

INTERNATIONAL CONFERENCE ON  
MOUNTAINS AND CLIMATE CHANGE

---

# Smart Agriculture for Carbon credit Exchange

Stefania Proietti, Ph. D.  
*Dept. Industrial Engineering, University of Perugia (IT)*  
*Carbon Trader Specialist for Asia Development Bank*



# REFERENCE CONTEXT

---

In recent years, the development of environmental policies brought about an increasing use of economic mechanisms, which leverage market dynamics to meet even social goals

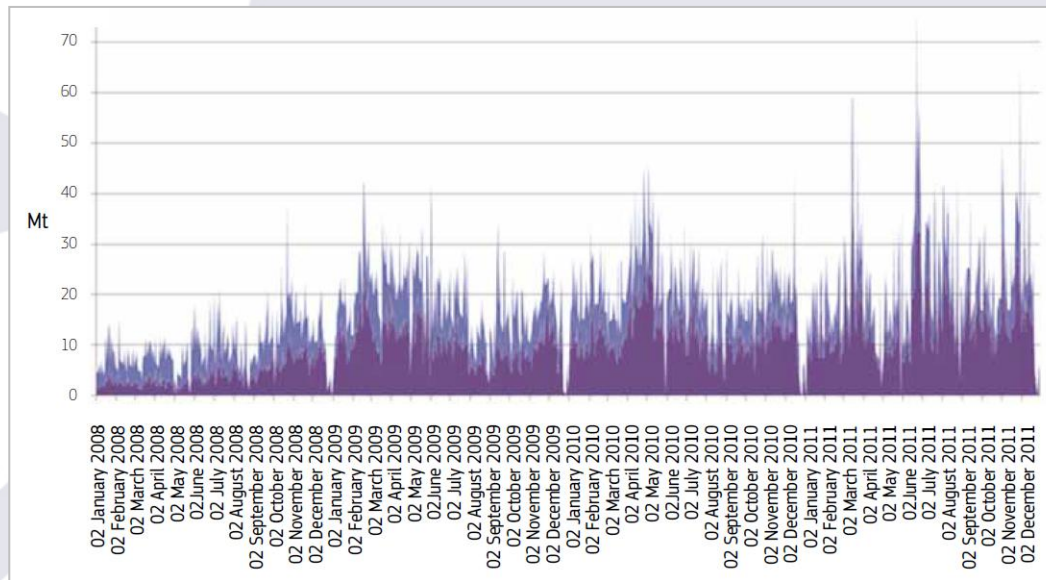
# Official initiatives

- United Nations Framework Convention on Climate Change  
*UNFCCC - Rio de Janeiro, 1992*



- Kyoto Protocol, 1997

Regulatory economic-based approach becomes an integral part of the strategies for reducing climate changing emissions



- ✓ Joint Implementation
- ✓ Clean Development Mechanism
- ✓ **Emission Trading System**

EU-ETS 2011:  
8.33 billion tCO<sub>2</sub>  
76 billion €

Source: Bloomberg New Energy Finance and London Energy Brokers Association.

# Voluntary actions

Profit and non-profit organizations, local governments and even individuals, interested in **reducing and offsetting the emissions** they are responsible for.

## ○ Proficiently and transparently

A number of agencies and companies deals with carbon credit services all over the world. Sometimes they are not completely transparent, easily understandable and verifiable by the “customer”.

## ○ Green Washing

*Compensation and neutralization processes in the voluntary market:*

- Additionality
- Permanence in time
- Leakage
- Double Counting

*Communication:*

- Regulation
- Transparency



## ○ Voluntary Market

VERs: 34,600 (2009) → 244,000 (2011)  
Average price 6 \$/tCO<sub>2</sub>

# Agriculture, forestry and other land uses

## ○ AFOLU

CO<sub>2-eq</sub> stocks and emissions.

A number of complex and different biological, physical and chemical processes, highly variable over space and time.

Natural and anthropogenic factors influencing emissions and removals.

→ *Inventoried and monitoring GHGs in the **Agriculture, Forestry and Land Uses** sector seem to be extremely complex, especially in comparison to other.*

## ○ Removal Units

Despite the potential positive role of policies for climate change mitigation in agricultural, several Countries decided not to account this sector.

Italy: forest management measures were included to meet Kyoto commitments, with a limit of accountability set to 10.2 MtCO<sub>2-eq</sub> per year.

→ *The **Removal Units (RMUs)**, i.e. credits related to land use and generated by investments on primary sector, **are excluded from European Emission Trading Scheme – EU ETS***

# PROJECT IDEA

---

In the framework of policies for climate change adaptation and for promotion of an integrated sustainable development, the voluntary market for the offsetting of CO<sub>2</sub> emissions introduces interesting opportunities for the primary sector

# Key elements

## ○ Main objective

**Definition of a local voluntary market of carbon credits**, with the creation of a trading platform and the **definition of agreements** designed to **reduce/offset the emissions through the purchase of credits related to agriculture and forestry sector.**

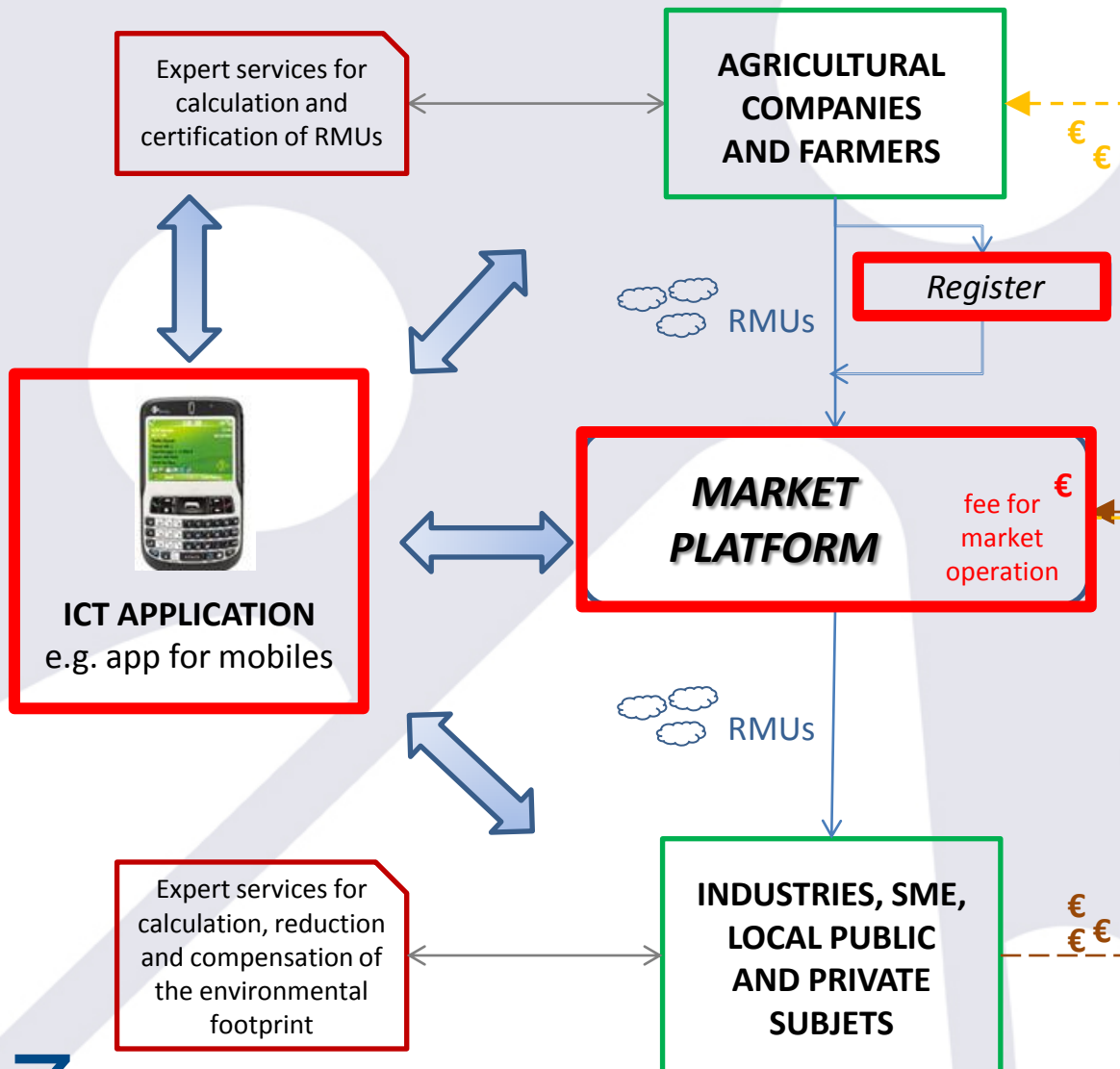
→ *Involvement of local partners in order to ensure a high degree of transparency in the mechanisms of recognition, quantification and trading of carbon credits.*

→ *Virtuous exploitation of soils and the maintenance of the territory in the context of policies against climate changes.*

## ○ Local micro-market where...

- **Demand** is represented by the subjects who want to calculate and reduce their environmental footprint through offsetting transactions (→ market competitiveness).
- **Supply** is guaranteed by small local farmers, who grow carbon sink crops generating removal units (or RMUs) type credits.

# Overview - 1



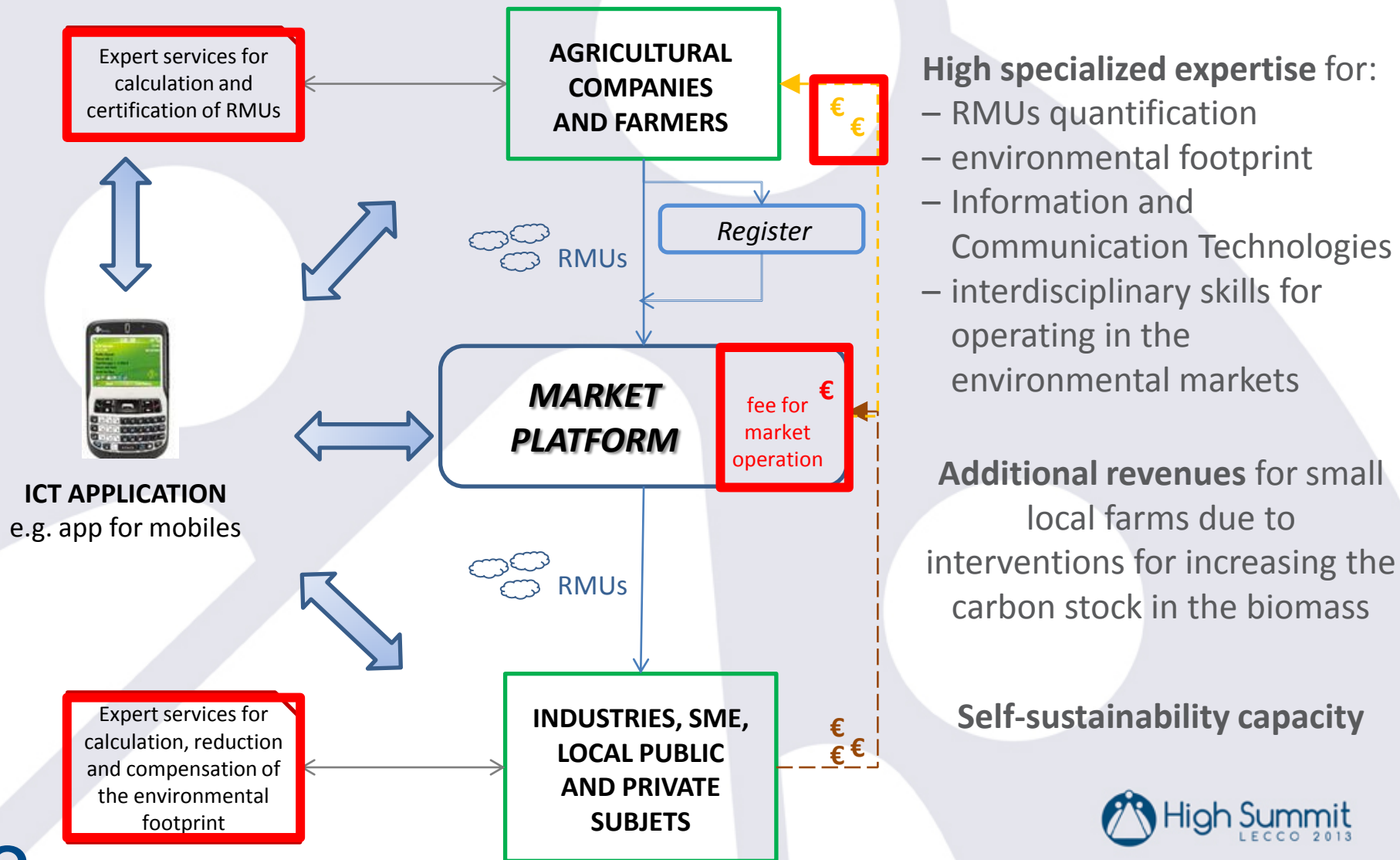
Carbon credits may be enhanced through the recognition in a specific **Register of agro-forestry Carbon Sinks**

**IT platform** for regulated sales and/or bilateral contracts – User friendly, open source

Operators may be directly connected to trading operations by the use of a dedicated **ICT application**



# Overview - 2



**High specialized expertise for:**

- RMUs quantification
- environmental footprint
- Information and Communication Technologies
- interdisciplinary skills for operating in the environmental markets

**Additional revenues for small local farms due to interventions for increasing the carbon stock in the biomass**

**Self-sustainability capacity**

# Advantages

- Directing carbon market mechanisms to sustainable development, environmental protection and territory preservation.
- Increasing the **resilience** of local areas and ensuring a quantifiable reduction of emissions.
- Discouraging mountain and marginal areas abandonment, as an **adaptation strategic action** for risk prevention, protection and the safety of the territory.
- Adoption of **direct and indirect measures** and of technological and managerial improvements aimed to reduce emissions throughout the entire life cycle of products.
- Enhancing the **awareness of public and private entities** about the significance and the potential environmental footprint mitigation.
- Creating a **transparent exchanging system** for carbon credits.
- **Penetration of ICTs**

# Hypothetical steps

## 1. OUTLINE OF LOCAL REFERENCE CONTEXT

Sensitization of stakeholders both on the demand and supply sides, analysis of the local context

## 2. TECHNICAL AND ECONOMIC FEASIBILITY ANALISYS

Scenario analysis, for a preliminary quantification of the potential local market in terms of supply and demand for carbon credits from agriculture/forestry. Survey on cost-effective ICT applications aimed at connecting subjects involved into the carbon market system.

## 3. IMPLEMENTATION

- **Pilot project:** carbon credits quantification, trading platform improvement, validation and integration of the feasibility study.
- Upgrade and replication in wider areas, through the mobilization of fund resources.

## 4. DISSEMINATION



**SHARE**  
Stations at High Altitude for Research on the Environment



# Thanks for your attention!

*For further information:*

**STEFANIA PROIETTI, PH. D.**

Dept. Industrial Engineering, University of Perugia (IT)

Email: [proietti.stefania@gmail.com](mailto:proietti.stefania@gmail.com)

Mobile: +39 349 3996936