

“Solid Waste Management in cross-border rural and coastal areas of South Eastern European region”

Workshop on
Assessment of regional cross-border impacts of solid waste
management in rural and coastal areas

October 2015, xxxx



Project Brief

- The Project “Solid Waste Management in cross-border rural and coastal areas of South Eastern Europe” implemented by the SWG and NALAS
- Origin of funds: GIZ Open Regional Fund for South East Europe – Modernisation of Municipal Services (ORF MMS) and the Government of Switzerland.
- Overall goal: “The conceptual and organisational framework conditions concerning Integrated Solid Waste Management (ISWM) in cross-border rural and coastal areas in SEE are improved”.
- Specific goal: “assess and develop schemes (models) for integrated management of solid waste that are environmentally effective and economically affordable in order to reduce adverse environmental and economic impacts of solid waste miss-management and support the ecological and socio-economic development of the cross-border rural and coastal areas in the SEE countries”

Project Results

Development of a Method for assessment of cross border adverse environmental and economic (tourism) impacts

Assessment of regional cross border impact of Solid Waste Management in rural areas (Report)

1st Dialog Platform session – input to the model

2nd DP – draft ISWM models for the pilot regions

ISWM model in the cross-border rural and coastal areas

Report on best practices from EU member states for ISWM in rural areas

Joint Workshop on measures and policy recommendations

Drafting project fiches from the developed and agreed models

Final project conference

Outline of the Method for Assessing Environmental and Economic Impacts

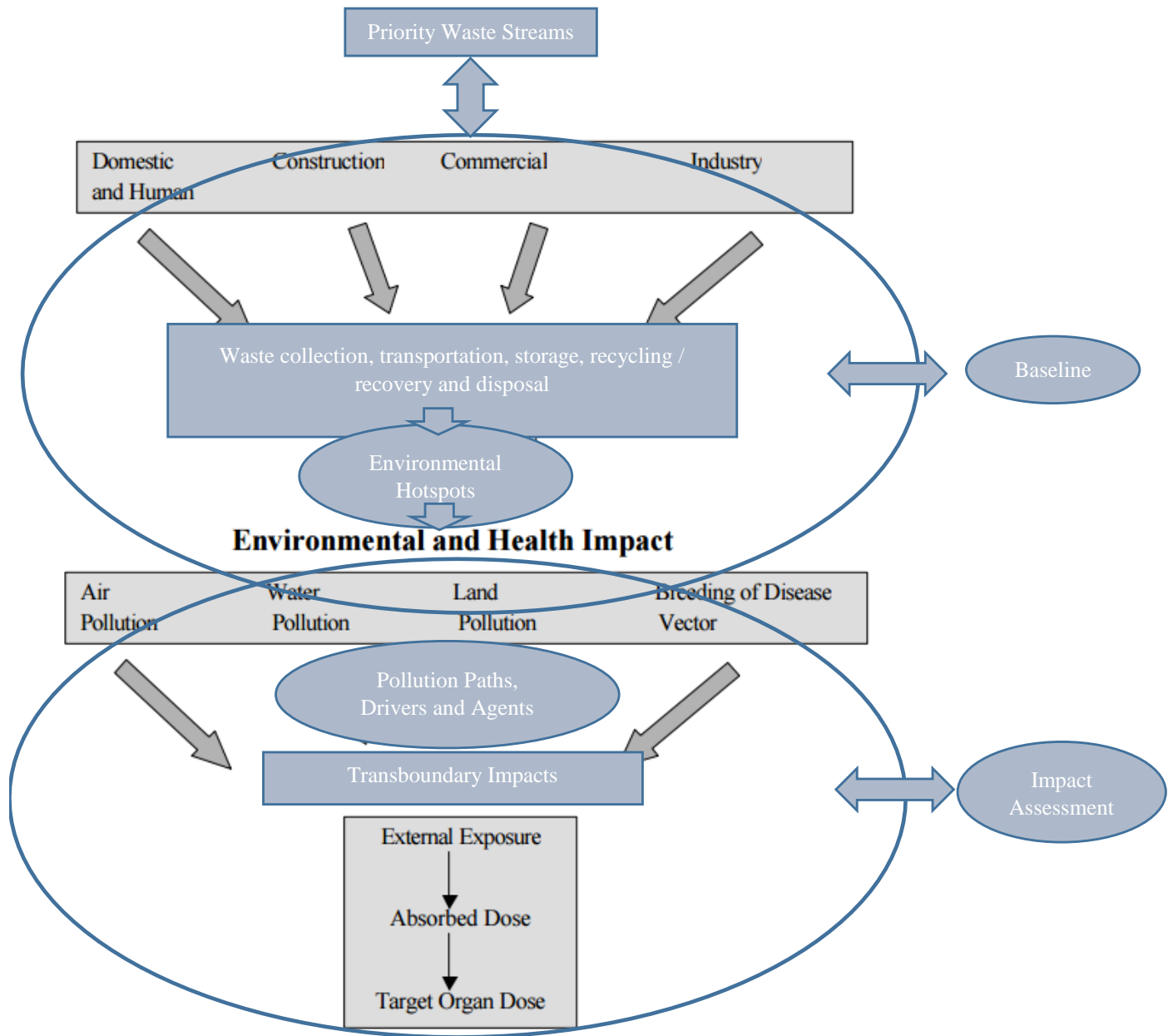
1. Baseline Analyses:

- Waste Generation and Composition & Waste Management Practices
- Environmental Hotspots and Pollution Agents
- Migration Paths & Migration Drivers

2. Impact Assessment:

- Priority Waste Streams
- Assessment of Environmental, Health and Economic Impacts on National Scale
- Assessment of Environmental, Health and Economic Impacts on Regional Scale (Transboundary Context)

3. Mitigation Measures / Conclusions ISWM Model



Baseline Analyses

Public Utility (name)	Сajetina-КЈП „Златибор“ and company А.С.А	Uzice ЈКР "Duboko"	Bjelo Polje ЈКР " LIM "	Prijepolje ЈКР „Лим“	Priboj ЈКР „Услуга“	Gorazde ЈКР "6 Mart"	Rudo КР „Usluga“	Visegrad КР „Komunalac“	Bajina Basta ЈКР „12.septembar
Do the population pay waste management charges?	yes	yes	yes	yes	yes	yes	yes	yes	yes
Charging Method: - flat rate; - based on frequency of service; - based on waste volume (container)	flat rate	flat rate	flat rate	flat rate	flat rate	Flat rate	Flat rate	Flat rate	flat rate
Payment efficiency (%)	/	/	/	/	/	75%	75%	80%	/
Cost Recovery (yes/no)	/	/	/	/	/	/	/	/	no
Is there any private waste management operator?	no	no	no	no	no			no	no
Service Coverage (%)	65%	app 80%	/	/	/	74%	/	/	/
Recycling operations	On regional landfill Duboko	yes selection and recycling	no	/	/	no	no	paper	collecting of recycling mater
Income from tourism (EUR/y) overnight stays	1.000.000	400000	3962	/	/	2000 app	/	27.339	178036

Baseline Analyses

Public Utility (name)	Srebrenica KP „Polet“	Bratunac AD “GRADSKA ČISTOĆA”	Milici KP „Komunalno“	Ljubovija JKP 'Standard"	Mali Zvornik JKP "Drina"	Zvornik KP „Vodovod i kanalizacija“	Krupanj JKP 'Prvi Maj"
Do the population pay waste management charges?	yes	yes	yes	yes	yes	yes	yes
Charging Method: - flat rate; - based on frequency of service; - based on waste volume (container)	Flat rate	Flat rate	Flat rate	flat rate	flat rate	flat rate	flat rate
Payment efficiency (%)	65%	60%	60%	60%	/	83%/	/
Cost Recovery (yes/no)	/	/	/	/	/	/	/
Is there any private waste management operator?				no	no	no	no
Service Coverage (%)	/	/	/	50%	/	/	/
Recycling operations	no	no	no	no	no	Yes paper	no
Income from tourism (EUR/y) overnight stays	/	/	/	/	/	/	/

Baseline Analyses

Waste Generation and Composition	Cajetina	Uzice	Bjelo Polje	Prijepolje	Priboj	Pljevlja	Rudo
Population	14754	82921	43460	41.188	30.377	29054	9.005
Economic activities	Tourism and agriculture	Industry ,trade agriculture	Trade, agriculture industry	Agriculture	Agriculture industry	Mining	Agriculture
Waste generation per capita (per day and year)	3.437t/year	16425t/year	12.053t/year	9.088t/year	6.570t/year	1519000t/year	/
Waste Composition (%)							
Organic	11.75	18,9	32.6	41.95	42.1	32	34
Paper	4,5	11,4	13.2	5.56	13.96	8.5	11
Plastic	5.25	5.3	17.5	10.12	10.49	14.7	22
Glass	4,25	6	8.5	3.66	6.55	8.5	4.7
Metal	1	2,4	2	1.32	2.58	2.7	4.5
Other	73.25		22.8	37.39	29.48	33.6	23.8

Baseline Analyses

Waste Generation and Composition	Gorazde	Visegrad	Rudo	Gorazde	Bajina Basta	Srebrenica	Bratunac	Milici	Ljubovija	Mali Zvornik	Zvornik	Krupanj
Population	22.08	18.159	9.005	22.08	26022	21.167	22.133	9.849	14.469	12 496	51.616	17 398
Economic activities	Auto Industry	Tourism ,agriculture HE plant	Agriculture	Auto Industry	Tourism , Agriculture	Agriculture	Agriculture Mining	Mining	Agriculture	Agriculture	Agriculture , Industry	Agriculture
Waste generation per capita (per day and year)	7700t/year	/	/	7700t/year	6.314t /year	/	/	/	2.924 t/year	3.015t /year	27.764t /year	1.913t /year
Waste Composition (%)												
Organic	Not available	34	34	35	Not available	34	34	34	Not available	Not available	34	Not available
Paper		11	11			11	11	11			11	
Plastic		14.7	22	3		22	22	22			22	
Glass		8.5	4.7	4		4.7	4.7	4.7			4.7	
Metal			4.5	5.5		4.5	4.5	4.5			4.5	
Other		31.8	23.8			23.8	23.8	23.8			23.8	

Problems

- Rural population not covered by organized service → proliferation of dumpsites
- Illegal dumping by population, tourists, industrial and construction companies
- Valuable recyclables not segregated and dumped
- Hazardous waste not segregated and dumped
- Others?

Environmental Hotspots

Non-compliant landfill(s)	Cajetina	Uzice	Bjelo Polje	Pljevlja	Prijepolje	Priboj	Rudo
Name of non-compliant landfill(s)	Regional Duboko	Regional Duboko			local	"Duboki Do"	KP Usluga
Location (sensitivity high, medium, low)	low	low	high	high	high	high	high
Area (m2)	15ha	15ha	/	/	/	465 000m3	2ha
Waste origin (settlements, industry, healthcare establishments, etc.)	settlements, industry, healthcare establishments,	settlements, industry, healthcare establishments,	settlements, industry, healthcare establishments,	settlements, industry, healthcare establishments,	settlements, industry, healthcare establishments,	settlements, industry, healthcare establishments,	settlements, industry, healthcare establishments,
Typical landfill operations (e.g. compaction, daily coverage)	compaction,	compaction,	/	/	/	/	/
Typical technical measures applied (e.g. bottom sealing, leachate drainage, landfill gas extraction and flaring etc.)	compaction,	compaction,	only collection of waste	only collection of waste	only collection of waste	only collection of waste	only collection of waste
Most significant environmental impacts (e.g. emissions of landfill gas, uncontrolled fire, leachate migration in the ground etc.)	/	/	leachate migration in the ground	leachate migration in the ground	leachate migration in the ground	leachate migration in the ground	leachate migration in the ground
Migration paths (rivers, canals, drains, gullies, reservoirs, aquifers, sea currents, atmosphere etc)	no	no	River Lim	River Cehotina	River Lim	River Lim	River Lim
Migration Drivers (wind, storms, erosion)	none	none	wind ,erosion	wind ,erosion	wind ,erosion	wind ,erosion	wind ,erosion
Likelihood for transboundary impacts (high, medium, low)	low	low	high	high	high	high	high

Environmental Hotspots

Non-compliant landfill(s)	Gorazde	Visegrad	Srebrenica	Bratunac	Milici	Krupanj	Mali Zvornik	Zvornik
Name of non-compliant landfill(s)	„Šišeta“	KP Komunalac	local	local	local	Кошевине-Дворска	/waste is trasferd to Loznica	Crni vrh still not operational vLocal in the function
Location (sensitivity high, medium, low)	high	high	high	high	high	high	high	High
Area (m2)	1.5ha	2 ha	1ha	0.5 ha	1ha	2,3 ha	/	2ha
Waste origin (settlements, industry, healthcare establishments, etc.)	settlements, industry, healthcare establishments,	settlements, industry, healthcare establishments,	settlements, industry, healthcare establishments,	settlements, industry, healthcare establishments,	settlements, industry, healthcare establishments,	No segregatio settlements, industry, healthcare establishments, etc.)	segregatio settlements, industry, healthcare establishments, etc.)	segregatio settlements, industry, healthcare establishments, etc.)
Typical landfill operations (e.g. compaction, daily coverage)	/	/	/	/	/	daily collection of waste	/	/
Typical techical measures applied (e.g. bottom sealing, leachate drainage, landfill gas extraction and flaring etc.)	only collection of waste	only collection of waste	only collection of waste	only collection of waste	only collection of waste	none	none	No drainage on the river bank
Most significant environmental impacts (e.g. emissions of landfill gas, uncontrolled fire, leachate migration in the ground etc.)	leachate migration in the ground	leachate migration in the ground	leachate migration in the ground	leachate migration in the ground	leachate migration in the ground	leachete migration to goround	leachate migration in the ground	leachate migration in the ground
Migration paths (rivers, cannels, drains, gullies, reservoirs, aquifers, sea currents, atmosphere etc)	River Drina	River Drina	River Drina	River Drina		river Kostainca ,drains	River Drina	drains
Migration Drivers (wind, storms, erosion)	wind ,erosion	wind ,erosion	wind ,erosion	wind ,erosion	wind ,erosion		wind ,erosion	wind
Likelihood for transboundary impacts (high, medium, low)	moderate	high	high	high	moderate	high	high	low

Impact Assessment

- Priority Waste Streams:
 - Municipal (Household) Waste
 - Industrial Non-Hazardous and Hazardous Waste
 - Commercial Waste
 - Construction & Demolition Waste
 - Healthcare Waste
 - Special Waste Streams: WEEE, Batteries and Accumulators, End of Life Vehicles
- Criteria for selection:
 - Share in Overall Generation Figures and Commercial Viability
 - Operational Capacity for Segregated Collection
 - Environmental Impacts and Visual Disturbance
 - Public Perceptions

Environmental Impact Assessment

- Environmental Impacts:
 - Sources:
 - Landfill Gas
 - Leachate
 - Erosion Deposits
 - Effects
 - Water and groundwater pollution
 - Air Pollution
 - Climate Change
 - Soil Degradation and Pollution
 - Health Effects
 - Landscape Disturbance
- Location Issues:
 - Hydrology (catchment area, flood, erosion)
 - Geology / Hydro-geology
 - Distance to Settlements
 - Transboundary Issues

Environmental Impact Assessment Method

No	Factor(1)	Affected Media					
		Air quality (2)	Water quality (3)	Land use (4)	Aesthetics (5)	Noise (6)	Health (7)
1	Dumping of non-hazardous Waste at non-sensitive location	low	low	Medium / high (depending on the area)	Medium / high (depending on the visibility issues)	Low / medium depending on the sensitivity of receptors)	Negligible
2	Dumping of non-hazardous Waste at sensitive location	Low / medium, depending on the sensitivity of receptors)	Medium / high (depending on the sensitivity of the water course / aquifer)	Medium / high (depending on the area)	Medium / high (depending on the visibility issues)	Low / medium depending on the sensitivity of receptors)	Low / medium, depending on the exposure
3	Dumping of hazardous waste at non-sensitive location	Low / medium, depending on the sensitivity of receptors)	Medium / high (depending on the sensitivity of the water course / aquifer)	Medium / high (depending on the area)	Medium / high (depending on the visibility issues)	Low / medium depending on the sensitivity of receptors)	Low / medium, depending on the exposure
4	Dumping of hazardous waste at sensitive location	Medium / high, depending on the sensitivity of receptors	High	High	Medium / high (depending on the visibility issues)	Low / medium depending on the sensitivity of receptors)	Medium / high, depending on the exposure
5	Burning	High	N/A	N/A	Medium / high (depending on the visibility issues)	N/A	Medium / high, depending on the exposure
6	Vectors	N/A	N/A	N/A	N/A	N/A	High
7	Blowing / washing away litter	Medium / high, depending on the sensitivity of receptors	Medium / high, depending on the sensitivity of the water course / aquifer)	Medium / high	High	N/A	Medium / high, depending on the waste property and/or exposure

Environmental Impact Assessment Method

- Determination of sensitivity of locations of already identified environmental hotspots. The sensitivity of location will be determined based on:
 - Soil permeability (high, medium, low)
 - Distance from a permanent water course ($\geq 50\text{m}$ – high sensitivity, 50-100 – medium sensitivity and $< 100\text{m}$ – low sensitivity)
 - Distance from a settlement ($\geq 100\text{m}$ – high sensitivity, 100-500 – medium sensitivity and $< 500\text{m}$ – low sensitivity)
- Determination of the waste property (hazard) – in the absence of any waste characterization, the waste origin (i.e. industry, healthcare establishments etc.) will be defined as an indicator of potential presence of hazardous waste at specific environmental hotspot.
- Determination of the area (or the accumulated waste) of the environmental hotspot ($\geq 500\text{m}^2$ – low impact, 500-5,000 m^2 – medium impact and $< 5,000\text{m}^2$ – high impact).

Economic Impact Assessment Method

- Loss of revenue due to dumped recyclables
- Loss of yield due to dumping of waste at agricultural land
- Loss in expected tourism income due to aesthetic impacts
- Increased healthcare costs due to diseases problems
- Rising climate change adaptation costs due to increased GHG emissions
- Biodiversity loss

Assessment of Hotspots

- Size of the hotspot
- Presence of hazardous waste
- Sensitivity of location (ground permeability, distance to river / coast, erosion etc.)
- Distance to sensitive receptors (settlements, recreational area, protected area)
- Transboundary impact
- Assessment of economic loss

Conclusions and next steps

- Finalise the baseline, priority waste streams and impact assessment
- Identify causes / sources of transboundary impact
- Develop the model
- Identify measures and policy recommendations
- Draft project files