ERETES (*)

ERETES technical team

(*) Equilibre Ressources Emplois – Tableau Entrées Sorties
ERETES

ERETES is a software package that provides assistance in compiling National Accounts compliant with the international standards (SNA 1993 and SNA 2008) until the milestone 5 of their implementation.

Exists in french, english and spanish.

Is installed in more than twenty five countries or sites (in Africa, South America, Mediterranean, Caribbean, Pacific countries…).

ERETES was developed under a cooperation project by the European Union (Eurostat) and France (INSEE) twenty years ago and these co-owners support it since then (hotline, maintenance, funding of new developments).

ERETES is a system that is continuously updated.

- Regarding IT, INSEE financed in 2016 a new version based on the Progress DBMS 64-bits called Open Edge to secure the future but the present version Progress 32-bits is already in use and works with all Windows OS

- At present, a feasibility study is conducted, in the framework of the Pan African Statistics Program financed by the EU, to propose improvement scenarios to answer new needs : functionalities, technologies, ergonomics

ESCWA Seminar Beyrouth august 2018
ERETES

The package is composed of:

- The main module: a database and a set of tools to help the national accountants team to build yearly national accounts

- Additional modules:
  - The SERIE module, to store yearly series of accounts, to produce aggregates at prices of a fixed reference year and to produce tables for dissemination purposes
  - The ICP module, to answer to the International Comparison Programme questionnaire for purchasing power parities

- Its key strengths are:
  - a great flexibility of uses and an easy customization
  - a high degree of completeness and security level
  - a significant contribution to capacity building
ERETES - functionalities of the main module

- Database
  - To load and store the data in the system

- Working tables
  - To compare, to complete the data
  - With many tools to facilitate the compilation

- Synthesis tables

- Editing tables
  - To analyse and publish the results
ERETES – functionalities of the main module

- An integrated help
  - User manual
  - SNA concepts
- A notepad
ERETES - approach

An integrated approach

- Whatever the National Accounts scope chosen, the data processing is done simultaneously on the different dimensions you decided to compile:
  - industry
  - industry and product
  - industry, product and institutional sector

An iterative process

- From the sources to the aggregates
- Alternation of centralized phases of analyse and decentralized phases where each accountant of the team works on the working tables he is in charge of, until the synthesis
ERETES offers a great flexibility of uses

According to:

- the scope chosen for the accounts
- the context in which it is implemented
ERETES offers a great flexibility of uses

- Each country chooses the scope of its goods and services accounts
  - Compile only industry accounts and the production approach of the GDP
  - Compile (also) SUB by product and the expenditure approach of the GDP
  - SUT every year or every four or five years
  - SUT only at current prices or both at current and constant prices
ERETES offers a great flexibility of uses

- Each country chooses the scope of its institutional sectors accounts
  - Compile the IEAT until generation of income accounts (milestone 3)
  - Compile the IEAT until capital accounts (milestone 4)
  - Compile the IEAT until financial accounts (milestone 5)
Customisation of ERETES

Main « customisable » classifications :

- Product
- Industry
- Source
- Production Mode

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- Sector
- Transaction
  by default, official SNA classification, but can be detailed

No need of an IT expert support: customisation can be done by a basic user with the help of the classification management tool
Customisation of ERETES: example Industry

### Classification Management

<table>
<thead>
<tr>
<th>Industry_id</th>
<th>industry_name</th>
<th>industry_label</th>
<th>industry_level</th>
<th>industry_di</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAA</td>
<td>Agriculture</td>
<td>Agric</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>AAA001</td>
<td>Growing of food crops</td>
<td>Food_crop</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>AAA002</td>
<td>Growing of industrial crops</td>
<td>Ind_crop</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>AAA003</td>
<td>Livestock farming</td>
<td>Farming</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>B88</td>
<td>Mining and quarrying</td>
<td>Mining</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>BBB001</td>
<td>Extraction of crude petroleum and natural gas</td>
<td>Extr_Petr</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>BBB002</td>
<td>Other mining and quarrying</td>
<td>Oth_mining</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

### Import Options
- Import into the table
- Empty the table
- Add a row
- Delete the row
- Modify the row

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All the data are stored in the same database

Advantage: no inconsistency between

- disjointed files (spreadsheet)

- disjointed databases dedicated to goods and services accounts on one side and institutional sectors accounts on other side
Same format for all data

- value
- transaction
  - principal / secondary
  - product origin
  - work duration
  - type of job
- valuation mode
- industry
  - production mode
- product
- debtor sector
- creditor sector
- methodological attribute
- status
  - source
- campaign
- time reference
- asset qualifier
The production mode is one of the specific attributes of ERETES

- It was designed to help the accountants to implement the industry accounts
- A production mode aggregates units whose economic behavior is close according to their:
  - formal or informal nature
  - public or private ownership
  - size
- The accountant builds his industry account visualizing the data of each production mode and the relative economic ratios and making adjustments mode by mode
Methodological attribute

The methodological attribute is one of the specific attributes of ERETES

- The structure of the database must allow to store concurrent valuations of the same flow:
  - if these valuations differ because they are the reflection of the points of view of different actors concerned by this flow, we need an attribute to specify that: it is called « methodological attribute »
The **status of value** allows a memory of the adjustments

- **Problem**: many adjustments can be done on a set of data and it could be difficult to follow them

- **Solution**: the **status of value**
  - First step: you enter data from statistical sources
  - Other steps: you adjust them making decisions in the work tables or during reconciliation tasks focused on a transaction
  - Different **status of value** correspond to these steps so you can keep the memory of the value in the initial source and the changes made in the other steps
ERETES work tables to compile the SUT: industry account

Diagram showing the flow of products and industries with supply and use tables.
Industry accounts work table

Aims:

- Synthesize the whole information linked to an industry of the classification.

- Analyze, reconcile and validate these data from a statistical and economic point of view: relevancy of the value added, the operating income, the different ratios available (storing employment data in the database is very useful).

- **Estimate the GDP by the Production approach**
Industry accounts work table

The data are displayed in a worktable designed with in row: the transactions and in columns: the production modes.

![Industry Account - New](image)

**Characteristics of the account studied**
- Code and name of the industry,
- Existence of an associated production chain,
- Label of the accounting year,
- Year currently on screen (current or previous),
- Valuation type.

**Work matrix**
This matrix includes, in rows, the operations and in columns, the production modes. The last column is the total in row. White central cells are inutable.

**Ratios table**
These ratios are automatically calculated depending on the data of the matrix. They are indicators to check the data consistency.
ERETES work tables to compile the SUT: Supply and Use Balance
Supply and Use Balance work tables

<table>
<thead>
<tr>
<th></th>
<th>Benchmark year</th>
<th>Current year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quantity</strong></td>
<td><img src="image1.png" alt="Quantity Table" /></td>
<td><img src="image2.png" alt="Quantity Table" /></td>
</tr>
<tr>
<td><strong>Value</strong></td>
<td><img src="image3.png" alt="Value Table" /></td>
<td><img src="image4.png" alt="Value Table" /></td>
</tr>
</tbody>
</table>
Supply and Use Balances in value

Aims:

• Synthesize the whole information linked to a product of the classification

• Balance supply and use
  • Benchmark year at price n
  • Current year at price n (and at price n-1 optional)

• Estimate the GDP by the Expenditure approach
Supply and Use Balance value / benchmark year

<table>
<thead>
<tr>
<th></th>
<th>Completed basic price</th>
<th>Transport margin</th>
<th>Trade margin</th>
<th>Net taxes</th>
<th>Non-deductible VAT</th>
<th>Purchaser's price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL SUPPLY</td>
<td>323</td>
<td>434</td>
<td></td>
<td></td>
<td></td>
<td>356</td>
</tr>
<tr>
<td>TOTAL USE</td>
<td>323</td>
<td>434</td>
<td></td>
<td></td>
<td></td>
<td>356</td>
</tr>
</tbody>
</table>

- 12 transactions in supply
- 11 transactions in use
- 6 Columns
- 1 valuation mode by column.

13 for SNA 2008
This tool allows to check:

- for each valuation mode the balance between supply and uses
- for each use the balance between the purchaser price on the screen and the purchaser price calculated summing the basic price, the taxes and margins on the screen.
This tool helps to calculate:

- for each use the different elements: taxes and margins between basic price and purchaser price

- you visualize the different assumptions and choose the one that suits you
ERETES work tables to compile the SUT: IC Matrix
IC matrix – projection of IC

If you have chosen to compile both Industry Accounts and Supply an Use Balances you can go even further to ensure consistency between:

• the intermediate consumption of the industries (demand of IC)

• the intermediate consumption of the products (supply of IC on the market)

  • for a benchmark year with the IC matrix
  • for a current year with the projection of IC tool and the IC matrix
IC matrix

methodological attribute  = 1 demand of IC by industries

methodological attribute = 2 supply of IC on the market by products

The IC matrix allows to compare:

- the total of the demand of IC of all industries for a product (example CC3 = 8922)

- the supply on the market of IC for the same product (example CC3 = 8577)

In that case, the accountant decides if he will modify the SUB increasing the supply or the Industry accounts decreasing the demand of one or several industries.
Projection of IC

A benchmark year is generally chosen according to the availability of a structural business survey which is the base of the implementation of a complete SUT in particular a detailed IC matrix.

This IC matrix gives for each industry a structure of the IC, describes its productive process.

These productive processes are stable over the medium term. It is called the assumption of the technical coefficients time-stability.
Projection of IC

For current years, if you implement Industry accounts and SUB, you can use this structure to propose an updated vector of IC for each industry (it is called projection of IC)

For each cell IC of industry j in product i:

\[
\text{IC}_N \text{ at price } N-1 \times \text{Volume index Output Industry j} = \text{IC}_N \text{ at price } N-1 \times \text{Price index IC Product i} = \text{IC}_N \text{ at price } N
\]

From Industry j accounts

From Product i SUB
You compare the IC vectors of the industries from the projection of IC tool and the IC by products on the market.
ERETES projection of IC tool: more information

- proposes for each pair industry * production mode the relevant method according to the information available for the year n:

  If the total of IC is not available: Leontiev method

  If the total of IC is available: Deflate method

- respects the cells with a particular status: source data, pre-arbitrated data, fixed cells (a file manages the memory of the cells to which this status has been given during the previous projections)

- allows to calculate a complementary price index that must be applied to the non-fixed cells to take into account the fixed cells particular price indexes while respecting the price index of IC supply in the SUB of the product.
## ERETES goods and services synthesis tables

### Synthesis by products (level 1):

![Synthesis Table Image](image-url)
ERETES goods and services synthesis tables

Synthesis by industries (level 1):

| Industry | Value Added | Compensation of employees | Wages + salaries | Actual social contributions | Imputed social contributions | Subsidies on production | Other taxes on production | Gross operating surplus | Employed workforce | VA / Output | GOS / VA | Ind / VA |
|----------|-------------|---------------------------|------------------|-----------------------------|----------------------------|--------------------------|--------------------------|----------------------|---------------------|------------|---------|--------|---------|
| AAA      | 114452      | 37452                     | 77010            | 40132                       | 41579                     | 57500                    | 403                      | 1189                 | 27603              | 170076     | 0.673   | 0.363  | 0.363  |
| BBB      | 48000       | 940                       | 3590             | 2327                         | 1897                      | 300                      | 30                       | 73                   | 1540               | 4435       | 0.807   | 0.391  | 0.391  |
| CCC      | 11684       | 7584                      | 4100             | 2534                         | 2189                      | 314                      | 31                       | 141                  | 1425               | 7850       | 0.351   | 0.348  | 0.348  |
| CDD      | 5854        | 3963                      | 2271             | 1159                         | 1034                      | 114                      | 11                       | 45                   | 1067               | 4530       | 0.388   | 0.470  | 0.470  |
| CDD      | 7214        | 4368                      | 3155             | 2394                         | 1963                      | 296                      | 30                       | 108                  | 756                | 4275       | 0.437   | 0.239  | 0.239  |
| CDE      | 2857        | 1559                      | 1388             | 1132                         | 986                       | 131                      | 13                       | 40                   | 216                | 2548       | 0.459   | 0.155  | 0.155  |
| DEC      | 2162        | 1159                      | 1155             | 600                          | 522                       | 78                       | 8                        | 30                   | 821                | 1820       | 0.531   | 0.043  | 0.043  |
| FFF      | 10445       | 4572                      | 6190             | 3735                         | 3285                      | 427                      | 43                       | 114                  | 2344               | 11930      | 0.575   | 0.378  | 0.378  |
| GGG      | 13017       | 2817                      | 10480            | 5762                         | 5042                      | 655                      | 65                       | 145                  | 4355               | 25650      | 0.785   | 0.424  | 0.424  |
| HHH      | 5238        | 1968                      | 3338             | 2128                         | 1885                      | 239                      | 24                       | 57                   | 1156               | 7270       | 0.627   | 0.346  | 0.346  |
| KKK      | 4136        | 1450                      | 2738             | 4542                         | 3895                      | 584                      | 55                       | 96                   | -1900              | 6500       | 0.652   | 0.056  | 0.056  |
| DDD      | 10137       | 2028                      | 80108            | 8019                         | 7051                      | 1058                     |                          |                      | 2050               | 8800       | 0.816   | 0.047  | 0.047  |
| PDD      | 7531        | 1414                      | 6272             | 5337                         | 5068                      | 701                      | 9                        | 147                  | 236                | 1802       | 0.816   | 0.047  | 0.047  |
| SDD      | 14268       | 2168                      | 12100            | 5732                         | 5022                      | 645                      | 65                       | 118                  | 6252               | 20300      | 0.848   | 0.517  | 0.517  |
ERETES implementation: key strengths

ERETES:

- stores and secures all the data in a single and consistent database from the sources to the aggregates and for the entire scope of your National Accounts

- involves all the accountants team and promote a teamwork structured by the tool
  - according to the breakdown of tasks each one is responsible for a set of work tables
  - each one has access to all the data generated by the other members of the team and the persons responsible for the synthesis
ERETES implementation: key strengths

ERETES:

- facilitates the assimilation of the National Accounts compilation methods as
  - the team follows the same structured process year after year (phases – tools)
  - it offers the possibility to consult both general documentation on national accounts (help) and specific one written by the team during the former campaigns (notepad)
  - it keeps the memory of reconciliations
ERETES implementation: key strengths

ERETES provides tools:

- to edit immediately a SUT and an IEAT compliant this the SNA 2008 and customized according to your own classifications
- to build and to edit time series
- to modify the classifications of your database to:
  - adapt it to specific issues (provisional accounts)
  - feed the edition of the MORES of the ICP
ERETES implementation: key strengths

- The use of ERETES is very flexible
  - A very complete set of work tables and tools is available
  - But it is not mandatory to use all of them
- Nothing is automatic in ERETES
  - It is a toolkit not but in no case a black box
  - The national accountant always takes the final decision
ERETES implementation: steps and support

When a country decides to use ERETES this implementation is conducted in the framework of a project and the support of an expert of the package is provided.

- The first step is the identification phase:
  - Analysis of the statistical information available, of the methods used up to now to compile National Accounts
  - Detailed presentation of the tool
  - Choice of the scope of the accounts
ERETES implementation: steps and support

The first step is the identification phase:

- Choice of the new benchmark year as the implementation is generally linked to the initialization of a new series.

- But the implementation can also be conducted in other contexts, in particular building an ERETES database in which data previously elaborated with other tools are loaded.

- According to the context, decisions on the appropriate support and the implementation schedule are taken.
ERETES implementation: steps and support

Step 2 - installation:

- Software installation
- Loading of the local classifications prepared by the team
- Initialization of a new accounting year
- Support to prepare the formatting and loading of statistical sources
ERETES implementation: steps and support

Step 3 - Processing statistical sources:

- Validation of choices regarding data organization: aggregation of individual data, for some transactions is it more useful to load amounts or rates?

- Detailed review of the data prepared by the team: in particular the methodological attribute, support to use the interface « scan » an Excel file

- Loading data in the database
ERETES implementation: steps and support

Step 4 - Preliminary pre-reconciliation

- First check of the consistency between sources transaction by transaction

Additional treatments if necessary (examples)

- Transform data at producer price into data at basic price
- Transform data based on cash accounting into data on accrual basis
- Check the consistency of the rates of taxes or social contributions with the legislation

....
ERETES implementation: steps and support

Step 5 – Assimilation by all the team members of how to use the work tables:

- Industry accounts
- Supply and use balance
- Whom to whom matrix (distributive and financial transactions)
ERETES implementation: steps and support

Step 6 – Synthesis

- Reconciliation of the IC matrix
- Last checks of the consistency of the institutional sectors accounts

Post-synthesis:

- Launching the editions of the SUT and the IEAT
- Data preparation to start the accounts of the following year
ERETES implementation: steps and support

Step 7 – Working on a current year needs to assimilate specific tables and tools:

- SUB: current year version
- IA: production account at current price and constant price
- Projection of IC tool

After this last step, the team has a full mastery of all tools and their use in the compilation process.
ERETES implementation : training

The ERETES community provides:

- A set of exercises to familiarize your accountants team with the package it is called « testset »
- 3 levels of the testset are available (basic – advanced – expert) to organize trainings with progressive difficulty
- The testset can be used during the support provided at each step or during specific training sessions
- A pool of african experts have been trained to conduct these trainings – the Pan African Statistic program supported this initiative
Thank you for your attention

ERETES technical team