Impatto Ecologico dei pattern alimentari: come tradurli in strategie di prevenzione «Real Life»?

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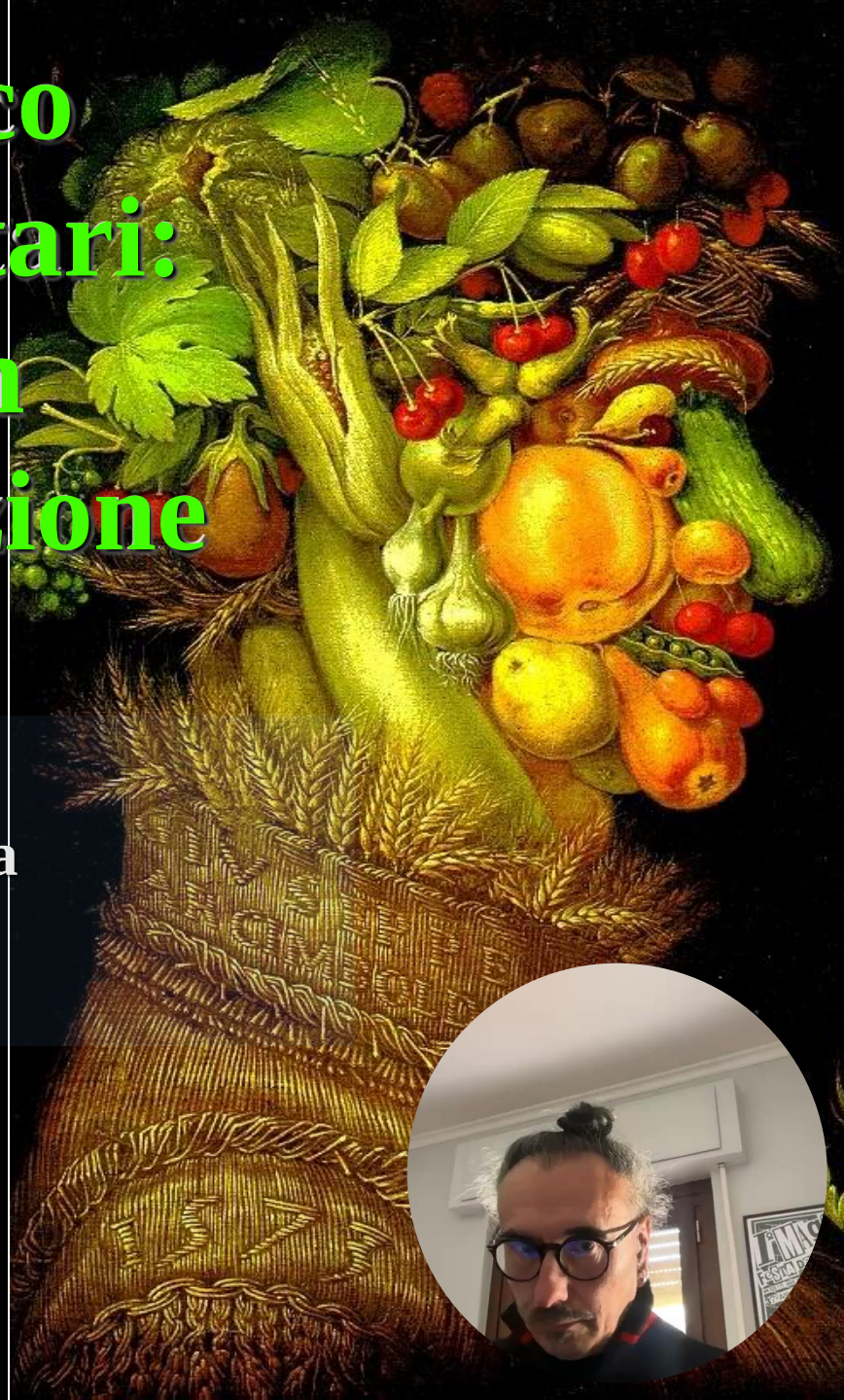
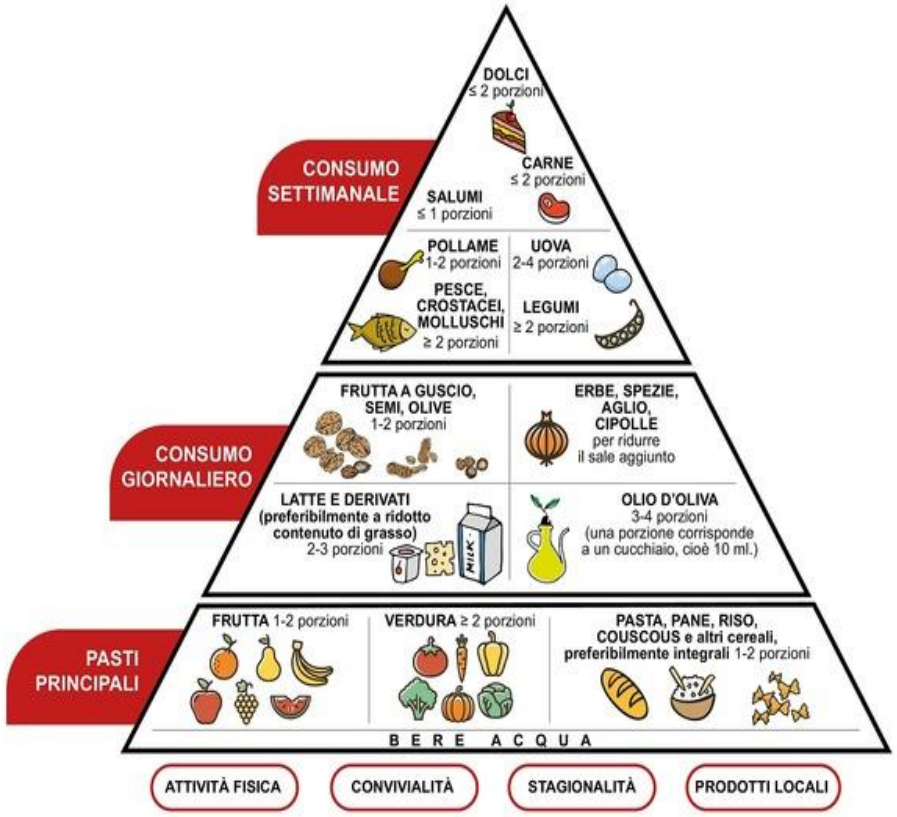


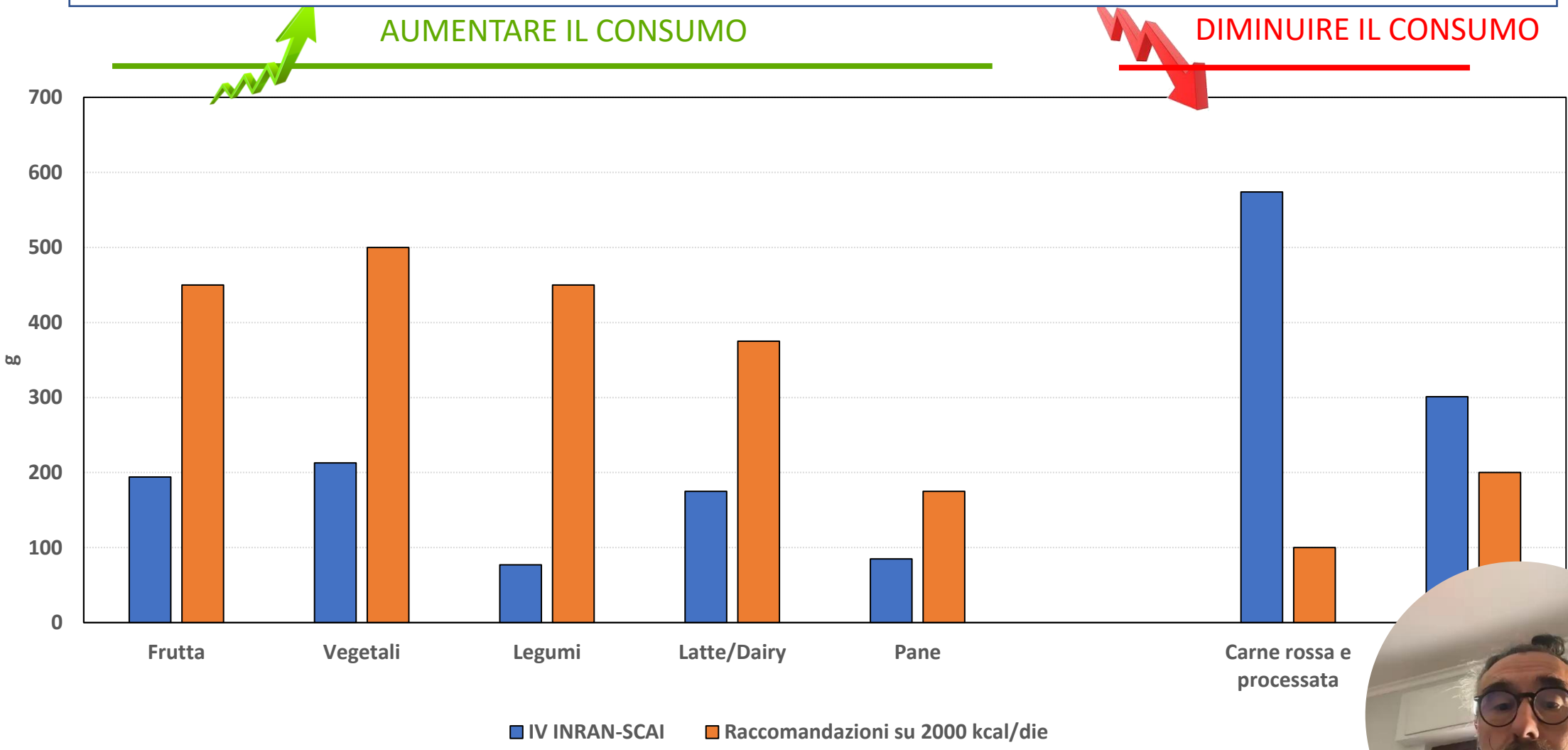
“Le diete sostenibili sono caratterizzate da un basso impatto ambientale, contribuiscono alla sicurezza alimentare e ad una vita in salute per le generazioni presenti e future…”

From EAT-Lancet 2019 and FAO

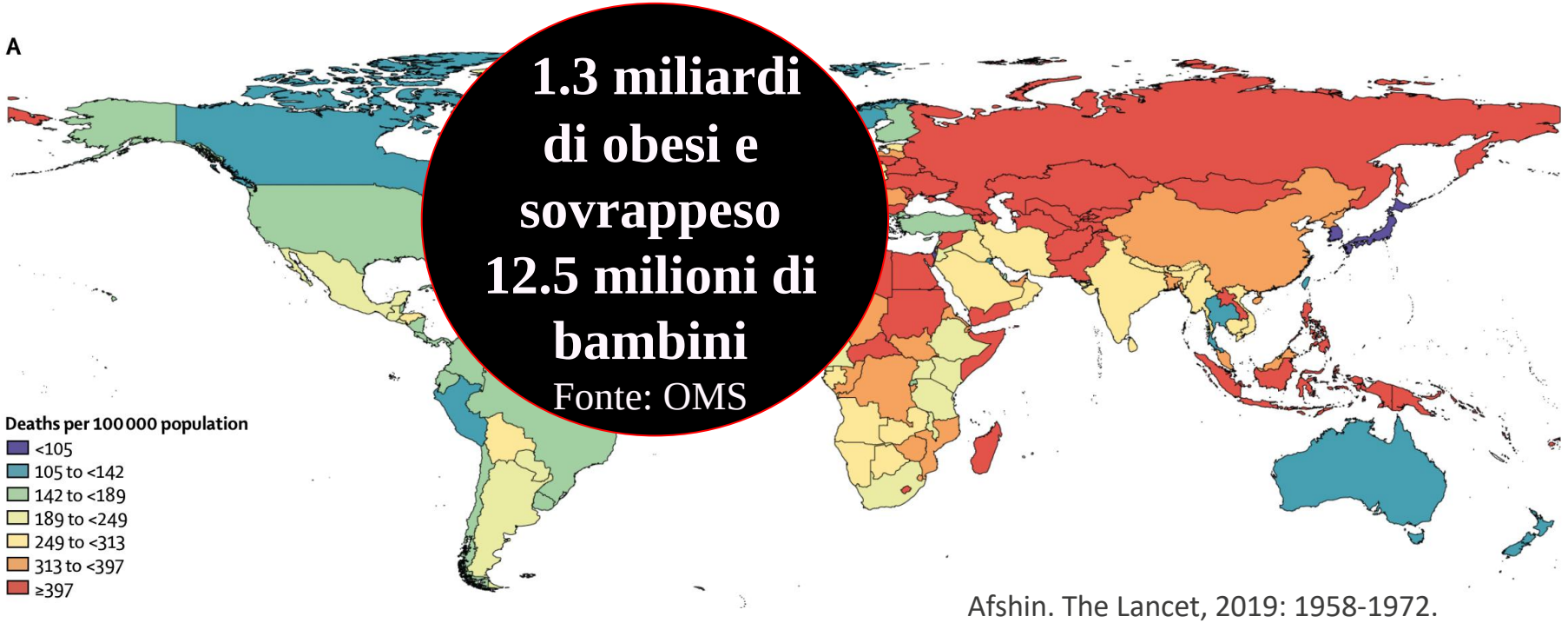

CONSUMO SETTIMANALE
DOLCI
≤ 2 porzioni
CARNE
≤ 2 porzioni
SALUMI
≤ 1 porzioni
POLLAME
1-2 porzioni
UOVA
2-4 porzioni
PESCE, CROSTACEI, MOLLUSCHI
≥ 2 porzioni
LEGUMI
≥ 2 porzioni
CONSUMO GIORNALIERO
FRUTTA A GUSCIO, SEMI, OLIVE
1-2 porzioni
ERBE, SPEZIE, AGLIO, CIPOLLE
per ridurre il sale aggiunto
LATTE E DERIVATI
(preferibilmente a ridotto contenuto di grasso)
2-3 porzioni
OLIO D'OLIVA
3-4 porzioni
(una porzione corrisponde a un cucchiaio, cioè 10 ml.)
PASTI PRINCIPALI
FRUTTA 1-2 porzioni
VERDURA ≥ 2 porzioni
PASTA, PANE, RISO, COUSCOUS e altri cereali, preferibilmente integrali 1-2 porzioni
BERE ACQUA
ATTIVITÀ FISICA
CONVIVIALITÀ
STAGIONALITÀ
PRODOTTI LOCALI


Whole grains
Starchy vegetables
Dairy foods
Animal sourced protein
Plant sourced protein
Unsaturated plant oils
Added sugars

Raccomandazioni Nutrizionali e “Real Life”



Patologie da eccesso di cibo



1.3 miliardi di obesi e sovrappeso 12.5 milioni di bambini

Fonte: OMS

Afshin. The Lancet, 2019: 1958-1972.

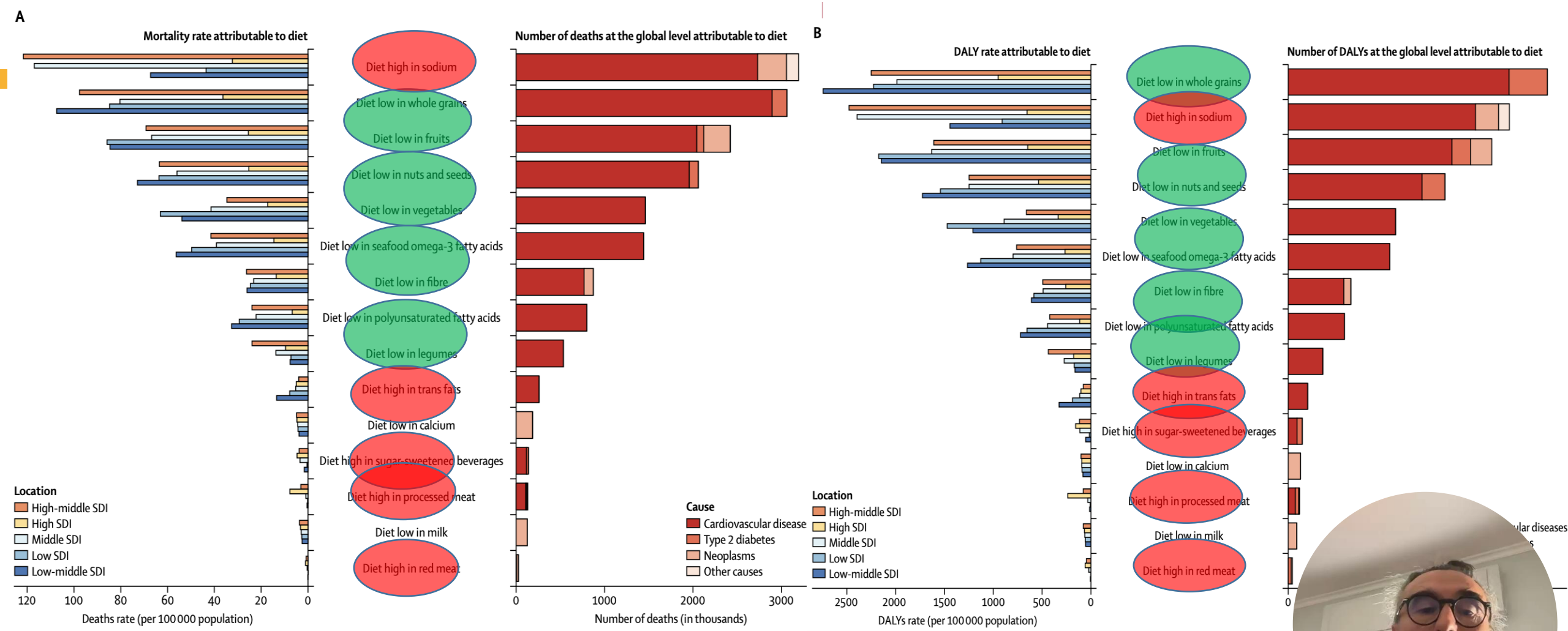
Cardiovascular Disease: 10 milions death and 207 milions DALYs

Cancer: 1 milions death and 20 milions DALYs

Diabetes type-2: 350 thousand death and 24 milions DALYs

Disability-adjusted life ye
DALY: years of life lo
premature mor
years of life lost
lived in states of
health, or years
lost due to d

Diet and Health



Afshin. The Lancet, 2019: 1958-1972.

L “Insostenibilità” dell’ Obesità

Serafini & Toti Frontiers Nutr Immun 2016

Spreco Alimentare Metabolico nel Mondo

TABLE 1 | Metabolic Food Waste [$MFW_{(kg\ of\ food)}$] corresponding to Excess Body Fat by BMI categories (OW, Overweight; OB, Obesity).

	$MFW_{(tons\ of\ food)}$	
	01,410,847	
	65,755,707	
	22,343,875	
	190,412,965	
	4,595,049,642	
	12,181,476,616	59.6
	5,079,066,441	47.4

2.081

Milioni Kg cibo sprecati per la popolazione italiana OW/OB

141

Milioni di Tonn cibo sprecati nel Mondo

EU = Europe
NAO = North America & Oceania
IA = Industrialized Asia
LA = Latin America

SSEA = South & Southeast Asia
NAWC = North Africa,West & Central Asia
SSA = Subsaharan Africa

Serafini & Toti Frontiers Nutr 2019

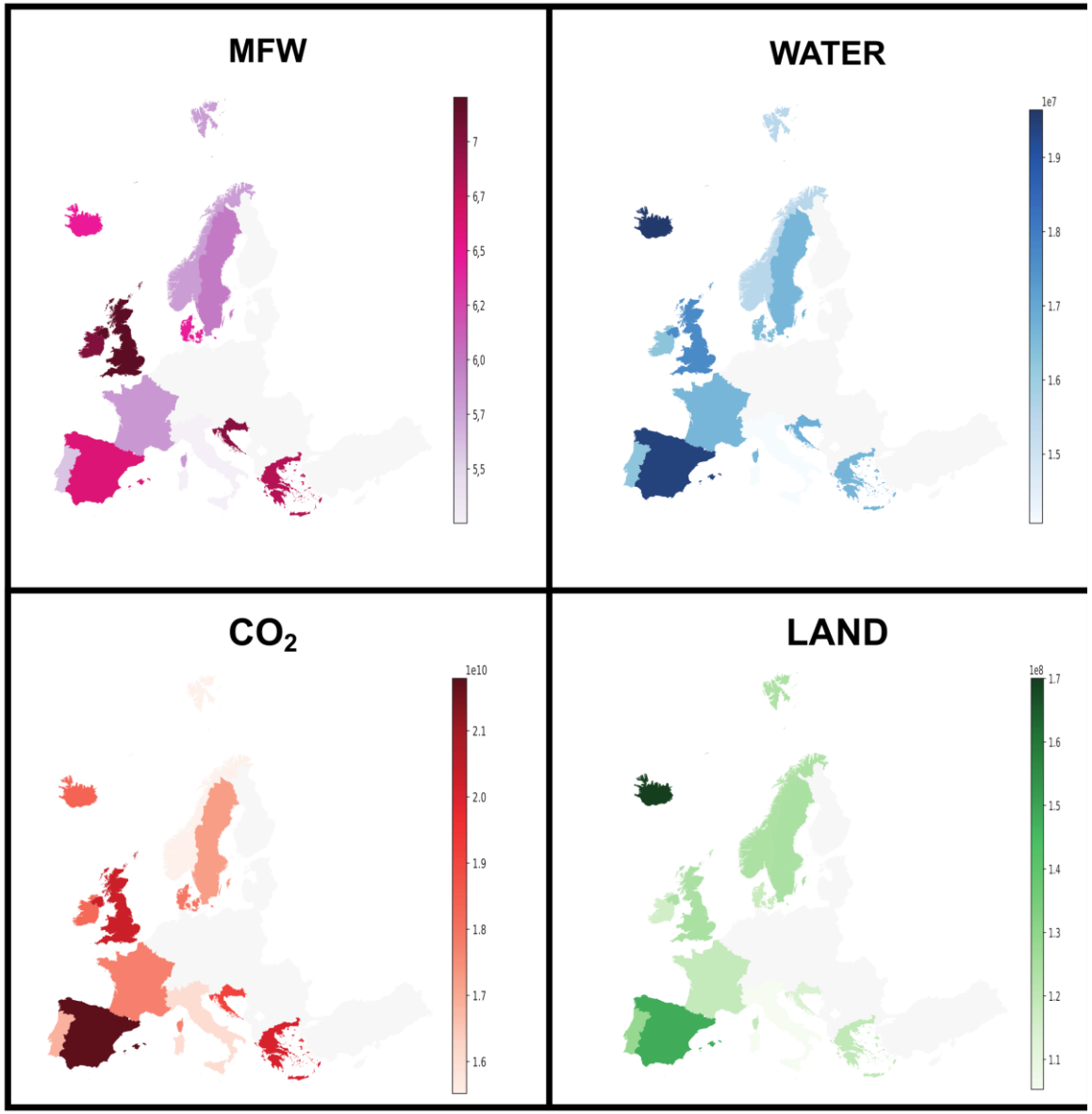
Metabolic Food waste in the seven FAO world regions (Ecological Footprints)

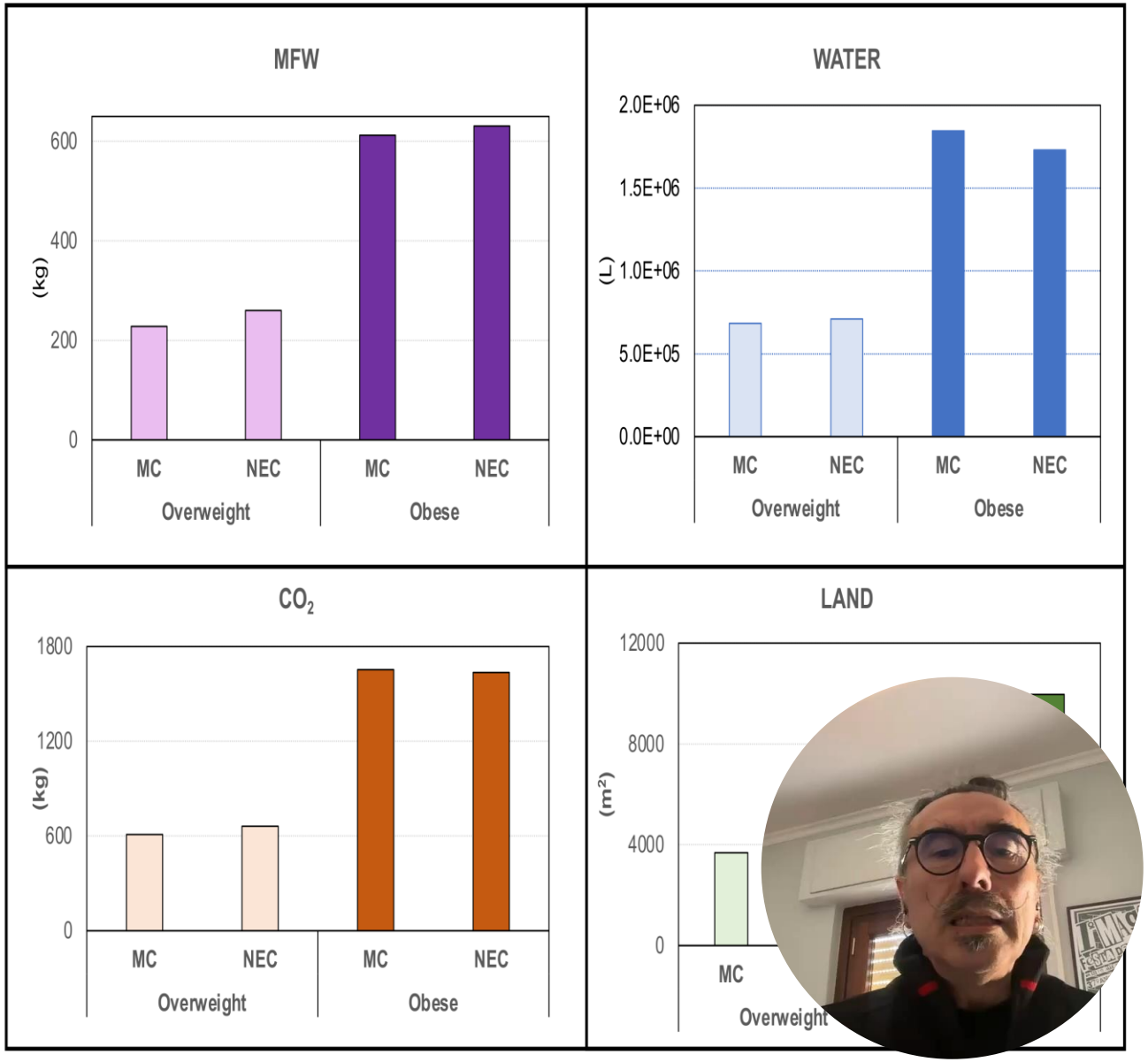
TABLE 2 | Metabolic Food Waste (MFW) expressed as water (millions m^3), GHG emissions (millions kg/CO_2eq), land (millions m^2).

	Water (millions m^3)	GHGs (millions kg/CO_2eq)	Land (millions m^2)
EU	93,926,391	66,477,365	1,085,945,294
NAO	92,446,368	58,419,124	1,034,147,016
IA	36,982,188	31,403,573	416,548,943
LA	50,769,141	34,343,457	531,386,727
NAWCA	28,631,298	18,885,007	289,849,101
SSEA	32,220,628	22,626,903	355,688,254
SSA	8,339,655	7,253,364	71,353,289
Total worldwide	343,315,669	239,408,793	3,784,918,624

EU, Europe; NAO, North America and Oceania; LA, Latin America; IA, Industrialized Asia; NAWCA, North Africa, West and Central Asia; SSEA, South and Southeast Asia; SSA, Sub-Saharan Africa.

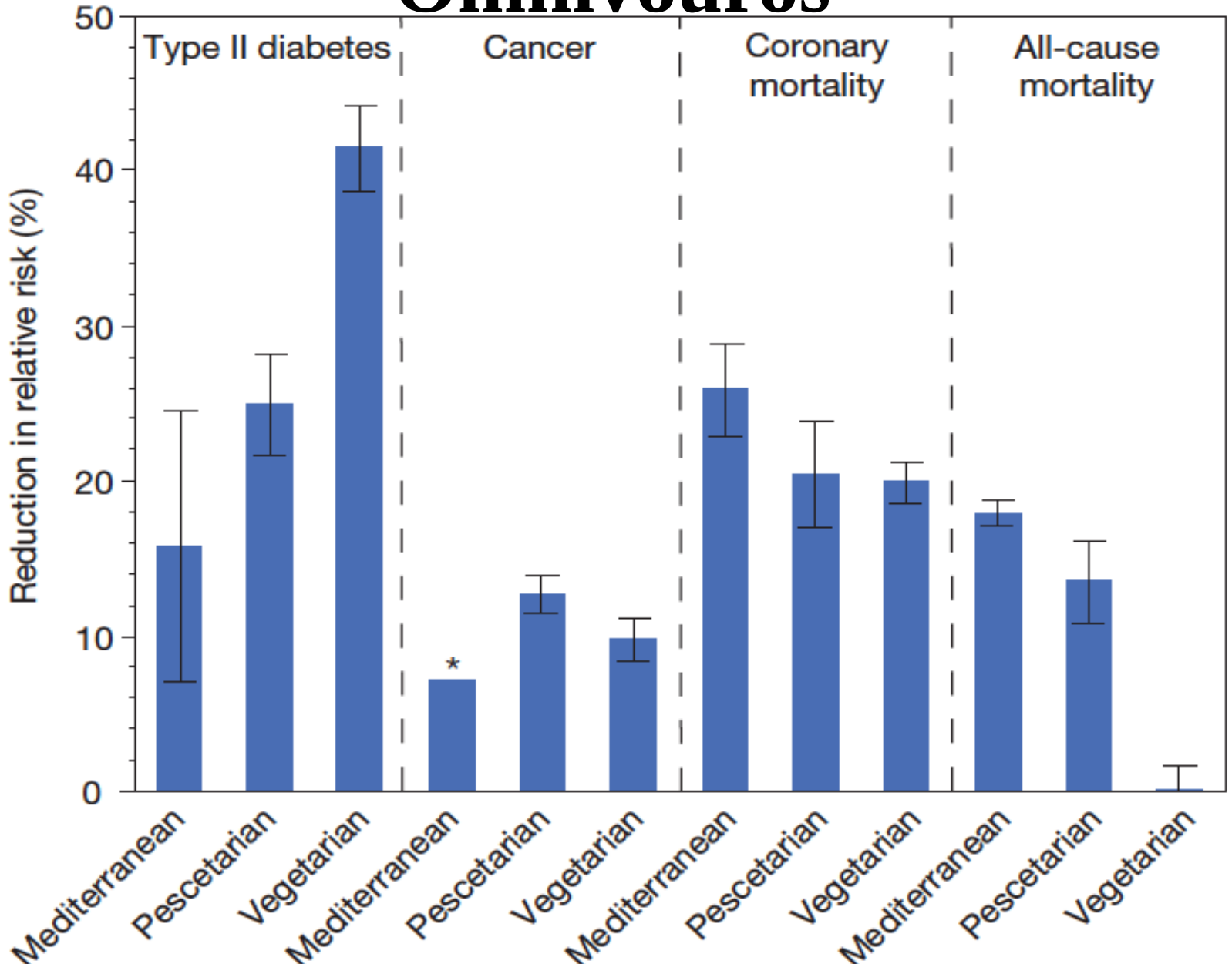
Metabolic Food waste in Mediterranean and Nothern European Countries (Ecological Footprints)





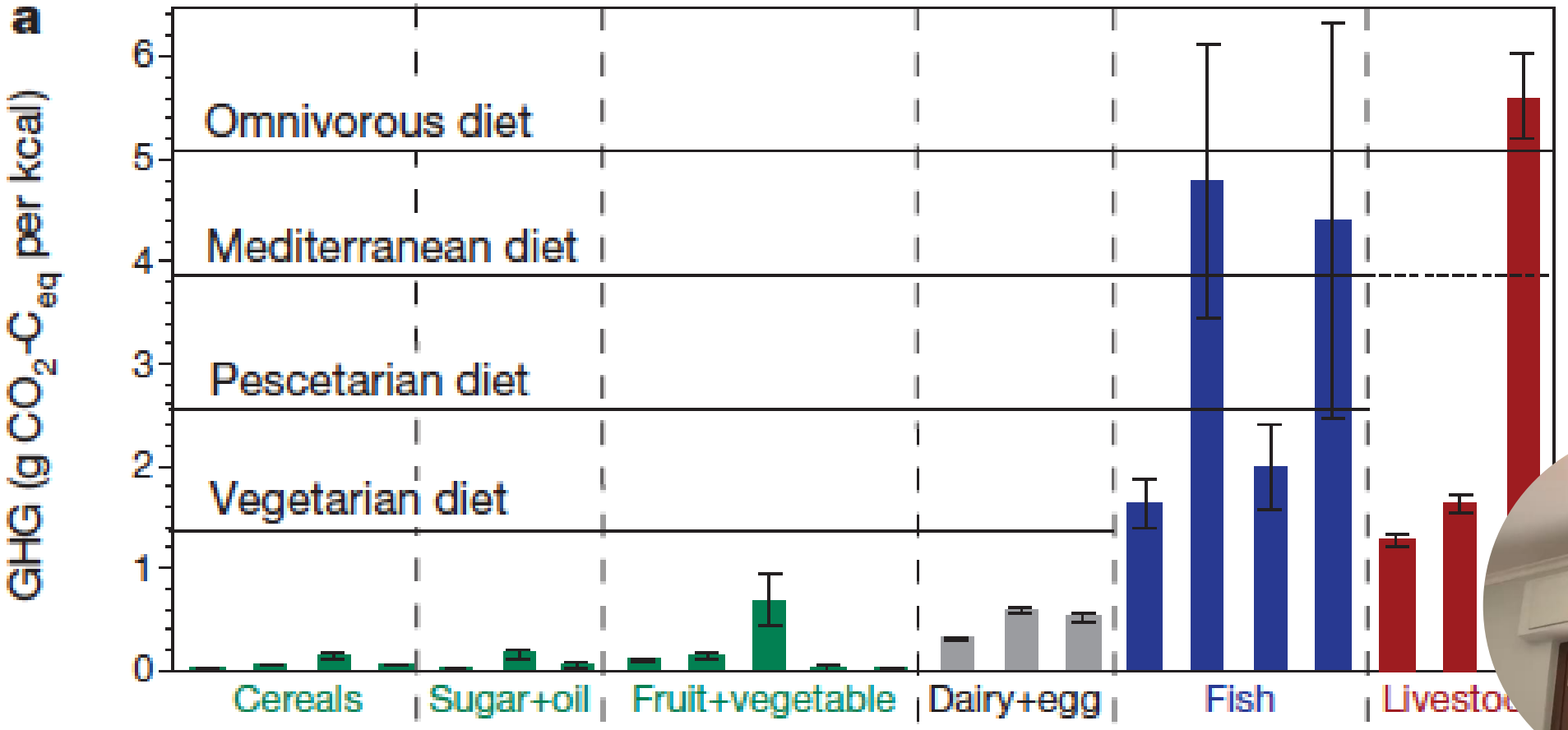
Diet-dependent reductions respect to Omnivouros

Tilman & M. Clark. *Nature* Nov 12 2014



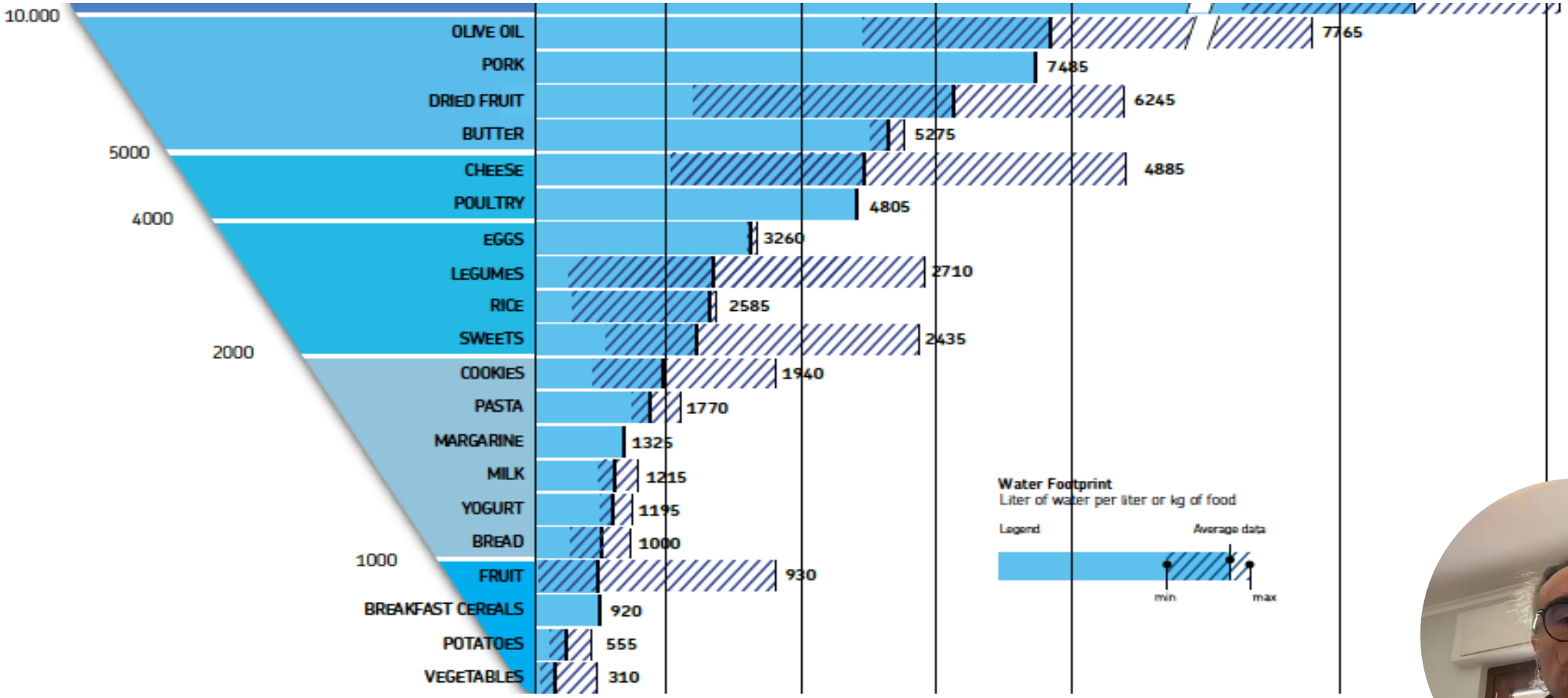
Global diets link environmental sustainability and human health

David Tilman[1,2] & Michael Clark[1]



Tilman & M. Clark. *Nature* Nov 12 2014

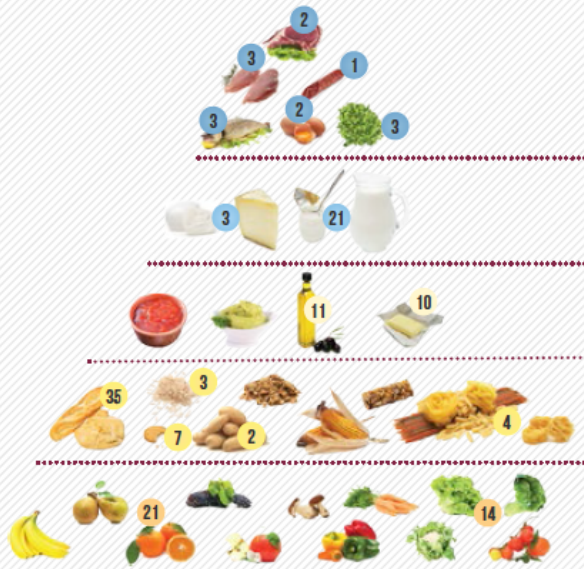
Impronta idrica



LA CLESSIDRA
AMBIENTALE

l'infografica

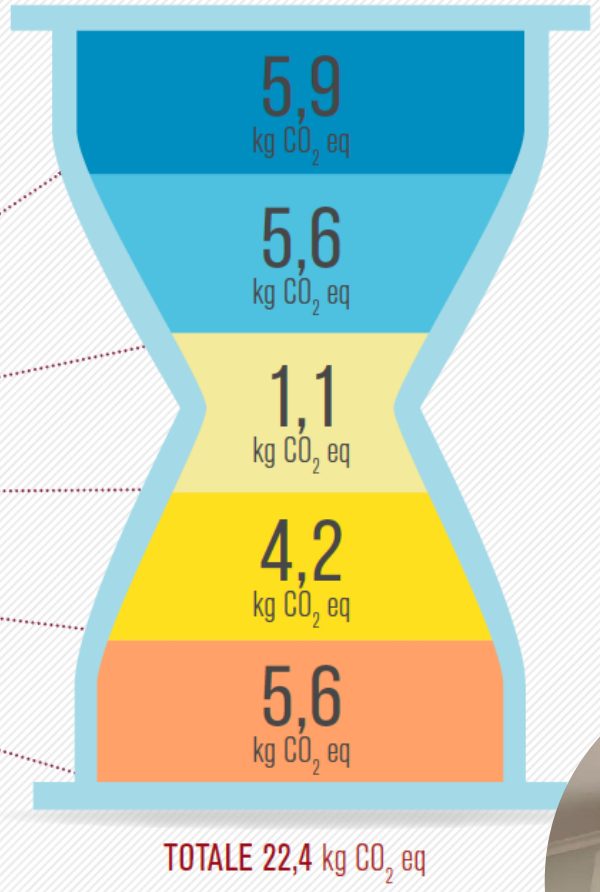
LA PIRAMIDE ALIMENTARE



PORZIONI SETTIMANALI

14	CARNE, PESCE, UOVA, LEGUMI, SALUMI
24	LATTE, YOGURT, FORMAGGI
21	CONDIMENTI, OLIO, GRASSI
51	PANE, PASTA, RISO, BISCOTTI, PATATE
35	FRUTTA,ORTAGGI

CARBON FOOTPRINT SETTIMANALE



TOTALE 22,4 kg CO_2 eq

LA CLESSIDRA AMBIENTALE RAPPRESENTA IL CARBON FOOTPRINT SETTIMANALE DI UNA PERSONA CHE SI ALIMENTA SEGUENDO LE INDICAZIONI DEL MODELLO DELLA DIETA MEDITERRANEA

La clessidra è stata aggiornata prendendo in considerazione i dati nutrizionali (porzioni e freque
una dieta da 2.100 kcal al giorno indicata per adulti con attività lavorativa sedentaria e disponi
INRAN (ora CRA-NUT) (www.sapermangiare.mobi).

SCIENTIFIC REPORTS

OPEN

Environmental impact of omnivorous, ovo-lacto-vegetarian, and vegan diet

Received: 10 November 2016
Accepted: 2 June 2017
Published online: 21 July 2017

Alice Rosi[1], Pedro Mena[1], Nicoletta Pellegrini[1], Silvia Turroni[2], Erasmo Neviani[1], Ilario Ferrocino[3], Raffaella Di Cagno[4], Luca Ruini[5], Roberto Ciati[5], Donato Angelino[1], Jane Maddock[6,7], Marco Gobbetti[4], Furio Brighenti[1], Daniele Del Rio[1] & Francesca Scazzina[1]

Subjects. Volunteers were recruited for a previous observational multi-centre study and were enrolled across four centres in Italy (Bari, Bologna, Parma, and Turin). A total of 153 apparently healthy adults (aged 18–60 years), recruited according to their self-reported habitual diets, completed the study: 51 omnivores (O), 51 ovo-lacto-vegetarians (VG), and 51 vegans (V). Inclusion and exclusion criteria, recruitment procedure, and characteristics of the subjects have been fully described by De Filippis and colleagues[22].

Dietary information. Participants were asked to record all food and beverages consumed over 7 consecutive days using a weighed food record, as previously described[22,23], and to send the completed food record to the Department of Food Science of the University of Parma. Food and drink items consumed were divided into food categories, principally to control the accuracy of the enrolment of participants in one of the three diet groups, based on self-reported eating habits. The food database of the European Institute of Oncology[24] was used to calculate daily energy and nutrient intakes. The Italian MD Index[25] was used to evaluate the level of adherence to the Mediterranean dietary pattern, a measure of the participants' diet healthiness. This tool is a 11-unit dietary score specific for the Italian population and it attributes positive points to Mediterranean foods (e.g. pasta, Mediterranean vegetables, fruit, legumes, olive oil, and fish) and negative points to non-Mediterranean foods (e.g. soft drinks, butter, red meat, potatoes and alcohol). Ethanol received 1 point for intake up to 12 g/day; abstainers and persons who consumed more than 12 g/day received a 0.

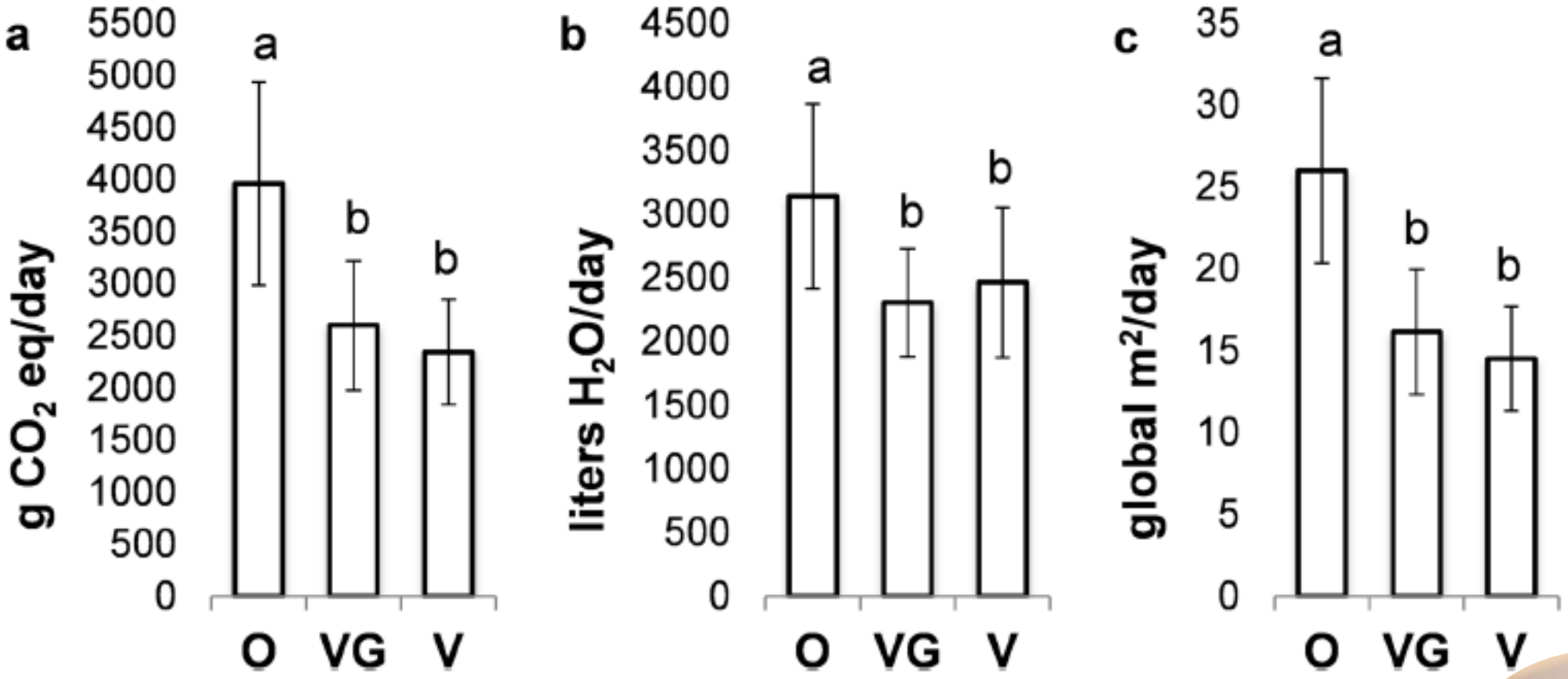


Figure 1. Environmental footprints: Daily carbon (**a**), water (**b**), and ecological (**c**) impacts expressed as average of 7-d food records (grams of CO_2 equivalent/d, litres of H_2O/d, and square meters of land/d respectively). Values are means ± standard deviation of fifty-one independent measurements for each group. Different letters indicate significantly different values ($P < 0.001$) as calculated by one-way ANO *post hoc* Tukey HSD test among the three diet groups. O, omnivores; VG, ovo-lacto-vegetarians; V, vega

Indicator	Food group	Diet type		
		O	VG	V
		N = 51	N = 51	N = 51
Carbon Footprint (g CO_2 eq./d)	Drinks	430.9 ± 342.9^{a}	299.2 ± 355.3^{a}	325.0 ± 385.0^{a}
	Meat and Fish	1447.2 ± 756.8^{a}	0.0 ± 0.0^{b}	0.0 ± 0.0^{b}
	Other animal-based foods	901.9 ± 363.6^{a}	628.9 ± 465.2^{b}	0.0 ± 0.0^{c}
	Cereals and their derivatives	425.5 ± 110.1^{b}	490.4 ± 133.4^{ab}	548.0 ± 200.7^{a}
	Other vegetable-based foods	503.3 ± 170.1^{c}	995.8 ± 367.5^{b}	1422.5 ± 381.4
	Sweets and desserts	250.8 ± 125.1^{a}	184.1 ± 109.6^{b}	47.0 ± 44.5^{c}
	Total	3959.3 ± 975.8^{a}	2598.3 ± 619.0^{b}	2336.1 ± 496.8^{b}
Water Footprint (L/d)	Drinks	174.3 ± 127.1^{a}	129.2 ± 138.1^{a}	158.1 ± 152.1^{a}
	Meat and Fish	1176.9 ± 603.5^{a}	0.0 ± 0.0^{b}	0.0 ± 0.0^{b}
	Other animal-based foods	567.9 ± 236.8^{a}	385.5 ± 287.7^{b}	0.0 ± 0.0^{c}
	Cereals and their derivatives	330.4 ± 81.3^{b}	370.2 ± 96.7^{ab}	412.8 ± 147.4^{a}
	Other vegetable-based foods	623.3 ± 223.9^{c}	1224.2 ± 449.7^{b}	1835.4 ± 676.1
	Sweets and desserts	268.0 ± 132.3^{a}	195.6 ± 114.7^{b}	51.8 ± 47.6^{c}
	Total	3140.8 ± 726.5^{a}	2304.7 ± 421.6^{b}	2455.0 ± 582.2^{b}
Ecological Footprint (global m^2/d)	Drinks	1.0 ± 0.9^{a}	0.8 ± 1.0^{a}	1.1 ± 1.2^{a}
	Meat and Fish	11.2 ± 4.7^{a}	0.0 ± 0.0^{b}	0.0 ± 0.0^{b}
	Other animal-based foods	7.0 ± 2.9^{a}	4.7 ± 3.6^{b}	0.0 ± 0.0^{c}
	Cereals and their derivatives	2.5 ± 0.6^{b}	2.8 ± 0.7^{ab}	3.1 ± 1.1^{a}
	Other vegetable-based foods	2.7 ± 1.4^{c}	6.6 ± 2.9^{b}	10.0 ± 2.9^{a}
	Sweets and desserts	1.6 ± 0.8^{a}	1.2 ± 0.7^{b}	0.3 ± 0.3^{c}
	Total	26.0 ± 5.6^{a}	16.1 ± 3.8^{b}	14.5 ± 3.1^{b}

Table 4. Daily carbon footprint, water footprint, and ecological footprint values of food groups (as average of 7-d food record) for each of the three diet groups. Values are mean ± standard deviation of fifty-one independent measurements. Different letters indicate significantly different values ($P < 0.05$) as calculated by one-way ANOVA with *post hoc* Tukey HSD test among the three diet groups. O, omnivores; VG, ovo-lacto-vegetarians; V, vegans. Drinks: alcoholic beverages, soft drinks, and fruit juices. Meat and Fish: meat and meat products, and fish. Other animal-based foods: eggs, milk and dairy products, and animal fat. Cereals and their derivatives: cereals and their derivatives. Other vegetable-based foods: fruit, vegetables, nuts and dried fruits, legumes, potatoes and other tubers, vegetable alternatives, and vegetable fat. Sweets and desserts: sweets and desserts.

WORLD RESOURCES INSTITUTE

WORKING PAPER

Installment 11 of "Creating a Sustainable Food Future"

SHIFTING DIETS FOR A SUSTAINABLE FOOD FUTURE

JANET RANGANATHAN, DANIEL VENNARD, RICHARD WAITE, PATRICE DUMAS,
BRIAN LIPINSKI, TIM SEARCHINGER, AND GLOBAGRI-WRR MODEL AUTHORS

Table ES-1 | Diet Shifts and Scenarios Modeled in this Paper

SCENARIO NAME	SCENARIO DESCRIPTION	AFFECTED POPULATION (MILLIONS), 2009
DIET SHIFT 1: Reduce overconsumption of calories		
Eliminate Obesity and Halve Overweight	Recognizing that reducing overconsumption of calories can contribute to reducing overweight and obesity, this scenario eliminates obesity and halves the number of overweight people by reducing calorie consumption across all foods.	1,385
Halve Obesity and Halve Overweight	Similar to the above scenario, this scenario halves the number of obese and overweight people.	1,046
DIET SHIFT 2: Reduce overconsumption of protein by reducing consumption of animal-based foods		
Ambitious Animal Protein Reduction	In regions that consumed more than 60 grams of protein (from animal and plant sources combined) and more than 2,500 calories per person per day, protein consumption was reduced to 60 grams per person per day by reducing animal-based protein consumption (across all animal-based foods). Overall, global animal-based protein consumption was reduced by 17 percent.	1,907
Traditional Mediterranean Diet	In regions that consumed more than 40 grams of animal-based protein and more than 2,500 calories per person per day, half of the population was shifted to the actual average diet of Spain and Greece in 1980. Overall calorie consumption was held constant.	437
Vegetarian Diet	In regions that consumed more than 40 grams of animal-based protein and more than 2,500 calories per person per day, half of the population was shifted to the actual vegetarian diet as observed in the United Kingdom in the 1990s. Overall calorie consumption was held constant.	437
DIET SHIFT 3: Reduce beef consumption specifically		
Ambitious Beef Reduction	In regions where daily per person beef consumption was above the world average and daily per person calorie consumption was above 2,500 per day, beef consumption was reduced to the world average level. Overall, global beef consumption was reduced by 30 percent.	1
Shift from Beef to Pork and Poultry	In regions where daily per person beef consumption was above the world average, beef consumption was reduced by one-third and replaced by pork and poultry. Overall calorie consumption was held constant.	1,9

Table 2 | Global Effects of Reducing Overconsumption of Calories on Agricultural Land Use and Greenhouse Gas Emissions in 2009

SCENARIO[A]	REDUCTION IN AGRICULTURAL LAND USE[B] (MILLION HA)	AVOIDED FUTURE GHG EMISSIONS FROM AGRICULTURAL LAND-USE CHANGE[C] (MILLION TONS CO_2E)	REDUCTION IN GHG EMISSIONS FROM AGRICULTURAL PRODUCTION (MILLION TONS CO_2E)
ELIMINATE OBESITY AND HALVE OVERWEIGHT APPLIED TO 1,385 M PEOPLE	84 Pastureland 54 Cropland TOTAL 138	34,564	194
HALVE OBESITY AND OVERWEIGHT APPLIED TO 1,046 M PEOPLE	56 Pastureland 36 Cropland TOTAL 92	19,908	126

Source: GlobAgri model.

Notes:

a. Reference scenario included a world population of 6.8 billion, agricultural land use of 5 billion hectares (3.4 billion hectares of pastureland and 1.6 billion hectares of cropland) billion tons of greenhouse gas emissions from agricultural production.

b. "Cropland" includes land for aquaculture farms.

c. These estimates assume that the diet changes are sustained over time. If other improvements to the food system (e.g., yield gains) allowed the world to avoid future land-use scenarios would allow some existing agricultural lands to revert to native vegetation and sequester the equivalent amount of carbon.

Table 3 | Global Effects of Reducing Overconsumption of Protein by Reducing Consumption of Animal-Based Foods on Agricultural Land Use and Greenhouse Gas Emissions in 2009

SCENARIO[A]	REDUCTION IN AGRICULTURAL LAND USE[B] (MILLION HA)	AVOIDED FUTURE GHG EMISSIONS FROM AGRICULTURAL LAND-USE CHANGE[C] (MILLION TONS CO_2E)	REDUCTION IN GHG EMISSIONS FROM AGRICULTURAL PRODUCTION (MILLION TONS CO_2E)
AMBITIOUS ANIMAL PROTEIN REDUCTION APPLIED TO 1,907 M PEOPLE	508 Pastureland 133 Cropland TOTAL 641	168,206	715
TRADITIONAL MEDITERRANEAN DIET APPLIED TO 437 M PEOPLE	14 Pastureland 4 Cropland TOTAL 18	-4,066	10
VEGETARIAN DIET APPLIED TO 437 M PEOPLE	113 Pastureland 37 Cropland TOTAL 150	36,532	287

Source: GlobAgri model.

Notes:

a. Reference scenario included a world population of 6.8 billion, agricultural land use of 5 billion hectares (3.4 billion hectares of pastureland and 1.6 billion hectares of cropland), and billion tons of greenhouse gas emissions from agricultural production.

b. "Cropland" includes land for aquaculture farms.

c. These estimates assume that the diet changes are sustained over time. If other improvements to the food system (e.g., yield gains) allowed the world to avoid future land-use change, thes scenarios would allow some existing agricultural lands to revert to native vegetation and sequester the equivalent amount of carbon.

Table 4 | **Global Effects of Reducing Beef Consumption on Agricultural Land Use and Greenhouse Gas Emissions in 2009**

SCENARIO[A]	REDUCTION IN AGRICULTURAL LAND USE[B] (MILLION HA)	AVOIDED FUTURE GHG EMISSIONS FROM AGRICULTURAL LAND-USE CHANGE[C] (MILLION TONS CO_2E)	REDUCTION IN GHG EMISSIONS FROM AGRICULTURAL PRODUCTION (MILLION TONS CO_2E)
AMBITIOUS BEEF REDUCTION APPLIED TO 1,463 M PEOPLE	**291** Pastureland **15** Cropland TOTAL 307	98,298	418
SHIFT FROM BEEF TO PORK AND POULTRY APPLIED TO 1,952 M PEOPLE	**196** Pastureland **-26** Cropland TOTAL 170	51,116	238
SHIFT FROM BEEF TO LEGUMES APPLIED TO 1,952 M PEOPLE	**211** Pastureland **7** Cropland TOTAL 218	66,396	299

Source: GlobAgri model.

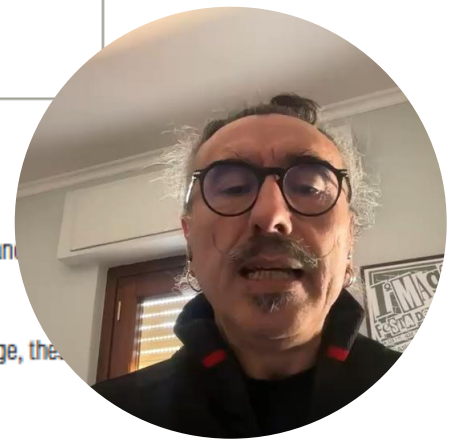
Notes:

Figures may not total correctly due to rounding.

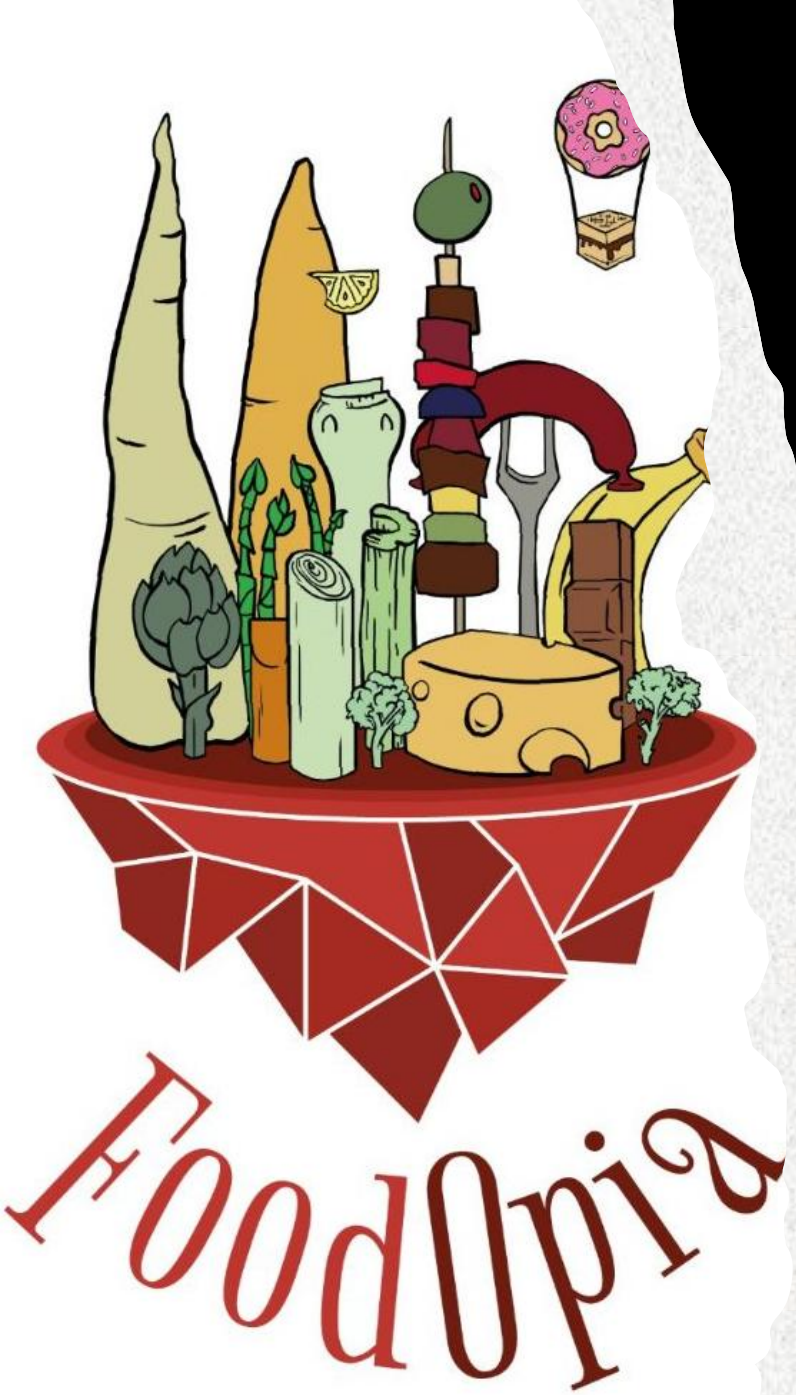
a. Reference scenario included a world population of 6.8 billion, agricultural land use of 5 billion hectares (3.4 billion hectares of pastureland and 1.6 billion hectares of cropland), an billion tons of greenhouse gas emissions from agricultural production.

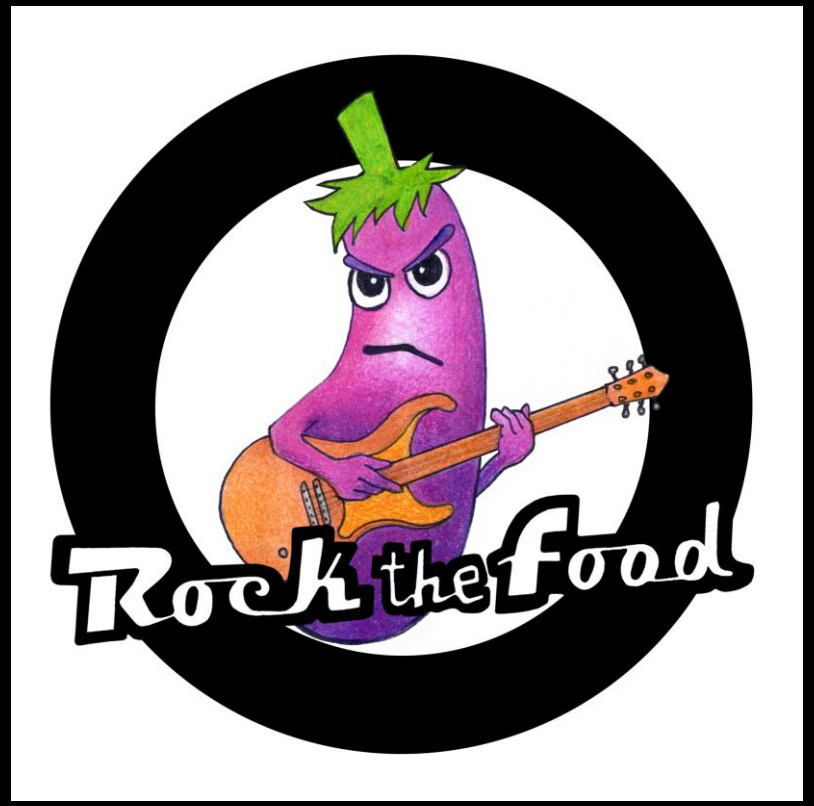
b. "Cropland" includes land for aquaculture farms.

c. These estimates assume that the diet changes are sustained over time. If other improvements to the food system (e.g., yield gains) allowed the world to avoid future land-use change, the scenarios would allow some existing agricultural lands to revert to native vegetation and sequester the equivalent amount of carbon.



Progetto ”FooDopia: Nutrire la ConoSc(i)enza






BENESSERE
Il Benessere è una questione di "equilibrio"
MALATTIA

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FUNCTIONAL FOOD AND METABOLIC STRESS PREVENTION LABORATORY

2024

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MOOD
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