



TWINNING CONTRACT

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Support to the Israeli Central Bureau of Statistics in Improving the Quality of Official Statistics

MISSION REPORT

on

Component C

Infrastructures for agricultural statistics

Activity C.2

Methodology for the Implementation and Maintenance of Farms Frame

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Table of contents

Executive Summary	5
1. General comments.....	6
2. Assessment and results.....	7
3. Conclusions and recommendations	12

Annexes produced for the mission (external to the report):

Annex C2 – 1 Terms of Reference for Activity C2
Annex C2 – 2 Programme for Activity C2
Annex C2 – 3 Persons met at Activity C2
Annex C2 – 4 The farm typology
Annex C2 – 5 Standard output
Annex C2 – 6 Standard Output and typology
Annex C2 – 7 Original Danish farm register
Annex C2 – 8 Danish farm register present system
Annex C2 – 9 Combining data from multiple sources
Annex C2 – 10 Introduction to GSBPM

List of Abbreviations

BC	Beneficiary country
EU	European Union
FADN	Farm Accountancy Data Network
FSS	Farm Structure Survey
GIS	Geographic information system
IACS	Integrated Agricultural Control System
ICBS	Israeli Central Bureau of Statistics
IT	Information Technologies
MS	Member State (of the EU)
SO	Standard output
ToR	Terms of Reference
GSBPM	Generic Statistical Business Process Model

Executive Summary

The last agricultural census in Israel was conducted in 1981. A comprehensive survey was conducted in 1995 and some surveys were conducted up to 2003. Since then the ICBS mostly relies on administrative data for agricultural statistics. These data sources suffer from quality inadequacy and are non-complete. The main conclusion is that ICBS is ready and capable of conducting a census. Furthermore, findings have confirmed that a census is necessary in order to identify the population of farmers and establish a reliable farm register, which will also serve as a basis for future agricultural surveys. A preliminary survey showed that the existing business register cannot provide the data needed in the required quality, even when data from different sources are combined. Nevertheless, further work on the census and the farm register should await decision on funding of the census.

The EU Code of Practice on official statistics was introduced for the Agricultural Unit at ICBS, as well as the generic statistical business process model (GSBPM), as tools to standardize the framework and to harmonize terminology, by describing and defining a set of business processes needed to produce official statistics. The template ensures standardized process documentation, harmonized statistical computing infrastructures as well as provides a framework for process quality assessment and improvement.

1. General comments

This mission report was prepared as part of the Twinning Project “*Support to the Israeli Central Bureau of Statistics (ICBS) in Enhancing the Quality of Official Statistics*”. This was the second mission of Component C: Infrastructures for Agricultural Statistics.

The main activities of the mission were:

- *Presentation by BC-experts on the follow up on the previous mission*
- *Presentation by BC-experts of the hands-on exercise - Test of concept for calculating farmer's income by combining data from multiple sources.*
- *Presentation by MS-experts on EU Typology and classification of farms, farm register, quality check of data and the EU Code of Practice on official statistics.*

The mission mainly assisted the ICBS and the Twinning Project experts in getting an overview of the typology and classification of farms, quality check of data from censuses and surveys and methodologies for establishment and maintenance of farms register,

The experts would like to express their thanks to all officials and individuals met for their kind support and for the valuable information they provided, which highly facilitated the experts' work.

The views and observations stated in this report are those of the consultants and do not necessarily represent the views of EU, ICBS or Statistics Denmark.

2. Assessment and results

All of the foreseen activities were carried out following the plans in the ToR; cf. Terms of Reference (Activity C.2: Methodology for the Implementation and Maintenance of Farms Frame). Outcomes were favorable, and results and conclusions are described in the following section.

ICBS presented:

- *Introduction of the hands-on exercise (Test of concept for calculating farmers income by combining data from multiple sources)(Annex C2 – 9 Combining data from multiple sources)*

The MS experts gave presentations on:

- *Typology and classification of farms*
- *Establishment and maintenance of a farm register*
- *Quality check of data from censuses and surveys*
- *Quality of official statistics according to Code of Practice*

Follow up on mission 1

- Funding of the census is still being discussed between MARD, ICBS and the Prime Minister's Office.
- The relevance of GIS for this project must be determined. An expert from Poland will be involved to help clarify the situation.
- Finalization and test of questionnaire awaits the decision on funding of the census.

Typology

The typology is a common EU system whose aim is to describe the agricultural farms by their specialization into different farm activities (Annex C2 – 4 The farm typology). The system has 9 different main groups:

- 1) Field crops such as e.g. cereals, industrial crops, pulses and potatoes.
- 2) Horticultural crops such as e.g. vegetables and mushrooms (also when grown under glass).
- 3) Orchard crops such as e.g. apples, pears, citrus and wine
- 4) Grazing livestock such as cattle, sheep, goats and horses
- 5) Granivores such as e.g. pigs and poultry
- 6) Mixed cropping
- 7) Mixed livestock
- 8) Other mixed farm
- 9) Farms which cannot be classified

Please consult COMMISSION REGULATION (EC) No 1242/2008 of 8 December 2008. Establishing a Community typology for agricultural holdings for further details:

<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008R1242&from=EN>

To group the farms according to this system it is necessary to know the farm's activities and the economic value of these activities. To fulfill this, two tools are necessary:

- A farm structure survey or census covering crops and livestock.
- Standard output (SO) parameters for each crop and livestock.

In The ICBS Aquaculture is also considered as an agricultural activity. In this case adaptation is needed in order to harmonize with the EU typology.

The SO parameter expresses simply speaking how much a farmer normally can earn by having, for instance, one dairy cow or cultivating one hectare with grass (Annex C2 – 5 Standard Output; Annex C2 – 6 Standard output and typology). The value is measured at so-called farm gate prices where VAT and other duties are deducted and subsidies added from and to the actual selling price.

These parameters can be obtained in several ways. The Danish approach is to use the accounts statistics (FADN) as often as possible, however expert estimates are also an option. In Israel SO parameter could be obtained from MARD calculations, ICBS output data or a combination of both data sources.

The composition of the SO determines how a farm is grouped in the typology. In order to be grouped in one, the first five groups a farm must have more than 2/3 of its SO from respectively field crops, horticultural crops, orchards, grazing livestock or pigs and poultry.

Otherwise, a farm will be grouped in one of the mixed groups 6-8. The last group is for farms with no activities on the survey day ("empty stable") or farms with activities not covered by the typology, for instance minks and reindeers.

There are several subdivisions of the main groups where the typology groups go as far as four digits, often with rather complex rules of grouping. Please consult COMMISSION REGULATION (EC) No. 1242/2008

SO is also used to group the farms into size groups. As such it is a more accurate measure than the traditional grouping of farms into size groups by size of area. This is because SO takes the economic importance of the different activities into account. A farm with a small area can have a big turnover if it grows special crops, especially crops under cover.

Certain aspects regarding SO and typology could be emphasized:

Who are the users? In Europe, one important user is the EU since it enables cross country comparison. The EU needs a harmonized tool to describe farms all over the EU in order to plan the agricultural policy. But experience tells that also other users than the experts that are often interested in knowing how many farms specialize in a certain field (for instance, cattle). In Israel the subsidy system is different than in the EU, as the farmers receive only indirect support. The MARD is considering shifting to direct support, which enhances the need of harmonized reliable data.

The SO parameters should reflect that certain crops could be harvested several times during a year or several crops can be harvested from a single field within one calendar year. This is evidently more pronounced in some countries than in others.

It may be necessary to have different SO parameters for certain countries, for instance, because of differences in the climatic conditions.

Farm registers

Two different register models were put forward by the experts:

Keeping an independent farm register

Until In 1976, Statistics Denmark kept a farm register based on a property register (Annex C2 – 7 Original Danish Farm Register), basically the same as what's sometimes called cadastra information.

Every year the farm register was updated partly by the property register and partly by farm structure surveys, either total censuses or sample surveys with big sample.

Such a system is excellent when it comes to farms where farmers own one or more properties, and when the ownership can be determined by means of matching by personal codes. However, this is often not the case in Israel since there are many farms whose ownership is not connected to a single person, such as kibbutzim.

The model is less efficient when it comes to finding farm units where the farmer leases all land and livestock farms with no land. Even if such farms are not very common they do exist and should be included in the farm structure statistics.

The model is also not so efficient when it comes to deleting inactive or closed down farms. Here the model relies heavily on frequent farm structure surveys which even regularly should be held as total census in order to clean the register for inactive units.

The model presented above could be improved considerably if other sources are introduced. These other sources could be the business register and subsidy registers for farms getting support from the government. However, in Israel, it has been proven that the business register cannot be used as a reliable source and that at the moment subsidies are not paid to individual farmers.

Integration of the farm register into the business register.

In 2010 Statistics Denmark decided to skip the independent farm register as it was seen as inefficient to maintain farm units in both the business register and in the farm register.

The solution was to add a special agricultural part to the business register (Annex C2 – 8 Danish farm register present system). This part also includes forestry since agriculture and forestry often go together in Denmark. However, it has to be mentioned that the Agricultural units are not certified to enter changes into the business register but only act as a data providers for the business register.

The unit in the business register is the *local unit*. For almost all agricultural farms the local unit is identical to the *legal unit*. But for very big companies with many factories spread all over a country each factory constitutes a local unit.

All local units are described by their engagement in agriculture and forestry:

Agricultural activity in the business register		
		Size
0	No agriculture and no forestry	-
1	Agriculture, no forestry	S=big farm, L=small farm
2	Forestry, no agriculture	-
3	Both agriculture and forestry	S=big farm, L=small farm
* Below or above the farm structure threshold		

Two important sources are used to update the register:

Subsidy register, also called *IACS*, Integrated Agricultural Control System: About 95 % of all Danish farms apply for subsidies. They report all their crops to the Ministry of Agriculture when applying for subsidies.

Livestock register: About 50 % of all Danish farms have livestock. The most import animals are pigs and dairy cows. When having pigs, cattle goats, sheep, minks and poultries it is mandatory to report to the livestock register.

These two registers are used to *add farms* to the agricultural part of the business register. But they are also used to *delete local units* from the list of active agricultural farms. The point of view is that if a local unit no longer can be found neither in IACS nor in the livestock register it has most likely stopped being an active farm.

Quality of statistics, including farm registers

A few years ago, Eurostat published the so-called “Code of Practice for European Statistics” (CoP), which has been formally adopted by the ICBS's top management in 2014. Moreover, the Statistics Code of Practice for the European Neighborhood South Countries was approved in Luxembourg in May 2015. The Statistics Code of Practice sets the standard for developing, producing and disseminating statistics. It builds upon a common definition of quality in statistics and targets all relevant areas from the institutional environment, the statistical production processes to output. The Code of Practice for the European Neighborhood South Countries includes 16 key principles for the production and dissemination of official statistics and the institutional environment under which national and community statistical authorities operate. A set of indicators of good practice for each of the 16 principles provides a reference for reviewing the implementation of the Code.

Evidently the quality of statistics has several dimensions of which a few could be emphasized:

Procedures are established for all statistics regarding *data validation*. Such procedures involve the control of data so at least all important mistakes are found and edited before publishing.

Register data are used whenever possible. It has two reasons: Firstly it is cheaper to produce statistics if we can utilize one or more registers which already exist in another government body. Secondly we avoid troubling the firms with asking questions which they already have reported to other authorities.

The statistical office and other authorities *co-operate* when it comes to *the content of a register*. Sometimes it might be possible to fulfill also statistical need if a few items are added to an administrative register.

Under all circumstances the statistical office should *always have access to any administrative register*. It means that an authority can never refuse to deliver a register to the statistical office on request.

When data enter the statistical system – whether collected from questionnaire based surveys or registers – they must absolutely *never be used for anything else than statistics*.

At the mission also the generic statistical business process model (GSBPM) was introduced as a tool to standardize the framework and to harmonize terminology, by describing and defining a set of business processes needed to produce official statistics (Annex C2 – 10 Introduction to GSBPM). The template ensures standardized process documentation, harmonized statistical computing infrastructures as well as provides a framework for process quality assessment and improvement.

Data validation

Data validation involves basically four types of errors:

- 1) Random errors e.g. errors cause by typos
- 2) Logical errors where certain dependencies in a questionnaire should be respected
- 3) Errors due to misunderstanding of questions
- 4) Outliers in a sample survey

These errors should be handled in the following way:

- 1) A list of rules should be created with maximum and maybe also minimum rules for survey items. One example for a rule is that all cases with more than 100 cows should be controlled before accepting the questionnaire. The list of rules should be realistic so that we avoid spending time on controlling too many cases of “mistakes” which are not really mistakes.
- 2) The best way to avoid logical errors is to require that all questions are answered so that no section in the questionnaire is left blank. Also it is necessary to demand that there cannot be a harvest of barely without an area with.
- 3) The questionnaire should be tested before a survey begins, and after the survey the questionnaire should be evaluated critically.
- 4) Outliers can lead to unreliable results if farm in a stratum with a big extrapolation factor has an unusual number of for instance certain animals. The solution is to regroup the farm in the stratification.

The validation could take place in several ways:

- A list of all potential mistakes could be printed.
- The validation takes place simultaneously when typing the questionnaire.
- The validation takes place online if a web questionnaire is used.

Some further considerations could be made:

Could we give *priority to important and less important mistakes*? It is worth considering if spending, say, 100 extra hours on data validation really improves the quality of our statistics significantly.

Is it possible to introduce *automatic data editing*? It must be in cases where we could absolutely sure that a figure is a factor 10 or 100 too big or too small. The harvest survey could be an example. We expect that the harvest of a crop measured as tons per hectare should be within certain limits.

3. Conclusions and recommendations

Main conclusions based on the findings and discussions of the mission:

- ICBS is ready and capable of conducting a census. Findings have confirmed that a census is necessary in order to identify the population of farmers and establish a reliable farm register.
- Further work on the census and the farm register should await decision on resources for the census.
- The theoretical frame is ready but adjustments will be made when real data is available. At present a threshold cannot be determined due to differences in the data sources.

Recommendation:

- The study trip should focus on:
 - The Italian experience on how to establish and maintain a farm register (Census, surveys, administrative data)
 - Quality check
 - Estimation methods
 - How to collect data from many small farms
 - How to deal with missing data
 - Questionnaire design
 - Data collection methods and statistical methods
 - Use of GIS in combination with economic data
- After the census results will be disseminated according to EU standards.

Table 1: Actions needed for moving forward as well as for preparing the next mission

Action	Deadline	Responsible person
Clarify differences in statistical results between MARD and ICBS, identify and evaluate the sources used. Particularly look into chickpeas, sunflowers, watermelons for seeds and other field crops.	End of 2016	Dr. Moshe Yanai
Further look into access to and cooperation about administrative registers.	End of 2016	Dr. Moshe Yanai
Decision on the need for a mission on the economy of agriculture.	Med November 2016	Dr. Moshe Yanai
BC will send SAS programme on classification.	Med December 2016	Peter Vig Jensen
Identify specific farmers and find their financial statements to see what information can be extracted.	Before the C4 mission in January 2017	Dr. Moshe Yanai