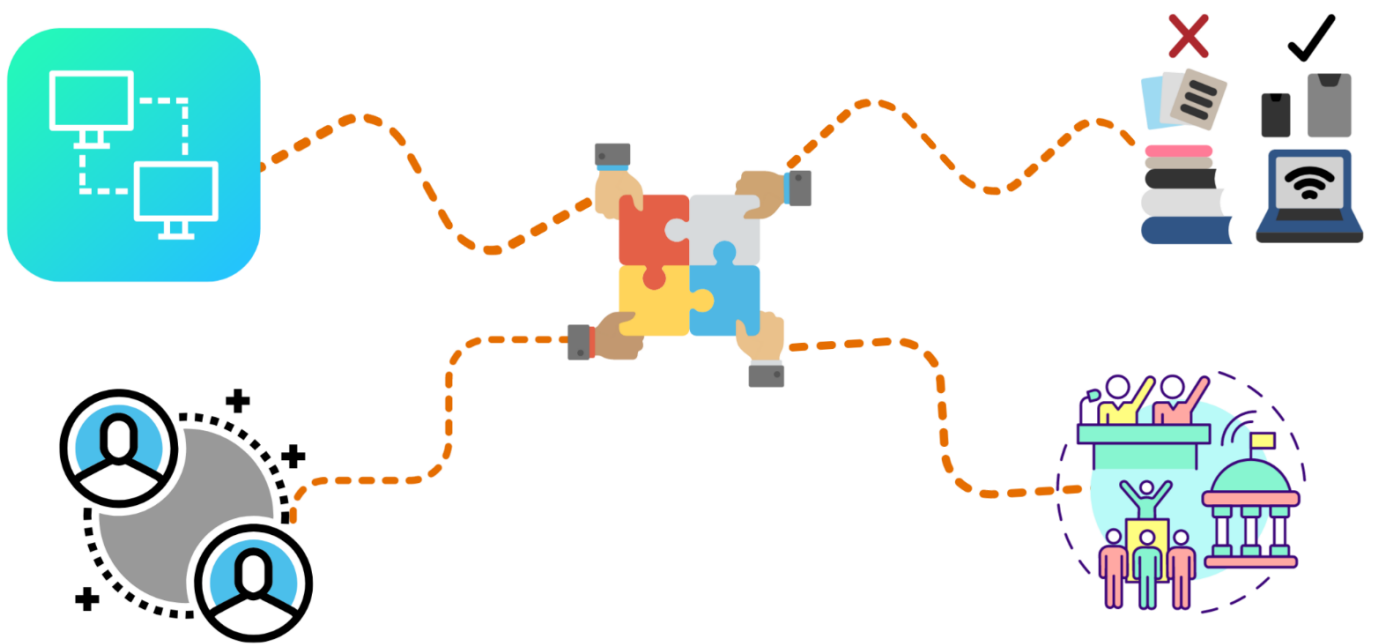
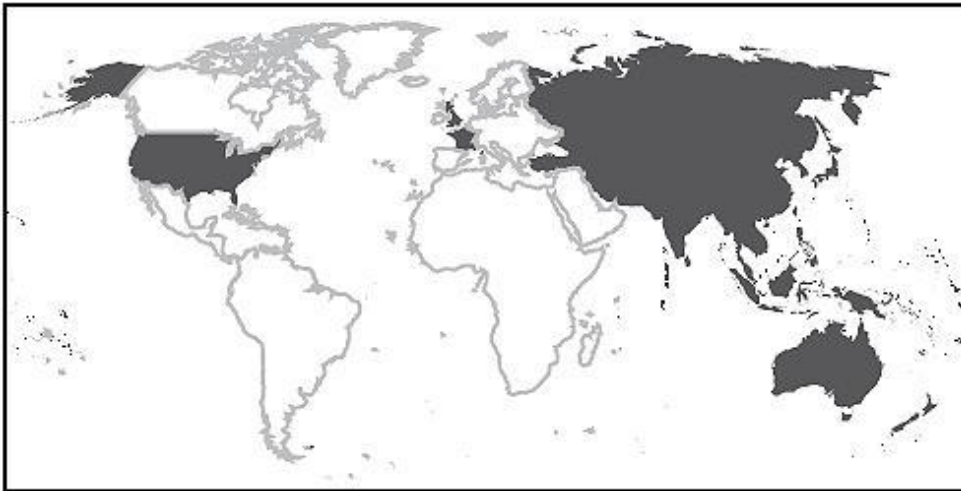


Advancing Cross-Border Paperless Trade of China: Reviewing Selected Documents and Exploring Pilot Projects



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Advancing Cross-Border Paperless of China: Reviewing Selected Documents and Exploring Pilot Projects

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Executive summary

This report reviews China's current practices in cross-border paperless trade and puts forth recommendations for pilot projects to chart the future course. The focus of this report is primarily on well-established government-to-government electronic exchanges, specifically the exchange of certificates of origin with 11 Free Trade Agreement (FTA) partners and sanitary and phytosanitary certificates with four trading partners.

This report delves into the operational aspects of electronic exchanges, elucidating the technical facets of data generation, transmission, and validation. Case studies on the Electronic Origin Data Exchange System (EODES) between China and the Republic of Korea, China and Singapore, and the e-Cert exchange between China and the Netherlands offer references to successful implementations and lessons learned.

The report provides a preliminary discussion of the possible new pilot initiatives on cross-border paperless trade, focusing on the potential expansion of the e-Cert exchange. The suggested countries for this expansion include those of agricultural trade importance, specifically ASEAN (Association of Southeast Asian Nations) and CAREC (Central Asia Regional Economic Cooperation) countries. The proposal considers factors such as potential impact, alignment with strategic goals, legal environment, and technological preparedness.

Table of Contents

Acknowledgement.....	I
Executive summary.....	II
Abbreviations	IV
Chapter 1. Introduction	1
Chapter 2. Certificate of Origin.....	3
2.1. Electronic Origin Data Exchange System (EODES)	3
2.2. EODES with the Republic of Korea	5
2. 2. 1. Legal basis.....	5
2. 2. 2. Business practices	6
2. 2. 3. Technical scheme	7
2.3. EODES with Singapore	7
2. 3. 1. Legal basis.....	7
2. 3 2. Business practices	7
2. 3. 3. Technical scheme	9
Chapter 3. Sanitary and Phytosanitary Certificate.....	10
3. 1. Joint Electronic Verification System.....	10
3.2. E-cert with the Netherlands	12
3. 3. Benefit and cost analysis of the electronic exchange of trade documents.....	13
3. 3 1. Benefits.....	13
3. 3. 2. Cost	14
3.4. Success stories and lessons learned.....	15
3. 4. 1. Need for common understanding and shared interest	16
3. 4. 2. Legal basis.....	17
3. 4. 3. Data protection.....	17
3. 4. 4. Technical standards and capacity	18
Chapter 4. Exploring the pilot projects.....	19
4 .1. e-Phyto exchange with ASEAN Member States.....	19
4. 2. Certificate exchange with CAREC member countries	21
Chapter 5. Conclusion.....	23
References	24

Abbreviations

AEOs	Authorised Economic Operator
AQSIQ	General Administration of Quality Supervision, Inspection and Quarantine
ASW	ASEAN Single Window
BRI	Belt and Road Initiative
CAREC	The Central Asia Regional Economic Cooperation
CCPIT	China Council for the Promotion of International Trade
COO	Certificates of Origin
CPTA	Framework Agreement on Cross-Border Paperless Trade in Asia and the Pacific
DEPA	Digital Economy Partnership Agreement
DSV	Department of Plant Health
E-cert	China Inspection and Quarantine E-cert System
e-COO	Electronic certificate of origin
EODE	Electronic Origin Data Exchange
EODES	Electronic Origin Data Exchange System
ESCAP	Economic and Social Commission for Asia and the Pacific
FTAs	Free Trade Agreements
GACC	General Administration of China Customs
GeNS	Generic ePhyto National System
ICC	International Chamber of Commerce
IPPC	International Plant Protection Convention
ISPM	International Standards for Phytosanitary Measures
JEVS	Joint Electronic Verification System
NPPO	National Plant Protection Organization
NTP	Networked Trade Platform
NVWA	Netherlands Food and Consumer, Product Safety Authority
PCO	Preferential Certificate of Origin
RCEP	Regional Comprehensive Economic Partnership

Chapter 1. Introduction

Cross-border paperless trade aligns well with China's strategic goals. At the highest level, cross-border paperless trade is essential to China in its bid to build new advantages in international cooperation and competitiveness through "opening up at a high standard", which is an inherent part of China's primary national priority of "high-quality development" in the decades to come (State Council, 2021).

China is a party to the Framework Agreement on Facilitation of Cross-border Paperless Trade in Asia and the Pacific (CPTA). Furthermore, the Regional Comprehensive Economic Partnership (RCEP) and the Belt and Road Initiative (BRI) enable China and its trading partners to further explore cross-border paperless trade.

This paper reviews two important trade-related documents: A certificate of origin and a sanitary and phytosanitary certificate. As shown in Table 1, both certificates are essential for China's cross-border paperless trade. This paper examines the current practice of cross-border paperless in China and discusses new pilot projects that China and its trading partners may consider.

The critical methodology for data collection and analysis is as follows.

- Extensive search on the Internet is done for information, both in English and Chinese, including websites of relevant international organizations, national government agencies, government agencies of partner countries and academic institutions.
- Interviews and extensive discussions (face-to-face meetings, telephone calls, and communications via e-mail and social media) were held with officials and experts responsible for cross-border paperless trade from several departments of the General Administration of China Customs (GACC) and its regional customs offices, Ministry of Commerce (MOFCOM), academics specializing in digital economy from universities and digital trade IT solution providers and practitioners as well as Customs Attaches of relevant partner countries' embassies in China.

Table 1: Trade-related Documents that China has been Exchanging with its Trade Partners Electronically

No.	Document	Start Date	Partner country or region
1	Certificate of Origin	2019-01-01	Chile
2	Certificate of Origin	2020-10-15	Indonesia
3	Certificate of Origin	2020-01-01	Georgia
4	Certificate of Origin	2018-04-30	Pakistan
5	Certificate of Origin and Proof of Transit	2004-01-01	Hong Kong, China
6	Certificate of Origin And Proof of Transit	2004-01-01	Macau, China
7	Certificate of Origin	2014-04-01	Taiwan province of China
8	Certificate of Origin	2016-12-20	New Zealand
9	Certificate of Origin and Proof of Non-manipulation	2019-11-01	Singapore
10	Certificate of Origin	2016-07-01	Republic of Korea
11	Origin Declaration (by AEO)	2014-07-01	Switzerland
12	Sanitary Certificate for Meat and Dairy Product	2010-12	Netherlands
13	Sanitary and Phytosanitary Certificates	2010-	New Zealand
14	Sanitary and Phytosanitary Certificates	2010-	Australia
15	Phytosanitary and veterinary certificates	2014-	Chile

Source: compiled by the authors

The General Administration of Customs (GACC) decided to operate the "Certificate of Origin Issuance System for Special Preferential Tariff Treatment"(the People's Republic of Bangladesh, Republic of Niger, Federal Democratic Republic of Ethiopia, Republic of Mozambique, Democratic Republic of Timor-Leste) on a pilot basis from 10 September 2020 onwards.¹

¹ 《Announcement on Matters Relating to the Online Operation of the System for Issuing Certificates of Origin with Special Preferential Tariff Treatment for Least Developed Countries》（GACC Announcement No. 94 of 2020）

Chapter 2. Certificate of Origin

2.1. Electronic Origin Data Exchange System (EODES)

China has been actively seeking FTAs with its trading partners to expand its opening to the outside world. Since the conclusion of the China-ASEAN FTA in 2002, China has concluded 22 FTAs with 29 of its trading partners (as of September 2023). With the tariffs on 90% of trade in goods liberalized, trade and investment between China and its FTA partners have been growing steadily. In 2022, the total value of import and export trade between China and its FTA partners has reached 14.25 trillion yuan (roughly \$2 trillion), with a year-on-year increase of 7.7%, accounting for 34% of China's total trade in goods with the rest of the world (Feng, 2023).

In 2015, the State Council issued Opinions on Accelerating the Implementation of the FTA Strategy (Guofa [2015] 69), which sets out the general and specific requirements for accelerating China's FTA negotiations and implementation. Paragraph 11 calls for "the strengthening of origin administration". More specifically, it calls for "advancing the construction of Joint Electronic Verification System (JEVS), enhancing the Electronic Origin Data Exchange (EODE) and actively exploring the wider implementation of self-declaration of origin by approved exporters" (State Council, 2015). Currently, China and its trading partners in the Free Trade Agreement may define the general principle on paperless solutions. However, the actual operation may be based on separate memorandum of understanding.

The electronic information exchange projects between China and its FTA partners in proof of origin involve the EODES or JEVS². Since 2004, China Customs has implemented the EODES. It enables China Customs and the designated administrations in 11 country and region FTA partners (Chile; Georgia; Hong Kong, China; Indonesia; Korea; Macau, China; New Zealand, Pakistan, Singapore; Switzerland; and Taiwan province of China) to exchange electronic data on proof of origin for goods being imported into or exported from their respective country or region under a preference scheme.

² In essence, from China's perspective, EODES and JEVS are the same. JEVS is only used for the arrangement between China and New Zealand.

Exporting goods from China under a Free Trade Agreement (FTA) involves the issuance of a certificate of origin by one of two authoritative entities: China Customs or the China Council for the Promotion of International Trade (CCPIT). The CCPIT is China's primary agency for promoting foreign trade and investment. Within China, the certificates/data of origin issued by CCPIT are transmitted through a designated line of communication to China Customs as the competent authority for China and then through China Customs to the customs administrations of the trading partners.

Chinese exporters can apply for an electronic certificate of origin through China International Single Window, Internet+Customs and the Declaration System of CCPIT. Since 1 November 2023 exporters can do so directly, without having to be registered in advance (GACC, 2023c). The application is processed by China Customs (when the traders apply for the certificate from Customs) and CCPIT (when the traders apply for the certificate from CCPIT) electronically, and the electronic certificate of origin is delivered electronically. Since 2019, the system has also allowed the exporters to print the certificate of origin through self-service printing (GACC, 2019).

When goods are imported under an FTA with an established EODES, according to "General Administration of Customs of the People's Republic of China Announcement No. 34 of 2021", the importers do not need to submit the electronic data or document to China customs. However, the importer needs to keep paper document if Customs wants to inspect the document.

The customs clearance system on the import side autonomously verifies the data provided by the importer against the information exchanged in the EODES in real-time, precisely at the submission of the customs declaration. Should the data align, the goods are promptly granted preferential tariff treatment upon release.

A query-based electronic certificate of origin verification is another form of EJVS. It exists between China and certain FTA partners where an EODES is not established (such as in the case of Malaysia and Thailand under China-ASEAN FTA). The query-based electronic certificate of origin verification makes it possible for Customs to carry out online verification of the authenticity of the certificate of origin issued by the foreign issuing body, using an

assigned username and password at a designated website which contains a database of the certificate of origin issued by another party.

It is also possible for foreign customs administrations to verify online specific preferential certificates of origin issued by CCPIT at the electronic certificate of origin verification website (<https://certificates.iccwbo.org/>) set up by the International Chamber of Commerce (ICC).

The EODES under different FTAs are similar in legal basis, working principle, structure, format, and technical scheme. It is worth noting that the latest upgrade of EODES between China Customs and New Zealand Customs under the upgraded China-New Zealand FTA, implemented in July 2023, contains the same advanced operational and technical features and involves the same business processes. In particular, under the upgraded EODES, the exporter would only need to enter a unique certificate of origin reference number on their electronic export document, which would then be matched to the electronic data exchanged between the two customs administrations, without having to submit electronic data on proof of origin and direct transport commitment or upload the electronic version of the proof of origin (GACC, 2023b).

2.2. EODES with the Republic of Korea

2.2.1. Legal basis

Commonly, an FTA provides that a certificate of origin has to be in paper form in a specified format and content, which will typically have to be applied, issued, delivered, submitted, and verified manually. Questions may arise regarding the legal basis for e-COO. Efforts have been made by both China and Korea Customs at an early stage of the development of the EODES to ensure that a sound legal basis is created to support the electronic exchange of certificate of origin. This is realized through both forward-looking provisions in the FTA itself and a special agreement on customs cooperation.

Article 3.27, Chapter 3 of the China-Korea FTA of 20 December 2015 on Rules of Origin and Origin Implementation Procedures prescribes that "both Parties endeavor to develop EODES before the implementation of Korea-China FTA" based on the strategic arrangement between Korea and China Customs.

In addition, the FTA specifies the procedures for facilitating the utilization of EODES in Article 3.17 (Claims for Preferential Tariff Treatment), which prescribes that “if all the information of certificate of origin is exchanged between the customs authority of each Party through EODES, the customs authority of each Party may not require the importer to submit the certificate of origin on importation”.

Article 2, Chapter 1 of the Korea-China Agreement on Strategic Partnership between Customs Authorities, which was signed on 3 July 2014, explicitly refers to efforts to establish an electronic data exchange system under Cooperation on the Exchange of Customs Data for Preferential Tariff Treatment.

2. 2. 2. Business practices

The EODES between China and the Republic of Korea was launched as a trial operation in July 2016, followed by full operation in December 2016 for the China-Korea FTA and then for certificate of origin under the Asia Pacific Trade Agreement (APTA) in 2017.

Korean traders apply for a certificate of origin electronically from UNI-PASS operated by KCS or from the Trade Certification Service Center of the Korea Chamber of Commerce and Industry (KCCI), from which applicants fill in and submit the application form along with the supporting documents and self-print the issued certificate of origin after approval by KCI or KCCI. Chinese traders can apply for a certificate of origin electronically through the China International Trade Single Window. Under the cross-border data exchange model, the data of electronic certificate of origin are exchanged between the KCS and China Customs through the EODES. After an electronic certificate of origin is issued upon the electronic application by the exporter, the data of the issued electronic certificate of origin is created in the issuing authority's database, followed by a transfer to the customs authority of the exporting country. The electronic certificate of origin data is subsequently transmitted to the customs authority of the importing country. The system will provide feedback on whether preference is granted to the goods when imported.

Alternatively, the electronic issuance systems of KCS and KCCI also enable the verification of the authenticity of the issued certificate of origin through the respective electronic verification systems accessible to the public. Users can query the authenticity of the

electronic certificate of origin by using a unique reference number and reference code indicated on the electronic certificate of origin (Korea Customs Service, 2023).

2. 2. 3. Technical scheme

The technical scheme for EODES involves the exchange of the dataset, communication solution, data format, security solution, etc. The following chart shows what data set/format is to be exchanged in an EODES between China Customs and other customs administrations:

Other elements in the technical scheme are as follows:

- Communication method: VPN or leased line; technical standard of digital signature;
- Communication protocol and software: asynchronous communication, MQ;
- Data format: message construction is XML; message standard is XML format accords with W3C standard; encoding format: UTF -8, less than 4M.

2.3. EODES with Singapore

2. 3. 1. Legal basis

Article 14, New Chapter 4 of the Protocol to Upgrade the Free Trade Agreement between the Government of the People’s Republic of China and the Government of the Republic of Singapore provides that “[T]he Parties will develop an Electronic Origin Data Exchange System to ensure the effective and efficient implementation of this Chapter in a manner jointly determined by the Parties.” This provides a useful foundation for developing EODES between the customs administrations.

2. 3 2. Business practices

Detailed information regarding the operation of the EODES is made available by Singapore Customs (Singapore Customs, no date).

The EODES was established on 1 November 2019 to enable the electronic submission of the Preferential Certificate of Origin (PCO) and the Certificate of Non-Manipulation (CNM) between Singapore and China Customs. Under the auspice of the upgraded China-Singapore Free Trade Agreement, GACC and Singapore Customs agreed to establish an EODES to allow the electronic exchange of PCO and CNM between China and Singapore.

With effect from 1 May 2020, China has implemented full electronic transmission of PCO, eliminating the need for hard copy PCO to be dispatched overseas.

Singaporean exporters and their appointed declaring agents/freight forwarders need to leverage the International Connectivity PCO (IC PCO) service available on the Networked Trade Platform (NTP) to benefit from the potentially faster customs clearance. Singaporean importers who wish to claim preferential treatment for importing goods from China to Singapore will be able to retrieve the electronic PCO issued by China via the International Connectivity PCO (IC PCO) service.

To apply for an electronic PCO under the China-Singapore FTA or China-ASEAN FTA, Singaporean traders will require an account under the Networked Trade Platform (NTP). Once the trader's NTP account is set up, the trader needs to submit a one-time declaration to Singapore Customs. This declaration is an undertaking by the applicant that the trader has read, understood and agreed to abide by the conditions governing the transmission of electronic PCO.

After submitting the one-time declaration, the applicant may proceed to apply for the PCO via TradeNet. Upon approval of the PCO, the exporter can retrieve the approved PCO in the NTP and submit the electronic PCO to China.

All PCOs issued by Singapore Customs destined for China could be submitted via this system. Similarly, all PCOs issued by China could be retrieved in this new system.

In general, the applicant can retrieve the approved PCO record in ICPCO service on NTP within 1 hour from its approval in TradeNet. They can then submit the electronic PCO immediately via ICPCO. China will receive the PCO in real-time.

Upon the arrival of the goods claiming preference at China Customs, the importer does not need to fill in the electronic origin data or upload the electronic copy of the PCO. The importer only needs to put the PCO number in the Number of Attached Document column. The clearance system will check automatically if the declaration and the PCO data exchanged match each other and give proper clearance instructions in real-time.

2. 3. 3. Technical scheme

The same technical scheme for EODES features as in the EODES between China and the Republic of Korea, including the data set to be exchanged, communication solution, data format and security solution. Apart from the communication protocol used here is Web Service instead of MQ, other elements of the technical scheme are very similar to those used in China-Korea EODES.

Chapter 3. Sanitary and Phytosanitary Certificate

3. 1. Joint Electronic Verification System

China has developed the "Electronic Certificate Information Exchange and Verification System for Inspection and Quarantine" (E-cert) to actively engage in international cooperation on electronic certificates with regulatory authorities around the world. China has signed electronic certificate cooperation arrangements with 18 countries, regions, and regional alliances and granted system query permissions to 66 national or regional regulatory authorities.³

China's international cooperation on E-Cert was first pursued by the former General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) as the fundamental solution to cracking down on fraudulent certificates and the most effective way to promote trade facilitation. It involves the setting up an international mechanism of on-line verification of e-cert through close cooperation between competent government agencies (China Customs, 2010). Improved efficiency was needed to ensure the authenticity and accuracy of the certificates while accelerating the clearance of the goods. Based on a platform developed for central data management and exchange of information, the system made possible the automatic exchange of data on inspection and quarantine certificates, online inspection and verification, feedback, and electronic tracing of fake certificates. Since 2018, the function of import and export inspection and quarantine was integrated into the General Administration of China Customs (GAAC).

In China, entry/exit inspection on SPS grounds is required for products listed in the Catalogue of Entry-Exit Commodities Subject to Inspection and Quarantine. The e-SPS certificates cover phytosanitary certificates, veterinary health certificates and animal health certificates. The relevant consignments are processed by customs at the ports against the SPS certificates which certify that food and agricultural products meet the animal and plant quarantine requirements of the importing country/region. On 1 June 2023, new templates for Entry-Exit Inspection and Quarantine Phytosanitary Certificate and the Phytosanitary Certificate for Re-export were put into use. The updated templates conform to international

³ According to the speech by the representative of China at the ad-hoc session of the Standing Committee of the Framework Agreement on Facilitation of Cross-border Paperless in Asia and the Pacific held on 23 and 24 January 2024.

standards and include requirements for new information such as Country of Origin, Country of Final Destination and Name of the Plant Protection Organization (WTO, 2023).

The China Inspection and Quarantine E-cert system was developed by the AQSIQ in 2009 which was officially put into use in 2010 for joint electronic verification of sanitary and phytosanitary certificates issued by foreign authorities for products destined for China and those issued by AQSIQ for products destined to foreign countries. The system went through an upgrade in 2016. By 2018, over 14 million electronic certificates had been uploaded to 59 countries using the system (China Customs, no date).

China has signed cooperative agreements on E-cert with Australia, Chile, the Netherlands and New Zealand and has a real-time exchange with these four countries. The number of electronic certificates has been growing over the years. In 2015, a total of around 70,000 to 300,000 electronic certificates were received from Australia, the Netherlands and New Zealand and 8,094 electronic certificates were received from Chile. By 2021, China has received more than 1.62 million electronic certificates from these countries (IGTG, 2022).

Besides the cooperative agreements, China has also signed MOUs on E-cert with 14 countries: Australia, Belgium, Chile, Czech Republic, Finland, France, Germany, Ireland, Mexico, the Netherlands, New Zealand, Russia, Thailand and the US (China Customs, no date).

For Chinese exporters, application for e-phyto is done upon export declaration for the goods through China International Single Window. China Customs, as the National Plant Protection Organization (NPPO), will inspect and quarantine the declared goods and issue the electronic sanitary and phytosanitary certificate to the exporter after assessment for qualification.

At the import end, when imported goods arrive at the port in China and are declared to customs, the system carries out control and verification of the E-cert data in real-time for the release of the goods. China Customs can submit an inquiry online, adopt appropriate measures according to the verification results, and send the feedback to the authority of the exporting country immediately (China Customs, 2019).

3.2. E-cert with the Netherlands

Paperless certification is one of the products of e-CertNL (e-CertNL, no date). E-CertNL is the official application for Dutch exporters to get legally certified for the export of their consignments and for stakeholders to verify the authenticity and validity of these certificates. E-CertNL is maintained by the Netherlands Food and Consumer Product Safety Authority (NVWA). Based on bilateral agreements, the Netherlands has e-certification with China for the veterinary export certification of dairy & dairy products and meat & meat products to China.

China started the pilot projects on certificates with e-signature with the Netherlands. The first trial of the paperless exchange of certificates for exporting dairy to China began in Shanghai in 2010. By 2021, approximately 50,000 certificates have been exchanged since the paperless exchange was realized in 2015 (Moret, 2021).

Box 1. describes the chronicle of this cooperation.

Box 1. The road to success: process of the bilateral co-operation between China and the Netherlands on paperless certification

- December 2010: the Netherlands started to access to China E-cert system for verification of Chinese veterinary export certificates contained in China E-cert database;
- May 2011: launching of the digital exchange of Netherlands veterinary export certificates for dairy with China e-Cert;
- October 2011 until October 2013: online verification of Netherlands electronic veterinary export certificates;
- MoU 2012: introduction of the International Standard on Signing (XMLDsig);
- MoU 2012: provision for a legal document on legal issues in China accepted by AQSIQ;
- MoU 2013: operational procedures;
- 2014: trial for paperless certification of dairy products in Shanghai;
- 2015: launch of paperless certification for dairy;
- 2018: extending E-cert to Dutch meat and meat products.

Adapted from: The "Why" of Electronic Certification, Netherlands Food and Consumer, Product Safety Authority (NVWA), Alexander J. Moret, Geneva , 2 July 2018 (Moret, 2018)

The following charts show the cross-border electronic exchange of health certificates and SPS certificates, respectively, between the authorities of the exporting country and the importing country.

E-cert cooperation brings changes to business processes. Since the original paper certificate is eliminated, the exporter receives a statement by mail from NVWA, NVWA issues a signed electronic (XML) certificate only. The Dutch exporter then uses this statement to inform the importer in China on the details of the Electronic Certificate. The Chinese importer uses this information in his application for border inspection at the local port. The Dutch exporter receives status updates regarding the clearance of goods by e-mail (Moret, 2018).

3. 3. Benefit and cost analysis of the electronic exchange of trade documents

Systematic and sufficiently quantitative cost-benefit analyses are not available due to a lack of information. The following benefit and cost analysis is provided based on a combination of mainly qualitative information and limited quantitative information.

3. 3 1. Benefits

The main benefits of cross-border exchange of electronic certificate of origin and electronic sanitary and phytosanitary certificate can be reflected in three aspects:

1) Improved customs clearance efficiency: in the paperless environment, the certification, declaration and verification processes will be greatly simplified and more efficient so that the goods can be cleared faster. China Customs experience shows that the EODES streamlines the cumbersome process of checking the authenticity of the paper or scanned copies of proof of origin, saving at least 0.5 days in customs clearance time. The electronic sanitary and phytosanitary certificate exchange helped to shorten the clearance time by two working days (Lin, 2015).

2) Reduced administrative cost for government and transaction cost for business: in a paperless environment, a considerable amount of operating expenses is reduced for business, including fees to produce documents, mailing and transportation costs due to the submission of the documents to the customs window at the port. In addition, keeping paper documents on record will also come with a price. According to Chile, after one year of electronic sanitary and phytosanitary certificate operation with China, one Chilean company reported savings of around \$1,000,000 (Chile, 2016). Early industry case studies indicate

that the operation of the IPPC Electronic Sanitary and Phytosanitary Certificate Solution results in time savings from 1-2 hours to 1-2 days (IPPC, 2019).

3) Reduced compliance risk: The electronic exchange of electronic certificate of origin and electronic sanitary and phytosanitary certificate will significantly reduce the possibility of trade documents being forged or tampered with and will contribute to better risk analysis, more effective law enforcement and enhanced regulatory compliance. Furthermore, transparency will also be improved. According to China Customs, in 2022, 280 fraudulent paper certificates of origin were detected in import trade with FTA partners which have not established EODES with China Customs, in contrast to zero fraudulent certificate of origin detected in import trade with FTA partners which have EODES with China Customs. In 2015, five years after E-cert was officially put into use, the operation of E-cert led to the detection of over one thousand counterfeited certificates (Lin, 2015).

3. 3. 2. Cost

A complete system for cross-border electronic certificate of origin and electronic sanitary and phytosanitary certificate exchange requires funding, technical capacity and human resources.

1) System development and maintenance: the electronic exchange of trade documents must be based on a reliable information and technology system, which involves the initial development and later maintenance. To achieve electronic exchange of trade documents among different countries, a certain amount of IT hardware and software investment is needed, including that for cross-border data transmission and security encryption through server configuration and software development.

According to an interview with China Customs, taking the EODES between China and some trading partners as an example, a rough estimation of the financial cost of system development on the Chinese side is around 200,000-300,000 yuan (equivalent to about US\$30,000-40,000, excluding costs of the existing hardware facilities and human resources already available within customs). In addition to the development and maintenance of the main system, the use of the functions of the electronic exchange program may require some investment at the software level by enterprises and government agencies as well. According to the IPPC, a point-to-point exchange of electronic sanitary and phytosanitary certificate

between an exporting country and an importing country costs about \$120,000 for each separate connection and \$20,000-100,000 for maintaining separate connections with each partner country annually (IPPC, 2019).

2) Investment in human resources: human resource investment mainly concerns two major aspects, namely, on the one hand, the participation of developers and maintenance personnel, and on the other hand, the participation of operational staff at the use level (such as customer service personnel at the back-stage). Of course, these personnel are not exclusively bound to a certain electronic exchange project. The same team can work on multiple electronic exchange projects, and the more electronic exchange projects they work on, the lower the marginal cost brought by personnel investment.

3) Learning and use costs: for the business personnel as users and the regulatory personnel responsible for the validation of trade documents, when a new electronic exchange project is launched or when the version is switched, it will bring certain learning costs. Therefore, due account should be taken of the need for both the business and government agencies to spend on organizing relevant training activities.

3.4. Success stories and lessons learned

There are certainly challenges for both sides to move forward with paperless trade. At the beginning stage, there were concerns over cross-border exchange of electronic certificate of origin data or electronic sanitary and phytosanitary certificate as a new idea which has implications, which include: 1. failing to see the need for electronic certificate of origin and electronic sanitary and phytosanitary certificate and considering it an extra administrative burden for the authorities, which requires investment in IT system, changes to operational process for certification and verification, investment in human resources and capacity; 2. concerns over legal basis and technical standards as well as protection of information in cross-border exchange of data; and 3. ownership or the ability to take the leading role of coordination among different agencies.

The following lessons are drawn from the success stories of responding to these challenges based on China Customs' experience in working with China's trading partners to develop EODES and E-cert cooperation.

3. 4. 1. Need for common understanding and shared interest

To get started, both parties need to agree on the need for electronic exchange, which requires a common understanding of the importance of EODES for both sides as a prerequisite.

As China Customs initiated the EODES with its partner administrations, it took a proactive part in communicating at a technical level to raise awareness of the benefits of eCO data exchange, which includes improved trade security and facilitation, reduced administrative and logistics cost and increased transparency, so that the partner administrations would be convinced that it is worthwhile to devote resources in technology and human capital. Efforts are also made to explain the proposed technical solution to the partner administrations by including IT experts in the discussion so that the technical requirements for the system development are clearly understood.

High-level commitment provides crucial support to the EODES and E-cert projects, which require the mobilization of financial, administrative and technical resources to develop. It is also demonstrated that the promotion of electronic exchange of documents for government control purposes will inevitably be affected by the political, economic and trade relations between countries. Electronic exchange requires a trusted ecosystem. It would be easier to push forward the electronic exchange of documents between countries with close political, economic and trade relations and a high degree of mutual trust. In this connection, the signing of cooperative agreements and MOUs by high-level officials helps to provide political and strategic support to developing and implementing the projects.

Multi-players, including various government agencies and e-platform service providers, are involved in cross-border paperless trade. Customs administrations, often at the forefront of cross-border paperless trade, have different organizational structures, and their responsibilities vary in different countries. In the case of EODES, China Customs is the leading agency in negotiating and organising the implementation of the customs-related chapters of an FTA. However, this is not always the case among China's trading partners. An ownership issue could arise when the customs administration of an FTA partner country is not taking a leading role or actively participating in the negotiation and implementation of FTAs, which requires extensive coordination among different domestic players. It was also necessary for China Customs to take responsibility for engaging with multiple stakeholders

of partner administrations, which are not limited to customs. For example, the MOU for the EODES with Indonesia was signed between China Customs on one side and Indonesian Customs, the Ministry of Industry and Trade, and the E-port administrator on the other.

3. 4. 2. Legal basis

Most FTAs provide that preferential certificate of origin shall be in paper form, and, commonly, national legislation requires that the certificate of origin and sanitary and phytosanitary certificates be in paper form. While China Customs, by customs laws and regulations, recognize electronic documents as equivalent to paper documents across all operations relating to customs clearance through the China International Trade Single Window within China, there are no domestic laws and regulations in China to support clear rules the cross-border electronic exchange of documents/data for government control purposes. Such a gap can be a barrier to cross-border electronic certificate of origin and electronic sanitary and phytosanitary certificate exchange.

To bridge the legal gap, China Customs and partner administrations have made efforts to strengthen the legal basis for EODES by explicitly providing for EODES in relevant FTAs, customs cooperation agreements and MOUs, especially in the negotiations on new free trade agreements and upgraded versions of existing free trade agreements, such as in the case of China-Korea FTA and China-Singapore FTA. Bilateral customs strategic cooperation agreements and MOUs dedicated to such purposes signed between the customs administrations provide clear policy direction and more detailed operational guidance. The cross-border electronic exchange of animal and plant inspection and quarantine certificates has also been effectively supported by dedicated bilateral cooperative agreements and MOUs signed with partner administrations.

3. 4. 3. Data protection

Some businesses are concerned about the possible disclosure of sensitive commercial information to foreign governments and their business competitors through the EODES cooperation. To address such concerns, China and its FTA partners have ensured that the data set to be exchanged and the format is carefully negotiated to limit it to data directly related to the origin determination of the goods under an FTA. Furthermore, data protection is specified in the bilateral MOUs on EODES, and security features are added so that encrypted messages are transmitted through secure channels only.

3. 4. 4. Technical standards and capacity

The technologies that can be applied to the electronic exchange of trade documents widely exist nowadays. EODES and E-cert exchange systems mainly involve developing IT systems for cross-border data transmission and security encryption through server configuration and software development to ensure documentation authenticity and guarantee that no information is lost or modified. The real obstacle lies in the differences in the standard and format of the same trade documents used in different countries/regions. The Electronic Data Exchange systems must be codified to enable connectivity and interoperability. Standardization of data elements and harmonization of electronic message specifications based on existing international standards for the EODES and electronic sanitary and phytosanitary certificate exchange projects should be adopted.

Chapter 4. Exploring the pilot projects

The following pilot projects between China and other countries might be considered to further explore opportunities and challenges to materialize cross-border paperless trade within the Framework Agreement.

4.1. e-Phyto exchange with ASEAN Member States

China and ASEAN have long been attaching great importance to agricultural cooperation. Over the past 30-plus years, the two sides have signed more than 40 agrarian cooperation agreements and established eight agricultural cooperation mechanisms. ASEAN has become China's number one agricultural trade partner and the most critical agrarian investment destination (Hou, 2023). Agricultural cooperation between China and ASEAN has been expanding in recent years. Fruitful achievements have been made in terms of investment and trade, scientific and technological exchanges and cooperation, food security, green and sustainable development of agriculture, and inter-governmental policy coordination. Many projects have been launched on trade in agricultural products such as grain, meat, vegetables, and fruits (Xinhua, 2023).

More specifically, China and ASEAN have been strengthening cooperation on SPS and food security. The China-ASEAN MOUs on Strengthening SPS Cooperation were signed in 2021 and 2022⁴. Both sides commit to strengthening cooperation in the application of SPS measures to ensure that imported and exported food, agricultural and other related products between ASEAN and China conform to requirements of safety, hygiene, health, the protection of the life and health of human beings, animals and plants, the protection of the interests of consumers, and the promotion of regional trade, in line with the principles of the WTO SPS Agreement. The MOUs also set out areas of strengthening cooperation and consultation mechanisms relating to SPS measures. The SPS Cooperation Action Plans for 2022-2023 and 2024-2025 were also adopted, comprising activities in the protection of food safety and plant and animal health (ASEAN, 2021).

Deepening cooperation under RCEP, ongoing negotiations on the upgrade of China-ASEAN FTA and bilateral FTAs as well as the Belt and Road Initiative (BRI) which China and all 10

⁴ <https://asean.org/wp-content/uploads/images/ASEAN-China-MOU-on-SPS.pdf>

ASEAN Member States joined, will likely provide further impetus to facilitating China-ASEAN agriculture trade through electronic sanitary and phytosanitary certificate exchange.

China has a national e-certification system in place and has been testing accessing the HUB and receiving and sending electronic sanitary and phytosanitary certificate. The main challenge faced in the transition to the digital exchange of phytosanitary certificates through the electronic sanitary and phytosanitary certificate Solution is the actual sending of the electronic certificates. This is due to a difference between the SPS version China Customs uses in its system and those used by the other Hub countries. While the data can be received from the Hub, problems need to be solved, and the system adjusted to be able to be sent through the Hub as well. China is assessing the necessity of changing the national system to solve data structure issues and interoperability between different countries. An interface also needs to be developed to realize a real connection between the national system and to the Hub (Yang, 2018).

Currently, China only has E-cert exchange through bilateral point-to-point exchange based on the signed cooperation agreements. China might need to agree with each of its trading partners on the best way to exchange e-certificates, either bilaterally or through the Hub (IGTG, 2022).

China only has a bilateral MOU with Thailand on E-cert among all ASEAN Member States. Thailand is among China's top 10 import sources of agricultural products. If a bilateral point-to-point exchange is preferred, Thailand can be considered a priority, given the significant trade volume. Other possible priority pilots can be E-cert with Indonesia, Malaysia, and the Philippines, which are already being exchanged at the Hub. Cambodia can be supported as a least developing country trading partner for electronic sanitary and phytosanitary certificate exchange.

Among the ASEAN Member States, only the Philippines is a Party to the Framework Agreement. In the context of implementing Article 13 (Pilot projects and sharing of lessons learned) of the Framework Agreement, China and the Philippines have the advantage of collaborating on cross-border electronic sanitary and phytosanitary certificate exchange pilot projects through the institutional arrangements established under the Framework Agreement. Since China and the Philippines have established their own national electronic

sanitary and phytosanitary certificate systems, the two countries can exchange electronic sanitary and phytosanitary certificate (i.e., for Philippines agricultural exports) through bilateral agreements or MOUs outlining the exchange terms, conditions, and procedures. Furthermore, as the Philippines is already exchanging and China is testing at the Hub, the two countries can also explore electronic sanitary and phytosanitary certificate exchange via this mode of exchange when China is ready to do so.

4. 2. Certificate exchange with CAREC member countries

Modernizing SPS measures is part of the regional agenda. CAREC Integrated Trade Agenda 2030, which was endorsed by CAREC members in 2018, incorporates the Common Agenda for Modernization of Sanitary and Phytosanitary Measures for Trade formulated in 2015. In particular, “digital SPS or e-certificates” (adopting electronic sanitary and phytosanitary certificate solutions and e-veterinary certification) are identified explicitly in the CAREC SPS Work Plan 2012-2023 (CAREC, 2021a).

Among the CAREC countries, Azerbaijan, China, Mongolia, Kyrgyzstan, Tajikistan and Turkmenistan are Parties to the Framework Agreement. Focused efforts should be made to pilot the implementation of electronic sanitary and phytosanitary certificate exchange between China and these Parties. This can be pursued through bilateral arrangements in a gradual manner, taking into account the specific circumstances of each country.

Challenges have been identified in advancing cross-border electronic sanitary and phytosanitary certificate exchange in most of these countries, notably the need for modernization of sanitary and phytosanitary procedures, the need for further development of the necessary infrastructure and ICT capacities, including national electronic sanitary and phytosanitary certificate systems and their integration into the Single Window to support interoperability and the secure transmission of electronic sanitary and phytosanitary certificate data (CAREC 2021b).

All the countries mentioned above may take advantage of the Belt Road Initiative (BRI). One of the crucial aspects of BRI is food and agricultural cooperation through agricultural investment, agrarian technology transfer, investment in infrastructure and policy coordination on trade facilitation. China Customs has been actively pushing forward the

import of agriculture and food products from BRI partner countries. In 2022, China Customs signed 73 customs inspection and quarantine cooperation documents, leading to quarantine access or actual trade of 60 food and agricultural products. During the third quarter of 2023, 67 customs inspection and quarantine cooperation documents were signed, including 50 agreements on access to food agrarian products. China has also put forward a master plan for the BRI Customs Information Exchange and Sharing Platform, which adopts standardized data elements and electronic message standards based on the existing WCO Data Model and other international standards with capacity-building elements which should facilitate electronic sanitary and phytosanitary certificate exchange among them (State Council, 2023).

The 3rd Belt and Road Summit Forum for International Cooperation held in October 2023 on the occasion of the 10th anniversary of the BRI provides renewed policy direction and impetus to accelerating the implementation of cross-border paperless trade. Among other outcomes, the Chair's Statement of the Forum concludes that "[T]he Belt and Road cooperation partners agree to enhance trade and investment liberalization and facilitation further, and support cooperation on customs clearance facilitation and law enforcement, especially mutual recognition of Authorized Economic Operators (AEOs), single window for international trade, international trade documents digitalization, shipping trade digitalization, innovation of trans-border e-commerce supervision, and cooperation on inspection and quarantine of agricultural and food products." (MFA, 2023).

Chapter 5. Conclusion

This study reviews China's current cross-border paperless trade practices, specifically emphasising the electronic exchange of documents, namely electronic certificate of origin and electronic sanitary and phytosanitary certificate. The

lessons drawn from China Customs' experiences reveal that, with political support and collaborative efforts to overcome challenges, including financial, administrative, technological, and human resource issues, there have been no insurmountable obstacles to cross-border exchange of electronic certificate of origin and electronic sanitary and phytosanitary certificate.

The report suggests expanding electronic exchanges of electronic certificate of origin and electronic sanitary and phytosanitary certificate through government-to-government cooperation, proposing the new pilot projects for electronic sanitary and phytosanitary certificate exchange with ASEAN Member States and CAREC countries. The criteria for these pilots include alignment with strategic goals, potential impact, scalability, stakeholder buy-in, technological readiness, legal and regulatory environment, feasibility, and sustainability.

The study acknowledges limitations due to the lack of publicly available information. It emphasizes the need for more systematic data sharing by Framework Agreement Parties to enable future studies to conduct comprehensive and in-depth cost-benefit analyses.

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