Punkaharju, 25-27 October, 2001

Bioenergy from forests
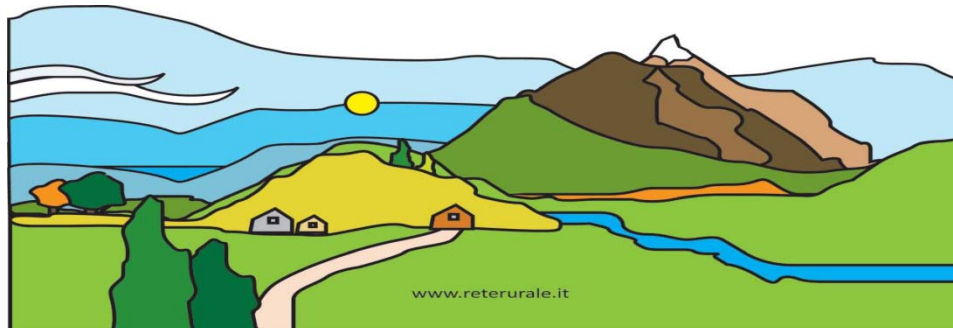*Rural Development Programmes and forest-based bioenergy*

Italian project on the FADN

Exchange of experience and knowledge on an accountancy data system
for forestry sector and RD measures

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Aim of the project

The main aim of this project is to exchange experiences and information on the following issues:

- techniques and problems for the evaluation of forestry assets

- impact indicators for forestry measures

- baseline indicators for forestry measures

In particular, regarding the measurement of impacts of the competitiveness enhancement measures (common framework for monitoring and evaluation, Reg. 1974/06), the EC proposes **accounting results at farm level** as proxy of three socio-economic indicators:

Impact indicators	Accounting results (target-variables)
Economic growth	Added Value
Employment creation	Net additional full-time equivalent created job
Labour productivity	Gross added value per full-time equivalent job

How to measure forestry accounting results at farm level? (costs and incomes)
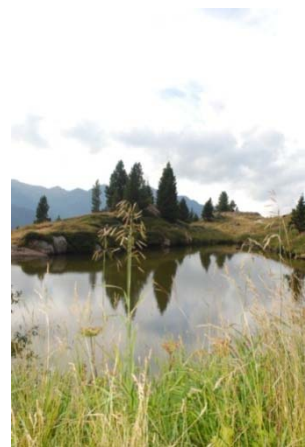
Structure of the presentation

- The problem

- The research plan in forestry accounting

- The characteristics of forestry assets and the adaptation of the accounting system to forestry sector

- Presentation of the pilot project

- Case study: Veneto Region

  definition of the accounting schemes

  description of the forestry farm

  balance sheet comparison

- Conclusions

Introduction (1)

In Italy, the timber sector plays an economic marginal role

- 95% of forests are situated in hilly and mountainous regions (LDAs)

- the private forests (60%) are very fragmented

- during the last years, the timber market value is decreased (30 €/mc on average)

In general, there is a scarce interest of timber producer organizations to collect data on sector performance

Differently from other European Member States and from the agricultural sector, in Italy does not exist a forestry accounting network which permits to have income and economic information about forestry enterprises.

This lack has different consequences:

1. Fragmentary knowledge of costs, revenues and income situation of forestry farms

2. Difficulties in the implementation of some policies

3. Scarce quality of economic evaluation results (i.e. <u>impact evaluation of rural development policies</u>)

Introduction (2)

With respect to the past, there is a growing interest in monitoring the results and in evaluating the socio-economical effects of rural development measures

Starting from Agenda 2000, the EU enhanced the forest related policies in the Rural Development Plan, stating that incomes from forests can play an important role in rural areas and raising the financial budget from 9.7% in 2000-2006 to 12-14% in the present period (2007-2013).

To fill this gap INEA (Italian responsible of FADN survey) started with a pilot project applying FADN scheme to forest sector:

• forestry and agro-forestry farms (forest owners)

• logging enterprises

GAIA (Gestione Aziendale delle Imprese Agricole)
The software used in Italy to collect information from farms for the national FADN (RICA)

Research plan

1st Work –Phase

Literature review: analysis of publications and other European experiences. New forestry accounting principles (IAS/IFRS 41)

2nd Work –Phase

Analysis of GAIA software used to collect agricultural data for Italian FADN: how to adapt it to meet the requirements of a forestry accounting scheme?

3nd Work –Phase

Analysis of statistics (national and regional) and creation of the sample

4th Work –Phase

Field survey: case study in Veneto region

Milestone: MOSEFA (Monitoring the Socio-Economic Situation of European Farm Forestry), FAIR (1997)

The nature of forestry assets and the accounting problems

The application of the traditional accounting framework (annual) to forestry assets (multi-annual) is not easy because of

- **biological growth**

It results in increases in timber volume, quality, assortment mix and also prices (market)

- **long production cycles**

Long periods between incurring costs and generating revenues at the time of harvest

- **non market benefits**

Landscapes, biodiversity, protection functions, etc.

Value of forestry assets

➕
- Annual growth of standing timber (volume)
- Improvement in the quality of products
- Increase in the price of timber

➖
- Annual cutting
- Decrease in the price of timber
- Other external factors

The nature of forestry assets and the accounting problems

<u>Net profit</u> → derives mainly from sales of wood from final cutting and/or thinning during the accounting period

> Large cuttings → High profit
>
> Low cuttings → Low profit or losses

Large cuttings do not affect the value of forest in the Balance Sheet accounts, the future cutting possibilities or the future increments.

Problem: who invests in silviculture activities rather than cuttings usually has a <u>loss,</u> even if the market value of the forest has increased as a consequence of the activities.

In rural and marginal areas the increase of forest value is important to justify the rural development measures for forestry sector.

The accounting schemes

Traditional accounting scheme

Value changes associated with growth and market conditions are recognised when they are realized (at the time of harvest). Only **realized revenues** coming from the harvested trees are take into account.

Forestry accounting scheme

Value changes associated with growth and market conditions are recognised when they occur (as tree grow and price change). **Unrealized revenues** of uncut trees (standing timber) are considered. The final cutting decrease the value of forestry asset.

**Agricultural accounting
Vs
Forestry accounting**

(adaptation of GAIA)

What is Gaia

GAIA is a new software used in Italy (since 2008) to implement the national FADN. All the surveyours in all the Italian regions use the same software. At the end of the accounting year, the regional dataset are sent to Rome that sent the national dataset to Bruxelles.

1. Definition of **farm context** (enterprise – farm – center sub-farm) and **inventory**
2. **Technical Management** of
    a. farm land (plantations and crops)
    b. farm labor (household, employee, seasonal worker)
    c. stores (internal uses of agricultural products and business extra-farm)
    d. animals (births, dead, slaughtering, entrusting, outstanding bi-monthly)
3. **Management Accounting** (double-entry bookkeeping)
    a. income and expense (with or without VAT, economic and financial, for farm sector)
    b. Public supports (aid management and investment)
    c. self-consumption, internal replacement, poultry farming, other financial transactions
4. **Year-end accounting transactions**
    a. Gross margins (production processes of plant and animal, *farm holidays*)
    b. Development in economy and extraordinary maintenance
    c. Accounting transactions at year end (accounting provisions, etc.)

What is Gaia

Farm list

Entry

Farm Context

Inventory

Technical management ←→ **Accounting management**

Balance Sheet Indicators
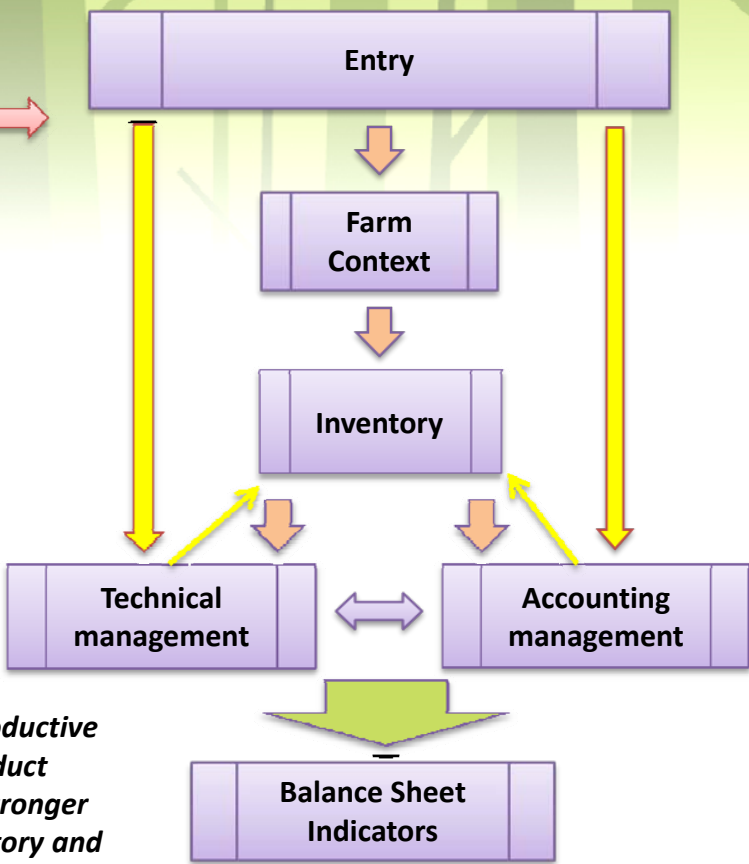
Woody capital: productive factor and product
It is necessary a stronger link with the inventory and the stock accounts

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Inventory
<u>Arboriculture</u> (bare soil separated)
<u>Semi-natural forests</u> (a single value for stand and bare soil)

Technical manag. ←→ Accounting manag.
The increase of value due to the <u>annual growth</u> of wood volume is computed every year with a book keeping entry linked to the technical management mask (that take into account the stock).
The <u>increase in the woody capital value</u> (changes in the stumpage price) is computed in the accounting management mask

IAS 41 biological transformation
+
Assets revaluation

FAIR VALUE

Inventory: <u>woody capital value (stocks)</u>

Every year:

Annual growth of wood → Woody capital value increase

Provision of increase in value of woody capital

(*Profit and Loss account – right side of the T account*)

If necessary:

Increase (decrease) in the economic value → Woody capital increase (decresase)

Revaluation surplus: **Revaluation of woody capital** (Revaluation reserve)

Revaluation deficit: as a **loss** in the Profit and Loss Account

In case of logging:

Selling price versus Woody capital value

→ Capital loss (selling price < woody capital value)

→ Capital gains (selling price > woody capital value)

As concern <u>subsidies</u>, in GAIA it is possible to compute them as

-Capital revenues

-Revenues grants

Localization of the case study

- Trichiana, a Municipality in Belluno province
- There is the management plan
- Forested area: 300 HA
- Mountain
- High forest and coppice systems
- Broad leaved (beech) and coniferous trees (spruce + Scots pine)
- Average growing stock in volume: 100-300 m3/ha
- Logging area in 2009: 3.2 HA

Creating the sample

ISTAT Agricultural Census: in 2000 also pure forestry farms has been collected. The Census of 2010 has excluded the farms without UAA. As a consequence there are not information about pure forestry farms.

ISTAT Agricultural Census:
- In 2000 also pure forestry farms have been recorded
- In 2010 the Census excludes the farms without UAA as a consequence there are not informations about pure forestry farms.

This is due to the harmonization with other European surveys and in particular with FSS (see CE Reg. 1166/2008 about FSS and other surveys concerning agricultural production methods).

FADN and FSS survey:
- there is not a Farm Type (FT) related to forestry production
- there is not at European Union a definition of Gross Standard Margin for forests
- there is not a common procedure to compute the forest assets

Creating the sample

A first problem in the survey starting phase is how to define the sample. IT is important to look for all possible source of information relevant to the population under investigation.

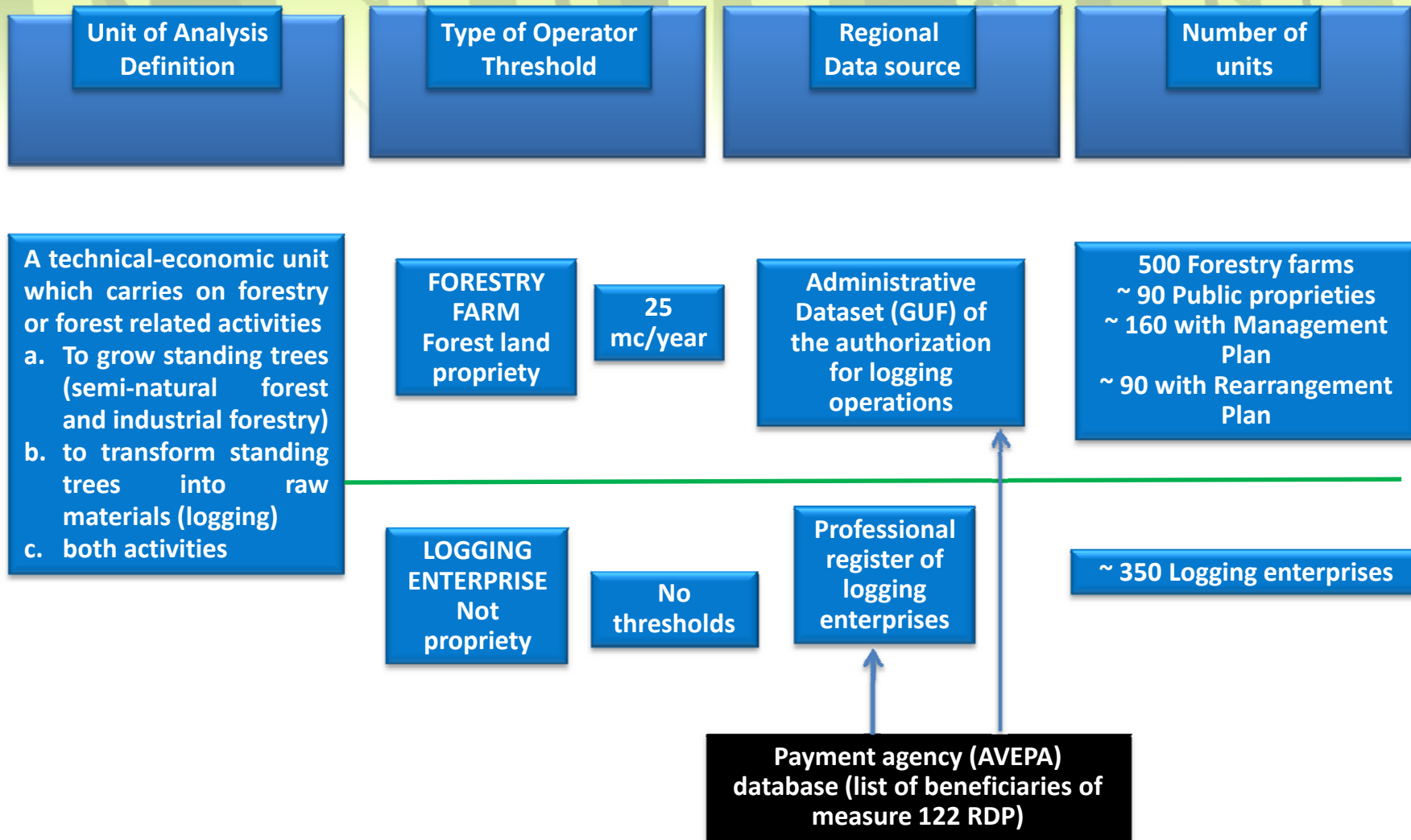At a national level:

1. National Agricultural Census

2. Farm Structure Survey (FSS): it collects forestry and agro-forestry farms.

3. RICA/FADN survey: it collects only agro-forestry farms

At a regional level

Regional administrative databases

For instance: in Veneto Region the database GUF (Gestione ed Utilizzazione Forestale) that collect information about forestry farms and logging enterprise.

Definition of the population

Unit of Analysis Definition	Type of Operator Threshold	Regional Data source	Number of units

A technical-economic unit which carries on forestry or forest related activities

a. To grow standing trees (semi-natural forest and industrial forestry)
b. to transform standing trees into raw materials (logging)
c. both activities

FORESTRY FARM Forest land propriety

25 mc/year

Administrative Dataset (GUF) of the authorization for logging operations

500 Forestry farms
~ 90 Public proprieties
~ 160 with Management Plan
~ 90 with Rearrangement Plan

LOGGING ENTERPRISE Not propriety

No thresholds

Professional register of logging enterprises

~ 350 Logging enterprises

Payment agency (AVEPA) database (list of beneficiaries of measure 122 RDP)

The problem of the sample

The sample for Veneto Region has been defined comparing the GUF database with AVEPA database and appling a simple formula to calculate the average sample number for each category

	Legal form	Beneficiaries	Not beneficiaries
Forestry farms	Private (> 25 mc)	40	115
	Collective forestry farms	15	37
	Municipalities	9	93
Logging enterpises		57	327
Total		121	572

$$n_s = 1.5 \sqrt[2]{N_s}$$

	Legal form	Beneficiaries	Not beneficiaries
Forestry farms	Private (> 25 mc)	10	17
	Collective forestry farms	6	10
	Municipalities	5	15
Logging enterpises		12	28
Total		33	70

	2009_trad	2009_for	
Saleable Gross Production	**32,129.9**	**48,733.5**	
Timber	23,690.9	40,294.5	Unrealized revenues due to the growth of forest
Other forest products	8,439.0	8,439.0	
Other revenues	0.0	0.0	
Current Costs	**8,439.0**	**8,439.0**	
Materials, consumption	0.0	0.0	
Services	8,439.0	8,439.0	Realized revenues = selling price
Other costs	0.0	0.0	
Added Value	**23,690.9**	**40,294.5**	
Other costs	**13,178.7**	**13,178.7**	
Depreciation of fixed assets	12,847.0	12,847.0	
Allocation to Provisions	331.7	331.7	
Net Product	**10,512.2**	**27,115.7**	
Wages, salaries and social security	**5,933.9**	**5,933.9**	
Operating results	4,578.3	21,181.8	
Financial costs	0.0	0.0	
Extraordinary results	**9,937.7**	**14,294.7**	
Subsidies	9,937.7	9,937.7	
Capital gains	0.0	4,357.0	Selling price – Standing timber value = Capital gains/loss
Capital loss	0.0	0.0	
Net Profit	**14,515.9**	**35,476.5**	

NET PROFIT (trad.acc.): realized revenues by way of wood sales

NET PROFIT (for.acc): unrealized revenues (growth of standing forest) ± capital gains/capital loss due to the wood sales

Changes in price of timber are not take into account as business transactions and do not leave any trace in the accounting system.
Hyder et al.(1999) consider the **CALCULATED NET PROFIT**

CALCULATED NET PROFIT: NET PROFIT **± change in forest value (price of timber)**
± adjustment of net interest
± compensation for own work

It is reasonable to assume that real stumpage prices will change over the next five to ten years

Conclusions and remarks

• In Italy, no efforts have been directed for developing common rules to collect data about forestry sector at a farm level. There is not any recommendation relates to the evaluation of forest economic value.

• The distinction between standing timber and growing timber is important

• Failure to measure the unrealized values should be regarded as a deviation from the accounting principles

• Management plans are important to have a good forestry accounting survey

• The unrealized values are important in the evaluation of the economic value of forest, especially in case of low cuttings. In rural and marginal areas the increase of forest value is important to justify the rural development measures for forestry sector (impact indicator)

Usefulness of Forestry FADN results for policy impact evaluation
Over the last 10-15 years, EU regional policy has brought the idea of evidence based policy making and evaluation to quite a wide audience. For the present RD programme period, the EC defined a common framework for monitoring and evaluation (EC Reg. 1974/06, Annex VIII). In particular, the document provides information on how to measure different kinds of indicators to assess the effectiveness of the policies.

Thanks to Forestry FADN investigation, it is possible to measure average values of such target-variables before and after the implementation of forest RD measures, or among farms with and without funding.
Anyway, extreme caution is needed to interpret the observed differences - over the time or among the individuals - as "effects" of the policies (EVALSED development 2006). In fact, what the impact evaluation is interested in, are not only the differences, but to what extent the measures have contributed to create these differences.
The following sub-paragraph provides some basic information on the theoretical approach suggested by statistical-economical literature and an example of application in the context of forest related measures.

Other questions

When and how NWFPs (marketable) or forest ecosystem services "production" (not marketable) influences the gross margin?

What is the best way to measure the growing stock and take it into account in the forestry accounting?

What are the indicators useful to evaluate the impact of the Rural Development measures?

Forestry accounting notes
Methodological aspects of the forestry FADN application (RICA-for)

- Description of the problem and literature review
- Evaluation and computation of capital timber value and variations
- Accounting registration and computation of some kind of multi-annual costs

Particular aspects:

- Organization of accounting procedures with respect to IAS/IFRS principles
- Application of accrual method for some cost and revenue items.

Thanks for your attention
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