

Zero Waste Berlin Festival, 17.+18.09.2021, Berlin & virtual

Our Wasteful Agricultural System: How Much Waste? How to Avoid?

Friedrich Bohn, Anja Lenze, Andreas Pfennig, Claudia Schleicher



what you can expect:

- | | |
|----------------------------------------------------------------|--------|
| 1. welcome & warmup | 40 min |
| 2. presentation "Our Wasteful Agricultural System" | 30 min |
| 3. reflection and consequences | 30 min |
| 4. into the future: the zukunftsbilder-project & final remarks | 20 min |



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to actively participate, to view the results later

<https://docs.google.com/document/d/1KNciHsWh-li0-iBVC8QI1FZeS2OL9f0O-DWEpSzNYLw/edit>



question 1

How much of foodstuff originally produced is lost in total?

<https://www.menti.com/uygjwwehe3>

or

<https://www.menti.com>

& menti code: 55443980



question 2

How is this distributed across the individual steps along the supply chain?

<https://www.menti.com/r7oe7dsobm>

or

<https://www.menti.com>

& menti code: 40318573



question 3

How much (avoidable) loss of foodstuff do you experience at your home (including eating out)?

<https://www.menti.com/9x3vwbefih>

or

<https://www.menti.com>

& menti code: 6127117



- Which measures can be taken against wasting agricultural products?

what you can expect:

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WWF, 2021:

- **one third** of all the food we produce goes uneaten

(https://wwf.panda.org/discover/our_focus/food_practice/food_loss_and_waste/)



(<https://www.worldwildlife.org/initiatives/food-waste>)

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UN-FAO 2011: Global Food Losses and Food Waste

“roughly **one-third of food produced** for human consumption is lost or wasted globally”

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J. Gustavsson, C. Cederberg, U. Sonesson, R. van Otterdijk, A. Meybeck, 2011:
Global Food Losses and Food Waste. Study conducted for the International Congress SAVE FOOD! at Interpack2011,
Düsseldorf, Germany. www.fao.org/3/a-i2697e.pdf

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UN-FAO 2011: Global Food Losses and Food Waste

“roughly **one-third of food produced** for human consumption is lost or wasted globally”

Estimated/assumed waste percentages for each commodity group in each step of the FSC for **Europe incl. Russia**.

	Agricultural production	Postharvest handling and storage	Processing and packaging	Distribution: Supermarket Retail	Consumption
Cereals	2%	4%	0.5%, 10%	2%	25%
Roots & Tubers	20%	9%	15%	7%	17%
Oilseeds & Pulses	10%	1%	5%	1%	4%
Fruit & Vegetables	20%	5%	2%	10%	19%
Meat	3.1%	0.7%	5%	4%	11%
Fish & Seafood	9.4%	0.5%	6%	9%	11%
Milk	3.5%	0.5%	1.2%	0.5%	7%

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Kantor et al. 1997: Estimating and Addressing Food Losses

Commodity	Edible food supply ¹	Losses from edible food supply					
		Retail food loss		Foodservice and consumer food loss		Total retail, foodservice, and consumer food loss	
		Million pounds	Percent	Million pounds	Percent	Million pounds	Percent
Grain products	45,606	912	2	13,682	30	14,594	32
Fruit	48,338	707	2	10,609	23	11,316	23
Fresh	22,389	448	2	6,717	30	7,165	32
Processed	25,949	259	1	3,892	15	4,152	16
Vegetables	63,077	999	2	14,947	24	15,946	25
Fresh	36,830	737	2	11,049	30	11,786	32
Processed	26,247	262	1	3,898	15	4,160	16
Dairy products	76,276	1,525	2	22,883	30	24,408	32
Fluid milk	54,474	1,089	2	16,342	30	17,431	32
Other dairy products	21,802	436	2	6,541	30	6,977	32

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L.S. Kantor, K. Lipton, Al. Manchester, V. Oliveira, 1997:
Estimating and Addressing America's Food Losses.
FoodReview, January - April, 1-12. <https://ageconsearch.umn.edu/record/234453/files/>

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total food losses, retail to consumer: 27 %!

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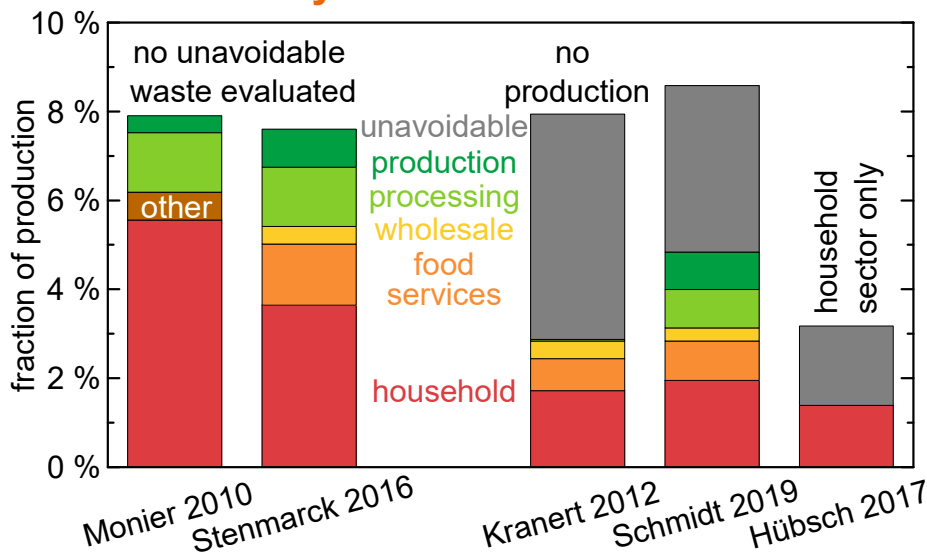
18



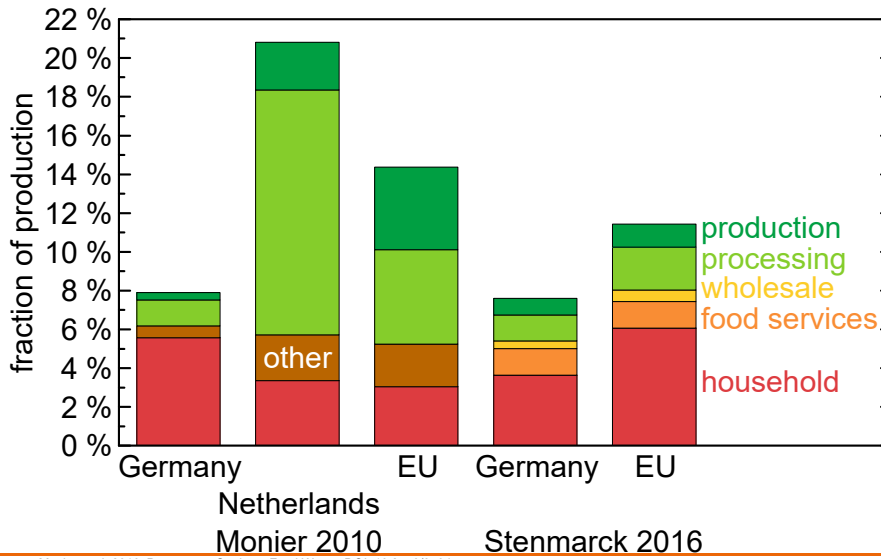
common tricks to maximize the numerical values

- include unavoidable 'losses' like bones, apple cores, coffee grounds, teabags, eggshells, peels, ...
- include 'losses' that are lost for human consumption but used otherwise, i.e. as feed or for bioenergy, which would need to be produced anyway
- use rough estimates of fractions wasted
- percentage of final product, not of produced amount
- water added for final product
- based on mass, where water-rich but low-caloric products are more likely to spoil

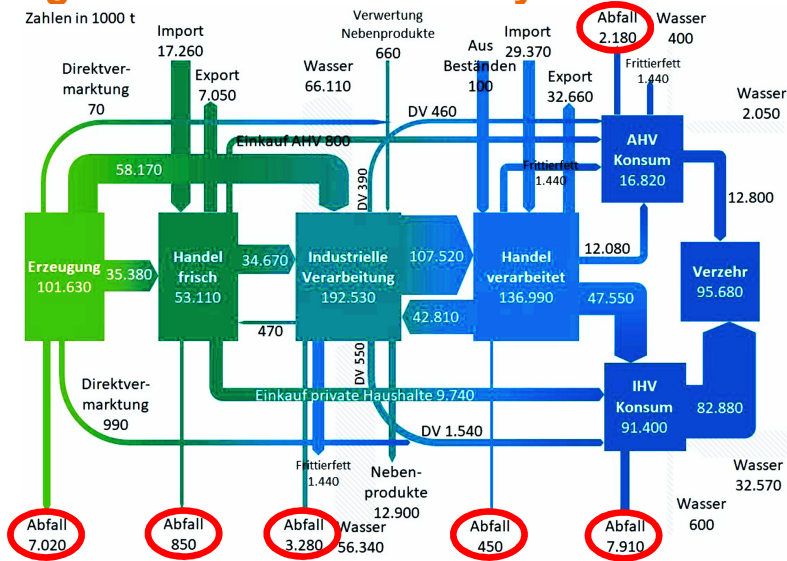
food waste in Germany



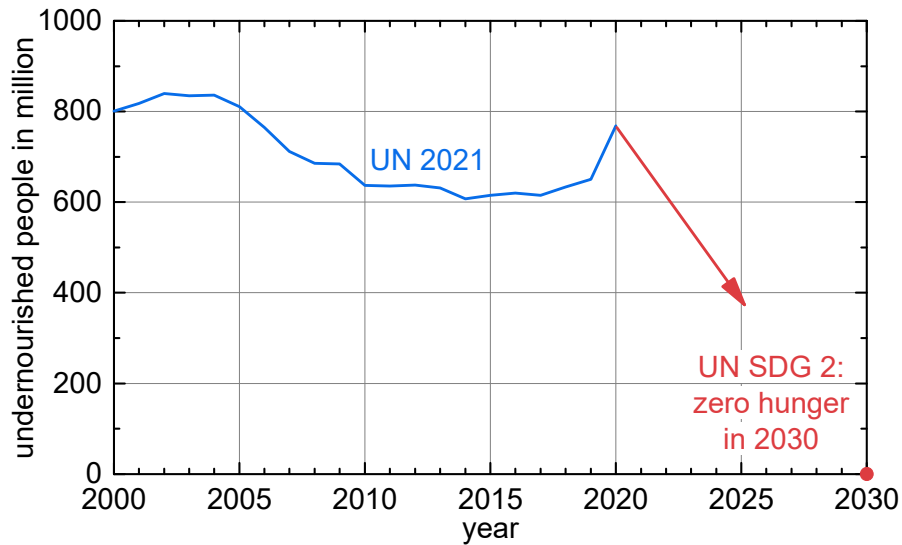
food waste in different regions, including unavoidable



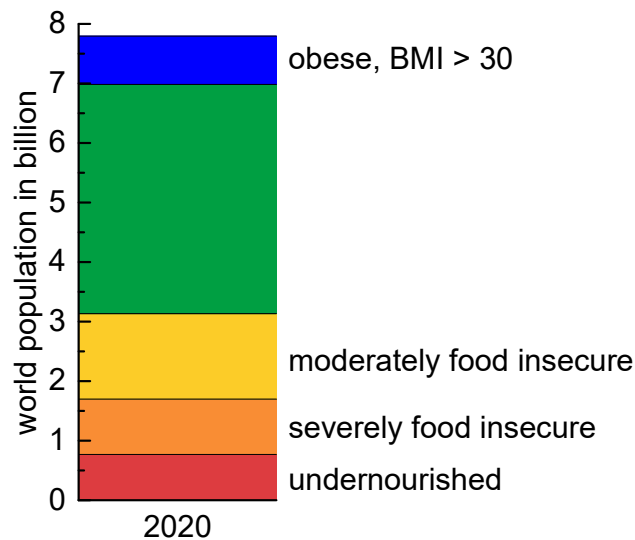
Sankey diagram of German food system



hunger in the world: 1 in ten humans is undernourished



nutritional status of world population



fire clearing of rainforest in Brasil



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utilization of land area per person

2020 available agricultural land area per person

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plant-based food



biofuels



bio-based materials



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utilization of land area per person

2020



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feed



pasture



utilization of land area per person

2020



PEPs
CHEMICAL
ENGINEERING

source: <http://www.fao.org/faostat/en/> & own evaluations

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utilization of land area per person

2050



2020



utilization of land area per person

2050



2020





afforestation to remove CO₂ from the atmosphere



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BECCS: bio-energy with carbon capture and storage



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sustainable agriculture



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flower strips & fallow land to save biodiversity



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utilization of land area per person



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animal-based food



animal-based food: 95 % of land area wasted



animal-based food

2 kcal feed + kcal from pasture \Rightarrow 1 kcal animal-based food

thus: \gg 50 % wasted

conclusions

- rainforests are burning, people are starving
 \Rightarrow any **food waste should be avoided**, but **only few %**
- **95 % waste**: land area for **animal-based food**
- **\gg 50 % waste**: kcal for **animal-based food**
- rainforests are burning, people are starving & in the future we need land area to reach sustainability
 \Rightarrow **we cannot afford wasting** any kcal & land area: **be vegan**
- just saving food waste contributes little to get us sustainable
- **applies today**: burning rainforest, people starving

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So, given these new perspectives on food waste ...

... what can / will you do – or do differently –
to reduce food waste (more) effectively?

- personally
- in your direct community of family, friends, colleagues, neighbors etc.
- on a larger scale

Step 1

Jot down your immediate thoughts and ideas

„What can / will you do – or do differently – to reduce
food waste (more) effectively?

- personally
- in your direct community of family, friends,
colleagues, neighbors etc.
- on a larger scale“

- 2 minutes



Step 2

Team up with another person
and consolidate your ideas

- 4 minutes



Step 3

- Team up with another 2-persons team (so you are 4 people) and consolidate your ideas
- Enter your final ideas into the Google Doc
- Agree on one person to share your ideas in the plenum afterwards

- 10 minutes



Step 4

Let's share, compare and further develop our ideas!



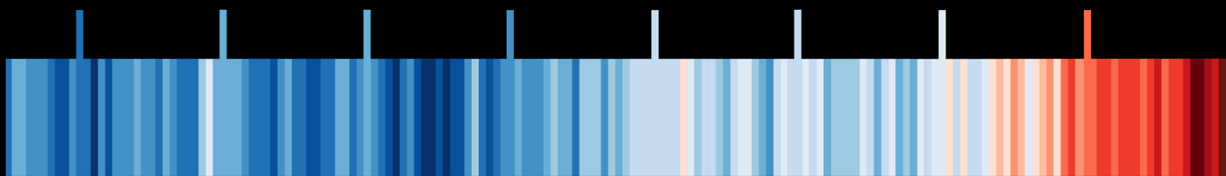
questions for 1-2-4-all:

- What are the best measures to reduce waste of agricultural production and products?
- What can you do to make that happen?

what you can expect:

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ZUKUNFTSBILDER - Project



Masterclass – Zero-Waste-Berlin-Festival 2021

18.9.2021

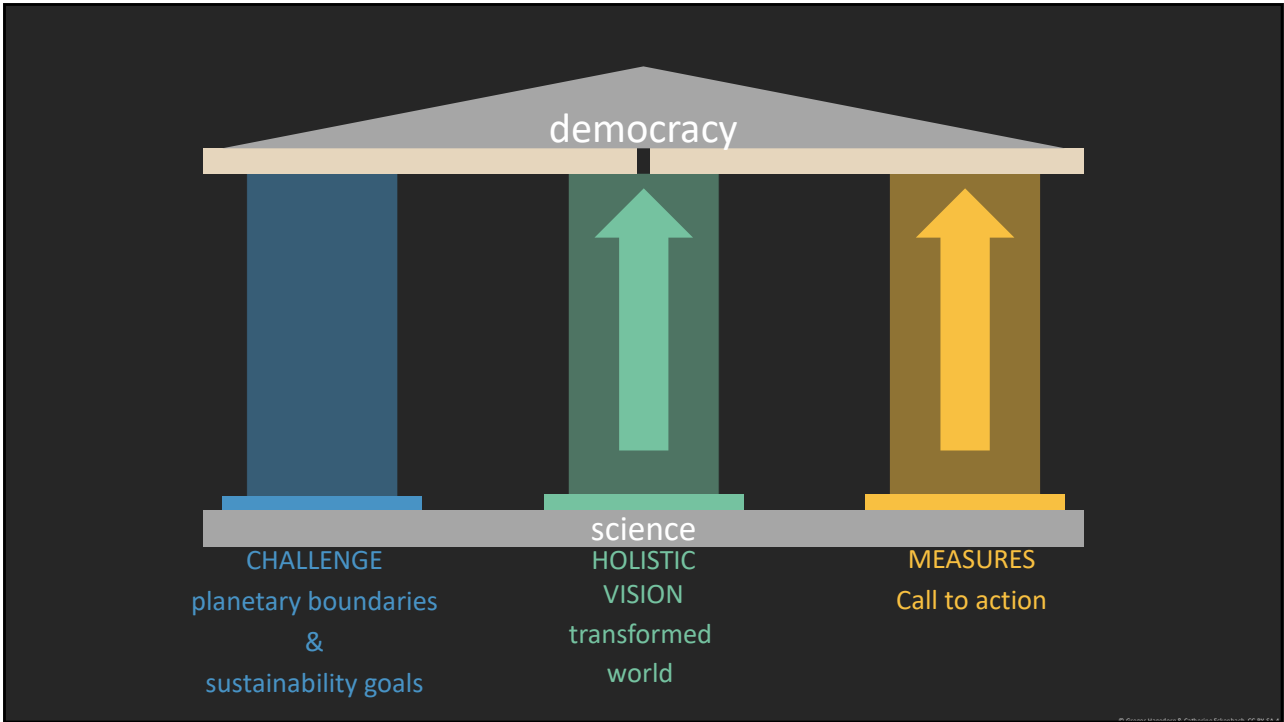
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Photos by Tony Raid, Mika Baumeister, Renata Vanaga, Varun Verma on Unsplash



SCIENTISTS FOR FUTURE

KLUG
Deutsche Allianz
Klimawandel und Gesundheit

ARCHITECTS FOR FUTURE

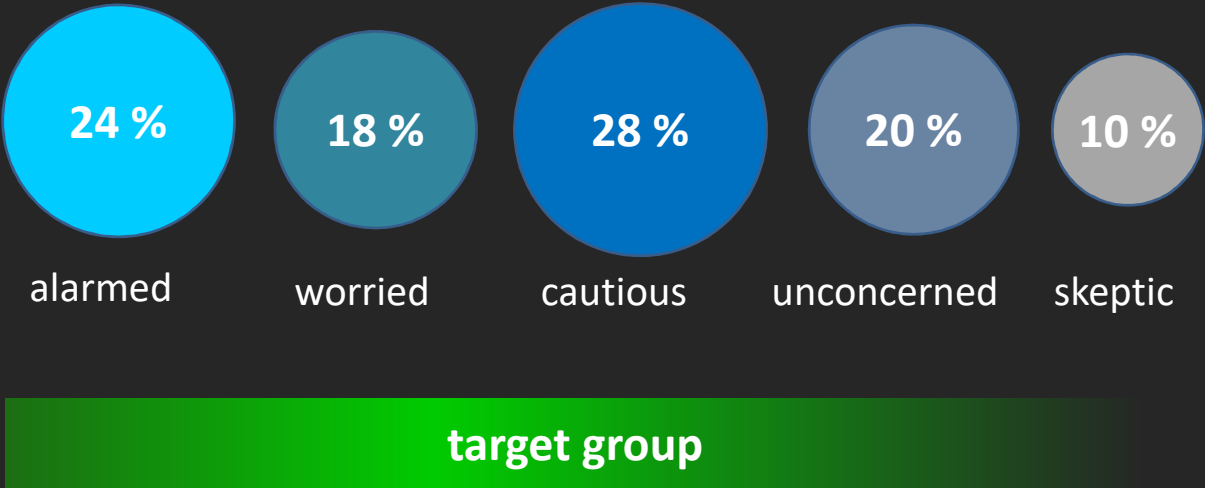
HELMHOLTZ
KLIMA INITIATIVE

SYMBIOSCENE
setting the scene for an era beyond the anthropocene

INFORMIEREN



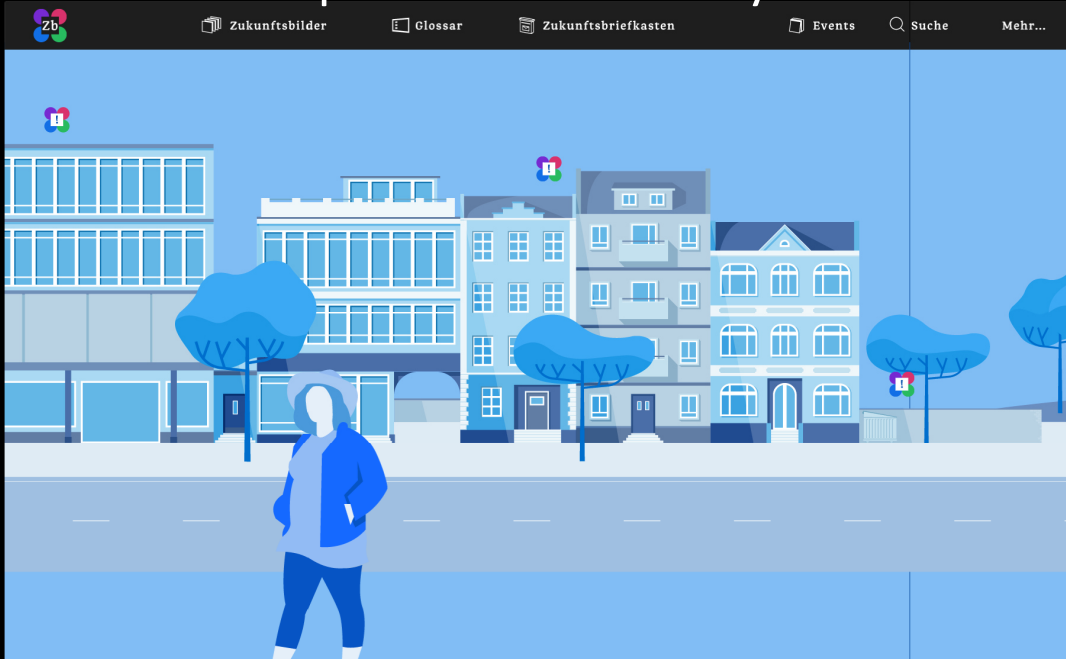
Germans and climate change



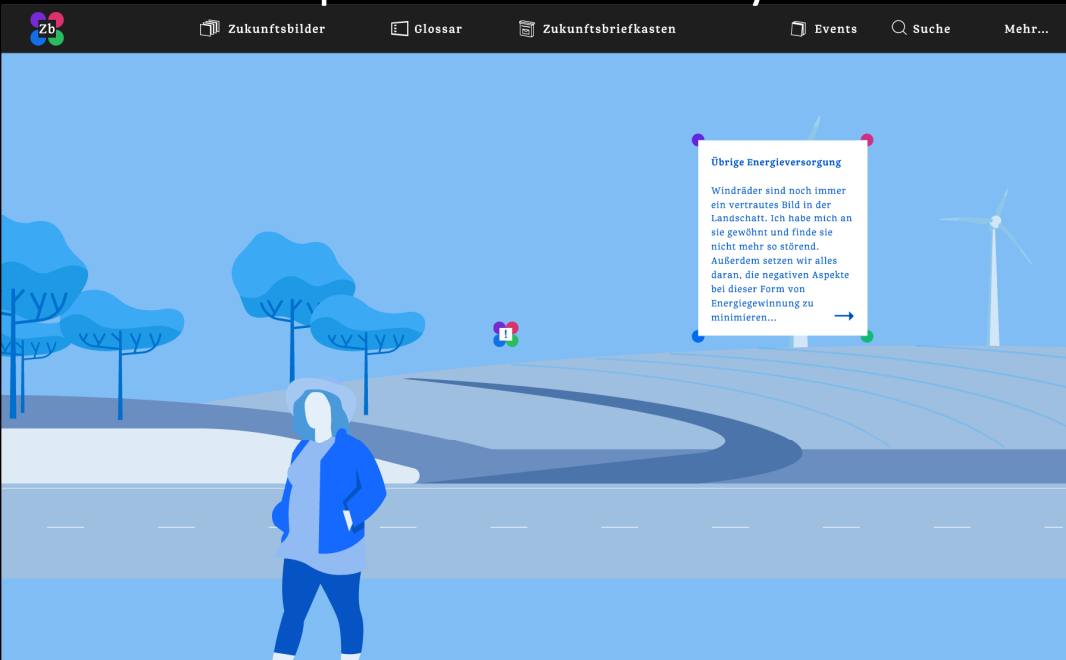
experience over analysis

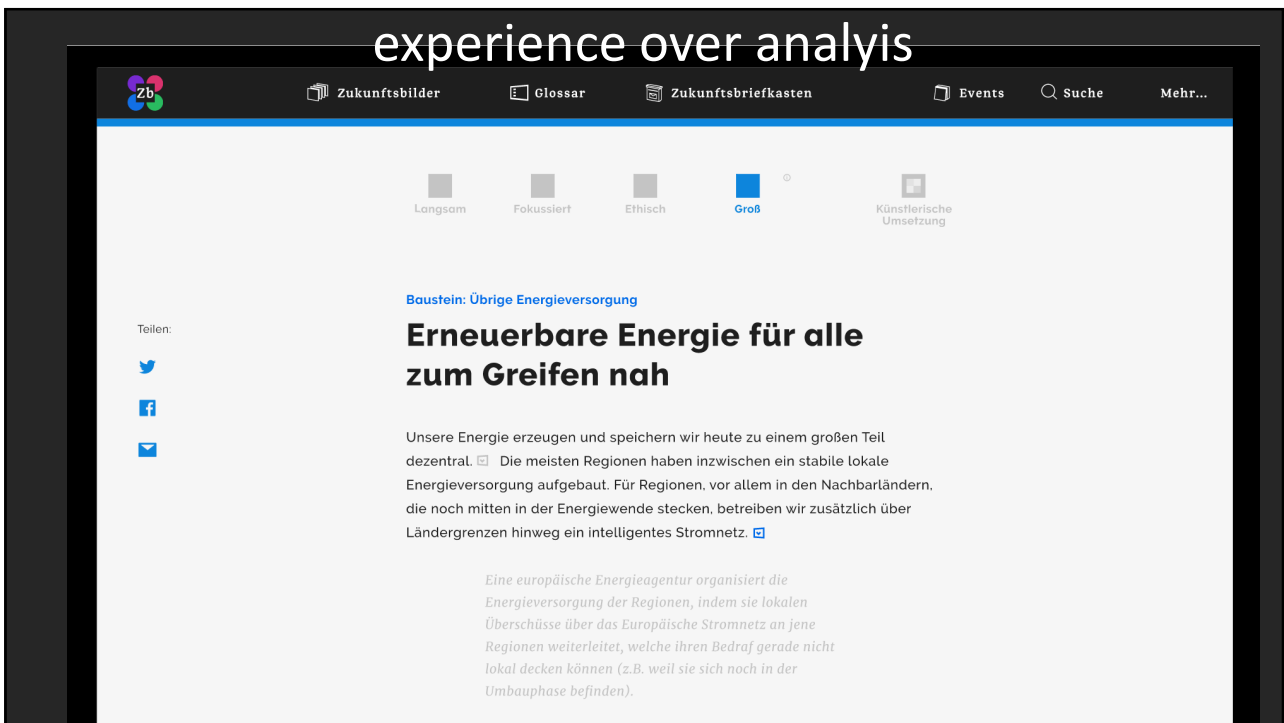
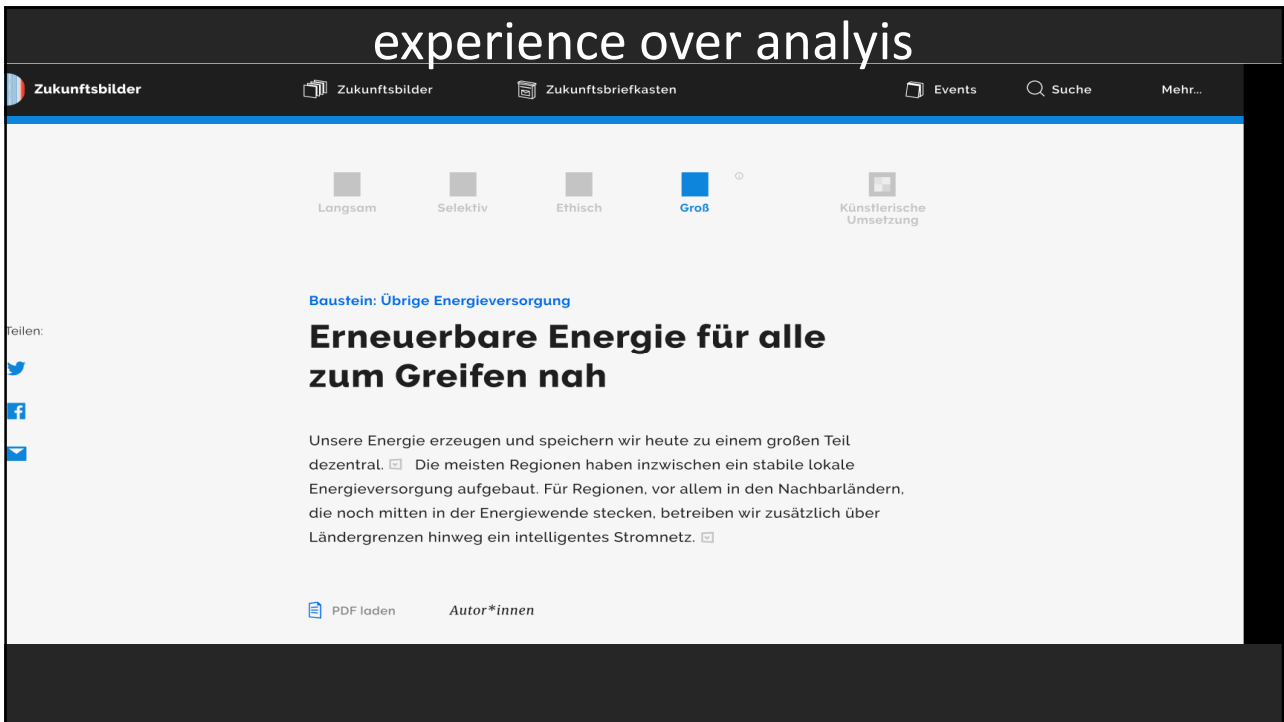


experience over analysis



experience over analysis





experience over analysis

The screenshot shows a website article page. At the top, there is a navigation bar with the logo 'zb' and menu items: 'Zukunftsbilder', 'Glossar', 'Zukunftsbriefkasten', 'Events', 'Suche', and 'Mehr...'. Below the navigation bar, there are five filter buttons: 'Langsam', 'Fokussiert', 'Ethisch', 'Groß', and 'Künstlerische Umsetzung'. The main content area features a sub-header 'Baustein: Übrige Energieversorgung' and a main title 'Erneuerbare Energie für alle zum Greifen nah'. To the left of the main text, there is a 'Teilen:' section with icons for Twitter, Facebook, and Email. The main text reads: 'Unsere Energie erzeugen und speichern wir heute zu einem großen Teil dezentral. Die meisten Regionen haben inzwischen ein stabile lokale Energieversorgung aufgebaut. Für Regionen, vor allem in den Nachbarländern, die noch mitten in der Energiewende stecken, betreiben wir zusätzlich über Ländergrenzen hinweg ein intelligentes Stromnetz.' At the bottom of the article, there are links for 'PDF laden' and 'Autor*innen'.

experience over analysis

The screenshot shows a website homepage. At the top, there is a navigation bar with the logo 'zb' and menu items: 'Zukunftsbilder', 'Zukunftsbriefkasten', 'Events', 'Suche', and 'Mehr...'. The main content area features a large title 'Zukunftsbild 2040' and a subtitle 'Die Welt in der wir leben'. Below the title, there is a tagline 'Entdecke unsere gemeinsamen Zukunft'. The main content is organized into a grid of colored boxes, each representing a different aspect of the future vision. The boxes are: 'Produktion, Handel und Welthandel' (blue), 'Konsum' (blue), 'Abfall und Recycling' (blue), 'Wirtschaftskreisläufe' (blue, featuring a circular flow diagram with a shopping cart and a Euro symbol), 'Wärmeversorgung der Wohn- und Wirtschaftsgebäude' (blue), 'Übrige Energieversorgung' (blue), 'Gesellschaftsorganisation' (pink, featuring a pie chart and a dollar sign), 'Demokratische Prozesse' (pink), 'Normen, Gesetze, Institutionen' (pink), 'Zusammenleben und Gerechtigkeit im Alltag' (purple), and 'Gutes Leben' (purple, featuring a person icon).

Nobody likes losing – but everyone likes gaining

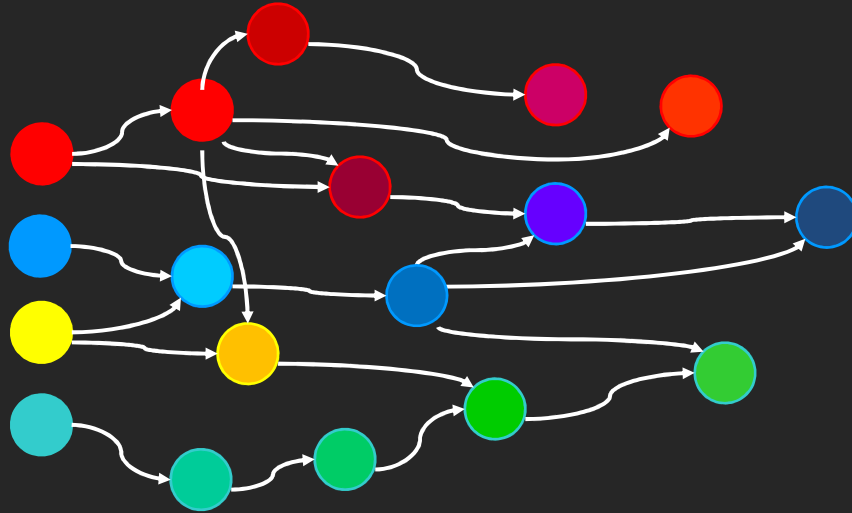


Bridging psychological distances



Photo by Nathan Dumlao on Unsplash

evolution of ideas & creating ownership



5 facettes (themes) finished already the scientific prozess

Tapping the potential of human motivation



Photo by NASA

Fill in the table at the end
of the script & give feedback
& stay connected



Give feedback to
various themes:



share
zukunftsbilder.net:



Photo by ActionVance on Unsplash

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