



Food and Agriculture Organization
of the United Nations



European Bank
for Reconstruction and Development

FAO INVESTMENT CENTRE

INVESTMENT SOLUTIONS
FOR SUSTAINABLE FOOD AND AGRICULTURE

SUSTAINABLE FOOD WASTE LOGISTICS IN ISTANBUL

**Towards a roadmap for Istanbul
food logistics – Workshop 3/4**

**EBRD/FAO AGRI-FOOD CLIMATE
AND ENVIRONMENTAL
SUSTAINABILITY (ACES) INITIATIVE**



Workshop Agenda

11H05 – 11H15	Project framework and roadmap presentation
11H15 – 11H35	Presentation of the Istanbul food waste logistics assessment findings Q&A
11H35 – 11H45	Presentation of the Pillar 3 of the draft roadmap and the survey results
11H45 – 12H15	Stakeholder discussion in break-out rooms: 1. Food waste prevention initiatives and investments 2. Organic waste treatment initiatives and investments
12H15 – 12H25	Debrief
12H25 – 12H30	Closing remarks and next steps

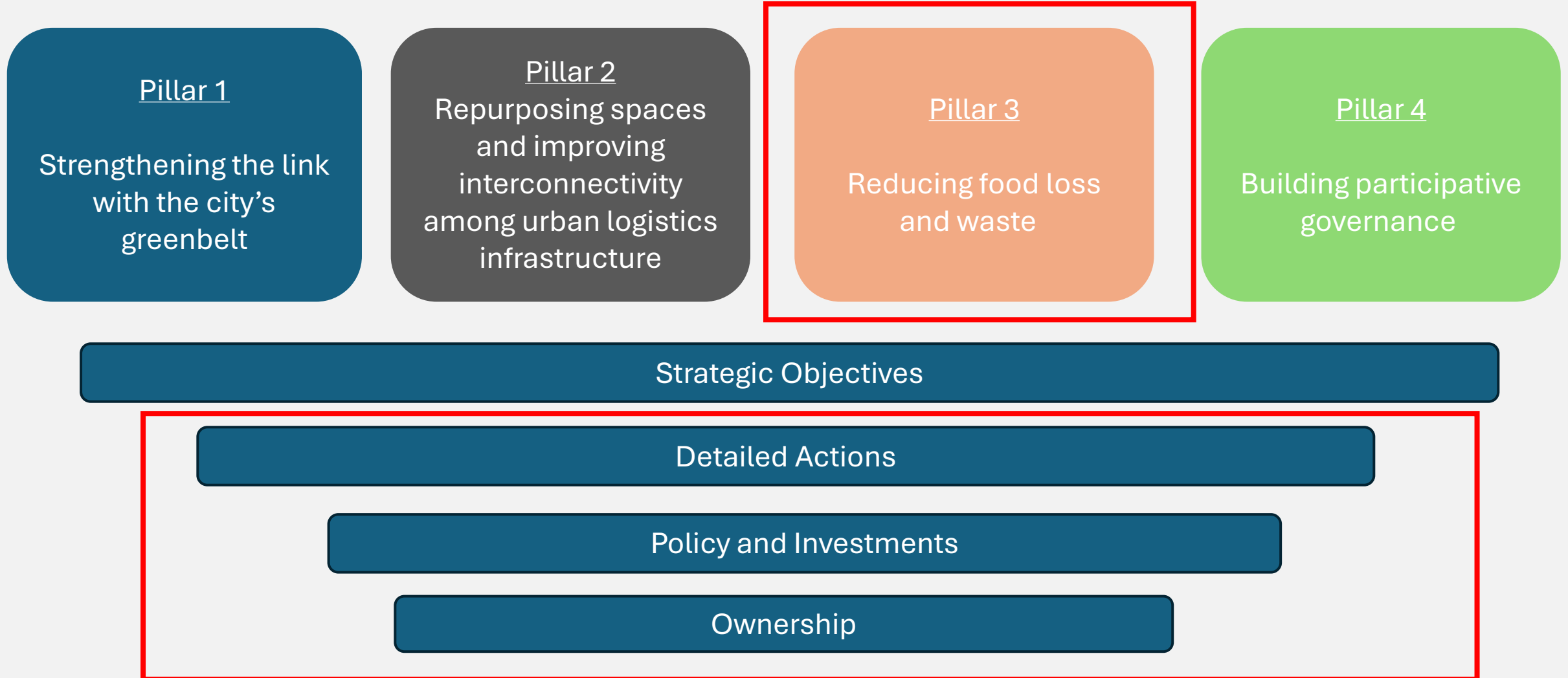
A food and food waste logistics roadmap for Istanbul: methodology

- Urban food waste logistics assessment: key challenges and areas for improvements
- Alignment with GCAP: "food section" of the action plan + alignment with food waste related actions
- Engagement and consultation with public and private stakeholders through series of workshops on different pillars: establishment of a shared action plan
- Building a path to greener and resilient urban food logistics and food waste logistics

Objectives of the workshop

- Share findings of the work achieved by the team during the last months in Istanbul
- Engage discussions about the establishment of a roadmap for urban food logistics in Istanbul to complete GCAP on food logistics and food waste logistics
- Identify key actions of the roadmap based on strategic pillars and stakeholders priorities
- Agreement on a preliminary action plan for food logistics
- Preparation of next steps for finalization of roadmap

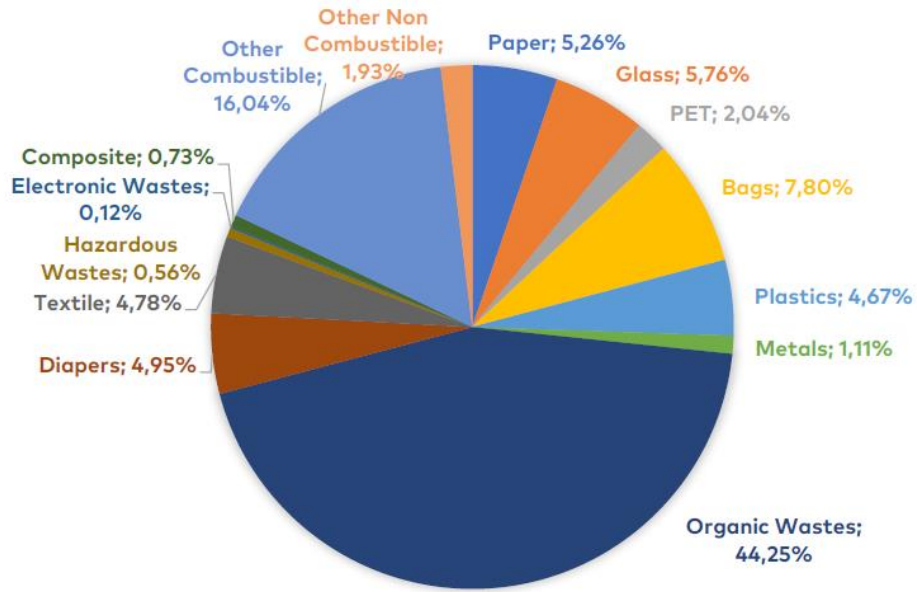
Four pillars for urban food and food waste logistics roadmap in Istanbul



Food waste logistics assessment



Roadmap which will be informed by eco/financial analysis of targeted inv.



City	Population (approx.)	Total municipal waste (tons/year)	Share of organic waste	Organic waste (tons/year)	Organic waste/Capita (kg/year)
Istanbul (2023)	15.9 million	≈6.69 million	44% organic waste	2.68	165
Milan (2022)	1.4 million	≈0.63 million	21% organic waste	0.14	95
London (2023)	9.0 million	≈5.4 million	27% food waste (19% edible)	1.47	161
Ile de France (2022)	12.4 million	≈5.60 million	25% organic waste	1.52	123

Organic waste in Istanbul: characterization and trends

- Istanbul generates approximately **18,000 of MSW per day** and **7,920 tons of organic waste per day**
- **Organic waste ≠ food waste** (includes non-edible food and garden waste).
- Istanbul's population is projected to increase by **17%**, reaching **20.4 million in 2050** while daily waste is expected to grow by **74%**, from **17,628 tons/day to 30,600 tons/day**.
- With organic waste remaining at **44%** of total waste, per capita organic waste increases from **0.45 to 0.66 kg/day/person**.

Source	Share of Total Organic Waste (%)	Estimated Quantity (tons/day)	Main cause
Households	55–60 %	4,300–4,800 t	Inedible parts of food and meals leftovers No recycling units near by, lack of awareness
HORECA / Food Service	15–30 %	1,200–2,500 t	Inedible parts of food and meals leftovers No mandatory reporting and redistribution system
Retail	5–15 %	400–1,200 t	Expired or unsold perishable products, damaged goods, and trimmings. No mandatory reporting and redistribution system
Wholesale and open-air Markets	8–10 %	400–800 t	≈ 400t from open-air markets and ≈ 50t from WFMs. Mainly unsold perishable products, damaged goods, and trimmings. No mandatory reporting and redistribution system
Food Processing	3–10 %	230–800 t	Processing losses, damaged goods during transport/storage operations and rejected materials Storage/transport/packaging practices
Total	100 %	≈ 7,920 t	

Estimated breakdown of Istanbul organic waste generation

- No clear data available on food waste as the sorting, weighing and reporting food waste is **not largely implemented**
- ISTAÇ characterization identified differences in **waste stream composition and quantities among the different districts**

Organic waste management legal framework

National level policies and strategies

National Waste Management Strategy, 2016

Zero Waste Policy, 2017

Food waste prevention campaigns

Legal framework

Environment Law No. 2872 Zero Waste Regulation 2019

- Obligation for waste-producing entities to implement prevention and reduction action and separate waste collection at the source
- Obligation of waste treatment in licensed facilities
- Obligation to self-register on the Zero Waste Information System and report biannually
- Zero Waste certification scheme to recognize actors involved in waste reduction

Municipal law

- Responsibility regarding waste management
- Waste management financing system

Zero Waste Regulation 2021

- IMM/ISTAC IMM is mandated to separately collect biodegradable waste from hospitals, universities, hotels, restaurants, social facilities, public institutions, and dining halls.

Food donation law

Renewable energy law

Packaging law

Istanbul-level plans

Istanbul waste Management plan, 2023

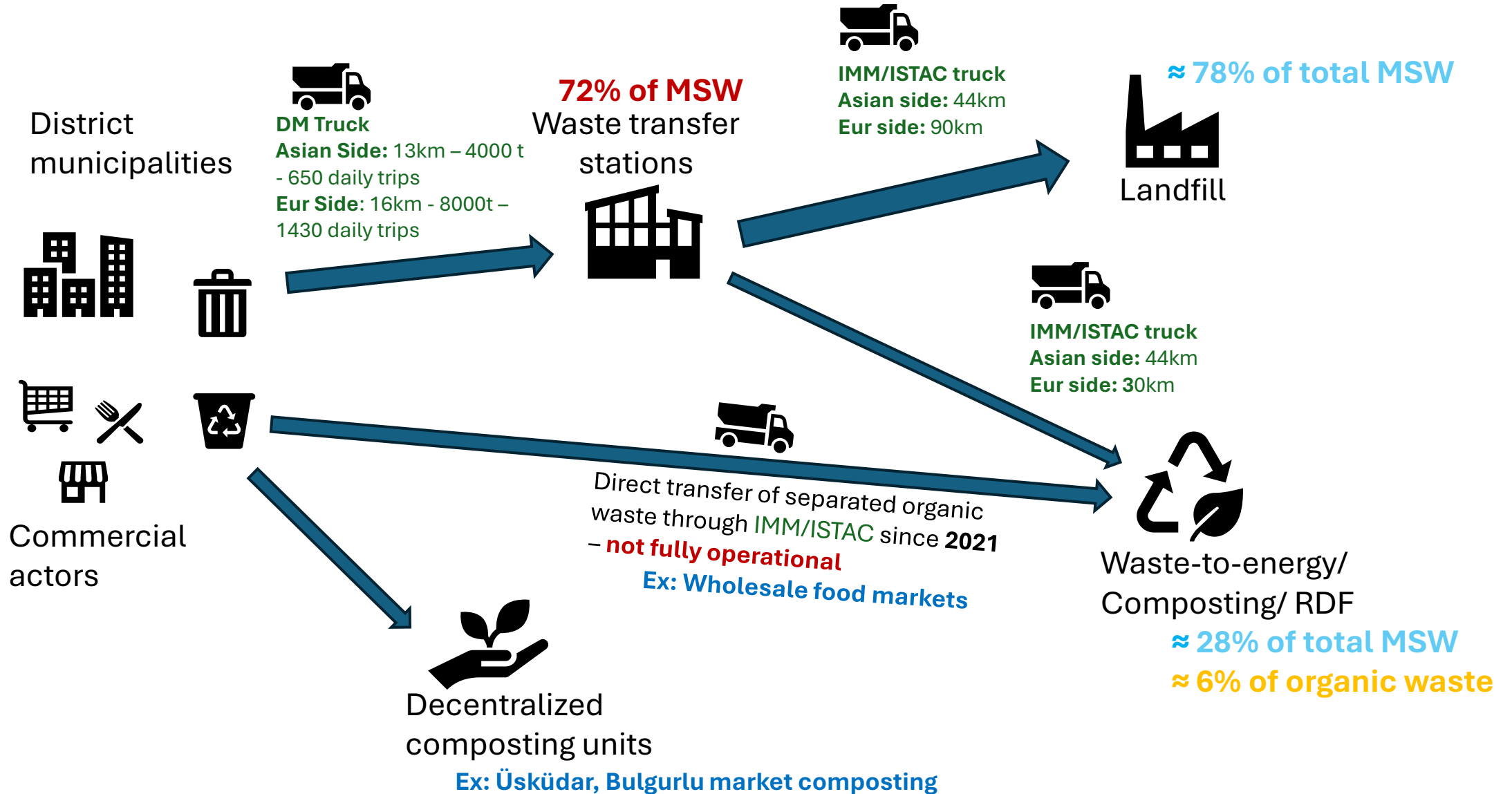
SECAP, 2023

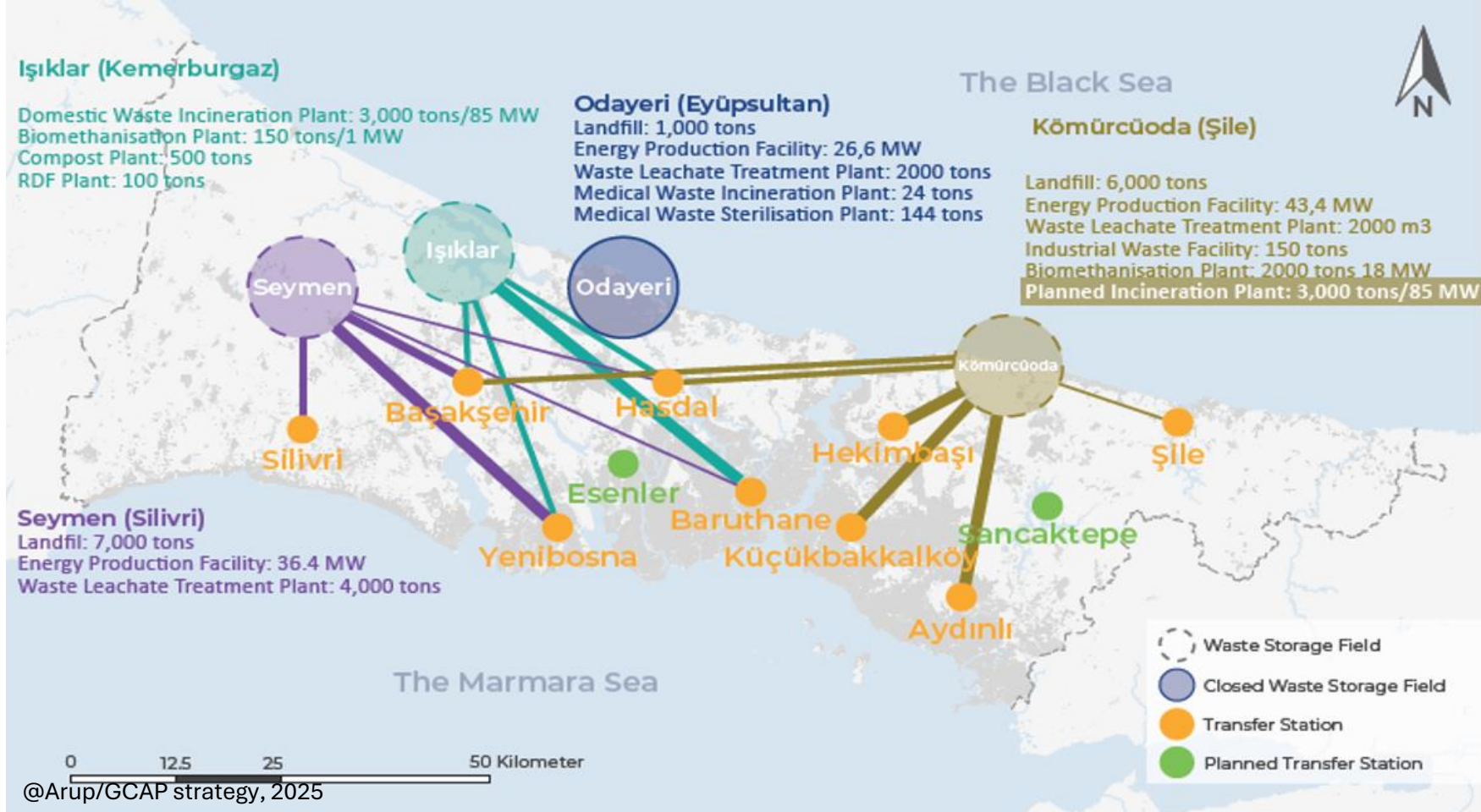
GCAP, 2023

- No legal definition of food waste
- No binding food waste reduction targets
- No specific mandatory food waste reporting
- No accountability of destruction of edible food by businesses and retailers (France)

Main differences with the EU

Waste management organization





Waste treatment facilities

- **18,000 tons/day of domestic waste is transported to five major recycling and landfill sites**
- Istanbul capacity for biomethanization/composting treatment is of 1650 tons/day : **20% could be recycled using the existing technologies.**
- **Kemerburgaz is the only plant receiving separated organic waste** . In 2023, the plant received 44 tons/day for biomethanization and 452 tons/day for compost. **The plant is currently utilized at 76%** (35% regarding biomethanization and 90% for composting).
- **Only 6% of the generated organic waste is properly collected at the source and processed in dedicated facilities.**

Pressure on waste transfer

CURRENT CHALLENGES

- Transfers from central districts occur with greater frequency yet involve smaller waste volumes
- Household waste transport to the transfer stations consumes approximately **15,665 liters of diesel per day**, generating **around 41.4 tons of CO₂**.
- **+50% of the transfer stations** are operating at or beyond capacity
- Handling **only mixed waste**: major bottleneck for the expansion of organic waste collection

INTERVENTION NEEDS

- Optimize waste collection routes/infra
- Deploy higher capacity, compartmentalized, or electric trucks
- Upgrade transfer stations to include solid waste separation facilities, enabling district municipalities to send pre-sorted waste.
- Construct additional 2 waste transfer stations to alleviate pressure on over-capacity stations
- Develop decentralized organic waste collection/treatment systems to maximize truck capacity and prevent congestion.

Decentralized and circular strategies

Treat waste close to the source
Lower transport needs, higher engagement
Best for large food waste producers:
retail, markets & HORECA

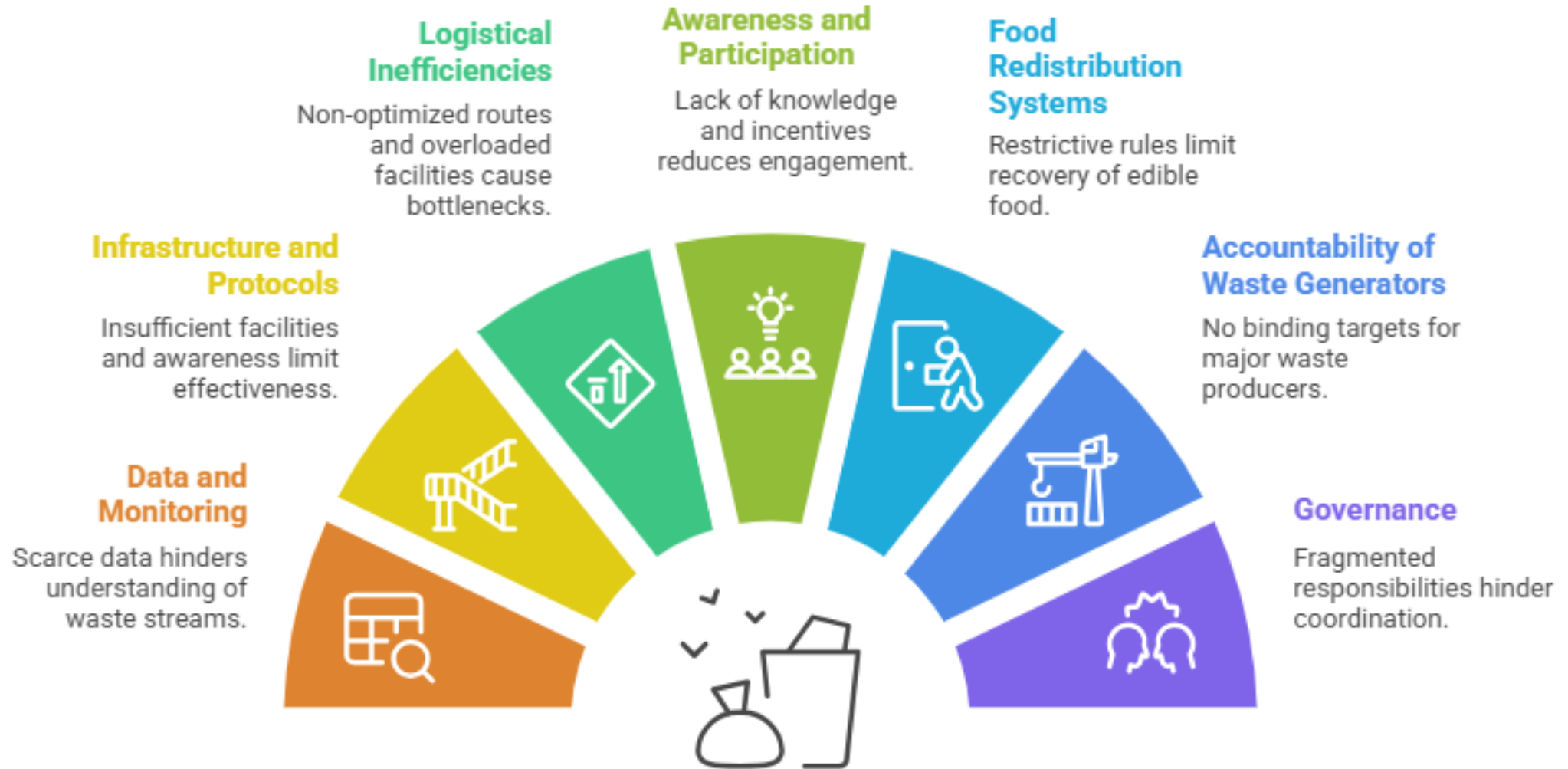


Melbourne Epping Market, Australia

- 67-hectare facility handling an estimated 1.26 billion USD in produce annually and supports around 2,750 businesses.
- Recycling rate of 98 % in 2022: only 90 tons of waste to landfill out of 4,453 tons total waste.
- 329,910 kg of edible produce to food banks and 183,180 kg to farms/zoo feed.
- 1,551 tons of organic waste to Yarra Valley Water's waste-to-energy facility located at 9 Km. That organic waste stream conversion powers 100% of the treatment site's operations.
- The business model includes satellite recycling stations for cardboard, polystyrene and plastics.
- Based on economic and environmental incentives to optimize waste sorting and circular resource flows: free disposal for up to 99 kg of clean organics per trader, and elevated fees in case of waste contamination.



Key barriers to effective organic waste prevention and management



Istanbul strategic commitments related to organic waste

IWMP, SECAP, GCAP

In 2022, WM sector accounted for 7% of total emissions in Istanbul:

- 89% from treatment and disposal of solid waste in landfills (methane)
- 5% from wastewater treatment (5%),
- 3% waste incineration
- 2% composting



Reducing landfilled waste by **40% by 2040** and eliminating it entirely by 2050



Recycling **100% of paper and plastic** waste by 2030



Processing **50% of park and garden waste** through anaerobic digestion by 2030



Increasing **landfill gas capture to 75% by 2030** and 85% by 2050



Reducing **waste-related GHG emissions** by 1 million tCO₂e by 2030 (-30%)



Expanding **energy generation from waste** from 133 MWh to 359 MWh by 2050

Strategic priorities for organic waste management

Based on the assessment results, IWMP, SECAP and GCAP

Upstream actions: Food waste prevention

- Prevent and reduce food waste at source
- Recover and redistribute edible surplus
- Fair responsibility across households, businesses & municipalities
- Continuous monitoring and reporting

Priority 1 – Promotion of decentralized organic waste treatment

- Treat waste circularly and close to the source
- Lower transport needs, higher engagement
- Best for large food waste producers: retail, markets & HORECA

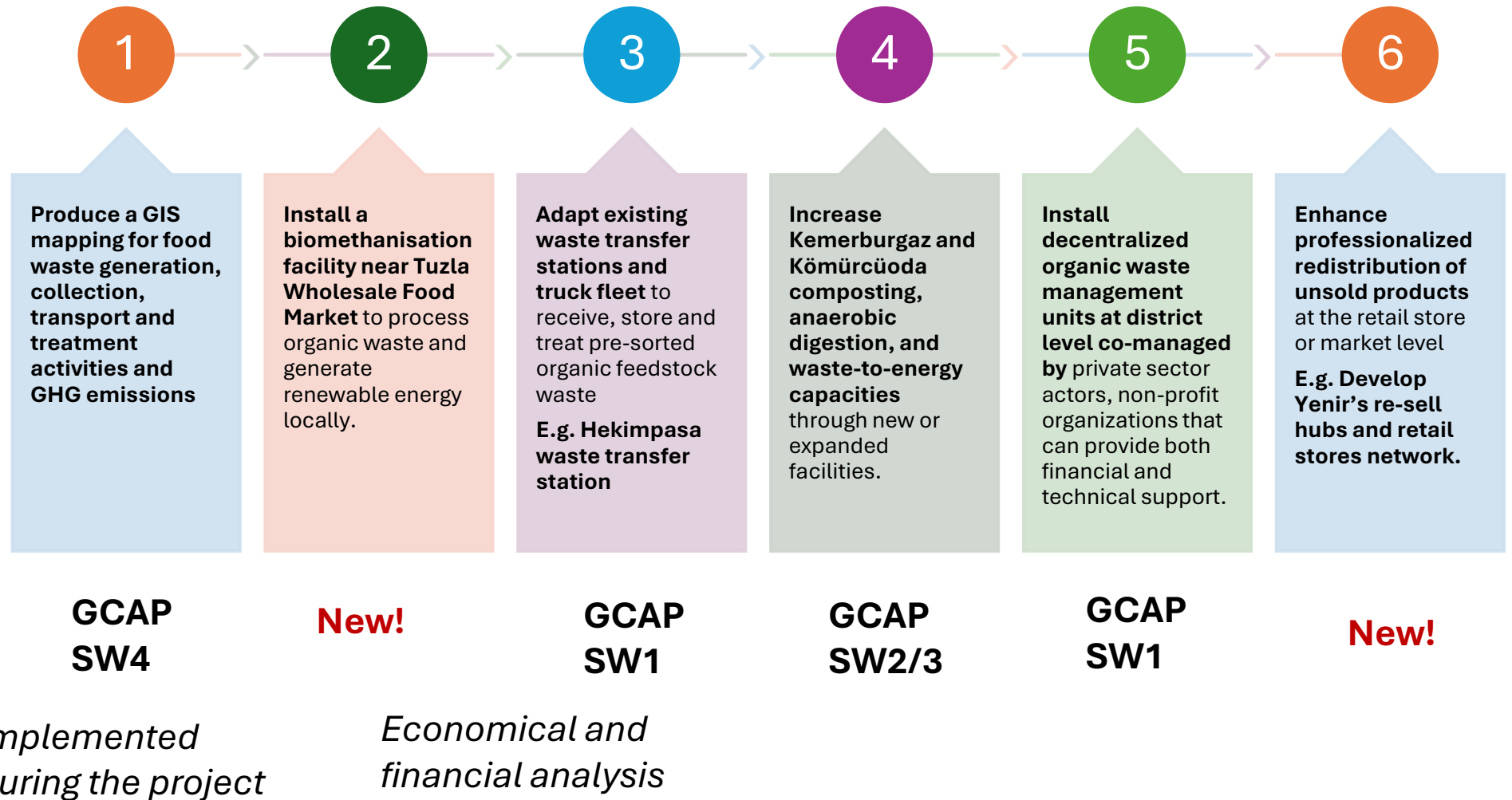
Priority 2 – Expansion of existing organic waste circular treatment facilities

- Increase composting and anaerobic digestion capacities in existing sites
- Implies important improvement in sorting, collection & logistic to reduce contamination
- Coordination from source to final disposal site

Priority 3 – Reduction of residual organic waste sent to landfill through investment in Mechanical Biological Treatment on disposal sites

- Recover organics from mixed waste at landfill
- Reduce landfill disposal/leachate risks
- Transitional solution where separation is limited/improve quality of feedstock

Report targeted actions



Survey Results

Strategic objectives	Detailed actions
Measure and monitor food waste accurately	1. Produce and monitor reliable data on food waste
Prevent avoidable food waste	1. Optimize supply chains to limit food wastage risk
	2. Redistribute edible food surplus
	3. Set food waste reduction targets
Sort, collect, and transfer separate organic waste efficiently	1. Expand food waste separate sorting
	2. Generalise food waste separate collection
	3. Enable organic waste separate transfer
Support sustainable organic waste treatment	1. Encourage decentralized organic waste treatment initiatives
	2. Increase capacities for centralized organic waste sustainable treatment

Focus on Policy and Investment recommendations
Measure and monitor food waste accurately

Alignment with strategic
 action: Solid Waste 4

Potential policy and investment recommendations	Type	Potential Ownership
Mandate and support systematic weighing and reporting of organic waste quantities for all food waste producers through a shared online reporting tool	Policy	IMM, ISTAÇ, WFM, Private sector (retailers, HORECA, WFM), Catering services (school, hospitals, universities...)
Develop a digital map to inform food waste management including waste infrastructure (separate collection points, transfer stations..)	Analysis	IMM, ISTAÇ, district municipalities

Focus on Policy and Investment recommendations

Prevent avoidable food waste

Partial alignment with strategic action: Solid Waste 1

Potential Policy and Investment recommendations	Type	Potential Ownership
Expand education and public awareness campaigns to reduce food waste	Policy	National, IMM, ISTAÇ, NGO, ISMEK, Local Communities, Private Actors (retailers, HORECA)
Optimize transportation routes between distribution centers and retail stores by using cold chain vehicles and tracking applications to ensure on-time delivery and maintain product quality	Investment	Private sector (retailers, HORECA, WFM)
Support and encourage businesses to implement voluntary food waste reduction and recycling practices: Zero Waste Certification, financial incentives, zero waste initiative funding.	Policy	National, Private Sector (Retailers, HORECA)
Develop/support professionalized collection and redistribution of unsold products at store/market level to serve vulnerable population living in the surroundings and/or to reach new markets.	Investment	Private sector (retailers, WFM), Food donation actors

Focus on Policy and Investment recommendations

Sort, collect, and transfer separate organic waste efficiently

Partial alignment with strategic action: Solid Waste 1

Potential Policy and Investment recommendations	Type	Potential Ownership
Equip homes and other public food waste producers with specialized and adapted facilities for separating organic waste (brown bins, microcomposting for schools, etc.).	Investment	IMM, district municipalities, food markets, Private actors (retailers, HORECA, universities...), Public catering (schools, hospitals..)
Upgrade transfer stations to include solid waste sorting facilities able to receive pre-sorted waste from district municipalities	Investment	IMM, ISTAÇ
Mandate separated food waste collection for all food waste producers by IMM through mandatory online registration	Policy	IMM, ISTAÇ, district municipalities, Private sector, Catering
Adapt collection trucks to meet specific waste collection requirements (district characteristics, collection infrastructure, waste quantity and characterization, final treatment station requirements, waste transport analysis results, etc.). For example: higher capacity, compartmentalized, or electric trucks.	Investment	IMM, ISTAÇ, district municipalities

Focus on Policy and Investment recommendations
Support sustainable organic waste treatment

**Alignment with
 Strategic Action: Solid waste 2,
 3 and 5**

Potential Policy and Investment recommendations	Type	Potential Ownership
Increase the landfill gas capture rate for electricity/heating and promote circular projects (fuel for waste transport vehicles, power for seedling greenhouses, etc.), for example: Silivri Landfill.	Investment	IMM, ISTAÇ, Private waste management actors
Improve toxic leachate treatment by preventing organic matter from being sent to landfills through dedicated facilities and improved recycling and separate collection initiatives.	Investment	IMM, ISTAÇ, Private waste management actors
Develop and/or support decentralized waste management projects in partnership with the private sector and non-profit organizations that can provide financial and technical support	Policy	IMM, district municipalities, Private sector, NGO, community
Expand composting, biodrying, and anaerobic digestion capacity: <ul style="list-style-type: none"> • 2 new biomethanisation plants in Silivri and Kömürcüoda • Capacity increase in Kemerburgaz Biomethanization Plant • Capacity increase in Kemerburgaz composting plant • New composting plant in Kömürcüoda, Şile 	Investment	IMM, ISTAÇ, Private waste management actors
Regulate decentralized compost use and support redistribution for IMM green spaces or local farmers	Policy	National, IMM, ISTAÇ, district municipalities

Stakeholder discussion in break-out rooms

30-min discussion

Group 1. Food waste prevention initiatives and investments

Group 2. Organic waste treatment initiatives and investments (In Turkish language)

10-min Debrief in plenary



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Next steps:

**Please feel free to
reach out for the
roadmap finalization**

**4th workshop:
governance and
ownership**

**Collaboration with IMM
on a GIS mapping**

**EFA for the selected
investments**

THANK YOU

