



INFORMATION MANAGEMENT IN AGRIFOOD CHAINS:

Towards an Integrated Paperless Framework for Agrifood Trade Facilitation

The United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) is the regional development arm of the United Nations and serves as the main economic and social development centre for the United Nations in Asia and the Pacific. Its mandate is to foster cooperation between its 53 members and 9 associate members. ESCAP provides the strategic link between global and country-level programmes and issues. It supports Governments of countries in the region in consolidating regional positions and advocates regional approaches to meeting the region's unique socioeconomic challenges in a globalizing world. The ESCAP office is located in Bangkok, Thailand.

Please visit the ESCAP website at www.unescap.org for further information.



The darker area of the map represents the members and associate members of ESCAP

The United Nations Network of Experts for Paperless Trade in Asia and the Pacific (UNNExT) is a community of knowledge and practice for experts from developing countries and transition economies from Asia and the Pacific involved in the implementation of electronic trade systems and trade facilitation. Established by ESCAP and the United Nations Economic Commission for Europe (UNECE), UNNExT aims to support national, subregional and transcontinental Single Window and paperless trade initiatives. It's emphasis is on training, knowledge sharing and application of international standards for trade facilitation. For more information on UNNExT, please visit <http://unnex.t.unescap.org/>

Information Management in Agrifood Chains: Towards and Integrated Paperless Framework for Agrifood Trade Facilitation

United Nations publication
Copyright © United Nations 2015
All right reserved
Manufactured in Thailand
ST/ESCAP/2711

The designations employed and presentation of the material in this publication 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.

Disclaimers

The opinions, figures and estimates set forth in this publication are the responsibility of the authors, and should not be considered as reflecting the views or carrying the endorsement of the United Nations, UNNExT members or partners, or other organizations that have contributed to this document. This publication is a living document, which will be reviewed and updated periodically. Comments are welcome.

Mention of specific names and commercial products and services does not imply the endorsement of the United Nations.

The use of the publication for any commercial purposes, including resale, is prohibited, unless permission is first obtained from the UNNExT secretariats. Request for permission should state the purpose and the extent of the reproduction. For non-commercial purposes, all material in this publication may be freely quoted or reprinted, but acknowledgement is required, together with a copy of the publication containing the quote or reprint.

Table of Contents

Acknowledgements.....	v
Preface.....	vi
List of abbreviations and acronyms.....	vii
Executive summary.....	1
Chapter I: Introducing information management in agrifood chains.....	4
A. The agrifood business and its information needs	6
B. The vision: Smarter food	10
Definition of information management in agrifood chains	12
C. Functions of information management systems in agrifood chains	13
D. Benefits of agrifood chain information management	15
Chapter I Appendix: Implementation checklist for enhancing agrifood chain information management	17
Chapter II: Structuring agrifood chain information management.....	19
A. Macro-trends in agrifood chain information management	19
1. Guaranteeing food safety	19
2. Increasing sustainability.....	20
3. Ensuring food quality.....	22
4. Efficient trade	23
B. Structuring agrifood chain information management	24
Chapter III: Practical recommendations for enhancing information management for agrifood trade facilitation.....	29
A. Development of a Single Window for Agrifood Trade.....	29
B. Establishment of a roundtable for agrifood chain information management	32
C. Identification of missing paperless systems for agrifood trade and their implementation	32
D. Establishment of normative databases for locations, products and land use	33
E. Establishment of a standard framework for identification and information exchange.....	34
F. Establishment of authorized economic operators	34
G. Establishment of risk-based inspection system for issuance of licences and certificates	35
H. Establishment of a food safety emergency system	35
I. Addressing legal implications of information management systems for agrifood chains ...	36
J. Funding development of core components	36

K. Kick-starting SWAT through four priority actions	38
Action 1: Implement electronic agrifood licence/permit/certificate and audit system.....	38
Action 2: Establish international cooperation on SWAT and inter-agency information systems.....	39
Action 3: Implementation of an automated risk-based inspection system using cross-border electronic information exchange of agrifood permits and certificates	39
Action 4: Implementation of an automated food safety emergency management system using national as well as cross-border electronic information exchanges.....	40
Beyond the “kick-start” actions.....	41
Chapter IV: Selected case studies.....	42
Case 1: GrapeNet – facilitating trade through validated information in India	42
Case 2: Malaysia Food Information and Traceability Project	43
Case 3: Building trust for fish export facilitation in Viet Nam	44
Case 4: New Zealand Information System for Meat Products – e-Cert	46
Appendix 1: Relevant international standards for SWATs.....	49
1.1. The standards ecosphere.....	49
1.2. Procedural standards.....	50
1.3. Identification systems used world-wide for agrifood information management.....	53
1.4. Data carrier standards	56
1.5. Case study: RFID in inspection and quarantine services at Tianjin port in China.....	59
1.6. Data harmonization	59
1.7. International data exchange standards and their penetration.....	60
Appendix 2. Architectures for agrifood information management.....	64
References.....	68

List of Boxes

BOX 1: TRACEABILITY AND TRADE: THE CASE OF THAILAND’S FROZEN SHRIMP EXPORTS.....	5
BOX 2: RATIONALE FOR A DEDICATED SINGLE WINDOW FOR AGRIFOOD TRADE	30
BOX 3: PUBLIC AND PRIVATE SECTOR STAKEHOLDERS AND THEIR ROLE IN THE IMPLEMENTATION PROCESS.....	31

List of Figures

FIGURE 1: A TYPICAL FOOD SUPPLY CHAIN AND ITS RELATIONSHIP TO INFORMATION MANAGEMENT PROCESSES .	4
FIGURE 2: EXPORTS (IN MIO €) OF CRUSTACEANS FROM THAILAND TO EU27	5
FIGURE 3: TOTAL NOTIFICATIONS IN THE RAPID ALERT SYSTEM FOR FOOD AND FEED, 1997-2012.....	7
FIGURE 4: EUROSTAT STUDY ON CONSUMERS’ NEEDS FOR INFORMATION, 2006	9
FIGURE 5: SMARTER FOOD PRODUCTION	10
FIGURE 6: FUNCTIONAL TYPES OF AGRIFOOD CHAIN INFORMATION MANAGEMENT SYSTEMS WITH SOME EXAMPLES.....	13
FIGURE 7: BENEFITS OF AGRIFOOD CHAIN INFORMATION MANAGEMENT FOR THE PRIVATE SECTOR	16

FIGURE 8: MACRO-TREND: FOOD SAFETY	19
FIGURE 9: MACRO-TREND – SUSTAINABILITY	21
FIGURE 10: MACRO-TREND: FOOD QUALITY.....	22
FIGURE 11: MACRO-TREND: TRADE.....	24
FIGURE 12: RECOMMENDED STRUCTURE OF THE AGRIFOOD CHAIN INFORMATION MANAGEMENT SYSTEM.....	25
FIGURE 13: NORMATIVE DATABASES NEEDED FOR EFFECTIVE DISEASE AND FOOD SAFETY CONTROL	33
FIGURE 14: TAXES AND LEVIES AS FUNDING SOURCES OF PUBLIC-PRIVATE PARTNERSHIPS.....	37
FIGURE 15: INFORMATION CHAINS IN M-FIT.....	43
FIGURE 16: THE E-CERT SYSTEM OF THE NEW ZEALAND FOOD SAFETY AUTHORITY.....	47

FIGURE A1. 1: COMPLEX RELATIONSHIPS WARRANT LARGE STANDARDS ECOSPHERE	49
FIGURE A1. 2. LEVELS OF STANDARDIZATION.....	50
FIGURE A1. 3. DOMAIN MAP OF E-BUSINESS SOLUTIONS FOR TRADE FACILITATION.....	53
FIGURE A1. 4. DATA CARRIERS OFTEN USED IN THE AGRIFOOD CHAIN.....	57
FIGURE A1. 5. TRACECORE DATA EXCHANGE STANDARD WITHIN TRACEFOOD.....	62

FIGURE A2. 1. THE CUMULATIVE PUSH MODEL	64
FIGURE A2. 2. THE PURE PUSH MODEL.....	65
FIGURE A2. 3. THE PULL MODEL OR DISTRIBUTED MODEL.....	66
FIGURE A2. 4. MIXED PUSH-PULL OR LAYERED MODEL	66

List of Tables

TABLE 1: COMPARISON BETWEEN PAPER AND ELECTRONIC RECORDS.....	8
TABLE 2: MAIN AREAS OF WORLD-WIDE INFORMATION NEEDS ON TRADED FOOD	12

Acknowledgements

This publication was developed under the general supervision of Ravi Ratnayake, Director, Trade and Investment Division (TID), United Nations, Economic and Social Commission for Asia and the Pacific (ESCAP), and Mr. Hiroyuki Konuma, Assistant Director-General and Regional Representative, United Nations Food and Agriculture Organization (FAO), Regional Office for Asia-Pacific (ROAP). It was prepared by Heiner Lehr, Syntesa, under the guidance of Yann Duval, Chief, and Khan Salehin, Associate Economic Affairs Officer, Trade Facilitation Unit, TID, ESCAP as well as Markus Pikart, Economics Affairs Officer, United Nations Economic Commission for Europe (UNECE), Trade and Sustainable Land Management Division and Shashi Sareen, Senior Food Safety and Nutrition Officer, FAO ROAP.

The draft publication was reviewed by the United Nations Network of Experts for Paperless Trade in Asia and the Pacific (UNNExT) Advisory Group on Agricultural Trade Facilitation, held on 12 September 2013 in Beijing. The comments and suggestions received from the Advisory Group members are gratefully acknowledged, including those from: Mr. Kum Wah Chang, Senior Principle Assistant Director, Research Division, Department of Veterinary Services (DVS), Ministry of Agriculture and Agro-Based Industry, Putrajaya, Malaysia; Mr. Patrik Jonasson, Director, Public Policy International, GS1, Malaysia; Ms. Lin Jing, Director, Department of inspection and Quarantine Clearance, Tianjin Entry-Exit Inspection and Quarantine Bureau of the People's Republic of China; Mr. Ponprome Chairidchai, Director-General, National Bureau of Agricultural Commodity and Food Standards, Bangkok, Thailand; and Mr. Francis Lopez, President, InterCommerce Network Services, Makati City, the Philippines. Comments from Sangwon Lim and Tengfei Wang, TFU, TID, were also helpful in finalizing this publication.

Preface

International trade in agricultural and food products is more complex than trade in manufacturing – trade regulations are stricter, paperwork is more cumbersome and logistics are more complex. These elements are mainly required for ensuring food safety for consumers. Detailed information on traded goods alongside the movement of goods in a supply chain is critically important for food safety. Various actors need to exchange information in the complex process of importing and exporting agrifood products. While there has been significant progress in the development of regulatory trade single windows to facilitate trade in goods in general, together with efforts to issue electronic sanitary and phytosanitary (SPS) certificates as well as to establish food traceability systems in some countries, these paperless systems may not fully meet the needs of the agriculture and food sector, where the requirement for accurate and timely information on products and their movements from farm to fork is becoming increasingly important to trade facilitation.

This publication outlines a framework for integrated agrifood information management, taking into account the functional needs of various stakeholders along the supply chain. The benefits as well as challenges involved in developing a comprehensive system are discussed. Some examples of existing paperless systems – which are considered good practices for agrifood trade – are also included together with the list of relevant international standards to be taken into account when implementing the systems. Practical recommendations for, and milestones in the enhancement of agrifood information systems for trade facilitation are provided, including a recommendation to develop a Single Window for Agrifood Trade (SWAT).

This publication is aimed mainly at government officials involved in overseeing and making policies related to agrifood trade. It is also relevant to the private sector (both existing and potential traders), associations and any agrifood supply-chain stakeholders interested in making agrifood trade both safer and more efficient. Simple text has been used to explain the technical content as far as possible. This policy guide builds on the series of technical and legal guides produced by UNNExT to facilitate paperless trade implementation. All previous guides are available at <http://unnex.unescap.org>.

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_4597

