



Eating to save wild-life: is a truly conservation-minded zoo/aquarium a vegan zoo/aquarium?

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Eating to save wildlife:

Is a truly conservation-minded
zoo/ aquarium a vegan
zoo/aquarium?



**KEEP
CALM
AND**

**PROTECT THE
WILDLIFE**

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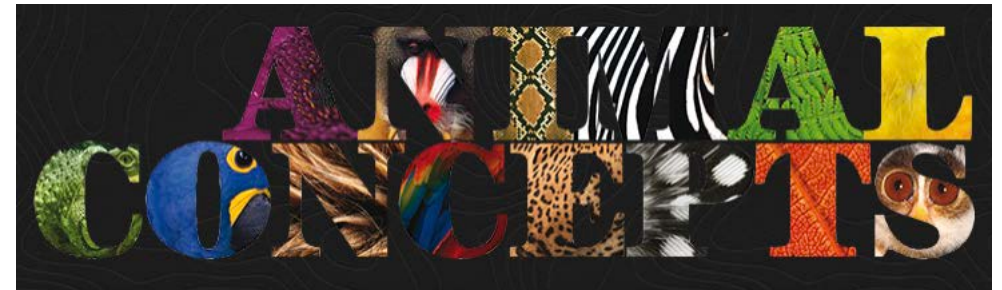
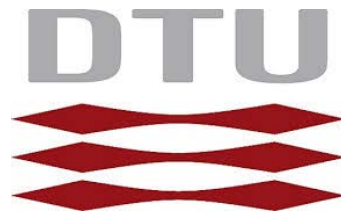
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AnimalConcepts



The ideals of European Association of Zoos and Aquaria (EAZA)

- Education, research, conservation

Catering in Z&A

- Serving the public

Sustainability

- What is it in Z&A?

LCA

- What is the impact?

Consequences

- Endangering wildlife?

Should Z&A go vegan?

- Opportunities and challenges



The ideals of
EAZA:
*Research,
education,
conservation*



Education

- Create awareness
 - about wild life
 - about nature
 - about problems
- Inspire to action

Research

- Create knowledge about animals
 - Welfare in Z&A
 - Species conservation in the wild

Conservation

- Species conservation (Noah's Ark)
- Habitat protection
- Re-introduction of wild life

The **European Association of Zoos and Aquaria** (<http://www.eaza.net>), is a not-for profit association which represents and links 345 institutions in 41 countries (of which 26 are EU members). Formed in 1992, EAZA's mission is to facilitate cooperation within the European zoo and aquarium community towards the goals of **education, research and conservation.**



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Catering in Z&A

Serving the public



COMBOS

Includes Medium Fountain Beverage and Chips or Fries

Hamburger	\$8.25
Cheeseburger	\$8.75
Chicken Sandwich	\$8.25
Veggie Burger	\$8.25
Pulled Pork Sliders	\$8.75
Buff. Chicken Wrap	\$8.25
Turkey Wrap	\$8.25
Jumbo Hot Dog	\$6.50
Polish Sausage	\$8.25
Italian Sausage	\$8.25
Cheese Pizza Slice	\$5.50
Pepperoni Pizza Slice	\$6.00
Meatball Sub	\$7.00

KIDS MEALS

Includes Small Fountain Beverage and fries or chips

Kids Dog	\$5.25
Corn Dog	\$5.25
Chicken Tenders	\$6.00
PB&J Sandwich	\$4.25

SALAD CHOICES

Chicken Breast Salad	\$8.00
Chef Salad	\$6.75

SNACKS

Super Nachos	\$6.00
Nachos w/ Cheese	\$4.50
French Fries	\$3.50
Chili Cheese Fries	\$5.00
Pretzels	\$3.50
Popcorn	\$3.00
Chips	\$2.00
Cookies	\$1.00



© http://www.centralfloridazoo.org/assets/1809/menu_11414.jpg

Z&A – A restaurant with animals?

- Animals and staff cost money
- Entrance fees, animal photo and feeding opportunities and sale of food and drinks important sources of income
 - From hot dog stands to fancy restaurants
 - Menus depend on local taste but often include hot dogs, burgers, milk shakes etc.
- In many Z&A catering has been outsourced
 - Only little influence on what is served
- **Our question**
 - **Could the food served help Z&A better reach their goals of education and conservation?**

Eating in the ZOO

Are you hungry like a lion or thirsty like a camel? Scattered over Antwerp ZOO, you will find a variety of eateries to recharge your batteries before, during or after a revitalizing visit to the ZOO.

> De Latteria

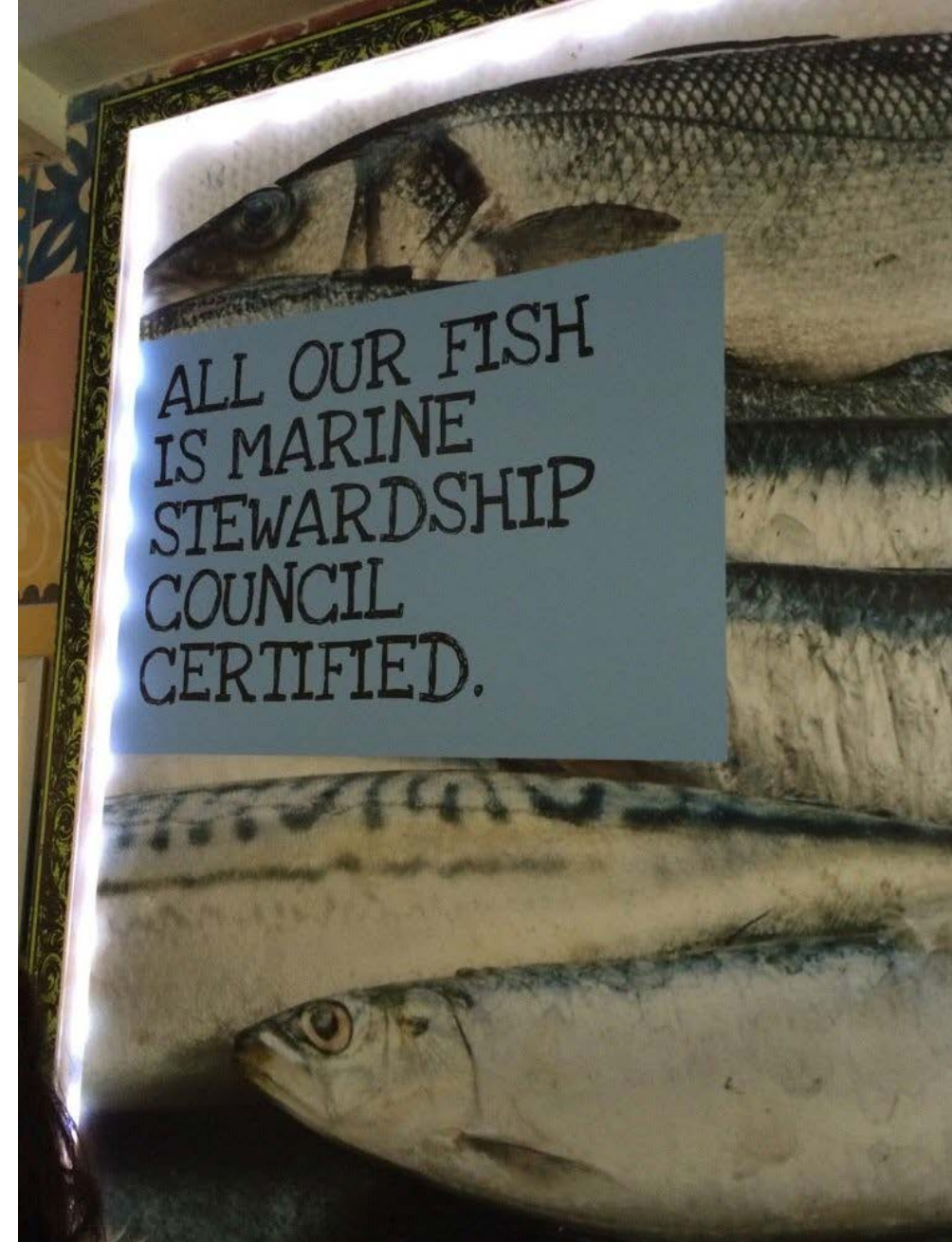


In this attractive **restaurant with a large sun terrace**, you can discover our delicious pizza's, wraps, sandwiches, salads, icecream and milkshakes. Hot and cold drinks available.



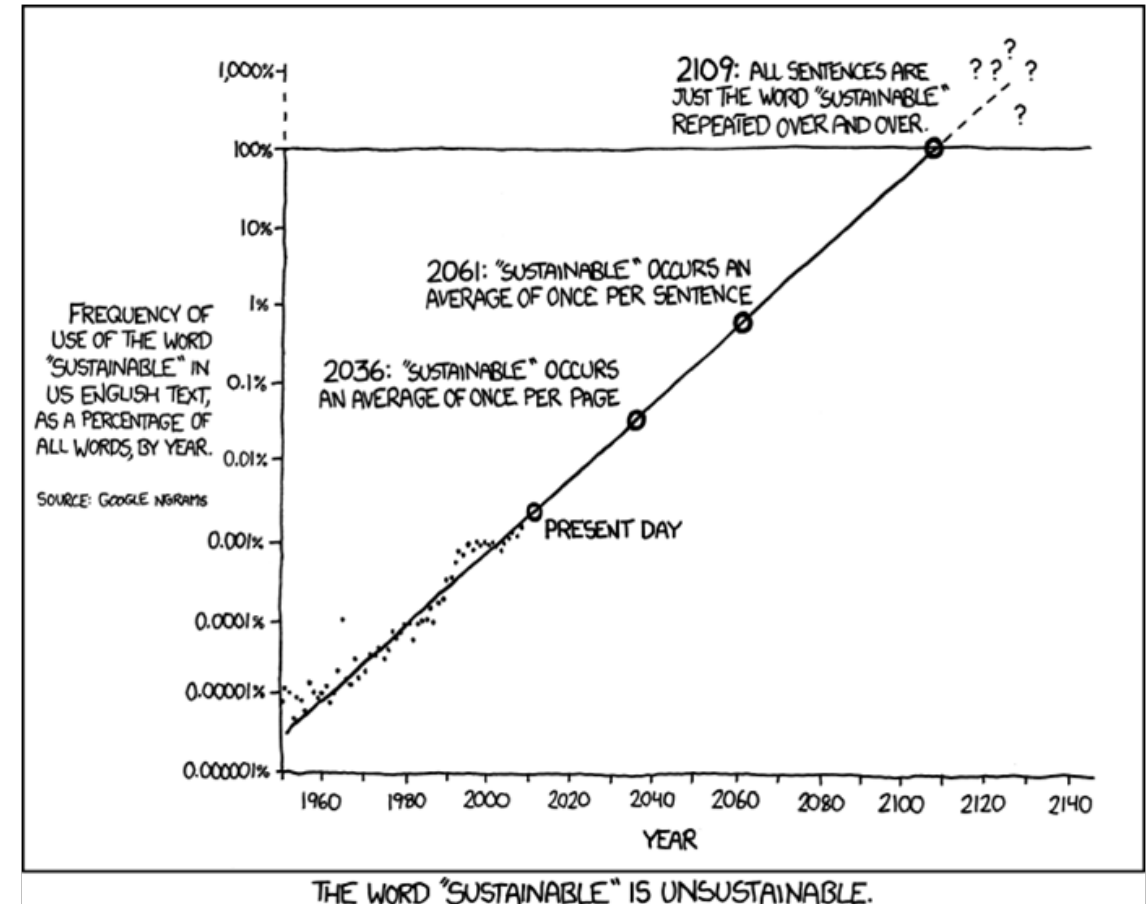
Existing initiatives

- Many Z&A worldwide are engaged in efforts to increase the sustainability in the products they use: fish, palm oil and meat
- Many Z&A offer vegetarian and vegan options as well as line caught fish and sustainably farmed fish
- For meat some Z&A adopt the "farm to restaurant concept": local farms and/or organic
- But - Source information of meat served often very difficult to find



Sustainability

What is it in Z&A?



Sustainable Z&As

- Sustainability – widely accepted as a broad and inclusive political as well as managerial framework
- Z&As can be seen as a kind of animal husbandry –albeit with focus on edutainment and breeding animals for conservation
- However: many ethical parameters to ponder in the running of a broadly understood sustainable Z&A
 - Requires balancing of concerns
- One concern is the environmental impact of serving animal protein based meals

A sustainable ZOO

A sustainable ZOO

Water consumption

Few people actually realise it, but Antwerp ZOO is – just like any other company – generates waste, and hence has an impact on the environment that underestimated. In this respect, we do our utmost ecological footprint in order to be able to reduce i

Green key



Antwerp Zoo was awarded the international 'Green Key' label, which rewards the efforts of wildlife parks in

The label is awarded by the Flemish Government of Flanders. In order to receive the label, water and energy consumption must be environmentally

LCA

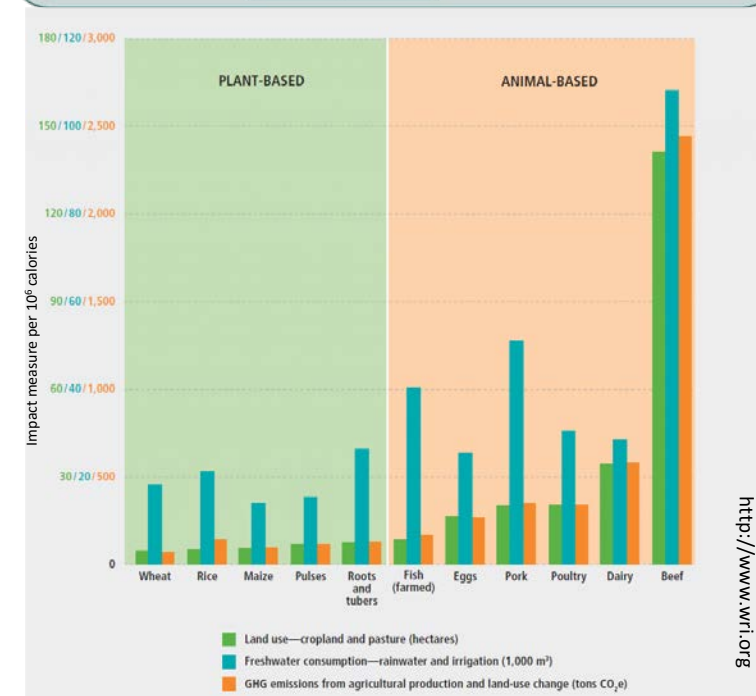
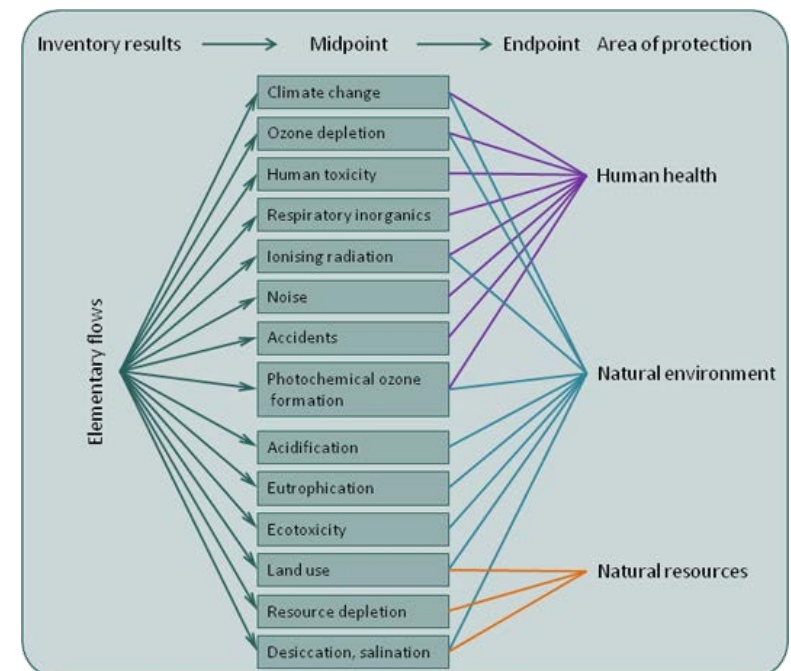
What are the impacts?

Life cycle of products



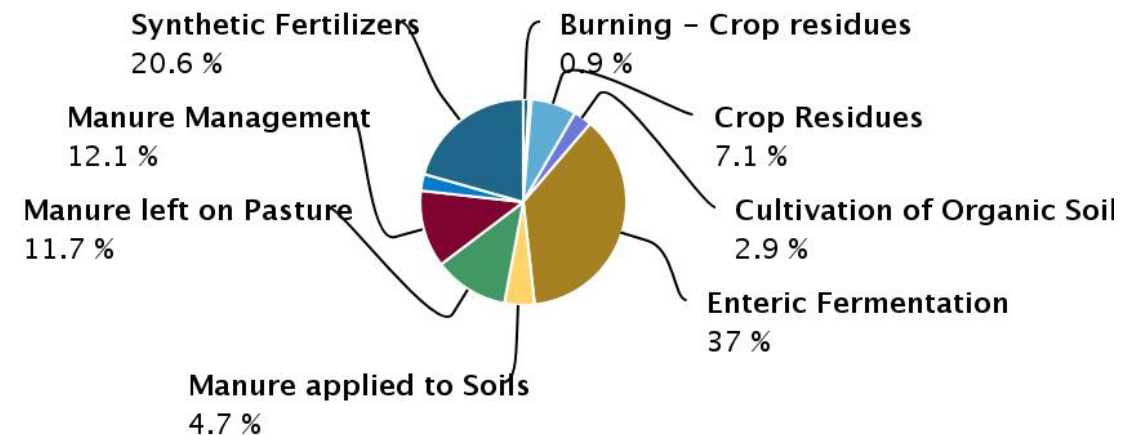
Quantifying sustainability of food

- Environmental sustainability performance can be quantified relying on a multitude of impacts indicators all relating to the environmental performance
- Food production leads to a multitude of environmental impacts ranging from climate change, toxicity related impacts, resource depletion etc. – hence a muddy picture and communication task
 - *Impact profiles are often simplified by application of carbon footprint*



Meat production versus other agroproduction

- Agriculture consumes app. 40 % of all ice-free land
- Livestock production in terms of land use, ranks second in agriculture, only superseeded by forestry
- Meat production is responsible for more than 50 % of all GHG emissions from US agricultural production
- Comparing the environmental performance of plant and animal based food items on a calorie basis, all animal food products performs worse than plant based



Source: <http://faostat3.fao.org>

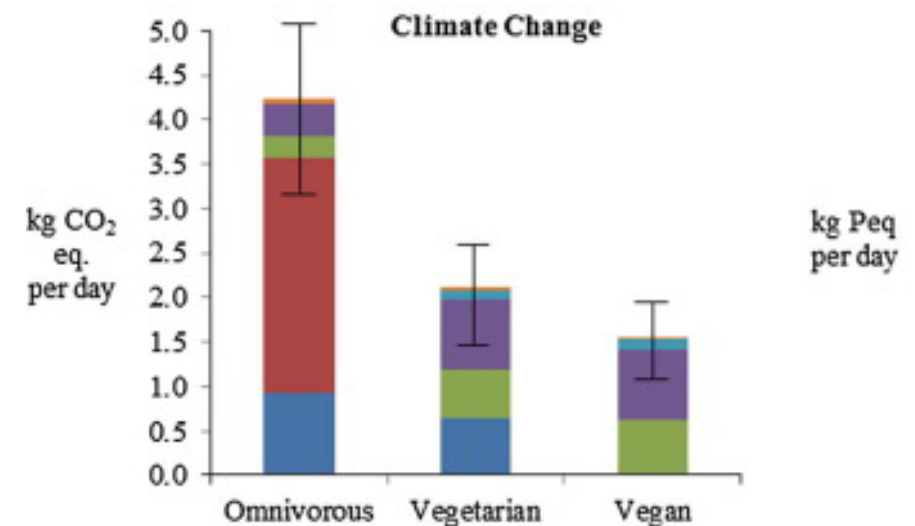
US agr. GHG emissions -2011

The impact of food

- Comparing impacts from 6 consumption segments reveal that food is the consumption segment most often dominating the impacts across a multitude of impact categories
- Comparing impacts from recommended diets reveal that meatless diets (vegetarian and vegan) are environmental superior to omnivorous diets across most impact indicators

	Accommodation	Thermal Energy	Electricity	Road Transport	Air Travel	Food	Total
Agricultural Land Occupation	34.6	0.1	1.9	0.5	0.0	63.0	100
Climate Change	11.6	24.2	11.6	24.1	12.1	16.4	100
Fossil Depletion	12.7	27.8	11.3	27.0	13.3	8.0	100
Freshwater Ecotoxicity	8.6	1.8	4.4	10.6	1.3	73.3	100
Freshwater Eutrophication	11.4	2.1	8.7	12.9	1.4	63.5	100
Human Toxicity	20.4	4.7	13.0	24.9	3.2	33.7	100
Ionizing Radiation	22.6	10.5	1.7	60.7	4.5	0.0	100
Marine Ecotoxicity	9.5	2.4	4.9	11.8	1.8	69.6	100
Marine Eutrophication	1.9	0.8	1.2	2.6	2.2	91.3	100
Metal Depletion	40.0	6.0	2.0	35.2	1.3	15.5	100
Natural Land Transformation	5.4	13.0	2.3	20.2	13.2	46.0	100
Ozone Depletion	5.8	35.1	5.1	31.0	14.2	8.8	100
Particulate Matter Formation	15.1	8.3	8.3	22.1	13.8	32.4	100
Photochemical Oxidant Formation	12.8	11.5	6.5	28.5	22.5	18.2	100
Terrestrial Acidification	9.2	8.4	7.3	17.1	12.2	45.8	100
Terrestrial Ecotoxicity	0.6	0.6	1.8	1.6	0.7	94.6	100
Urban Land Occupation	11.5	1.7	4.1	63.4	2.3	17.0	100
Water Depletion	40.8	6.4	1.7	48.0	2.8	0.3	100

Source: Kalbar et al. (2016)



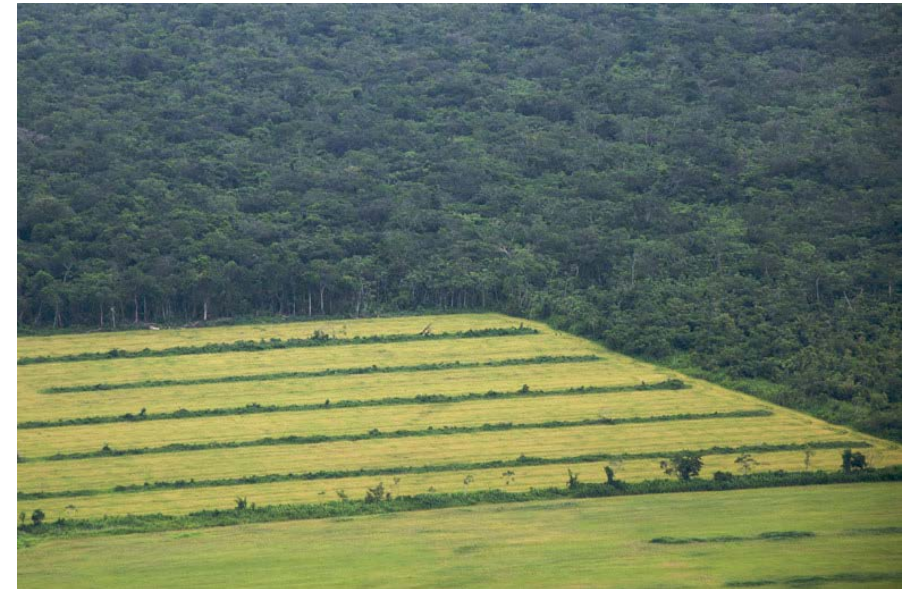
Source: Goldstein et al. (2016)

The impact of food

- The question is how much (impact) can be saved from changing our dietary preferences?
- Depending on the impact category 0-95 % of our consumption dependent impacts originate from food consumption
- By changing to e.g. a vegetarian nutrition strategy we may, depending on the impact category, lower the food consumption related impacts with more than 65 %

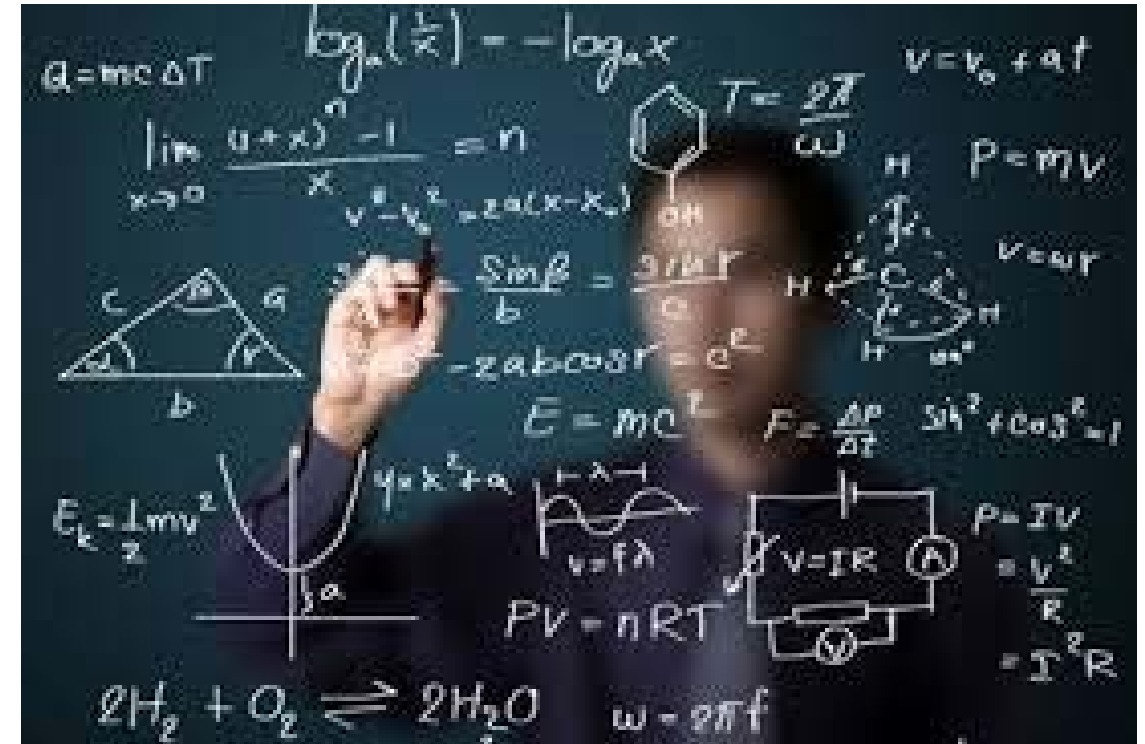
Example (based on Kalbar et al. (2016)):

Agricultural land occupation for non-vegetarians is app. 2.5 times larger than for vegetarians, meaning that roughly (and ideally) on global level the area we need for food production could be reduced by a factor 2.5 by switching to vegetarian diets equaling an overall reduction of the consumption driven land use by a factor 1.9 (i.e. that we could cut our individual land use by app. 50 % by switching diets).

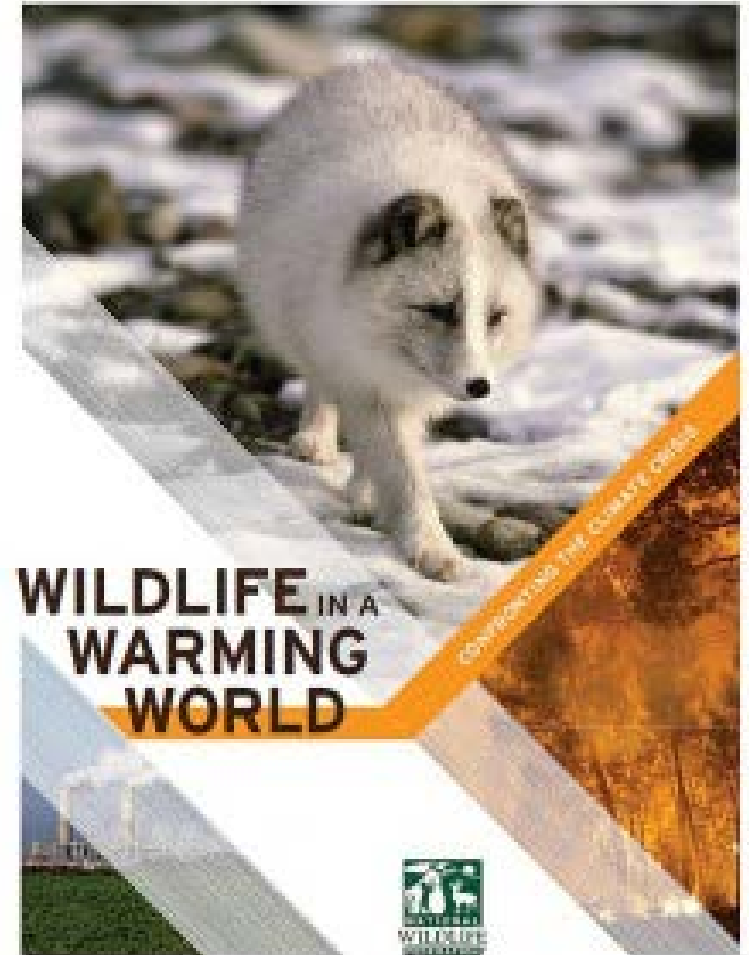


Future work

- Gather numbers!
 - Calculate actual impact of menus from different Z&A to empirically support our claim
 - Z&A have been a bit sceptical to provide these
 - But have been happy to tell us, what they are already doing



Consequences Endangering wildlife?



- Well-known that meat production substantially influences the environment in terms of:
 - Direct, immediate effects (e.g. clearing of woodland)
 - Indirect, longer-term effects (e.g. climate changes)
- Some of the areas affected harbour biodiversity and function as habitats for the very same animal species kept in zoos for conservation purposes



Should Z&A go vegan?

Opportunities and challenges

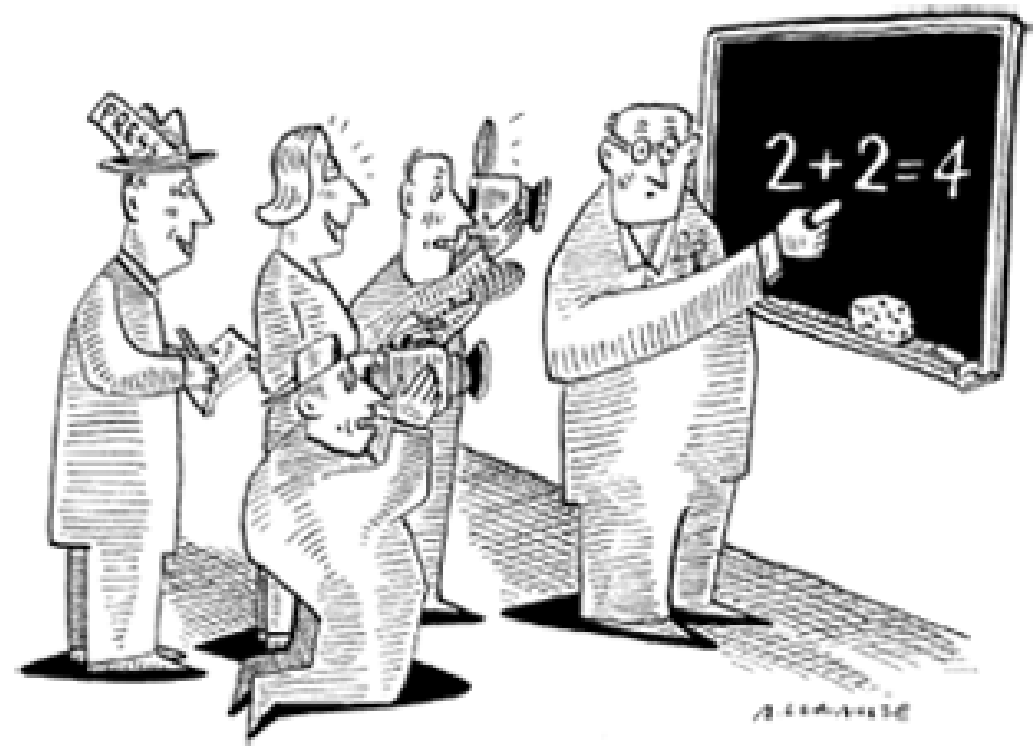


Premises

- Production of animal protein significant driver of climate change
- Climate change endangers wildlife
- Z&A work to conserve wildlife

Conclusion

- Z&A should work to reduce production/consumption of animal protein





Education

- Teach guests
 - That you can eat well without meat
 - That there is a connection between what we eat and what happens to wild life
- Higher awareness in everyday life – reduced emissions

Conservation

- Reduced emissions
- Reduced challenges for wild life

Money

- Guests might
 - Bring own food
 - Not come at all
- Less money for conservation work
- Z&A have little influence, if catering has been outsourced
 - Rethinking of business model necessary

Going vegan overnight probably not a good idea, but

- Reduced consumption of animal protein should be part of communication strategy
 - Part of building a more sustainable Z&A
 - Opportunity to reach people when in a good mood

To begin

- Inform people about effects of animal protein when buying food
- Ensure vegan alternatives
- Meat free days
- Etc.





EAT
LESS
MEAT