



Go green with **Best Environmental Management Practices for Waste Management**

Presentation at the Conference
**Municipal and Regional Waste Management
& Prevention Conference**

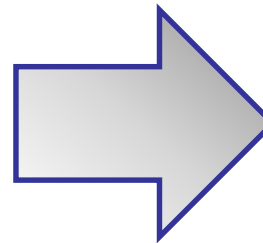
Brussels, 21 November 2017

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European Commission – Joint Research Centre



Do you ask yourself...



**Best
Environmental
Management
Practices (BEMPs)
can help!**



GO GREEN WITH **BEST ENVIRONMENTAL MANAGEMENT PRACTICES!**



BEMP

**Best practices to reduce
environmental impacts**

Already in Use by Best Environmental Performers



**Practical
Guidance**



**Environmental
Performance
Indicators**



**Benchmarks
of Excellence**



The 'frontrunners approach'



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The 'frontrunners approach'



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The 'frontrunners approach'



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BEMPs for the Waste Management Sector

The scope

Municipal solid waste

Construction and demolition waste

Healthcare waste

Waste
management
companies

Waste
authorities
(local)

Waste
management
strategy

Waste
prevention

Waste
collection

Waste re-
use

Waste
treatment

Material
recycling, energy
recovery, waste
disposal



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Currently under development

Few examples of BEMPs for **municipal solid waste**

Waste management strategy



Waste prevention



Waste collection



Waste re-use



Waste treatment

- Waste monitoring
- Pay-As-You-Throw
- Awareness raising

- Local waste prevention programmes
- Waste advisers network

- Logistics optimisation for waste collection
- Inter-municipal cooperation

- Re-use schemes

- Treatment of waste mattresses for recycling



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Advanced waste monitoring

- Data at **single waste stream level** and for the different waste management phases;
- Track information **along the entire value-chain** of the collected waste;
- Regular **composition analysis** of mixed waste;
- **Timely** availability of data;
- (Internal) **analysis** of data;
- **Web-based tools** for information to residents.

Future outlook: advanced waste monitoring + user identification at collection = web-based tool with data for each waste stream at single household level

Example – Advanced waste collection monitoring

Data for 35
separately
collected waste
streams

Val di Non (IT)

Monthly data
collection

QUANTITA' RIFIUTI RACCOLTI

CER	Descrizione	GEN (t)	FEB (t)	MAR (t)	APR (t)	MAG (t)	GIU (t)	LUG (t)	AGO (t)	SET (t)	OTT (t)	NOV (t)	DIC (t)	TOTALE (ton)	%
Frazione organica															
200108	residui biodegradabili di cucine e mense	169,120	155,880	173,490	168,220	165,190	179,060	201,100	238,420	183,000	191,110	198,920	175,400	2,161,860	12,33%
200201	residui biodegradabili da giardini e parchi	54,760	28,300	137,160	266,970	172,640	250,960	252,380	273,360	262,580	155,920	283,380	113,860	2,252,270	12,84%
R.diff. per frazioni omogenee															
150101	imballaggi in carta e cartonecartone selettivo	116,960	139,540	149,760	154,200	163,680	144,980	155,080	160,160	141,120	136,500	134,460	144,360	1,740,800	9,93%
200101	carta congiunta	88,800	66,100	85,620	80,020	87,080	84,740	105,640	109,320	106,740	61,100	85,540	82,320	1,043,020	5,95%
200102	vetro	0,000	0,000	0,000	14,200	0,000	0,000	0,000	15,120	0,000	0,000	0,000	14,960	44,280	0,25%
200103	legno non contenente sostanze pericolose	83,630	64,820	123,830	129,110	142,030	135,190	126,920	187,650	119,510	113,490	109,690	84,970	1,420,840	8,10%
200104	abbigliamento	5,060	0,000	7,180	6,820	7,180	7,660	0,000	0,000	9,060	13,400	7,840	4,800	70,000	0,40%
200109	plastica	2,800	19,000	19,860	25,260	27,040	24,780	28,580	23,940	32,990	15,640	26,740	18,800	275,430	1,57%
200110	metallo	8,110	25,430	44,910	46,990	49,520	37,740	48,490	53,230	45,760	40,810	54,680	42,450	518,120	2,95%
170104	residui misti da costr e demolizione	8,820	53,160	45,860	79,960	81,930	71,980	72,820	96,300	67,140	56,510	78,820	31,940	814,140	4,64%
Imballaggi															
150102	imballaggi in plastica	5,380	53,000	65,780	72,700	88,960	70,910	70,540	86,260	72,980	67,900	73,340	64,620	850,370	4,85%
150104	imballaggi metallici	1,200	4,080	8,240	19,44	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	24,720	0,13%
150105	imballaggi in materiali compositi (tetrapak)	1,000	8,580	7,380	6,800	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	23,760	0,12%
150106	multimateriale	1,960	8,000	11,120	11,62	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	32,700	0,17%
150107	imballaggi in vetro	9,740	103,460	92,420	76,24	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	282,860	1,54%
RACCOLTA DIFFERENZIATA															
200121*	tubi fluorescenti ed altri rifiuti contenenti Hg	0,000	0,140	0,228	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,368	0,00%
200123*	apparecchiature fuori uso contenenti CFC	3,000	7,200	5,740	4,660	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	20,600	0,11%
200135*	apparecchiature elettriche ed elettroniche fuori uso	4,300	7,655	0,560	4,770	3,755	11,277	2,958	5,920	11,490	2,893	5,230	4,053	64,591	0,37%
200136	apparecchiature elettriche ed elettroniche fuori uso	2,705	21,585	19,700	16,030	12,100	23,614	16,235	19,667	27,862	18,928	27,170	14,575	238,171	1,36%
Raccolte selettive															
010138	toner per stampa esauriti	0,035	0,110	0,513	0,254	0,435	0,025	0,361	0,120	0,312	0,170	0,301	0,410	3,046	0,02%
200132	medicinali non citotossici e citostatici	0,040	0,170	0,997	0,473	0,339	0,108	1,101	0,386	0,508	0,220	0,365	0,608	5,216	0,03%
200133*	batterie ed accumulatori al Pb, al Ni-Cd, Hg	0,340	1,2980	8,280	5,339	6,206	3,895	4,646	3,830	8,444	2,755	4,899	4,424	58,356	0,33%
200134	batterie ed accumulatori al Pb, al Ni-Cd, Hg	0,025	0,550	0,154	0,010	0,020	0,000	0,000	0,000	0,240	0,315	0,353	0,000	1,667	0,01%
Altri rifiuti urbani non pericolosi															
200125	olio vegetale e grassi commestibili	1,060	1,050	0,170	0,870	1,580	1,230	0,630	3,040	0,000	0,520	1,415	0,500	12,065	0,07%
200126	(olio motore) oli e grassi diversi da quelli di	0,000	3,900	0,390	1,560	2,340	1,950	0,000	0,000	5,850	0,000	0,000	0,780	16,770	0,10%
200127	rifiuti prodotti dalla pulizia di camini e	41,520	18,480	25,480	21,840	19,880	21,400	0,000	27,880	0,000	0,000	27,520	25,460	229,460	1,31%
200202	terra e roccia	0,000	0,000	0,000	0,000	0,000	0,000	26,660	0,000	0,000	0,000	0,000	0,000	26,660	0,15%
160101	pneumatici fuori uso	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	12,900	16,010	0,000	0,000	28,910	0,16%
Altri rifiuti urbani pericolosi															
160107	filtri olio	0,020	0,045	0,202	0,504	0,4390	0,050	0,534	0,100	0,158	0,185	0,555	0,020	2,812	0,02%
160504*	gas in contenitori a pressione contenenti	0,015	0,120	2,149	1,399	1,099	0,060	2,411	0,075	2,262	0,340	1,727	1,372	13,029	0,07%
130204*	parti di olio minerale per motori, ingranaggi	0,030	0,000	0,200	0,080	0,000	0,000	0,000	0,450	0,250	0,000	0,000	0,000	1,010	0,01%
200127*	vernici, inchiostri, adesivi e resine contenenti	0,120	0,340	4,299	1,248	2,743	0,080	4,279	0,090	5,320	1,680	3,050	1,826	25,075	0,14%
Raccolta indifferenziata															
200307	rifiuti incombustibili	40,990	54,140	67,460	81,070	75,250	90,650	86,290	102,770	84,720	68,180	90,980	52,640	895,140	5,10%
200301	rifiuti urbani non differenziati	225,170	209,080	263,860	259,910	258,230	268,230	268,660	238,660	238,120	248,700	237,240	233,020	3,008,840	17,16%
Totale Rifiuti Urbani differenziata															
		874,380	1,041,522	1,216,467	1,174,9270	1,227,139	1,281,985	1,501,428	1,294,262	1,065,036	1,229,720	1,204,888	1,363,1505	13,631,505	77,74%
Totale Rifiuti Urbani indifferenziati															
		266,160	263,2200	331,320	340,980	314,4800	346,320	356,140	431,760	322,840	316,880	328,220	285,660	3,906,1200	22,26%
TOTALE RACCOLTA RIFIUTI URBANI		1,140,540	1,055,213	1,372,842	1,557,447	1,489,407	1,573,459	1,638,125	1,933,188	1,617,102	1,381,916	1,565,728	1,210,518	17,535,485	
% Raccolta Differenziata - ANNO 2016		76,66%	75,06%	75,87%	78,11%	78,89%	77,99%	78,26%	77,67%	80,04%	77,07%	79,04%	76,40%	77,74%	
a discarica															
200303	residui della pulizia stradale	0,00	14,54	12,10	30,40	30,40	29,36	0,00	26,28	23,46	0,00	0,00	0,00	161,39	
														17,696,875	TOTALE COMPLESSIVO con sabbie

Additionally, **composition analysis** of mixed waste every 3 months.

Advanced waste monitoring is key for the calculation
of meaningful indicators



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Establish a network of waste advisers

- Set up a local network of **"waste advisers"** to:
 - raise awareness on waste management;
 - offer a service to residents and entrepreneurs/small businesses;
 - gain a better understanding of what happens on the ground (drivers, reasons).
- Key features:
 - home/community **visits** (+ schools);
 - working **together** to identify possibilities to **reduce** waste generation;
 - improving source separation with practical **what goes where** sessions;
 - **focus on** waste streams that are considered more problematic (**food waste**, WEEE, bulky waste, etc.).



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Establish a network of waste advisers

Examples of frontrunners

Styria (AT)

- *Very dense network: an adviser every 20,000 inhabitants*
- *Target: children (including schools and kindergartens), private households and SMEs*

Nürnberg (DE)

- *Waste advisers are both employees and volunteers*
- *Multi-lingual awareness raising for foreigners (English, Turkish, Russian, Arabic, Farsi, Amharic, Kurdish...)*
- *Mobile information centre*

Brussels (BE)

- *Waste advisers to support local businesses*
- *Specific competences by business sector*
- *Give advice but also support best practice sharing*



Common indicators for Municipal Solid Waste

DRAFT – Work in progress

Generation

Total municipal
solid waste
generation
[kg/capita/year]

Collection

Amount of mixed
waste collected
[kg/capita/year]

Bio-waste in mixed
waste
[kg/capita/year]

Capture rate for
glass [%]

Impurity rate for
separately collected
glass [%]

Capture rate for
paper/cardboard [%]

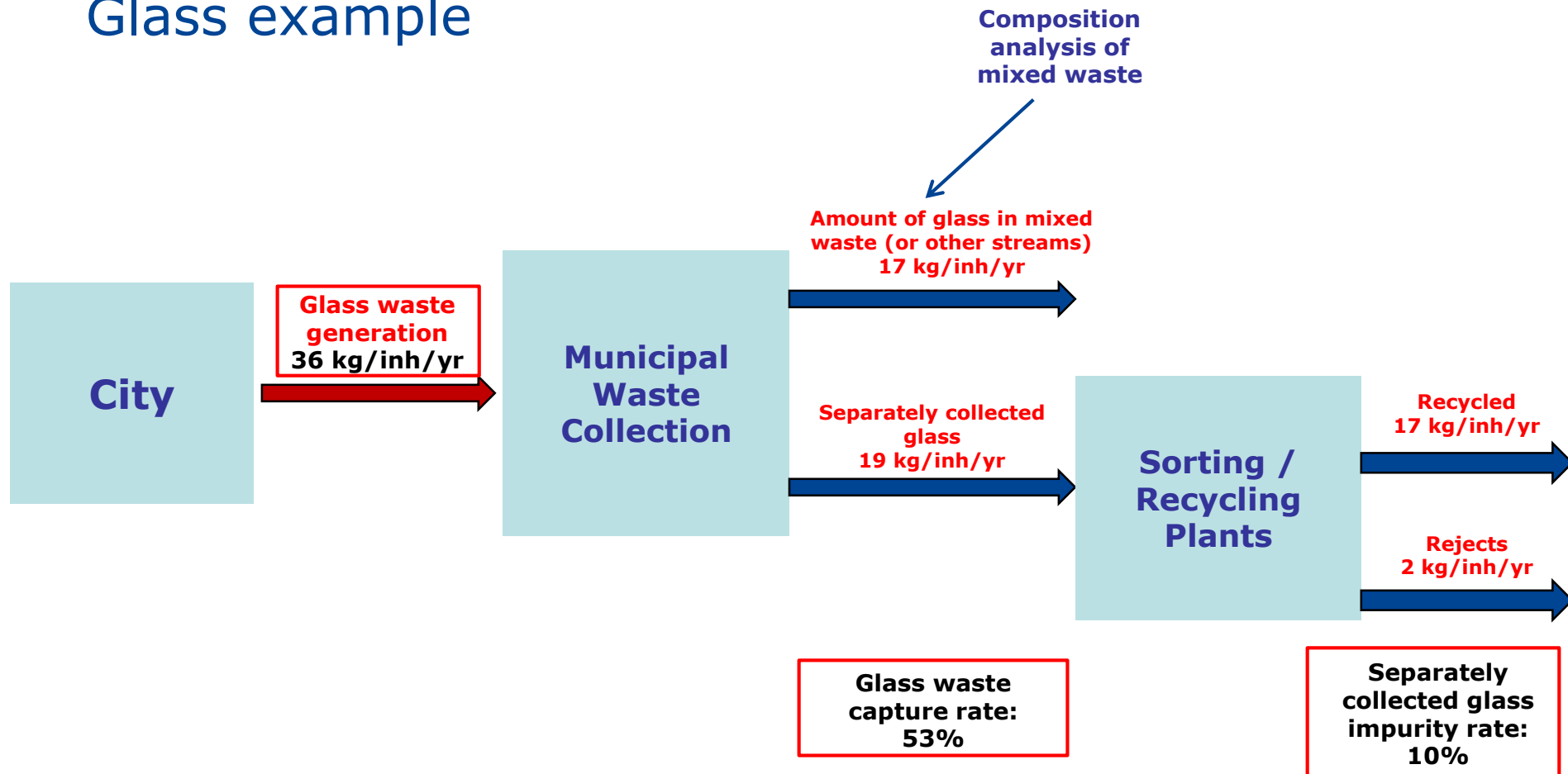
Treatment

Waste sent to
energy recovery
and/or disposal
[kg/capita/year]

Waste sent to
disposal
[kg/capita/year]

Example: capture rates and impurity rates

Glass example



DRAFT – Work in progress

Proposals of Benchmarks of Excellence

Generation

Total municipal solid waste generation*:
360 kg/capita/year

Collection

- Capture rates for...
- glass: **90%**
 - paper/cardboard: **85%**
 - metals: **75%**
 - co-mingled packaging: **65%**

Treatment

Municipal solid waste sent to energy recovery and/or disposal:
70 kg/capita/year



A development process based on stakeholder involvement

Three phases:

- **Desk research** (background collection of information from literature, frontrunner organisations and experts)
- **Information exchange** within the forum of a **Technical Working Group** comprising sector experts to identify and validate the best practices identified, the indicators and the benchmark of excellence
- **Legislative process** (member state representatives in the EMAS Committee)



BEMPs for the Waste Management Sector

The timeline



Oct 2014

Oct 2015

Dec 2017

Oct 2018



Background report



Best Practice report

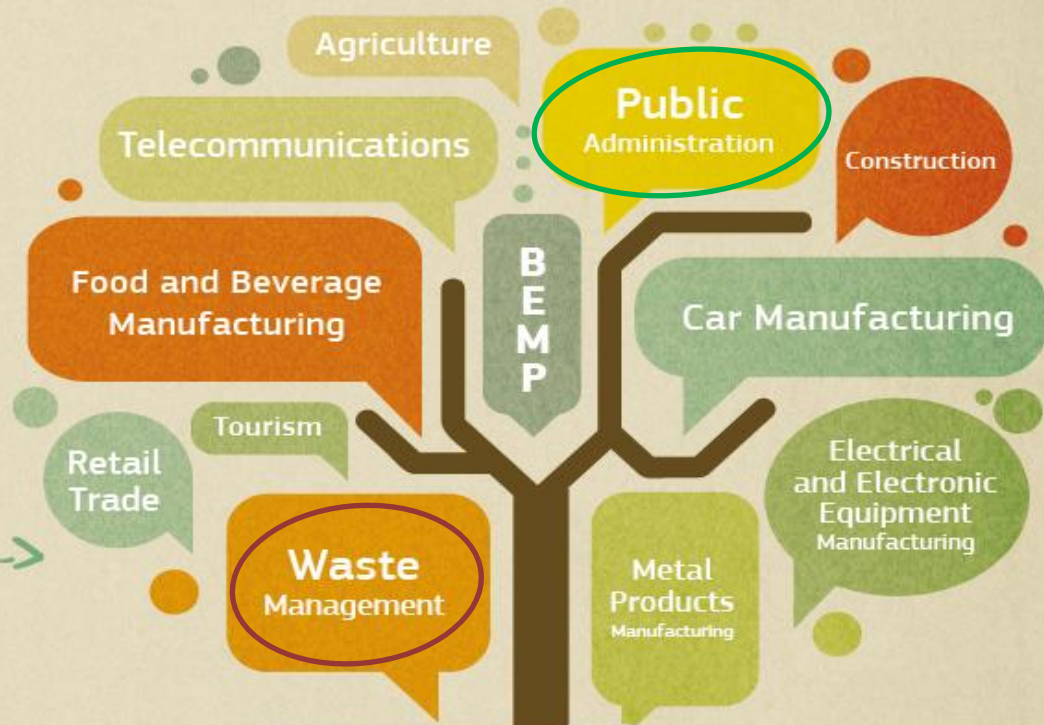


Sectoral Reference Document

BEMPs for 11 sectors

The European Commission cooperates with experts and stakeholders from different sectors to identify BEMPs.

As a result of this cooperation, Sectoral Reference Documents for 11 sectors are currently under development.



WORKING GROUPS

JRC & DG Environment
in close cooperation with

Research centres
and universities

Member
States

EMAS organisation

Environmental
NGOs

Technology
providers

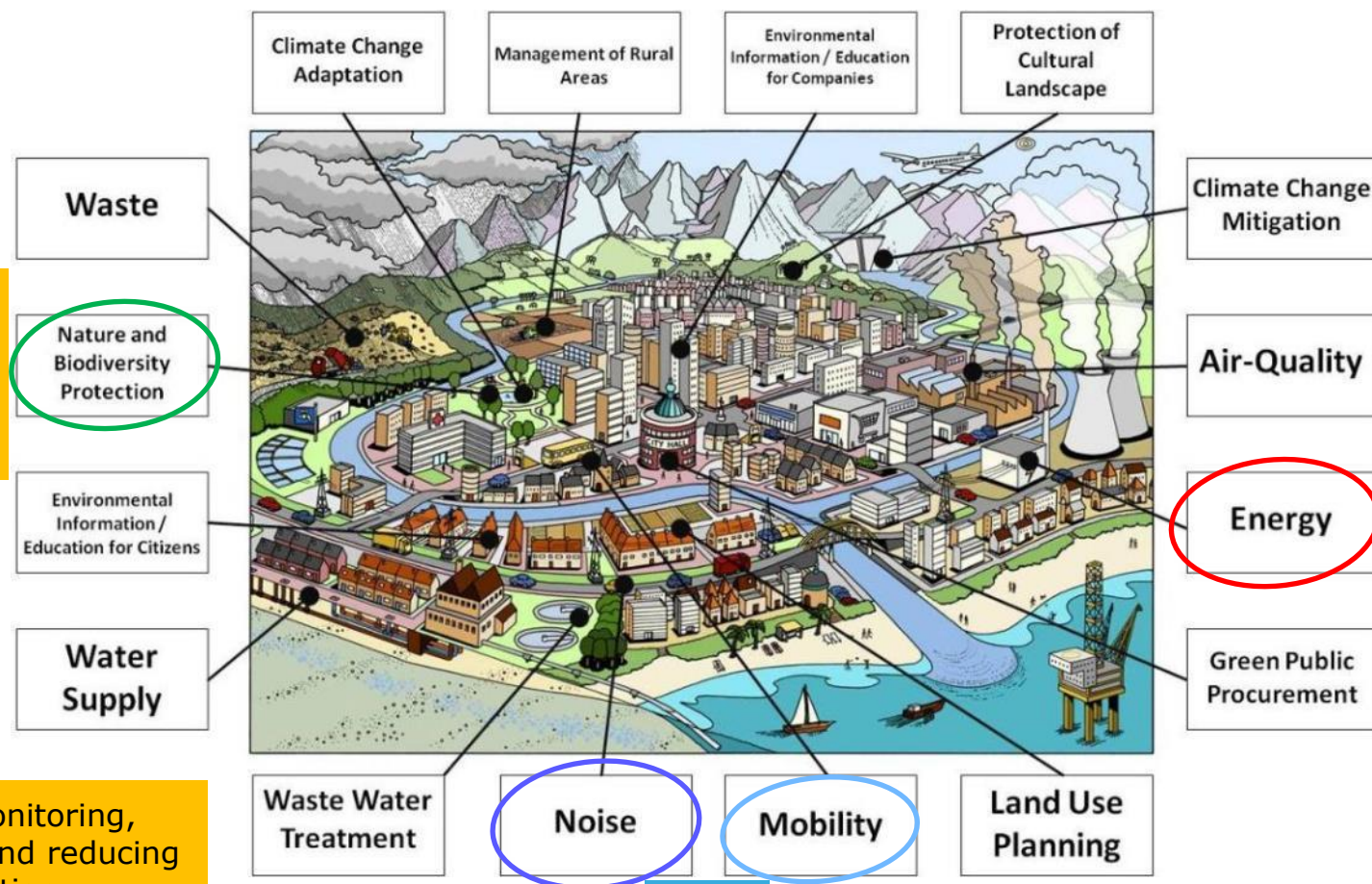
Companies

EMAS
verifiers

Industry
associations

BEMPs for Public Administrations

Focus: municipalities/local authorities and the services they provide (directly and indirectly)



BEMP:
Creating
blue-
green
networks

BEMP:
Energy
efficient
public lighting

BEMP: Monitoring,
mapping and reducing
noise pollution

BEMP: Fostering cycling and walking



What's in it for you? **Implementation is voluntary!**

- Proven and reliable information on relevant best practices
- Set of environmental performance indicators
- Possibility to benchmark your performance against frontrunners to identify improvement potentials

We plan to turn this content into an **on-line user friendly tool** and **continue developing** it in cooperation with stakeholders!



So... use BEMPs and get in touch for the next phase!

Download the BEMPs at:
<http://europa.eu/!xW93Nv>

Contact us at
jrc-emas-srd@ec.europa.eu
to be engaged in the next phase

CHECK OUR TIPS



No EMS yet?
Discover EMAS at:
<http://www.emas.eu>



Thank you!

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