# The IRR, a tool for evaluating projects to combat desertification?

**WED 5.2: Assessing actions to combat desertification, what valuations**
UNCCD  Bonn Germany

## 10 Avril  2013

**Melanie Requier-Desjardins**
Trainer-researcher CIHEAM-IAMM,
Mediterranean Agronomic Institute
CSFD

CIHEAM
IAM MONTPELLIER

CSFD

**Interest rate at which the cost and benefit of a project discounted over its life are equal.**

**➔ Measure of profitability associated to investment / project**

**IRRI (%) = average annual profits discounted / amount invested**

*IRR ex ante : decision-making on investment / projects*
*IRR ex post : advocacy towards decision-makers, funders*

**Examples:**
**Development / environmental projects / s FIDA, AFD etc (ex ante)**
**Sahel studies (ex post) ➔ IRR indicating / validating success stories**

**Financial evaluation tool applied mostly on technical choices, seldom on organizational choices**

**Based on the project logical framework information**

➔ **Tend to limit the identification and measure of benefits and costs to those expected**

**Assuming a discounting rate, usually of 10%, too high for natural resources**

**Needs to be applied to long term scales for environmental projects: 20 years for forestry and agroforestry**

**Assumptions on benefits**

**EX ANTE ➔ IRR**

**EX POST, calculation over the project period of time ➔ ERR**

**Arid context : water variability ➔ average annual benefits over time?**
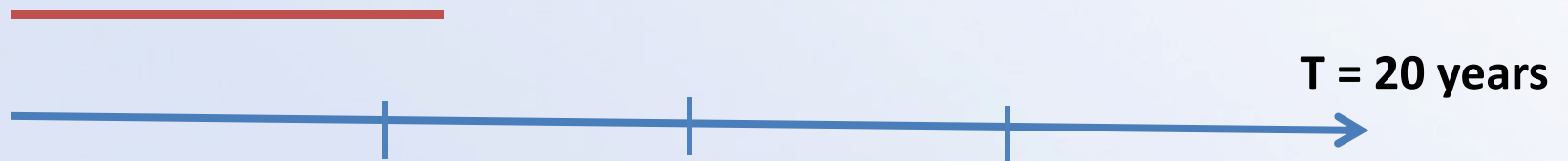
**Project : 6 years**

**T = 20 years**

**Extrapolation of anual average benefits**

**Time of projects**

**Time of expected benefits**

**Data available through time about projects results**

**Sahel studies (Botoni, Reij, 2011)  ERR on reforestation : timber and non timber products from the sixth year only**

➔ **ASSUMPTIONS / INCERTAINTIES**

**Fruits Plantation : 6 steres par ha, 15,5 kg forage, 1,5 kg arabic gum per tree and ERR of 31%**

**Plantation : ERR of 13%**

**T = 20 years = action time = scale of ERR calculation**

**RNA (Botoni and Reij, 2011) :**

➔ **Niger : 31%**

➔ **Burkina Faso : 24%**

- **Advocacy for policy makers and investors to sustain agro-forestry practices**

- **Census, choice of data, monitoring systems (price, production, labor force etc. )**

- **FFEM - CILSS Project : Regional initiative and Global Environment for combatting desertification in Sahel (Africa) (IREM/LCD)**

- **2000-2008 : 33 local projects funded (< 100 000 euros)**

- **Characteristics :**

  – **Short duration, 2 years projects**

  – **Implemented, co-funded by civil society (NGOs, associations etc.)**

  – **Coordinated at regional level by CILSS**

- **Evaluation ex post : ERR on projects axes**

  – **Improvement of local income, of natural environment ➜ provisioning services only**

  – **Management costs are not included**
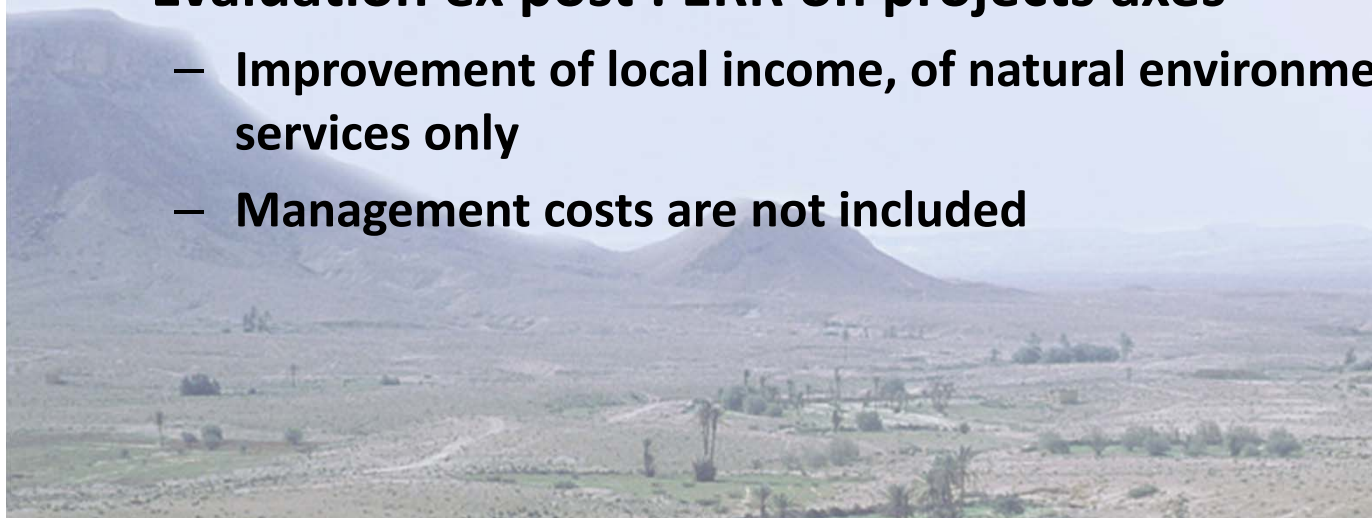
# Examples of ERR - IREM LCD

| Project / Country | Activities measured / objectives | ERR- potential of profitability | Time to recover l |
|---|---|---|---|
| NGOAMEN Mali (Tambouctou) | Plantation of eucalyptus / avoiding deforestation | 38% / 3 years 52% / 10 years | 3 years |
| Association Bareina Mauritania | Plantation / arabic gum Avoiding sand silting | 11% / 20 years | 9 years |
| Association ATY Burkina Faso | Infrastructures against erosion on cultivated land | 35% / 5 years | 3 years |

- **Projects potentially profitable**
- **1 to 2 years of implementation when ERR calculation**
- **Extrapolation for getting the average annual benefits (literature review)**

# Results analysis?

- **Highest return : commercial plantations and infrastructures on cultivated land.**

- **From environmental perspectives, not necessarily the most relevant actions**

- **More useful activities for preserving long term quality of life, limiting natural risks (acacia senegal plantation) ➔ ERR smaller**


➔ **How to support such public investments ? Role of local rural collectivities? Land planning, rural development policies**

➔ **Land tenure issue**

➔ **Preserving land leads to small EER compared to restoring land**

# Sensitivity analysis on eucalyptus project

Area planned : 30 ha.

Area planted : 25 ha.

Plantation success :  60%  of area for the first year

Assumptions :

- Timber selling after 3 years, then annual rotation for commercialization
  Data on annual benefits : project report and USAID report on eucalyptus value chains

ERR

- on 3 years : 38%
- on 12 years with partial plantation every 3 years : 45,5%
- on 3 years with trees  survival rate of 20% :   - 2 %
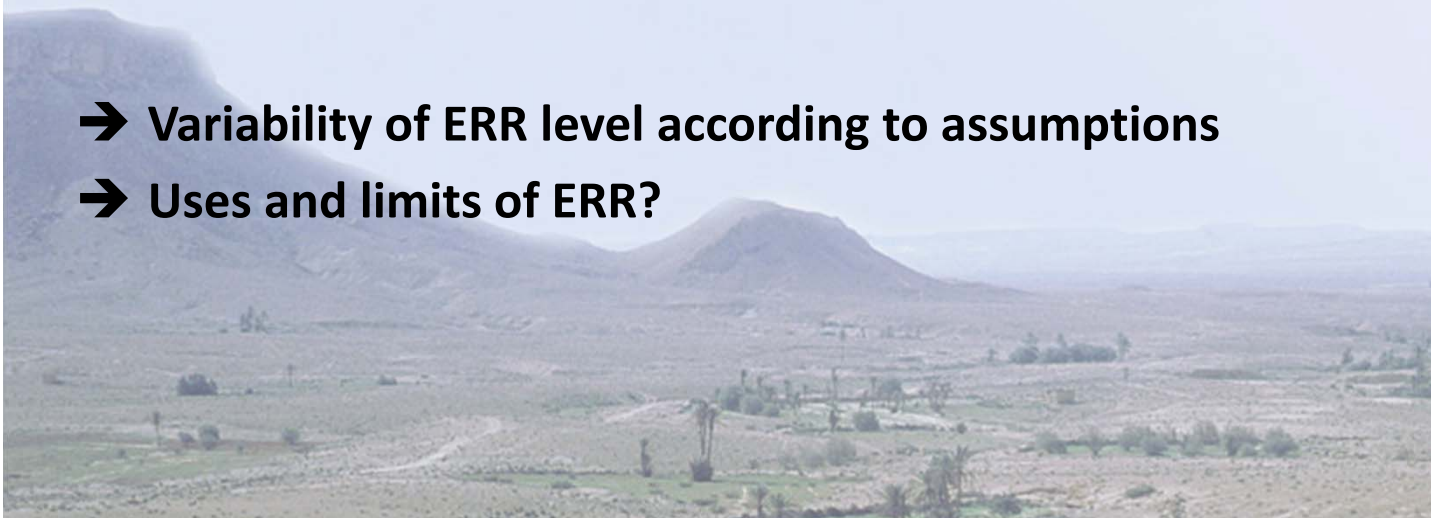
**Assumptions :**

- **Current yield : 0,7 t / ha**
- **Low return : 1 t / ha**
- **High return: 1,7 t / ha**

**ERR**

- **High return on 5 years : 35%**
- **Low return on 5 years : - 12%**
- **High return on 20 years and 3 annual droughts : 10 %**

➔ **Variability of ERR level according to assumptions**
➔ **Uses and limits of ERR?**

# ERR for drylands actions

- **USEFUL Tool for advocating decision-makers and investors ➔ their language and terminology**
- **For showing the vitality of these regions and their unhabitants**

*Constraints*

- **Data monitoring : to get average annual benefits**
- **Assumptions on the benefits through time**
- **Natural variability (rainfall) for short lasting projects**
- **Discounting rate of 10%, over evaluated**
- **Short duration of projects ➔ benefiting to actions that are giving quick returns, where as long lasting environmental actions**
- ➔ **Trade-off, synergies between financial / environmental objectives**

# Some limits to ERR approach

- EER only measures the results of the projects logical framework
- Externalities are not integrated in the calculation (tool constraint).

➔ Missing of
  – Social costs and social benefits (collective action, organization, governance etc)
  – Most environmental costs and benefits (except provisioning services)
  – ERR does not reflect well collectivity welfare but the investor profit point of view
  – Neighboring spaces are not taken into account (ERR not relevant for a territorial approach)

- **Implementing a ERR approach as an evaluation process does generate some positive local externalities in terms of :**

  - **local capacity building**

  - **collective learning through evaluation process**

  - **contribution to local / territorial development process and governance**

- **Tool for experts dedicated for investors more than for beneficiaries**

- **Ignores the risks of costs report on external actors and external environment**

- ERR is hardly integrating externalities of projects, not the general welfare as an objective of valuation

- It brings a very limited understanding of how the project is articulated to its local environment and surroundings and of its dynamics under this point of view

- ERR valuation brings an interesting and important piece of information on the project outputs limited to expected results and private profitability

➔ To be associated with other types of evaluations : collaborative, economic etc.

# An economic approach

➔ **Identification / measurement of productions and destructions associated to a project for a concerned collectivity / territory**

➔ **Impacts, understanding of a project within an enlarge and coherent environment**

| Benefits | Costs |
|---|---|
| Job creation | Job loss |
| Income Generating Activities creation (products, services) | Loss of activities |
| Environmental services creation (ecosystem services) | Environmental services loss |
| Social networks and collective organization creation | Social networks and collective organization loss |

# Thank you!