



United Nations
Educational, Scientific and
Cultural Organization



UNESCO Chair
in Life Cycle and
Climate Change



School of International Studies



THE LIFE+ ZERO CABIN WASTE PROJECT: WASTE CHARACTERIZATIONS

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ZERO CABIN WASTE
LIFE15ENV/ES/000209



This Project is co-financed
by the European Union
through the LIFE Program

1. INTRODUCTION

3.1 billion passengers travelled by plane in 2013 (IATA, 2014)



1.43 kg is the average weight of waste per passenger/flight (IATA, 2014)



4.43 billion kg of waste produced by passengers



1. INTRODUCTION

7.2 billion of passengers are estimated to travel by plane in 2035 (IATA, 2016)

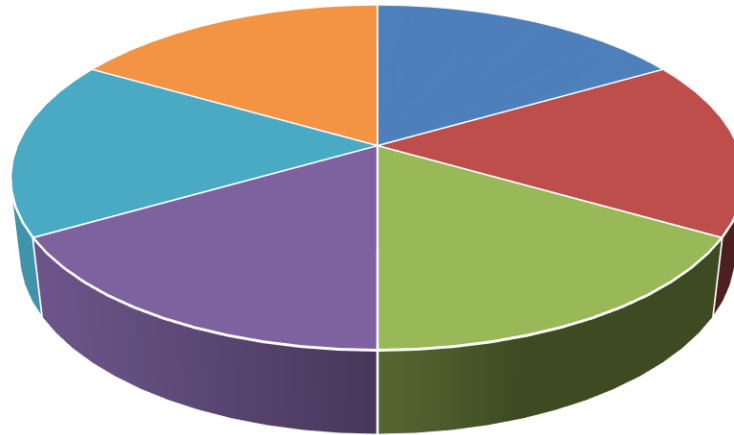
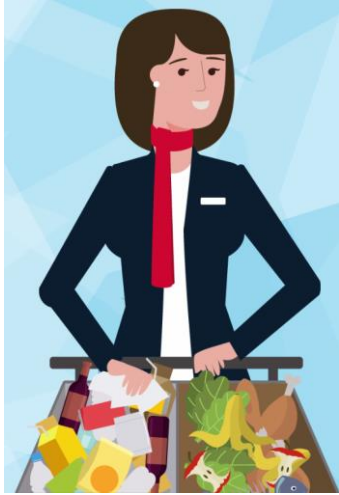


2. THE LIFE+ ZERO CABIN WASTE PROJECT

Create a sustainable model to reduce, re-use and recycle waste collected in airplane cabins and set the basis for future replication by other airlines.



2. THE LIFE+ ZERO CABIN WASTE PROJECT



It is crucial to know the specific composition of the waste produced in different flights

CHARACTERIZATIONS

3. CHARACTERIZATIONS

Process

a) Classification of flights: National or European (<3h).

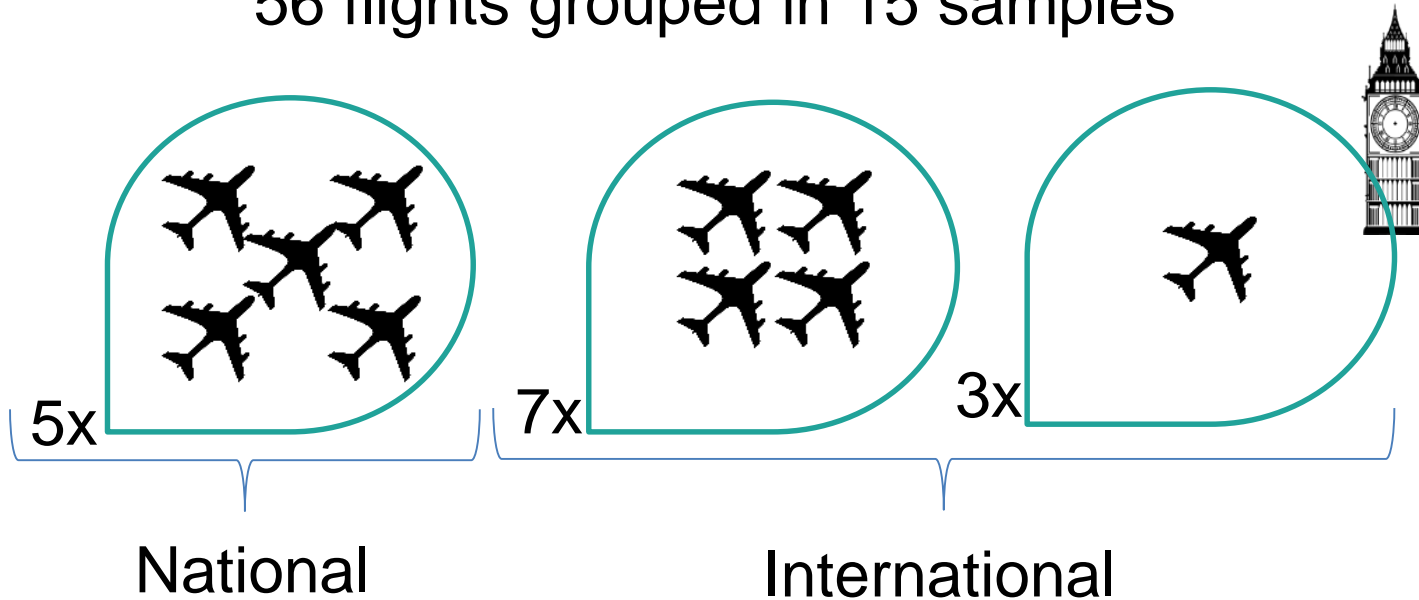
	Type of flight	Time of flight	Waste flow
CAT 3 MSW	National European	<3h	Business menu trolley Waste trolley
	Short International		Pantry trolley
	Medium International	3-7h	Business menu trolley Tourist menu trolley Waste trolley Pantry trolley
CAT 1 Hazardous Regulation EC 1069/2009	Long international	>7h	Business menu trolley Tourist menu trolley 2º Tourist menu trolley Waste trolley Pantry trolley

3. CHARACTERIZATIONS

Process

b) Grouping of flights.

56 flights grouped in 15 samples



3. CHARACTERIZATIONS

Process

c) Election of flows.

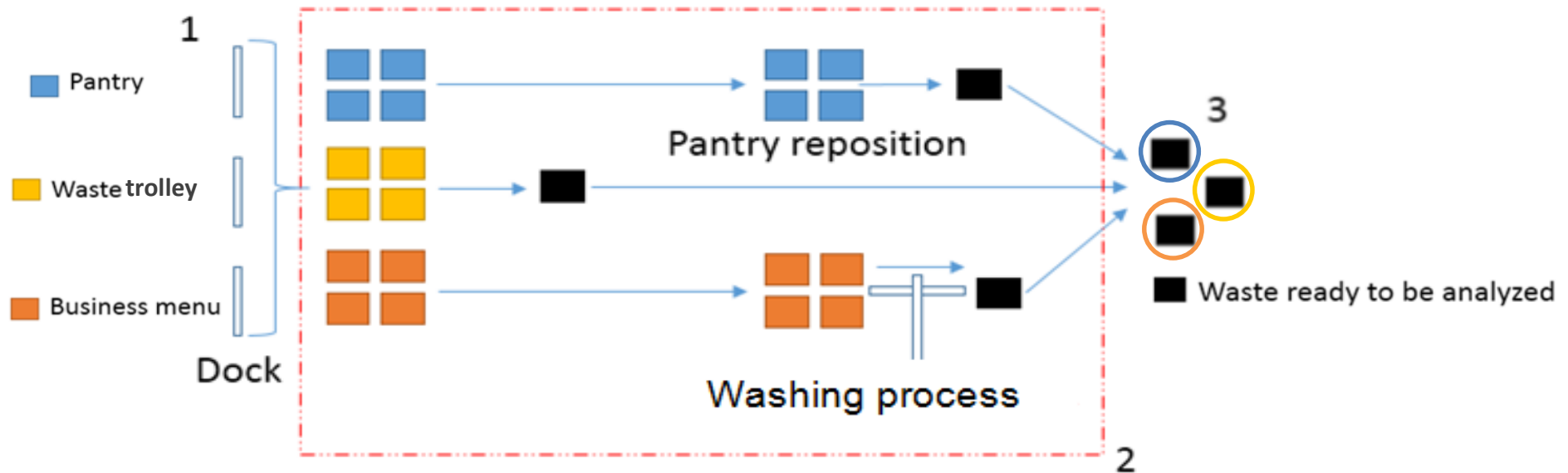
- Business class menu trolley: waste containing trays with the leftover of these class menus.
- Waste trolley: contain waste generated during the flight, mainly from the sale on board.
- Pantry trolley: contains drinks and napkins basically.



3. CHARACTERIZATIONS

Process

d) Selection of waste.



1 Arrival of trucks with the trays

2 Separation of the different types of waste

3 Obtention of the waste to analyse.

3. CHARACTERIZATIONS

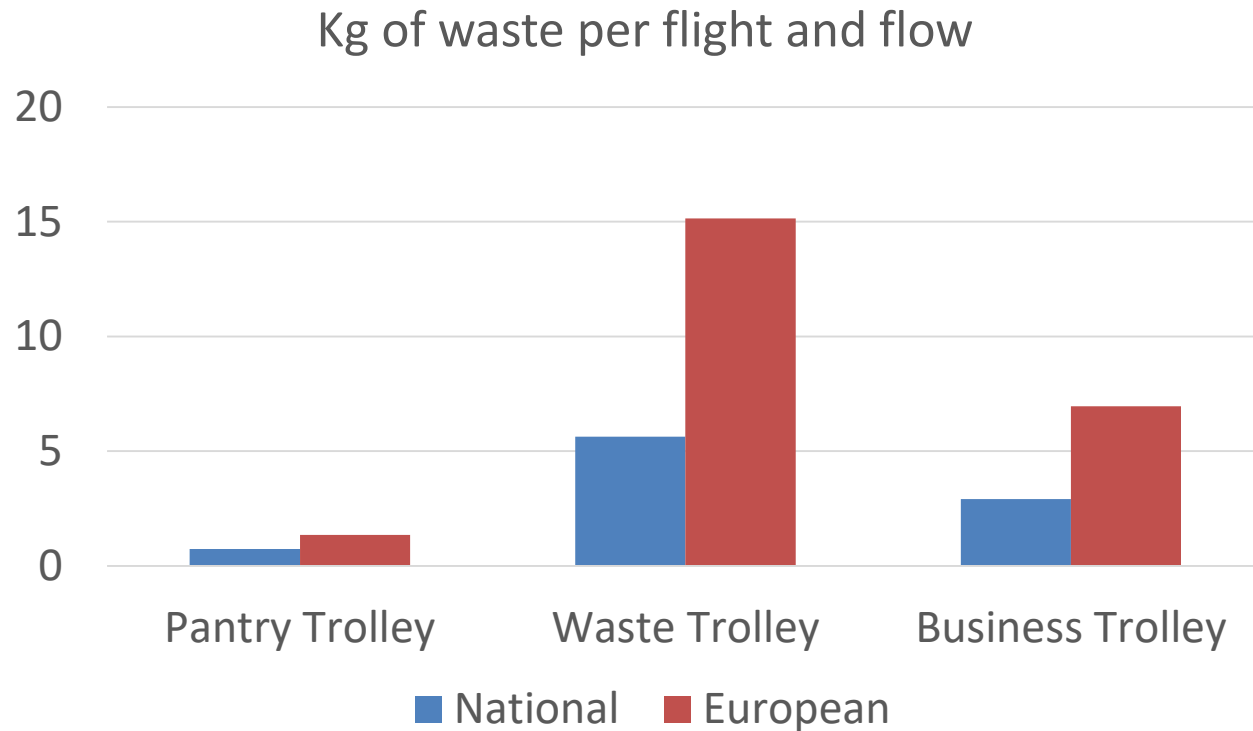
Process

e) Classification of the residues.

<i>Used packaging</i>	<i>Unused packaging</i>	<i>Other materials</i>
PET	Organic Matter	
Natural PEAD	Liquid in packaging	
Color PEAD	Packaging	
PVC	PET	
Film	Natural PEAD	
PP	Color PEAD	
PS	PVC	
Other plastics	Film	
Steel	PP	
Aluminium	PS	
Brik	Other plastics	
Wood	Steel	
	Aluminium	
	Brik	
	Glass	
	Plastic Cutlery	
	Celulose	
	Packaged sugar	
	Packaged pepper and salt	
	Packaged milk	
	Packaged coffee	
	Packaged napkins	
	Cardboard	

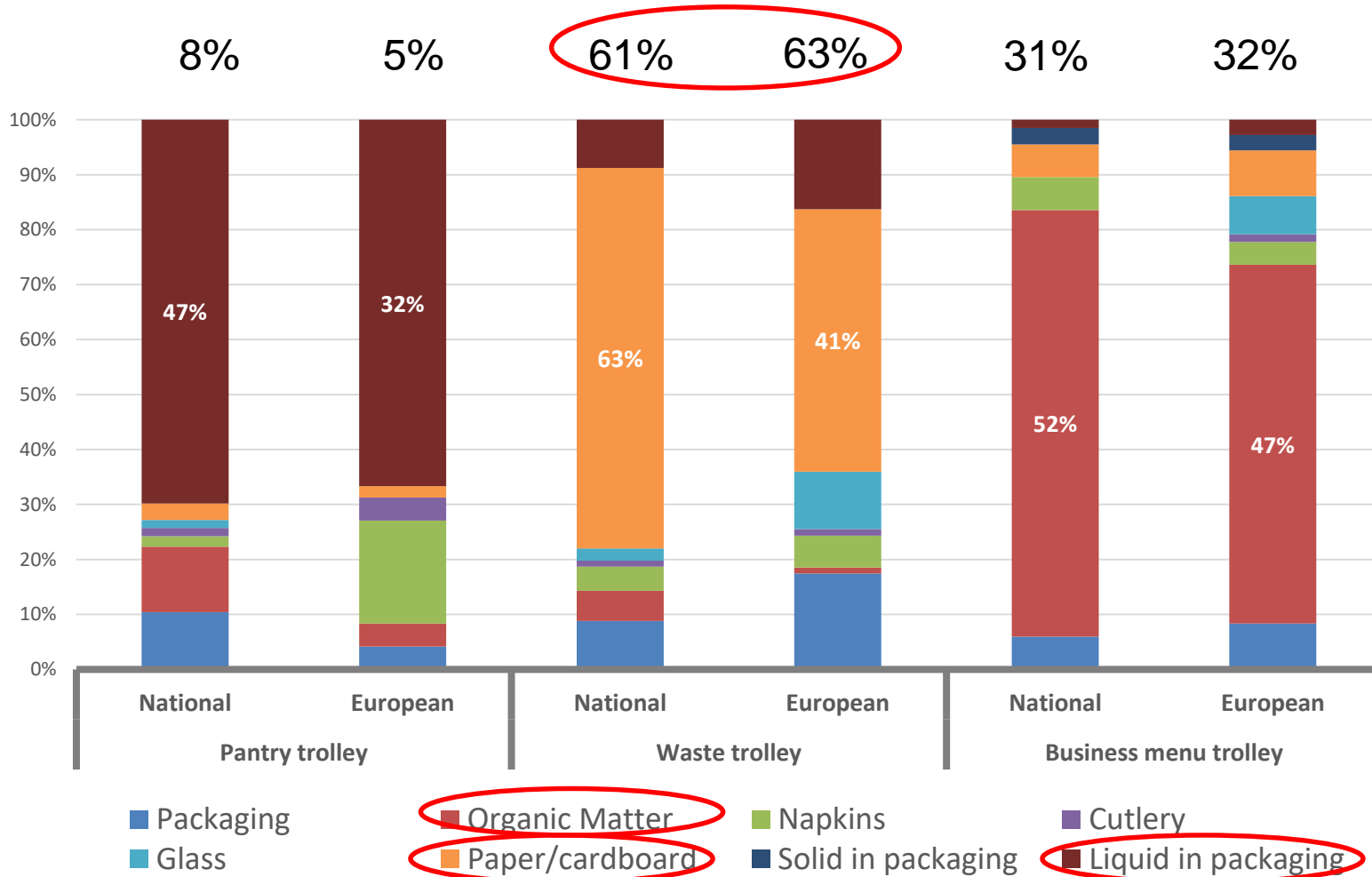
4. RESULTS AND DISCUSSION

Generation of waste for both National and European flights per flows.



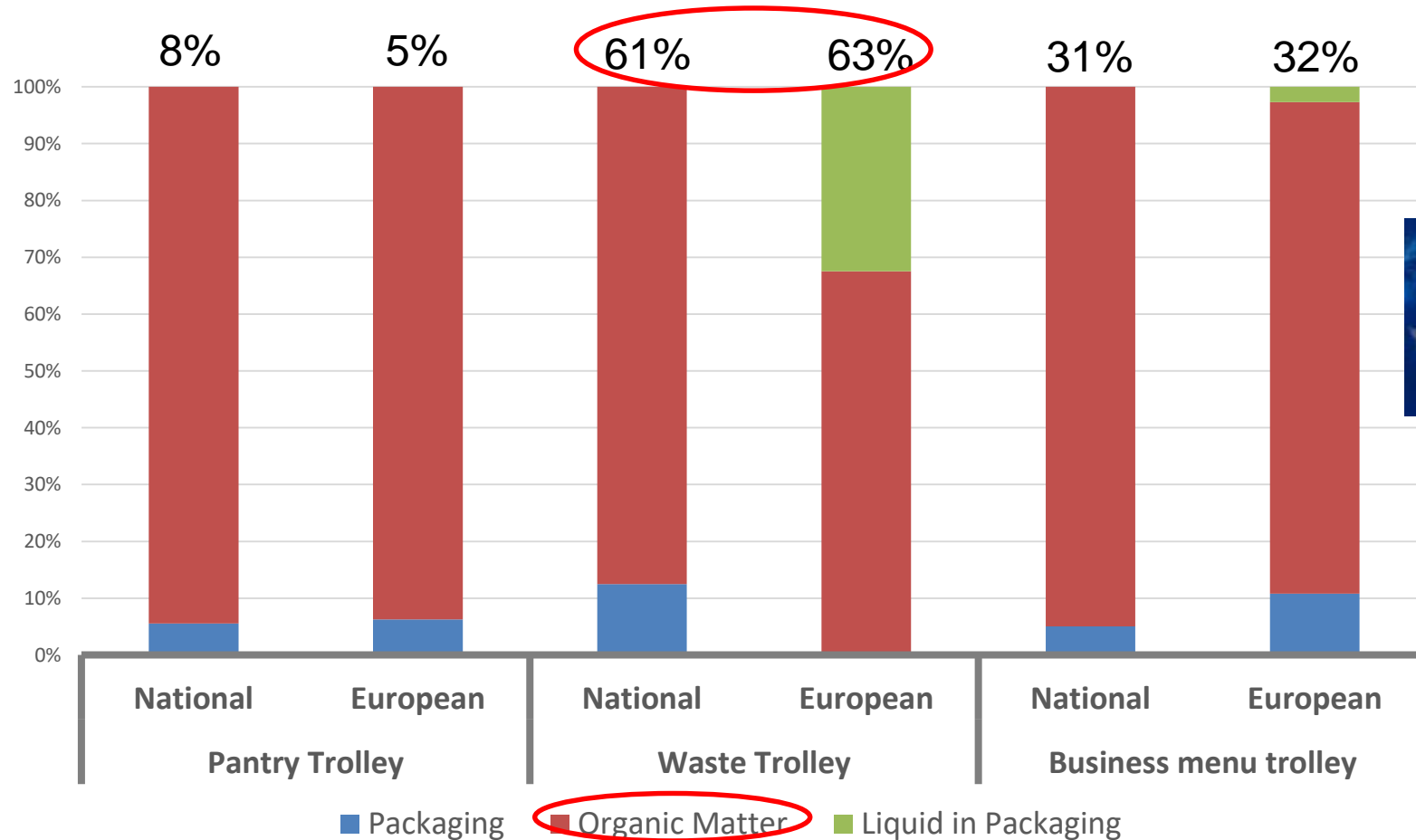
4. RESULTS AND DISCUSSION

Distribution of each type of **used material** for both National and European flights.



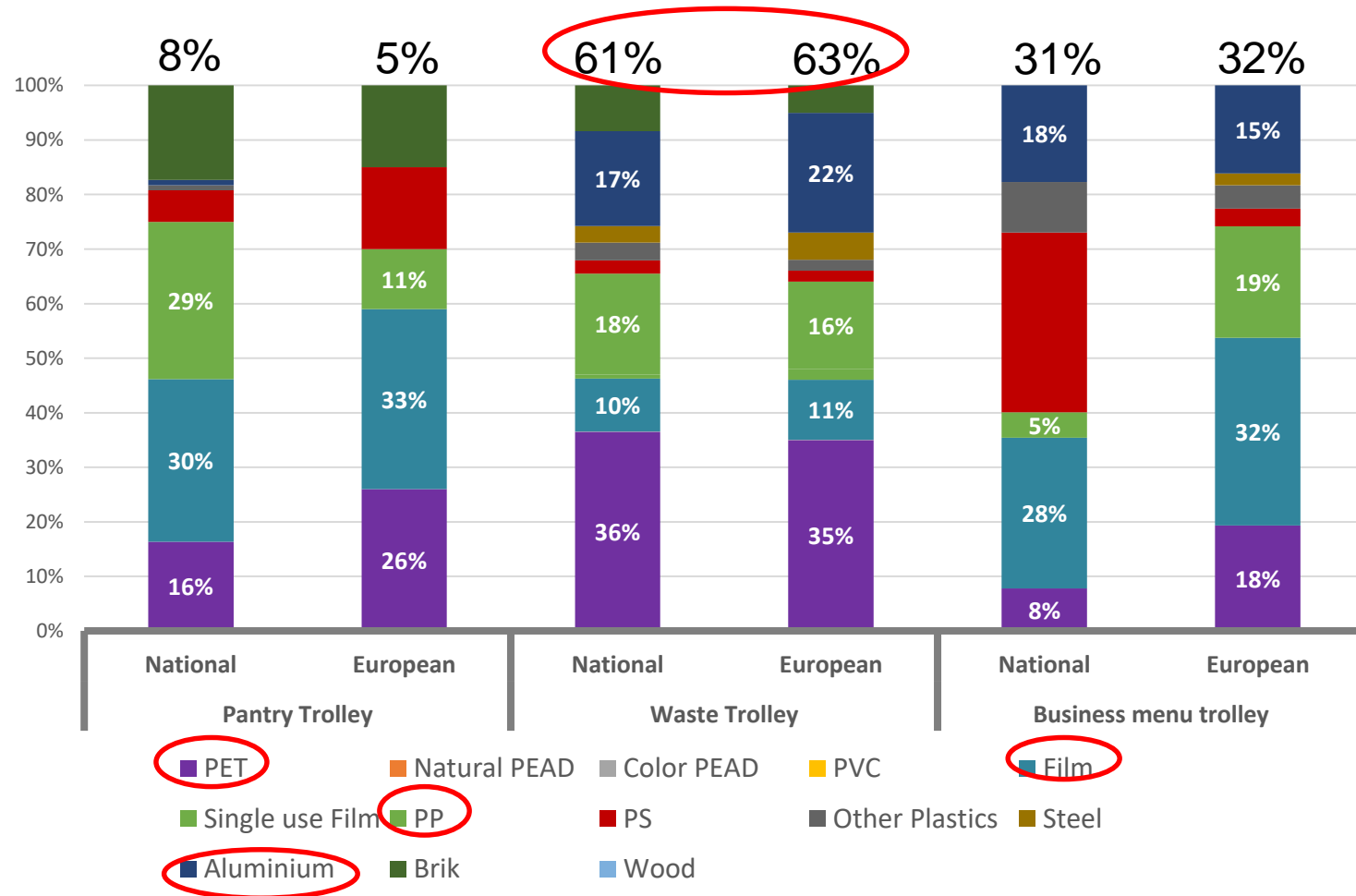
4. RESULTS AND DISCUSSION

Distribution of each type of unused material for both National and European flights.



4. RESULTS AND DISCUSSION

Distribution of each type of used packaging for both National and European flights.



4. CONCLUSIONS

1. The direct relationship between the amount of waste generated in the flight and its duration due to the increase of opportunities to produce waste.
2. In national flights, the highest percentage in waste weight is caused by paper, due to the amount of newspapers and the lack of food served and/or ordered.
3. Less waste from unmanipulated packaging is generated on European flights than on domestic flights, probably because there are more occasions when the passengers are hungry.
4. Most of the packaging waste is PET, film, PP and aluminium, due to the water bottles, snack bags, plastic cups and drinks, respectively.

THANK YOU

GRAZIE

TAK

DANKE

شكرا لك

GRACIAS

谢谢

OBRIGADO

ありがとう

БЛАГОДАРИЮ ВАС

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through the LIFE Program

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