

Preliminary study
for
**Development of recycling plant for construction and
demolition waste in the region of South-East Serbia**

3rd of January 2023

Table of Content

1.	Introduction and tasks.....	4
2.	Abbreviations.....	4
3.	Decimal marks, decimal separators	4
4.	Overview of the construction & demolition wastes.....	5
4.1.	C&D waste composition	6
4.1.1.	Construction waste.....	8
4.1.2.	Demolition waste.....	9
4.1.3.	Mineral and soil fraction.....	9
4.1.4.	Combustible fraction	10
4.1.5.	Recyclables	10
4.1.6.	Hazardous waste	11
4.1.7.	Other fractions.....	12
5.	Population in South and South – East Serbia.....	12
6.	Waste generation in Serbia	15
7.	C&D and RDF generation in Nis region (South – East Serbia)	19
7.1.	Regional action plans	19
7.2.	C&D and RDF generation.....	20
7.3.	C&D generation and recycling in Germany	25
8.	Processing of C&D waste	26
8.1.	Current C&D waste treatment on Western Balkans	26
8.2.	Recycling of C&D waste	27
8.3.	C&D waste processing steps	27
8.3.1.	Crushing.....	28
8.3.2.	Screening	30
8.3.3.	Scrubbing	32
8.3.4.	Washing and classifying.....	32
8.4.	C&D waste processing methods.....	32
9.	Basic layout and mass flow	35
9.1.	Mass flow – Scenario 1 (South-East Serbia)	35
9.2.	Mass flow – Scenario 2 (South-East Serbia)	37
9.3.	Layout - Scenario 1 & Scenario 2 (South-East Serbia)	39
9.4.	Mass flow – Scenario 3 (Nis region)	40
9.5.	Layout - Scenario 3 (Nis region).....	41

9.6. Capacity and Equipment suppliers	42
10. Applications for recycled C&D waste	43
10.1. Recycled concrete	45
10.2. Asphalt recycling	47
10.3. Soil recycling.....	47
10.4. Recycling and Co-processing	48
10.4.1. Recyclables	48
10.4.2. Combustibles	48
11. Hazardous wastes	49
11.1. Hazardous materials and components in C&D waste	49
11.1.1. Asbestos.....	50
11.1.2. Disposal of hazardous construction waste	51
11.2. Hazardous waste generation in South-East Serbia.....	52
11.3. Development of the hazardous waste management in Nis region.....	52
12. Feasibility of the production plant site and location.....	55
12.1. Size of the C&D waste recycling plant.....	55
12.2. Location	57
12.3. Permits and Legal requirements	57
13. Economics and Profitability analysis	62
13.1. Potential revenues and taxes	64
13.2. CAPEX	66
13.3. OPEX69	
13.4. Profitability analysis	73
14. Preliminary business concept.....	77
14.1. Processing of demolition waste at site of generation	81
15. Waste management sector and competition analysis	86
15.1. Nis region	86
15.2. Kragujevac region.....	88
15.3. Conclusion	88
16. Conclusion and Recommendations	89
16.1. Conclusions.....	89
16.2. Recommendations for further steps	94
17. Disclaimer	95