

Resource Recovery Cluster

Area: approx. 6.0 hectares

A modern ADS ECO platform for waste reception, weighing, pre-check, unloading, smart sorting, recycling, resource recovery and energy-ready routing.



Reception

controlled
inbound flow



AI sorting

NIR, robotics
and QC



Recovery

secondary
resources



ESG data

traceable
KPIs



Cluster purpose

Convert mixed material streams into clean, measurable and market-connected circular-economy outputs.



Strategic Role in ADS ECO

The cluster is the primary operational interface of the complex. Incoming material is received, weighed, pre-checked, and routed to recycling, advanced recovery, storage or energy production.

01 Operational control

Registered vehicles, scale data, pre-check results and unloading instructions are captured before processing.



02 Material value creation

Separated streams are converted into secondary raw materials, industrial inputs or energy-ready residuals.



03 Bankable technology platform

Conveyors, AI sorting, robotic systems, quality control and SCADA create a measurable process chain.



04 ESG traceability

Batch-level source, weight, route, output quality and recovery performance data support reporting.



Strategic Role of the Zone

The zone serves as the principal material recovery and conversion hub within ADS ECO. It receives recyclable and recoverable streams after intake and sorting, then applies specialized processing pathways according to material type, quality and market potential.

01

Material recovery

Transforms waste into secondary raw materials.



02

Circular value

Supports closed-loop material cycles.



03

Scalable platform

Creates industrial, ESG and investor value.



Recyclable



Reusable



Recoverable



Traceable



Resource recovery and processing concept



Operational objective

Create a compact, safe and data-driven recovery cluster that reduces contamination and raises downstream recovery value.



6.0 ha Layout and Functional Allocation

Indicative planning program for the Resource Recovery Cluster. The final layout should be confirmed through site survey, traffic modelling, supplier quotations and permitting requirements.



1	Reception + pre-check	0.55 ha
2	Tipping hall	0.90 ha
3	Smart sorting	1.05 ha
4	Recycling lines	1.25 ha
5	Advanced recovery	0.65 ha
6	Logistics + storage	0.85 ha
7	Utilities + green buffer	0.75 ha

Component	ha	Primary function
1 Reception + pre-check	0.55	Gate, weighbridge, inspection, quarantine
2 Tipping hall	0.90	Enclosed unloading, bunkers, odor/dust control
3 Smart sorting	1.05	Conveyors, screens, NIR, robots, QC
4 Recycling lines	1.25	Plastics, paper, glass, metals, wood, textiles
5 Advanced recovery	0.65	E-waste, batteries, PV panels, composites
6 Logistics + storage	0.85	Bales, product yards, spare parts, dispatch
7 Utilities + green buffer	0.75	SCADA, lab, safety, water, roads, landscape



Planning principle

Place reception, sorting, recycling and storage in a direct operational chain to reduce truck movement, internal transfer distance and contamination risk.



Managed Waste Streams

The cluster is designed to accept mixed and selected material streams in a traceable and controlled way, enabling downstream recovery, recycling and conversion routes.



- Household MSW % - 45
- Commercial % - 25
- Industrial/C&I % - 15
- Recyclables % - 15

01 Household MSW

Mixed municipal waste needing robust pre-separation, odor and leachate control.



02 Commercial

Packaging, paper, plastics and recyclable material with high recovery potential.



03 Industrial / C&I

Selected non-hazardous residues, bulky items and industrial offcuts.



04 Recyclables

Pre-sorted streams routed faster to QC, baling and storage.

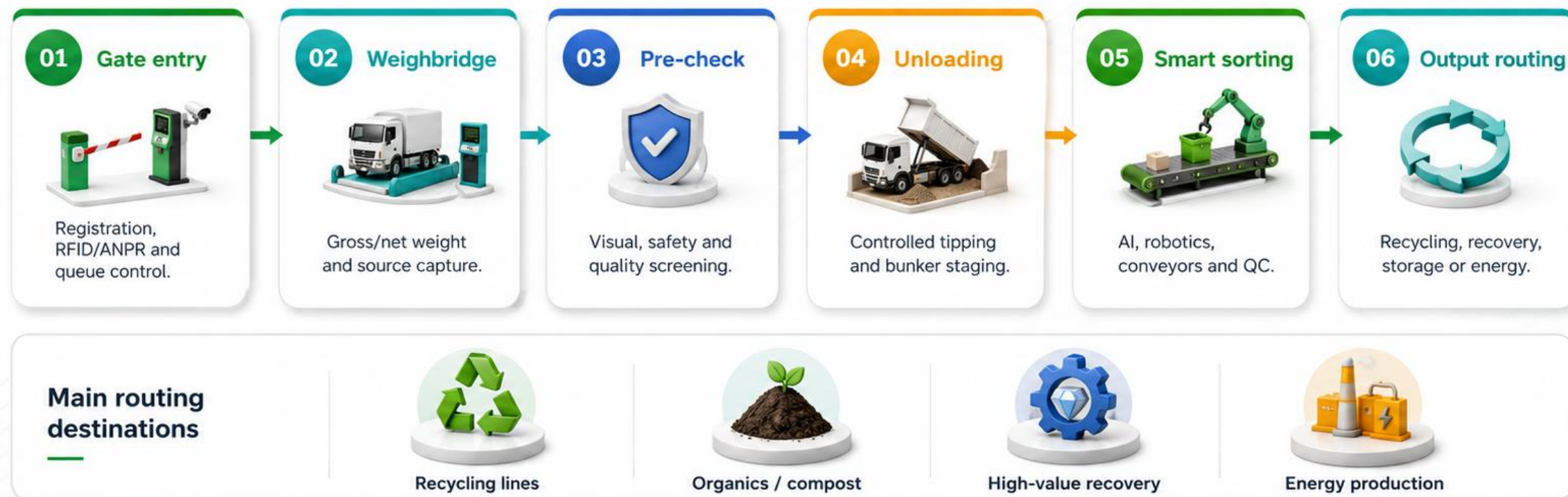


Design principle

Classify early, keep materials clean and route each stream to the highest-value recovery option.



Reception-to-Recovery Workflow



Operational logic

Each stream receives a defined route, quality gate and data record from gate entry to output dispatch.

Smart Sorting and Pre-Separation Technologies



Automated conveyor and robotic sorting concept

01 Conveyors

Movement across intake, sorting and output bays.



02 Optical / NIR

Sensor recognition of plastics, paper and metals.



03 Robotics

High-speed AI picking of valuable or problematic items.



04 Pre-separation

Screening, magnets, eddy current and manual QC.



05 SCADA + data

Alarms, uptime, traceability and performance data.



06 Quality control

Sampling, contamination checks and documentation.



Technology objective

Make the reception and sorting zone bankable, measurable, safe and ready for operational scaling.



Recycling Lines and Advanced Recovery Scope



Plastics & polymers

Film, PET, HDPE/PP, mixed plastics; sorting, washing, flaking or pelletizing.



Paper & cardboard

OCC, mixed paper and cardboard; contamination removal, baling and dispatch.



Glass & metals

Glass by color, ferrous and non-ferrous fractions; cleaning and baling.



Wood / rubber / textiles

Conditioned materials for reuse, product conversion or specialist processing.



E-waste & batteries

Controlled streams for certified specialist partners and safe storage.



PV panels & composites

Dedicated handling for technically demanding or mixed recovery streams.



Output families and circular-economy value



Plastics

flakes / pellets / feedstock



Paper, glass & metals

bales / sorted grades



Wood, rubber & textiles

conditioned materials



Advanced streams

e-waste / PV / batteries



Core Infrastructure and Process Components

01 Material intake

Reception, storage and staging of incoming streams.



02 Smart separation

Mechanical, optical, robotic and sensor-based segregation.



03 Recycling lines

Processing for plastics, paper, glass, metals and textiles.



04 Advanced recovery

E-waste, Li-ion batteries, PV panels and composites.



05 Quality lab

Output purity, compliance and traceability checks.



06 Conditioning

Baling, shredding, granulation and storage preparation.



07 Warehouse & logistics

Movement, storage and shipment of recovered resources.



08 Digital ESG control

SCADA, traceability, KPI and ESG reporting.



Design principle

Recover, condition and trace materials by category. A layered infrastructure enables conventional recycling today and advanced recovery expansion over time.



Technology Systems and Design Parameters

Integrated systems and process design for efficient, safe and data-driven resource recovery operations.



 System	 Indicative configuration	 Design output / purpose
 Gate / weighbridge	2 x 60–80 t weighbridges; RFID/ANPR; radiation and visual pre-check.	Reliable inbound control, source traceability and traffic safety.
 Tipping hall	Enclosed hall; negative-pressure ventilation; leachate drainage; odor and dust control.	Safe unloading and controlled transfer to conveyors.
 Pre-separation	Bag openers; trommel or ballistic screen; air classifier; magnetic and eddy-current separation.	Early removal of metals, fines, film and bulky contaminants.
 AI / NIR sorting	NIR/VIS/color sorters; camera analytics; automated rejection gates; QC feedback loops.	High-purity plastics, paper, glass and mixed material fractions.
 Robotic picking	6–10 modular robot cells with AI vision; 3,000–4,000 picks/hour per robot.	Removal of high-value or problematic items at high speed.
 Conditioning lines	Baling, shredding, washing/drying, granulation, densification and storage preparation.	Marketable outputs and industrial feedstock readiness.
 SCADA + ESG data	PLC/SCADA; weighbridge integration; cameras; MES/WMS; KPI dashboards.	Batch-level traceability and investor-ready ESG data.

Operational KPI, ESG and Safety Framework



Indicative operational readiness



Strategic value dashboard



Environmental controls

Dust, odor, noise, leachate and wastewater management.



Worker safety

Traffic control, PPE, training, fire prevention and emergency response.



Data reporting

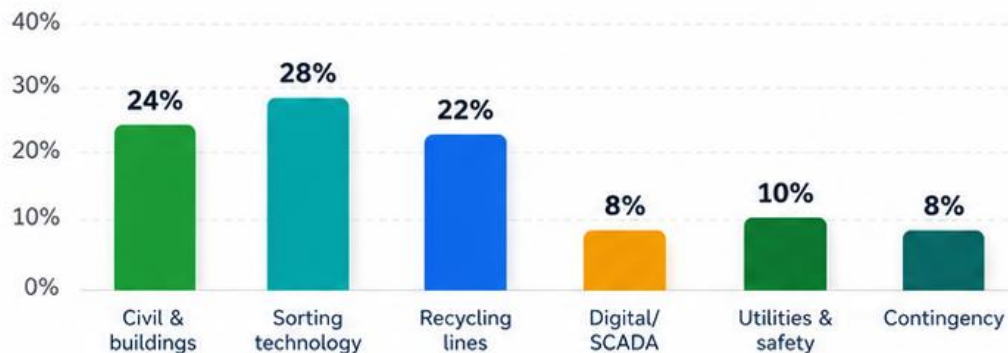
Material traceability, weight records, sorting performance and ESG KPIs.



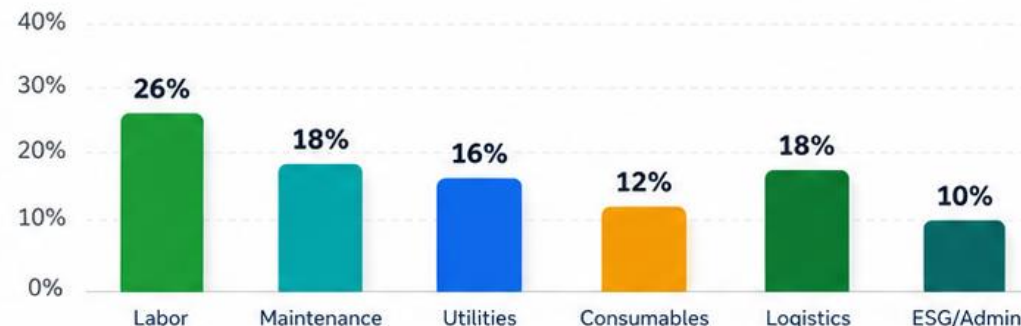
Cost Logic and Partner Packages



Illustrative CAPEX allocation



Illustrative OPEX allocation



EPC package

Civil works, process buildings and utilities.



Technology package

Sorting, robotics, recycling lines and QC lab.



O&M package

Availability, spare parts, KPI reporting and training.



Offtake package

Product specs, buyers and quality documentation.



Conclusion and Implementation Path



Key takeaway

The cluster produces secondary raw materials, supports closed-loop resource cycles, accommodates advanced recovery streams and creates diversified long-term value for ADS ECO, investors and partners.



Indicative next steps



Material stream validation



Technology package design



CAPEX / OPEX model



Partner & JV structure



Implementation plan



ADS ECO circular-industrial platform

Advanced recycling, resource recovery and ESG traceability can make waste streams bankable, measurable and market-connected.

