



New approach for strengthening food market price data collection systems using smartphones and automated email services

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Objectives

- Evaluate and implement new approaches and technologies to support national institutions in collecting data
- Streamline data transmission process from the field to HQs and reduce reporting errors
- Reduce the time gap between the data collection and the analysis, real time dissemination



Technologies

Two technologies are being evaluated:

- Use of smartphones to transfer field survey data to the FENIX database
- Use of an automated email system to transfer field survey data to the FENIX database



Advantages

- Reduce time and costs of inputting data
- Reduce probability of reporting errors from the data input process
- Increase data security and confidentiality
- Create a platform that could be easily adapted by other projects
- Increase efficiency by eliminating transfer or conversion of intermediate physical (e.g. on paper) or digital (e.g. Excel) forms
- **Enable real-time monitoring of key field information, also in not-easily accessible areas**



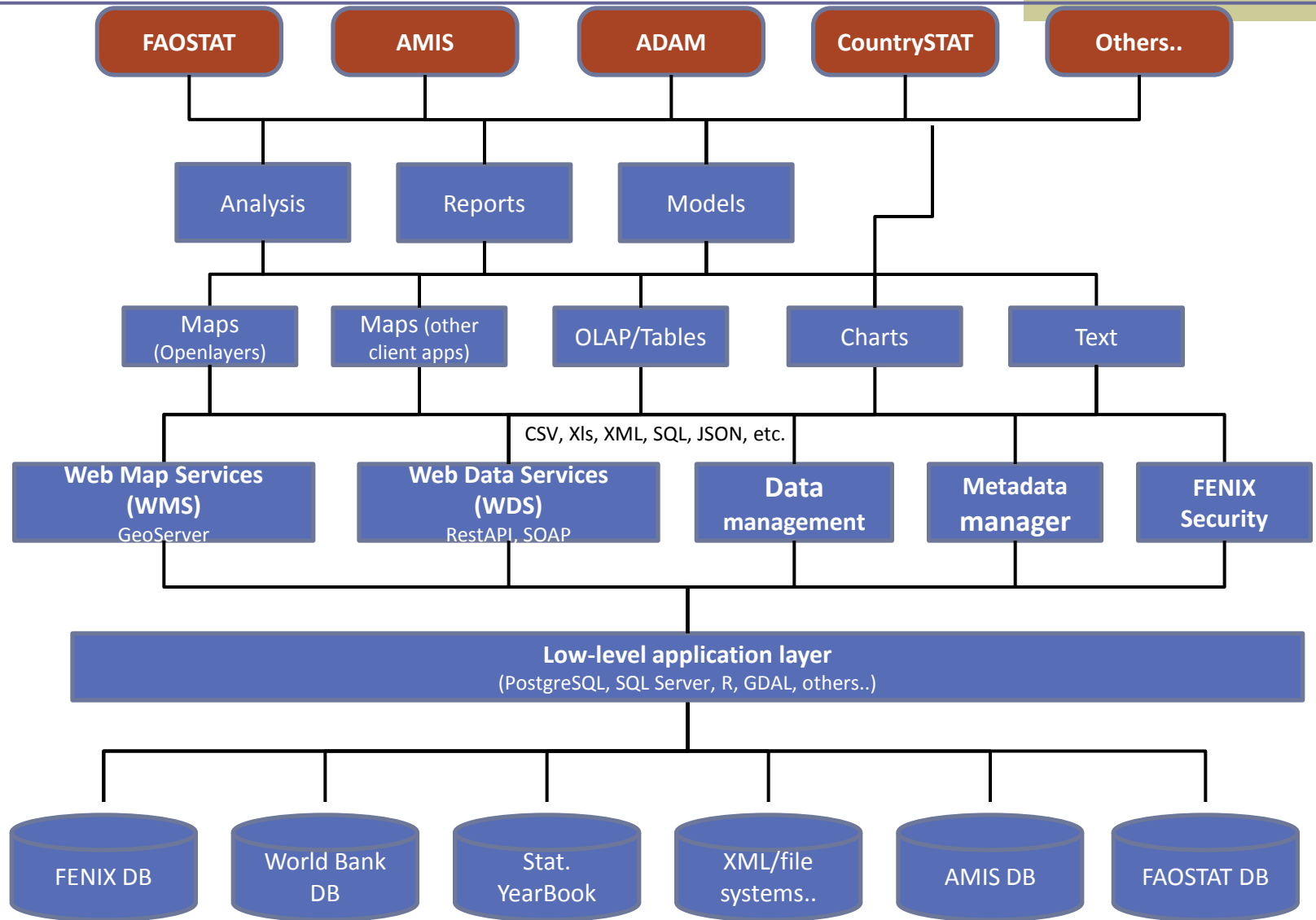
FENIX Overview

Data collection system based on the FAO FENIX platform, which is:

- based on open source technology
- capable of handling different types of data such as remote sensing, GIS layers, databases and texts
- provided with advanced data visualization tools with advanced analytical functionalities
- based on a service-oriented architecture allowing removal and addition of tools and functionalities (flexible system)
- designed to implement international standards to integrate data
- able to integrate national and international data

FENIX is used by applications such as FAOSTAT, AMIS and CountrySTAT

High-level diagram of the FENIX architecture





Agricultural Market Information System

- HOME
- ABOUT
- MARKET MONITOR
- ANALYSES
- STATISTICS
- CAPACITY DEVELOPMENT
- NEWS & EVENTS

The AMIS Secretariat

The Secretariat is formed by the following international organizations and entities: FAO, IFPRI, IFAD, OECD, UNCTAD, the UN High Level Task Force (UN-HLTF), the World Bank, WFP, and WTO. Contributions from the International Organizations to the fulfilment of the functions of the Secretariat reflect those organizations' comparative advantage and expertise. The Secretariat, housed in FAO headquarters in Rome, supports all functions of the Forum and the Information Group of AMIS.

Partners' contribution to AMIS



Food and Agriculture Organization of the United Nations

FAO has a well-established expertise in global, country and regional supply and demand analysis of major agricultural commodities, as well as food security assessments and capacity building. FAO's widely disseminated information products and extensive price databases are instrumental to the success of AMIS. FAO is hosting the AMIS Secretariat in Rome.



International Food Policy Research Institute

IFPRI's contributions to AMIS focus on bringing its modeling capacity in assessing the effect of futures prices on cash prices, price transmission from international to local markets, modeling the relationships between oil and food prices, measuring price volatility across AMIS commodities and defining price abnormalities and periods of excessive price volatility.



International Fund for Agricultural Development

KEY DOCUMENTS

- Price Volatility in Food and Agricultural Markets: Policy Responses
- G20 Action Plan on Food Price Volatility and Agriculture
- Cannes Summit Final Declaration
- G20 Leaders Summit - Final Communiqué
- AMIS Scoping Report
- AMIS Terms of Reference
- AMIS Rules of Procedures
- AMIS Secretariat Outputs
- AMIS Governance Document

CONTACT US

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Food and Agriculture Organization of the United Nations (FAO)
Viale delle Terme di Caracalla
00153 Rome, Italy



Smartphone-based surveys

- Data is collected using customized forms that reproduce the questionnaires and sent to a temporary database, where data is checked and validated
- Multiple devices can be used to conduct a survey (smartphones, tablets, laptops ..)
 - The current application runs on Android
- No Internet connection is required while conducting surveys; results might be temporarily stored on the device
- Raw survey data can be downloaded in the widely used CSV format
- Smartphones can be configured to record the GPS location at the time the questionnaire is conducted



CrowdPrices

Survey Summary

Date: 13/set/1932 13:15:43

City
Port-au-Prince

Market
Port-au-Prince

Vendor
Point de vente I

Currency
Gdes

Commodity
Agrumes

Variety

Chadèque

| Price | Quantity (Kg) |
|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> |

Citron et limes

| Price | Quantity (Kg) |
|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> |

Orange amer

| Price | Quantity (Kg) |
|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> |

Orange doux

| Price | Quantity (Kg) |
|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> |

CrowdPrices

Survey Summary

Market

- Point de vente I
- Point de vente II
- Point de vente III
- Point de vente IV
- Point de vente IX
- Point de vente V
- Point de vente VI
- Point de vente VII
- Point de vente VIII

Currency

Gdes

CrowdPrices

Survey Summary

Vendor

Point de vente IV

shop 6

1 2 3 4 5 6 7 8 9 0
@ # % & * / - + ()
1/3 ? ! " ' : ; ,
ABC [] . []

Select a selling point and enter its name, if needed. At the moment there is no list of the names of the selling points, so the names can be entered in a free-text box

CrowdPrices

Survey Summary

Date: 13/set/1932 13:15:43

City
Port-au-Prince

Market
Port-au-Prince

Vendor
Point de vente I

Currency
Gdes

Commodity
Agrumes

Variety

Chadèque

Price Quantity (Kg)

Citron et limes

Price Quantity (Kg)

Orange amer

Price Quantity (Kg)

Orange doux

Price Quantity (Kg)

Send Save

- CrowdPrices
- Agrumes
 - Autres fruit tropicaux et subtropicaux
 - Autres fruits de mer
 - Banane
 - Bovin
 - Cabri
 - Cochon
 - Cultures pour epices
 - Des fruits et légumes
 - Dinde
 - Fruits a pepins et fruits a noyaux
 - Haricots secs
 - Haricots verts
 - Igname
 - Mangues
 - Manioc

CrowdPrices

Survey Summary

Point de vente IV

shop 6

Currency
Gdes

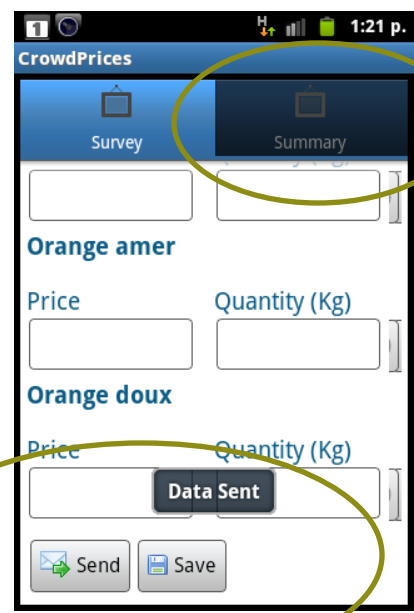
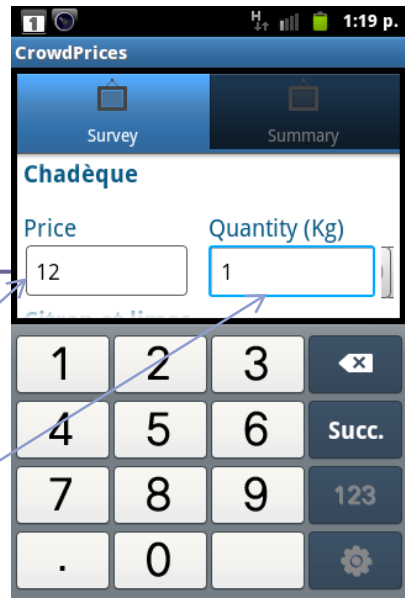
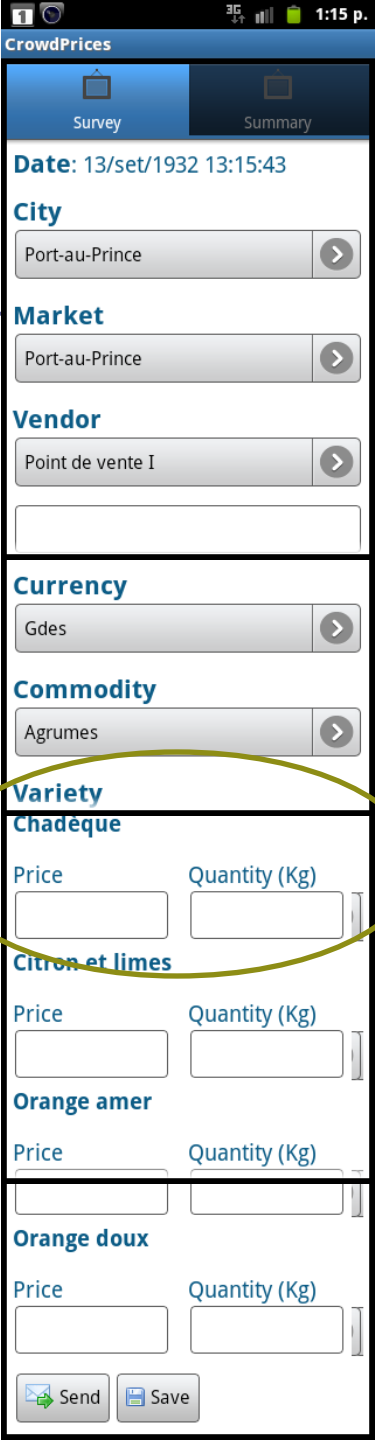
Commodity
Agrumes

Variety

Chadèque

Select a commodity from the list. The application will automatically load all its varieties





Enter price and quantity for the varieties you need and press "Send" to send data to the database or "Save" to temporarily save your data in the smartphone (useful if you don't have internet connection coverage in your location)

The tab summary allows you to send data that is temporarily stored in the smartphone





Metadata Info

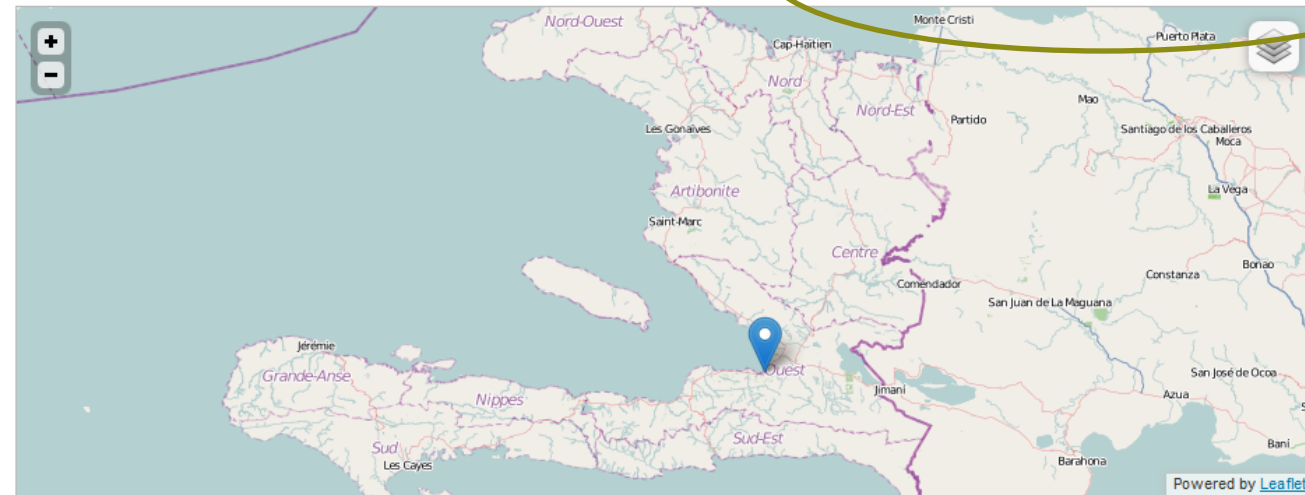
- FENIX receives/sends both data and metadata information at every data exchange transaction
- Metadata information sent via smartphone or email includes the minimum set of elements needed to handle the data correctly
- Additional metadata information is linked to the data once data is fully uploaded.
- The metadata information sent through the smartphone or the Excel file consists of three elements:

| Metadata structure | Data Type | Source | Periodicity |
|--------------------|-----------|-------------------------|-------------|
| Example | Price | Ministry of Agriculture | Daily data |

- Both data and metadata information use coded information, which could conform to both national and international standards
- This flexibility will ensure usability of the data collection/management system in different contexts

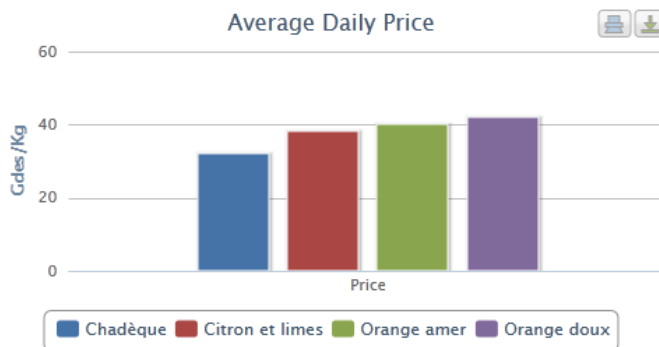


Agrumes 2012-09-12



Agrumes

| | | | | |
|----------------|-----------------|----|------|-------|
| Port-au-Prince | Chadèque | kg | Gdes | 32.00 |
| Port-au-Prince | Citron et limes | kg | Gdes | 38.00 |
| Port-au-Prince | Orange amer | kg | Gdes | 40.00 |
| Port-au-Prince | Orange doux | kg | Gdes | 42.00 |



Data sent via smartphone can be viewed on real time as map, table and chart at the following address

<http://fenixapps.fao.org/crowdprices/>

The application automatically calculates the daily average of the prices if more than one value per commodity/variety is entered in the same day

Automated Email Data Collection



- Allows users to upload data to the database using email attachments
- Data collected using paper forms are inputted in Excel files first and then sent to the application using the FENIX email account
- It is inexpensive and requires low level of training
- The FENIX email system performs the following operations:
 - Verifies the existence of attachments and opens it
 - Verifies the compatibility of the format of the data and metadata
 - Uploads the data and verifies if the operation has correctly been executed
 - Sends a return email to the sender to communicate the result of the operation (successful or unsuccessful)



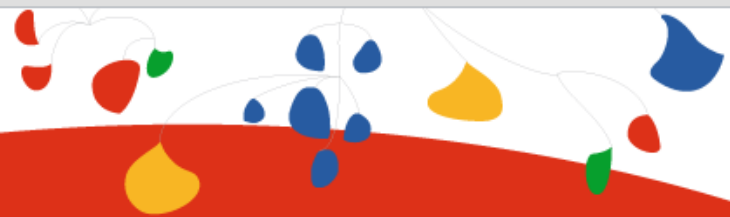
Pilot Testing in Haiti

- Collaboration between the FAO Statistical Division and the Ministry of Agriculture in Haiti (MARNDR) to develop and test a new software application to support food market data collection in the field using smartphones.
- The test is being done in one market (Port-au-Prince)
- The application allows to handle specific Haiti commodities and varieties and to enter prices in local currency or USD
- Two smartphones have been loaded with a preliminary version of the application and shipped to Haiti
- Data collected through smartphones is sent to a central database and it is displayed on a web mapping tool in real-time



New Developments

- Statistical processing of the collected price data in order to derive daily, weekly and monthly statistics.
- Data will be made available online in a dedicated website
- ***A successful test of this technology may encourage planning for a country-wise expansion of this data collection method***



Select a Data Source:

- FAO-CBS
- FAOSTAT
- USDA-PSD
- AMIS
- NATIONAL (Requires 'Log In')

| Countries/Regions |
|-------------------|
| Argentina |
| Australia |
| Brazil |
| Canada |
| China |
| China Mainland |

| Years |
|-------|
| 2012 |
| 2011 |
| 2010 |
| 2009 |
| 2008 |
| 2007 |

| Products |
|-------------------------|
| TOTAL CEREALS |
| COARSE GRAINS |
| Maize |
| Wheat (Total) |
| Rice, Milled equivalent |
| Soybeans |

| Elements |
|---------------------------------|
| Area Harvested (Million Ha) |
| Closing Stocks (Million tonnes) |
| Exports (Million tonnes) |
| Exports (NMY) (Million tonnes) |
| Extraction Rate (%) |
| Feed Use (Million tonnes) |

Select All Deselect All

Select All Deselect All

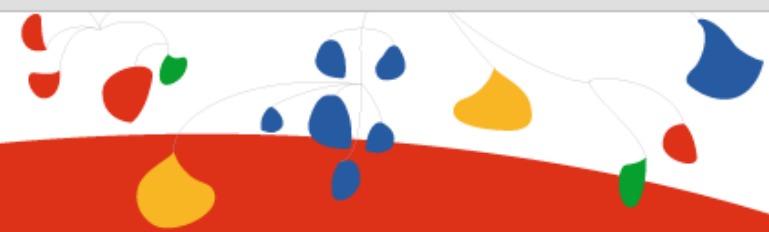
Download Options

Show Codes Thousand Separator:

Show Units Decimal Separator:

Show Null Values Decimal Values:

Export to CSV View Table



Select Data Source(s): FAO-CBS (C) FAOSTAT (F) USDA-PSD (P) AMIS (A) NATIONAL (N) Requires 'Log In'

- Countries/Regions**
- Argentina
 - Australia
 - Brazil
 - Canada
 - China
 - China Mainland
 - Egypt

Clear All Area Selections

- Products**
- TOTAL CEREALS
 - COARSE GRAINS
 - Maize
 - Wheat (Total)
 - Wheat (excluding Durum)
 - Rice, Milled equivalent
 - Soybeans

Clear All Product Selections

- Elements**
- Population (1000) [*C,F]
 - Utilization (Million tonnes) [*C,P]**
 - Food Use (Million tonnes) [*C,F,P]
 - Feed Use (Million tonnes) [*C,F,P]
 - Other Uses (Million tonnes) [*C,F]
 - Seeds (Million tonnes) [*F]
 - Waste (Million tonnes) [*F]

From 2000 To 2012

- Compare by:
- Data Sources
 - Countries/Regions
 - Products
 - Elements

Show Comparison

Notes

→ Data Availability by source (e.g. [C,P] means data is available from FAO-CBS and USDA-PSD, but not from FAOSTAT).

→ NMY = National Marketing Year

→ Aggregated data are in **bold**.

→ FAOSTAT production always refers to the calendar year (year n) whereas FAO_CBS production refers to specific crop seasons or split years (season n/n+1) which, however, are referenced as year n. For soybeans, in the case of Argentina, Australia, Brazil, Philippines, South-Africa, Thailand and Vietnam, FAO_CBS production refers to crops harvested in the second half of the split year (corresponding to year n+1) and therefore is different from FAOSTAT production which always refers to year n. For all other AMIS countries, FAO_CBS soybean production refers to crops harvested in the first half of the split year (year n) and therefore is comparable to FAOSTAT.



Conclusions

- This system is expected to help a much larger number of countries to improve data collection
- It will increase efficiently in information management through a series of database tools for handling, validating and publishing data
- Data accessibility is facilitated by web services allowing to exchange between databases
- The FAO Statistical Division will be able to advise countries to establish/strengthen data exchange networks
- Links between national institutions and international/regional organizations are expected to become stronger.



Points for Discussion

- Have APCAS members any experience in this field?
- Do APCAS members think that this system can streamline data collection?
- Would APCAS members be interested in implementing it?