Iceland Liechtenstein Norway grants

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NATIONAL AND INTERNATIONAL SOURCES FOR ESTIMATING CO_2 EMISSIONS AT CITY LEVEL

Inspired by the EU Mission for Climate-Neutral and Smart Cities
Aligned with the NetZeroCities approach

M100
Mirror Mission Cities Hub Romania

As part of the Climate Neutrality Action Plan development, establishing a reliable baseline for emissions and estimating the impact of planned actions on reducing CO_2 emissions require particular attention and specific data.

Table 1 provides an overview of key references that can be used to assess emissions from targeted sectors, including Transport, Buildings, Waste, Industrial Processes and Product Use (IPPU), and Agriculture, Forestry and Other Land Use (AFOLU). The listed sources draw on national strategies, EU policies, and international studies, ensuring consistency with established methodologies and regulatory frameworks. This baseline serves as a foundation for setting reduction targets and tracking progress over time.

Additionally, **Table 2** offers a list of indicative sources for the estimation of energy and emission reductions of planned actions. The list aims to provide a starting point for estimating potential reductions, for early-stage projects for which detailed estimations and technical parameters are not readily available. This process is also aimed to support the prioritisation of actions that contribute most significantly to achieving climate neutrality.

TABLE 1. LIST OF SOURCES FOR ESTIMATING BASELINE EMISSIONS

SECTOR	CATEGORY	SOURCE OF DATA	LINK	NOTES / VALUES
TRANSPORT - All vehicle types	Number of autovehicles by type and power source	DRPCIV, 2021	https://data.gov.ro/dataset/parc-auto-romania/resource/f94b0916-e1bc-4ce2-9eff-62f6e349f61a	County-level data. Municipality-level data available upon request.
TRANSPORT - All vehicle types	Estimated travelled distance	Google Environmental Insights, 2021	https://insights.sustainability.google/places/ChIJT608vzr5sUARKKacfOMyBqw?hl=en-US	Available upon request, specific cities
TRANSPORT - All vehicle types	Average fuel consumption (Romania)	Long Term Strategy of Romania, 2023, page 96	https://www.mmediu.ro/app/webroot/uploads/files/LTS%20-%20Versiunea%201.0%20-%20Eng%20-%2005.05.2023.pdf	The data for the buses and HGV are derived from the National statistics Institute's data for passenger/tonne kilometers and total number of kilometers. For cars and motorcycles, the data from the JRS TIMES EU model - data for Romania were used. The fuel consumption of each type of vehicle was derived from the calibration of the model.
TRANSPORT - All vehicle types	Net calorific power of different fuel types (for converting from liters to MWh)	2006 IPCC Guidelines for National Greenhouse Gas Inventories	https://zmo.ro/download/PAED.pdf	Presented as a table in SEAP Oradea, 2017, page 61

SECTOR	CATEGORY	SOURCE OF DATA	LINK	NOTES / VALUES
TRANSPORT - electric cars	Electric energy consumption for electric cars	EVBox.com	https://evbox.com/en/ev-home-charger-electricity-usage	0.20 kWh / km
TRANSPORT - hybrid buses	Average fuel consumption rate for hybrid buses	CIVITAS study, DESTINATIONS project, page 7	https://civitas.eu/sites/default/files/measure_evaluation_report_lpa7.2_10032021_final.pdf	43 liters /100 km
TRANSPORT - Motorcycles, cars, buses, HGV	Average distance travelled per vehicle type (km / year)	Long Term Strategy of Romania, 2023, page 95	https://www.mmediu.ro/app/webroot/uploads/files/LTS%20-%20Versiunea%201.0%20-%20Eng%20-%2005.05.2023.pdf	Based on data from Eurostat and National Insititute of Statistics
TRANSPORT - Buses, trams, trolleybuses, metro	Number of vehicles, fuel consumption / electric energy consumption, travelled distance	Local Transport Operators / City Hall Transport Direction	Upon request	Data to be requested should include: number of vehicles and type, fuel consumption by type, travelled distance by type (for baseline year)
TRANSPORT - Trams	Electric energy consumption	Comparative Analysis of Sustainable Electrification in Mediterranean Public Transportation, 2024	https://www.mdpi.com/2071-1050/16/7/2645	Estimates ranging between 2 and 5 KWh/km
TRANSPORT - Trams	Electric energy consumption	Oradea Local Transport report, 2023, page 28	https://www.otlra.ro/upload/www.otlra.ro/pagini/ro/Bilant/Raportul_Administratorilor_S1_2023_Total.pdf	2,84 KWh/km

SECTOR	CATEGORY	SOURCE OF DATA	LINK	NOTES / VALUES
TRANSPORT - Trolleybuses	Electric energy consumption	CIVITAS, Possibilities of energy demand reduction in trolleybus transportation, Brno, 2014, page 26	https://civitas.eu/sites/default/files/possibilities_of_trolleybus_transportation_energy_demand_reduction.pdf,	Chapter 4.2.4, equation (4.8) Average energy consumption of 1.3 KWh/km for trolleybuses
TRANSPORT - Municipal transport	Number of vehicles, fuel consumption / electric energy consumption, travelled distance	City Hall	Upon request	Data to be requested should include: number of vehicles and type, fuel consumption by type, travelled distance by type (for baseline year)
TRANSPORT - Scope 3 emissions	Distance from main refineries to the city	Calculation	Google Maps	E.g. OMV Petrom - Brazii de Sus, Lukoil - Ploiești, Rompetrol - Năvodari
TRANSPORT - Scope 3 emissions	Number of fuel stations	Fuelo	https://ro.fuelo.net/gasstations?lang=ro	-
TRANSPORT - Scope 3 emissions	Average consumption for one tanker	average	average	0.33 liters / km
TRANSPORT - Scope 3 emissions	Fuel tanker average capacity	average	average	35,000 liters
TRANSPORT - Scope 3 emissions	Energy content of diesel (MJ)	MIT, Units & Conversions Fact Sheet (Derek Supple, MIT Energy Club)	https://indico.ictp.it/event/8008/session/3/contribution/23/material/slides/2.pdf	35.8 MJ per liter

SECTOR	CATEGORY	SOURCE OF DATA	LINK	NOTES / VALUES
WASTE - Collection	Average transport distance of waste to the different types of treatment / storage units	Environmental Report on the National Waste Management Plan, page 117 AEA Technology, Waste management options and climate change, 2001, page 87	https://www.mmediu.ro/app/webroot/uploads/files/RM_SEA_PNGD_v4.pdf https://ec.europa.eu/environment/pdf/waste/studies/climate_change.pdf https://jaspers.eib.org/knowledge/publications/calculation-of-ghg-emissions-in-waste-and-waste-to-energy-projects	40 km (based on JASPERS methodology for quantifying GHG emissions in waste and waste-to-energy projects, “based on standard emission factors for different waste management facilities which were estimated in a study by AEA Technology on Waste Management Options and Climate Change, financed by DG Environment and published in 2001)
WASTE - Collection	Average capacity of a garbage truck	T. Nguyen and B. Wilson, "Fuel consumption estimation for kerbside municipal solid waste (MSW) collection activities," Waste Management & Research, vol. 28, no. 4, pp. 289-297, 2010	https://www.researchgate.net/publication/383433518_Waste-to-energy_technology_selection_and_capacity_planning_in_a_multi-facility_waste_management_system	18 tons

SECTOR	CATEGORY	SOURCE OF DATA	LINK	NOTES / VALUES
WASTE - Collection	Average fuel consumption	T. Nguyen and B. Wilson, "Fuel consumption estimation for kerbside municipal solid waste (MSW) collection activities," Waste Management & Research, vol. 28, no. 4, pp. 289-297, 2010	https://www.researchgate.net/publication/383433518_Waste-to-energy_technology_selection_and_capacity_planning_in_a_multi-facility_waste_management_system	0.5 liters of diesel / km
WASTE - Sorting	Energy requirement for waste sorting process (electricity)	Environmental impact assessment study report - IWMS in Covasna county, page 23 and page 34	https://www.kvmt.ro/_f/raport_mediu/raportstudiuimpact_covasna-sept_2009_.pdf	0.727 kWh / ton (8 MWh per 11,000 tons of waste
WASTE - Green waste composting	Energy requirement for the composting process (electricity)	Environmental impact assessment study report - IWMS in Covasna county, page 23 and page 34	https://www.kvmt.ro/_f/raport_mediu/raportstudiuimpact_covasna-sept_2009_.pdf	0.0833 KWh per tonne of waste (1 MW per 12,000 tons)
WASTE - Green waste composting	Energy requirement for the composting process (electricity)	Environmental impact assessment study report - IWMS in Covasna county, page 23 and page 34	https://www.kvmt.ro/_f/raport_mediu/raportstudiuimpact_covasna-sept_2009_.pdf	0.833 liters of diesel per tonne of waste (10,000 liters / 12,000 tons)
WASTE -Biodegradable waste composting	Energy requirement for composting food waste (electricity)	Slorach et al., Energy demand and carbon footprint of treating household food waste compared to its prevention, 2019, page 20	https://www.sciencedirect.com/science/article/pii/S1876610219311324/pdf?md5=48f1c75408152eb676263451a84c014c&pid=1-s2.0-	from 93 kWh/t to 30 kWh/t in the best case (in-vessel composting), several studies cited by Slorach et al. estimate an average range of

SECTOR	CATEGORY	SOURCE OF DATA	LINK	NOTES / VALUES
			S1876610219311324-main.pdf	
WASTE - Waste recycling	Energy requirement requirement of mechanical and physical recycling technologies (electricity)	Garcia-Gutierrez, P., Amadei, A.M., Klenert, D., Nessi, S., Tonini, D., Tosches, D., Ardente, F. and Saveyn, H., Environmental and economic assessment of plastic waste recycling, EUR 31423 EN, Publications Office of the European Union, Luxembourg, 2023, page 49	https://publications.jrc.ec.europa.eu/repository/handle/JRC132067	est. between 300 and 700 KWh/ton
WASTE - Waste landfilling		AEA Technology, Waste management options and climate change, 2001, page 94	https://ec.europa.eu/environment/pdf/waste/studies/climate_change.pdf	A large landfill site in the UK uses 975,000 liters of diesel fuel per year and handles 2.2 million tons of waste. Based on this amount, an estimated at 0.4432 liters of diesel / tonne of waste / year is required.
WASTE - Waste landfilling (non-recovered methane)	Biogas	AEA Technology, Waste management options and climate change, 2001, page 96	https://ec.europa.eu/environment/pdf/waste/studies/climate_change.pdf	Approx. 149 m^3 biogas / ton of municipal solid waste. Asumming 50% of the dissimilable carbon is released as methane and 50% as short-cycle

SECTOR	CATEGORY	SOURCE OF DATA	LINK	NOTES / VALUES
				carbon dioxide (74.5 m^3 of methane per tonne of municipal solid waste). The assumption of 50% CH_4 and 50% CO_2 falls within the range offered by IPCC for landfill biogas composition. However, the guidelines recommend detailed modelling or direct measurement for more accurate estimates).
WASTE - Waste landfilling (non-recovered methane)	CO_2 from the degradation of organic waste	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 3. Solid Waste Disposal, page 6	https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/5_Volume5/V5_3_Ch3_SWDS.pdf	CO_2 emissions from the degradation of organic waste are excluded from national GHG inventories because they are considered biogenic and not a net addition to atmospheric carbon.
WASTE - Waste landfilling (non-recovered methane)	Methane density			Approx. 0.708 kg/m^3 (standard conditions: 0 degrees Celesius and 1 bara)
WASTE - Waste landfilling (non-recovered	Average methane recovery rate	Environmental Report on the National Waste	https://www.mmediu.ro/app/webroot/uploads/files/RM_SEA_PNGD_v4.pdf	75%

SECTOR	CATEGORY	SOURCE OF DATA	LINK	NOTES / VALUES
methane)		Management Plan, page 117		
WASTE - Waste landfilling (non-recovered methane)	Global Warming Potential (GWP) for non-fossil methane, page 2	Greenhouse Gas Protocol (August 2024)	https://ghgprotocol.org/sites/default/files/2024-08/Global-Warming-Potential-Values%20%28August%202024%29.pdf	27 (over 100 years) 1 tonne of methane has the same warming effect as 27 tons of carbon dioxide (CO_2) over 100 years.
WASTE - Wastewater	Billed wastewater	Water and Wastewater Operator	-	Upon request
WASTE - Wastewater	Energy consumption per billed volume of wastewater, page 12	ANRSC, 2022	https://www.anrsc.ro/wp-content/uploads/2023/06/Raport-ANRSC-analiza-performanta-operatori.pdf	Data for regional operators, Bucharest, cities and towns is presented in a table.
IPPU	Industrial economic composition	Metroverse, 2020	https://metroverse.cid.harvard.edu/	Selected industries and their share of employees (Manufacturing, Natural Resources, Construction)
IPPU	EU-ETS Installations (Romania) and verified emissions	Ministry of Environment	https://www.mmediu.ro/app/webroot/uploads/files/Lista_instalatiilor_stationare_ETS_perioada_2021_2025%281%29.pdf	The EU ETS includes CO_2 emissions from electricity and heat generation, as well as energy-intensive industrial sectors such as oil refineries, steelworks,

SECTOR	CATEGORY	SOURCE OF DATA	LINK	NOTES / VALUES
				and the production of iron, aluminum, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids, and bulk organic chemicals, as well as aviation and maritime transport. For more information: https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/scope-eu-ets_en
AFOLU	Total production of milk, meat Total surface of green spaces	National Statistics Office	http://statistici.insse.ro:8077/tempo-online/	-
AFOLU	Technological framework - various estimates	Ministry of Agriculture	Upon request	E.g. 70 days per year that would require heating of the green houses
AFOLU	Energy requirement for greenhouses and type	Energy Consumption Prediction of a Greenhouse and	https://www.mdpi.com/1996-1073/11/1/65	Approx. 0.007 MWh/sqm of energy per day to function.

SECTOR	CATEGORY	SOURCE OF DATA	LINK	NOTES / VALUES
		Optimization of Daily Average Temperature Heating and cooling of greenhouses report from Perdue University	https://www.purdue.edu/hla/sites/cea/wp-content/uploads/sites/15/2021/01/Heating-and-Cooling-in-Greenhouses-1.pdf	Approx. 80% is thermal energy and 20% electrical energy.
AFOLU	Energy consumption for milk production	Good Practice Manual for Raising Cattle, 2015		Approx. 3,78 KWh / hectoliter of milk Approx. 2.7 liters diesel / hectoliter of milk.
AFOLU	Energy consumption for meat processing	Assessment of Energy Consumption in a Meat-Processing Plant—a Case Study	https://www.researchgate.net/publication/257764089_Assessment_of_Energy_Consumption_in_a_Meat-Processing_Plant-a_Case_Study	Approx. 435 KWh electrical energy / ton of meat
AFOLU	Energy requirement for maintenance of public parks	Sustainability of Urban Parks: Applicable Methodological Framework for a Simple Assessment	https://www.mdpi.com/2071-1050/15/21/15262	15,000 KWh/ha electrical energy/year 750 liters diesel / ha per / year
BUILDINGS	Share of energy in public buildings	EUROPE'S BUILDINGS UNDER THE MICROSCOPE	https://www.bpie.eu/publication/europes-buildings-under-the-microscope/	Electricity: 32% Natural gas: 36% District heating: 22%

SECTOR	CATEGORY	SOURCE OF DATA	LINK	NOTES / VALUES
				Renewable: 10%
BUILDINGS	Energy requirement in public buildings	Renovarea României, page 25	https://bpie.eu/wp-content/uploads/2015/10/Renovating-Romania_RO-Final.pdf	Office: 0.25 MWh/sqm/year Education,culture: 0.35 MWh/sqm/year Health: 0.4 MWh/sqm/year Tourism: 0.3 MWh/sqm/year Trade: 0.3 MWh/sqm/year
BUILDINGS	Built-up volume	Google Earth Engine	https://developers.google.com/earth-engine/datasets/catalog/JRC_GHSL_P2023A_GHS_BUILT_V	Total buildings volume per 100m grid cell and total non-residential buildings volume per 100m grid cell

TABLE 2. INDICATIVE SOURCES FOR ESTIMATING ENERGY AND EMISSIONS REDUCTION FOR PLANNED ACTIONS

TOPIC / ACTION	SOURCE OF DATA
GREEN PUBLIC TRANSPORT	• OECD (2023), *How Improving Public Transport and Shared Mobility Can Reduce Urban Passenger Carbon Emissions* • *Rail Delivery Group (2017), Regenerating Britain's railway stations: a six-point plan* • Electric Mobility Europe (2021), *Trolley Systems 4 Smart Cities* • *Cascajo et al. (2013), Quality of Bus Services Performance: Benefits of Real Time Passenger Information Systems* • Durand et al. (2018), *Mobility-as-a-Service and changes in travel preferences and travel behaviour: a literature review* • *Lepre et al. (2022), DEPLOYING CHARGING INFRASTRUCTURE FOR ELECTRIC TRANSIT BUSES Best practices and lessons learned from deployments to date* • Ortego et al. (2017), *Environmental Impacts of Promoting New Public Transport Systems in Urban Mobility: A Case Study* • K. Pietrzak, O. Pietrzak, *Tram System as a Challenge for Smart and Sustainable Urban Public Transport: Effects of Applying Bi-Directional Trams* • Carrese et al, (2023), *The Integration of Shared Autonomous Vehicles in Public Transportation Services: A Systematic Review* • R. Maruyama, T. Seo (2022), *Integrated Public Transportation System with Shared Autonomous Vehicles and Fixed-Route Transits: Dynamic Traffic Assignment-Based Model with Multi-Objective Optimization* • *N. Olsen, N. Kliewer (2022), Location Planning of Charging Stations for Electric Buses in Public Transport Considering Vehicle Scheduling: A Variable Neighborhood Search Based Approach* • *Alamatsaz et al. (2022), Electric Bus Scheduling and Timetabling, Fast Charging Infrastructure Planning, and Their Impact on the Grid: A Review*

TOPIC / ACTION	SOURCE OF DATA
	• *Orbe et al. (2024), Influence of Optimal Charging Station Integration on Electric Power Distribution Grid: Case of Electric Bus-Based Transport System* • *Nguyen-Phuoc et al. (2016), Modelling the direct impact of tram operations on traffic* • *Rodrigues et al. (2024), Environmental Impact Reduction of a Trolleybus System in the City of São Paulo, Brazil* • *Wolek et al. (2020), Transformation of Trolleybus Transport in Poland. Does In-Motion Charging (Technology) Matter?* • *Rosca et al. (2021), The Effects of New Infrastructure on Traffic Dynamics. An Urban Simulated-Based Model* • *Rădulescu et al. (2012), The need of improvement of transport conditions in large Romanian cities* Other sources: • https://www.itf-oecd.org/integrating-public-transport-mobility-service-maas-roundtable • *https://www.wri.org/insights/current-state-of-public-transport-climate-goals* • *https://www.ncesc.com/how-many-watts-does-it-take-to-run-a-train/* • *https://www.uitp.org/publications/ticketing-in-mobility-as-a-service/* • *https://www.stiripesurse.ro/rate-of-persons-with-disabilities-in-romanian-population-reaches-395prc-as-of-march-31-2022_2490995.html* • *https://www.rta.eu/en/expertise/r-d-projects/ecotram* • https://www.newsnationnow.com/us-news/education/schools-electric-buses-cost/ • https://afdc.energy.gov/vehicles/electric-school-buses-p8-m1 • https://www.sustainable-bus.com/news/electric-bus-consumption-energy-report-viriciti/ • https://www.urban-transport-magazine.com/en/bus-electrification-a-comparison-of-capital-costs/ • https://www.sustainable-bus.com/news/electric-bus-consumption-energy-report-viriciti/

TOPIC / ACTION	SOURCE OF DATA
NON-MOTORISED MOBILITY	• Natterer et al. (2023), *Traffic Reduction and Decarbonization through Network Changes - Empirical Evidence from Paris* • Xu et. al. (2022), *Assessing the Traffic Noise Reduction Effect of Roadside Green Space Using LiDAR Point Cloud Data in Shenzhen, China* *Other sources:* • STARS: Traffic reduction through car sharing - Evidences from the German experience • https://www.transportenvironment.org/articles/does-car-sharing-really-reduce-car-use
ELECTRIC VEHICLES	• https://www.sparkcharge.io/blogs/leadthecharge/ev-charging-station-infrastructure-costs • https://www.iea.org/reports/global-ev-outlook-2023/trends-in-charging-infrastructure • https://www.statista.com/statistics/1312911/evs-per-charging-point-worldwide/ • https://www.edmunds.com/electric-car/articles/how-much-electricity-does-an-ev-use.html
PARKING AND TRAFFIC MANAGEMENT	• Rye et al. (2023), *Reducing car use through parking policies: an evidence review* • Biyik et al. (2021), *Smart Parking Systems: Reviewing the Literature, Architecture and Ways Forward* • *Santos et al. (2023), Using Smart Traffic Lights to Reduce CO2 Emissions and Improve Traffic Flow at Intersections: Simulation of an Intersection in a Small Portuguese City* Other sources: • Intellias, Smart Traffic Signals • https://nap.nationalacademies.org/read/24770/chapter/5 • https://parklio.com/en/blog/park-ride-systems-what-are-they-and-how-to-implement-them • https://etrr.springeropen.com/articles/10.1186/s12544-023-00628-8 • https://news.mit.edu/2015/smarter-stoplights-cut-greenhouse-gas-0331

TOPIC / ACTION	SOURCE OF DATA
ENERGY RENOVATION OF BUILDINGS	• BPIE (2014), Renovating Romania • RDH (2017), Case Studies of Energy Efficient Buildings • Șerban et al. (2024), The Intersection of Architectural Conservation and Energy Efficiency: A Case Study of Romanian Heritage Buildings • Chen Xu et al. (2024), *Interventions for increasing energy efficiency in hospitals* Other sources: • https://www.omvpetrom.com/en/news/the-third-public-educational-unit-modernized-through-the-romania-eficienta-program-supported-by-omv-petrom • https://energyindustryreview.com/energy-efficiency/second-school-modernized-within-romania-eficienta-program-supported-by-omv-petrom/ • https://www.worldometers.info/energy/romania-energy/ • https://www.thediplomat.ro/2024/07/11/energy-efficiency-and-climate-neutrality-in-europes-real-estate-sector-striving-for-sustainable-building-practices/ • https://roec.biz/project/energy-efficiency-in-romanias-residential-sector/
URBAN RENEWAL & UHI REDUCTION	• Constantinescu et al. (2016), Effective Monitoring and Warning of Urban Heat Island Effect • Green Roofs and Cooling Strategies, • S. Cheval, A. Dumitrescu (2015), The summer surface urban heat island of Bucharest (Romania) retrieved from MODIS images Other sources: • https://www.preventionweb.net/media/97872/download?startDownload=20241215

TOPIC / ACTION	SOURCE OF DATA
MODERNISATION OF PUBLIC LIGHTING	Velasquez et al. (2024), Energy Efficiency in Public Lighting Systems Friendly to the Environment and Protected Areas Other sources: • https://www.thediplomat.ro/2024/01/31/ppc-advanced-energy-services-romania-40-lighting-projects-for-city-halls-and-public-institutions-in-2023/ • https://energy-cities.eu/the-evolution-of-public-lighting-from-torches-to-smart-services/ • https://smart-cities-marketplace.ec.europa.eu/sites/default/files/2021-06/Smart%20Lighting%20Factsheet_0.pdf • https://ebrdgeff.com/projects/improved-public-lighting-in-bucharest/
ENERGY EFFICIENT DISTRICT HEATING	• Combined Heat and Power Basics • https://www.libristo.ro/ro/carte/district-heating-and-cooling-networks_32784993?gad_source=1&gclid=Cj0KCQiAvP-6BhDyARIsAJ3uv7bBDeW3E6-Js1C5wvz7GRFiwE0-xA-zSJWL-Ta-aiXLiBlcbqjNY6caAk2sEALw_wcB • https://www.cogeneurope.eu/
RES GENERATION	• https://pressone.ro/romanias-geothermal-energy-has-fantastic-potential-but-is-neglected-by-state-authorities • https://www.researchgate.net/publication/268979346_Natural_gas_savings_using_solar_heating • https://www.greenlancer.com/post/interconnection-commercial-solar-projects#:~:text=Large%2Dscale%20solar%20farms%20require,voltage%20for%20high%2Dvoltage%20transmission
WASTE AND CIRCULAR ECONOMY	• Cudecka-Purina et al. (2024), *A Comprehensive Review on Construction and Demolition Waste Management Practices and Assessment of This Waste Flow for Future Valorization via Energy Recovery and Industrial Symbiosis*

TOPIC / ACTION	SOURCE OF DATA
	• Oyeranmi (2022), *INTERACTION BETWEEN WASTE MANAGEMENT AND ENERGY GENERATION SYSTEMS IN TERMS OF MATERIAL PROPERTIES AND ENVIRONMENTAL IMPACT IN THE EUROPEAN UNION* • Dapsopoulou et al. (2024), *Sustainable Management of Green Waste in Urban Settings: A Case Study on Energy Recovery and Heating Solutions in the Municipality of Athens (Greece)* • Tremier at al. (2024), Bio-waste: A Unique and Valuable Resource with Significant Recovery, Prevention and Management Challenges • Mei Mah et al. (2018), Environmental Impacts of Construction and Demolition Waste Management Alternatives • M. Torring, Management of Construction & Demolition Waste Streams • Bayar et al. (2021), *Impact of Municipal Waste Recycling and Renewable Energy Consumption on CO2 Emissions across the European Union (EU) Member Countries* Other sources: • *https://www.academia.edu/56868255/Building_waste_sorting_stations_for_sustainable_environment* • *https://www.researchgate.net/publication/355429346_Towards_Sustainable_Cities_The_Spillover_Effects_of_Waste-Sorting_Policies_on_Sustainable_Consumption/fulltext/61702eab750da711ac5d3204/Towards-Sustainable-Cities-The-Spillover-Effects-of-Waste-Sorting-Policies-on-Sustainable-Consumption.pdf* • *https://link.springer.com/chapter/10.1007/978-3-031-58253-0_8* • *https://wjarr.com/sites/default/files/WJARR-2024-1517.pdf* • *https://wtert.org/wp-content/uploads/2020/10/Bhada_Thesis.pdf* • *https://conferinta.management.ase.ro/archives/2012/pdf/90.pdf* • *https://econet-romania.com/wp-content/uploads/2020/06/brosura-econet-19-en-final.pdf*

TOPIC / ACTION	SOURCE OF DATA
	• *https://www.ebrdgreencities.com/policy-tool/category/waste/digitalisation_solid_waste_management/* • *https://www.wastedive.com/spons/electric-technology-advantages-and-challenges-for-refuse-collection-fleets/693630/*
GREEN-BLUE INFRASTRUCTURE	• Aman et al. (2022), *Green corridor: A critical perspective and development of research agenda* • Strohbach et al. (2012), *The carbon footprint of urban green space–A life cycle approach* • M. Zaharia, G. Voloaca, *EVALUATION OF THE INFLUENCE OF GREEN SPACE IN THE PROCESS OF REDUCING URBAN NOISE, ON THE TRANSVERSAL PROFILES OF TRAFFIC ROADS* • Zhang et al. (2024), Key Factors Affecting Carbon-Saving Intensity and Efficiency Based on the Structure of Green Space
GENERAL	• https://climate.ec.europa.eu/document/download/7c59d7a3-2602-4a2f-8072-df544554a13d_en?filename=ro_2023_factsheet_en.pdf • https://www.statista.com/statistics/1383110/romania-final-energy-consumption-2021-by-sector/