

SWIM and Horizon 2020 Support Mechanism

Working for a Sustainable Mediterranean, Caring for our Future

MONITORING MARINE LITTER ON BEACHES – DATA ANALYSIS

Presented by:

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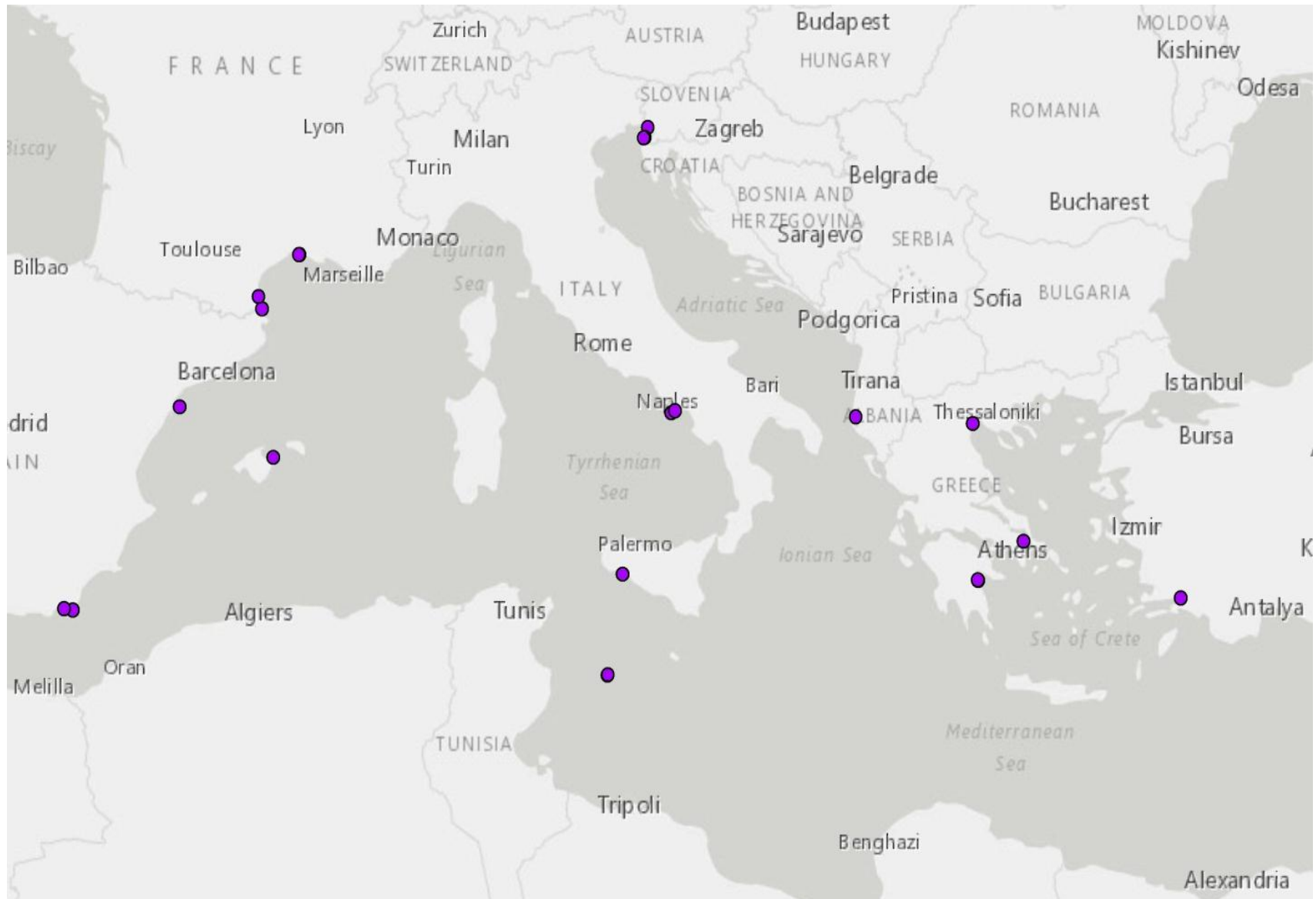
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THE ACT4LTTR MLWM CASE STUDY



ML DENSITY

Macro-debris density is calculated as follows (Lippiatt et al., 2013):

$$C_M = n / (w \times l),$$

where C_M is the density of litter items per m^2 , w and l are the width and length of the sampling unit respectively.



MARINE LITTER DENSITIES

Beach code	Beach name	Average number of items per 100m stretch
GRE-ALI	Alyki Kitrous	12896*
ITA-MIR	Miramare	2050
FRA-CRO	Crouste	1182
SPA-MES	Cala Mesquida	1134
ITA-TOR	Tordigliano	752
ITA-MAR	Marina del Cantone	681
ITA-PAL	Cala Palme	535
SPA-TGA	Torre Garcia	467*
ALB-ZVE	Zvernec	444
ITA-PIS	Cala Pisana	430
ITA-CAP	Capo San Marco	405
TUR-ACK	Akcapinar	399
SLO-STR	Strunjan	323
SLO-BEL	Bele Skale	315
SPA-EMB	Embarcadero de los Escullos	296
GRE-SCH	Schinias	174
GRE-CHE	Cherronisi	167
FRA-ESP	Espiguette	113
FRA-FOU	Fourat	106
FRA-BOU	Boucanet	78
GRE-KAZ	Kazarba	61
SPA-SER	Serrallo	46

Beach code	Beach name	Average number of items per square metre (items/m ²)
GRE-ALI	Alyki Kitrous	6,45
ITA-PAL	Cala Palme	1,07
ITA-TOR	Tordigliano	1,01
ITA-PIS	Cala Pisana	0,86
ITA-MIR	Miramare	0,86
ITA-MAR	Marina del Cantone	0,53
SLO-STR	Strunjan	0,32
SLO-BEL	Bele Skale	0,32
SPA-EMB	Embarcadero de los Escullos	0,30
FRA-CRO	Crouste	0,30
ITA-CAP	Capo San Marco	0,27
SPA-MES	Cala Mesquida	0,26
SPA-TGA	Torre Garcia	0,20
TUR-ACK	Akcapinar	0,16
ALB-ZVE	Zvernec	0,13
GRE-SCH	Schinias	0,11
GRE-CHE	Cherronisi	0,11
FRA-BOU	Boucanet	0,07
FRA-FOU	Fourat	0,05
GRE-KAZ	Kazarba	0,05
FRA-ESP	Espiguette	0,05
SPA-SER	Serrallo	0,03

BEACH CLEANLINESS

Beach cleanliness can be assessed through the Clean Coast Index (Alkalay et al., 2007):

Clean Coast Index (CCI) = (Total litter on sampling unit/total area of sampling unit) x K,

where CCI is the number of litter items per m², the total area of the sampling unit is generated by multiplying the sampling unit's length with the width and K is a constant that equals to 20.

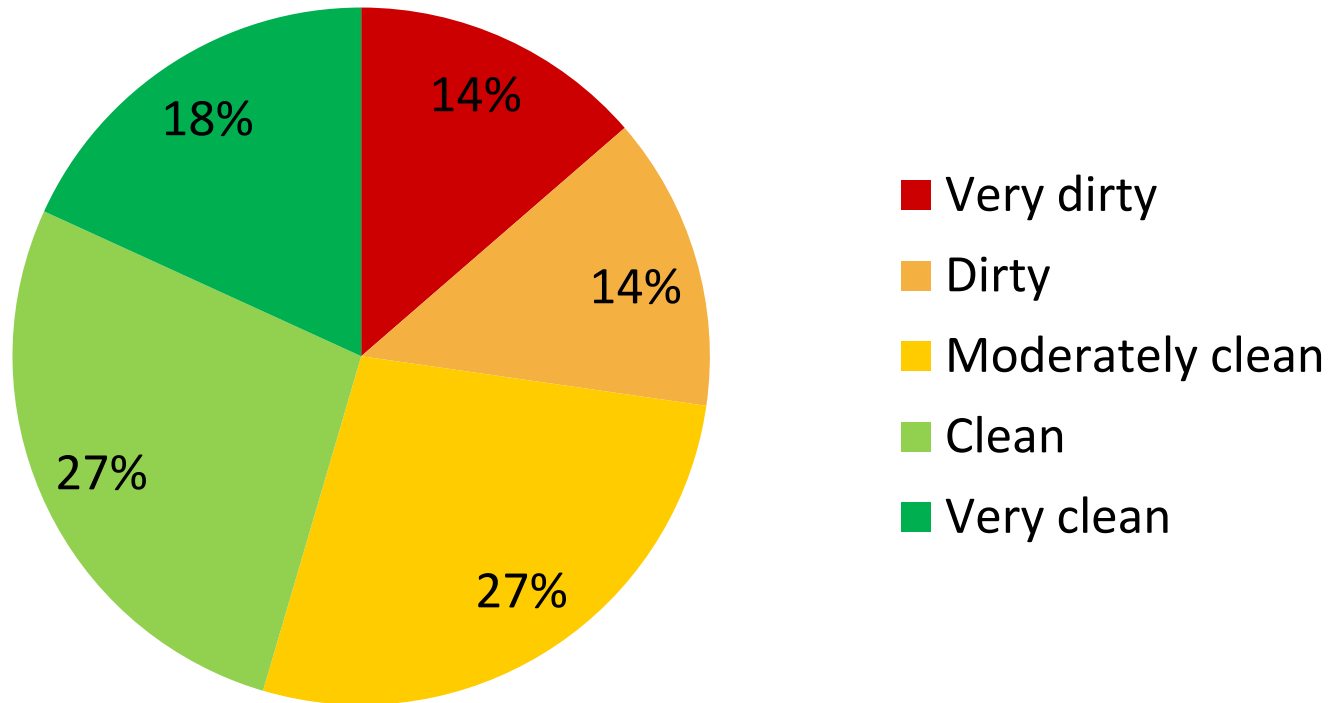
Quality	Value	Definition
Very clean	0-2	No litter is seen
Clean	2-5	No litter is seen over a large area
Moderate	5-10	A few pieces of litter can be detected
Dirty	10-20	A lot of litter on shore
Very dirty	20+	Most of the beach is covered with litter



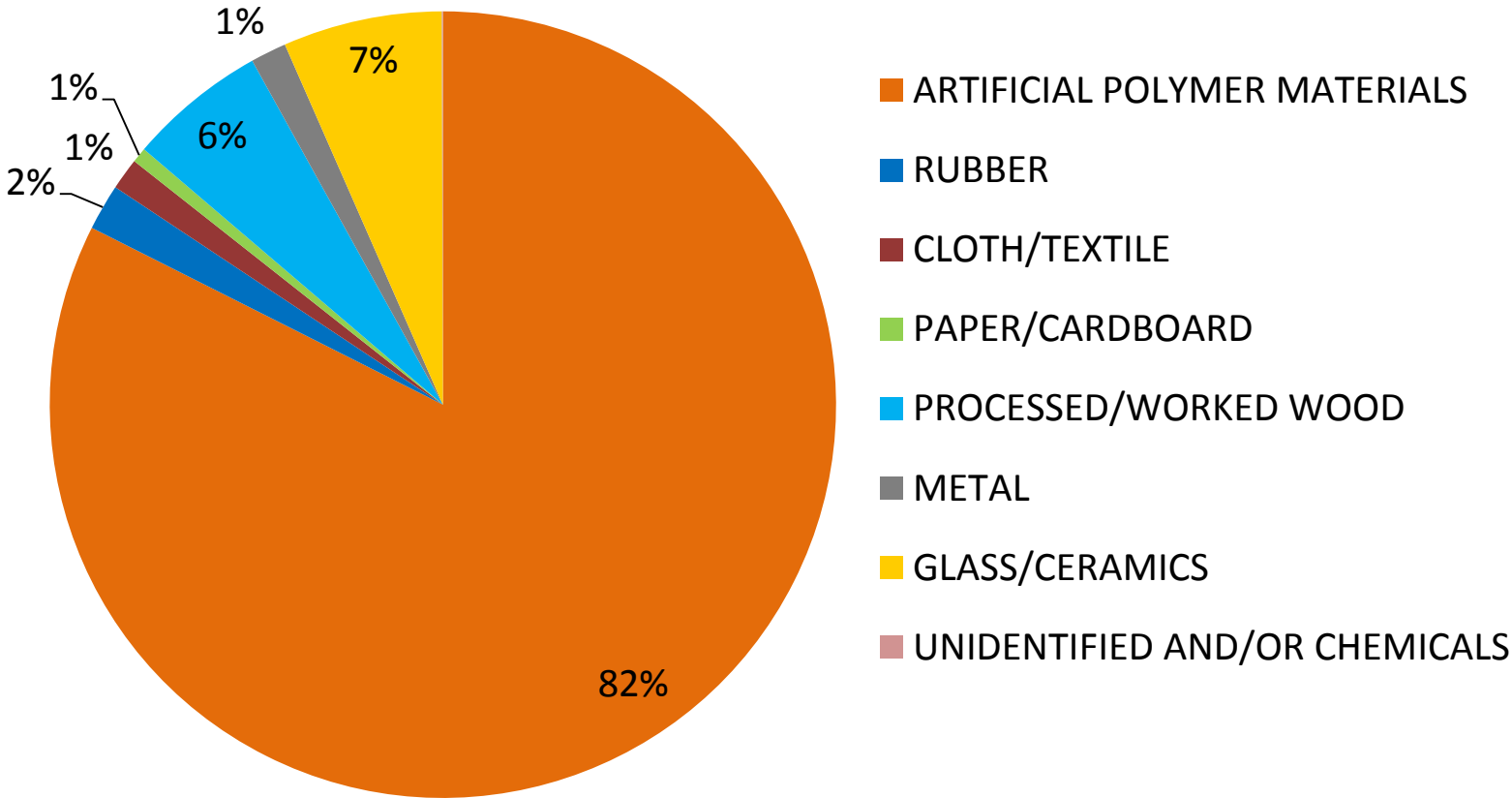
BEACH LITTER CLEANLINESS

Beach code	Beach name	Clean Coast Index (CCI)	Cleanliness
GRE-ALI	Alyki Kitrous	129,0	Very dirty
ITA-PAL	Cala Palme	21,4	Very dirty
ITA-TOR	Tordigliano	20,3	Very dirty
ITA-PIS	Cala Pisana	17,2	Dirty
ITA-MIR	Miramare	17,1	Dirty
ITA-MAR	Marina del Cantone	10,6	Dirty
SLO-STR	Strunjan	6,5	Moderately clean
SLO-BEL	Bele Skale	6,3	Moderately clean
SPA-EMB	Embarcadero de los Escullos	5,9	Moderately clean
FRA-CRO	Crouste	5,9	Moderately clean
ITA-CAP	Capo San Marco	5,4	Moderately clean
SPA-MES	Cala Mesquida	5,3	Moderately clean
SPA-TGA	Torre Garcia	4,1	Clean
TUR-ACK	Akcapinar	3,2	Clean
ALB-ZVE	Zvernec	2,5	Clean
GRE-SCH	Schinias	2,3	Clean
GRE-CHE	Cherronisi	2,2	Clean
FRA-BOU	Boucanet	1,5	Clean
FRA-FOU	Fourat	1,1	Very clean
GRE-KAZ	Kazarba	0,9	Very clean
FRA-ESP	Espiguette	0,9	Very clean
SPA-SFR	Serrallo	0,6	Very clean

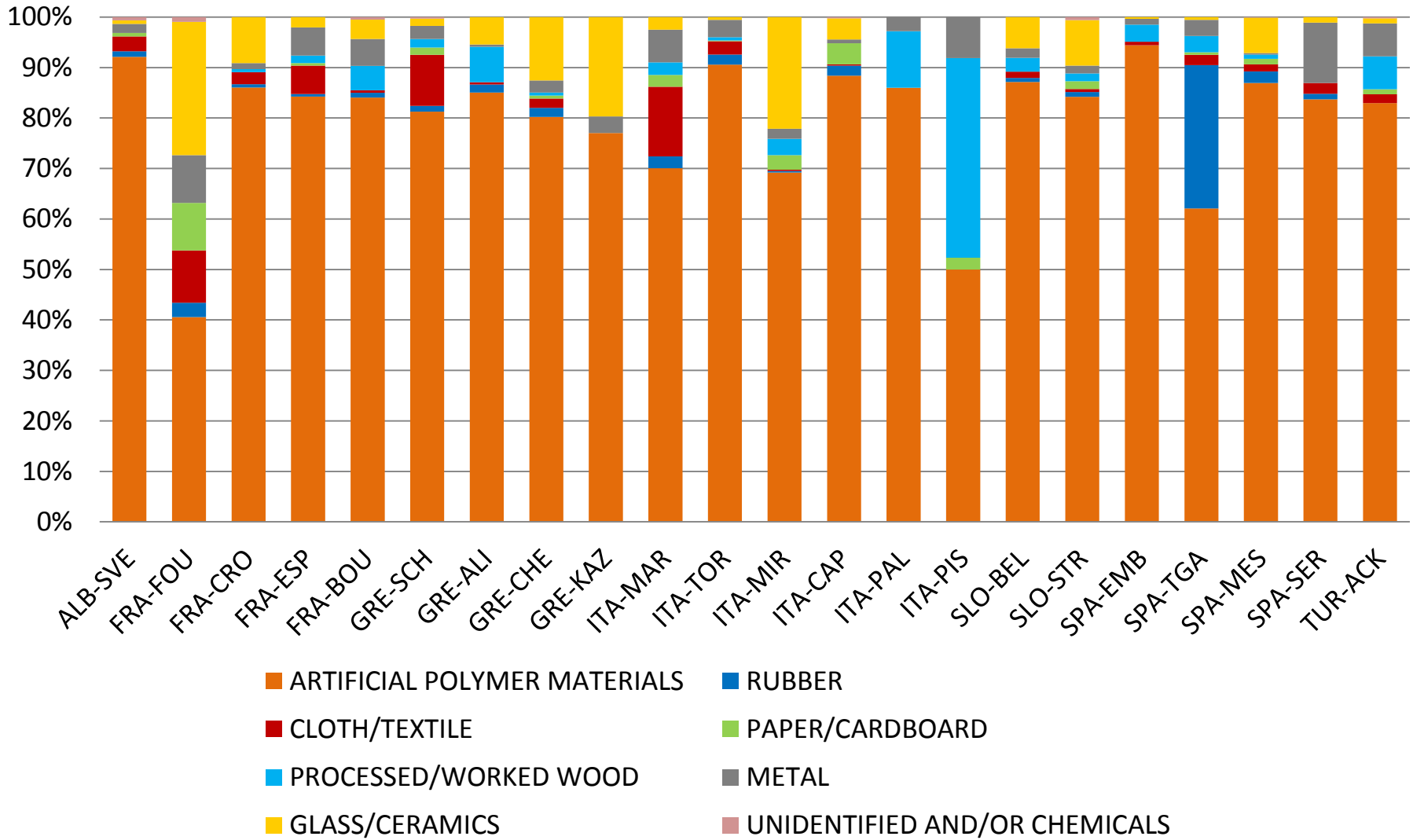
BEACH CLEANLINESS



COMPOSITION



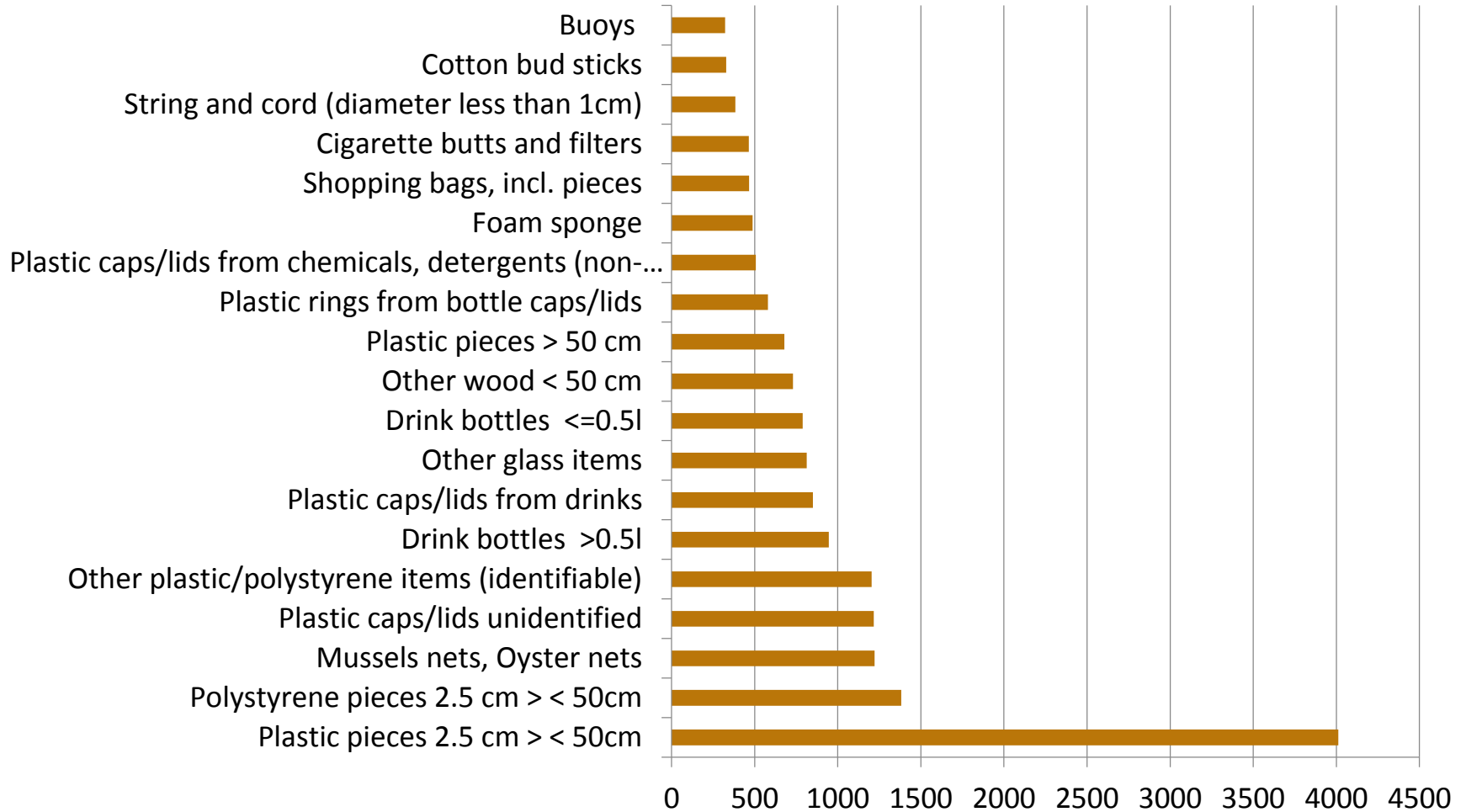
COMPOSITION

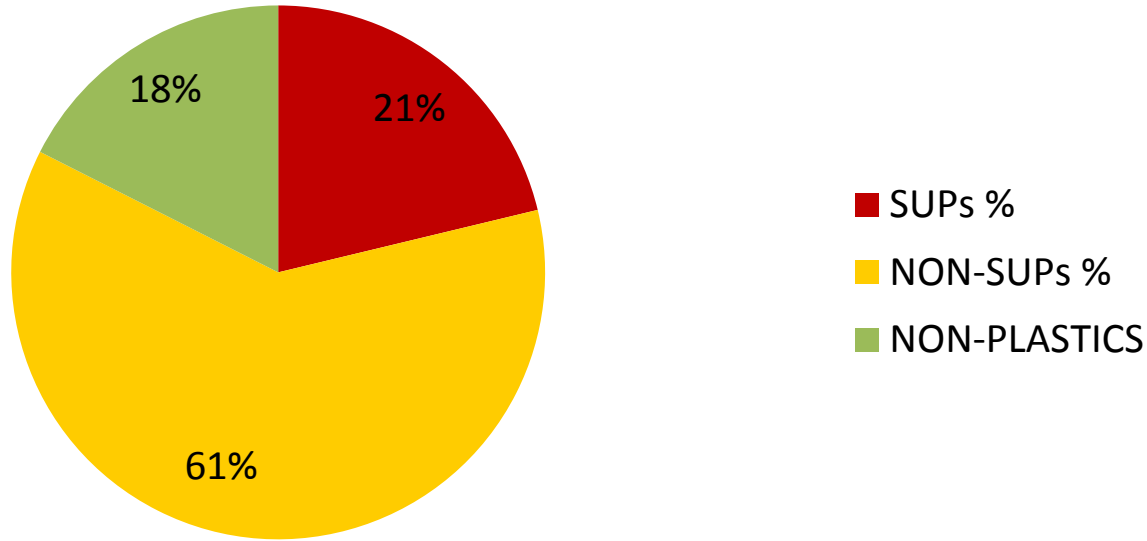


TOP 20 ITEMS

	Item code	Item name	Items count	%
1	G79	Plastic pieces 2.5 cm > < 50cm	4012	16,3
2	G82	Polystyrene pieces 2.5 cm > < 50cm	1382	5,6
3	G45	Mussels nets, Oyster nets	1221	5,0
4	G23	Plastic caps/lids unidentified	1217	5,0
5	G124	Other plastic/polystyrene items (identifiable)	1203	4,9
6	G8	Drink bottles >0.5l	946	3,8
7	G21	Plastic caps/lids from drinks	850	3,5
8	G210	Other glass items	814	3,3
9	G7	Drink bottles <=0.5l	789	3,2
10	G171	Other wood < 50 cm	731	3,0
11	G80	Plastic pieces > 50 cm	679	2,8
12	G24	Plastic rings from bottle caps/lids	579	2,4
13	G22	Plastic caps/lids from chemicals, detergents (non-food)	507	2,1
14	G73	Foam sponge	487	2,0
15	G3	Shopping bags, incl. pieces	466	1,9
16	G27	Cigarette butts and filters	464	1,9
17	G50	String and cord (diameter less than 1cm)	383	1,6
18	G95	Cotton bud sticks	329	1,3
19	G63	Buoys	322	1,3
20	G200	Bottles, including pieces	309	1,3

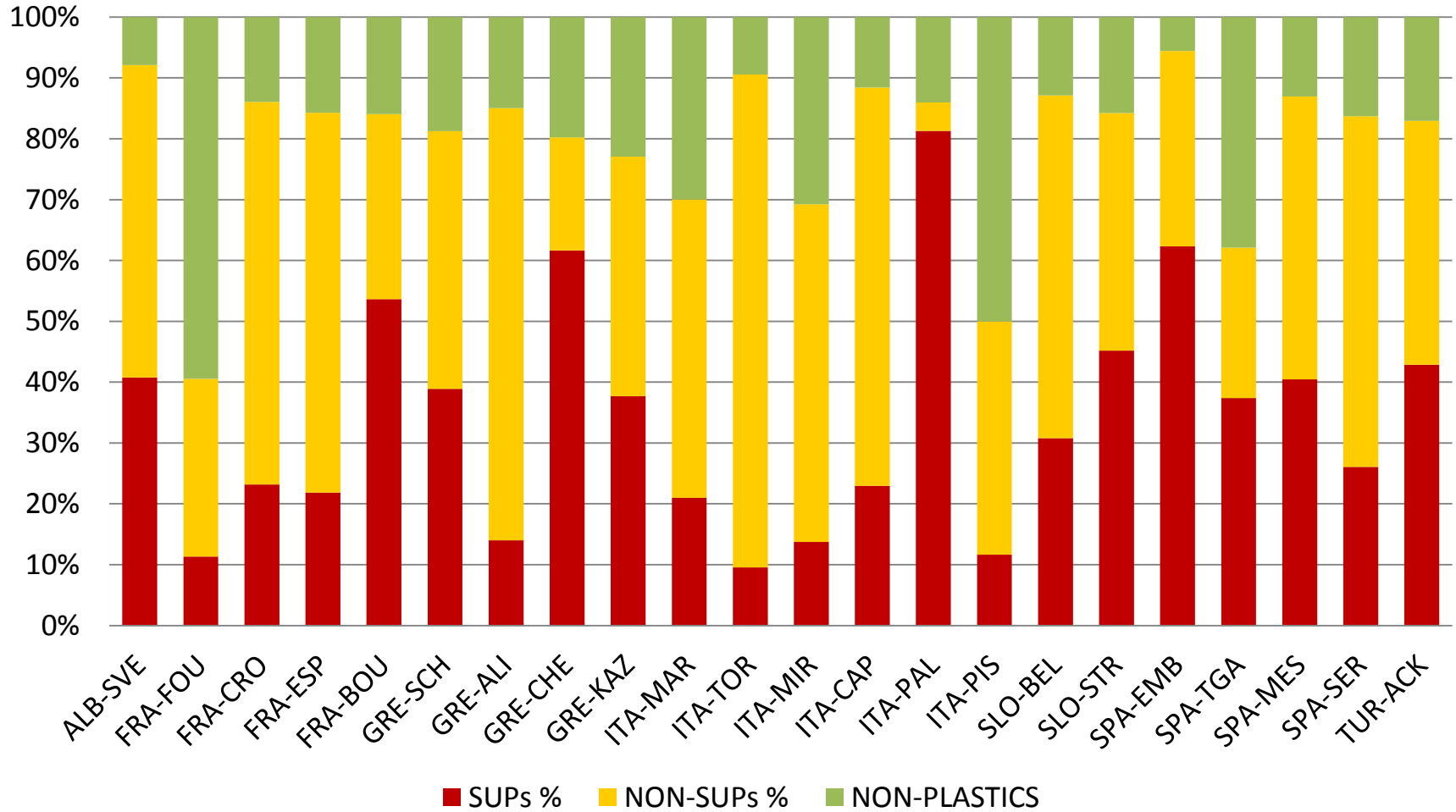
TOP 20 ITEMS



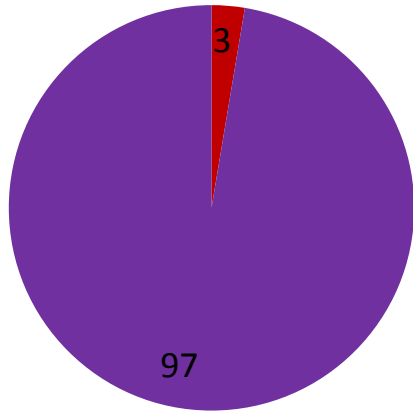


As single-use plastics the following items were considered: shopping bags, including pieces (G3), drink bottles $\leq 0.5l$ (G7), drink bottles $> 0.5l$ (G8), food containers including fast food containers (G10), plastic caps/lids from drinks (G21), cigarette butts and filters (G27), crisps packets/sweets wrappers (G30), lolly sticks (G31), cups and cup lids (G33), cutlery and trays (G34), straws and stirrers (G35), cotton bud sticks (G95) and sanitary towels/panty liners/backing strips (G96), toilet fresheners (G97).

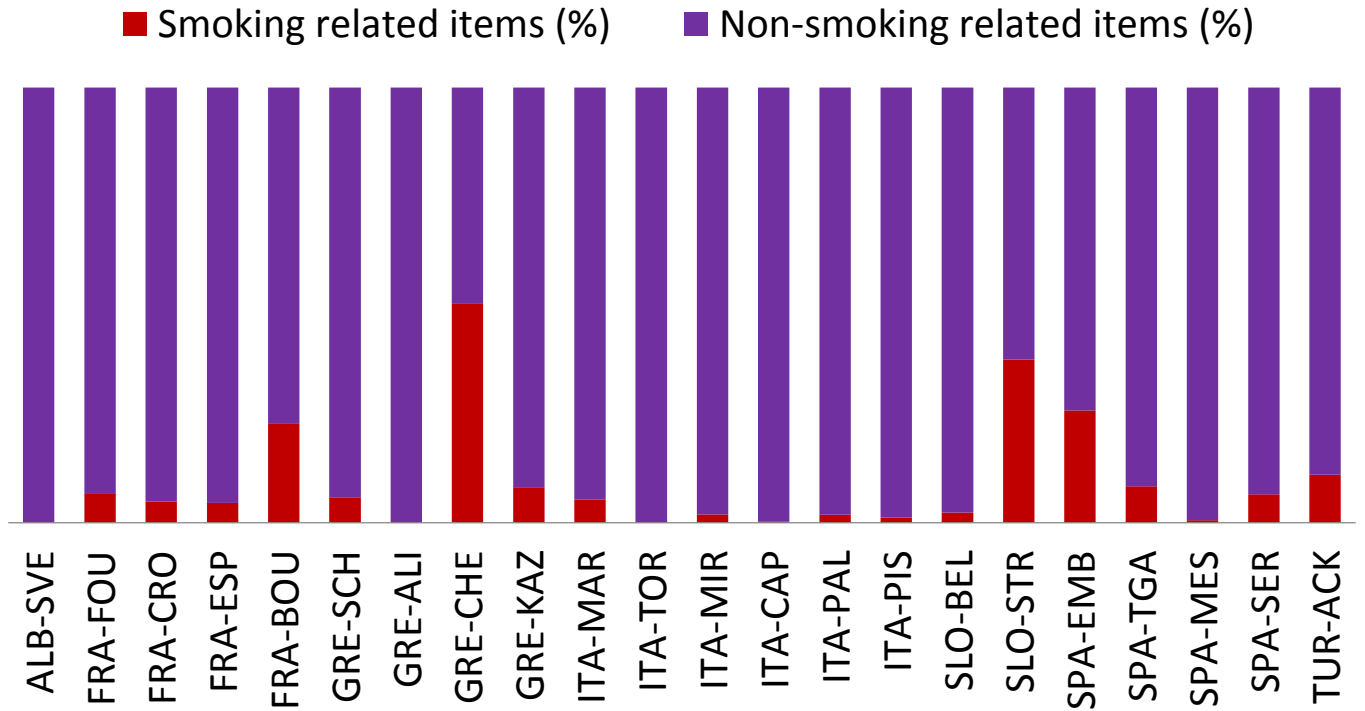
SINGLE-USE ITEMS



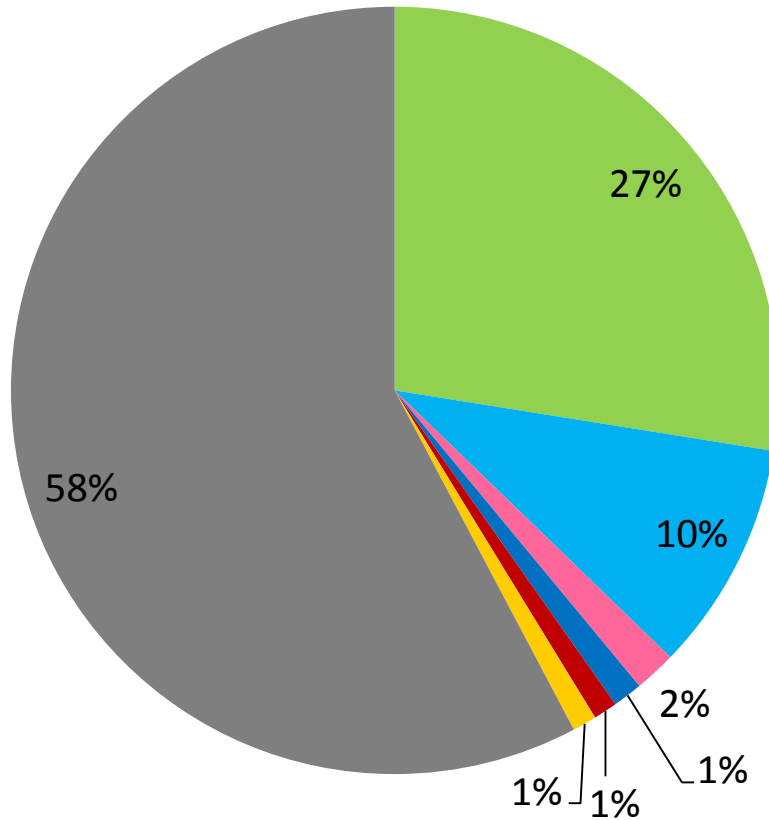
SMOKING RELATED ITEMS



- Smoking related items (%)
- Non-smoking related items (%)

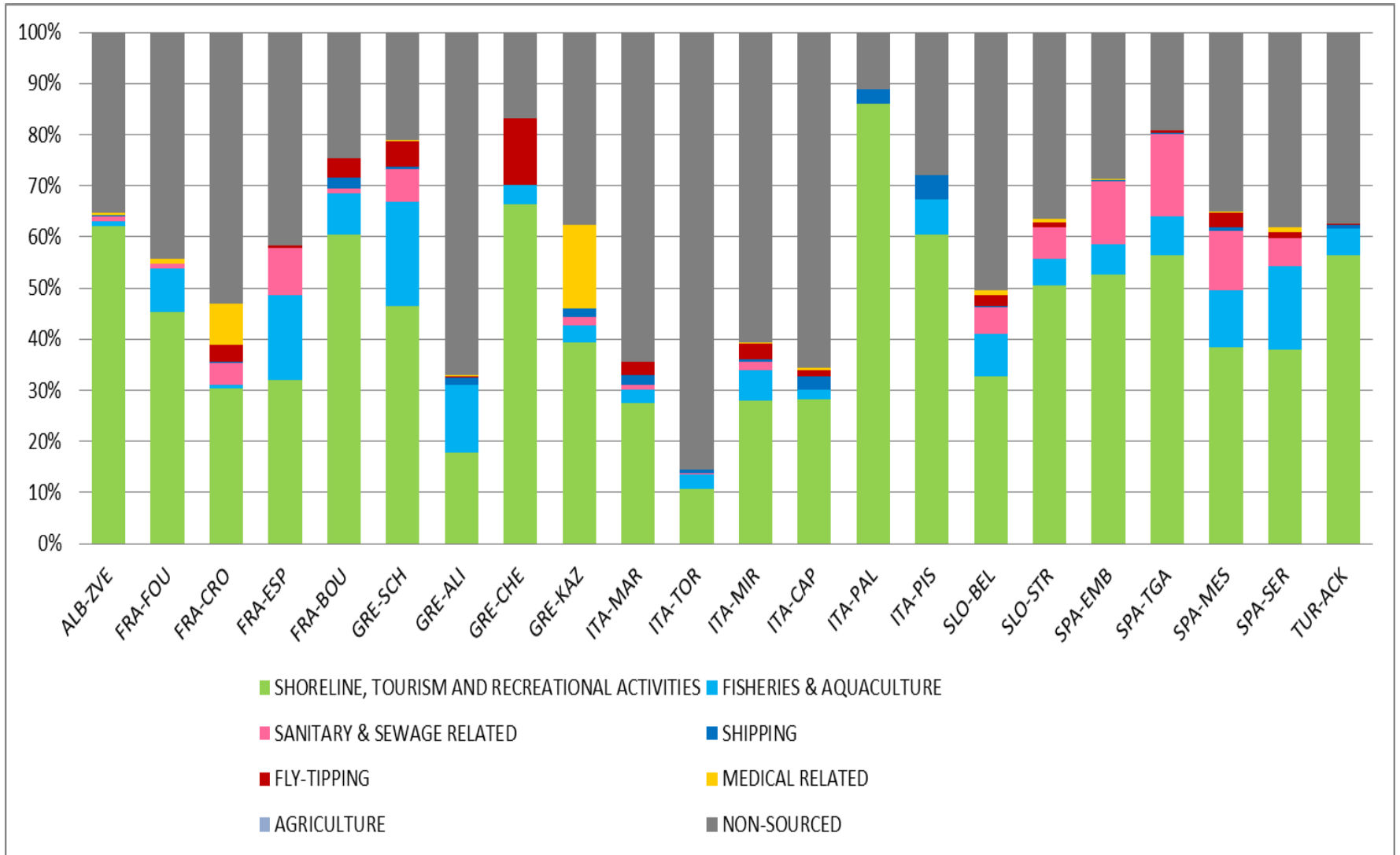


SOURCES OF ML



- SHORELINE, TOURISM AND RECREATIONAL ACTIVITIES
- FISHERIES & AQUACULTURE
- SANITARY & SEWAGE RELATED
- SHIPPING
- FLY-TIPPING
- MEDICAL RELATED
- AGRICULTURE
- NON-SOURCED

SOURCES OF ML



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