

**Name:**

Energy balance

**Definition:**

Based on the IRENA 11 indicator (Energy use), the energy balance of the farm is the difference between the energy of inputs and outputs.

**Method of calculation:**

It is calculated as the difference between the energy outputs (crop yield) and the energy inputs derived from the provision of inputs and the energy used in the farm management.

$$\text{Indicator} = \frac{\sum_i (EB_i \times A_i)}{A_T}$$

Where:

Indicator: Energy balance (MJ/ha year)

EB<sub>*i*</sub>: Energy balance of the crop *i* (MJ/ha)

A<sub>*i*</sub>: Area assigned to the crop *i* (ha)

A<sub>T</sub>: Total area considered (ha)

**Interpretation:**

A positive value of the indicator means that the system consumes less energy than it produces one thanks to the photosynthesis. As much higher is the value less energy is required, and therefore, the farm is more environmentally sustainable.

Using the values of this indicator, two other indicators can be calculated giving information on the use of energy:

- The “Energy efficiency”, which is the relationship between the crop energy and the energy used for its production.
- The “Energy productivity”, which is the crop yield (kg) per MJ of energy used.

**Information source:**

The surfaces, inputs and yields of different crops data: obtained in a farmers survey.

The energy associated with each input and output: data obtained in the bibliography.

**Bibliography and references:**

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