

INTERNATIONAL STUDENT SCIENCE CONFERENCE 2017
HONG KONG



DIET AND FOOD WASTE OF ITALIAN
HIGH SCHOOL STUDENTS:
HOW TO IMPROVE OUR WATER FOOTPRINT

LICEO GINNASIO STATALE MARCO FOSCARINI
VENEZIA



WHAT IS THE WATER FOOTPRINT?

The water footprint (WF) measures the amount of water used to produce each of the goods and services we use.



Potato
WF : 290 L/Kg



=10 L

WATER CRISIS



Globally

In Italy



We wanted to focus on the water used in food production



In agriculture

In breeding





And in industrial
food processing



We have thus analysed the impact that our diet has on water consumption

How much does our diet influence our water consumption?



To produce one kilogram
of red meat 15415 litres
of water are needed

That is the water needed to fill
about 150 bath tubs!



HOW DID WE PROCEED?



Bibliographic
research

Data
Collection



Data
processing

THE SURVEY

DISCOVERING THE EATING HABITS OF OUR SCHOOLMATES

We wrote a survey to ask how many times a given food was consumed per day or week and we submitted it to 160 students in our school

Dietary habits of high school students
- a tool to estimate our Water
Footprint.

Personal data

The questions in this introductory section have the sole purpose of allowing a better analysis of the data collected

Date of birth

GG MM AAAA

/ / 2017

Sex

- ☐ Female
- ☐ Male
- ☐ Other

Nationality (please indicate country)

La tua risposta

Daily consumption

How many portions of carbohydrates (pasta, rice, cookies - excluding pizza) do you eat per day?

- ☐ 1 or 2
- ☐ 3 or 4
- ☐ 5 or more
- ☐ I never eat those!

How many portions of dairy products (cheese, yogurt - excluding milk) do you eat per day?

- ☐ 1 or 2
- ☐ 3 or 4
- ☐ 5 or 6
- ☐ more than 6
- ☐ I never eat dairy products
- ☐ I am vegan

How many portions of fruit or vegetables do you eat per day?
(NOTE: a portion = a side dish, such as salad, or a single fruit)

- ☐ 1 or 2
- ☐ 3 or 4
- ☐ 5 or more
- ☐ I never eat those!

How many cups of coffee do you have per day?

- ☐ I never drink coffee
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6 or more

How many cups of tea do you have per day?

- ☐ I never drink tea
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6 or more

How many glasses of milk do you have per day?

- ☐ I never drink milk
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6 or more

DATA ANALYSIS



water
footprint
network

We looked for the water footprint
of the foods we were interested in



255 L per 250 ml

214 L/Kg



15415 L/Kg

We calculated the water footprint of the various recipes

Pasta 112 L



Vegetables 6 L



Tomato sauce 35 L



Pasta with meat sauce*
1158 L



Oil 85 L



Beef 770 L



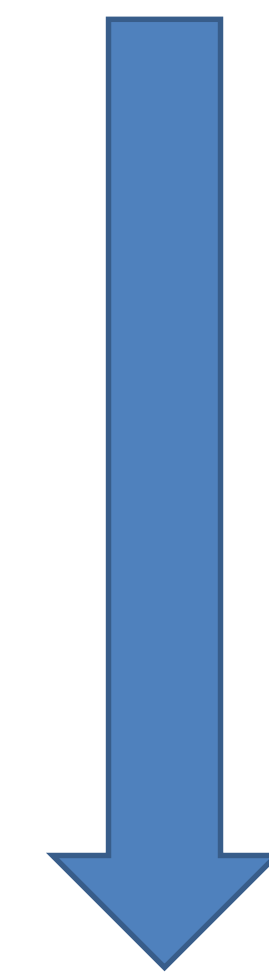
Pork 150 L



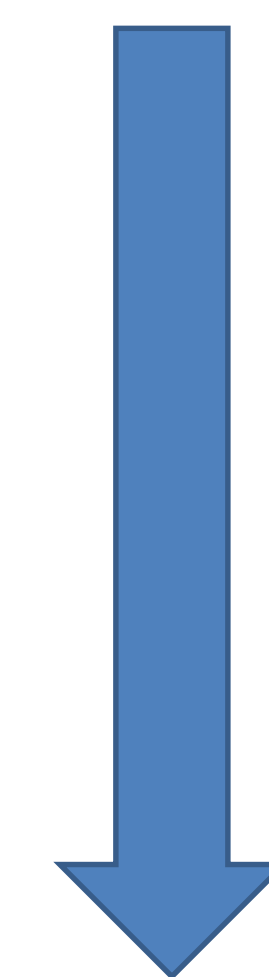
*a portion of 90g

DATA ANALYSIS

**Determine the average consumption
by our schoolmates for food A (g/week)**



**Average consumption of food A (g/week) x WF of food A (L/g)
=
contribution of food A to our average WF (L/week)**



**Sum of all contributions of food A, B, C... in our diet
=
Total average WF (L/week)**

RESULTS

The diet of an average student in our school costs **27079 litres** of water per week



Foods that consume most water in a week are:



Dairy products and eggs
6691 L



Red meat
6009 L



Carbohydrates
4283 L

Having discovered our weekly water consumption, we asked ourselves:



Could we change our diet to reduce its water footprint?



Living in Italy, we decided to analyse the water footprint of the Mediterranean diet

THE MEDITERRANEAN DIET

A COMPARISON

Following the Mediterranean diet, a single person consumes about **22760 litres** of water per week

Italian students could save more than **4000 litres** of water per week each, changing a few things in their diet

For example:

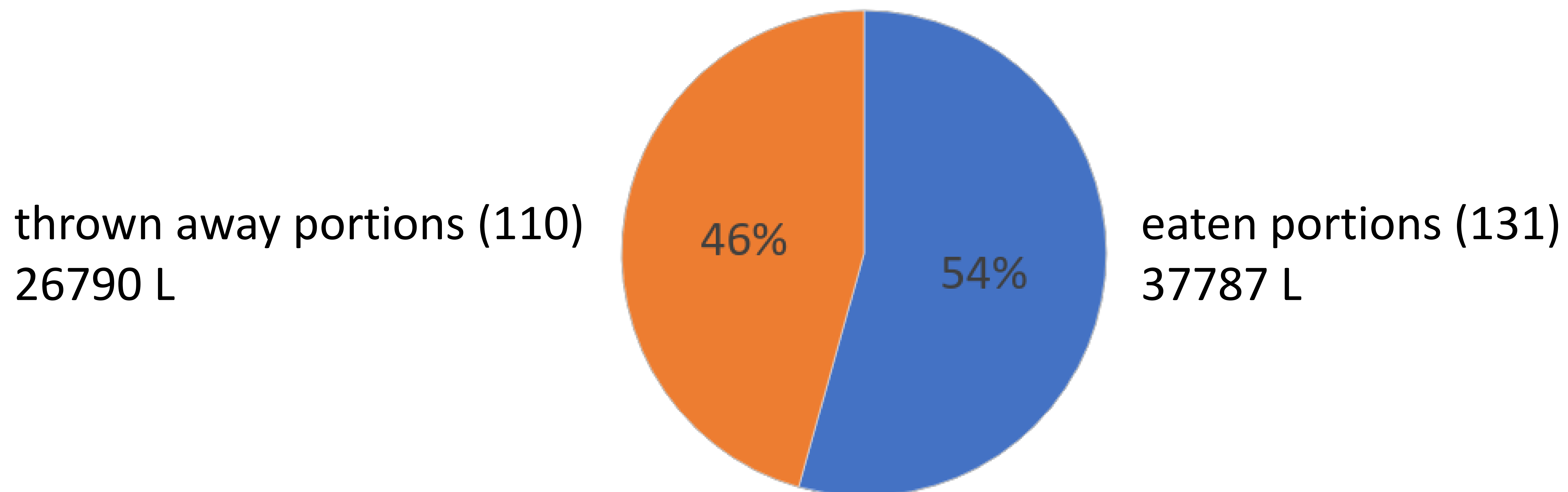


The WF of chicken meat is 4325 L/Kg.
The Mediterranean diet includes 1
portion of red meat and 4 of white meat
per week

ANALYSIS OF THE CANTEEN MENU

HOW MUCH DO STUDENTS EAT?
HOW MUCH DO THEY THROW AWAY?

We have been monitoring for a week a
class of 13 during lunchtime in the school
canteen



CONCLUSIONS

It is not easy to preserve water resources,
but **it is** possible.

We could protect our main source of life just by
being more aware of what we eat and its impact on
the world we live in.

Small changes today, big changes in the future.

SOURCES

- <http://waterfootprint.org/en/water-footprint/what-is-water-footprint/>
- <http://www.fao.org/nr/sustainability/en/>
- <http://www.fao.org/docrep/018/i3347e/i3347e.pdf>
- <http://pubs.sciepub.com/jfnr/1/4/5/>
- <http://www.wwf.it/news/pubblicazioni/?6785/Impronta-idrica-dellItalia>
- <http://www.sinu.it/html/pag/07-PROTEINE.asp>
- <http://www.sinu.it/html/pag/03-Fabbisogno-energetico-medio-AR-in-eta-adulta.asp>
- http://nut.entecra.it/646/tabelle_di_composizione_degli_alimenti.html
- <http://waterfootprint.org/media/downloads/Hoekstra-2008-WaterfootprintFood.pdf>
- D.Vanham, A.Y.Hoekstra, G.Bidoglio, “Potential water saving through changes in European diets” Environment International, Volume 61, November 2013, Pages 45-56
- <https://www.ncbi.nlm.nih.gov/pubmed/26258557> Pahlow M, van Oel PR, Mekonnen MM, Hoekstra A, “Increasing pressure on freshwater resources due to terrestrial feed ingredients for aquaculture production” Science of the Total Environment 536 (2015) 847–857

ACKNOWLEDGEMENTS

and gratitude to those who participated in this project:

- **Massimo Zane** – Principal Liceo Classico Europeo M.Foscarini
- **Caterina Rossi** – Science Teacher at Liceo Classico Europeo M.Foscarini
- **Eugenia Iovane** – Science Teacher at Liceo Classico Europeo M.Foscarini
- **Angelo F. Paloschi** – Science Teacher at Liceo Classico Europeo M.Foscarini
- **El Fontego** – Venetian fairtrade cooperative
- **Mrs. Nicoletta Zanon** – Voluntary worker at El Fontego cooperative
- **Alice Laggia** – Student at Liceo Classico Europeo M.Foscarini
- **Eric Ho** – Administration Executive at the Community Relations Office of the St. Paul's co-educational College

... and everyone who assisted us in our research

OUR GROUP

Manola Bonsignore, 5BO

Nina Cerasuolo, 2AE

Pierpaolo Fasolo, 2BE

Nicolò Ferretti, 2EE

Elena Gianola, 5AO

Nicolò Giuntoli, 2CE

Carlotta Pompei, 2CE

Susanna Savini, 2DE

Anna Collarin, Science teacher

Alvise Varagnolo, Mathematics and Physics teacher