16th March 2016

The Italian White Certificates Mechanism

Simone Maggiore, Walter Grattieri & Marco Borgarello

Features

- Market-based tool in force since January, 1st 2005, today the main policy instrument for energy efficiency in Italy
- Energy efficiency obligations assigned to large Distributors of electricity and natural gas (efficiency target related to the amount of energy delivered)
- Compliance with the obligation: return a corresponding number of White Certificates that are awarded to a project after an evaluation procedure is successfully completed (1 White Certificate = 1 toe saved)
- Efficiency projects can be implemented in any end-use sector: Industry, Residential, Tertiary, Transportation, Agriculture, Public Lighting.
- White Certificates can be traded through a market platform

Participants

- Program Administrator: GSE
- Technical Partners for project evaluation: RSE and ENEA
- Market Operator: GME

- Obliged Parties: Distributors serving more than 50,000 customers (typical buyers of white certificates on the market)
- Eligible “non obliged” Parties: ESCOs and other entities (typical sellers of white certificates on the market)

Basic Rules for Savings Estimation

- **Principle of "Additionality"**: recognized (*net*) savings shall be in addition to those that would occur anyway because of the natural technology and market change, including compliance with any legal obligations.
- The savings are the difference, at the same operating conditions, between the consumption in the reference situation (*baseline*) and the consumption resulting after the realization of the interventions.
- The ***baseline*** situation corresponds to the more conservative one (with lower consumption or higher efficiency) between the average of the market and the situation prior to the intervention.

Normalization

- **Coefficient of additionality**: applies to ex-ante consumption when the characteristics of the pre-intervention does not represent the "market average". In this case it is accounted for only a part of the savings arising between *before* and *after* the intervention.

- **Coefficient of adjustment**: applies when the service provided *after* differ from the one referred to in the reference situation (*baseline*). It adjusts savings for variations of consumption independent of the intervention performed, for example: different quality or quantity of production, change of process variables, different climatic conditions, etc. The typical correction on the quantity of the product involves the use of specific consumption, or per unit of product.

CHALLENGES in setting up energy saving estimation methods

- Reasonable trade-off between simplicity and accuracy
- Independence from factors other than efficiency that affect consumption
- Readiness for on-site verification when random inspections are foreseen (savings referred to installed equipment, the "*before*" situation is never verifiable)
- Bias, if any, towards underestimation (actual savings less then estimates)

Issues in specific consumption definition

$$Savings = Cs_{BL} \times P_{after} - E_{after}$$

$$Cs_{BL} = E_{before} / P_{before}$$

Cs_{BL} baseline specific consumption

P_{before}, $P_{after,}$ production (activity level) before/after intervention

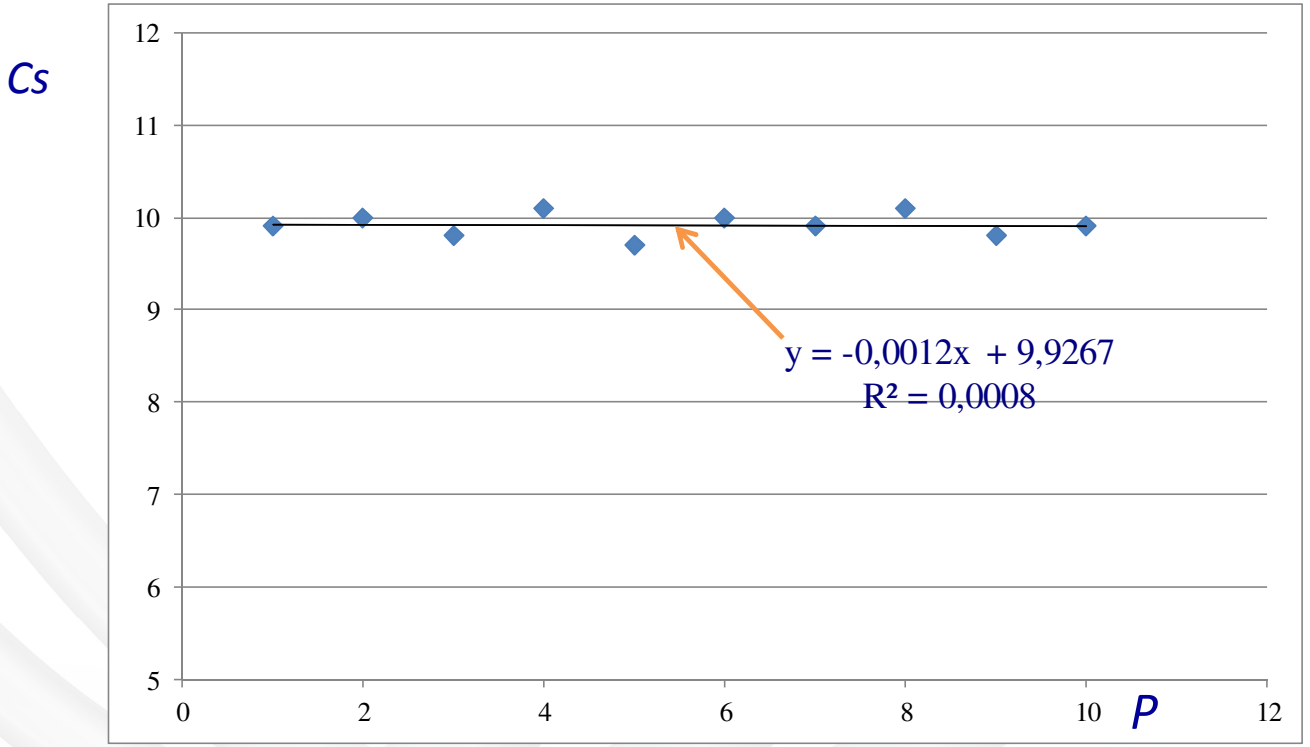
E_{before}, E_{after} consumption before/after intervention

Often the baseline specific consumption is considered constant and independent from the activity level.

But, is it always true?

Case 1

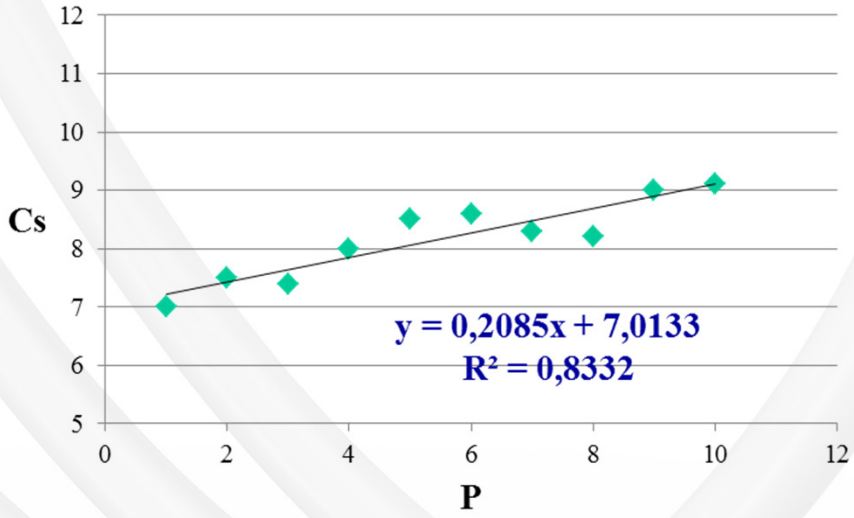
The values are randomly spread around an horizontal line

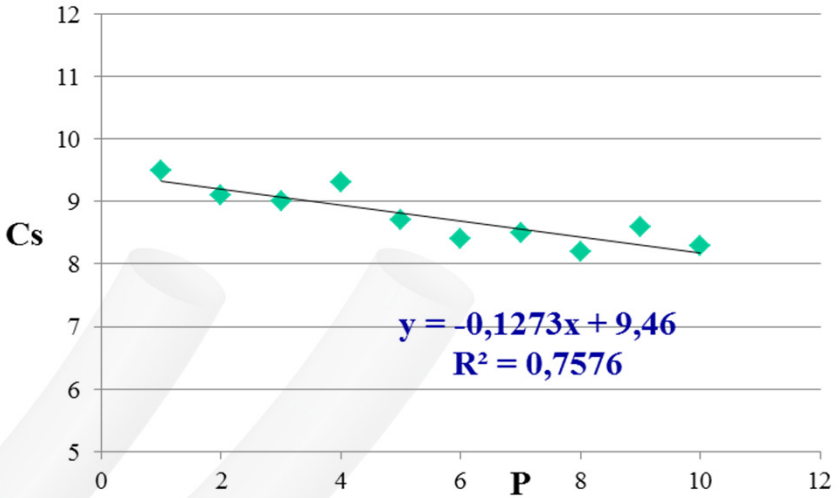


Cs_{BL} actually constant and independent from P

Case 2

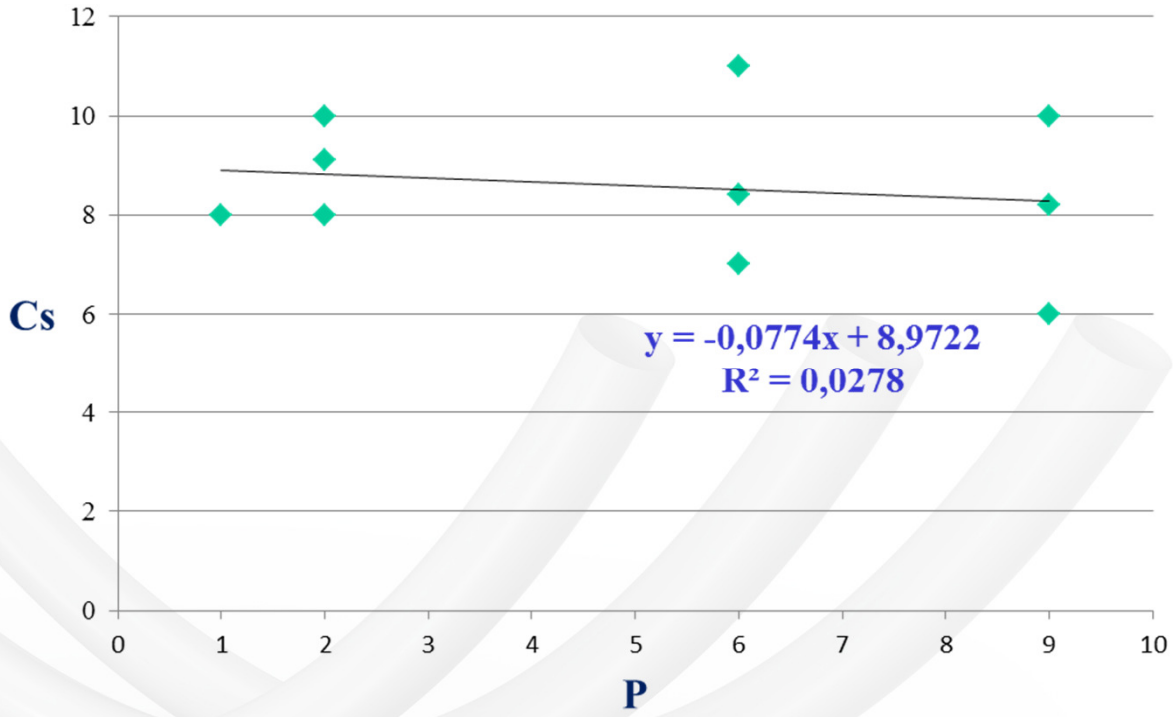
A trend exists which must be taken into account





Case 3

Dependence also on other variables



We must determine which other variables in addition to P affect *Cs*

Open challenges

Definition of **Key Performance Indicators** for the efficiency projects against the goals of efficiency, effectiveness, profitability, environment-benefit and transparency

Elaborate

- **methods** (e.g. to correctly establish reference baselines of the ex-ante consumptions)
- **algorithms** (e.g. for the estimation of the efficiency improvements based on objective technical considerations)
- **procedures** (e.g. concerning the energy saving monitoring)
- **specifications** (e.g. related on the accuracy of measurements),

which will allow industry, process-by-process, to implement efficiency projects and to report them in an appropriate and transparent way.

Current RSE activities

Selection of best practices and propose those solutions in the more standardized way as possible;

Definition of standardized modalities to assess the performances of the selected best practices;

Elaboration of supporting tools enabling design, implementation and reporting of the efficiency improvement.

Goals

Main:

- support the targeted industry stakeholders to suitably put in practice effective efficiency improvements. :
  - identifying best practices of implementation of energy efficiency projects
  - helping industry actors to overcome experienced barriers maximizing the technical and economic benefits
  - simplifying their burden in the preparation of access-to-incentive demands

Ancillary:

- to provide evaluators with instruments enabling a more linear, uniform and transparent evaluation of the projects
- support policy makers in the assessment of the effectiveness of the implemented efficiency mechanisms

simone.maggiore@rse-web.it