



## SPICE COMMITTEE #4

### CASE STUDIES

SPICE, co-founded by L'ORÉAL & Quantia

17 APRIL 2019

# SPICE CASE STUDIES

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## INTRODUCTION

## Case studies: Objective

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The overall objective of the case studies is to assess the influence of methodological choices, on one or several examples.

The first on-going case study focuses on the influence of **weighting methods for single score assessment**, on a range of 8 cosmetic products.

# CASE STUDY ON WEIGHTING FACTORS

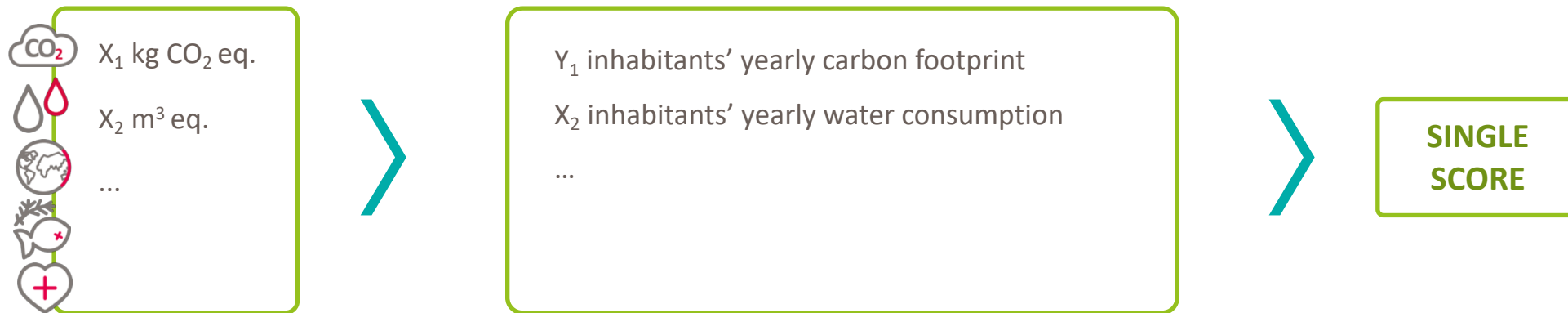
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## INTRODUCTION

# Reminder Committee 1 - Aggregation of all environmental impacts categories



How to make a straightforward decision based on environmental multicriteria assessment?



**Multicriteria  
assessment**

## 1. NORMALIZATION

according to current levels of emissions, consumption, etc.

What are the magnitude of my product's impacts compared to reference?

Ex: yearly impacts of 1 human

## 2. WEIGHTING

according to relative levels of criticality of environmental issues

Which impact categories are the most important?

## Reminder Committee 1 - Aggregation of all environmental impacts categories: 2 examples of weighting factors

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### **PANEL-BASED** weighting factors

Experts and stakeholders were asked to answer a survey, in order to rank environmental categories according to their own educated perception.

>> Weighting factors correspond to the average results.



### **PLANETARY BOUNDARIES** weighting factors

The limit of the planet (“planetary boundary”) is assessed for each environmental category.

>> The weighting factors correspond to the current status of each category, with respect to its planetary boundary.

## Reminder Committee 1 - Aggregation of all environmental impacts categories: proposition voted during Committee 1

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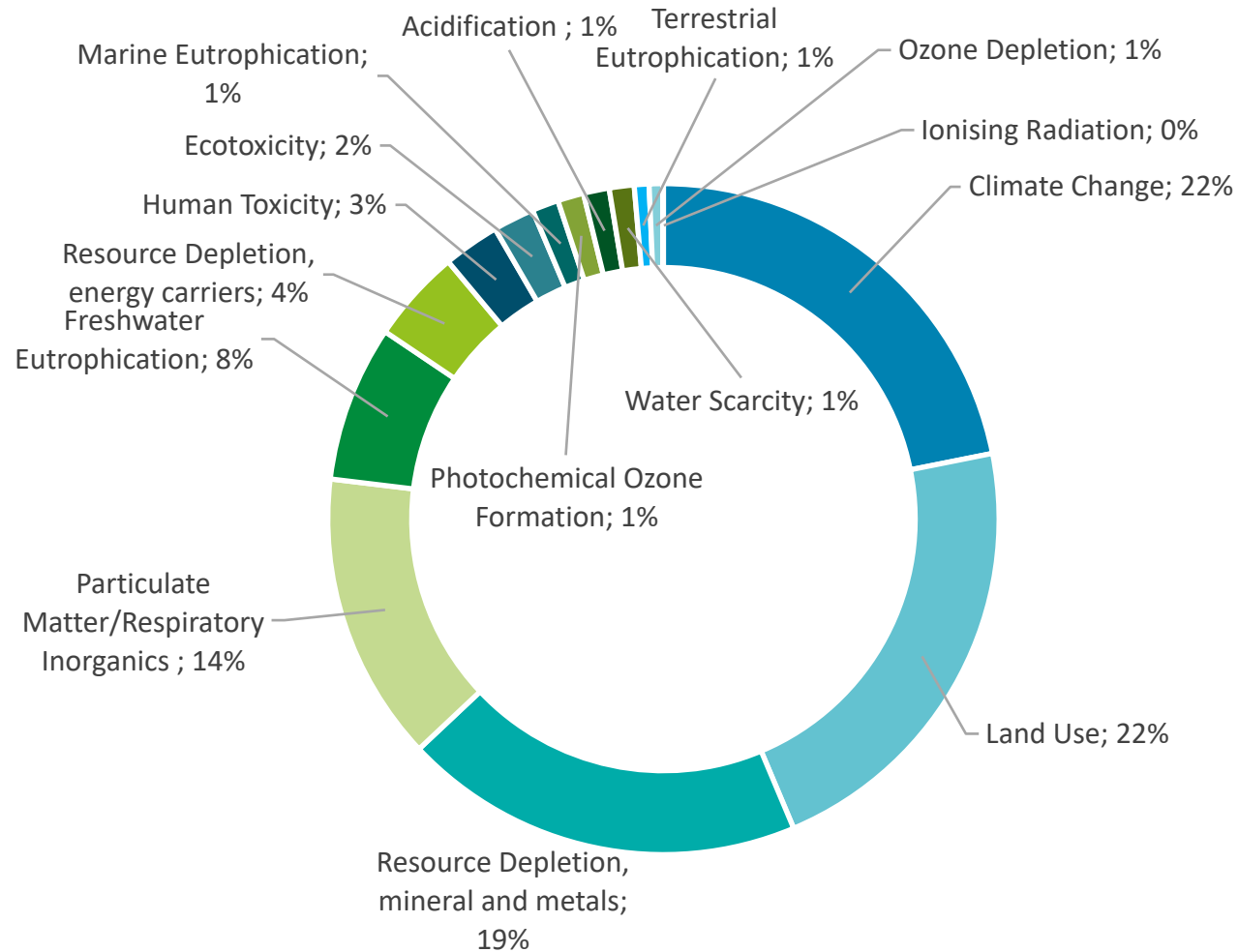
The calculation of a single score **is not a mandatory step**, however, if an environmental single score is calculated based on an environmental footprint, it **should be calculated by applying the normalization and weighting process**, using normalization and weighting factors based on either:

- PEF recommendation,
- Planetary Boundaries methodology(\*),
- Or other sets of values.

*(\*) The Planetary Boundaries weighting factors are based on Björn, A. 2015, completed with methodological developments by Quantis & L'Oréal (publication pending)*



# Planetary Boundaries weighting factors

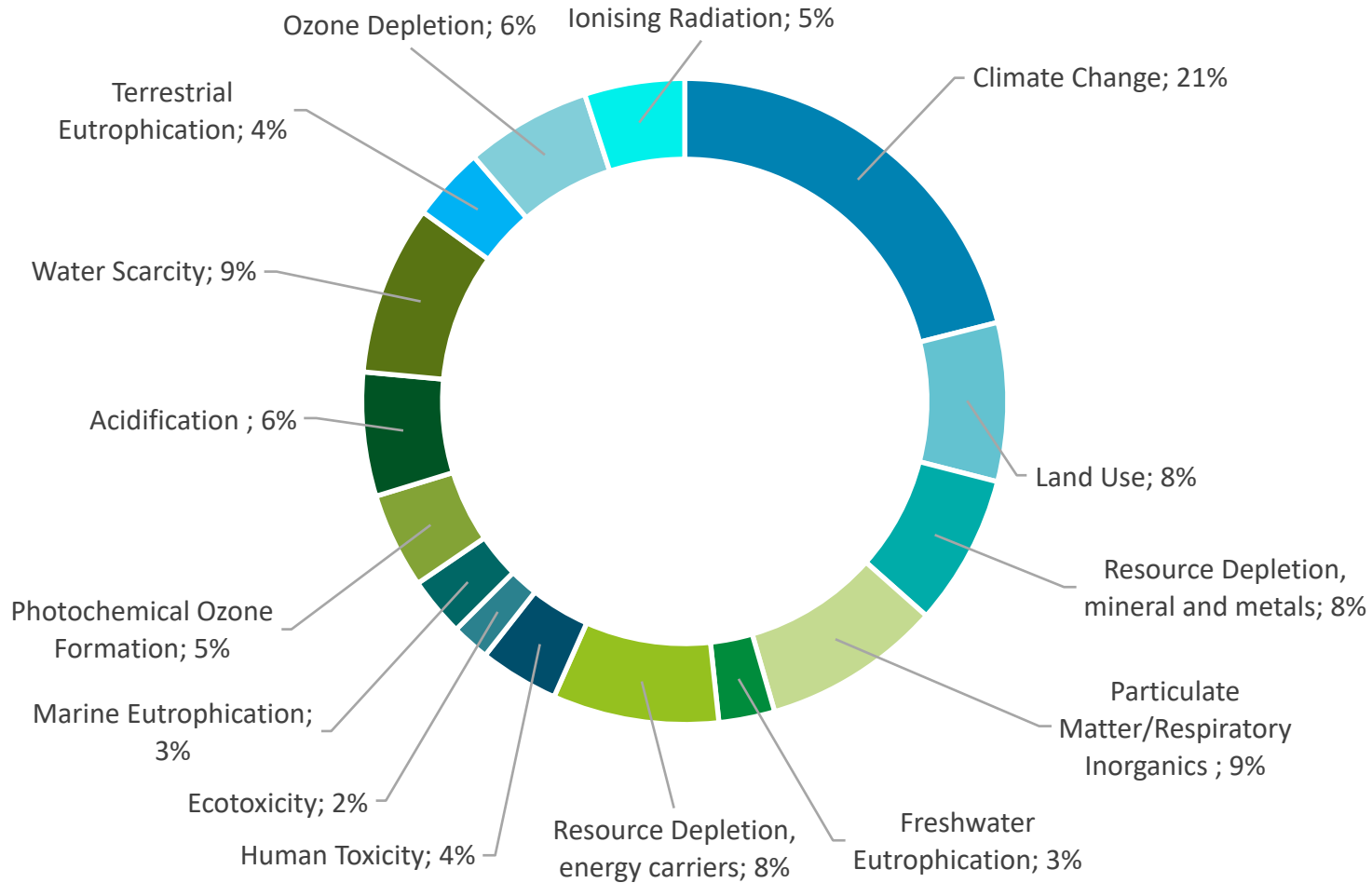


The planetary boundary approach leads to 4 indicators with high contribution (>10%):

- + Climate change
- + Land Use
- + Resource Depletion, mineral and metals
- + Particulate Matter



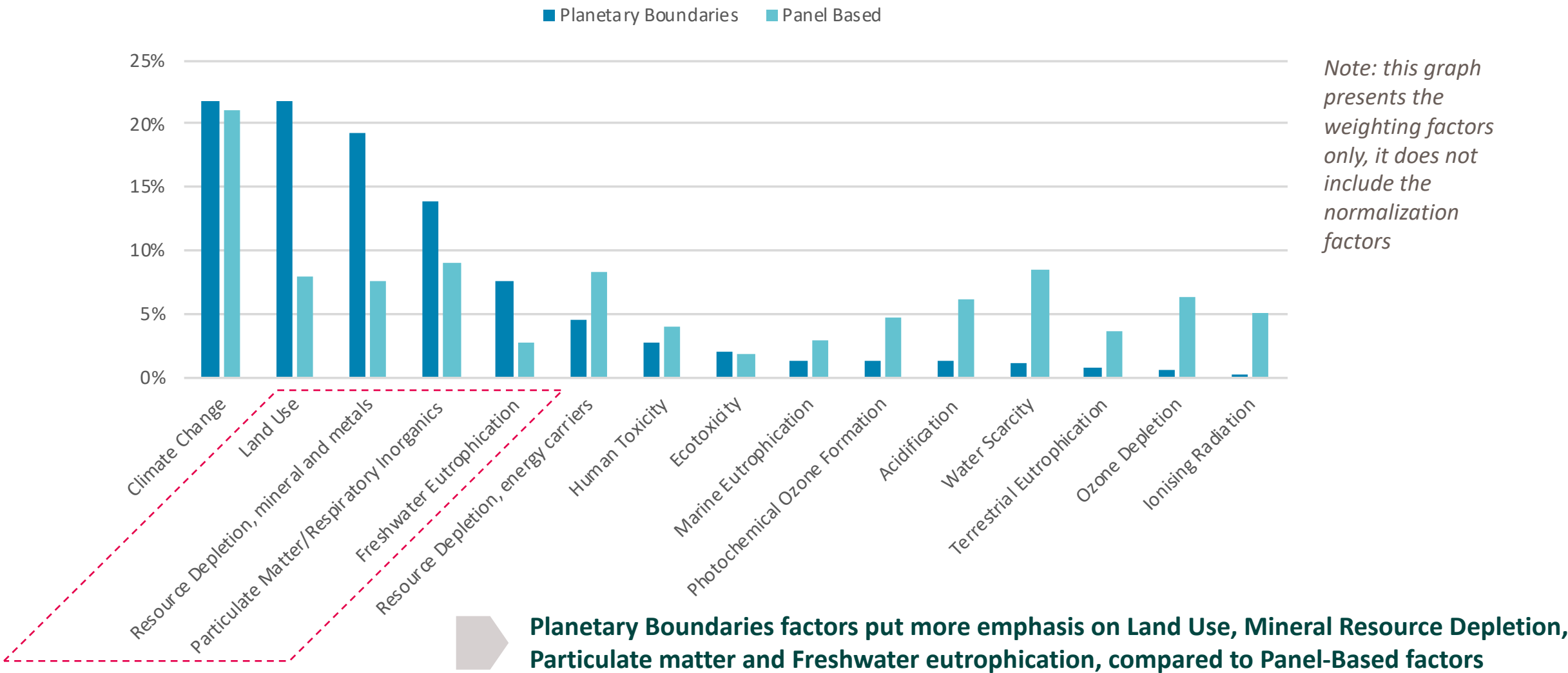
# Panel-based weighting factors



The panel-based approach leads to:

- + a 21% weight on climate change
- + and more spread weights for other indicators

# Side by side comparison of weighting factors












# CASE STUDY ON WEIGHTING FACTORS

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## PACKAGING DESCRIPTION

# Scope of the case study on weighting methods

	1	2	3	4	5	6	7	8
	Shampoo bottle	Aerosol Hair Spray	Face cream jar	Solar protection - tube	Blush powder - box	Lip stick	Mascara applicator	Roll-on deo
Formula Quantity, mL	250	200	50	250	20	5	7	50
Primary Pack Main Material(s)	PET	Aluminium can	Glass jar	HDPE Tube	SAN, ABS	ABS, Aluminium	PET, POM, Aluminium	PP
Primary Pack Mass, g	31	50	172	16	70	22	42	29
Secondary Pack Main Material(s)	-	-	Cardboard box	-	-	-	Cardboard box	-
Secondary Pack Mass, g	-	-	27	-	-	-	4	-
								
 Each packaging is assessed <b>for 1 functional unit</b> (to contain, protect, and deliver 1mL of formula to the consumer)								

# Questions

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1

How does the set of weighting factors influence the single score results per life cycle step, for each packaging?

2

How does the set of weighting factors influence the single score results per indicator, for each packaging?

3

How does the set of weighting factors influence the single score ranking of the selected packagings ?

# CASE STUDY ON WEIGHTING FACTORS

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## KEY LEARNINGS

# Case study on weighting factors: Key learnings

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1

How does the set of weighting factors influence the single score results per life cycle step, for each packaging?

- For the selected packaging solutions, the influence on the breakdown per life cycle step is relatively low.
- The most visible modification is for plastic packaging solutions, where the contribution for the Primary Pack Material is slightly higher in the panel based perspective.



## Case study on weighting factors: Key learnings

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2

### How does the set of weighting factors influence the single score results per indicator, for each packaging?

- The main differences are:
  - the higher contribution of Fossil Resource indicator (weighting factor is about twice higher in Panel-Based vs. Planetary Boundaries) as well as Human toxicity;
  - the lower Freshwater eutrophication and Particulate matter contributions when using panel based
- Acidification and Ozone depletion have very small contributions when using the Planetary Boundaries approach, while they have about 5% contribution when using Panel-based approach.

# Case study on weighting factors: Key learnings

3

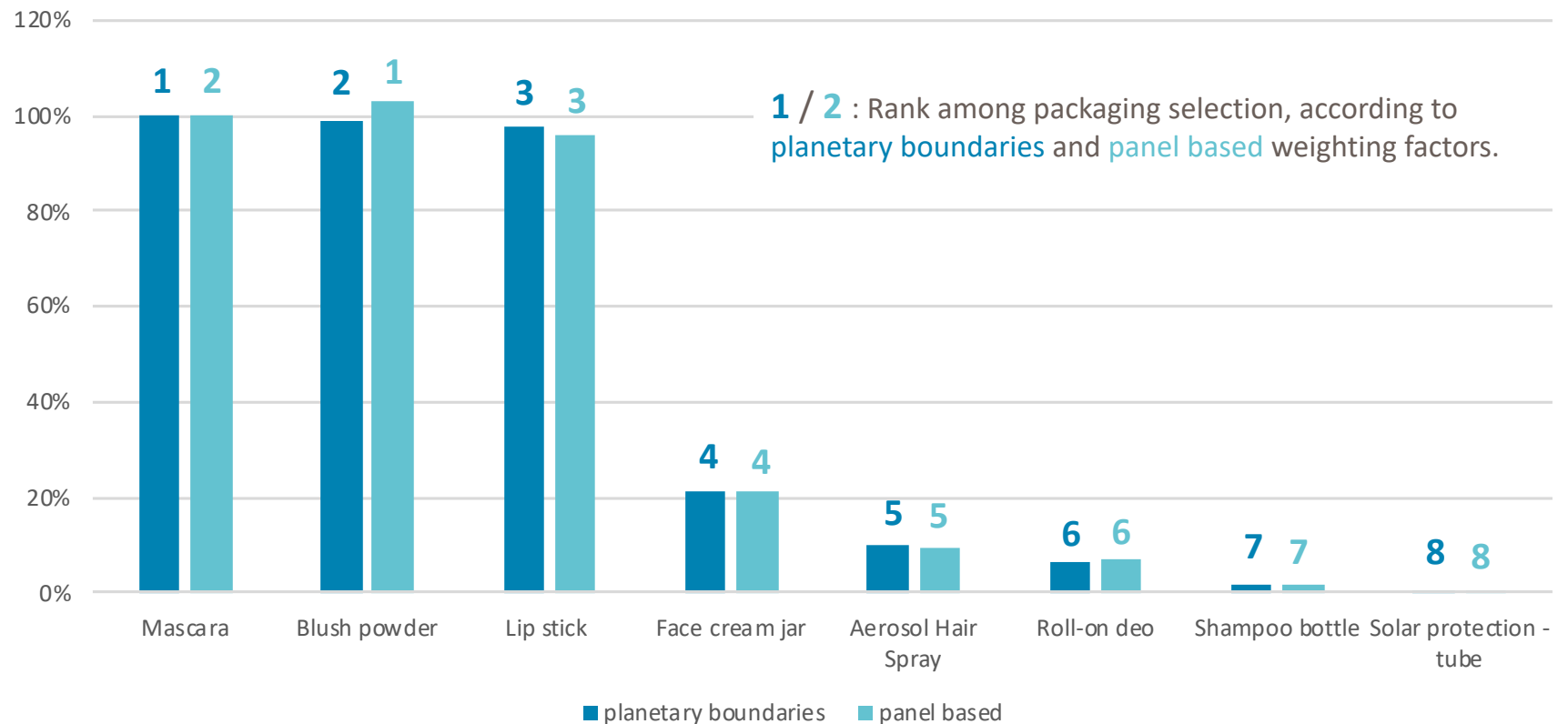
How does the set of weighting factors influence the single score ranking of the selected packagings?

## Relative comparison of environmental single score (planetary boundaries and panel based)

- for 1 functional unit
- for each packaging
- mascara is chosen as the common reference (100%)



Ranking is identical, with the exception of a switch between rank 1 & 2 for mascara and blush powder box.



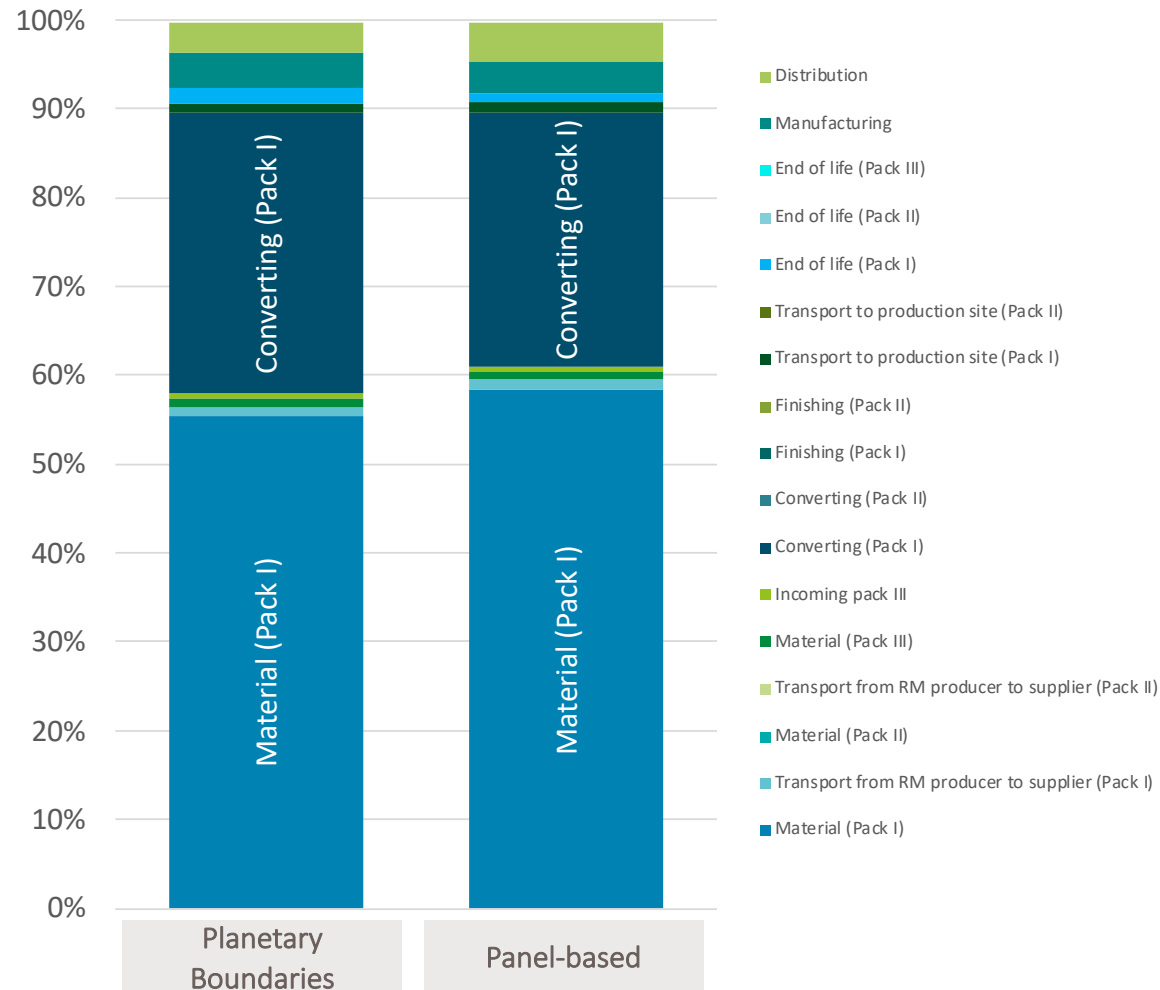
# CASE STUDY ON WEIGHTING FACTORS

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**DETAILED RESULTS:**

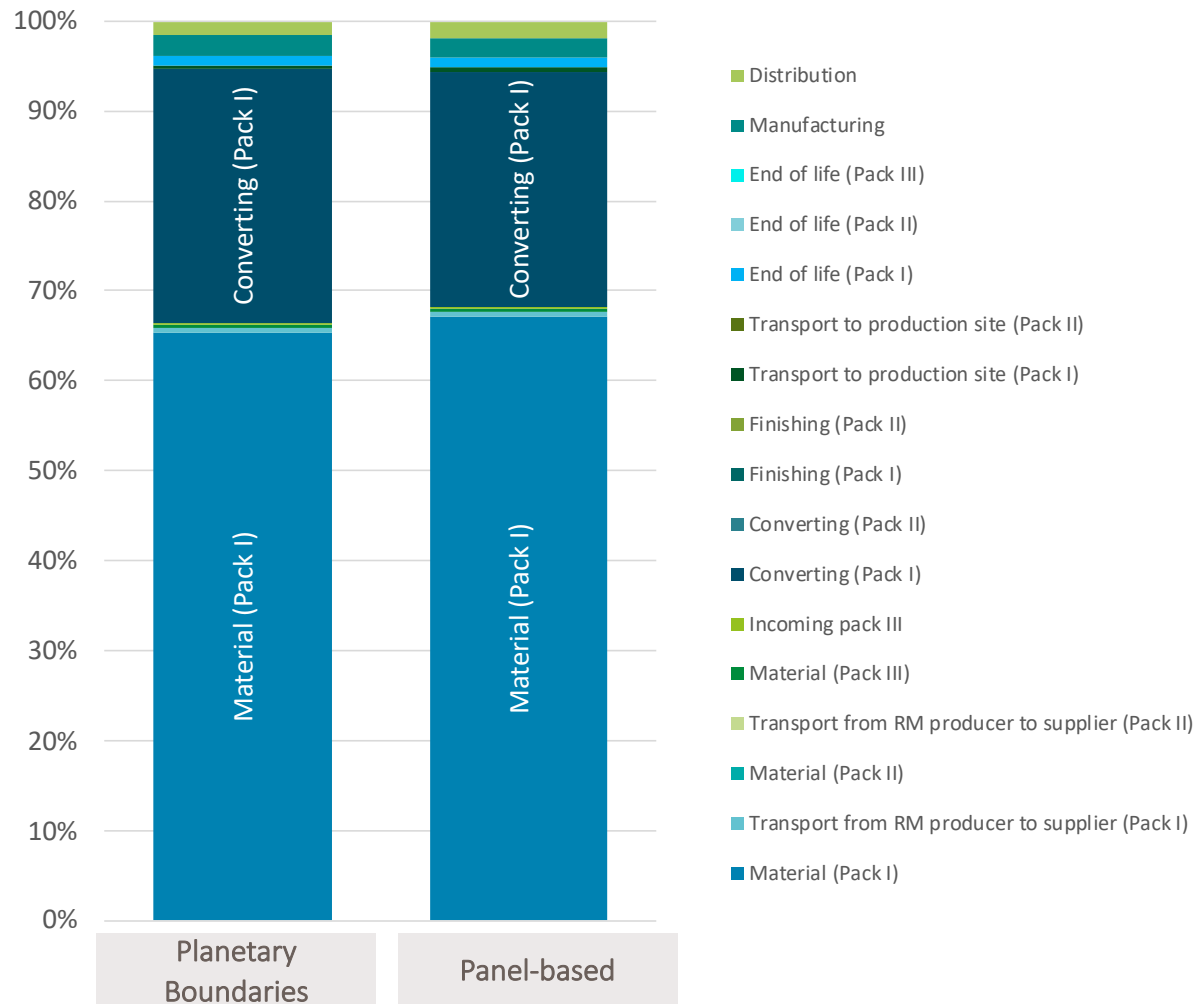
**BREAKDOWN OF SINGLE SCORE PER LIFE CYCLE STEP**

# Breakdown of single score per life cycle step – Shampoo bottle



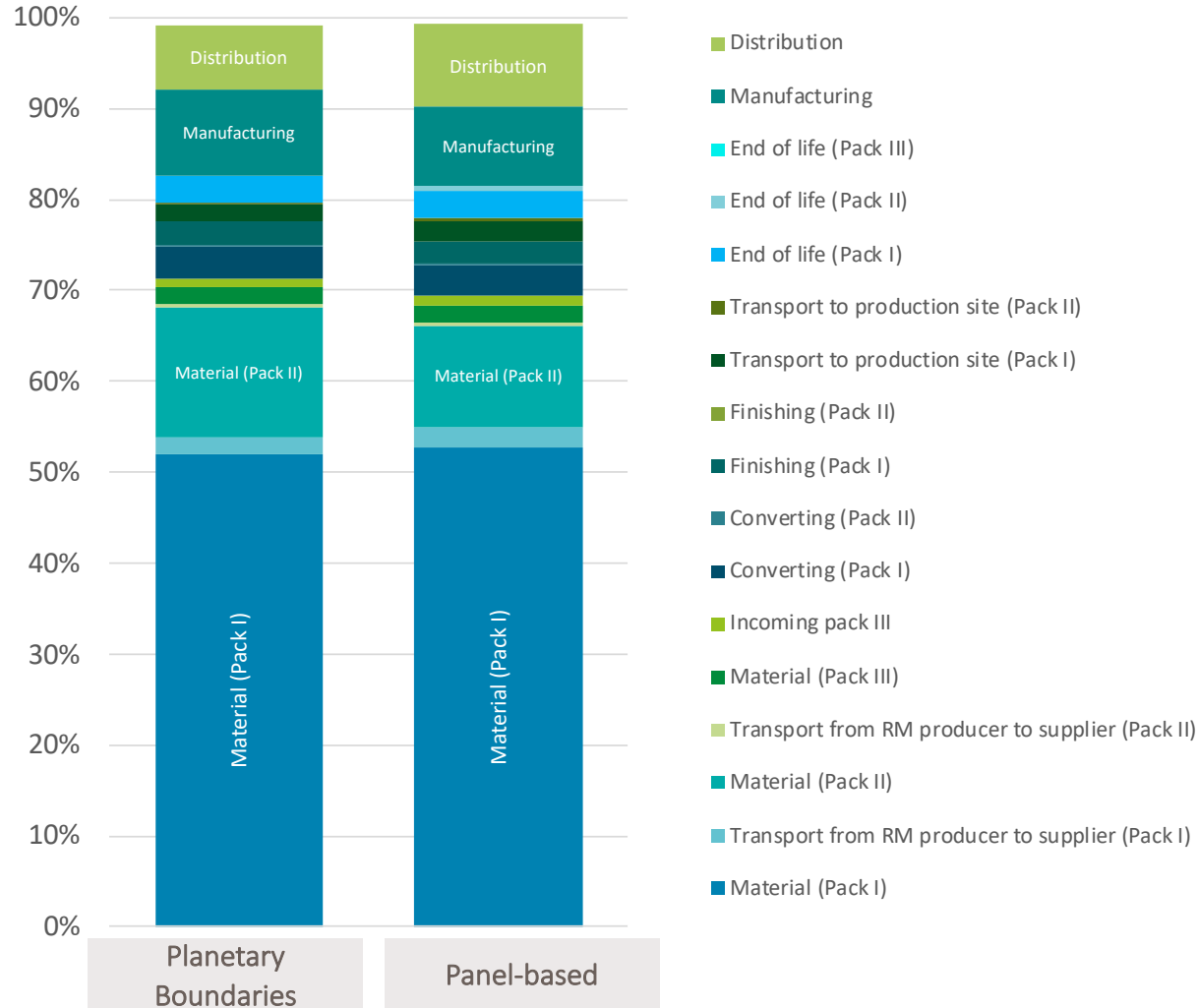
- + The influence on the breakdown per life cycle step is relatively low
- + The main difference is the slightly higher contribution for the **Primary Pack Material**, mainly due to the higher contribution of the **Fossil Resource** indicator (weighting factor is ~ twice higher in Panel-Based vs. Planetary Boundaries)

# Breakdown of single score per life cycle step – Aerosol Hairspray



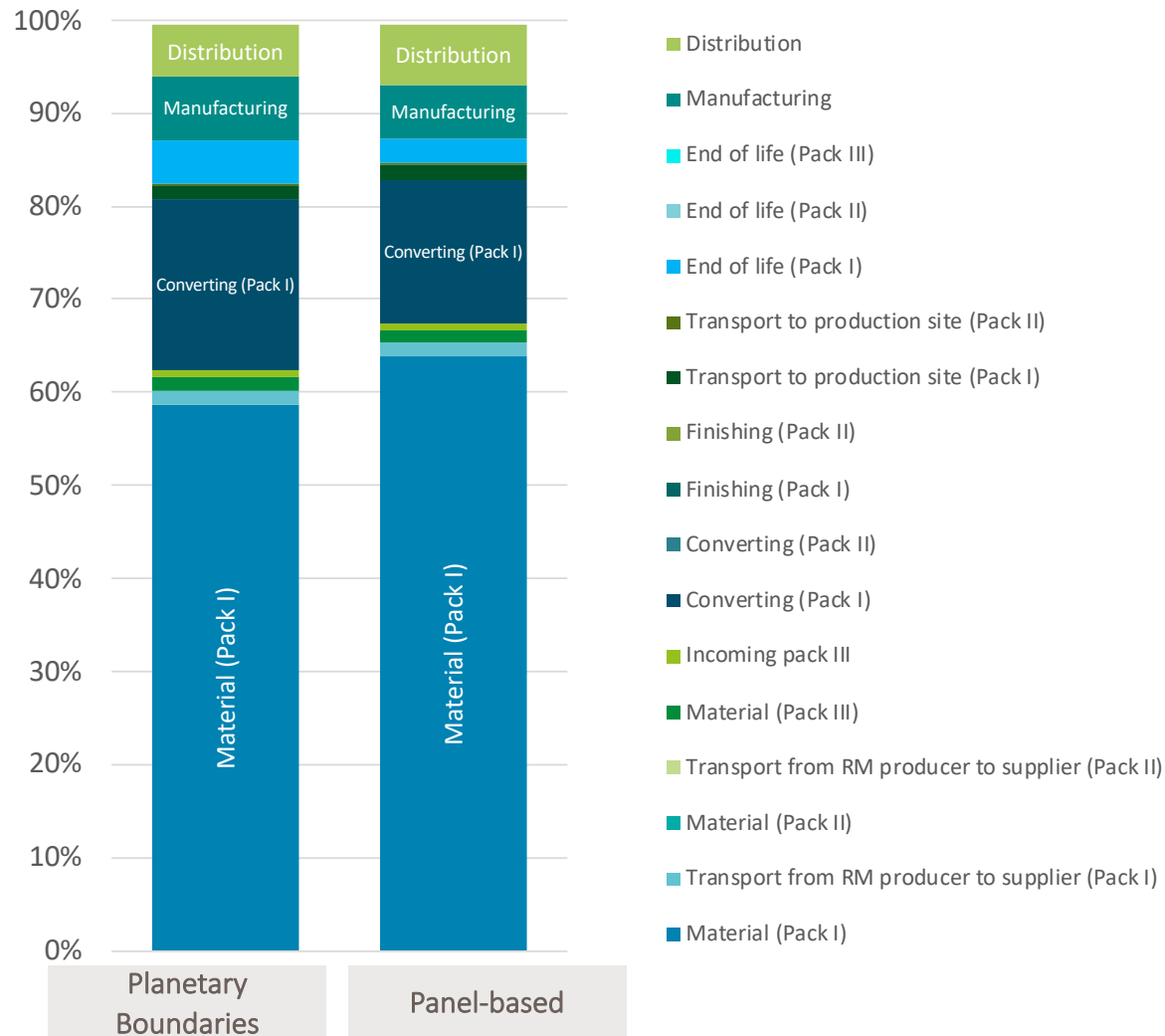
+ The influence on the breakdown per life cycle step is relatively low

# Breakdown of single score per life cycle step – Face cream jar



+ The influence on the breakdown per life cycle step is relatively low

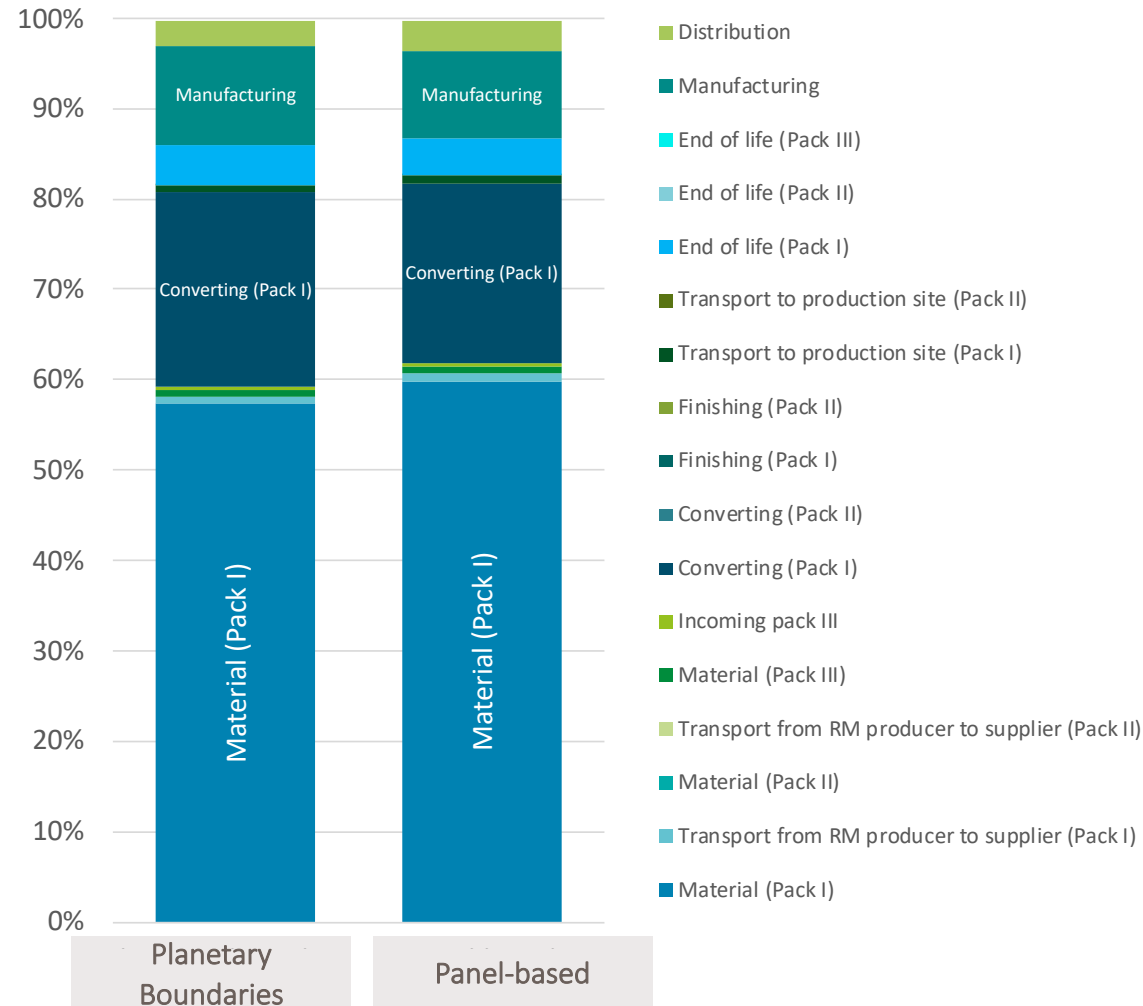
# Breakdown of single score per life cycle step – Solar protection tube



- + The influence on the breakdown per life cycle step is relatively low
- + The main difference is the slightly higher contribution for the **Primary Pack Material**, mainly due to the higher contribution of the **Fossil Resource** indicator (weighting factor is ~ twice higher in Panel-Based vs. Planetary Boundaries)

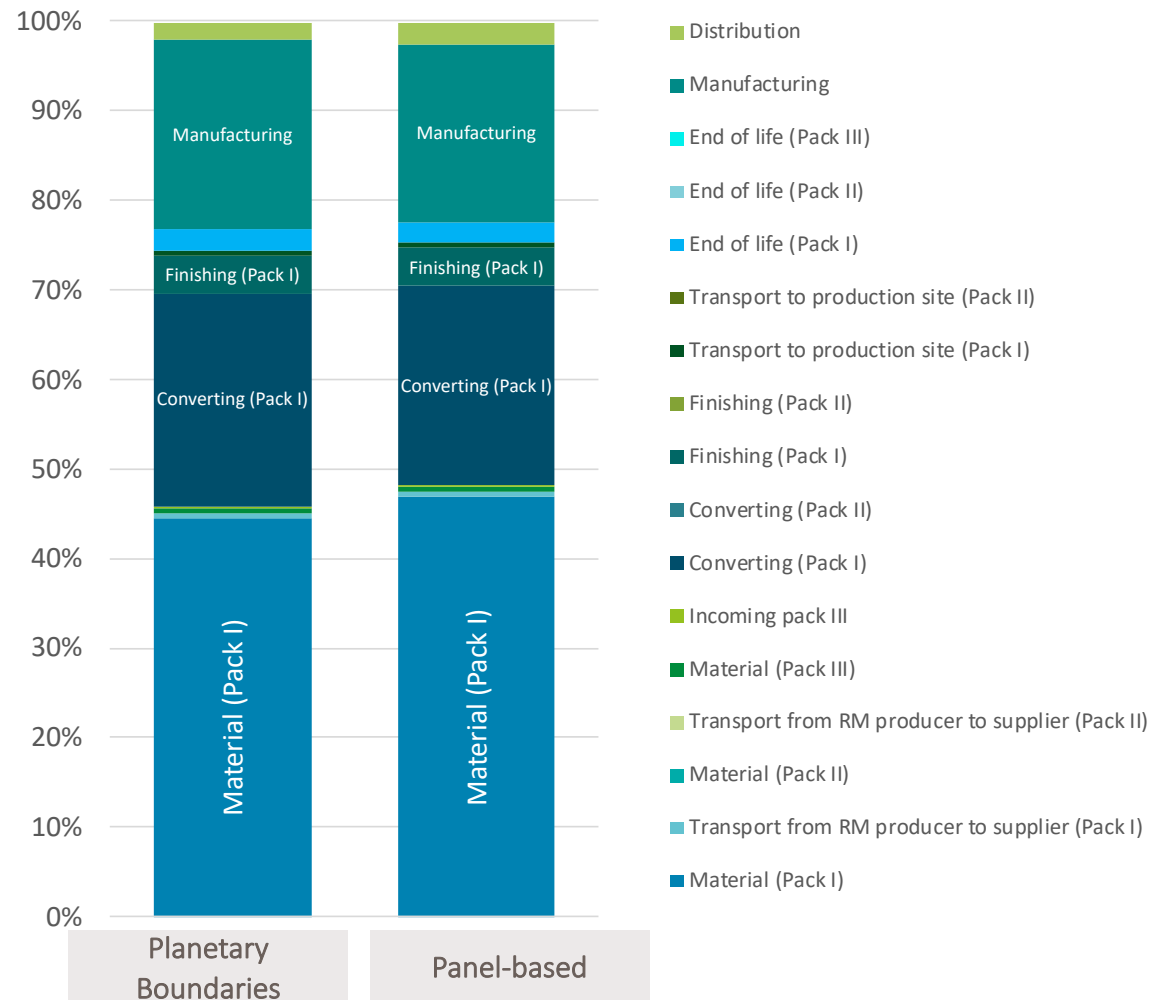


# Breakdown of single score per life cycle step – Blush powder box



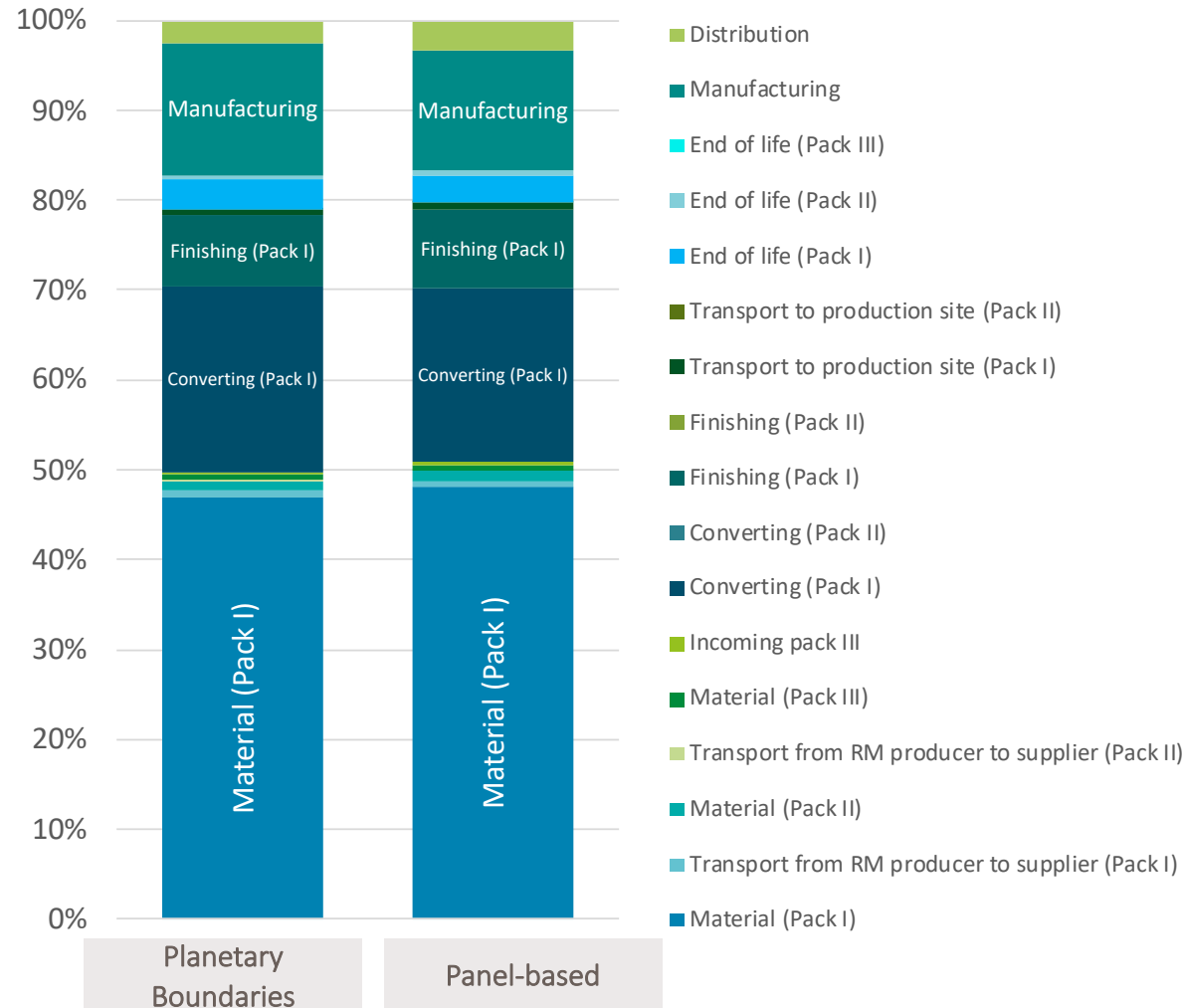
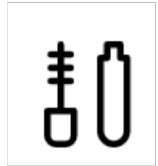
- + The influence on the breakdown per life cycle step is relatively low
- + The main difference is the slightly higher contribution for the **Primary Pack Material**, mainly due to the higher contribution of the **Fossil Resource** indicator (weighting factor is ~ twice higher in Panel-Based vs. Planetary Boundaries)

# Breakdown of single score per life cycle step – Lip stick



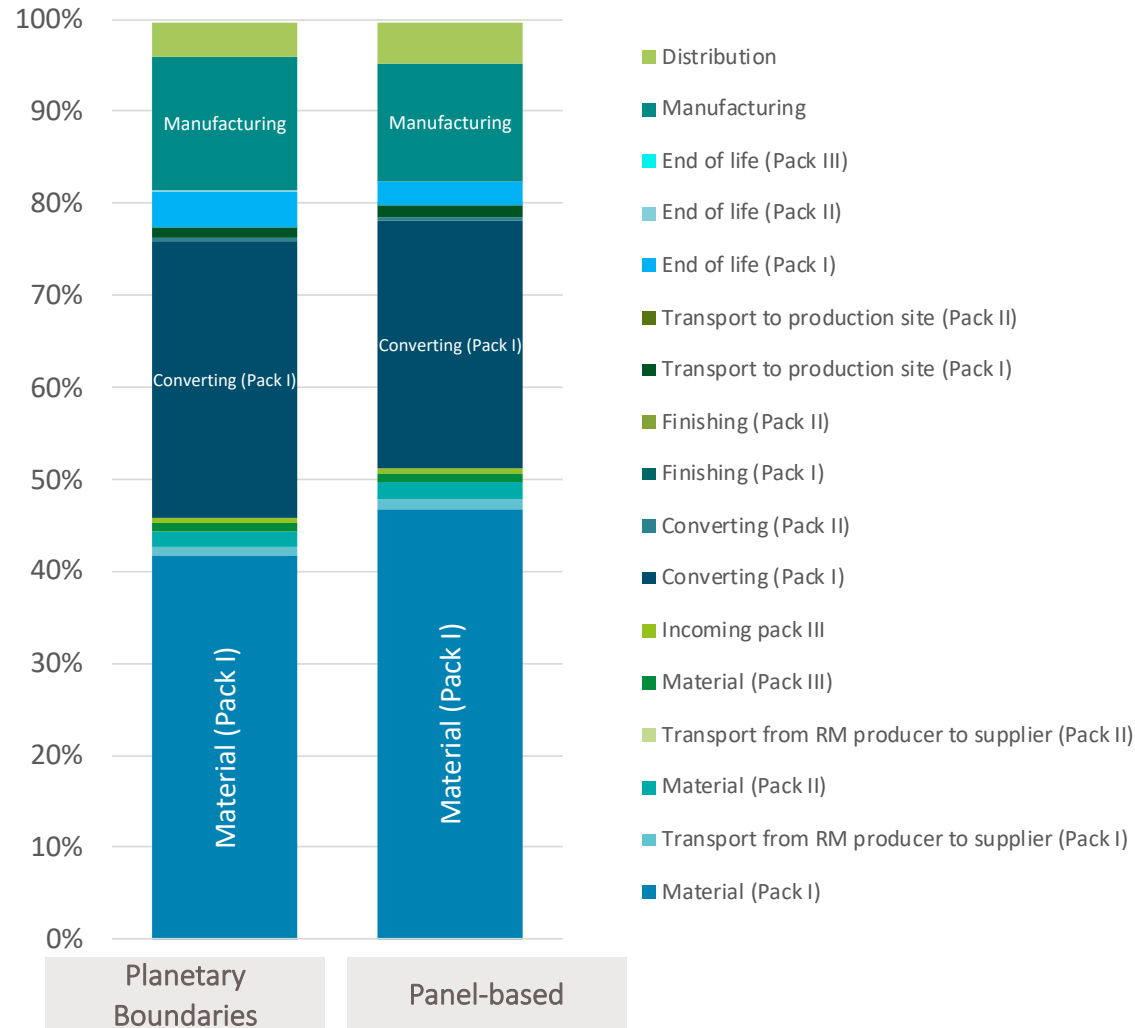
- + The influence on the breakdown per life cycle step is relatively low
- + The main difference is the slightly higher contribution for the **Primary Pack Material**, mainly due to the higher contribution of the **Fossil Resource** indicator (weighting factor is ~ twice higher in Panel-Based vs. Planetary Boundaries)

# Breakdown of single score per life cycle step – Mascara



- + The influence on the breakdown per life cycle step is relatively low
- + The main difference is the slightly higher contribution for the **Primary Pack Material**, mainly due to the higher contribution of the **Fossil Resource** indicator (weighting factor is ~ twice higher in Panel-Based vs. Planetary Boundaries)

# Breakdown of single score per life cycle step – Roll-on deo



- + The influence on the breakdown per life cycle step is relatively low
- + The main difference is the slightly higher contribution for the **Primary Pack Material**, mainly due to the higher contribution of the **Fossil Resource** indicator (weighting factor is ~ twice higher in Panel-Based vs. Planetary Boundaries)

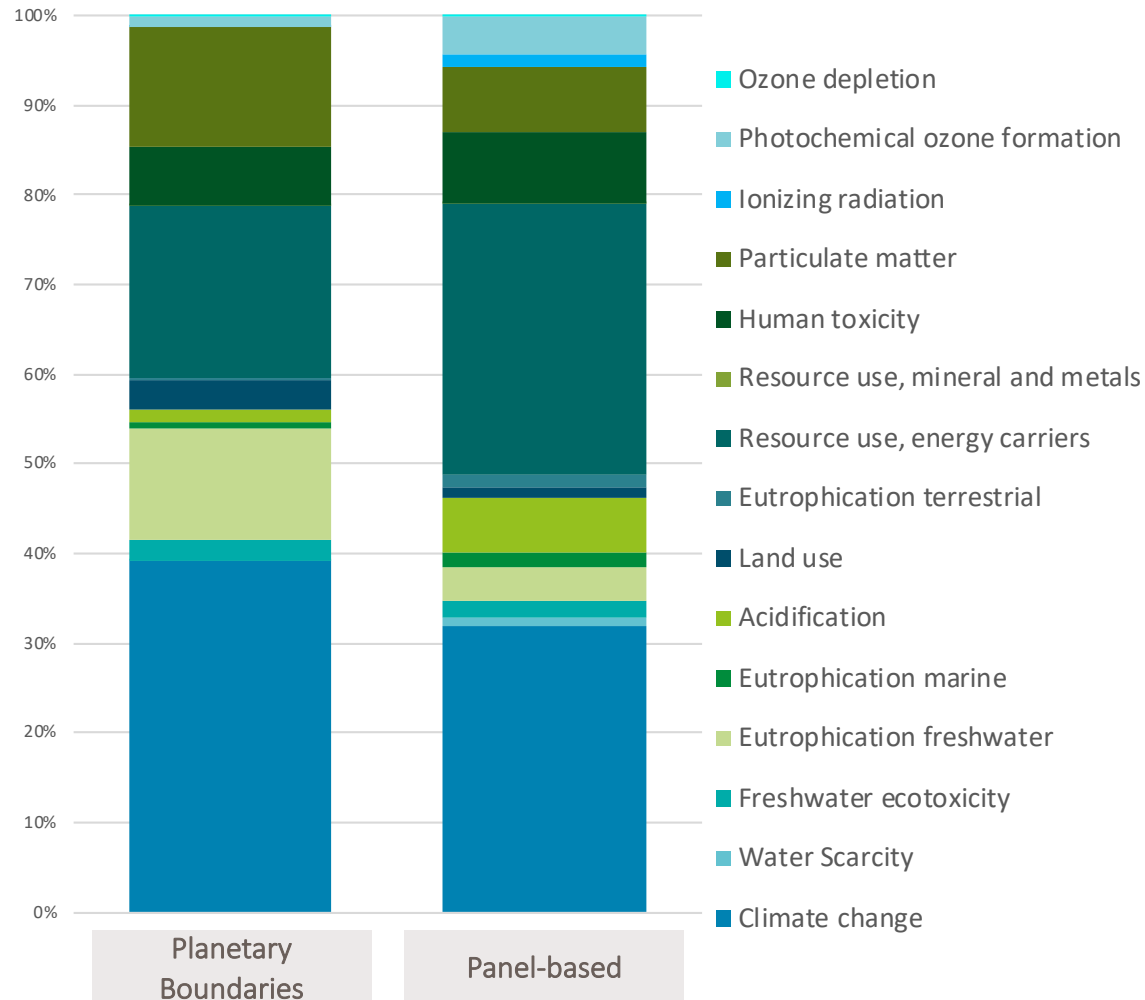
# CASE STUDY ON WEIGHTING FACTORS

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**DETAILED RESULTS:**

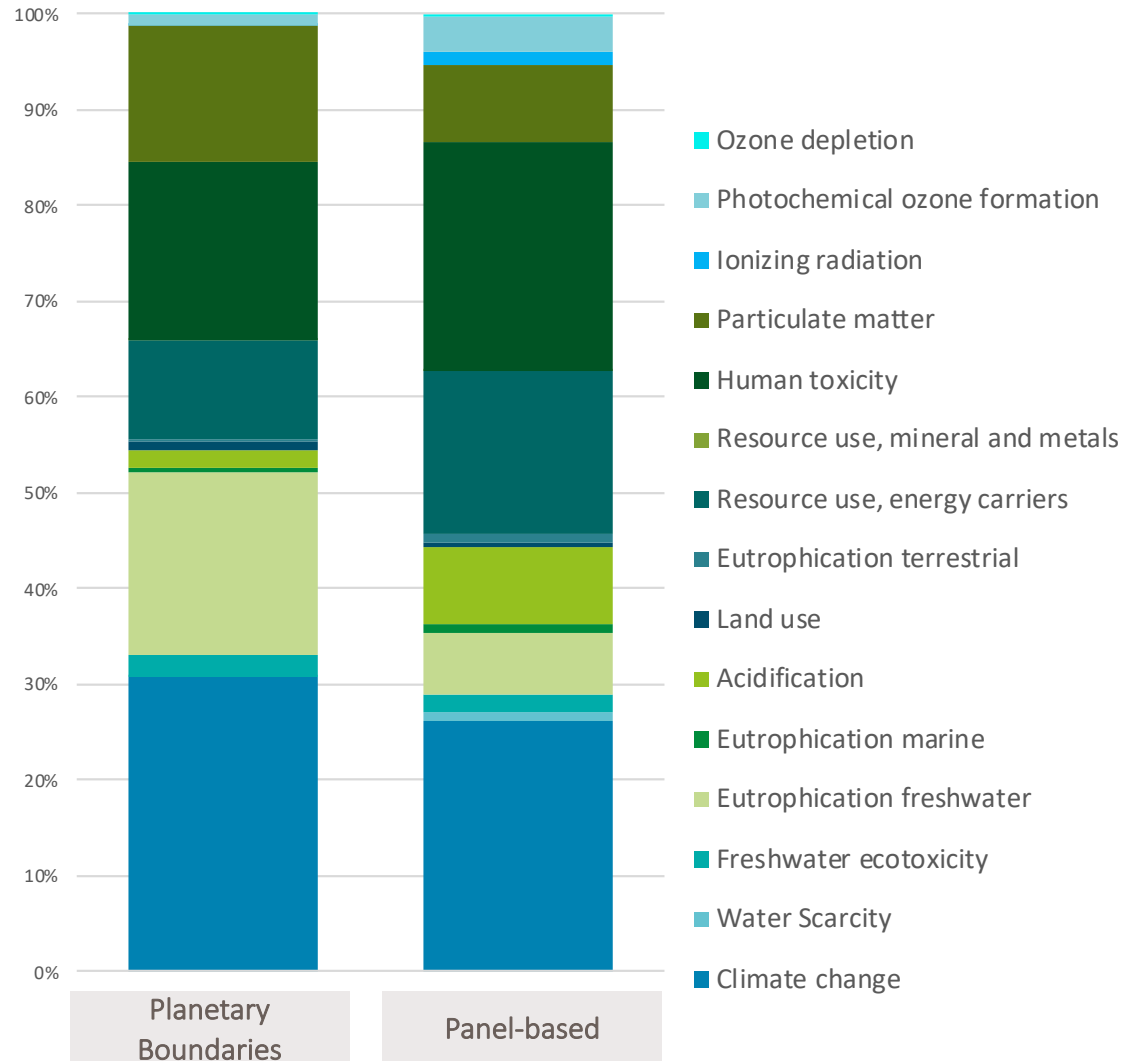
**BREAKDOWN OF SINGLE SCORE PER INDICATOR**

# Breakdown of single score per indicator – Shampoo Bottle



- + The main difference is the higher contribution of **Fossil Resource** indicator (weighting factor is ~ twice higher in Panel-Based vs. Planetary Boundaries)
- + **Acidification** and **Ozone depletion** have very small contributions when using the Planetary Boundaries approach, while they have about 5% contribution when using Panel-based approach.

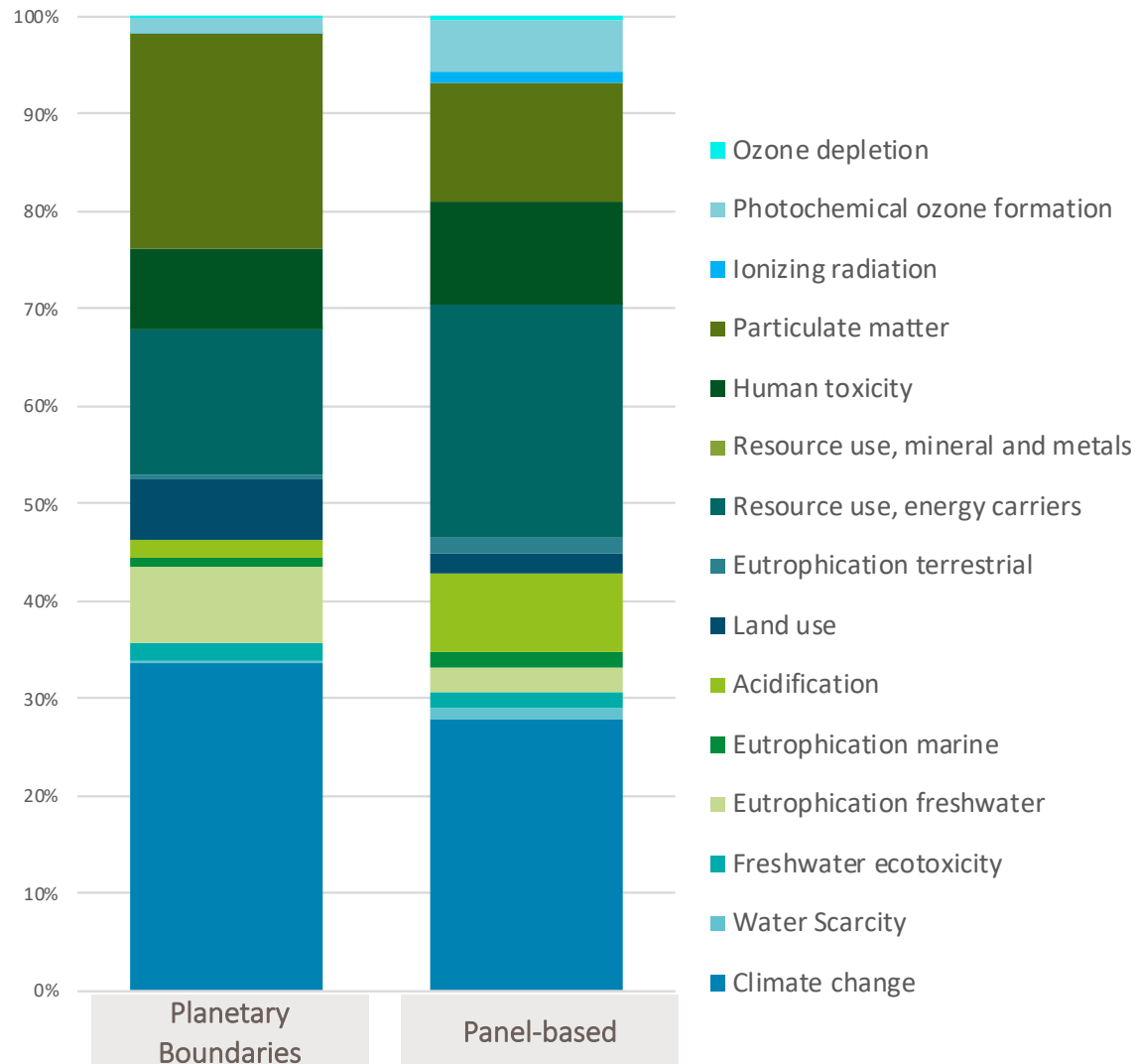
# Breakdown of single score per indicator – Aerosol Hairspray



- + The main difference are:
  - + the higher contribution of **Fossil Resource** indicator
  - + the higher **Human toxicity** contribution
- + **Acidification** and **Ozone depletion** have very small contributions when using the Planetary Boundaries approach, while they have about 5% contribution when using Panel-based approach.

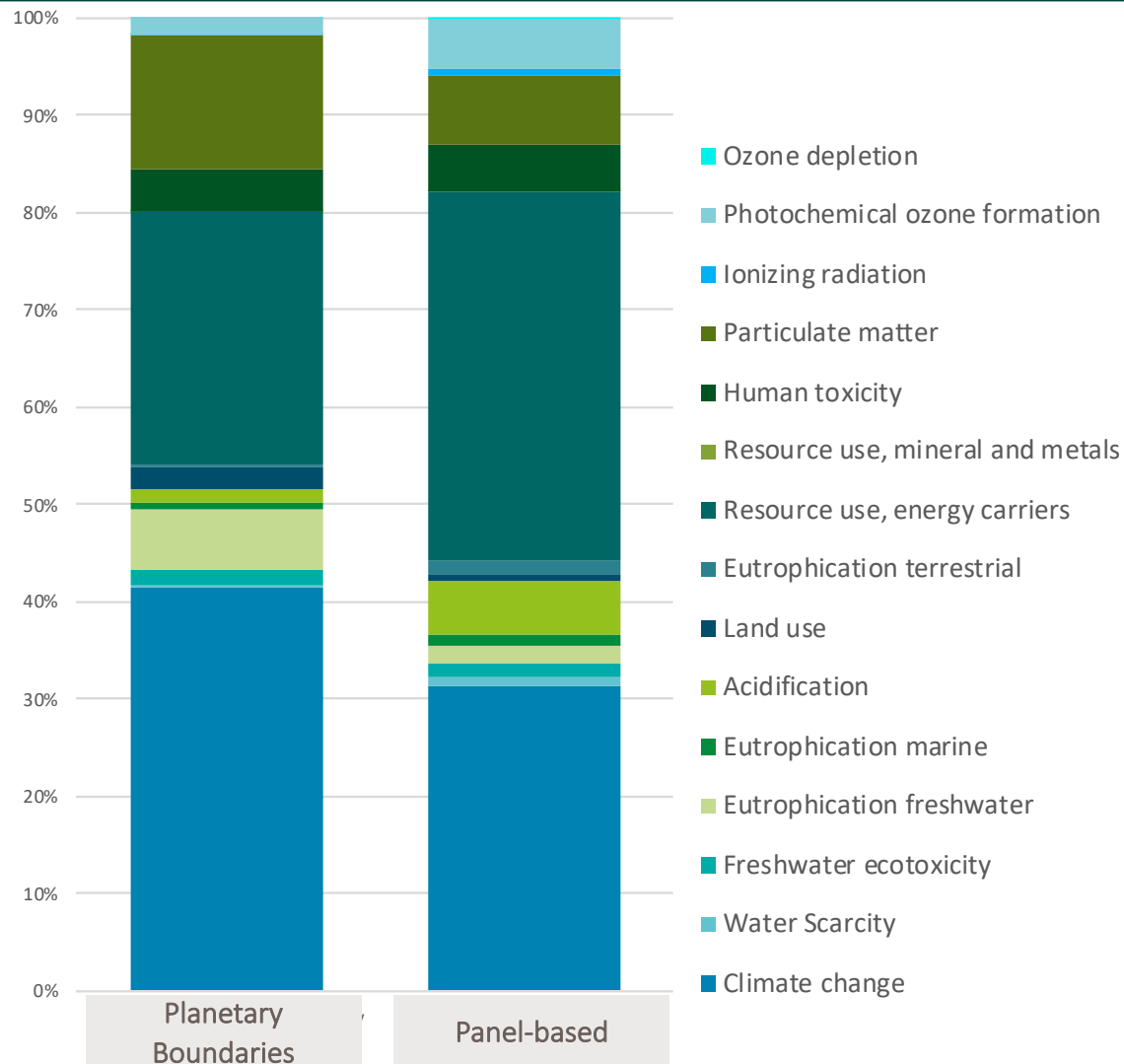


# Breakdown of single score per indicator – Face cream jar



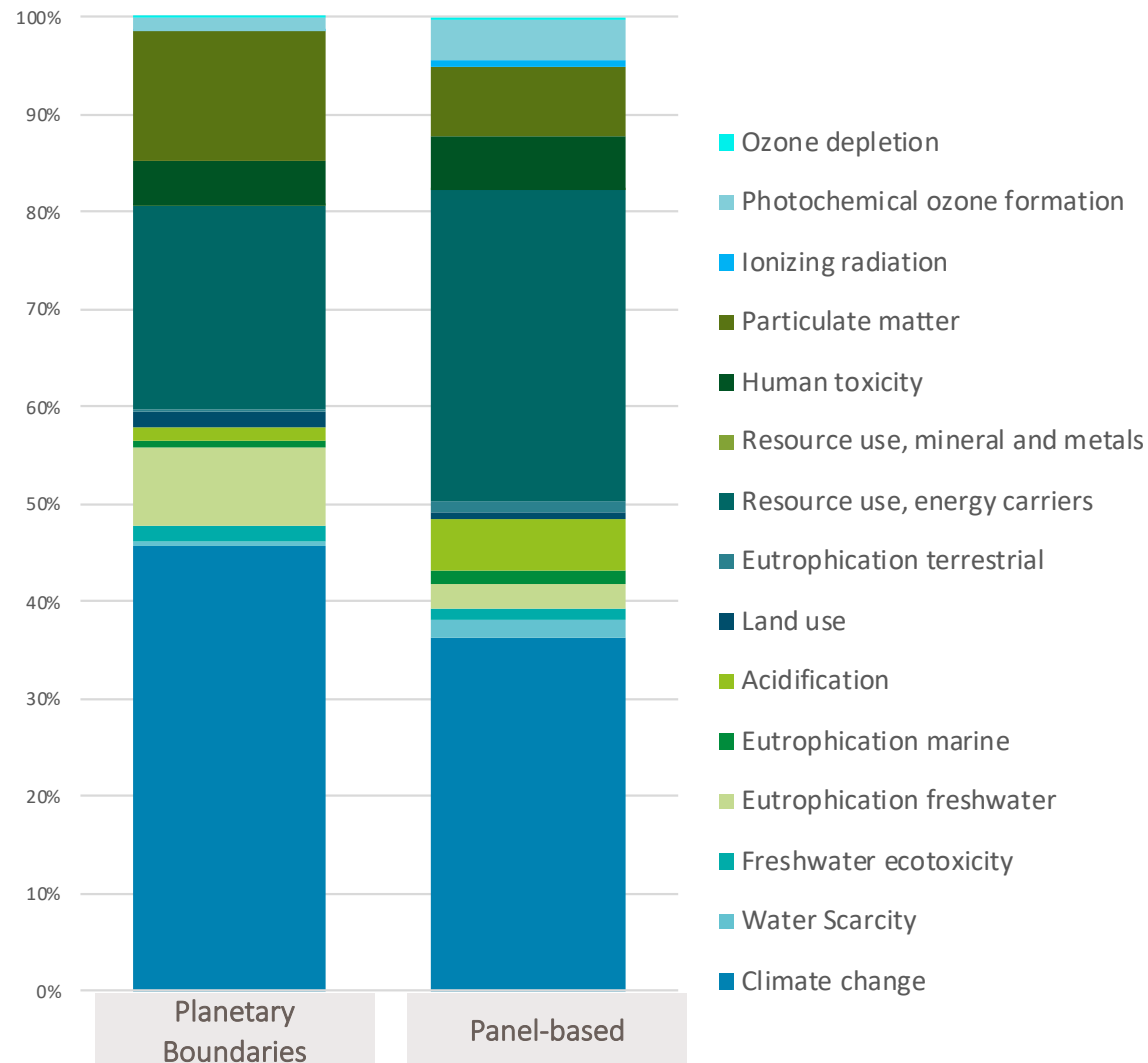
- + The main difference are:
  - + the higher contribution of **Fossil Resource** indicator
  - + the lower **Particulate matter** contribution
- + **Acidification** and **Ozone depletion** have very small contributions when using the Planetary Boundaries approach, while they have about 5% contribution when using Panel-based approach.

# Breakdown of single score per indicator – Solar protection tube



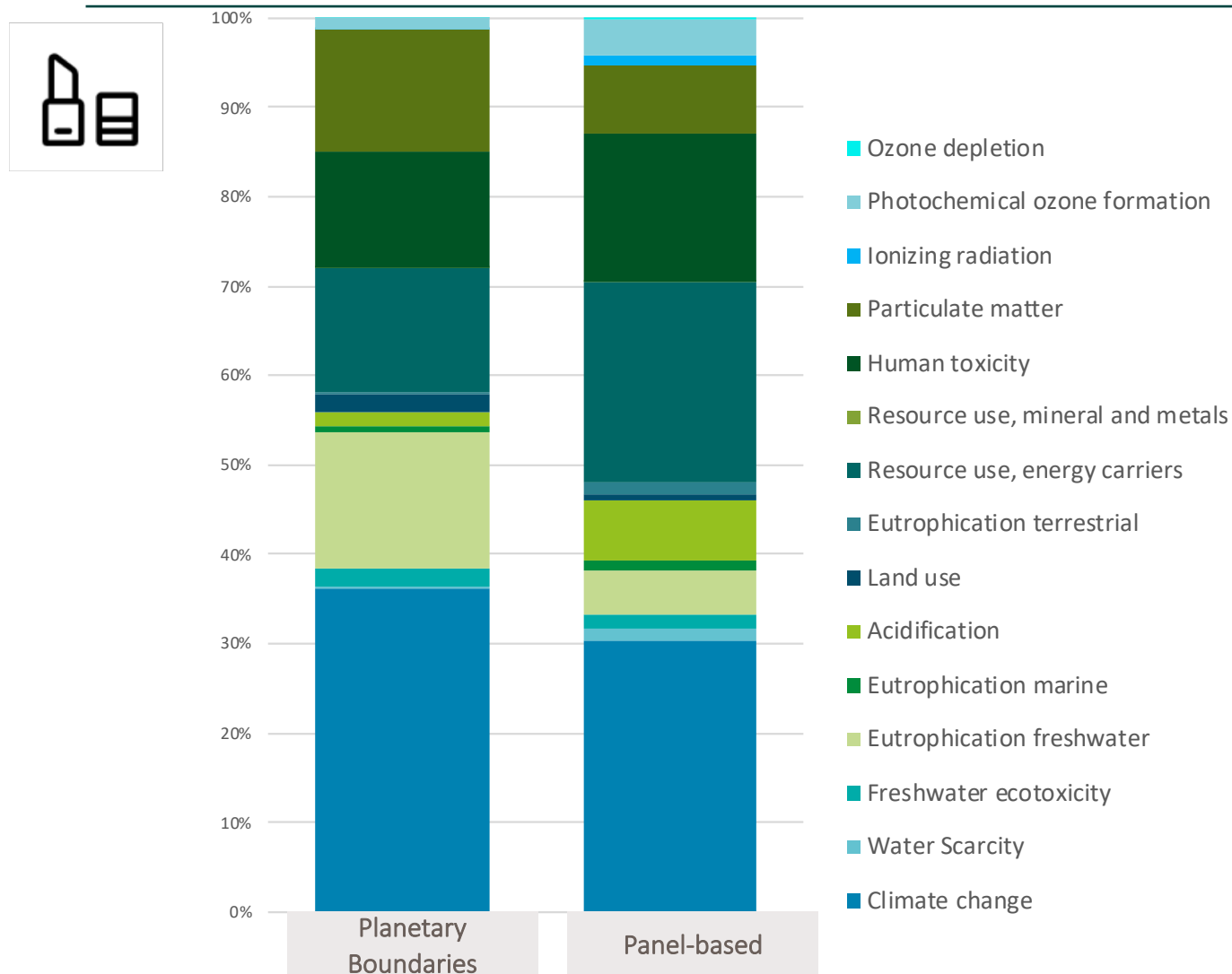
- + The main difference are:
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# Breakdown of single score per indicator – Blush powder box



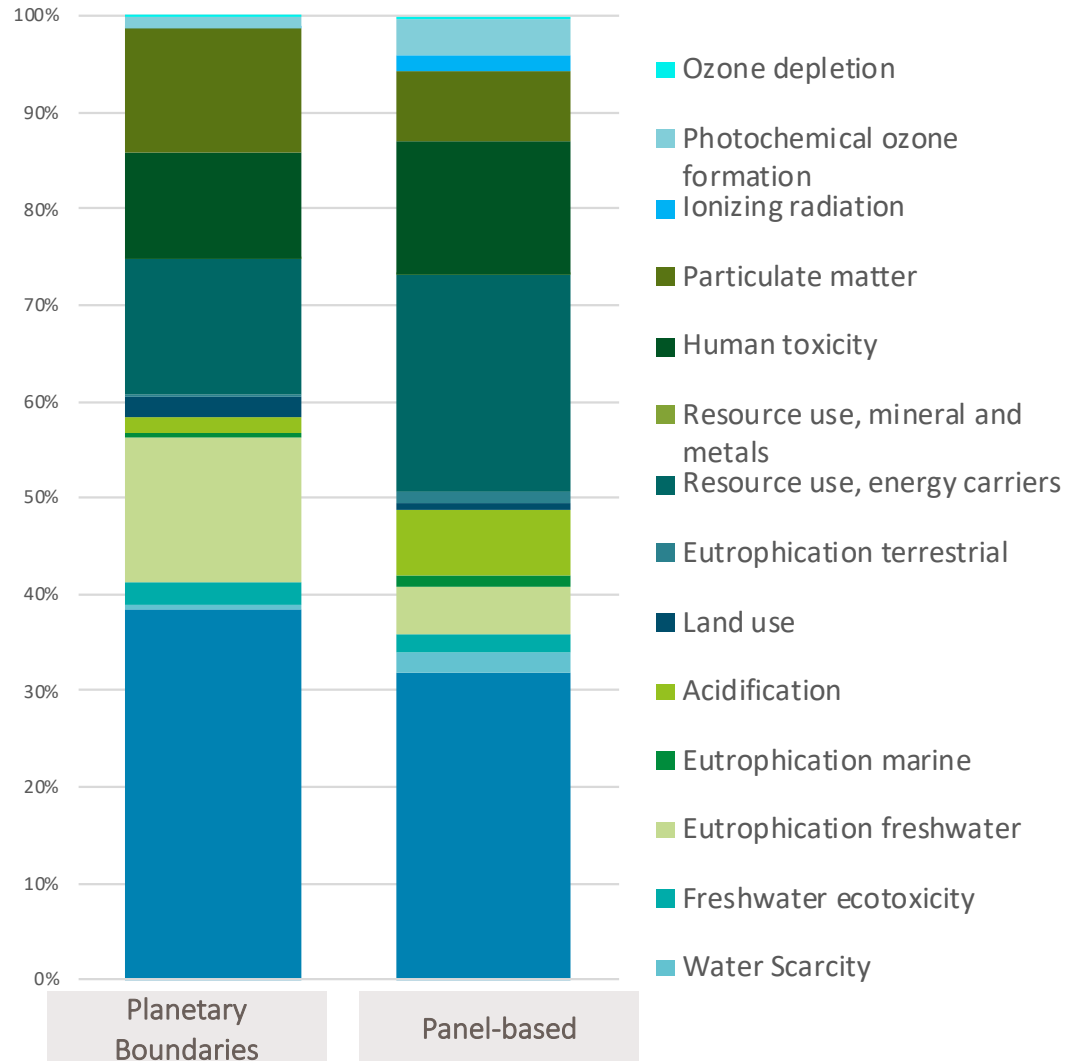
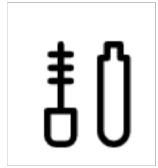
- + The main difference are:
  - + the higher contribution of **Fossil Resource** indicator
  - + the lower **Particulate matter** contribution
- + **Acidification** and **Ozone depletion** have very small contributions when using the Planetary Boundaries approach, while they have about 5% contribution when using Panel-based approach.

## Breakdown of single score per indicator – Lip stick



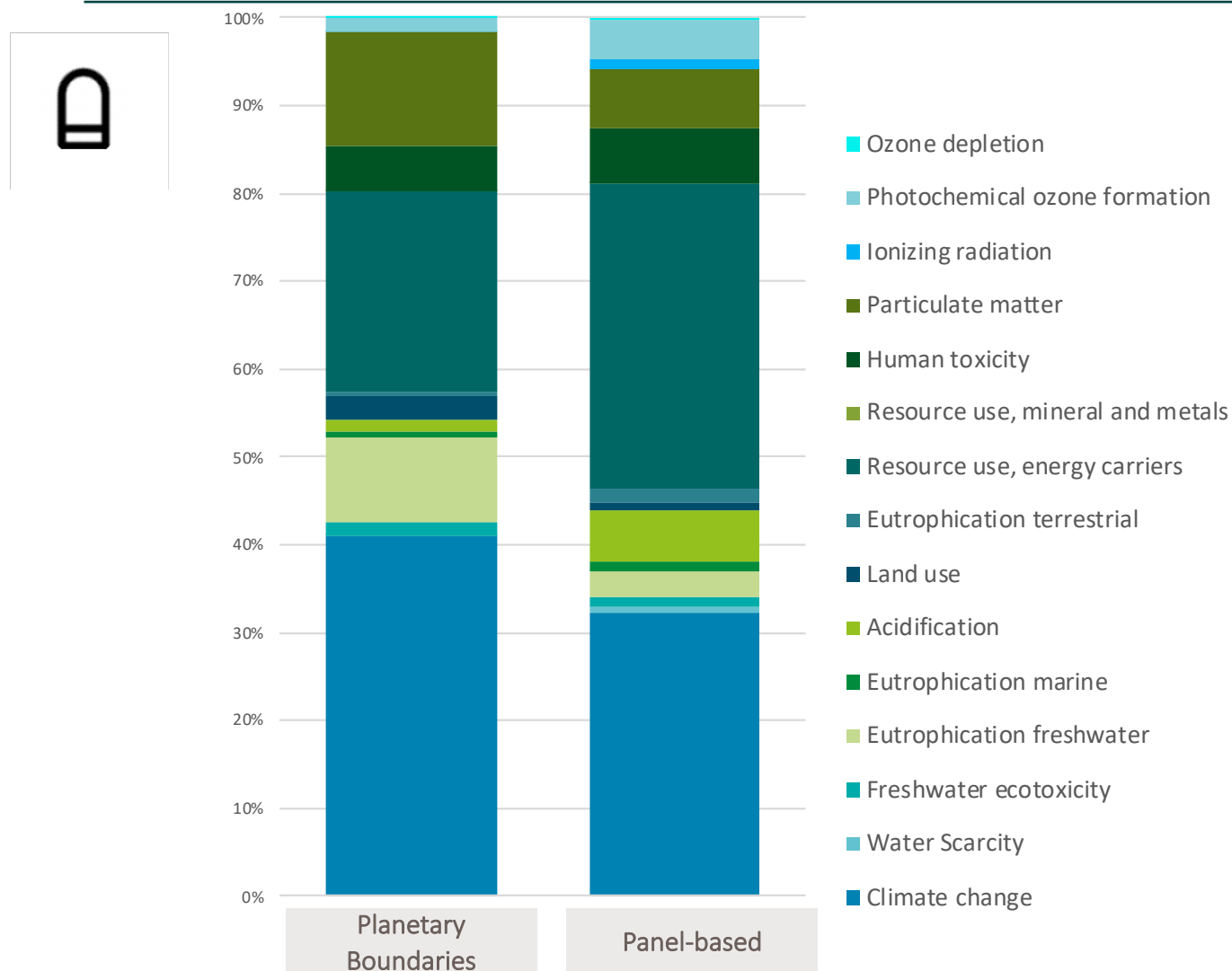
- + The main difference are:
  - + the higher contribution of **Fossil Resource** indicator
  - + the lower **Freshwater eutrophication** contribution
  - + the lower **Particulate matter** contribution
- + **Acidification** and **Ozone depletion** have very small contributions when using the Planetary Boundaries approach, while they have about 5% contribution when using Panel-based approach.

# Breakdown of single score per indicator – Mascara



- + The main difference are:
  - + the higher contribution of **Fossil Resource** indicator
  - + The lower **freshwater eutrophication** contribution
  - + The lower **particulate matter** contribution
- + **Acidification** and **Ozone depletion** have very small contributions when using the Planetary Boundaries approach, while they have about 5% contribution when using Panel-based approach.

# Breakdown of single score per indicator – Roll-on deo



- + The main difference is the higher contribution of **Fossil Resource** indicator (weighting factor is ~ twice higher in Panel-Based vs. Planetary Boundaries)
- + **Acidification** and **Ozone depletion** have very small contributions when using the Planetary Boundaries approach, while they have about 5% contribution when using Panel-based approach.