

Drink Innovation Challenge

Sustainability workshop

28.04.2022

Sustainability workshop schedule – Part 1

**What we mean by
sustainability?**



**What are key sustainability
aspects in the beverage and
food sector?**

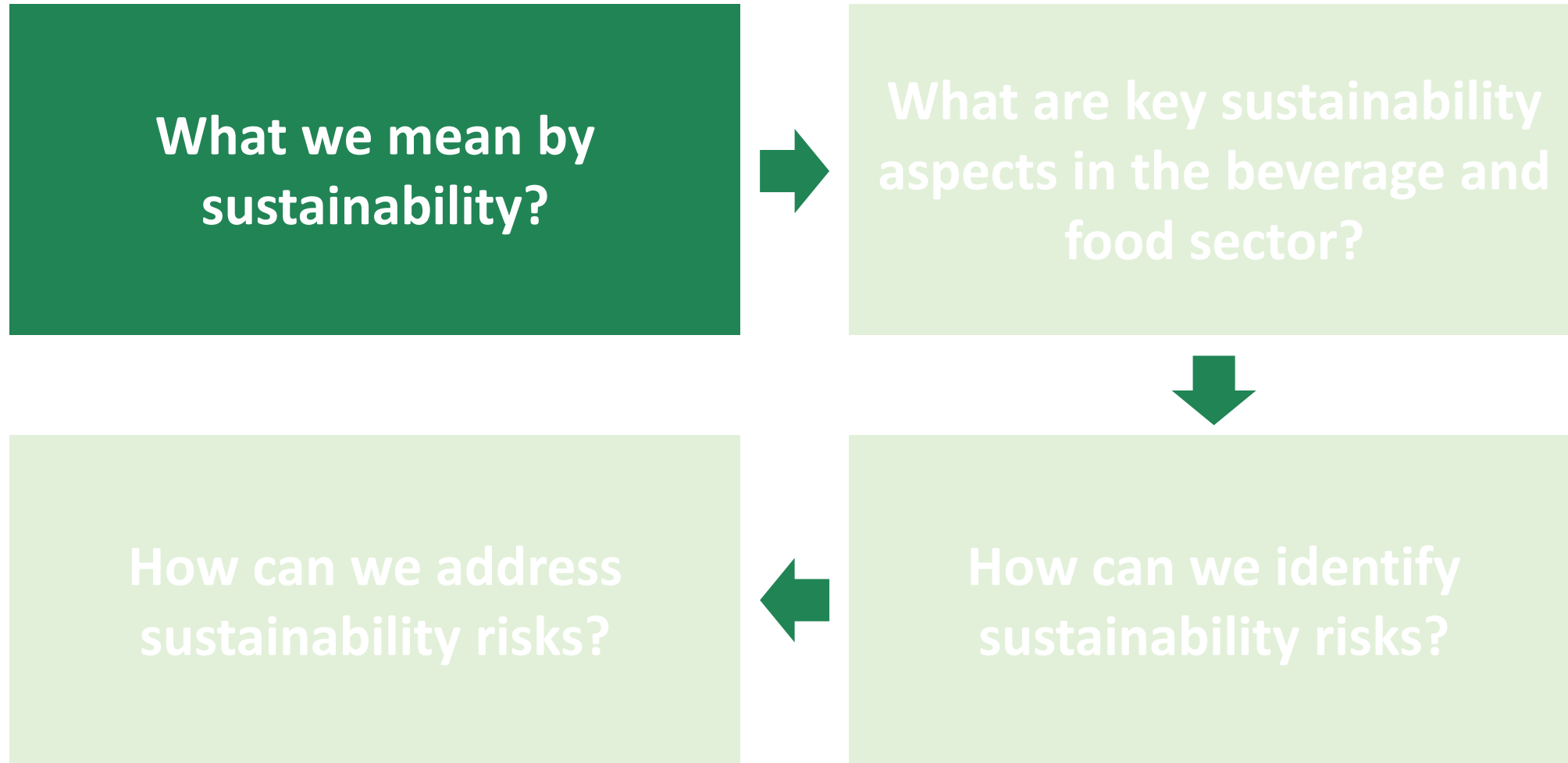


**How can we address
sustainability risks?**



**How can we identify
sustainability risks?**

Sustainability workshop schedule – Part 1



What we mean by sustainability?

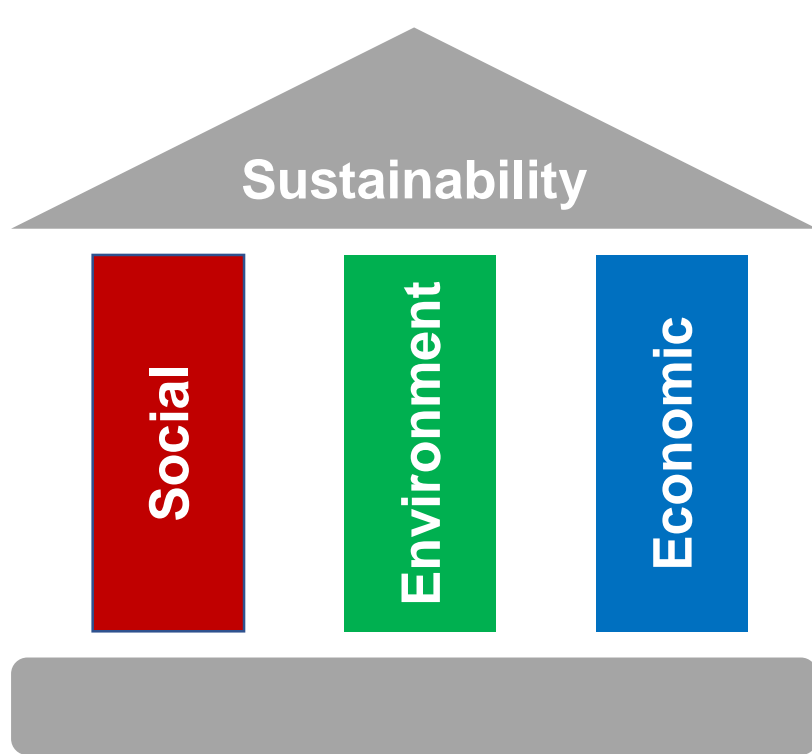
Brundtland definition

The United Nations Brundtland Commission defined sustainability as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.”

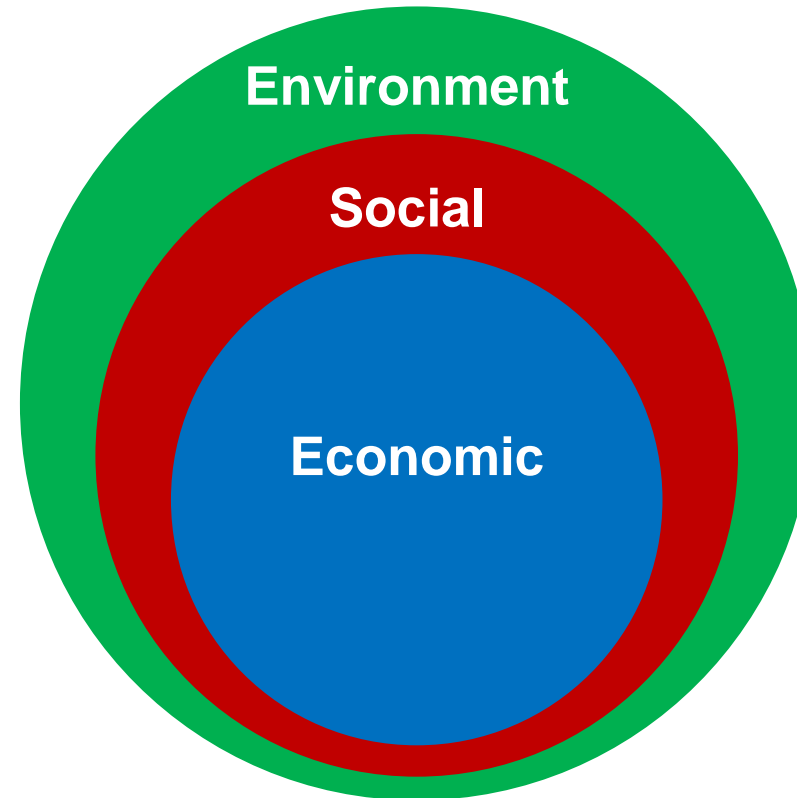
What do you understand by sustainability?



Models & concepts of sustainability



Three pillars of sustainability



Weighted three pillars of sustainability

Sustainability workshop schedule – Part 1



Sustainability challenge in the food sector

Climate change Resource protection

Water consumption Use of pesticides

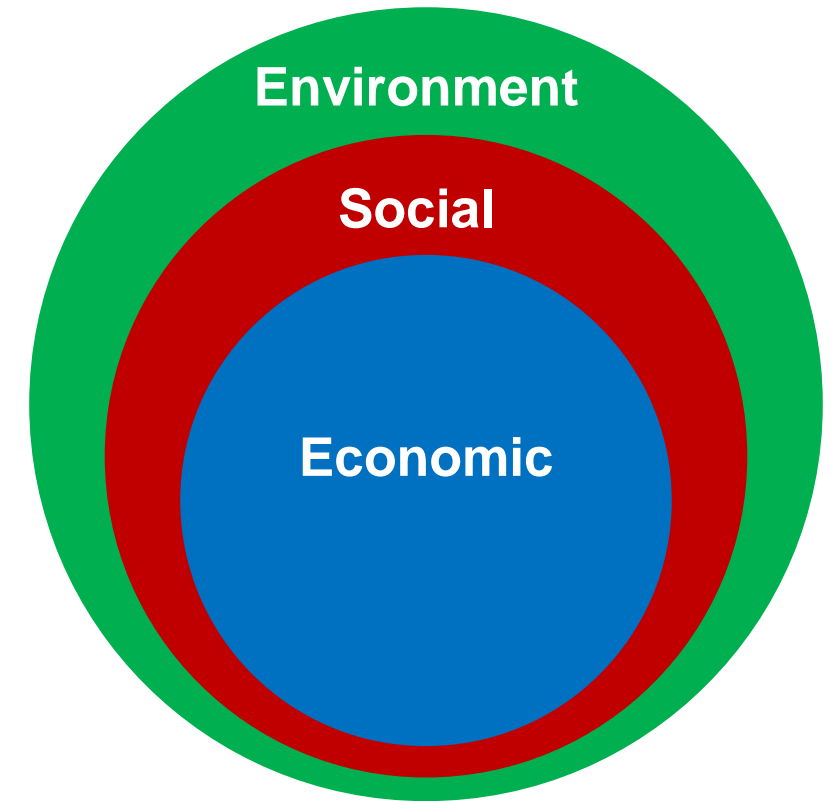
Food waste Biodiversity

Animal welfare Producer prices

Human rights

Working conditions

Sustainable production Health Packaging



How do we choose relevant aspects?

Materiality analysis

- Method to identify **requirements and expectations of internal and external stakeholders**
- The internal and external requirements are summarized in a **materiality matrix**



vgl. Lidl UK, 2021

Key sustainability challenges



Climate change



Water



Biodiversity losses



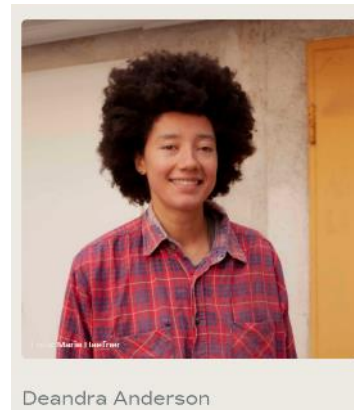
Human rights



Packaging



Health

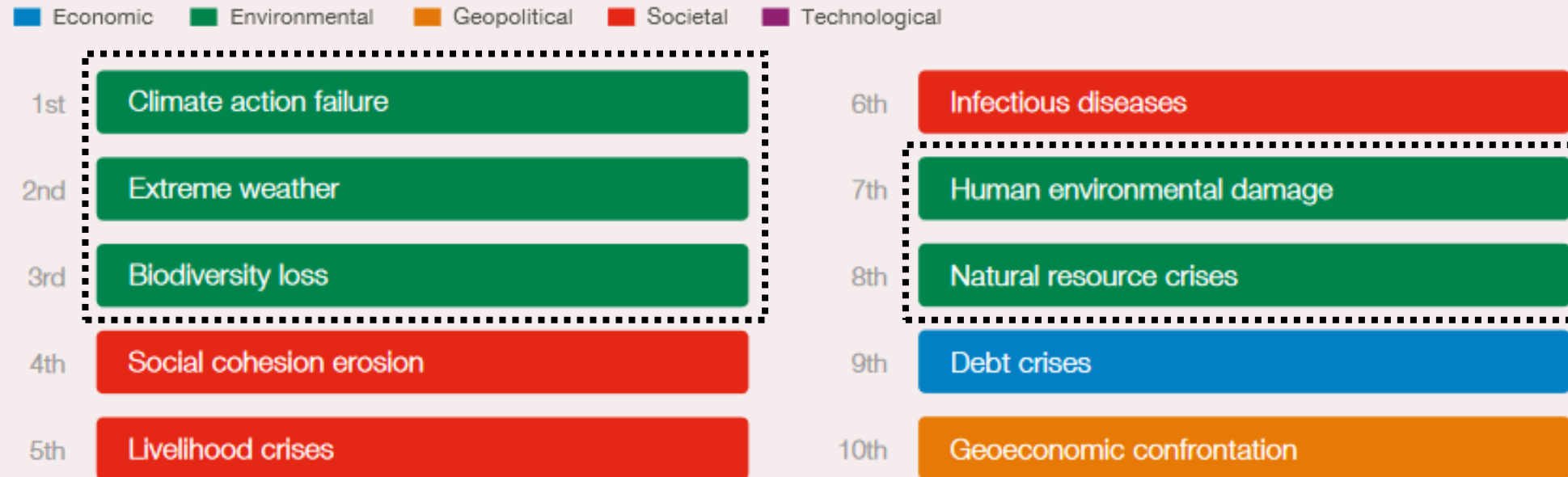


CRAFT
ebbsflow
IN A KEG



Key sustainability challenges

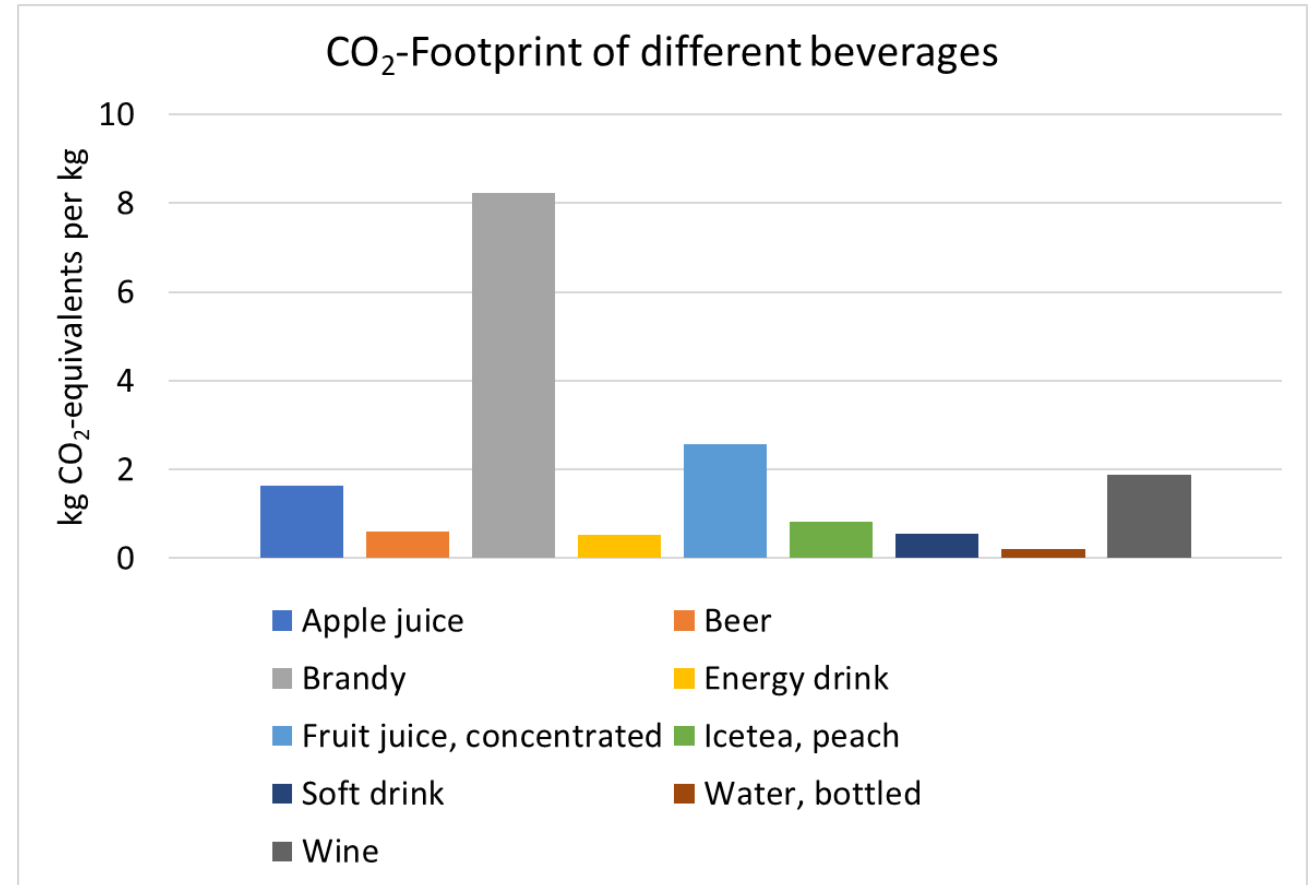
“Identify the most severe risks on a global scale over the next 10 years”



Source: World Economic Forum Global Risks Perception Survey 2021-2022

Climate risks in the food sector

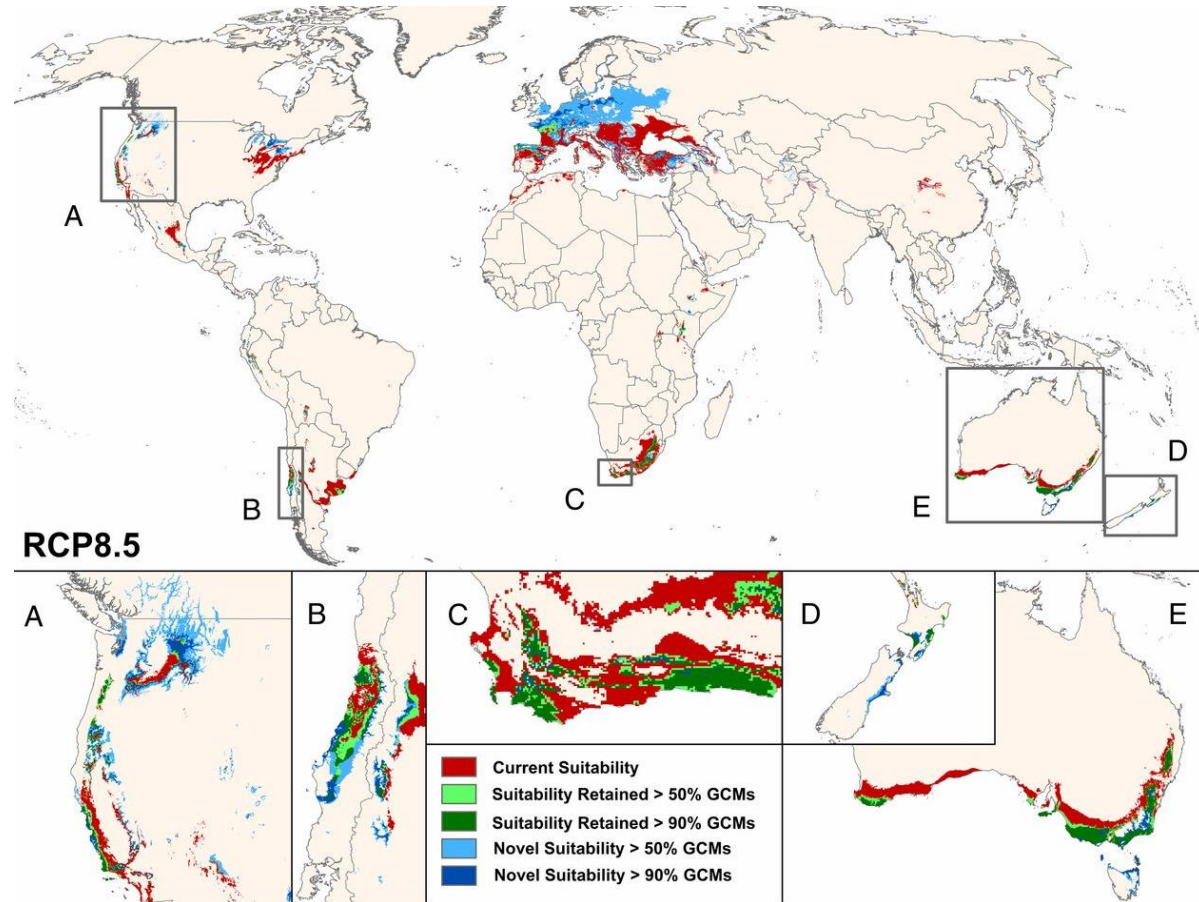
- Food production is both **a cause of climate change**, but is also negatively affected by it
- In industrialized countries, the food sector is responsible for 15 to 31% of total GHG emissions



More information at: <https://denstoreklimadatabase.dk/en>

Climate risks in the food sector

- Food production is both a cause of climate change, but is also **negatively affected by it**
- Influence of climate change on agricultural production is highly dependent on region, crop type, as well as irrigation
- Selection of the crop variety, growing region as well as management may change significantly as a result

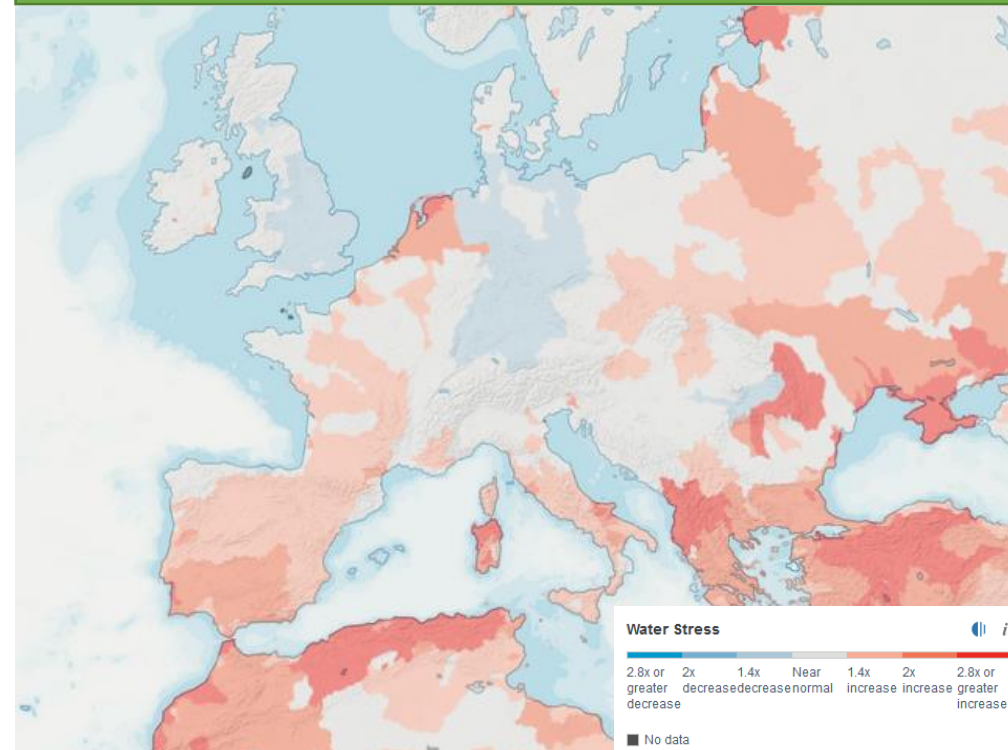


<https://doi.org/10.1073/pnas.1210127110>

Water risks in the food sector

- Definition of water risks: Situation in which "*damage related to water is likely in the future*" (WWF, 2019).
- Globally, water risks are increasing strongly
- These vary greatly at the local level
- The German food retail sector is exposed to a high risk in this respect → It consumes an average of 47 liters of water per euro of sales

Changes in water stress by 2040



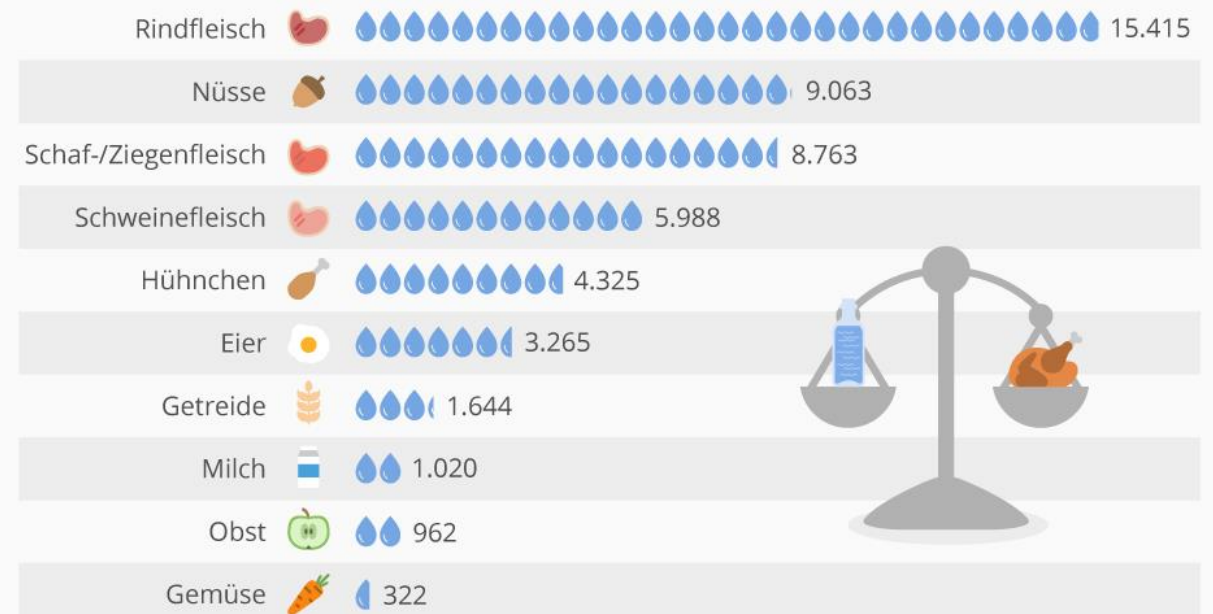
Water risks

Water risks in the food sector

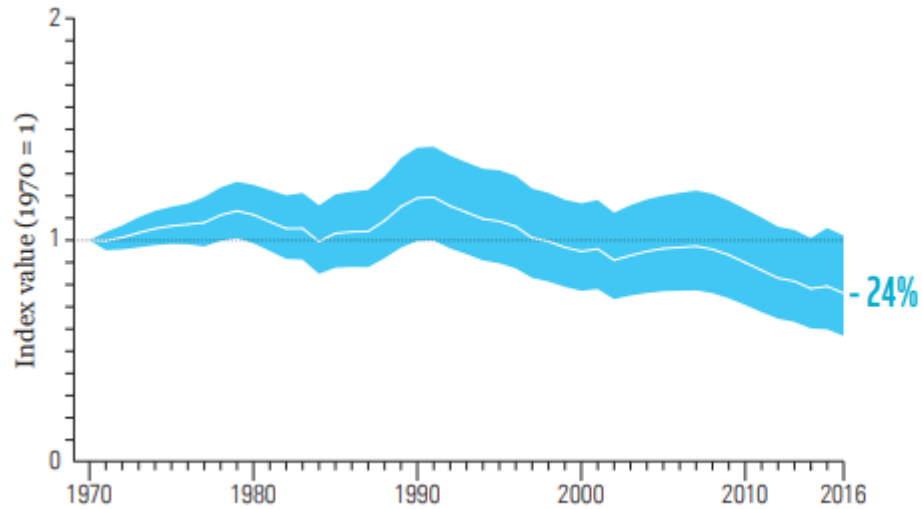
- Agriculture is responsible for **70% of water use** worldwide
- At the same time, it is highly dependent on water availability
- Depending on the product and region, water consumption differs significantly

Durstiges Essen

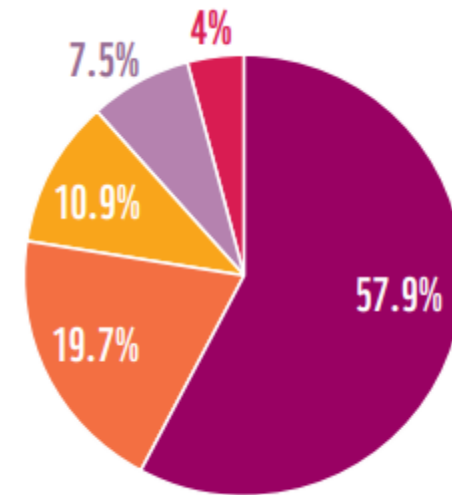
Durchschnittlicher Wasserbedarf für die Produktion von einem kg folgender Produkte (in l)



Biodiversity risk



EUROPE AND CENTRAL ASIA



Land-use change



Species overexploitation



Invasive species and disease



Pollution



Climate change

Vgl. WWF 2020

Human right risks in the supply chain

Human rights risks in the supply chain are very diverse:

- **Workers' rights** (e.g.: Violation due to excessive working hours, low wages, unsafe or unhealthy working conditions)
- **Gender discrimination** (e.g.: unequal treatment of men and women)
- **Child labor**
- **Forced labor**

Kasten: 1. Landkonflikte und Menschenrechtsverletzungen durch Sojaanbau in Südamerika

Brasilien ist der zweitgrößte Sojaproduzent der Welt mit 115 Millionen Tonnen jährlich und einer Anbau-

Der Sojaanbau begann in Mato Grosso in den 1970er Jahren und erstreckt sich mittlerweile auf fast 10 Mil-

Kasten: 2. Sojaanbau gefährdet Recht auf Gesundheit

In den letzten dreißig Jahren ist in vielen Ländern Südamerikas der Sojaanbau für den Export drastisch angestiegen und dort eines der wichtigsten Exportpro-

sat angepasst. Die Landwirt*innen reagieren darauf, indem sie pro Hektar mittlerweile mehr als doppelt so viel Glyphosat ausbringen wie noch vor einigen Jahren.

Kasten: 3. Antibiotikaproduktion ohne Abwasserbehandlung als Ursache für die Ausbreitung von Antibiotikaresistenzen

Rund 90 Prozent der Wirkstoffe, die als Antibiotika auf den Weltmarkt gelangen, werden in Indien und

antibiotikaresistenten Keimen reinigen? Bisher sehen offenbar weder Pharmaimporteure noch Fleisch- und

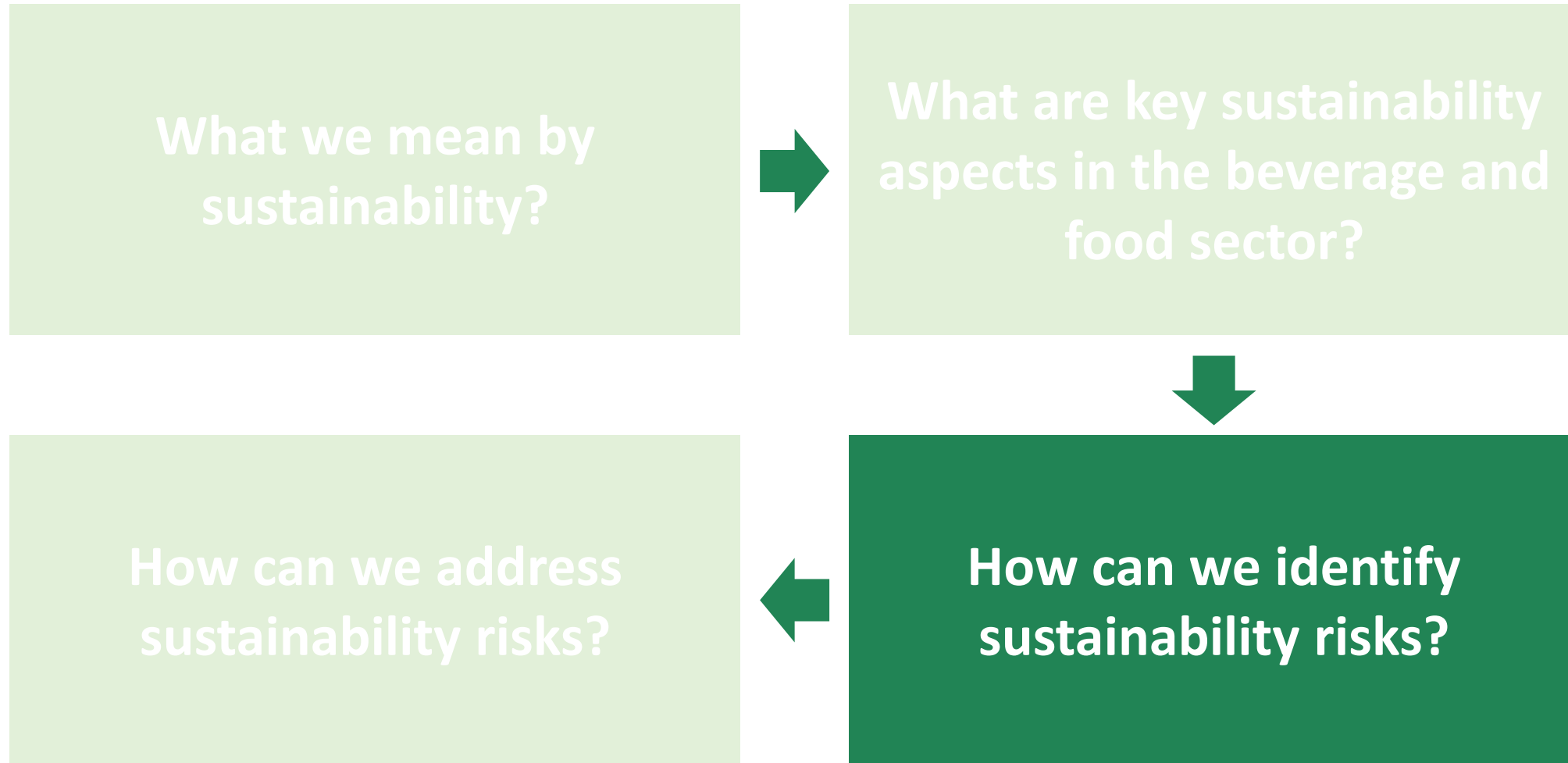
Kasten: 4. Arbeits- und Menschenrechtsverletzungen in der Fleischindustrie Süd-Oldenburg

Spätestens seit verschiedenen Medienberichten im Jahr 2013 sind die prekären Arbeits- und Lebensbedingungen der migrantischen Arbeiter*innen in der Fleisch-

20 Kilogramm haben (ALSO 2018: 11). Der in der Region ansässige Hausarzt Dr. Florian Kossen berichtet von einem weiteren Fall: Ein bulgarischer Werkvertrags-

Vgl. Germanwatch 2020

Sustainability workshop schedule – Part 1



Drivers of sustainability issues







Increasing pressure from various stakeholders:

Internal stakeholders

- CSR Departments

External stakeholders

- NGOs (Oxfam, Greenpeace, WWF, etc.)
- Politics
- Consumers

	2018	2022	
 TESCO	23%	61%	✓
 LIDL	5%	59%	✓
 ALDI	1%	56%	✓
 Sainsbury's	18%	55%	✓
 ALDI	1%	49%	✓
 REWE	1%	48%	✓
 Morrisons	5%	42%	✓
 JUMBO	0%	35%	✓
 Ahold Delhaize	5%	28%	✓
 PLUS	11%	14%	✓
 E	1%	11%	✓
 ASDA	-	9%	✓

Vgl. Oxfam 2022

Growing pressure from political stakeholders



„From farm-to-fork“: goals until 2030

- Reduce use and risk of chemical pesticides by 50%
- Reduce use of more hazardous pesticides by 50%
- Reduce nutrient losses by min. 50%
- Reduce fertilizer use by min. 20%
- Reduce total antimicrobial sales by 50%
- Farm 25% of the agricultural area with organic agriculture

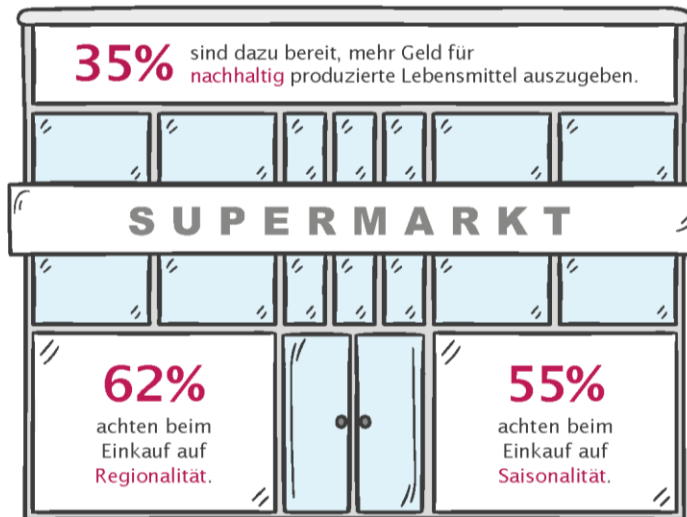
Increasing demands from consumers

Ein Trend wird zum Lebensstil:

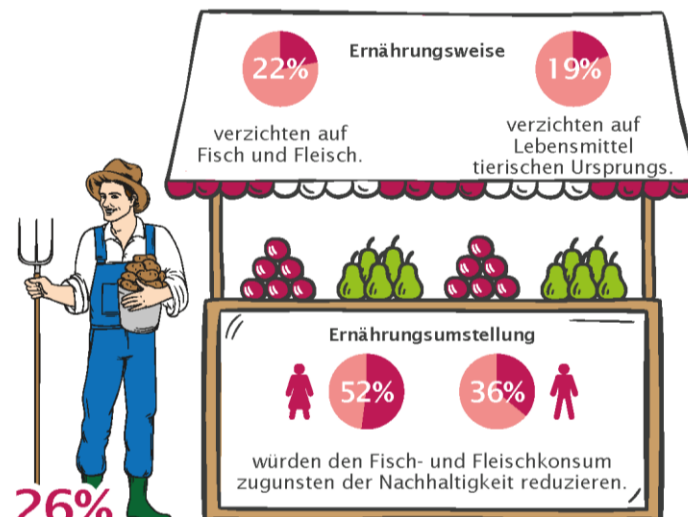
71%



der Deutschen legen bei der Ernährung und beim Lebensmitteleinkauf Wert auf Nachhaltigkeit.



Source: DGQ 2021



Increasing awareness on the consumer side

- Consumers place more value on sustainability and are willing to pay more for it
- Share of organic food is steadily rising → sales increased from 22% in 2020
- At the shelf, however, decisions are often still made primarily on the basis of price and quality criteria
- Organic food accounts for only 6.4% of total sales

What are we assessing?



Product / ingredient

X



Region of origin

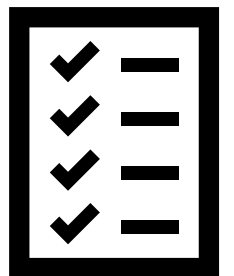
X



Supplier

Task

Consider in your group what possible relevant “ingredient – region of origin” combinations of your beverage are and where sustainability risks might occur.



Generic identification of sustainability risks

Critical raw materials

- Various so-called "critical raw materials" are known for their sustainability risks
- These products are often addressed regardless of origin
- These include:
 - Cocoa
 - Tea
 - Palm oil
 - Soy



Deforestation

Child labour

No living wages

Identification of climate risks

Climate risks for the food sector

Various climate risks threaten the food retail industry:

- **Greenhouse gas (GHG) emissions** triggered by the range of products sold
- **Impact of climate change** on production processes

Assessment of the GHG emissions:

- **Calculation of the CO₂ footprint** of the distributed products
- Calculation usually performed by external consultants or based on existing databases
- Identification of hot spots in product portfolios and supply chains

Analysis of climate change impacts:

- Potential future impacts of climate change on agricultural processes can be calculated
- Based on **crop growth and climate models**
- Currently focus rather on GHG emissions

Identification of water risks

Water risks for the food sector

- Determination of water consumption via **water footprint**
- Water consumption of products strongly influenced by **agricultural processes**
- Assessment of water risks at both **product** and **country of origin level** necessary



EXTREMELY HIGH BASELINE WATER STRESS


- | | | | |
|------------|-----------------|--------------------------|------------------|
| 1. Qatar | 6. Libya | 10. United Arab Emirates | 14. Pakistan |
| 2. Israel | 7. Kuwait | 11. San Marino | 15. Turkmenistan |
| 3. Lebanon | 8. Saudi Arabia | 12. Bahrain | 16. Oman |
| 4. Iran | 9. Eritrea | 13. India | 17. Botswana |
| 5. Jordan | | | |


Identification of water risks at product level

Water risks at product level

- Water footprint is composed of three areas:

 **Green water** (rainwater)

 **Blue water** (irrigation water)

 **Grey water** (polluted water, e.g. through the use of fertilizers or pesticides)

Water consumption of the Avocado cultivation (l/t)

Country	Green	Blue	Grey
Israel	231	698	70
Mexico	746	266	99
Spain	579	204	143

- Region-specific water footprint data for a wide range of sectors are available at: <https://waterfootprint.org/en/resources/water-stat/product-water-footprint-statistics/>

Identification of water risks at country of origin level

Water risk of different countries

- In addition to the water footprint at the product level, water stress at the country or regional level is crucial
- This can be determined by means of the [WRI Aqueduct Tools](#)
- This part divides the water stress into 5 categories from *low* to *extremely-high*

Water risk of selected countries

Country	Overall water risk
Israel	Extremely-high
Mexico	High
Spain	High

- Israel has both the highest demand for irrigation water and the highest water stress
- **Consequence:** Very high water risk

Identification of biodiversity risks

Reasons for global biodiversity loss

- Central causes of biodiversity loss are:
 - Land use change
 - Overexploitation of species
- Main causes: agriculture, forestry and fisheries
- Protection of biodiversity hotspots central point for biodiversity conservation

Environmental Performance Index (EPI)

- Yale University's [EPI](#) evaluates and compares the environmental performance of 180 countries
- A wide range of indicators are recorded:
 - Air quality
 - Climate Change
 - Biodiversity & Habitat
 - Ecosystem Services
 - Etc.

Identification of biodiversity risks

Biodiversity & Habitat

- Indicator assesses measures taken by countries to **conserve natural ecosystems** and **protect biodiversity**
- Composed of various sub-indicators:
 - Protection of terrestrial biomes
 - Representativeness of protected areas
 - Etc.

RANK	COUNTRY	SCORE		SCORE	
1	Botswana	91.6	161	Papua New Guinea	27.3
2	Zambia	90.4	162	Fiji	25.1
3	Poland	89.0	163	Madagascar	25.0
4	Germany	88.8		Uruguay	25.0
5	France	88.3	165	Djibouti	23.0
6	United Kingdom	88.0	166	Lesotho	22.5
7	Belize	87.9	167	Afghanistan	21.9
8	Spain	87.6	168	Lebanon	21.8
9	Lithuania	87.5	169	Singapore	20.9
10	Belgium	87.4	170	Mauritius	19.3
11	Bhutan	87.2	171	Mauritania	19.2
12	Estonia	87.0	172	China	19.0
	Zimbabwe	87.0	173	Bahrain	18.9
14	Latvia	86.7	174	Solomon Islands	15.3
15	Slovenia	86.4	175	Turkey	15.1
16	Gabon	86.0	176	Cabo Verde	14.3
17	Czech Republic	85.7	177	Barbados	12.6
18	Austria	85.5	178	Marshall Islands	11.4
	Luxembourg	85.5	179	Micronesia	6.9
20	Romania	85.0	180	Maldives	6.5
	Slovakia	85.0			

Identification of biodiversity risks

Ecosystem Services

- Indicator says something about the **loss of key ecosystems** and the services they provide
- Is composed of several sub-indicators:
 - Loss of tree cover
 - Loss of grassland
 - Loss of wetlands

RANK	COUNTRY	SCORE			
1	Bahrain	100.0	161	Nicaragua	20.1
	Iceland	100.0	162	Guatemala	19.5
	Malta	100.0	163	Cambodia	19.0
	Micronesia	100.0	164	Singapore	18.4
	São Tomé and Príncipe	100.0	165	Laos	16.6
	United Arab Emirates	100.0	166	Viet Nam	16.4
7	Niger	97.7	167	Côte d'Ivoire	15.7
8	Tajikistan	97.6	168	Ghana	15.4
9	Mauritania	97.2	169	Liberia	14.6
10	Eritrea	97.1		Madagascar	14.6
11	Saudi Arabia	96.9	171	Malaysia	12.8
12	Turkmenistan	96.2	172	Guinea	11.5
13	Burkina Faso	95.5	173	Sierra Leone	9.6
14	Cabo Verde	93.7	174	Portugal	7.4
15	Afghanistan	93.6	175	Dominica	5.3
16	Iraq	91.8	176	Qatar	0.0
17	Kyrgyzstan	91.1	NA	Kiribati	NA
18	Iran	88.8		Marshall Islands	NA
19	Seychelles	84.3		Samoa	NA
20	Armenia	81.5		Tonga	NA

Identification of human right risks

Human right risks in the supply chain

- Human rights risks in particular are highly dependent on the regions, sectors and suppliers considered
- The use of indices allows only a first rough risk assessment
- Involvement of the specific supplier and on-site audits are often essential

Risk identification using the example of forced labor

- Identification of the risk of forced labor can be based on the **product/sector** or on the **country of origin**
- Based on the product: [List of Goods Produced by Child Labor or Forced Labor](#) (ILAB, US Department of Labor)
- Based on the country of origin: [Global Slavery Index](#)

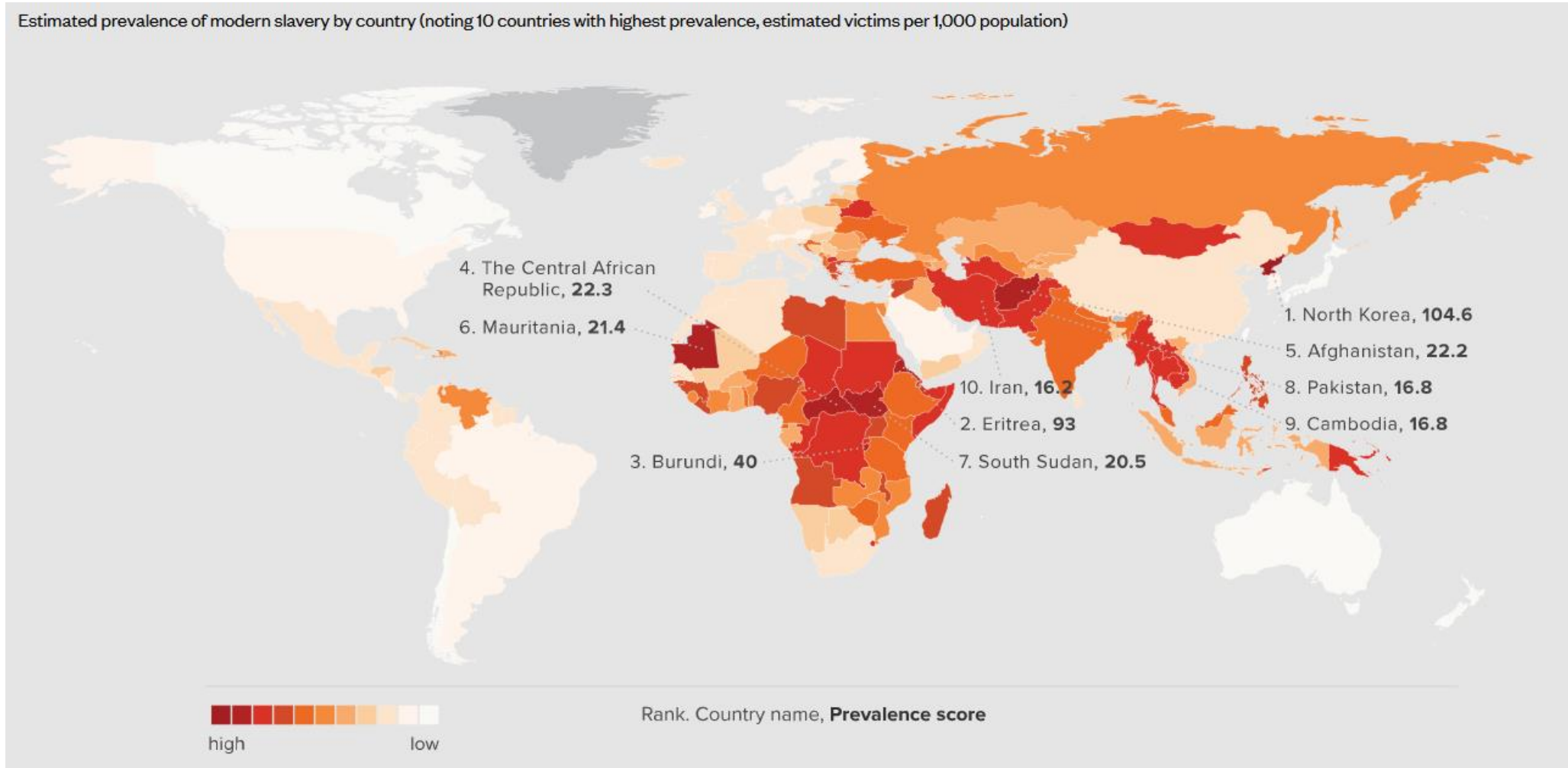
Identification of risks related to the product

COUNTRY/AREA	CHILD LABOR	FORCED LABOR	CHILD LABOR & FORCED LABOR
Afghanistan	Carpets, Coal, Poppies, Salt		Bricks
Angola			Diamonds
Argentina	Blueberries, Bricks, Cotton, Garlic, Grapes, Olives, Strawberries, Tobacco, Tomatoes, Yerba Mate (stimulant plant)		Garments
Azerbaijan	Cotton		
Bangladesh	Bidis (hand-rolled cigarettes), Bricks, Footwear, Furniture (steel), Garments, Glass, Leather, Matches, Poultry, Salt, Shrimp, Soap, Textiles, Jute (textiles)		Dried Fish
Belize	Bananas, Citrus Fruits, Sugarcane		
Benin	Granite (crushed)		Cotton
Bolivia	Bricks, Gold, Silver, Tin, Zinc	Cattle, Peanuts	Brazil Nuts/Chestnuts, Corn, Sugarcane
Brazil	Bananas, Beef, Bricks, Cashews, Ceramics, Cocoa, Corn, Cotton, Fish, Footwear, Hogs, Manioc/Cassava, Pineapples, Poultry, Rice, Sheep, Sisal, Tobacco	Garments, Timber	Cattle, Charcoal, Coffee, Sugarcane
Burkina Faso	Granite		Cotton, Gold

COUNTRY/AREA	CHILD LABOR	FORCED LABOR	CHILD LABOR & FORCED LABOR
Nepal			Bricks, Carpets, Embellished Textiles, Stones
Nicaragua	Bananas, Coffee, Gold, Gravel (crushed stones), Shellfish, Stones (pumice), Tobacco		
Niger	Gold, Gypsum (mineral), Salt, Trona (mineral)	Cattle	
Nigeria	Gold, Manioc/Cassava, Sand		Cocoa, Granite, Gravel (crushed stones)
North Korea		Bricks, Cement, Coal, Gold, Iron, Textiles, Timber	
Pakistan	Glass Bangles, Leather, Surgical Instruments	Cotton, Sugarcane, Wheat	Bricks, Carpets, Coal
Panama	Coffee, Melons		
Paraguay	Beans, Bricks, Cabbages, Carrots, Corn, Fish, Goats, Hogs, Lettuce, Manioc/Cassava, Melons, Onions, Peanuts, Peppers, Pornography, Poultry, Sesame, Sheep, Stones (limestone), Sugarcane, Sweet Potatoes, Tomatoes, Yerba Mate (stimulant plant)		Cattle
Peru	Bricks, Coca (stimulant plant), Fireworks, Fish	Brazil Nuts/Chestnuts, Timber	Gold

Identification of risks related to the country of origin

Estimated prevalence of modern slavery by country (noting 10 countries with highest prevalence, estimated victims per 1,000 population)



Sustainability workshop schedule – Part 1



Addressing sustainability risks

Establish standards

- Critical raw materials or product-country combinations must be certified
- This is done by means of:
 - Labels which focus on one subject area
 - Labels that cover several topics

Promote alternatives

- Use of more sustainable alternatives
- Sourcing raw materials from countries that do not pose critical sustainability risks

Drive change

- Empowering consumer
- Compensate
- Mitigating the environmental and social impacts of selected value chains

Certification of critical country of origin-product combinations

Establish standards

- Standards provide specifications on various sustainability topics
- Standard differs according to focus as well as robustness of requirements
- They are only partially displayed on the product
- Compliance with the standards is checked by external auditors
- In case of repeated failures, the certification is withdrawn from the producers

Standards and consumers

- On the [Siegelklarheit](#) homepage alone, over 120 seals are listed
- Of these, 39 are in the food sector alone
- It is often not clear which topics are covered by the seals and to what extent

Certification of critical country of origin-product combinations



Ingredient: **Cocoa**



Product

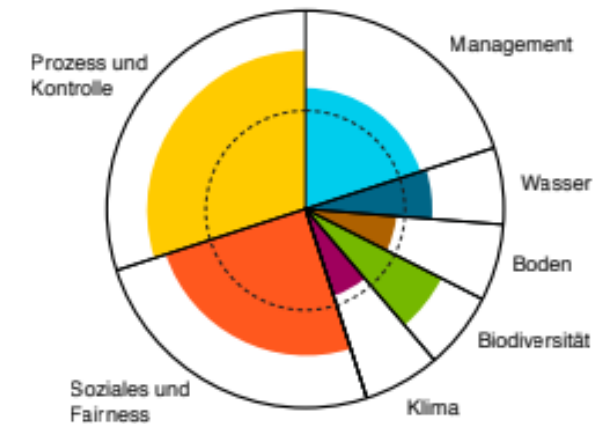
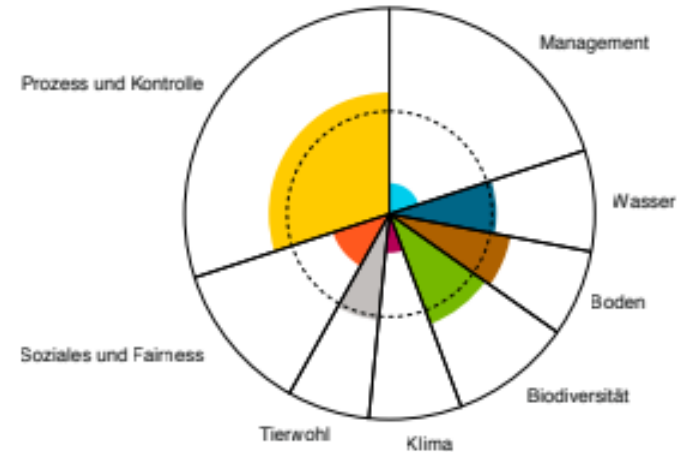
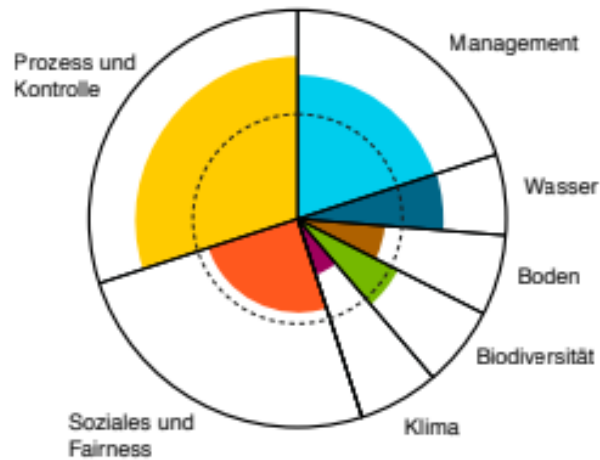
Known sustainability risks

- Human rights risks
- Biodiversity risks

What labels would you use to address these risks?



Certification of critical country of origin-product combinations



Comparison of different labels by WWF CH available at:

<https://www.wwf.ch/sites/default/files/doc-2017-10/2015-11-Hintergrundbericht-Lebensmittellabel-de.pdf>

Promote alternatives

Promote alternatives

- **Use of more sustainable alternatives**
- Sourcing raw materials from countries that do not pose critical sustainability risks

Vegetarian / Vegan milk alternatives



- The share of milk alternatives is growing significantly
- These are based on different raw materials (soy, oats, almond)
- The environmental impact can differ significantly (Tello et al. 2021)

Milk and milk alternatives	CO ₂ Footprint in kg CO ₂ eq.
Cow milk	1,40
Oat milk	0,50
Soy milk	0,75

<https://doi.org/10.1016/j.fufo.2021.100080>

Promote alternatives

Promote alternatives

- Use of more sustainable alternatives
- **Sourcing raw materials from countries that do not pose critical sustainability risks**

Selection of the country of origin using the example of water



- The water risk of avocados differs significantly depending on the country of origin
- The future development of the water risk should also be included in this consideration

Country of origin	Irrigation water consumption in l t ⁻¹
Israel	698 (Baseline)
Mexico	266 (-62%)
Spain	204 (-71%)

Drive change

Drive change

- Empowering consumer
- Compensate
- Mitigating the environmental and social impacts of selected value chains



Quelle: Too Good To GO, 2022

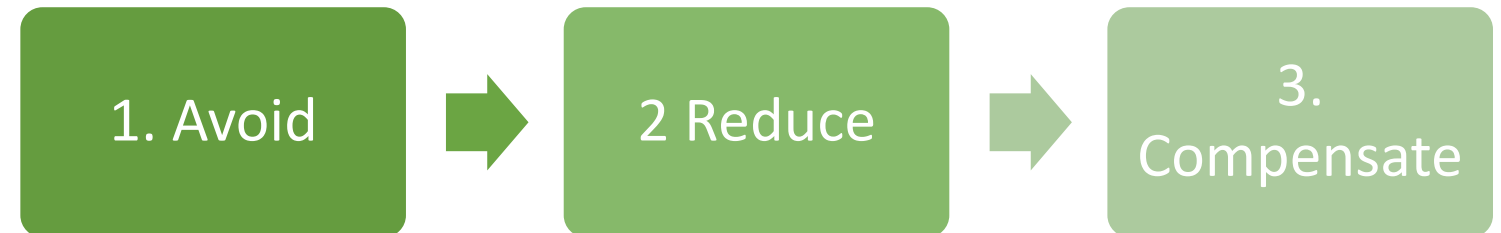
Drive change

Drive change

- Empowering consumer
- **Compensate**
- Mitigating the environmental and social impacts of selected value chains

Compensation

- Offsetting in CO₂ management only envisaged as last step (after avoid and reduce)
- Current trend in food retailing to offset emissions from a wide variety of (not always sensible) products



Drive change

Drive change

- Empowering consumer
- Compensate
- **Mitigating the environmental and social impacts of selected value chains**

Sustainable packaging



- Use of single-use bottles is one of the most important environmental hot spots in wine production
- Use of reusable containers as a sustainable alternative



References

Aqueduct Water Risk Atlas (2021) [Link](#)

Pictures: Pixaby

DGQ (2021) <https://www.dgq.de/aktuelles/presse/ein-trend-wird-zum-lebensstil-mehrheit-der-deutschen-achtet-beim-lebensmitteleinkauf-auf-nachhaltigkeit/>

Germanwatch (2020) Bericht 2020: Globale Agrarwirtschaft und Menschenrechte

Heller (2018) Beyond Meat's Beyond Burger Life Cycle Assessment: A detailed comparison between a plant-based and an animal-based protein source

Oxfam (2020) Global Supermarket Scorecard, <https://www.oxfam.org/en/take-action/campaigns/end-suffering-behind-your-food/supermarkets-scorecard> (accessed 07.04.2022)

WWF (2020) Living Planet Index, <https://livingplanet.panda.org/>

WWF (2019): <https://www.wwf.de/themen-projekte/fluesse-seen/wasser-politik-maerkte/wasserrisiko>

WWF (2018): https://www.wwf.de/fileadmin/user_upload/WWF-Report-Wassernotstand-im-Regal-2018.pdf

WWF (2015): Bewertung der Lebensmittel-Labels 2015 - Hintergrundbericht