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Enhancing agricultural trade is an essential component in fostering sustainable economic development in the Asia-Pacific region. However, the procedures associated with trade in agricultural products are considered amongst the most complex, costly and time-consuming. Agricultural trade facilitation can be defined as the simplification and harmonization of procedures involved in the import and export of agrifood products, including but not limited to collecting and processing data and documents required for the cross-border movement of these products. Increasingly countries are adopting measures to streamline and automate the procedures involved in the trade of agricultural products, in order to enhance trade competitiveness; ensure food safety; and to reduce the time and cost associated with agrifood trade.

The Turkish Ministry of Economy launched the “Risk-Based Control System for Foreign Trade (TAREKS)” in August 2010. The purpose of the TAREKS system is to conduct safety and quality inspections on export and import goods electronically and through risk-assessment. The TAREKS system is a web-based inspection system allowing importers and exporters to apply using their electronic signatures for official product safety and quality inspections conducted by the Ministry of Economy. The

main objectives of the TAREKS system is to enhance the efficiency of the trade; to ensure safety and quality requirements for imported and exported products are met; to allow for better resource allocation towards the assessment and identification of high-risk products and traders; and to reduce the waiting time in customs procedures.

Exporters and importers of certain agricultural commodities and importers of several groups of industrial products must log in to their TAREKS accounts using e-signatures and submit an application to the Ministry of Economy to have their products inspected. Since the launch of TAREKS, many transactions that had previously been carried out manually on paper can now be done online. The Decree on the Technical Regulations Regime and other product-specific regulations (which were modified to comply with the corresponding EU regulations) require that inspections carried out for industrial and agricultural products must be risk-based. In order to prevent inefficient use of resources and shorten the waiting time at customs control points, the TAREKS system categorizes the goods from high risk to low risk and determines which imported or exported consignments will go through physical inspections.



Why was the TAREKS system developed?

Export-oriented growth has been a key part of Turkey's economic development policy since the early 1980s, when the country moved away from its import substitution policies and subsequently liberalized its foreign trade regime. Since then Turkey has taken many steps to increase its share in international trade by actively participating in trade-related global platforms, engaging in numerous bilateral trade-facilitating agreements and establishing a customs union with the European Union. Due to these trade-inducing policies, Turkey's trade volume multiplied by a factor of 4 within the last 15 years, from USD 86.9 billion in 2002 to USD 341.2 billion in 2016. This, in turn, led to a natural increase in the workload of government institutions responsible for import and export controls. Turkey's import and export control system was based on pre-market controls, in which the shipment arrives at customs and the goods are monitored and inspected by the relevant competent authorities to ensure compliance to human health, safety, animal health, plant health and environmental considerations. Prior to the launch of the risk-based system and TAREKS, imported and exported products were subject to inspections that were not planned according to the risk category of the goods themselves or the past performance of the importing/exporting firms. Given the rapidly increasing number of shipments, ensuring the efficiency and effectiveness of controls was a challenge and burden not only for government officials but also for the firms that had to endure long and costly waiting periods at the customs.

Turkey's alignment with the European Union's (EU) trade policies was one other factor that encouraged the country to adopt a risk-based inspection system. The Customs Union established by the EU – Turkey Association Council Decision no. 1/95 gave Turkey the responsibility to align its technical regulations governing free movement of goods with those implemented by the EU. This meant that Turkey's inspection system and methodology also had to be reconsidered since EU Regulation (EC) 765/2008 imposes that appropriate checks on the characteristics of products should be carried out *“on an adequate scale, by means of documentary checks and, where appropriate, physical and laboratory checks on the basis of adequate samples. When doing so they shall take account of established principles of risk assessment, complaints and other information.”* To comply with this requirement, Turkey modified its existing regulations and adopted new product-specific legislation to introduce risk assessment and risk-based inspections. For example, the Decree on the Technical Regulations Regime was amended to include a clause that introduced risk analysis as the basis of inspections at import and export stage. Product-based legislation such as the Directives on Toys, Medical Devices, Machinery and several others were also introduced with specific articles that included mention of risk analysis.

Box 1: Turkey's Trade in Figures (2016)

Turkey is the 30th largest exporter in the world with total exports of 142.6 billion in 2016. For imports, the country ranks 20th with an import volume of 198.6 billion for the same year. EU-28 countries account for nearly half of Turkey's exports (47%) and and roughly 38% of its imports.

Agricultural produce listed under HS chapters 1-24 account for 11% of Turkey's exports with a figure of 16.2 billion and 5.5% of its imports with a total worth of 11 billion.

For fruits and vegetables under HS chapters 7-8, Turkey is the world's 10th largest exporter with a volume of 4.8 billion in 2016. The country boasts the top rank in a variety of specialty agricultural products such as hazelnuts, fresh and dried figs, dried apricots and dried grapes.

Source: ITC Trademap – www.trademap.org

Based on these two major factors, combined with Turkey's overall e-government policy to enhance the efficiency of public services by moving them to online platforms, the Turkish Ministry of Economy decided to establish a comprehensive web application that would speed up the import and export control procedures for product groups that fell under its responsibility. The Turkish Risk-based Foreign Trade Control System or “TAREKS” was designed as a result of these policies.

Development of the TAREKS system

Under the Ministry of Economy, a project team consisting of relevant departments within the Ministry as well as the IT department was formed in order to develop and implement the TAREKS system. A feasibility study was conducted to define the project's purpose and goals, timetables, target users, measurable indicators, risks and assumptions, sustainability and a financial forecast. The project team of the Ministry was led by an administrative manager (Deputy Director General) and a technical manager (Head of Department) with support from 4 to 5 foreign trade experts and several IT experts from among the Ministry staff. The software development team comprised a project manager, 1 architect, 1 technical leader, 3 to 4 software coders, 1 interface designer and 1 to 2 testers. The project team conducted the overall coordination and monitoring of the project. During the design phase, the project team conducted seminars and consultative meetings and sought cooperation from relevant stakeholders, such as customs authorities, inspection bodies and private sector representatives. Different tools such as SWOT analyses and questionnaires were developed in order to inform the project team about the needs and the design of the system. Two questionnaires related to TAREKS implementation were developed by

the Ministry of Economy and the Union of Chambers and Commodity Exchanges of Turkey. The information gathered as a result of these surveys was taken into consideration in the development phase of the system. The main phases of the project include:

- January-June 2010: Feasibility study
- August 2010: Official kick-off
- November 2010: Testing phase
- December 2010: First prototype inspections started with a small pilot group comprising walnuts and apples
- January 2011 – 2013: Additional product groups such as other agricultural produce, medical devices, toys, construction material, etc. were gradually included in the system
- February 2012: Integration of the Turkish Standards Institute (TSE) into the system. TSE conducts import controls for several industrial product groups including electronic equipment, machinery and intermediate goods
- April 2016: Integration of TAREKS into the Single Window System managed by the Ministry of Customs and Trade

Implementation of the system:

A new software application was developed to meet the needs of the Ministry of Economy for the TAREKS web-based control system. There was a tender process for a software company to develop the system, although the Ministry's IT specialists provided input in relation to the available IT infrastructure. The software development work itself was conducted by the company that was awarded the contract. In order to transition to the use of the web-based system the inspectors of the Ministry of Economy were equipped with notebooks and wireless internet access. The Ministry of Economy mobilised resources from its Central Directorate for revolving funds, which generated revenues from the fees collected from importers and exporters for the inspection services provided by the Ministry. This revolving fund continues to be the main resource for all expenses related to the maintenance and expansion of the TAREKS system. Exporters and importers subscribed to the system

purchase credits on TAREKS by depositing money into TAREKS's official bank account and a certain amount is deducted from their accounts when they apply for inspections. The amount varies according to the produce in question. In other words, inspections are conducted through TAREKS and the fees collected for this service is used to maintain the system and develop it further.

The initial financial costs of developing TAREKS included:

- The financial costs summarised as follows:
 - Feasibility study : TL 70 000 (USD 19.820);
 - Software development : TL 250 000 (USD 70.620);
 - Equipment (notebook computers, Internet access etc.) : TL 400 000 (USD 113.000);
 - Hardware (server, licensing, etc.): 0 (existing hardware of the Ministry were used);
 - Maintenance: TL 140 000 to 580.009 (USD 39.540 to 163.840) with annual increases in accordance with the expansion of the system;
 - Training/ capacity building: TL 20 000 (USD 5.650).

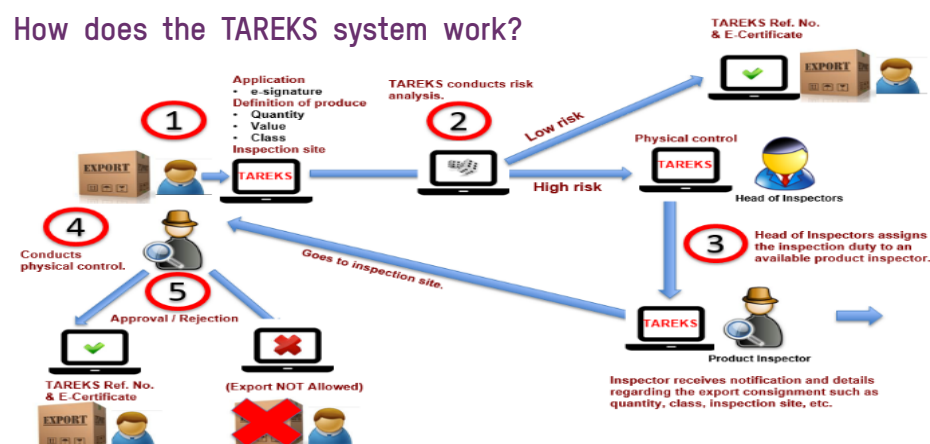
Once the system was developed the Ministry of Economy conducted several seminars and consultative meetings to provide information to relevant stakeholders and beneficiaries on how to use the system.

Simplified Export Workflow (for agricultural products)

- 1) The exporter logs in using their e-signature and submits application for export control. He/she enters the required fields for:
 - Type, variety, weight/quantity, quality class, value, destination country
 - Inspection site
- 2) TAREKS conducts instant risk analysis and decides whether the consignment should be forwarded for physical inspection. This risk analysis is based on a logarithm that calculates pre-defined coefficients determined for every risk factor.
 - If the system determines low risk, a 15 digit reference number and an electronic control certificate are automatically created, which means the consignment is cleared. Products subject to agricultural quality inspection of the Ministry of Economy cannot be exported (or imported) without receiving a TAREKS Reference Number.

Figure 1: Simplified Export Workflow

How does the TAREKS system work?



- If the system determines high risk, the exporter is informed that the consignment will have to go through physical inspections. The same information goes to the Head of Inspectors.
- 3) Using the TAREKS system, the Head of Inspectors assigns a Product Inspector to conduct

the physical controls and forwards the information submitted by the exporter with regards to the consignment (type, variety, quality class, etc.) to the Product Inspector.

- 4) The Product Inspector arrives at the inspection site to perform a physical inspection and to take samples for laboratory analysis if required. The consignment must be packed, labelled and ready to be transported.
- 5) According to the findings of the physical inspection, if the Product Inspector decides that the consignment meets the quality and labelling requirements defined in the applicable legislation, the Product Inspector approves the consignment through TAREKS by using his/her e-signature. This signals the TAREKS system to generate the 15 digit TAREKS Reference Number and electronic control certificate to be used by the exporter, and the consignment is cleared.

If the consignment does NOT meet the requirements defined in the applicable legislation, the Product Inspector rejects the consignment through TAREKS by using his/her e-signature and inserts the reasons for rejecting the

Risk Factors for agricultural quality controls at export stage

There are several risk factors that impact the frequency of physical controls for agricultural products at the export stage. The Risk Commission, established in accordance with Communiqué No. 21, meets at least three times a year on a regular basis to revise the risk factors and coefficients to be applied for standard risk analysis. The risk factors are as listed below:

- The exporter firms' class (A, B, C or D), size, infrastructure, capacity and share in trade.
- Characteristics of the product, season, weather conditions,
- Past performance of the firm (number of rejections and approvals).
- Notifications and feedback from other public institutions, trade partners.
- Any other information that may impact conformity of the product to the applicable legislation.

consignment.

Simplified Import Workflow (for industrial products)

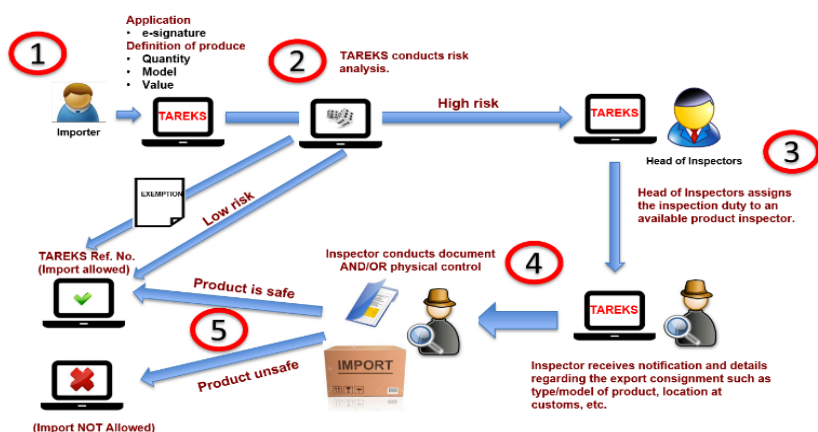
- 1) The importer logs in using their e-signature and submits an application for import control. He/she must enter:
 - the required fields for quantity, value, brand, model, country of origin, and the customs entry point where the consignment is located;
 - certificates and test reports (if required by the applicable regulations);
 - certificates proving exemption from inspections (if applicable).
- 2) TAREKS conducts instant risk analysis and decides whether the import consignment should be forwarded for physical inspection. This risk analysis is based on a logarithm that calculates pre-defined coefficients determined for every risk factor.
 - If the system determines low risk or the importer provides documents for exemption (such as the ATR certificates, which is a customs document used for goods traded between Turkey and EU members), a TAREKS Reference Number is instantly generated for the consignment, meaning that it can be imported. Products subject to safety inspections of the Ministry of Economy cannot be imported without receiving a TAREKS Reference Number.
 - If the system determines high risk, the importer is informed that the consignment will go through physical inspections. The same information goes to the relevant Group of Inspectors.
- 3) Using the TAREKS system, the Head of Inspectors assigns a Product Inspector to conduct the physical controls and forwards the information submitted by the importer with regards to the consignment (quantity, value, brand, model, country of origin, etc.) to the Product Inspector.

Risk Factors for safety controls at import stage

The risk factors that apply to safety controls at the import stage differ from factors that impact the quality of agricultural products at export stage. The TAREKS system takes into consideration many risk factors in deciding whether the consignments can be imported with or without physical and/or document control. Some of these factors are:

- Past performance of manufacturer, importer or their representative.
- Market surveillance results and findings.
- Type, brand, model, value and quantity.
- Country of origin and departure.

Figure 2: Simplified Import Workflow



- 4) The Product Inspector conducts document and/or physical controls on the product, and sends the product samples to the laboratory for analysis if necessary.
- 5) If the Product Inspector decides that the product is safe after conducting document and/or physical inspections, he will approve the consignment on TAREKS and the system will generate a reference number, which the importer will use for customs clearance. If the documents are missing and/or the product turns out to be unsafe, the Product Inspector rejects the goods through TAREKS and the customs authority is informed about the situation.

ADVANTAGES OF TAREKS

REDUCES COSTS

- The average duration of inspection procedures dropped significantly due to faster decision-making processes, automatic risk analysis, and efficient distribution of workload. Average inspection duration for fresh fruit and vegetables dropped from 20 to 7 hours. For dried food products the whole process now takes only 1.6 days as opposed to 2.4 before TAREKS was established.
- Lower transaction costs due to less bureaucracy and reduced number of manual functions.

PROTECTS THE ENVIRONMENT

- Less paperwork: All application forms, certificates and other printed documents are now produced and/or uploaded online.
- Less travel: Importers and exporters are not required to apply in person for controls or for receiving certificates.

ENHANCES EFFICIENCY

- Easier and much quicker application process.
- Flow of information and delivery of assignments within the Ministry are now much quicker.
- Daily workload of Product Inspectors is now more balanced.

PROVIDES TRANSPARENCY

- All transactions are recorded (who, when, what).
- Objections and enquiries from firms resolved instantly.
- Use of legally binding e-signatures brings legal certainty and responsibility for all transactions.
- Abuses are easily and quickly identified.

Utilizing TAREKS data to process improvement

All transactions made through TAREKS are recorded, stored and translated into data. Therefore, this data can be used by the Ministry of Economy to further improve the inspection and control process in order to identify risks and enable better distribution of the

workload among inspectors and between inspectorates where necessary. This data can be filtered and used in many different combinations. For example, in a scenario where the Ministry of Economy is concerned whether inspectors are most suitably located to meet the increasing seasonal demand for citrus-fruit inspections in a certain province, data analysis can be conducted to determine which inspectorates have received the highest number of applications in the previous season. Inspectors can be temporarily transferred to inspectorates in provinces where they would be needed the most. It would also be possible to see which inspectors are more experienced with citrus fruit by filtering the number of citrus-fruit inspections they have performed. In another scenario where the Ministry plans to conduct a workload analysis to ensure that inspection tasks have been distributed evenly among inspectors within a given period, this would be possible to apply filters for “number of applications”, “dates” and “inspectors”. This creates data that can be used to assess the workload of a given Product Inspector between certain dates. Additional filters can be applied for a more thorough analysis. All this data can be used to monitor the performance of the product inspectors and to take necessary precautions if any imbalances are observed.

It is important to note that the information required to take action for the scenarios depicted above can also be collected through traditional means – but this would require a number of telephone conversations with several inspectorates and tasking a number of personnel to read through and quantify hundreds of pages of archived documents. With TAREKS, it takes only 2 minutes to collect the data needed. As such, TAREKS's data collection and filtering ability is currently being used by the Ministry of Economy for streamlining inspection strategies, workload analysis and also for academic purposes.

LEGAL INFRASTRUCTURE

TAREKS is used for the official product safety and agricultural quality controls conducted by the Ministry of Economy, meaning that all transactions made through TAREKS are official and carry legal consequences. Therefore, there is a body of legal texts which define the usage and operation of the TAREKS system; the rights and obligations of economic operators and civil servants; decision-taking procedures related to risk assessment and the products covered by the system. The most important of these legal texts include:

- **Law No. 5070 on Electronic Signatures:** All users including public personnel must use their personal e-signatures to access the TAREKS system. The Law on E-signature was prepared taking into consideration the UNCITRAL Model Law on International Commercial Arbitration as well as Directive 1999/93/EC of the European Parliament and of the Council on a Community Framework for Electronic Signatures and several examples from national legislations of EU member states such as Germany, France, Belgium

and Austria. The Law was published in the Turkish Official Gazette on 23 January 2004 and provides the legal basis on the use of e-signatures in official transactions. The law emphasizes that the legal consequence of using e-signatures are identical to that of original (wet) signatures.

- **Communiqué no. 2011/53:** This communiqué defines the procedures for the electronic registration of firms on the TAREKS system and the personnel authorised to conduct transactions on TAREKS on behalf of these firms.
- **Communiqué no. 2016/22:** This legal document defines the procedures for the classification of firms exporting agricultural products that must go through the official quality controls of the Ministry of Economy. Firms are classified into four groups (as A, B, C and D) in accordance with the rules laid down in this Communiqué. Firms classified as Class A, B or C are allowed to conduct their own quality controls and a significant number of consignments exported by these firms are exempted from official physical controls. In order to be classified under these groups, firms must meet several requirements laid down in Communiqué 2016/22, such as employing an Authorised Inspector and operating according to internationally accepted quality management systems (ISO 9001, GLOBALGAP, etc.). All firms that are not categorized under Class A, B or C are automatically registered under Class D, which means that the majority of their consignments

destined for export markets will be subjected to official quality controls. Thus, the class of a firm plays a large role in TAREKS's risk analysis for exports and the final decision on whether the consignment will be subject to physical quality controls or not.

- **Product-specific legislation:** There is no single document that lists every single product group subject to risk analysis on the TAREKS system. The product groups are regulated under several communiqués that define the safety and/or quality requirements these products must comply with.

The TAREKS system provided the Ministry of Economy with data that considerably improved its resource planning and inspection strategies. For example, the data collected for Class D firms demonstrated the existence of many fresh fruit and vegetable exporting firms that were not classified under classes A, B or C had a perfect track record of exporting quality produce to high-income markets in EU. This resulted with the Ministry's decision to devise a risk analysis logarithm based on the past performances of Class D firms, with the aim to award high performing firms with exemptions from inspections and focus on underperforming firms instead. The result was a significant decrease in the percentage of agricultural produce inspected at export stage, from 68% in January 2014 to 43% in May 2016. This also enabled the Ministry to better utilize its available manpower for inspections.

The risk analysis and official controls of the products below are conducted through TAREKS

IMPORT STAGE (product safety)	IMPORT & EXPORT STAGE (quality control)
Medical Devices	Fresh Fruit & Vegetables
Construction Products	Dry and Dried Produce
Machinery, Electronic Products, Pressure Equipment and Gas Appliances	Edible Vegetable Oils
Batteries and Accumulators	Legumes
Telecommunications Equipment	Cotton
Personal Protective Equipment	Certain other products such as honey and eggs

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