

STUDY ON LAND-SOURCED LITTER (LSL) IN THE MARINE ENVIRONMENT

Review of sources and literature

In the Context of the Initiative
of the Declaration of the Global Plastics
Associations for Solutions on Marine Litter

Darmstadt / Freiburg 26.01.2012

Commissioned by:

BKV Beteiligungs- und Kunststoffverwertungsgesellschaft mbH,
Frankfurt/Main (Germany)

IK Industrievereinigung Kunststoffverpackungen e.V., Bad
Homburg (Germany)

KVS Kunststoff Verband Schweiz, Aarau (Switzerland)

FCIO- Fachverband der Chemischen Industrie Österreichs,
Vienna (Austria)

Prepared by

Dr. Georg Mehlhart, Öko-Institut e.V.

Markus Blepp, Öko-Institut e.V.

Öko-Institut e.V.

Freiburg Head Office

P.O. Box 17 71

79017 Freiburg, Germany

Street Address

Merzhauser Str. 173

79100 Freiburg, Germany

Phone +49 (0) 761 - 4 52 95-0

Fax +49 (0) 761 - 4 52 95-288

Darmstadt Office

Rheinstr. 95

64295 Darmstadt, Germany

Phone +49 (0) 6151 - 81 91-0

Fax +49 (0) 6151 - 81 91-33

Berlin Office

Schicklerstraße 5-7

10179 Berlin, Germany

Phone +49 (0) 30 - 40 50 85-0

Fax +49 (0) 30 - 40 50 85-388

Contractor:

Öko-Institut e.V. – Institut für angewandte Ökologie
Merzhauser Str. 173, D 79100 Freiburg, Germany

Lay out prepared to print front and back side

Table of Contents

<i>Introduction by the sponsors</i>	i
Executive Summary	1
1 Introduction	1
1.1 Regional coverage	1
1.2 Structure of the study	1
2 The current situation of marine litter	2
2.1 Marine litter	2
2.1.1 Main source of marine litter	3
2.2 Land-Sourced Litter (LSL)	6
2.2.1 Situation worldwide	6
2.2.2 LSL and plastics	9
2.3 Analysis of quantities and pathways (discharge)	10
2.3.1 Situation in terms of the Baltic Sea	11
2.3.2 Situation in terms of the North Sea	13
2.3.3 Situation in terms of the Mediterranean Sea	18
2.3.4 Challenges and recommendations resulting from the analysis	20
3 Plastics production and use	22
4 Pressure indicator for the risk of pollution with LSL	25
4.1 Population density	26
4.2 Tourism and recreation	26
4.3 Activities at ports	26
4.4 Solid waste management	27
4.4.1 Collection and treatment of municipal waste	27
4.4.2 Dumpsites located on the coast or riverbanks	29
4.4.3 Plastic packaging waste management	30
4.4.4 Waste management of commercial and industrial waste	33
4.4.5 Waste management of agricultural plastic waste	33
4.5 Waste water treatment	33
4.5.1 Coverage of collection (sewer) and treatment	33
4.5.2 Sewer overflow, combined sewer overflow	33
4.5.3 Pressure indicator for waste water management	34
4.6 Proposed set of indicators	34
5 Baltic Sea	36

5.1	Geography	36
5.2	Convention on the prevention of the Baltic Sea.....	36
5.3	Pressure	37
5.3.1	Population density	37
5.3.2	Tourism and recreation	37
5.3.3	Waste management at ports	38
5.3.4	Collection and treatment of municipal waste	38
5.3.5	Management of plastic waste	38
6	The North Sea	40
6.1	Geography	40
6.2	Convention for the protection of the marine environment of the north-east Atlantic.....	41
6.3	Pressure	41
6.3.1	Population density	41
6.3.2	Tourism and recreation	42
6.3.3	Waste management at ports	42
6.3.4	Collection and treatment of municipal waste	42
6.3.5	Management of plastic waste	42
7	The Mediterranean Sea	43
7.1	Geography	43
7.2	Convention for the protection of the Mediterranean Sea against pollution.....	44
7.3	Pressure	45
7.3.1	Population density	45
7.3.2	Tourism and recreation	46
7.3.3	Waste management at ports	46
7.3.4	Collection and treatment of municipal waste	47
7.3.5	Management of plastic waste	49
8	Comparison of structure and pressure for the three seas.....	51
9	Behavioural aspects.....	53
9.1	Phenomenon of littering	53
9.2	Trends	54
9.2.1	Economic growth	54
9.2.2	Demographic characteristics	54
9.2.3	Tourism	55

9.2.4	Major events.....	55
9.2.5	Biodegradable plastics and bio-based plastics	56
9.2.6	Consumer trends.....	56
10	Stakeholders.....	58
11	Conclusions and outlook	59
12	References.....	63
12.1	References for this study	63
12.2	General literature on marine littering	1
12.2.1	Further references available electronically (CD ROM).....	1
12.2.2	Further internet libraries	9
13	Annex	1
13.1	Beach litter.....	1
13.2	Floating litter	5
13.3	Sea bed litter.....	6
13.4	Identified stakeholders	8
13.4.1	Baltic Sea	8
13.4.2	North Sea	12
13.4.3	Mediterranean Sea.....	17
13.5	Classification as ocean sourced, land-sourced or „general items“ (NMPDM 2007)	22
14	Maps	1
14.1	Population density of administrative areas (NUTS 3); Source: Eurostat and other data sources, consolidated by Öko-Institut 2011	2
14.2	Nights spent by residential and non-residential in tourist accommodation establishments (NUTS 2); Source: Eurostat (2011) and other.....	3
14.3	Maritime transport of freight: Total goods loaded and unloaded, average 2008 – 2010; Source: Eurostat (2011) and other	4
14.4	Current Waste Management; Source: Eurostat (2011) and estimates.....	5
14.5	Plastic packaging waste disposed off; Source: Eurostat (2011) and estimates.....	6

Figures

Figure 1:	Situation liable to lead to pollution on coastal zones. Source: (IKZM 2008).....	4
Figure 2:	Distribution of indicator items for LSL and SSL , US 2001 – 2006 (MNDMP 2007)	6
Figure 3:	Distribution of indicator items for LSL and SSL , Source: Compiled from annual ICC data reports, Center for Marine Conservation/Ocean Conservancy (1989-2007) in: UNEP 2009b	7
Figure 4:	Average values of type of litter in the North Sea (Source: Own illustration based on OSPAR 2009 and UNEP 2009b).....	17
Figure 5:	Source of SSL and LSL from items found on reference beaches in the North Sea (Source: Own illustration based on OSPAR 2009)	17
Figure 6:	Left : Total plastics demand from European Converters in 2010 by segments; Others refers to furniture, leisure, sport and medical applications Right: Total plastics demand from European Converters in 2010 by resin types Both: Values for EU-27 + Norway + Switzerland; Source: PlasticsEurope 2011	22
Figure 7:	Break down of the plastics demand from European Converters in 2010 by segments and resin types in EU-27 + Norway and Switzerland; Source: PlasticsEurope 2011	22
Figure 8:	Main Steps in plastics' lifecycle for EU27 + Norway Switzerland in 2010 Source: PlasticsEurope 2011	23
Figure 9:	Data on plastic packaging in Europe; Source: Eurostat 2011b, env_waspac 2011	24
Figure 10:	Effects of littering and dumping alongside rivers in Albania (2011), Photo: Markus Blepp	29
Figure 11:	Data on plastic packaging generated and treated in Europe (2008): Sorted by the specific amount generated per capita; Source: Eurostat 2011b, env_waspac	31
Figure 12:	Data on plastic packaging generated and treated in Europe (2008): Sorted by the specific amount of material recycling; Source: Eurostat 2011b, env_waspac 2011b	32
Figure 13:	Data on plastic packaging generated and treated in Europe (2008): Sorted by the specific amount for calculated disposal; Source: Eurostat 2011b, env_waspac	32
Figure 14:	Population density in administrative areas (NACE 3), bordering the Baltic Sea (including . Source: Eurostat.	37
Figure 15:	Population density in administrative areas (NACE 3), bordering the North Sea. Source: Eurostat (2011).	41
Figure 16:	Population density in administrative areas (NACE 3) bordering the Mediterranean Sea. Source: different data, consolidated by Öko-Institut.	46

Tables

Table 1:	Overview of the SSL and LSL sources of marine litter.....	5
Table 2:	“Top ten” marine debris items for ICC Global and for Baltic Sea, North Sea and north-east Allantic and Mediteranean Sea	8
Table 3:	Data regarding the marine litter items (debris) in the Baltic Sea	12
Table 4:	Overview of the proportion of marine litter categories on Baltic Sea beaches (several sources).....	13
Table 5:	Data regarding the marine litter items (debris) in the North Sea	14
Table 6:	Overview of the proportion of marine litter categories per items found on reference beaches on North Sea (several sources).....	16
Table 7:	Data regarding the marine litter items (debris) in the Mediterranean Sea	19
Table 8:	Level of waste management referring to the level of material recovery and incineration of municipal waste; <i>Source: Eurostat, 2011a ,including estimates for non EU countries</i>	28
Table 9:	Overview of impacts and related indicators for land-sourced litter.....	34
Table 10:	Riparian states and their coastline in km and the share in percentage (Source: Policy Research 2009)	36
Table 11:	National pressure, indicating potential LSL	39
Table 12:	Riparian states and their coastline in km and the share in percentage (Source: Policy Research 2009)	40
Table 13:	National pressure, indicating potential LSL for the North Sea	42
Table 14:	Riparian states and their coastline in km and the share in percentage (Source: Policy Research 2009)	44
Table 15:	Municipal solid waste situation in selected SWEEP-Net Countries (SWEEP-NET 2010).....	48
Table 16:	National pressure, indicating potential LSL for the Mediterranean Sea	50
Table 17:	Regional differences for the three seas	51
Table 18:	Overview of impacts and related indicators for land-sourced litter (Numbers are referring to the relevant chapter).....	61

Abbreviations

BKV	Beteiligungs- und Kunststoffverwertungsgesellschaft mbH
ECO-LEF	Public System for Recovery and Reuse Waste
EEA	European Economic Area
EEE	Electric and Electronic Equipment
EMCs	Eastern Mediterranean countries
EC	European Commission
EU	European Union
EuPC	European Plastics Converters
FCIO	Fachverband der Chemischen Industrie Österreichs

GIS	Geographic Information System
HELCOM	Helsinki Commission/The Baltic Marine Environment Protection Commission
ICC	International Coastal Cleanup
ICZM	Integrated Coastal Zone Management
IK	Industrievereinigung Kunststoffverpackungen e.V.
KIMO	Kommunenenes Internasjonale Miljøorganisasjon
KVS	Kunststoff Verband Schweiz
LSL	Land-Sourced Litter
NGO	Non-Governmental Organization
NMDMP	National Marine Debris Monitoring Program
MAP	Mediterranean Action Plan
MARPOL	International Convention for the Prevention of Pollution by Ships
MSW	Municipal Solid Waste
MW	Municipal Waste
NABU	Naturschutzbund Deutschland e.V.
NUTS	Nomenclature of Units for Territorial Statistics
NUTS 1	Major socio-economic regions
NUTS 2	Basic regions for the application of regional policies
NUTS 3	Small regions for specific diagnoses
NMCs	Northern Mediterranean countries
OSPAR	Convention for the Protection of the Marine Environment of the Northeast Atlantic
PE	Polyethylene
PP	Polypropylene
POPs	Persistent Organic Pollutants
SMCs	Southern Mediterranean countries
SSL	Sea-Sourced Litter
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environmental Programme

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_9647

