

“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

29 October 2015, Ugljevik



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

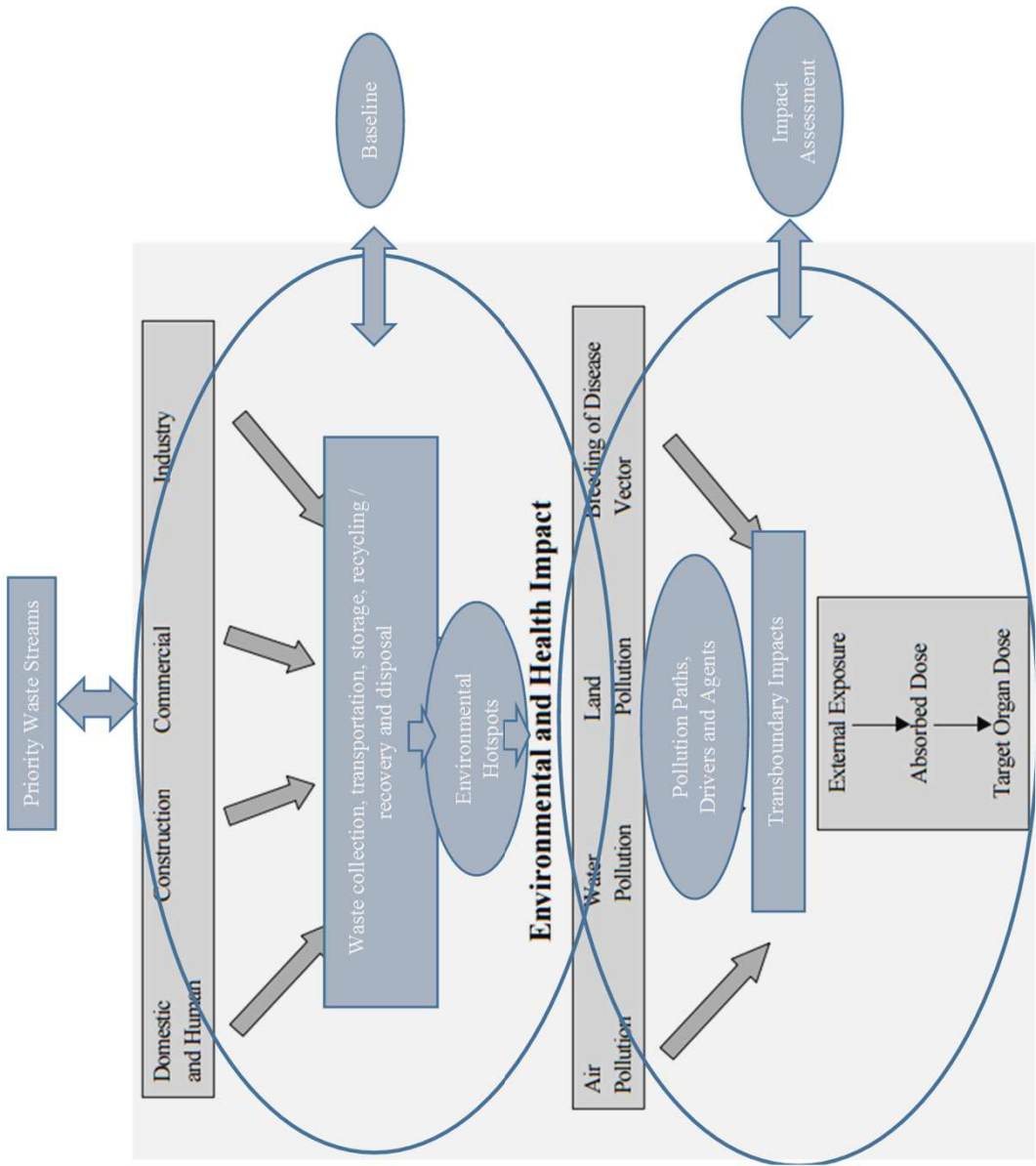
1. Baseline Analyses:

- 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



List of Municipalities

Bajina Basta	Brcko
Prijepolje	Bjeljina
Priboj	Loznica
Cajetina	Sremska Mitrovica
Uzice	Sabac
Bjelo Polje	Krupanj
Pljevija	Zvornik
Visegrad	Ugljevik
Ljubovija	
Rudo	
Gorazde	
Srebrenica	
Bratunac	
Milici	
Mali Zvornik	

Baseline Analyses

Public Utility (name)	Brcko JP "Komunalno"	Bjelina "Komunalac"	Loznica KJP „Nas dom" Loznica	Sremska Mitrovica-. JKP "Komunalije"
Do the population pay waste management charges?	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
Payment efficiency (%)	/	74%/	/	/
Cost Recovery (yes/no)	/	no		no
Is there any private waste management operator?	no	no	no	no
Service Coverage (%)	/		55%	90%
Recycling operations	Yes papir plastik	paper PET	no	paper ,metal, PET
Income from tourism (EUR/y) overnight stays	approx 50000 overnight stays	approx. 50000 overnight stays	app 160000	13000

Baseline Analyses

Public Utility (name)	Sabac "Stari grad"	Ugljevik AD „KOMPRED“	Krupanj JKP 'Prvi Maj'	Zvornik KP „Vodovod i kanalizacija“
Do the population pay waste management charges?	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
Payment efficiency (%)	/	/	/	83%
Cost Recovery (yes/no)	/	/	/	/
Is there any private waste management operator?	no	„Intermont“ Brčko	no	no
Service Coverage (%)	53%	Urban 100% rural partially/	/	/
Recycling operations	papir PET	papir PET	no	Yes paper
Income from tourism (EUR/y) overnight stays	/	/	/	/

Baseline Analyses

Waste Generation and Composition	Brcko	Bjeljina	Loznica	Sremska Mitrovica	Sabac	Zvornik
Population	93,028	109.167	78 788	85000	115 347	51.616
Economic activities	Trade, Agriculture,	Agriculture , Industry	Agriculture , Industry	Agriculture , Industry	Agriculture chemical industries	Agriculture , Industry
Waste generation per capita (per day and year)	Not available	34.863 t /year	22812t/year	21000t/year	27.465t /year	27.764t /year
Waste Composition (%)						
Organic		34	35	55	27	34
Paper		11	10	15	23	11
Plastic		22	20	15	23	22
Glass		4.7	3	3	2	4.7
Metal		4.5	7	3	5	4.5
Other		23.8	25	9	47	23.8

Baseline Analyses

Waste Generation and Composition	Krupanj	Ugljevik
Population	17 398	16.538
Economic activities	Agriculture	Mining
Waste generation per capita (per day and year)	1.913t /year	3050 t /year
Waste Composition (%)	Not available	/
Organic		/
Paper		1,6 recycled
Plastic		0,6 recycled
Glass		/
Metal		/
Other		Industry ?

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)	Brcko	Bjeljina	Loznica	Sremska Mitrovica	Sabac
Name of non-compliant landfill(s)	Gradska deponija	Eko Deponija (regional)	Трбушница	RDKO regional	RDKO based in municipality
Location (sensitivity high, medium, low)	Not Available	low	high	low	low
Area (m2)		115	8,5ha	45ha	45ha
Waste origin (settlements, industry, healthcare establishments, etc.)		Regional waste separated	No separation	Regional waste collected and separated	Regional waste collected and s
Typical landfill operations (e.g. compaction, daily coverage)		compaction,	/	compaction,	/
Most significant environmental impacts (e.g. emissions of landfill gas, uncontrolled fire, leachate migration in the ground etc.)		/	leachate migration in the ground	/	/
migration paths (rivers, cannels, drains, gullies, reservoirs, aquifers, sea currents, atmosphere etc)		no	River Drina	no	/
Migration Drivers (wind, storms, erosion)		none	wind ,erosion	none	/
Likelihood for transboundary impacts (high, medium, low)		low	high	low	low

Non-compliant landfill(s)	Krupanj	Ugljevik	Zvornik
Name of non-compliant landfill(s)	Kosevina Dvorrska	Regional Eco dep	Crni vrh still not operational Local in the function
Location (sensitivity high, medium, low)	high	low	high
Area (m2)	2 ha	115	2ha
Waste origin (settlements, industry, healthcare establishments, etc.)	No separation	Regional waste separated	No separation
Typical landfill operations (e.g. compaction, daily coverage)	none	compaction	/
Typical technical measures applied (e.g. bottom sealing, leachate drainage, landfill gas extraction and flaring etc.)	none	/	on the river bank
Most significant environmental impacts (e.g. emissions of landfill gas, uncontrolled fire, leachate migration in the ground etc.)	Leachete migration	/	leachate migration in the ground
Migration paths (rivers, cannels, drains, gullies, reservoirs, aquifers, sea currents, atmosphere etc)	River Kostajnica	/	River Drina
Migration Drivers (wind, storms, erosion)	winds	/	wind
Likelihood for transboundary impacts (high, medium, low)	high	Lo w?	high

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