access to food. Conversely, at the micro level, logistics is the domain of companies and business actors, where the primary focus lies on operational efficiency, cost management, and compliance with standards. Between these two levels lies a dimension of assurance—assurance of timeliness, quality, safety, and service continuity. Such assurances inevitably carry cost implications. When systemic guarantees are not fully provided at the macro level, the cost burden shifts to the micro level and is ultimately reflected in food prices.

Pengembangan Digitalisasi Logistik 4.0 dan Peran IoT

Digitalisasi menjadi pengungkit penting untuk mengatasi kompleksitas logistik. Dalam konteks ini, Logistik 4.0 merupakan kerangka transformasi sistemik yang mengintegrasikan seluruh proses logistik berbasis data, sementara Internet of Things (IoT) berfungsi sebagai alat pengumpul data real time. IoT memungkinkan pemantauan suhu, waktu, dan kondisi produk peternakan selama distribusi. Namun, tanpa integrasi dalam Logistik 4.0, data tersebut tidak akan menghasilkan keputusan. Sebaliknya, Logistik 4.0 tanpa IoT kehilangan akurasi informasi lapangan. Sinergi keduanya memungkinkan pengurangan risiko, penurunan biaya jaminan, dan peningkatan efisiensi distribusi antarwilayah.

Developing Logistics Digitalisation: Logistics 4.0 and the Role of IoT

Digitalisation has become a critical lever for addressing the complexity of logistics. In this context, Logistics 4.0 serves as a framework for systemic transformation that integrates all logistics processes through data driven systems, while the Internet of Things (IoT) functions as a real time data collection tool. IoT enables the monitoring of temperature, time, and the condition of livestock products throughout distribution. However, without integration into Logistics 4.0, such data will not translate into effective decision making. Conversely, Logistics 4.0 without IoT loses the accuracy of field level information. The synergy between the two allows for risk reduction, lower assurance costs, and improved efficiency of interregional distribution.



Gambar 3. Ilustrasi Penerapan Logistik 4.0 dan I.O.T

Arah Kebijakan : Mengingat kembali Logistik

Pokok bahasan ini menegaskan perlunya mengingat kembali peran logistik dalam kebijakan pangan. Ketahanan pangan tidak cukup ditopang oleh peningkatan produksi, tetapi harus diimbangi dengan penguatan distribusi antarwilayah. Distribusi yang efisien memungkinkan pasokan antarwilayah saling menutupi, fluktuasi harga ditekan, dan akses pangan bergizi diperluas. Selain itu, logistik yang

Policy Direction: Recalling the Importance of Logistics

This discussion underscores the need to bring logistics back into focus within food policy. Food security cannot be sustained solely by increasing production; it must be balanced with strengthened interregional distribution. Efficient distribution enables supply flows between regions to complement one another, suppresses price fluctuations, and expands access to nutritious food. Moreover, robust logistics opens

kuat membuka peluang hilirisasi produk peternakan dalam bentuk produk olahan dan beku yang lebih fleksibel untuk distribusi lintas wilayah. Beberapa arah kebijakan yang relevan antara lain: Pengembangan infrastruktur logistik peternakan berbasis wilayah, khususnya cold chain di luar sentra produksi utama.; Integrasi kebijakan produksi dan logistik, sehingga perencanaan distribusi menjadi bagian dari strategi pengembangan peternakan; Penerapan dan pembinaan GFP secara konsisten, terutama bagi peternak rakyat dan pelaku usaha kecil; Penguatan kelembagaan peternak dan agregator logistik, untuk meningkatkan efisiensi dan skala ekonomi; serta Pemanfaatan data dan digitalisasi logistik pangan, guna mendukung perencanaan distribusi dan stabilisasi harga.

Penutup: Ketahanan Pangan yang Benar-Benar Hadir

Pada akhirnya, ketahanan pangan bukan sekadar angka di atas kertas, tetapi soal apakah pangan bergizi benar-benar hadir di meja makan masyarakat, di seluruh wilayah Indonesia. Logistik produk peternakan—yang selama ini kerap terlupa—memegang peranan kunci dalam mewujudkan tujuan tersebut. Dengan logistik yang kuat, terintegrasi, dan berbasis praktik pangan yang baik, ketahanan pangan nasional dapat menjadi lebih adil, merata, dan berkelanjutan. Dalam jangka panjang, sistem logistik yang kuat juga meningkatkan kesejahteraan peternak. Akses pasar yang lebih luas dan efisien meningkatkan kepastian serapan produk dan memperbaiki posisi tawar peternak dalam rantai pasok.

opportunities for downstream development of livestock products in the form of processed and frozen products, which are more flexible for cross regional distribution. Relevant policy directions include: the development of region based livestock logistics infrastructure, particularly cold chains outside major production centres; the integration of production and logistics policies so that distribution planning becomes an integral part of livestock development strategies; consistent implementation and capacity building for Good Food Practice (GFP), especially among smallholder farmers and small scale enterprises; strengthening farmer institutions and logistics aggregators to enhance efficiency and economies of scale; and the utilisation of data and digitalisation in food logistics to support distribution planning and price stabilisation.

Conclusion: Food Security That Truly Materialises

Ultimately, food security is not merely a set of figures on paper, but a question of whether nutritious food truly reaches people's dining tables across all regions of Indonesia. Livestock product logistics—so often overlooked—plays a pivotal role in realising this objective. With strong, integrated logistics grounded in good food practices, national food security can become more equitable, inclusive, and sustainable. In the long term, a robust logistics system also improves farmers' welfare. Broader and more efficient market access enhances certainty of product absorption and strengthens farmers' bargaining position within the supply chain.