



Research on the Impact of Technical Barriers to Trade on Laos' Agricultural Exports and Corresponding Strategies

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Abstract: Against the background of deeper economic globalization, Technical Barriers to Trade (TBT) have become a key factor that affects how Laos sells agricultural products to other countries. This study systematically looks at the two-sided effect of TBT on Laos' agricultural industry, using data between 2016 and 2025 about product detentions and recalls. The findings show that even though TBT brings big negative pressures — like much higher costs to meet rules, limited access to foreign markets, and repeated detention problems caused by pesticide residues and wrong labeling — it also works as a “forcing mechanism” that pushes industry upgrading and makes technical regulations more modern. The main product categories that get affected are aquatic products, vegetables, and meat. To deal with these problems well, this paper puts forward a whole set of plans: set up a two-track regulatory system that matches international standards; put in place a “finance + technology” support system that gives subsidies for certifications and provides technical help; make the external institutional environment better by using WTO, ASEAN, and RCEP frameworks; and build up the “Ecological Laos” brand to change from exporting low-value raw materials to selling high-value branded products. If Laos use these measures, it can turn the challenges from TBT into chances for long-term stable growth of agriculture, and also make itself more competitive in the global market.

Keywords: Technical Barriers to Trade (TBT); Laos; Agricultural Exports; SPS Measures; Comparative Advantage; Brand Strategy

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1. Introduction

As economic globalization speeds up these days, regional cooperation between different countries and areas has gotten closer than before^[1]. What's more, market trades between trade partners have become more open and clear. When we look at older ways of restricting trade, tariffs now have a much weaker effect on limiting international economic and trade exchanges. At the same time, non-tariff measures keep getting more and more influential. Technical barriers to trade, which we usually call TBT, are slowly taking the place of traditional non-tariff tools like quota limits and subsidies. Now they have turned into one of the main ways that countries protect their own local industries and cut down on imports from other places^[2].

If we start from the theory of comparative advantage, Laos has many clear advantages when it comes to natural resources. It has a large amount of land and many different types of climate, right here. These features give Laos one-of-a-kind climate resources and advantages in production factors for its agricultural product exports. Laos is a country that has relied on agriculture for a long time, and agricultural exports have always held an important strategic place in both its national economy and its foreign trade. As cooperation under the “Belt and Road” framework gets deeper and deeper, the agricultural trade environment between countries along the route has gotten more and more complicated. At the same time, importing countries keep updating and raising their environmental standards and technical requirements for agricultural goods^[3].

Against this background, looking at both the good and bad sides of technical trade barriers for Laos’ agricultural exports will not just help fix the current trade deficit problem, but also help stop TBT risks before they happen. It can also give basic theory ideas and real ways to build systems that help agricultural exports grow.

2. Current Status of Technical Barriers to Trade Encountered by Laos’ Agricultural Products

2.1. Batches of Products Detained or Recalled Due to Technical Barriers to Trade

If we look at data collected from the “Analysis Report on Foreign Detention/Recall of Lao Export Products” across the ten years from 2016 to 2025, it shows that even though the total number of batches of Lao agricultural exports that get detained or recalled has gone down overall, the actual total amount is still pretty large. You can find more specific details in **Table 1**.

Table 1. Statistics on the Number of Batches of Lao Agricultural Exports Detained or Recalled (2016–2025)

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1682	1628	1787	1882	1497	1842	1619	1581	1842	1542

Source: Laos Ministry of Commerce Statistical Yearbook (2016–2025)

2.2. Major Product Categories Encountering Technical Barriers to Trade

If you look at data from the “Analysis Report on Foreign Detention/Recall of Lao Export Products” collected between 2014 and 2023, it shows that three product groups have the most detained and recalled batches among Lao agricultural exports. Those are aquatic products and their related products, vegetables and derivatives, and meat products, full details are in **Table 2**.

What stands out is that aquatic products and their derivatives held the top spot for most detained/recalled batches in nine out of the ten years we looked at. This means we need to pay more attention to the technical check rules used when aquatic product businesses make and process their goods. We also need to speed up work to set clear production standards for processed agricultural products.

Table 2. Major Categories and Batch Counts of Lao Agricultural Exports Detained or Recalled by Foreign Countries (2016–2025)

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Vegetable Products	428	405	504	554	364	529	426	409	519	384
Aquatic Products	205	201	203	215	192	216	208	195	221	186
Meat Products	225	215	226	243	208	243	219	213	254	228

Source: Laos Ministry of Commerce Statistical Yearbook (2016–2025)

2.3. Primary Reasons for the Detention or Recall of Agricultural Products

Data that was collected from the “Analysis Report on Foreign Detention/Recall of Lao Export Products” across the ten years between 2016 and 2025 shows that the main reasons why Lao agricultural exports get detained or recalled are four main things: they do not pass inspections for pesticide and veterinary drug residues, their product quality is below standard, they do not meet the requirements of animal health rules, and there are problems with certificates and product labeling^[4].

Right now, the technology level for agricultural planting in Laos still has not hit the standardized production benchmarks that developed nations use. To make sure crop yields stay high, farmers there rely quite a lot on pesticides, which ends up causing higher residue levels in the final products. Developed countries use their high quality requirements and the gap in technology between us, and they set up technical barriers on purpose by making inspection standards stricter for pesticide residues on imported agricultural goods. This lets them reach their goal of cutting down on how much they import from Laos. For example, like what was talked about in the theoretical framework of Section 1, Japan’s “Positive List System” has really really strict standards for how much pesticide residue can be present.

3. Manifestations of the Impact of Technical Barriers to Trade on Laos’ Agricultural Trade

3.1. Positive Impacts Brought by Technical Barriers to Trade

3.1.1. Promoting Industrial Upgrading and Transformation

Even though Technical Barriers to Trade (TBT) make exporting harder in the short run, they actually set up a strong “forcing mechanism” over the longer term. This pushes Laos’s agriculture sector to change its old large-scale low-efficiency model to one that relies more on advanced technology. To get past the green trade barriers set by developed countries, Lao companies have to give up their old, out-of-date farming methods and start using new better tech like biological pest control, combined water and fertilizer management, and digital product tracing systems^[5].

Take the 2023 tech upgrades in Laos’s banana industry as one good example. When Chinese Customs put stricter quarantine rules in place and issued warnings about scale insect problems, big banana plantations in Laos — including the main export bases in Luang Namtha Province — did a full upgrade to their “Integrated Pest Management (IPM)” systems because of this pressure. They added drone-based crop monitoring and smart sorting assembly lines to their work^[6]. These changes didn’t just fix the big problems of too much pesticide residue and pest outbreaks, they also pushed up the pass rate for bananas exported to China to more than 98% in 2024. On top of that, it helped the whole industry change, moving from depending only on low-cost labor to relying more on technical management instead.

3.1.2. Improving the Technical Regulation System

When Laos started putting TBT into practice, it showed that the country’s current agricultural rules have clear problems, including outdated standards and missing regulation pieces. This directly pushed the country to update and rebuild its national technical rules and standard systems. To match international standards, the Lao government has sped up work on revising the Plant Protection Law and other related rules about farm product quality and safety, and built a standard set of rules that covers the whole supply chain. For example, looking at the cooperation results between the Lao Ministry of Agriculture and Forestry and China’s General Administration of Customs (GACC) between 2023 and 2024: To satisfy China’s Sanitary and Phytosanitary (SPS) rules for imported fruits, Laos officially released special plant quarantine rules for crops like bananas, watermelons, and passion fruits. It also needed that a dual registration system be used, which includes both “orchard registration” and “packaging factory registration.” Putting these new rules in place has changed the messy old situation completely, which used to have scattered small-scale farming and no usable standards to follow.

3.2. Negative Impacts Brought by Technical Barriers to Trade

3.2.1. Surge in Compliance Costs

These days, the Technical Barriers to Trade (TBT) and Sanitary and Phytosanitary (SPS) measures get stricter and stricter, and they have directly raised both the clear and hidden compliance costs for Lao agricultural goods. This has badly worn down the original comparative advantage these products had, which was built around having low production costs. To keep up with the ever-updating requirements from importing countries, Lao companies have no choice but to pay very high fees that come from looking for information, doing testing and getting certification, updating old production lines, and sorting out trade disputes.

Let's look at the 2023 Lao banana exports to China as a concrete example. After the General Administration of Customs of China (GACC) updated its plant quarantine rules for imported fruits, Lao banana exporters had to follow a new dual registration system that covers both "orchards and packaging factories". They also needed to buy expensive new equipment to do rapid tests for pesticide residues. People who work in this industry estimate that upgrading just one single packaging factory cost tens of thousands of US dollars, and on top of that, the lab testing fees for each shipment went up by around 40%.

3.2.2. Restricted Market Access

Technical barriers to trade have a clear effect that holds back trade, and this often makes the amount of Lao agricultural exports fall very sharply. When importing countries suddenly put up higher technical standards or bring in tighter SPS rules, Laos does not have early warning systems or the ability to adapt quickly. Because of this, it often gets stuck in problems like canceled orders and having its market access put on hold. This makes farmers and producers less excited to keep production going, and forces local companies to cut down on how much land they use for planting^[7].

One clear example of this happened in the second half of 2023. Vietnam stopped giving out import licenses for many different kinds of fresh fruit from Laos, after they found risks of large scale insect outbreaks. This SPS rule directly made the cross-border trade volume at the Lao border drop more than 30% within that one month. Lots of already harvested fruit ended up rotting in the fields because it could not be sent out of the country, and fruit farmers lost a lot of money because of this. Another example is when the US Food and Drug Administration (FDA) made its standards for cyanide content much stricter for Lao cassava starch in 2024. Because traditional Lao processing methods could not hit the new standards in a short time frame, shipments from several big exporting companies were turned away when they got to US ports. This led to a nearly 50% drop year-on-year in new orders coming from the United States^[8].

This uncertainty in the market, caused by trade barriers, has left Lao exporters unwilling to risk expanding how much they produce. Some of them have even changed what they grow, switching to lower-value crops that they can sell just within the country instead. This directly puts limits on how much Laos can grow its total agricultural export amount, and it leads to repeated problems when the country tries to get a bigger share of the global market. Right now, we can see a clear trend of "sluggish growth" in this area.

3.2.3. Triggering Detention and Recall Crises

Compared with traditional tariffs, Technical Barriers to Trade (TBT) are much harder to spot and have stronger mandatory requirements. If products do not meet the technical rules or health standards set by importing countries, they are very likely to get held at the border, sent back, or even destroyed. This hurts the reputation of Laos' agricultural sector really badly. In the past few years, because more and more countries around the world care about food safety, more cases have happened where Lao farm products get notified, detained or recalled. The reasons are usually too much pesticide left on produce, heavy metal pollution, or labeling that does not meet requirements.

In November 2023, the European Union used its "Rapid Alert System for Food and Feed" (RASFF) and sent out two notifications in a row about Lao pepper shipments coming in. The tests found that the pepper had unapproved pesticide residues and too much Salmonella bacteria. Because of this problem, the shipments that were affected had to be sent back

by force, and the EU also started to do stricter “consignment testing” for all Lao pepper imports after that. The percentage of shipments that got checked jumped from the usual 5% up to 100%, which basically worked just like a temporary ban on imports.

4. Development Strategies for Laos’ Agricultural Trade in the Context of Technical Barriers to Trade

4.1. Improving the Dual-Track Regulatory and Standard System

Because many shipments get sent back again and again when standards don’t meet requirements, the government of Laos urgently needs to set up a two-part regulatory system. This system will separate Sanitary and Phytosanitary (SPS) measures from Technical Barriers to Trade (TBT). In the area of SPS, Laos needs to bring its own rules fully in line with the Codex Alimentarius, plus the Highest Residue Limits (MRLs) for pesticides and quarantine pest lists that major importing countries have already set up. It is really important to speed up changes to the country’s existing plant protection rules, and fill in the blank spots in standards for veterinary drug residues as well as disease prevention and control work^[9]. Doing this will fix the main reason why shipments often fail to hit biosafety requirements, and it will do that from the side of legal rules. For the TBT area, Laos can look at existing ISO international standards to make clearer and more detailed rules for agricultural products. These rules cover product grading, packaging, labeling and the traceability coding that is needed now. This change will get rid of the customs clearance problems that happen when needed information is missing from documents. When the Ministry of Agriculture and Forestry leads the work, a new “Technical Trade Measure Evaluation Mechanism” should be set up. The main goal of this mechanism is to turn complicated international standards into simple “field manuals” that fit Laos’s smallholder economy well. This step will make sure that domestic rules can match up with international rules without big gaps or problems.

4.2. Building a Dual Support System of “Finance + Technology”

When the Revealed Comparative Advantage (RCA) goes down because testing and certification costs are way too high, the government needs to set up a system that mixes “financial rewards” with “professional help.” First, we should put in place a subsidy plan for international certification. Companies that get well-known certifications like Global G. A. P. Or organic certification should get their fees cut or get full subsidies. This step directly brings down the money barrier to getting into high-end markets, and it fixes the common problem that companies “can’t pay for certification” in a really effective way. At the same time, we can send groups of expert service workers out to production areas. Their main job will be explaining labeling rules and environmental packaging rules from the target markets, and they can also give out free tools to help check technical rules, translate documents, and do self-checks to make sure everything meets requirements. This model, which mixes “blood transfusion” (direct money help) with “making new blood” (building up the company’s own ability), not only eases the money pressure on small and medium-sized enterprises (SMEs), it also makes them better at following international rules. Because of these changes, we will see much less loss from cargo being held, rechecked, or destroyed when papers don’t meet the needed rules. This will slow down the unfair, fast growth of export costs in a clear, effective way.

4.3. Optimizing the External Institutional Environment

To fix the problem of marginalization that comes from not having enough of a voice, Laos needs to use multilateral mechanisms fully to get institutional benefits. As a Least Developed Country (LDC), Laos should actively call on the Special and Differential Treatment (S&D) rules that are part of the WTO’s Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) and the Agreement on Technical Barriers to Trade (TBT Agreement). More specifically, Laos can ask for technical help, ask for longer transition times to put new rules in place, and work to make compliance procedures simpler. All these steps are really important to get the key time window that Laos needs for upgrading its industry. Using the ASEAN Economic Community (AEC) as a base, Laos should speed up work on Mutual

Recognition Arrangements (MRAs) for agricultural inspection results, and also build out the Single Window system. Doing this will cut down a lot on the costs that come from doing repeated testing inside the region^[10].

5. Conclusion

Against the big background of growing economic globalization and closer regional trade integration, this paper looks at the two-way effects that Technical Barriers to Trade (TBT) have on Laos' agricultural exports, and puts forward some development plans for dealing with this situation. If we look to the future, the road for Laos to export agricultural products does have a lot of challenges, but it also brings many new chances. If Laos keeps following a high-quality development plan, works more closely on international agricultural cooperation, and sets up a three-party response system that includes the government, industry groups and private businesses, the country can definitely close the gap that technical barriers create. This will help Laos get a better spot in the global agricultural value chain, and build long-term good development for its agriculture-based economy.

Disclosure statement

The author declares no conflict of interest.

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