Barilla Center FOR FOOD & NUTRITION

BCFN Double Pyramid & Sustainable Durum Wheat

FAO/OECD Expert Meeting GEA
5 September 2011

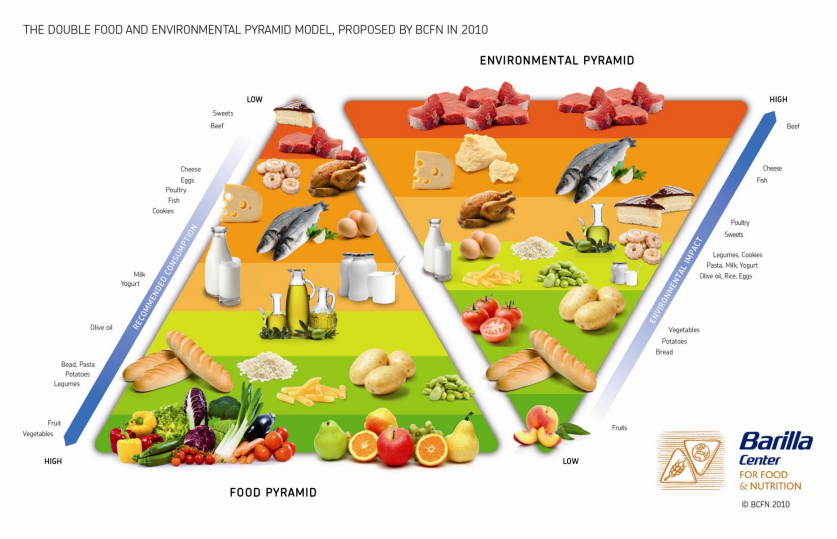
Luca Ruini - BCFN Food for Sustainable Growth Area

BARILLA CENTER FOR FOOD & NUTRITION

The Barilla Center for Food & Nutrition is a **multidisciplinary** think tank founded with the aim of:

- identifying the key **food** and **nutrition** priorities related to **people**, **environment**, **science** and **economics**
- collecting and analyzing the **most advanced experience**, **knowledge** and **competencies** available in the world
- developing **proposals** and **recommendations** on food and nutrition and making them available to opinion leaders and decision makers

Agenda - Greening Economy : Three examples



BCFN Double Pyramid

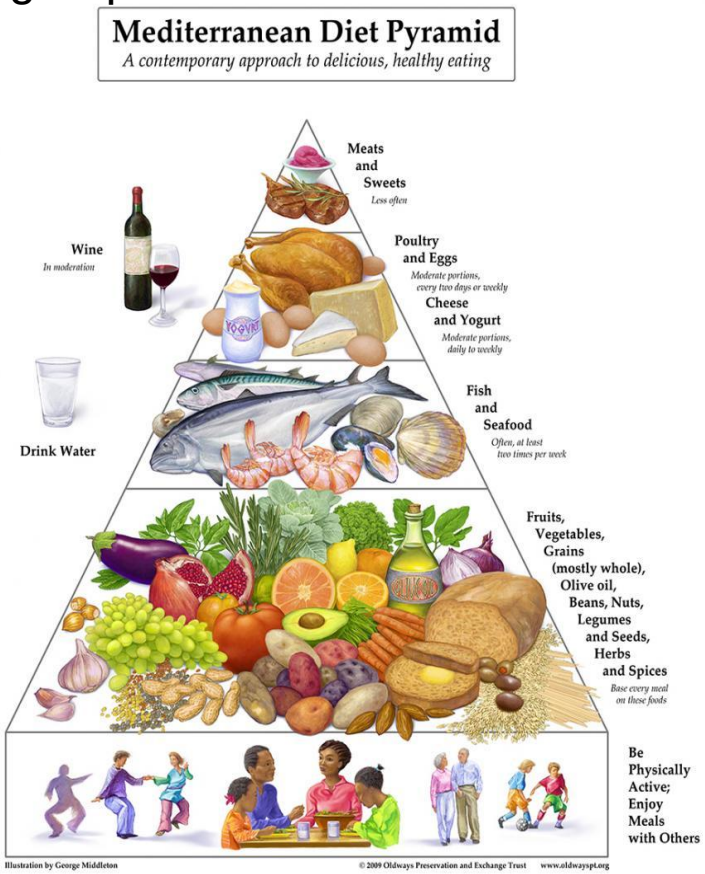
Sustainable Durum Wheat Cultivation & Aureo Project

The BCFN Double Pyramid

Starting from the Nutrition Pyramid

The starting point is the Nutrition Pyramid, which is divided into six sections that scale downwards to contain each nutritional food group.

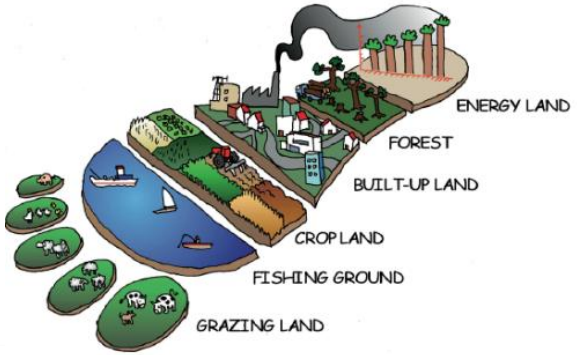
Source: Ministry for Health of Italy



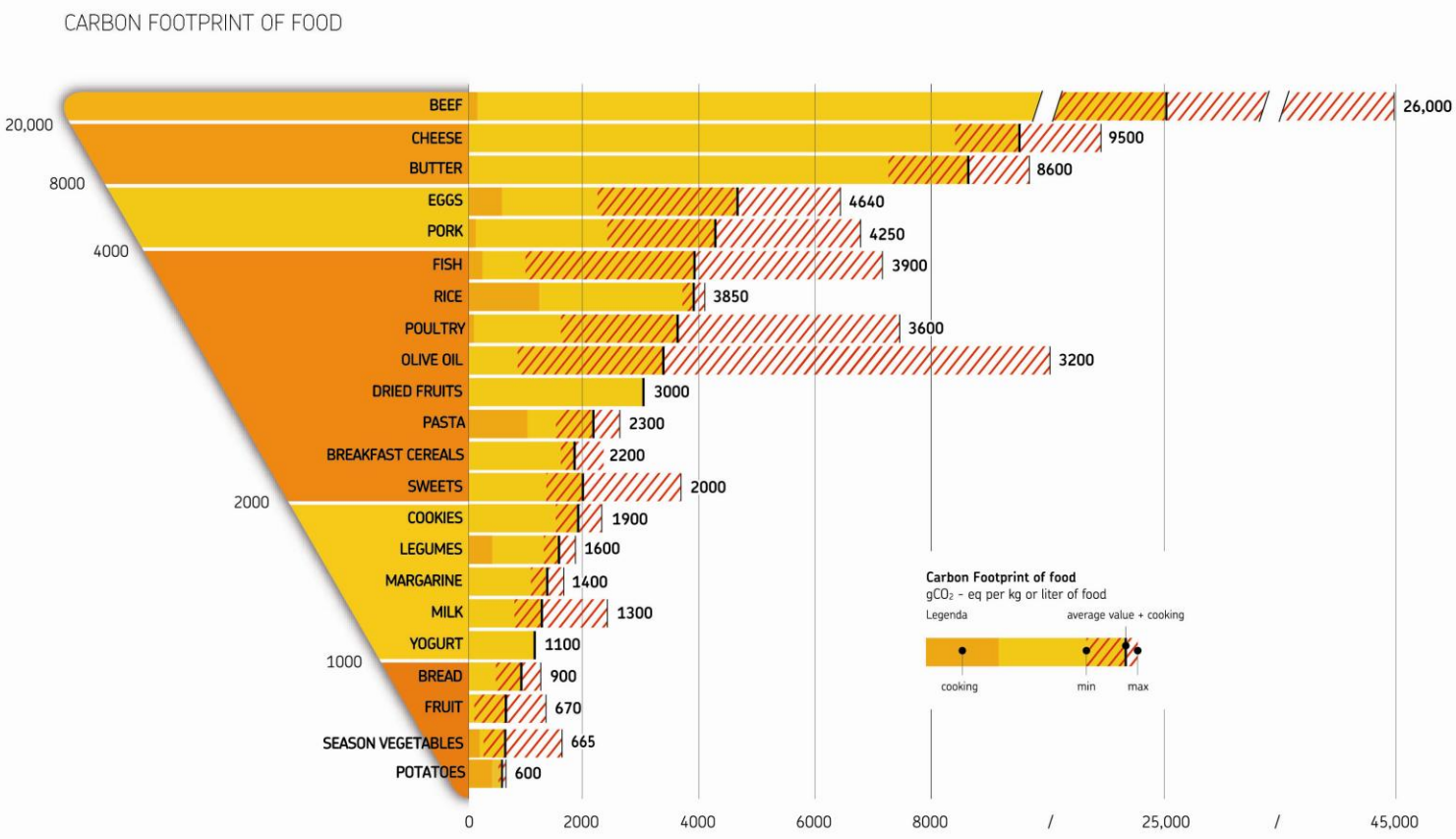
Source: Oldways (www.oldwayspt.org)

Life Cycle Thinkig Approch

Footprint Measures



Double Pyramid: Carbon Footprint



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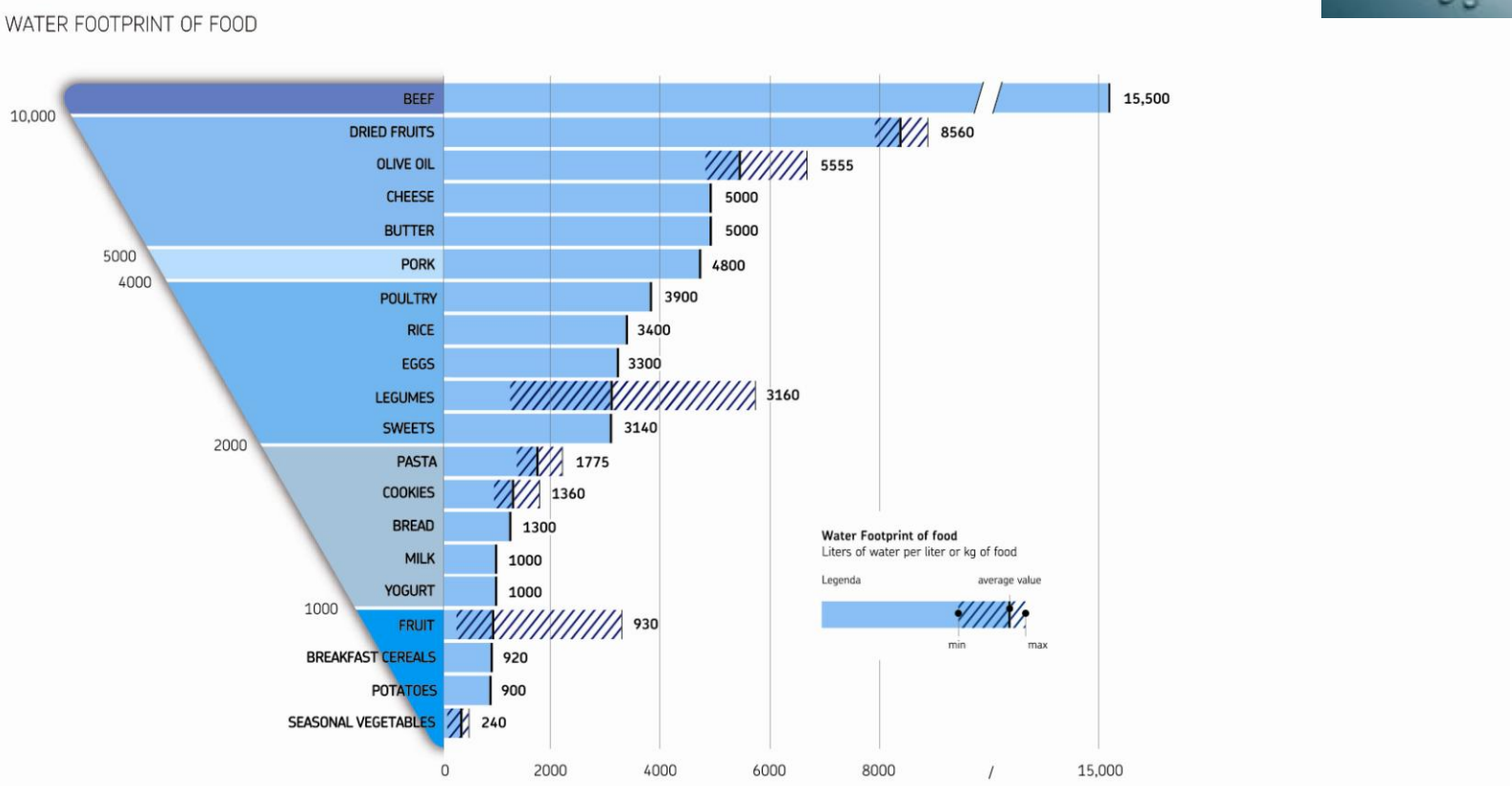
Double Pyramid: Water Footprint



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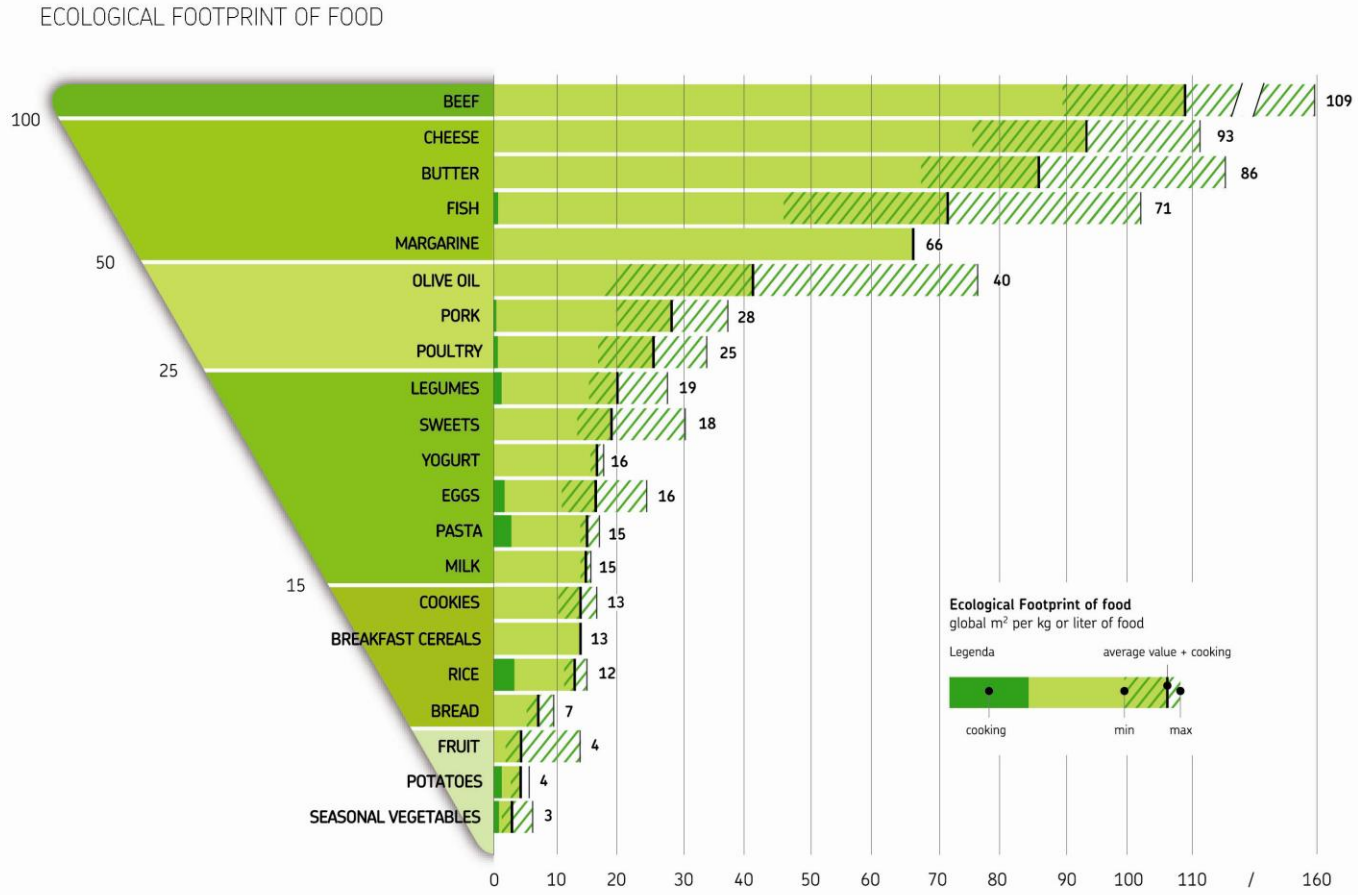
Double Pyramid: Ecological Footprint



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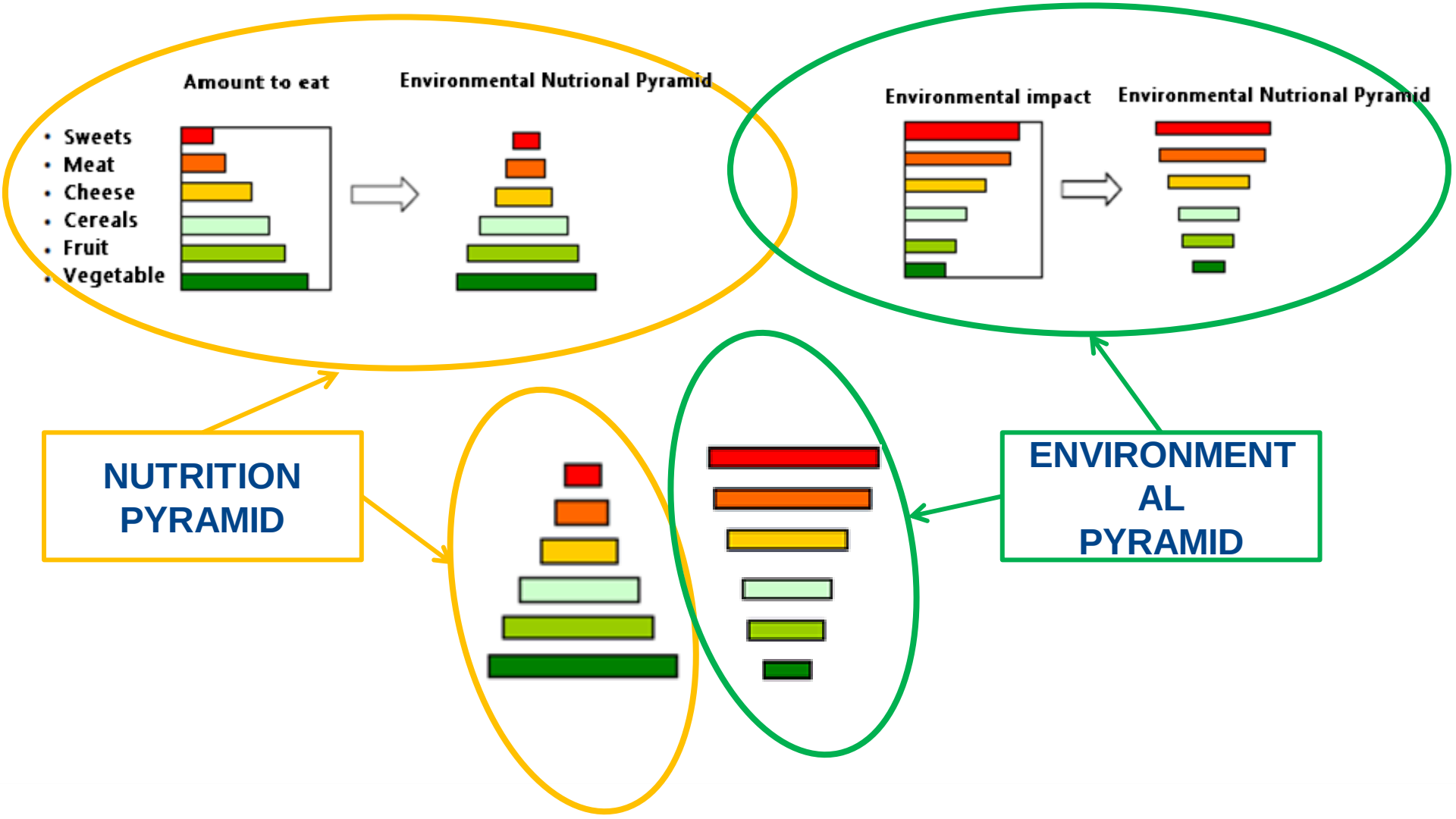
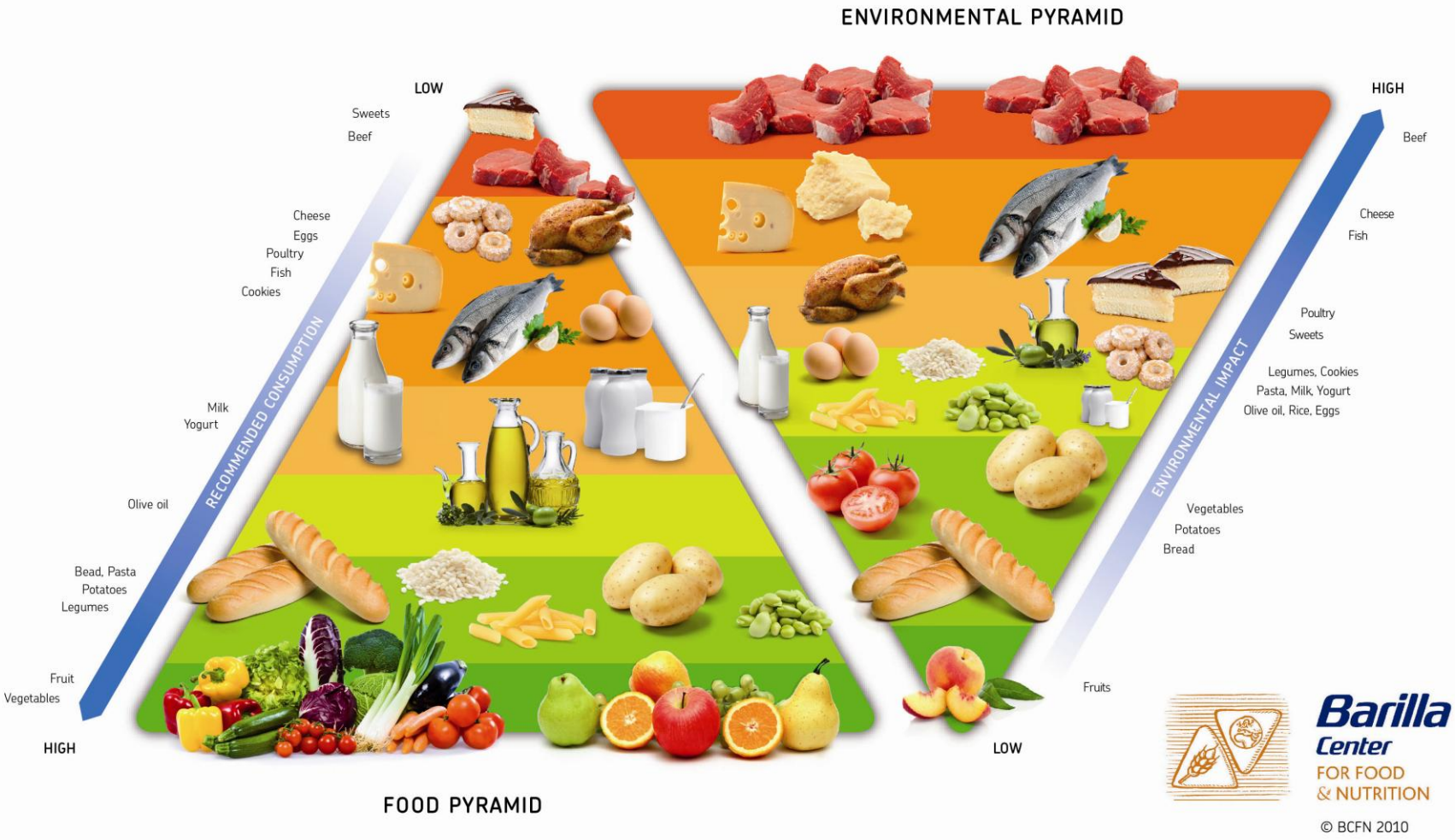
The BCFN Double Pyramid

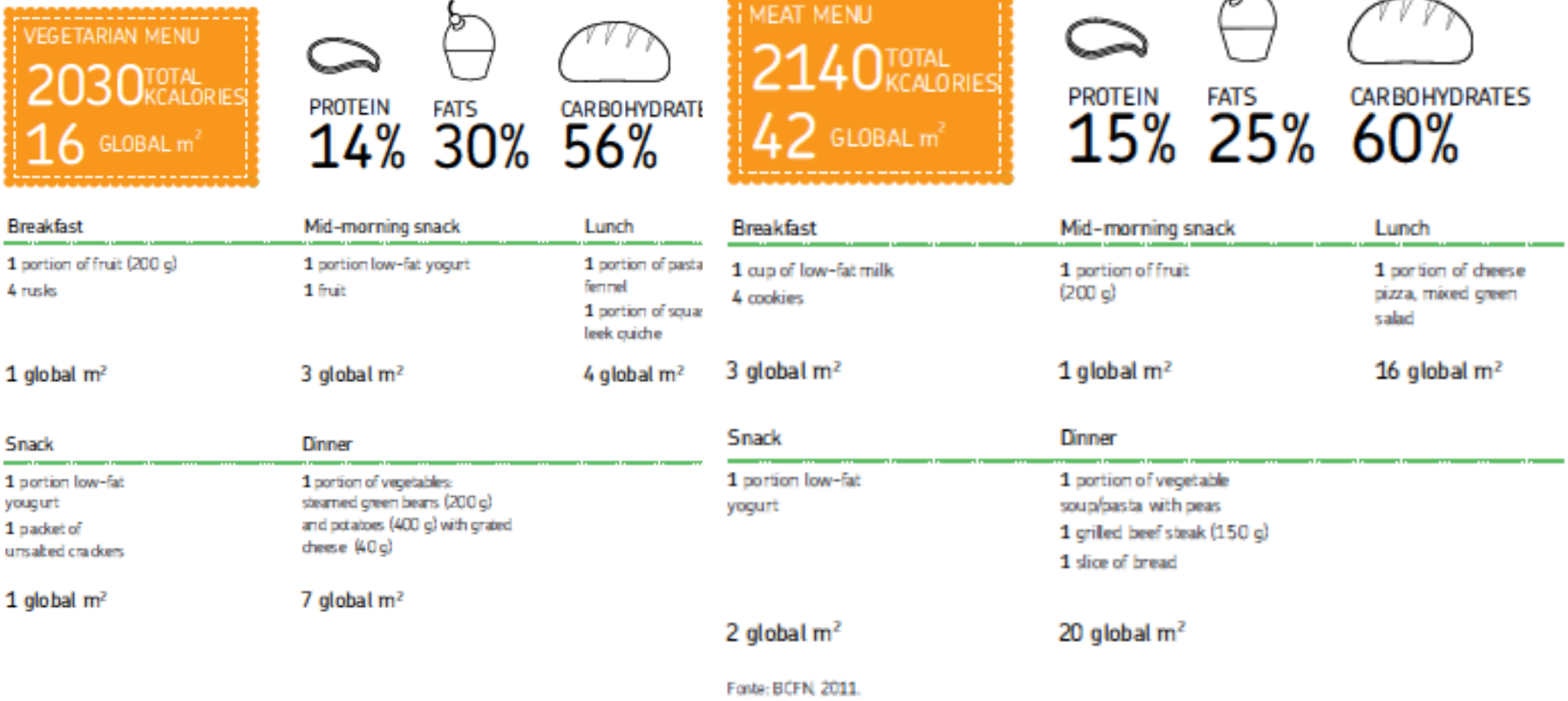
Double Pyramid: Nutrition Pyramid + Environmental Pyramid



The BCFN Double Pyramid



The BCFN Double Pyramid



Fonte: BCFN, 2011.

WEEKLY MENUS: GOOD FOR YOU, SUSTAINABLE FOR THE ENVIRONMENT

MONDAY

Breakfast

- 1 Glass of semi-skimmed milk
- 5 Mulino Bianco "Armonie Dorate" rusks
- 1 Piece of fruit

ECOLOGICAL FOOTPRINT: 3 m²

Snack

- 1 "Storie di Frutta Mulino Bianco (apple, banana, pear)" fruit smoothie

ECOLOGICAL FOOTPRINT: 3 m²

Lunch

- 1 Portion of "Barilla Whole-Grain" spaghetti, cheese and pepper with herbs
- 1 Portion of rabbit with olives
- Mixed raw vegetables
- Bread (60g)

ECOLOGICAL FOOTPRINT: 21 m²

Snack

- 1 Piece of fruit
- 1 Packet of "Sfoglia di Grano" Mulino Bianco unsalted crackers

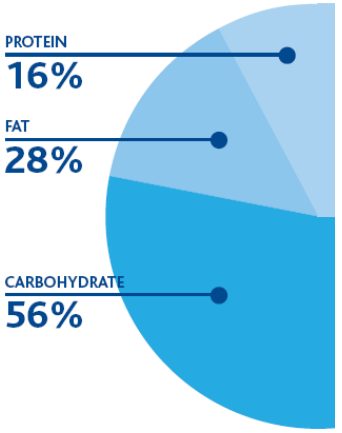
ECOLOGICAL FOOTPRINT: 1 m²

Dinner

- 1 Portion of tomato smoothie
- 1 Portion of herb omelette
- Steamed chard (200g) and potatoes (300g)
- Whole Grain bread (60g)

ECOLOGICAL FOOTPRINT: 10 m²

Total kcal: 2.270



LCA Chef Tool developed

TUESDAY

Breakfast

- 1 Glass of semi-skimmed milk
- 2 "Pan Bauletto" Mulino Bianco Whole Grain bread slices with two spoonfuls of jam
- 1 Piece of fruit

ECOLOGICAL FOOTPRINT: 3 m²

Snack

- 1 Low-fat yogurt

ECOLOGICAL FOOTPRINT: 2 m²

Lunch

- 1 Portion of Barilla "Penne Rigate" with tomato and basil
- 1 Portion of salmon with artichoke purée
- Mixed raw vegetables
- Whole Grain bread (60g)

ECOLOGICAL FOOTPRINT: 15 m²

Snack

- 4 Chocolate biscuits
- 1 "Storie di Frutta Mulino Bianco (peach, grapes, apricot)" fruit smoothie

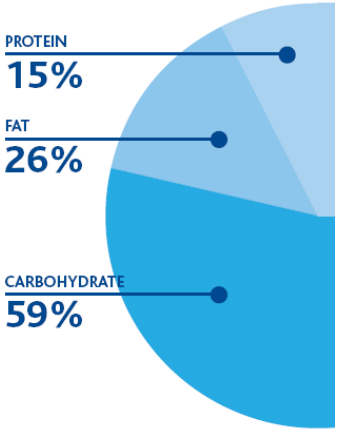
ECOLOGICAL FOOTPRINT: 3 m²

Dinner

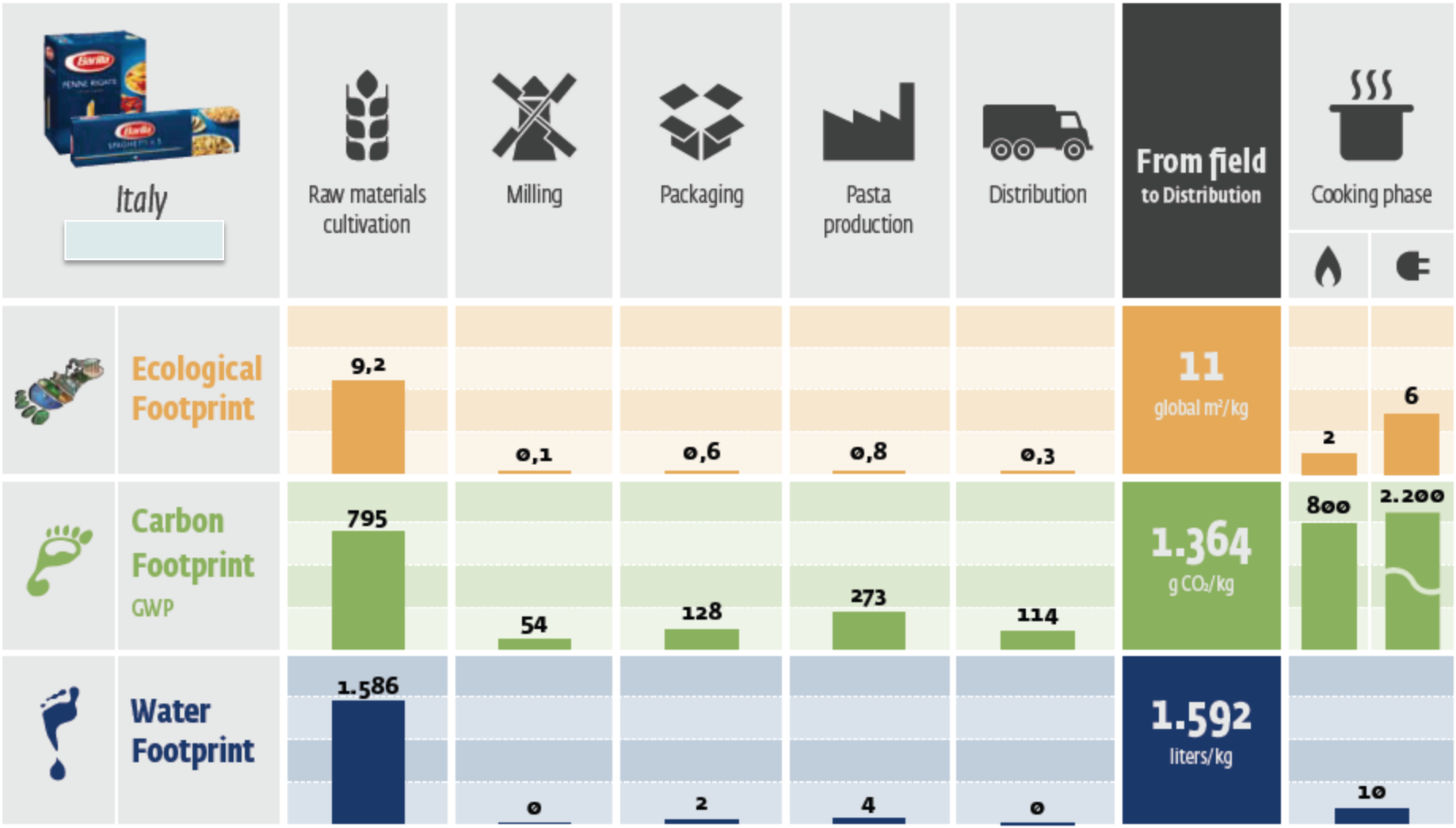
- 1 Portion of Barilla "Ditaloni Lisci" with beans
- Mixed raw vegetables
- 2 "Pan Bauletto" Mulino Bianco soft wheat bread slices
- 1 Portion of strawberries with lemon

ECOLOGICAL FOOTPRINT: 8 m²

Total kcal: 2.230



Durum wheat pasta LCA – EPD Published



Durum wheat cultivation

Recyclable packaging: from **92%** to **95%** during **2009-2010**

PACKAGING
Calculation tool for packaging environmental burdens

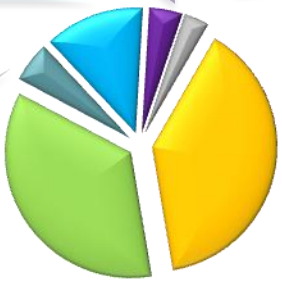
PASTA PRODUCTION
- Energy saving projects
- Renewable energy use
- Cogeneration

- 13% GHG

PRODUCT TRANSPORT
Logistic transport optimization

Number 1 logistic opimization**:**

- 8% GHG during **2009-2010**



COOKING
Information about cooking time and right quantity of water to be used

using **0.8 litri of water** (instead of 1litre) **per 100 g of pasta: -5% GHG**

MILL
Energy consumption reduction

DURUM WHEAT CULTIVATION
- Study about durum wheat cultivation techniques (rotations and fertilizers)
- Updating the crop guidelines

Possible reduction**: - 55% GHG** (**390 kg** of **GHG per ton of durum wheat** not emitted)

Sustainable Durum wheat cultivation

AIM OF THE PROJECT ABOUT DURUM WHEAT PROJECT

1) To identify sustainable alternative cropping systems for the cultivation of durum wheat;

2) To analyze and evaluate the characteristics of cropping systems identified;

3) To propose possible in-field experimentations to validate the proposed solutions and to integrate the Barilla's cultivation disciplinary;

Durum wheat cultivation

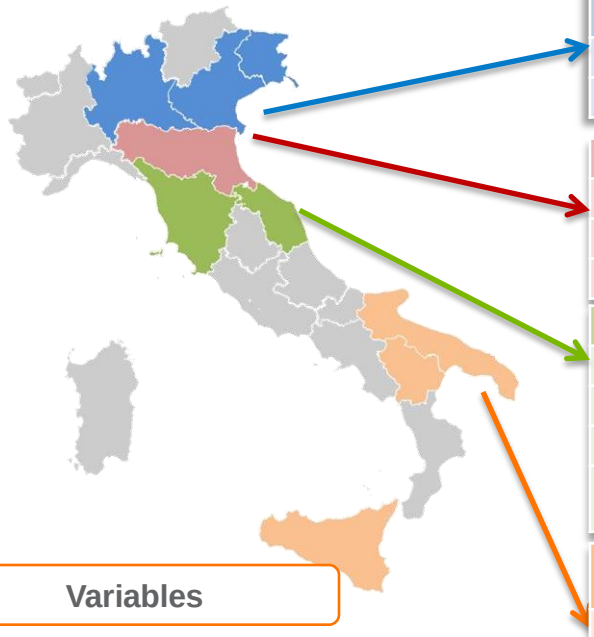
INDICATORS USED

- **CARBON FOOTPRINT**: it represents the total amount of greenhouse gases (GHG) produced to directly and indirectly support human activities, usually expressed in equivalent tons of CO2 with the relative indicator, commonly called “global warming potential”.
- **WATER FOOTPRINT:** it measures the water consumption of a system in terms of water volumes consumed because of the processes, the irrigation, the natural evaporation by plants and/or that polluted, per unit of time.
- **ECOLOGICAL FOOTPRINT**: is a measure of how much biologically productive land and water an individual, population or activity requires to produce all the resources it consumes and to absorb the waste it generates using prevailing technology and resource management practices. It is measured in global hectares (gha).
- **ECONOMICS INDICATORS:** represented by the direct costs of cultivation (cultivation operations + technical tools), the gross marketable production (GPS), updated to the price lists of 17 November 2009, and the gross income (GI), i.e. the difference between direct costs of cultivation and GPS. (In the GPS are not considered coupled and uncoupled aid)
- **NITROGEN INDEX**: measurement of nitrogen availability determined by the previous crop residue, by the contribution of chemical fertilizers and the time required to biologically degrade the organic substance of the preceding crop;
- **DON INDEX**: this index expresses the cultivation safety aspects related to the possibility of reducing pathology occurrence due to the deoxynivalenol mycotoxin (DON).

Durum wheat cultivation

CROP SYSTEM ANALYSIS

Crop System analysed



Lombardia, Veneto and Friuli (PLV)	Cultivation
Maize	Maize (3 years) – Durum wheat
Diversified	Soybean – Durum wheat – Millet - Maize

Emilia Romagna (RER)	Cultivation
Cereals	Maize – Durum wheat – Millet - Wheat
Industrial	Soybean – Durum wheat- Maize – Wheat
Horticultural	Tomato – Durum wheat - Maize – Wheat

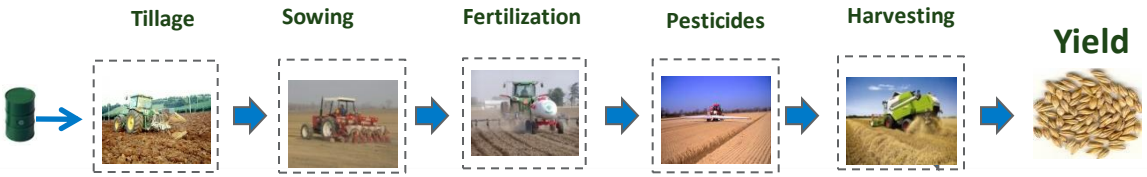
Marche and Toscana	Cultivation
Cereals	Durum wheat (3 years) – Millet
Proteic	Proteic pea (2 years) - Durum wheat (2 years)
Alfa alfa	Alfa alfa (3 years) – Durum wheat
Industrial	Rapeseed – Durum wheat – Sunflower – Durum wheat

Puglia, Basilicata and Sicilia	Cultivation
One crop	Durum wheat (4 years)
Fodder	Durum wheat (2 years) – Oat and vetch (2 years)
Horticultural	Tomato – Durum wheat - Tomato – Durum wheat
Check pea	Chick pea (2 years) – Durum wheat (2 years)

Variables

- Crop system: species used within the crop rotations
- Agricultural “in-field” activities
- Fertilizers use
- Regional climatic situation

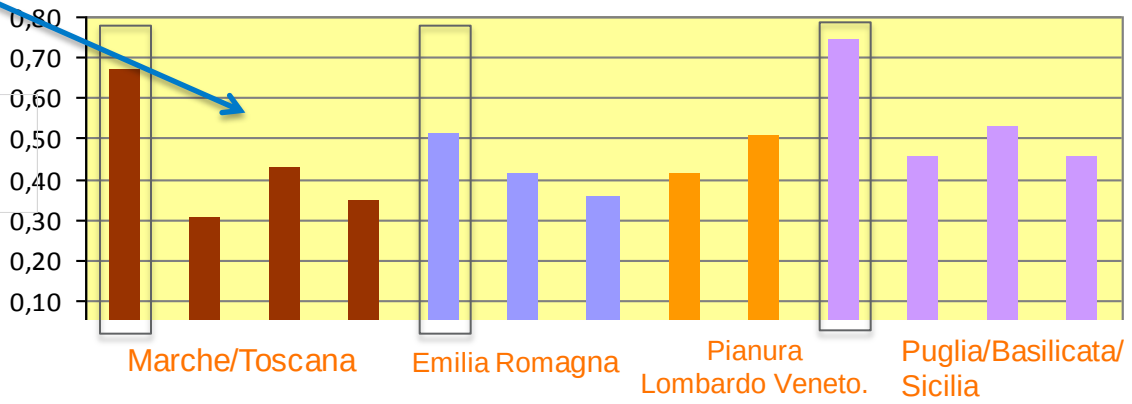
System Boundaries



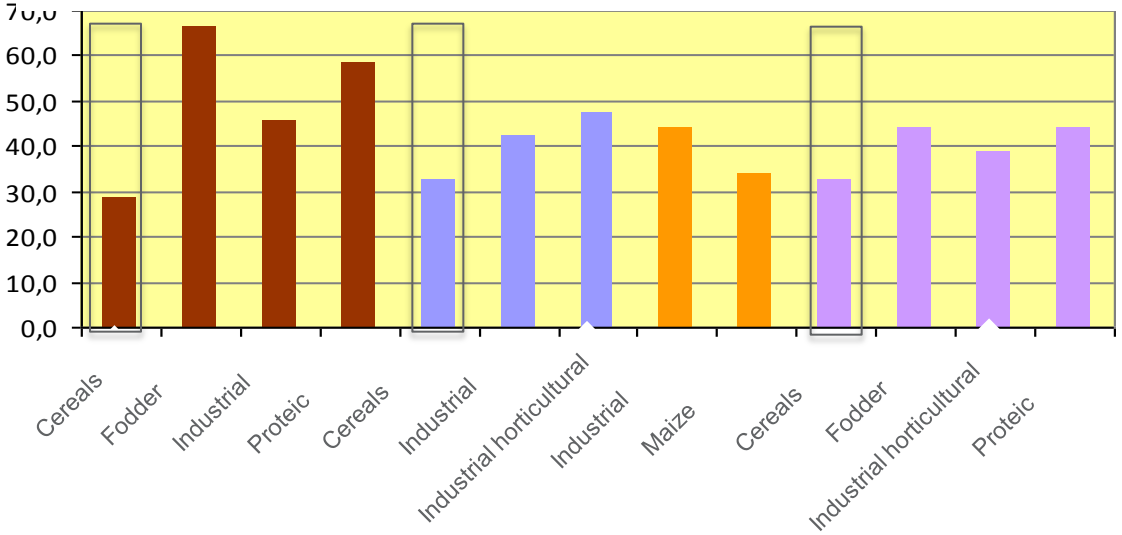
Durum wheat cultivation

- 390 kg Co2 / t

Carbon Footprint (t Co2 / t durum wheat semolina)

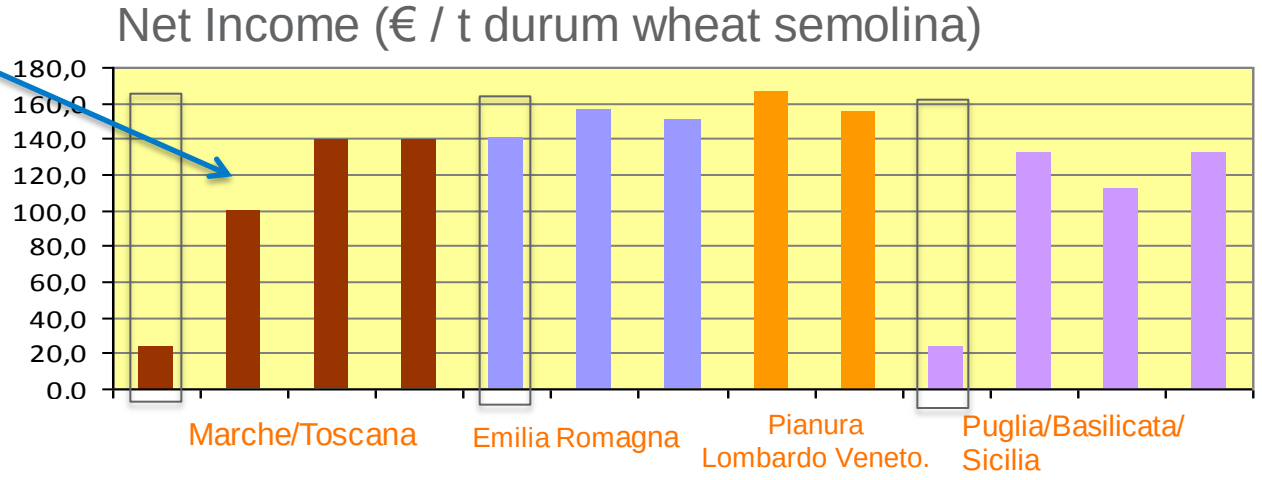


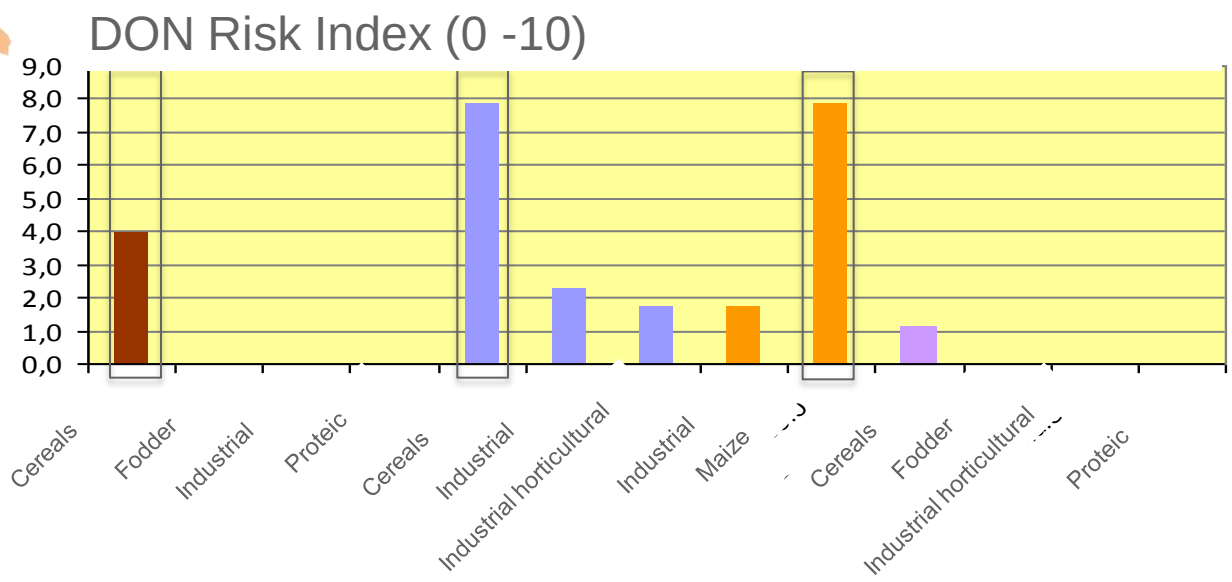
Nitrogen Indicator (kg durum wheat semolina/ kg N)



Durum wheat cultivation

> 100 € / t





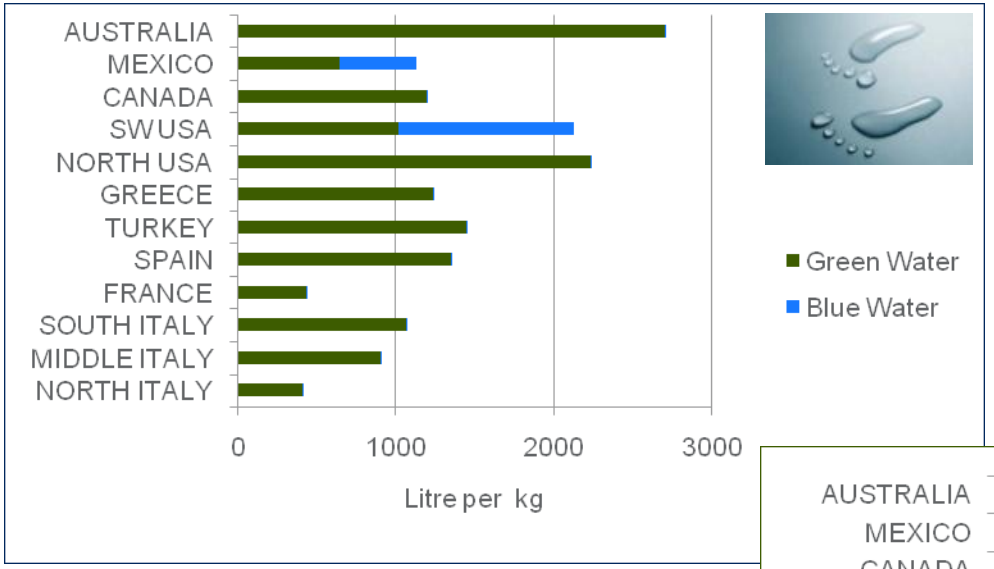
Durum wheat cultivation

Second Part of the Project
"Durum wheat: Cropping System Sustainability in Italy 2011-2012"

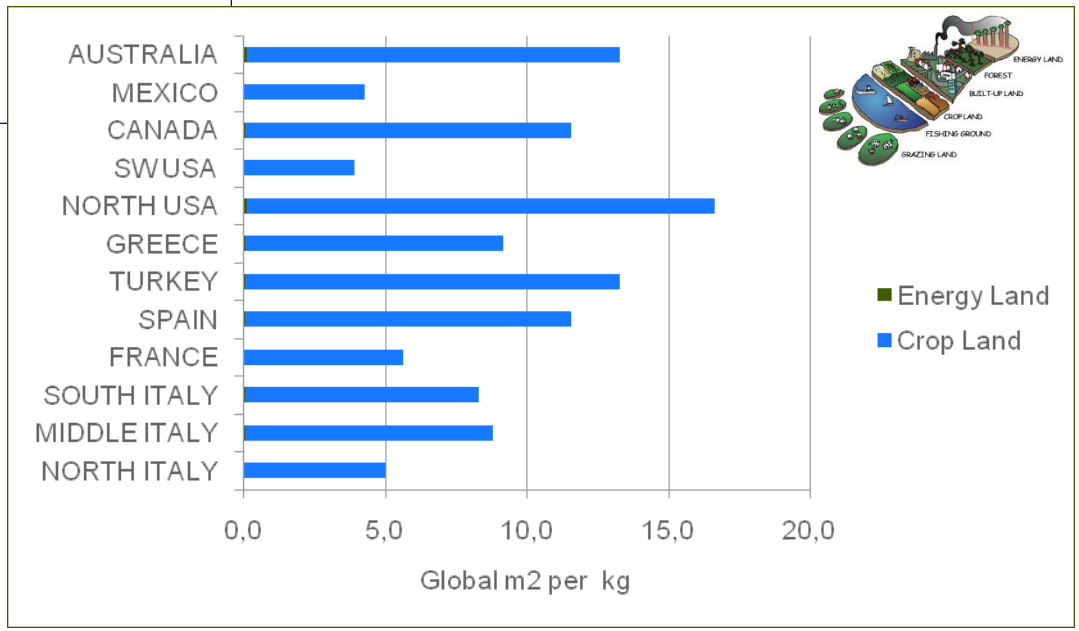
The second part of the project consists in in-field experimentation, comparing sustainable and traditional cropping systems.
Some farms have been identified for the in-field testing

Durum Wheat cultivation : EF & WF figures

Water Footprint



Ecological Footprint



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2010 Aureo project

Durum Wheat from SW USA in Desert area to Italy

During the 2010, more than **20.000 tons** of durum wheat have been cultivated using new variety seeds (developed in a traditional way) called **AUREO** in the South Italy instead of in the **SW USA Desert Area**

This project have also an environmental relevance some positive some negative:

WATER FOOTPRINT: **- 20 million of m^3 (Blue Water)**

CARBON FOOTPRINT: **-1.000 t of CO_2 eq** (due transports)

More info on WWW.BARILLACFN.COM

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Thank you

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