

Advancing cross-border paperless trade of China:

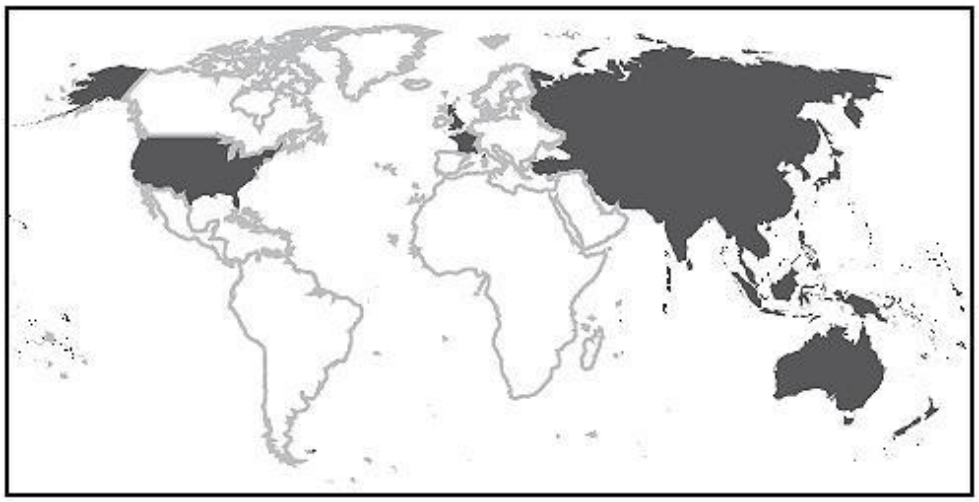
Reviewing Selected Documents and Exploring Pilot Projects

ESCAP

Advanced draft version for comments.

The Economic and Social Commission for Asia and the Pacific (ESCAP) is the most inclusive intergovernmental platform in the Asia-Pacific region. The Commission promotes cooperation among its 53 member States and 9 associate members in pursuit of solutions to sustainable development challenges. ESCAP is one of the five regional commissions of the United Nations.

The ESCAP secretariat supports inclusive, resilient and sustainable development in the region by generating action-oriented knowledge, and by providing technical assistance and capacity building services in support of national development objectives, regional agreements and the implementation of the 2030 Agenda for Sustainable Development.



Copyright © United Nations 2024

All rights reserved

Disclaimers:

The designation employed and the presentation of the material in the Report do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The United Nations bears no responsibility for the availability or functionality of URLs.

Opinion, figures and estimates set forth in this publication are the responsibility of the authors and should not necessarily be considered as reflecting the views or carrying the endorsement of the United Nations. Any errors are the responsibility of the authors. Mention of firm names and commercial products does not imply the endorsement of the United Nations.

The report has been issued without formal editing.

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

United Nations Publications

Trade and Investment Division

ESCAP

Bangkok, Thailand

Copyright © United Nations 2024

All rights reserved

.

Acknowledgement

To support the implementation of the Framework Agreement on Facilitation of Cross-border Paperless Trade in Asia and the Pacific, the ESCAP's Subregional Office for East and North-East Asia and Trade, Investment and Innovation Division jointly prepared this report. The consultants JIANG Xiaoping, LIU Ping and ZHOU Zhuojian from China collected data and drafted the report. Tengfei Wang, Economic Affairs Officers and Ma. Fideles S. Sadicon, Sustainable Development Officer, ESCAP, guided the study and reviewed and revised the report. Julian Latimer Clarke substantially contributed to discussion of the report. Kayan Lee and Elliot Carpenter provided research analysis of the information during -their internships at ESCAP. Yoshihiko Fujita provides logistical support.

The preliminary study results were shared at the meeting titled “Cross-border paperless trade: lessons from China, Mongolia and Republic of Korea” held in a hybrid manner on 5 October 2023. Furthermore, the draft report was shared at the ad-hoc session of the Standing Committee of the Framework Agreement on Facilitation of Cross-border Paperless Trade in Asia and the Pacific held on 23-24 January 2024. Insightful expertise from the participants and constructive feedback are gratefully acknowledged.

The following experts shared their insights and reviewed the documents: XXX

The study is supported by a project titled "Enhancing Capacity of East and North-East Asian Countries for Regional Connectivity through Trade and Transport Facilitation". Generous support from the Government of the Republic of Korea is gratefully acknowledged.

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 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.

Commencing with an exploration of the significance of cross-border paperless trade for China in the context of its pursuit of "high-quality development," this report underscores China's alignment with its strategic goals. This includes fostering a high-standard business environment, facilitating trade in accordance with the national strategy of "opening-up at a high level," and integrating globally to expand market presence. This report emphasizes China's commitment to leveraging technology and innovation for economic growth, while adhering to international standards in the digital economy and digital trade.

From a practical standpoint, this report delves into the operational aspects of electronic exchanges, explains the technical facets of data generation, transmission, and validation. Case studies on the Electronic Origin Data Exchange System (EODES) between China and Republic of Korea, and between China and Singapore, as well as the e-Cert exchange between China and the Netherlands, offer insights into successful implementations and lessons learned. Challenges, ranging from political will to legal frameworks, financial and administrative resources, and technological standards and capacity, are thoroughly analysed. This report includes a comprehensive cost-benefit analysis based on available information.

Looking ahead, this report recommends new pilot initiatives, focusing on the potential expansion of the e-Cert exchange. The suggested countries for this expansion include those important to agricultural trade, specifically ASEAN (Association of Southeast Asian Nations) and CAREC (Central Asia Regional Economic Cooperation) countries. The proposal takes into consideration factors such as potential impact, alignment with strategic goals, legal environment, and technological preparedness.

Table of Contents

Acknowledgement 1

Executive summary 2

Abbreviations 5

I. Introduction 1

II. Reviewing cross-border paperless trade of China 2

II. A. Electronic Origin Data Exchange System (EODES) for Origin Administration under FTAs 3

II. A. 1. Overview and background 3

II. A. 2. Operation of EODES 4

II. B. EODES with the Republic of Korea 6

II. B. 1. Legal basis 6

II. B. 2. Business practices 6

II. B. 3. Technical scheme 7

II. C. EODES with Singapore 8

II. C. 1. Legal basis 8

II. C. 2. Business practices 8

II. D. 3. Technical scheme 10

II. D. Joint Electronic Verification System for Sanitary and Phytosanitary Certificates 10

II. D. 1. Overview of China's international cooperation in E-cert 10

II. D. 2. Business practices 12

II. E. 3. Technical features 12

II. F. E-cert with the Netherlands 13

II. G. Success stories and lessons learned from e-COO and ePhyto exchange 15

II. G. 1. Need for common understanding and shared interest 16

II. G. 2. Legal basis 17

II. G. 3. Data protection 18

II. G. 4. Technical standards and capacity 18

II. H. Benefit and cost analysis of the electronic exchange of trade documents 19

II. H. 1 Benefits of eCO and ePhyto exchange 19

II. H. 2 Cost of electronic exchange of trade documents 20

III. Identifying the pilot projects 22

III. A. e-Phyto exchange with ASEAN Member States 22

III. A. 1. Alignment with strategic goals 22

III. A. 2. Legal environment and technological preparedness 24

III. B. ePhyto exchange with CAREC member countries 27

III. B. 1. Alignment with strategic goals 27

III. B. 2. Legal environment and technological preparedness 28
IV. Conclusion 30
References 31

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

I. Introduction

Cross-border paperless trade aligns well with China's strategic goals. At the highest level, cross-border paperless trade is important to China in its bid to build new advantages in international cooperation and competitiveness through "opening-up at a high standard" . This 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 better explore cross-border paperless trade.

This paper reviews two important trade-related documents, namely the Certificate of Origin, and Sanitary and Phytosanitary certificates. As shown in Table 1, both certificates are important for China's cross border paperless trade. This paper examines the current practice of cross-border paperless in China, shows what lessons can be learned from its practice, and identifies new pilot projects with a view to exploring opportunities and challenges to further materialize cross-border paperless trade.

The following methods are used to collect and validate the information:

- Extensive search on the Internet for information, both in English and Chinese, including websites of relevant international organizations, national government agencies, governments agencies of partner countries, and academics institutions.
- Interviews and extensive discussions (face-to-face meetings, telephone calls and communications via e-mail and social media) are 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	Specific arrangement
1	Certificate of Origin	2019-01-01	Chile	MoU
2	Certificate of Origin	2020-10-15	Indonesia	MoU
3	Certificate of Origin	2020-01-01	Georgia	MoU
4	Certificate of Origin	2018-04-30	Pakistan	MoU
5	Certificate of Origin and Proof of Transit	2004-01-01	Hong Kong, China	MoU
6	Certificate of Origin And Proof of Transit	2004-01-01	Macau, China	MoU
7	Certificate of Origin	2014-04-01	Taiwan province of China	MoU
8	Certificate of Origin	2016-12-20	New Zealand	MoU
9	Certificate of Origin and Proof of Non-manipulation	2019-11-01	Singapore	MoU
10	Certificate of Origin	2016-07-01	Republic of Korea	Agreement on Customs Strategic Cooperation
11	Origin Declaration (by AEO)	2014-07-01	Switzerland	MoU
12	Sanitary Certificate for Meat and Dairy Product	2010-12	Netherlands	MoU
13	Sanitary and Phytosanitary Certificates	2010-	New Zealand	MoU
14	Sanitary and Phytosanitary Certificates	2010-	Australia	MoU
15	Phytosanitary and veterinary certificates	2014-	Chile	MoU

Source: compiled by the authors

II. Reviewing cross-border paperless trade of China

II. A. Electronic Origin Data Exchange System (EODES) for Origin Administration under FTAs

II. A. 1. Overview and background

China has been actively seeking FTAs with its trading partners to expand its opening up to the outside world. Since the conclusion of China-ASEAN FTA in 2002, China has concluded 20 FTAs with 27 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 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 the Acceleration of 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). This high-level guidance provides clear policy direction to China Customs in continuing to pursue EODES and JEVS actively with its FTA trading partners.

The electronic proof of origin information exchange projects between China and its FTA partners involve the Electronic Origin Data Exchange System (EODES), or Joint Electronic Verification System (JEVS). 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.

According to an interview with China Customs, over the past decade or so, the percentage of the value of FTA/PTA goods covered by EODES has been increasing, accounting for

around 40% of total preferential trade in 2022. In 2022, it is estimated that over one million copies of preferential COOs have been covered so far by EODES for imports into China under the FTAs concerned.

II. A. 2. Operation of EODES

The process of exporting goods from China under a Free Trade Agreement (FTA) involves the issuance of certificates of origin by one of two authoritative entities: China Customs or the China Council for the Promotion of International Trade (CCPIT). The CCPIT serves as 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 eCO through China International Single Window, Internet + Customs, and the Declaration System of CCPIT. Since November 1 2023, exporters can do so directly, without having to be registered in advance (GACC, 2023c). The application is processed by China Customs, CCPIT electronically, and the eCO is delivered electronically. Since 2019, the system also allows the exporters to print the CO through self-service printing (GACC, 2019).

In cases where goods are imported under an FTA with an established EODES, the importer is exempt from the traditional process of submitting and exchanging paper documents such as the certificate of origin, origin declaration, or other evidence like a certificate of non-manipulation. These documents serve to verify that the transported goods remain unaltered or manipulated. Leveraging the benefits of e-COO, importers simply need to specify the certificate number in their customs declaration.

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.

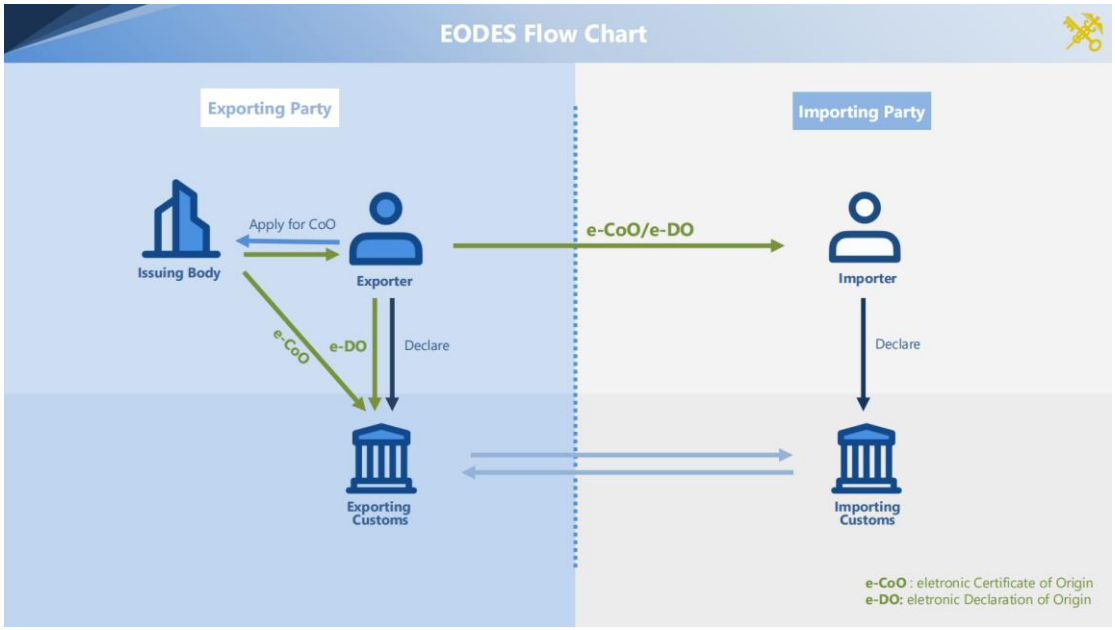


Chart: EODES FLOW

Source: China's practice of electronic origin data exchange by General Administration of China Customs, Feb. 2023, presentation at the 41st Technical Committee on Rules of Origin, February 2023 (GACC, 2023a)

A query-based e-COO 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). This makes it possible for Customs to carry out online verification of the authenticity of the COO issued by the foreign issuing body, using an assigned username and password at a designated website which contains a database of the COO issued by another party.

It is also possible for foreign customs administrations to verify certain preferential certificates of origin issued by CCPIT at the e-COO verification website (https://certificates.iccwbo.org/), sponsored by the International Chamber of Commerce (ICC) World Chambers Federation (WCF) International Certificates of Origin Accreditation Chain which the CCPIT joined in 2013.

The EODES under different FTAs are similar in terms of 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 JEVS, the exporter would only need to enter a unique certificate of origin reference

number on his/her 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 having to upload the electronic version of the proof of origin (GACC, 2023b).

II. B. EODES with the Republic of Korea

II. B. 1. Legal basis

It is common that an FTA stipulates that a certificate of origin has to be in paper form of specified format and content, which will normally have to be applied, issued, delivered, submitted and verified manually. Questions may therefore 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 COO. 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 Dec. 20, 2015 on Rules of Origin and Origin Implementation Procedures (Electronic Origin Data Exchange System), prescribes that “both Parties endeavour 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 COO 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 COO on importation”.

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

II. B. 2. Business practices

The EODES was launched into trial operation in July, 2016, followed by full operation in December 2016 for China-Korea FTA, and then for COO under the Asia Pacific Trade Agreement (APTA) in 2017.

Korean traders apply for a COO electronically from UNI-PASS, operated by KCS or from the Trade Certification Service Center of the Korea Chamber of Commerce and Industry (KCCI) . Applicants fill in and submit the application form along with the supporting documents, and self-print the issued COO after approval by KCI or KCCI. Chinese traders can apply for a COO electronically through the China International Trade Single Window. Under the cross-border data exchange model, the data of e-COO are exchanged between the KCS and China Customs through the EODES. After an e-COO is issued by the exporter, the data of the issued e-COO is created in the database of the issuing authority, followed by transfer to the customs authority of the exporting country. The e-COO 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 COO through the respective electronic verification systems accessible to the public. The users can make a query on the authenticity of the e-COO by using a unique Reference No. and Reference Code indicated on the e-COO (Korea Customs Service, 2023).

II. B. 3. Technical scheme

The Technical scheme for EODES involves the data set to be exchanged, 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:

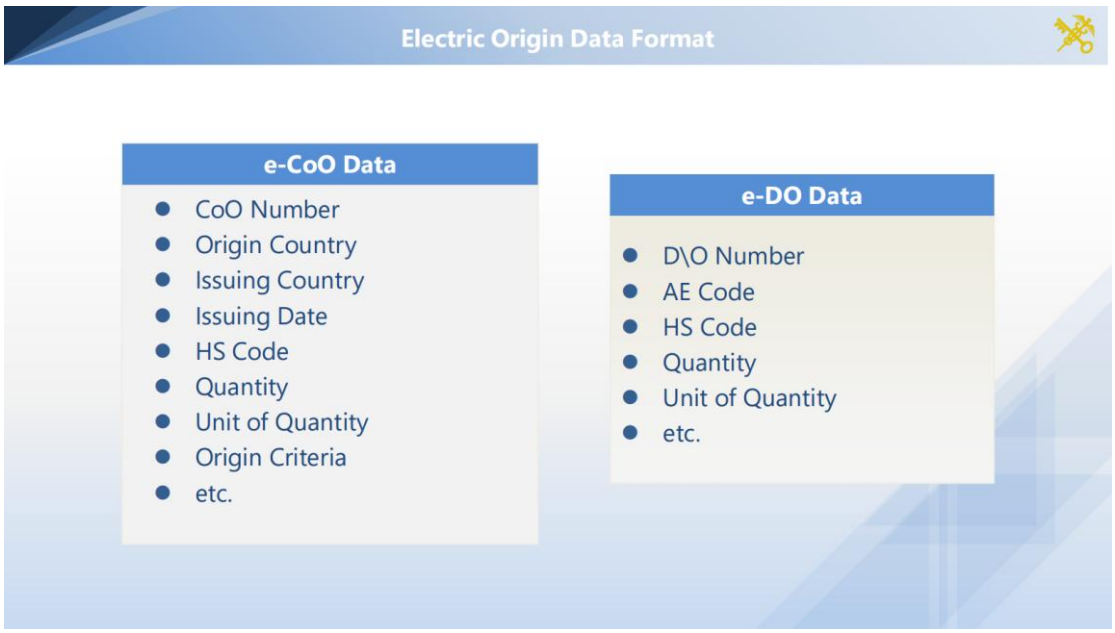


Chart: Electric Origin Data Format

Source: China's practice of electronic origin data exchange by General Administration of China Customs, Feb. 2023, presentation at the 41st Technical Committee on Rules of Origin, February 2023 (GACC, 2023a)

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.

II. C. EODES with Singapore

II. C. 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.

II. C. 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 copies of PCOs to be dispatched overseas.

To benefit from the potentially faster customs clearance, 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). Singaporean importers who wish to claim preferential treatment for the import of 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 has been set up, he/she is required to submit a one-time declaration to Singapore Customs. This declaration is an undertaking by the applicant that he/she 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 will be able to retrieve the approved PCO record in ICPCO service on NTP within 1 hour from its approval in TradeNet. He/she can then submit the electronic PCO over immediately via ICPCO. China will receive the PCO in real-time.

Upon arrival of the goods claiming preference at China Customs, the importer of his/her agent does not need to fill in the electronic origin data or upload the electronic copy of the PCO. The importer only needs to put in 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 instruction in real time.

II. D. 3. Technical scheme

Largely 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 fact that 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.

II. D. Joint Electronic Verification System for Sanitary and Phytosanitary Certificates

II. D. 1. Overview of China's international cooperation in E-cert

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 of an international mechanism of on-line verification of e-cert through close cooperation between competent government agencies.

China Inspection and Quarantine E-cert System (E-cert) was launched officially in 2010 by the former AQSIQ (China Customs, 2010). During the few years leading up to 2015, 2.25 million export certificates were issued and 0.33 million import certificates needed to be verified every year (China Customs, 2015). 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 June 1, 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 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).

With a working team having been set up in 2007, and business requirement assessment completed in 2008, 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 has undergone a major upgrade in 2016. By 2015, around 6 to over 9 million E-certs have been uploaded with over 40-46 countries using the system for verification (China Customs, 2015). 2.6 to 5 million E-certs have been verified. By 2018, more than 10 million E-certs have been uploaded, with 57 countries using the system for verification. Following the merger of AQSIQ into China Customs in 2018, over 14 million electronic certificates have been uploaded with 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 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).

China has also actively participated in the work of the IPPC E-cert solution. China has joined the initiative and has been testing the accessing to the HUB, receiving and sending the ephyto.

II. D. 2. Business practices

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 perform inspection and quarantine of the declared goods, and issue the ePhyto 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).

II. E. 3. Technical features

The joint electronic verification includes three ways: system interface operation, system integration, and hub interface (ESCAP, no date2).

(1) System interface operation (e-Cert web view application)

The e-Cert system provides interface input function so that foreign authorities can input structured certificates and submit to China Customs. Alternatively, they can also submit the PDF file of the certificates uploaded to the e-Cert system. Using the internet with user account and password being allocated to the foreign authority by China Customs, this model applies to the scenario in which the foreign authority has not digitized its certificate, or is not ready to go for online transmission.

(2) System integration

The certificate system of the foreign authority is integrated with the E-cert system of China Customs so that system-to-system eCert connection is realized, using the technology MQ or HTTP Restful.

(3) IPPC hub interface

This model applies to the situation where both sides have connected to IPPC hub, and both meet the technical standards of connecting to IPPC hub. China's customs have been testing the exchange of phytosanitary certificates through the IPPC hub.

The ePhyto exchanged conforms with the International Standards for Phytosanitary Measures (ISPM 12) of the International Plant Protection Convention (IPPC). It is based on international technical standards (UN/CEFACT e-Cert Data Standard Model). Data is transmitted in the Extensible Markup Language (XML). The system provides 3 flexible accesses: on-line browse and verification (E-Cert, no date), pull data (SOAP interface), and push data (SMTP interface). Security is guaranteed through Secure Hypertext Transfer Protocol (HTTPS), 128-bit encryption, and user authentication.

II. F. 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). To face the challenges deriving from the use of paper certificates (paper certificates can be costly, are logistically complicated, and difficult to protect against fraud), the Netherlands has launched programs for the practical implementation of electronic SPS certificates. 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. For the paperless exchange of certificates for export dairy to China, the first trial started in Shanghai in 2010. By 2021, approximately 50,000 certificates have been exchanged since paperless exchange was realized in 2015 (Moret, 2021).

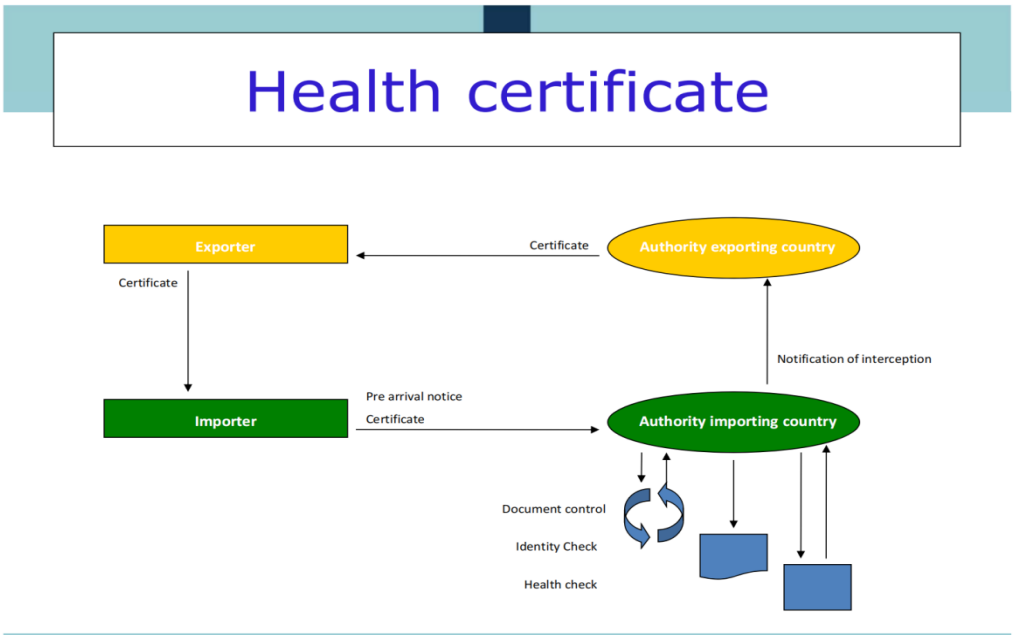
Box 1 describes the chronicle of this cooperation.

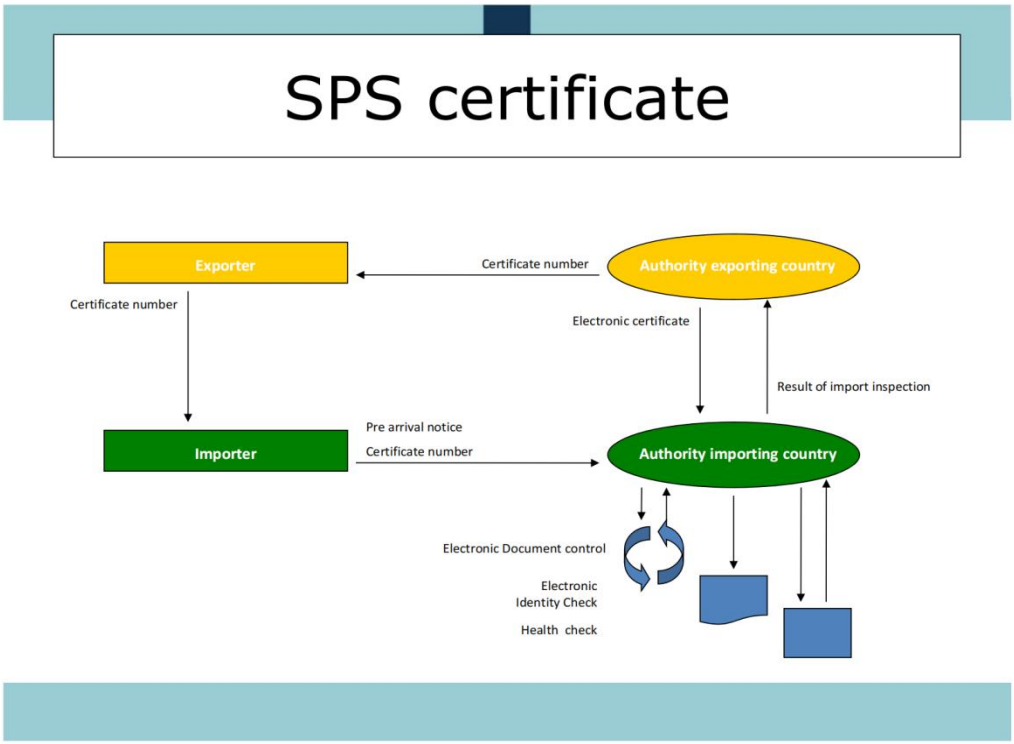
Box 1. The road to success: process of the bilateral co-operation between China and the Netherlands on paperless certification

- December 2010: the Netherlands started to access to China E-cert system for verification of Chinese veterinary export certificates

Adapted from: The "Why" of Electronic Certification, Netherlands Food and Consumer, Product Safety Authority (NVWA), Alexander J. Moret, Geneva, 02 July 2018 (Moret, 2018)

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





Source: The "Why" of Electronic Certification, Netherlands Food and Consumer, Product Safety Authority (NVWA), Alexander J. Moret, Geneva, 02 July 2018 (Moret, 2018)

The E-cert cooperation brings changes in 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 at his/her application for border inspection at the local port. The Dutch exporter receives status updates regarding the clearance of goods by e-mail (Moret, 2018).

II. G. Success stories and lessons learned from e-COO and ePhyto exchange

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 e-COO data, or ePhyto as a new idea which has implications. These include: 1. failing to see the need for e-COO and ePhyto, 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/JEVS and E-cert cooperation.

II. G. 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. These include 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 were 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. Between countries with close political, economic and trade relations, and a high degree of mutual trust, it would be easier to push forward the electronic exchange of documents. In this connection, the signing of cooperative agreements and MOUs by high-level officials helps to provide political and strategic support to the development and implementation of the projects.

There are multi-players involved in cross-border paperless trade, including various government agencies and e-platform service providers. Customs administrations, which are often at the forefront of cross-border paperless trade, belong to different organizational structures, and their responsibilities vary in different countries. In the case of EODES, China Customs is the leading agency in the negotiation and organization of 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 the responsibility to engage 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, Ministry of Industry and Trade, and E-port administrator, on the other.

II. G. 2. Legal basis

Most FTAs stipulate that preferential CO shall be in paper form, and it is common that national legislation requires that certificate of origin, and Sanitary and Phytosanitary certificates shall also be in paper form. While China Customs, in accordance with 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 e-COO and ePhyto exchange.

To bridge this legal gap, China Customs and partner administrations have made efforts to strengthen the legal basis for EODES by specifically providing for EODES in relevant FTAs, customs cooperation agreements, and MOUs. This is especially true 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.

II. G. 3. Data protection

This also relates partly to the legal issue. 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 made efforts to ensure 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.

II. G. 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 the development of IT systems for cross-border data transmission and security encryption through server configuration, and software development to ensure the authenticity of documentation and to 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 have to be codified to enable connectivity and interoperability. The adoption of data standards due to the differences in the technical direction and technical level of the existing platforms in various countries/regions results in the lack of interoperability and complications for system integration. There are a number of different approaches to determining the legal status of e-signatures which both parties must recognise mutually.

To address this challenge, standardized data elements and harmonized electronic message specifications based on existing international standards (UN/CEFACT and WCO Data Model) for the EODES and ePhyto exchange projects have been adopted which meets the needs of different countries. For example, both parties can recognise e-signatures by referring to a standard model such as the XML signature.

II. H. 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.

II. H. 1 Benefits of eCO and ePhyto exchange

The main benefits of cross-border exchange of eCO and ePhyto 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 ePhyto exchange helped to shorten the clearance time by 2 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 costs for the production of documents, mailing, and transportation costs due to the submission of the documents to the customs window at the port. In addition, record keeping of paper documents will also come with a cost. According to Chile, after one year of ePhyto 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 ePhyto Solution results in time savings from 1-2 hours to 1-2 days (IPPC, 2019).

3) Reduced compliance risk: The electronic exchange of eCO and ePhyto will greatly 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 COs were detected in import trade with FTA partners which have not established EODES with China Customs, in contrast to zero fraudulent CO 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 1,000 counterfeited certificates (Lin, 2015).

II. H. 2 Cost of electronic exchange of trade documents

A complete system for cross-border eCO and ePhyto 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's 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 ePhyto 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.

As a testimony, a study made by Korean Customs Service shows positive results that the China-Korea EODES has achieved (See Box 2).

Box 2. Positive results from Korea-China EODES implementation since 2016

According to the Korean Customs Service, as a result of Korea-China EODES, the utilization rate of Korea-China FTA has increased from 33.9% in 2016 to 49.7% in 2017 and as much as 57.2% in 2019. In 2021, the reduced clearance time and logistics costs resulting from the implementation of Korea-China EODES are estimated to amount to 72 million US Dollars. In addition, it is noted that the implementation of e-COO has mitigated the difficulties experienced during the preferential trade procedures in the Customs authorities in the importing countries. For instance, after the implementation of Korea-China EODES, the number of complaints received by KCS from the Korean exporters regarding FTA-related difficulties in China, showed a dramatic decrease from 80 cases in 2016 and 134 cases in 2017 to 30 cases in 2018, followed by 22 cases in 2019, 13 cases in 2020 and 23 cases in 2021.

Source: Korea, Article 10: Formalities Connected with Importation, Exportation and Transit, Electronic certificate of origin (e-COO) **(Korean Customs Service**, 2023b**)**

III. Identifying the pilot projects

To further explore opportunities and challenges to materialize cross-border paperless trade within the Framework Agreement, we propose the following pilot projects for China with other countries, based on the agreed criteria, namely, alignment with organizational strategic goals, potential impact, scalability, stakeholder buy-in, technological readiness, legal and regulatory environment, feasibility, and sustainability: 1. ePhyto exchange with ASEAN Member States; and 2. ePhyto exchange with CAREC member countries.

III. A. e-Phyto exchange with ASEAN Member States

III. A. 1. Alignment with strategic goals

According to statistics released by China Customs, China has been the ASEAN's largest trading partner for the past 13 years, and ASEAN became China's largest trading partner in 2020. With the entering into force of the Regional Comprehensive Economic Partnership (RCEP) in 2020, China's trade with the 10 ASEAN Member States has grown significantly. In 2022, the total trade between China and ASEAN countries reached nearly 6.5 trillion yuan ($970 billion), with the compound growth rate reaching nearly 12% during 2015-2022.

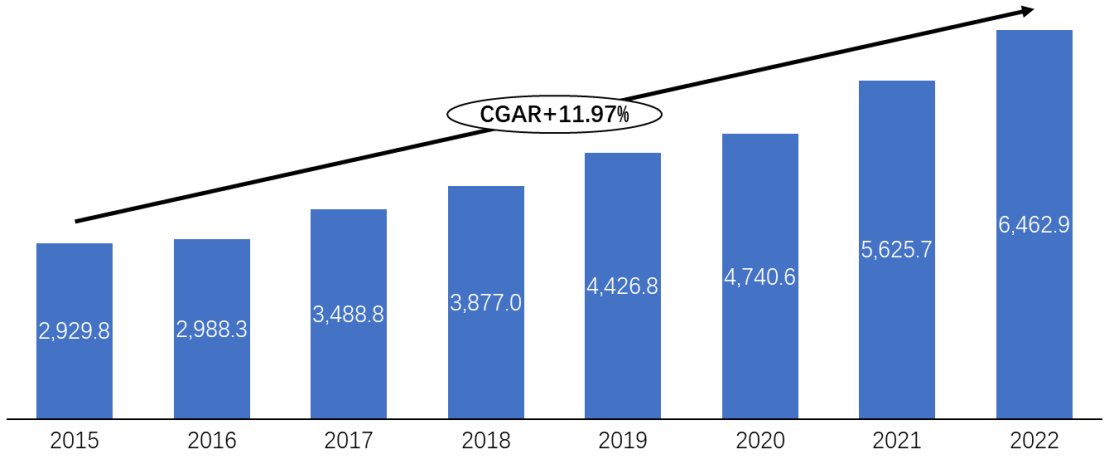


Figure: Trade volume between China and ASEAN countries in 2015-2022(unit: billion yuan)
Source: General Administration of Customs, People's Republic of China

Trade in agricultural products plays a vital role in China-ASEAN trade. China provides market access to 1,500 agricultural and food products from ASEAN. The trade volume of agricultural products between China and ASEAN reached $61 billion in 2022, topping the other countries and regions worldwide. With additional quarantine access provided to more fruits from ASEAN, $36.98 billion of agricultural products were imported from ASEAN to

China in 2022, representing an increase of 21.3% and accounting for 15.7% of China's total agricultural imports (GT staff reporters, 2021).

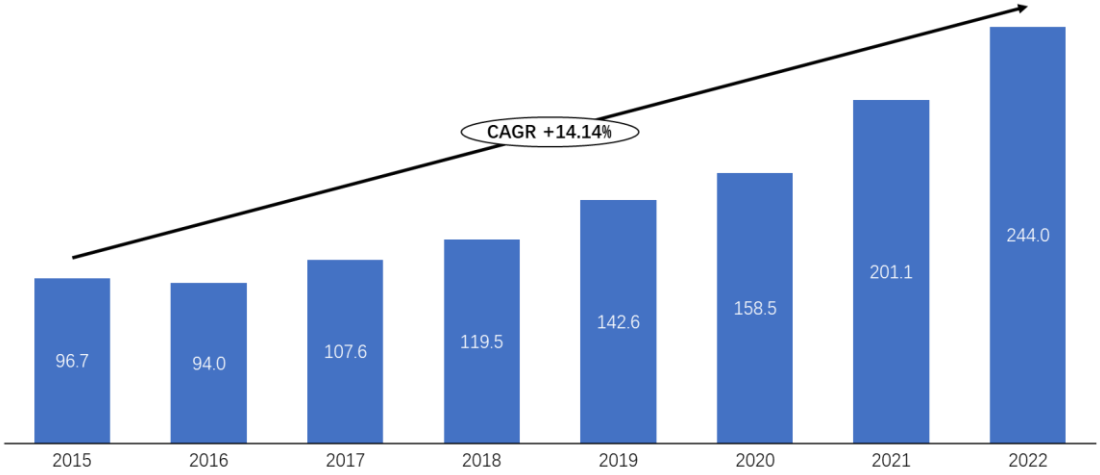


Figure: China's import volume of agricultural products from ASEAN (unit: billion yuan)

Source: General Administration of Customs, People's Republic of China

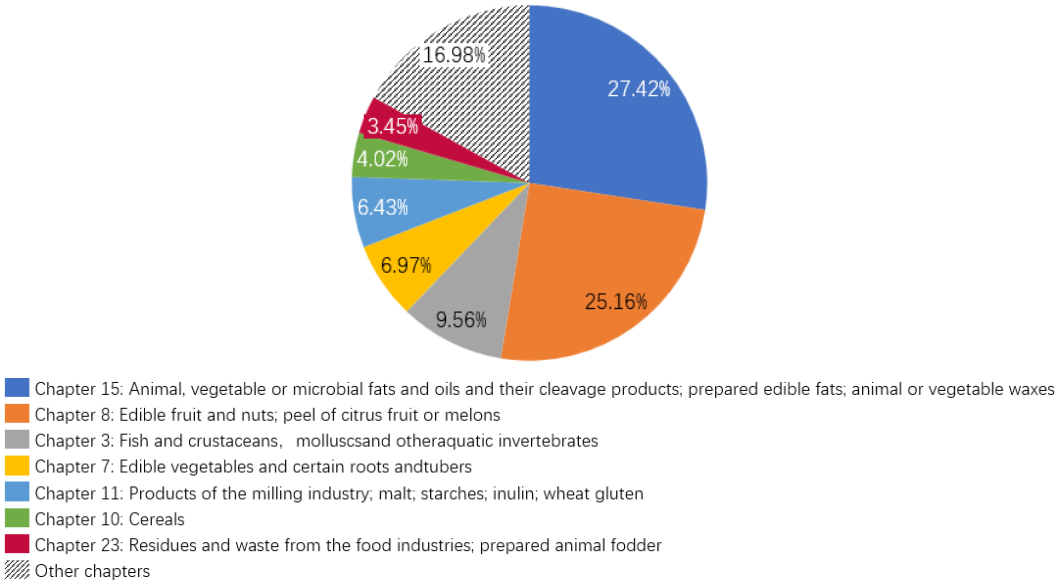


Figure: Main ASEAN agricultural exports to China in 2022 by HS Chapters

Source: General Administration of Customs, People's Republic of China

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 agricultural cooperation agreements, and established eight agricultural cooperation mechanisms. ASEAN has become China's number one agricultural trade partner, and the most important agricultural 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 2022. 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, 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 ASEAN Member States joined, will likely provide further impetus to facilitating China-ASEAN agriculture trade through ePhyto exchange.

III. A. 2. Legal environment and technological preparedness

The fact that legal frameworks across ASEAN countries are not harmonized creates complexities and difficulties in cross-border transactions, especially for electronic exchange of trade documents with countries outside the region. While electronic documents and signatures are broadly accepted in the region, they are subject to various regulatory, administrative, and practical considerations. Countries have different levels of data protection regulations and security standards, which can create uncertainties for businesses engaging in cross-border trade (Zicolaw, 2020).

As far as technological preparedness is concerned, ASEAN Member States are at varying stages in their participation in the IPPC e-Phyto solution:

- Indonesia, Malaysia, the Philippines and Thailand - exchanging at IPPC ePhyto Hub (the Hub);
- Myanmar, Singapore- testing at the Hub;
- Cambodia- registered at the Hub;
- Others: unregistered.

China has a national e-certification system in place, and has been testing accessing the HUB, receiving and sending ePhyto. The main challenge faced in the transition to the digital exchange of phytosanitary certificates through the ePhyto 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. Today data can be received from the Hub, but problems need to be solved and the system adjusted in order for data to be able to send through the Hub as well. China is considering if adjustment of the national system might be needed to solve the issues of data structure and interoperability between different countries. An interface also needs to be developed to realize a real connection between the national system and to Hub (Yang, 2018).

At present, China only has E-cert exchange through bilateral point-to-point exchange based on the signed cooperation agreements. China will 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).

Among all ASEAN Member States, China only has a bilateral MOU with Thailand on E-cert. 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 important trade volume. Other possible priority pilots can be E-cert with Indonesia, Malaysia, and the Philippines which are already exchanging at the Hub. Cambodia can be supported as a least developed country trading partner for ePhyto exchange.

Among the ASEAN Member States, only the Philippines is a Party to the Framework Agreement. In the context of the implementation of Article 13 (Pilot projects and sharing of lessons learned) of the Framework Agreement, China and the Philippines have the advantage in collaborating on cross-border ePhyto exchange pilot projects through the institutional arrangements established under the Framework Agreement. In the context of

the implementation of Article 9 (International standards for exchange of trade-related data and documents in electronic form) of the Framework Agreement, collaboration between the two countries in sharing their experience and lessons learned in applying international standards to ensure interoperability in ePhyto exchange will also contribute to the collection of best practices for interoperability and further development of international standards related to cross-border paperless trade .

The Philippines has a well-functioning ePhyto system which enables cross-border exchange via both bilateral arrangements and the IPPC ePhyto Solution. Since China and the Philippines have both established their own national ePhyto systems, the two countries can exchange ePhyto (i.e. for the Philippines agricultural exports) through bilateral agreements or MOUs outlining the terms, conditions, and procedures for exchanging. Furthermore, as the Philippines is already exchanging and China is testing at the Hub, the two countries can also explore ePhyto exchange via this mode of exchange when China is ready to do so.

Box 3 shows the development process of ePhyto exchange in the Philippines, notably through close collaboration between Philippines Customs and its NPPO.

Box 3. ePhyto system of the Philippines

Bureau of Plant Industry (BPI), the country's official NPPO, started to implement the electronic certification of phytosanitary certificates in 2019 to allow exporters to apply for electronic phytosanitary certificates, which paved the way for the Philippines to exchange ePhyto with its trading partners (Philexportcebu, 2019). In January, 2023, the Bureau of Customs (BOC) and BPI began to work together to facilitate exchange of e-Phyto with ASEAN Members using the BOC Electronic Phytosanitary Management Portal, which has access to the e-Phyto issued by BPI, as well as those issued by the respective NPPOs of exporting countries (Bureau of Customs, 2023a). Follow-up activities between BOC and BPI included data and process mapping covering both incoming and outgoing e-Phyto messages with ASEAN, as well as system alignment with the IPPC Hub. In April 2023, the BOC and the BPI agreed to participate in the end-to-end pilot e-Phyto exchange with Indonesia in May and with Thailand in June 2023 (Bureau of Customs, 2023b).

III. B. ePhyto exchange with CAREC member countries

III. B. 1. Alignment with strategic goals

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 ePhyto solutions and e-veterinary certification) are specifically identified in the CAREC SPS Work Plan 2012-2023 (CAREC, 2021a).

Among the CAREC countries, Azerbaijan, China, Mongolia, Tajikistan, and Turkmenistan are Parties to the Framework Agreement. Ratification by Kyrgyzstan will be imminent. As guided by Article 13 (Pilot projects and sharing of lessons learned) of the Framework Agreement, focused efforts should be made to pilot the implementation of ePhyto 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. As Parties to the Framework Agreement, their collaboration will be a concrete action in the implementation of Article 14 (Capacity Building) of the Framework Agreement, so that tailor-made capacity building activities can be identified and delivered based on the technical assistance already received from relevant international organizations and donors in the CAREC region.

Challenges have been identified in advancing cross-border ePhyto 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 ePhyto systems and their integration into the Single Window to support interoperability, and the secure transmission of ePhyto data (CAREC 2021b).

Based on available information, the following boxed texts outline the current status in relation to the implementation of ePhyto certification in Azerbaijan, Kyrgyzstan, Mongolia, Tajikistan, and Turkmenistan, respectively.

Since all CAREC countries have joined the BRI, strengthened cooperation in plant quarantine for trade facilitation under the BRI should further boost SPS cooperation among CAREC countries, including ePhyto exchange.

One of the crucial aspects of BRI is the food and agricultural cooperation through agricultural investment, agricultural 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 agricultural 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 ePhyto 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 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 further enhance trade and investment liberalization and facilitation, 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).

III. B. 2. Legal environment and technological preparedness

Most CAREC countries have a legal basis for the recognition of the cross-border exchange of electronic phytosanitary certificates. However, they vary in terms of provisions for allowing electronic exchange and international storage of data including ePhytos. All CAREC countries except Turkmenistan are Contracting Parties of IPPC. Therefore, separate mutual recognition agreement is not necessary to exchange phytosanitary data.

However, the adoption of global standards and technical capacity among CAREC countries vary (ADB, 2021b). A study by CAREC identified five major reasons as to why CAREC countries do not practice mutual recognition of phytosanitary e-certificates at this stage. These are: a lack of technically qualified and authorized phytosanitary personnel; the need for mutual recognition agreements; an absence of phytosanitary certification e-systems; the need for strong security standards to prevent fraud; and the development stage of phytosanitary certification e-systems (CAREC, 2021b).

According to IPPC ePhyto Solution (IPPC ePhyto Solution,no date), Uzbekistan is already exchanging at the Hub; China, Georgia, and Pakistan are testing; Azerbaijan, Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan, and Turkmenistan are currently unregistered but are in the process of registering to access the Hub, so as to enable them to utilize their own IT systems to issue and receive ePhytos, or to use the Generic ePhyto National System (GeNS) (IPPC, 2023).

IV. Conclusion

This study reviews China's current cross-border paperless trade practices, with a specific emphasis on the electronic exchange of documents, namely eCO and ePhyto, for government control purposes. The report showcases successful examples of cross-border eCO exchange, such as the EODES with Korean Customs Service and Singapore Customs. For ePhyto, collaboration with the Netherlands for real-time point-to-point exchange is highlighted, along with China's participation in the IPPC ePhyto Solution.

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 eCO and ePhyto in China.

Looking ahead, the report suggests expanding electronic exchanges of e-COO and ePhyto through government-to-government cooperation, proposing three new pilot projects for ePhyto 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, and 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.

References

ADB. (2021a) Digitalizing Trade in Asia Needs Legislative Reform. Available at: https://www.adb.org/sites/default/files/publication/704041/digitalizing-trade-asia-legislative-reform.pdf (Accessed:14 October 2023).

ADB. (2021b) Expanding Agri-Trade in Central Asia through the Use of Electronic Certificates. ADB Briefs. Available at: https://www.adb.org/sites/default/files/publication/743001/adb-brief-184-agri-trade-central-asia.pdf (Accessed: 14 October 2023).

ASEAN. (2021) Memorandum of Understanding between the Association of Southeast Asian Nations and the Government of the People's Republic of China on Strengthening Sanitary and Phytosanitary Cooperation.(2021). Available at: https://asean.org/wp-content/uploads/2021/09/21089.pdf (Accessed: 14 October 2023).

BRICS. (2021a) Action Plan 2021-2024 for Agricultural Cooperation of BRICS Countries. Available at: http://www.brics.utoronto.ca/docs/210827-agriculture-action-plan.pdf (Accessed: 16 October 2023).

BRICS. (2021b) The Joint Declaration of the 11th Meeting of the BRICS Ministers of Agriculture. Available at: http://brics.utoronto.ca/docs/210827-agriculture.pdf (Accessed:16 October 2023).

Bureau of Customs. (2023a) BOC and DA-BPI Begin Work to Facilitate the Exchange of Electronic Phytosanitary Certificate in ASEAN. Available at: https://customs.gov.ph/boc-and-da-bpi-begin-work-to-facilitate-the-exchange-of-electronic-phytosanitary-certificate-in-asean/ (Accessed: 13 November 2023).

Bureau of Customs. (2023b) BOC, BPI lead regional exchange of e-Phyto Certificate in ASEAN. Available at:https://customs.gov.ph/boc-bpi-lead-regional-exchange-of-e-phyto-certificate-in-asean/ (Accessed: 13 November 2023).

CAREC. (2021a) CAREC SPS Work Plan 2021-2023. Available at:

https://www.carecprogram.org/uploads/CAREC-SPS-Workplan-2021-2023-June-23-2021.pdf (Accessed: 14 Nov. 2023).

CAREC. (2021b) Phytosanitary e-Certification in CAREC. Available at: https://estore.carecinstitute.org/wp-content/uploads/2021/04/S3-1-Dr.-Samad-side-by-side.pdf (Accessed: 16 October 2023).

Chile. (2016) IPPC Global Symposium on Implementation of ePhyto, 9 to 13 November 2015. Incheon City, Republic of Korea. Available at: https://assets.ippc.int/static/media/files/publication/en/2016/02/3_COREA_NOV_2015_EPHYTO_ENGLISH.pdf (Accessed: 7 August 2023).

China Customs. (2010) China Inspection and Quarantine E-cert System Launched Officially. Available at: http://www.e-to-china.com/tariff_changes/Policy_Focus/2010/0319/76025.html (Accessed: 28 July 2023).

China Customs. (2015) E-cert experience - China Journey. Available at: https://assets.ippc.int/static/media/files/publication/en/2016/02/6_E-cert_In_CHINA.pdf (Accessed: 28 July 2023).

China Customs. (no date) Experience of the International Cooperation of China Customs E-cert. Available at: https://www.unescap.org/sites/default/files/China%20Customs.pdf (Accessed: 28 July 2023).

China Customs.(2019) Experiences and Practices in International Cooperation on China Inspection & Quarantine E-cert. Available at: https://www.unescap.org/sites/default/files/1.2%20-%20Experiences%20and%20Practices%20in%20the%20International%20Cooperation.pdf (Accessed: 27 July 2023).

E-Cert.(no date) China Inspection and Quarantine E-cert System - Single Window. Available at: http://ecert.eciq.cn (Accessed: 27 July 2023).

e-CertNL. (no date) e-CertNL Electronic exchange of import and export data. Available at: https://e-cert.nl/en/ (Accessed: 27 July 2023).

ESCAP. (no date1) China, Cross-border Paperless Trade Database. Available at: https://www.digitalizetrade.org/projects?country=CHN (Accessed: 27 July 2023).

ESCAP. (no date2) China's International E-Cert Cooperation. Available at: https://www.digitalizetrade.org/projects/chinas-international-e-cert-cooperation (Accessed: 28 July 2023).

ESCAP.(no date3) e-SPS: The Netherlands. Available at: https://www.digitalizetrade.org/projects/e-sps-netherlands (Accessed: 7 August 2023).

Feng,Q. (2023) 高标准建设自贸区网络. Economic Daily, 18 April. Available at: https://www.gov.cn/yaowen/2023-04/18/content_5751925.htm (Accessed: 17 July 2023)

Food Safety Agency of the Republic of Azerbaijan. (2023) CAREC Conference on Electronic Phytosanitary Certificates, Tashkent, Uzbekistan. Available at: https://www.carecprogram.org/uploads/Session-3e_Azerbaijan-AFSA_eng.pdf (Accessed: 14 November).

Food Security Committee under the Government of the Republic of Tajikistan. (2023) Sanitary and Phytosanitary Measures in the Republic of Tajikistan: Opportunities for Implementing ePhyto Solutions, 3rd Meeting of the CAREC Regional Working Group on Sanitary and Phytosanitary Measures. Available at: https://www.carecprogram.org/uploads/3rd-Meeting-of-the-CAREC-SPS-RWG-Session-4b-TAJ_ENG.pdf (Accessed: 14 Nov. 2023).

FTA Korea Plus. (no date) Available at: https://www.ftakoreaplus.co.kr/#/account/auth/login?returnUrl=%2Fcontents%2Fdashboard%2Fstatus (Accessed: 27 July 2023).

General Administration of Customs. (2019) 海关总署公告 2019 年第 77 号（关于全面推广原产地证书自助打印的公告 公告〔2019〕77 号. Available at: https://www.gov.cn/zhengce/zhengceku/2019-11/05/content_5448961.htm (Accessed: 17 July 2023)

General Administration of Customs. (2023a) China's practice of electronic origin data exchange. Available at: https://www.wcoomd.org/-/media/wco/public/global/pdf/events/2023/workshop-on-rules-of-origin/session-2/afternoon/en/4_chinas_practice_of_eletronic_origin_data_exchange_0206.pdf?la=fr (Accessed: 17 July 2023] .

General Administration of Customs. (2023b) 海关总署公告 2023 年第 82 号（关于中国与新西兰原产地电子联网升级有关事宜的公告）. Available at: http://wuhan.customs.gov.cn/customs/302249/2480148/5137436/index.html (Accessed: 18 July 2023).

General Administration of Customs. (2023c) 海关总署：11 月 1 日起取消出口货物原产地企业备案事项. Available at: http://www.customs.gov.cn/customs/302249/302266/302267/5449140/index.html (Accessed: 14 October 2023).

GT staff reporters. (2021) China to buy $150b in farm goods from ASEAN, almost double current level, Global Times. Available at: https://www.globaltimes.cn/page/202301/1283779.shtml (Accessed: 14 October 2023)

GT staff reporters.(2023) Trade between China and ASEAN grows 15% in 2022, first year of RCEP's enforcement, Globaltimes. Available at: https://www.globaltimes.cn/page/202301/1283779.shtml (Accessed: 14 October 2023).

Hou,Y.(2023) China, ASEAN strengthen agricultural cooperation, China Daily. Available at: https://global.chinadaily.com.cn/a/202305/04/WS64530673a310b6054fad0ed4.html (Accessed: 14 October 2023).

IGTG.(2022) IPPC ePhyto Solution: 2021-22 virtual global workshop tour continues with success. Available at: https://igtcglobal.org/index.php?id=10&tx_news_pi1%5Bnews%5D=238&tx_news_pi1%5Bcontroller%5D=News&tx_news_pi1%5Baction%5D=detail&cHash=64355cca875d3dca9a42b3022602caba (Accessed: 17 July 2023).

IPPC. (2019) Available at: https://assets.ippc.int/static/media/files/publication/en/2019/04/ePhyto_CPM-14.pdf (Accessed: 8 August 2023).

IPPC. (2023) Member countries of the Central Asia Regional Economic Cooperation on the road to adopting the IPPC ePhyto Solution, IPPC. Available at: https://www.ippc.int/en/news/member-countries-of-the-central-asia-regional-economic-cooperation-on-the-road-to-adopting-the-ippc-ephyto-solution/ Accessed: 14 October 2023).

IPPC ePhyto Solution.(2021) USA Implementation Case Story. Available at: https://www.ephytoexchange.org/landing/assets/docs/2021-05_USA_ePhyto_Implementation_CaseStory.pdf (Accessed: 16 October 2023).

IPPC ePhyto Solution.(no date) ephytoexchange. Available at: https://www.ephytoexchange.org/landing/index.html (Accessed:Viewed 14 October 2023).

Korea Customs Service.(2023a) Implementation of e-COO, Best Practice of Korea Customs Service. Available at: https://www.wcoomd.org/-/media/wco/public/global/pdf/events/2023/workshop-on-rules-of-origin/session-2/afternoon/en/3_20230124_tcro_implementation_of_e_coo_korea_customs_service.pdf?la=en (Accessed: 17 July 2023).

Korean Customs Service. (2023b) Formalities Connected with Importation, Exportation and Transit, Electronic certificate of origin (e-COO). Available at: https://www.wcoomd.org/-/media/wco/public/global/pdf/topics/wto-atf/members-practices/art-10_1/korea-art-10.pdf?la=en (Accessed: 28 July 2023).

Lin, J.(2015) China's International E-Cert Cooperation, UNNExT Workshop on Electronic Exchange of SPS Certificates for Better Trade Control and Facilitation[online]. Available at: https://www.unescap.org/sites/default/files/04._China_Lin_Jing.pdf (Accessed: 7 August 2023).

MAPA. (2018) Electronic Sanitary Certification in Brazil, Claúdia Vitória Custodio Dantas. Available at: https://www.wto.org/english/tratop_e/sps_e/session_4_2b_brazil_ecertification_claudia_custodio_dantas.pdf (Accessed: 16 October 2023).

MFA.(2023) Chair's Statement of the Third Belt and Road Forum for International Cooperation. Available at: https://www.mfa.gov.cn/mfa_eng/zxxx_662805/202310/t20231020_11164505.html (Accessed:16 October 2023).

Ministry of Agriculture and Livestock. (2020) Phytosanitary requirements and Certification. Available at: https://www.gov.br/agricultura/pt-br/internacional/english/exporting/plants/requisitos-e-certificacao-fitossanitaria-1 (Accessed: 16 October 2023).

Ministry of Foreign Relations. (2023) Joint Communiqué between the Federative Republic of Brazil and the People's Republic of China on the Deepening of their Global Strategic Partnership – Beijing. Available at: https://www.gov.br/mre/en/contact-us/press-area/press-releases/joint-communique-between-the-federative-republic-of-brazil-and-the-people2019s-republic-of-china-on-the-deepening-of-their-global-strategic-partnership-beijing-14-april-2023 (Accessed: 16 October 2023).

Moret, A. J. (2018) Netherlands Food and Consumer Product Safety Authority (NVWA). Available at: https://unece.org/fileadmin/DAM/trade/agr/meetings/ge.11/2018/emeat_Moret.pdf (Accessed: 7 August 2023).

Moret. A.J. (2021) The Netherlands Food and Consumer Product Safety Authority. Available at: https://www.unescap.org/sites/default/d8files/event-documents/The%20Netherlands%20Food%20and%20Consumer%20Product%20Safety%20Authority_food%20safety%20e%20Cert.pdf (Accessed: 27 July 2023).

OECD. (2023) Electronic Sanitary Certificates for Trade in Animal Products - Opportunities and Challenges, OECD Food, Agriculture and Fisheries Paper, February 2023 n°190. Available at: https://www.oecd.org/publications/electronic-sanitary-certificates-for-trade-in-animal-products-5417ff4f-en.htm (Accessed: 13 November 2023).

Philexportcebu. (2019) E-application for phytosanitary certificates now mandatory. Available at：

https://www.philexportcebu.org/e-application-for-phytosanitary-certificates-now-mandatory/ (Accessed: 13 November, 2023).

Philexportcebu. (2023) BOC, BPI Facilitate e-Phyto Exchange with ASEAN. Available at: https://www.philexportcebu.org/boc-bpi-facilitate-e-phyto-exchange-with-asean/ (Accessed: 13 November 2023).

Singapore Customs. (no date) Overview, Certificate of Origin. Available at: https://www.customs.gov.sg/businesses/certificates-of-origin/overview/ (Accessed: 27 June 2023).

State Council. (2015) 国务院关于加快实施自由贸易区战略的若干意见国发〔2015〕69 号. Available at: https://www.gov.cn/zhengce/content/2015-12/17/content_10424.htm (Accessed: 17 July 2023).

State Council. (2021) 商务部国际司负责人就《亚洲及太平洋跨境无纸贸易便利化框架协定》生效答记者问. Available at: https://www.gov.cn/zhengce/2021-02/21/content_5588058.htm (Accessed: 14 October 2023).

State Council. (2023) 国务院新闻办就 2022 年全年进出口情况举行发布会. Available at: https://www.gov.cn/xinwen/2023-01/13/content_5736993.htm (Accessed: 14 October 2023).

State Council. (2023) 海关总署：11 月 1 日起取消出口货物原产地企业备案事项. Available at: https://www.gov.cn/lianbo/bumen/202310/content_6910545.htm (Accessed: 17 July 2023).

State Plant Protection Service, Ministry of Agriculture Turkmenistan. (2023) CAREC Conference on Electronic Phytosanitary Certificates, Tashkent, Uzbekistan. Available at: https://www.carecprogram.org/uploads/Session-3j_Turkmenistan_eng.pdf (Accessed 14 November 2023).

SWIS. (2023) Single Window Center for Foreign Trade, State Enterprise under the Ministry of Economy and Commerce of the Kyrgyz Republic. CAREC Conference on Electronic Phytosanitary Certificates, Tashkent, Uzbekistan. Available at: https://www.carecprogram.org/uploads/Session-3g_Kyrgyz-Republic_eng.pdf (Accessed 14 November 2023).

Tsendsuren. (2023) Cross-border Paperless Trade: Lesson from Mongolia, 41st UN/CEFACT Forum: ESCAP Workshop: Cross-border Paperless Trade: Lessons from China, Mongolia and Republic of Korea. Available at: https://www.unescap.org/sites/default/d8files/event-documents/4.%29%20TSENDSUREN%20Davaa_0.pdf (Accessed 14 November 2023).

WTO. (2023) Committee on Sanitary and Phytosanitary Measures. Available at: https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/SPS/NCHN1278.pdf&Open=True (Accessed: 27 July 2023).

Xinhua. (2022) BRI Countries Advance Agricultural Imports, Exports. Available at: https://english.www.gov.cn/news/internationalexchanges/202208/29/content_WS630bfb48c6d0a757729df582.html (Accessed: 14 October 2023).

Xinhua. (2023) China Focus: China, ASEAN aim for deepened agriculture cooperation. Available at: http://www.china.org.cn/china/Off_the_Wire/2023-03/31/content_85204443.htm (Accessed: 14 October 2023).

Yang, H.(2018) Connecting to the Hub ePhyto in China, IPPC. Available at: https://www.ippc.int/static/media/files/publication/en/2018/02/H.Yang.China.23rdJAN_Lf2x9Gz.pdf (Accessed: 14 October 2023).

Zicolaw. (2020) Electronic & Digital Signatures in ASEAN.ASEAN Insiders Series. Dec.2020. Available at:https://www.zicolaw.com/wp-content/uploads/2020/12/ASEAN-INSIDERS_Electronic-Signatures.pdf (Accessed: 16 October 2023).