Initiatives on biowaste in Hungary

Laszlo ALEKSZA PhD.
associate professor

MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM

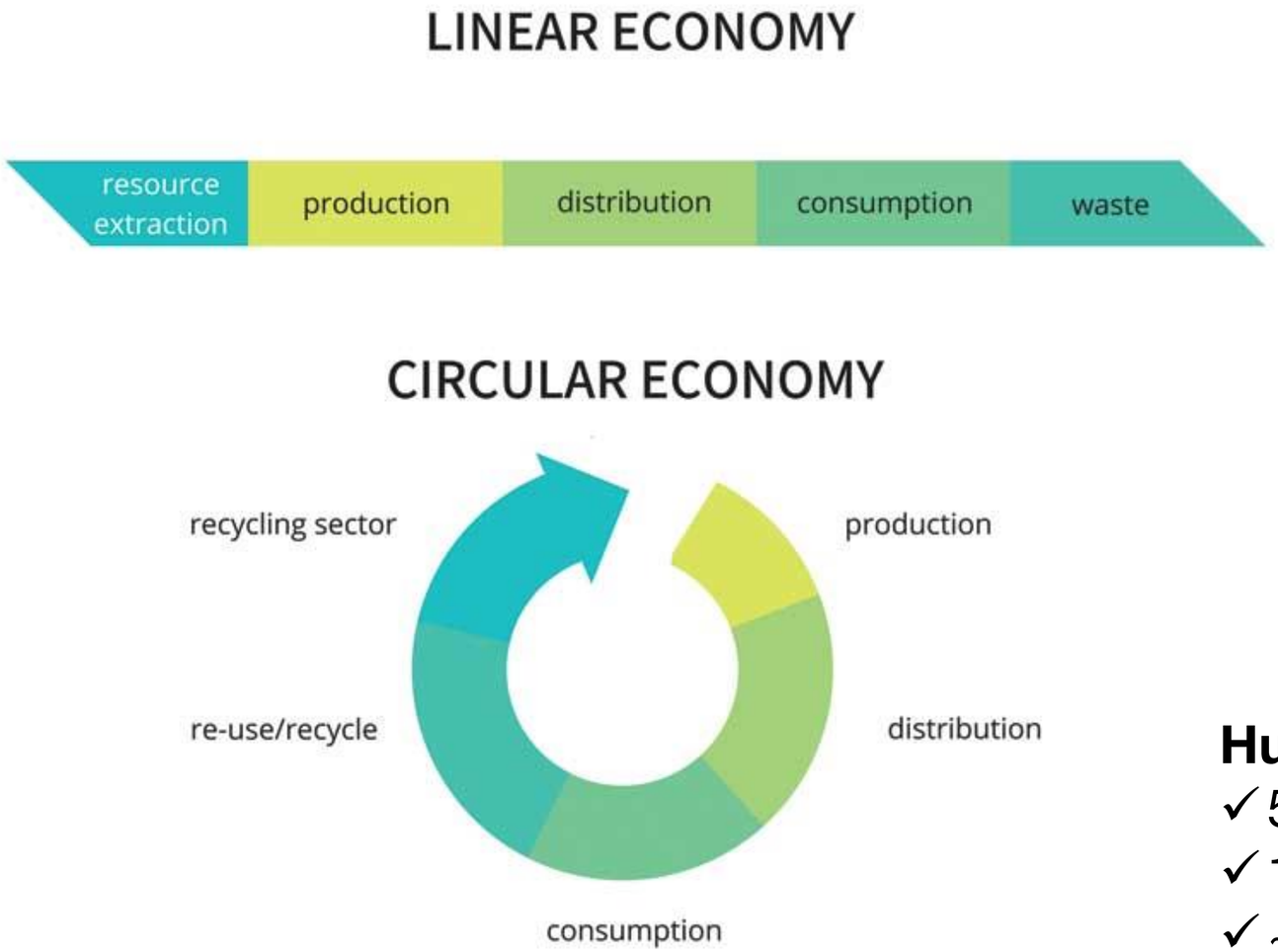
Hungarian University of Agricultural and Life Sciences (MATE)

MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM

- **MATE (Hungarian University of Agriculture and Life Sciences):** one of the largest agricultural-focused, multidisciplinary higher education institutions in Europe;
- Established on **1 February 2021** (Szent István University and integration of Kaposvár University, Eszterházy University's Károly Róbert Campus (Gyöngyös) and Pannon University's Georgikon Faculty in Keszthely);
- **Campuses:** Buda, Gödöllő, Gyöngyös, Kaposvár and Keszthely;
- MATE has an Institute structure;
- **Institute of Environmental Sciences**.

Transition from linear to circular economy

MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM



Hungary:

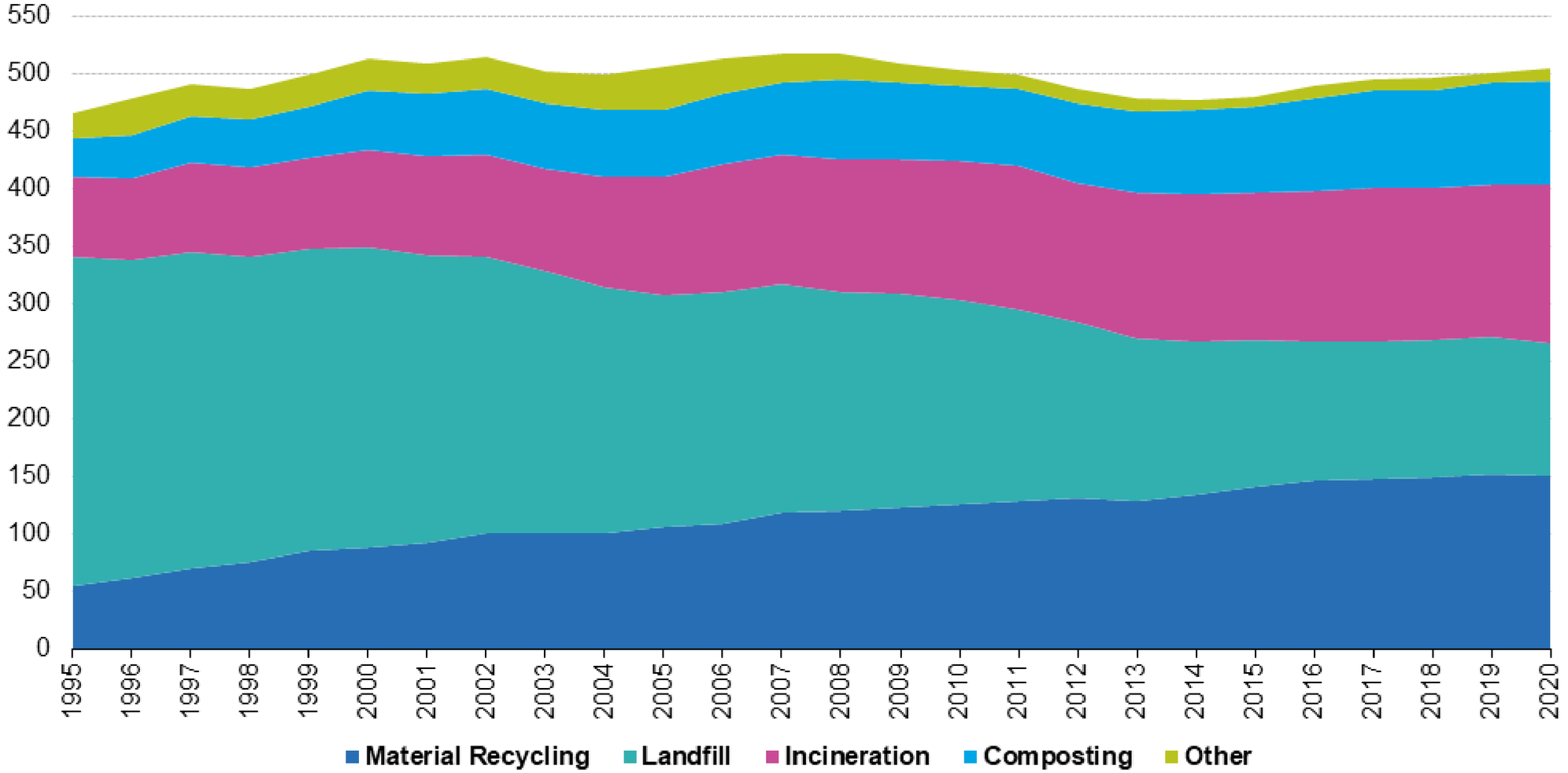
- ✓50% of MSW to landfill;
- ✓1,5 million tons biowaste potential;
- ✓~30 billion EUR: value as secondary raw material;

Waste treatment in EU (1995-2020)

MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM

Municipal waste treatment, EU, 1995-2020

(kg per capita)



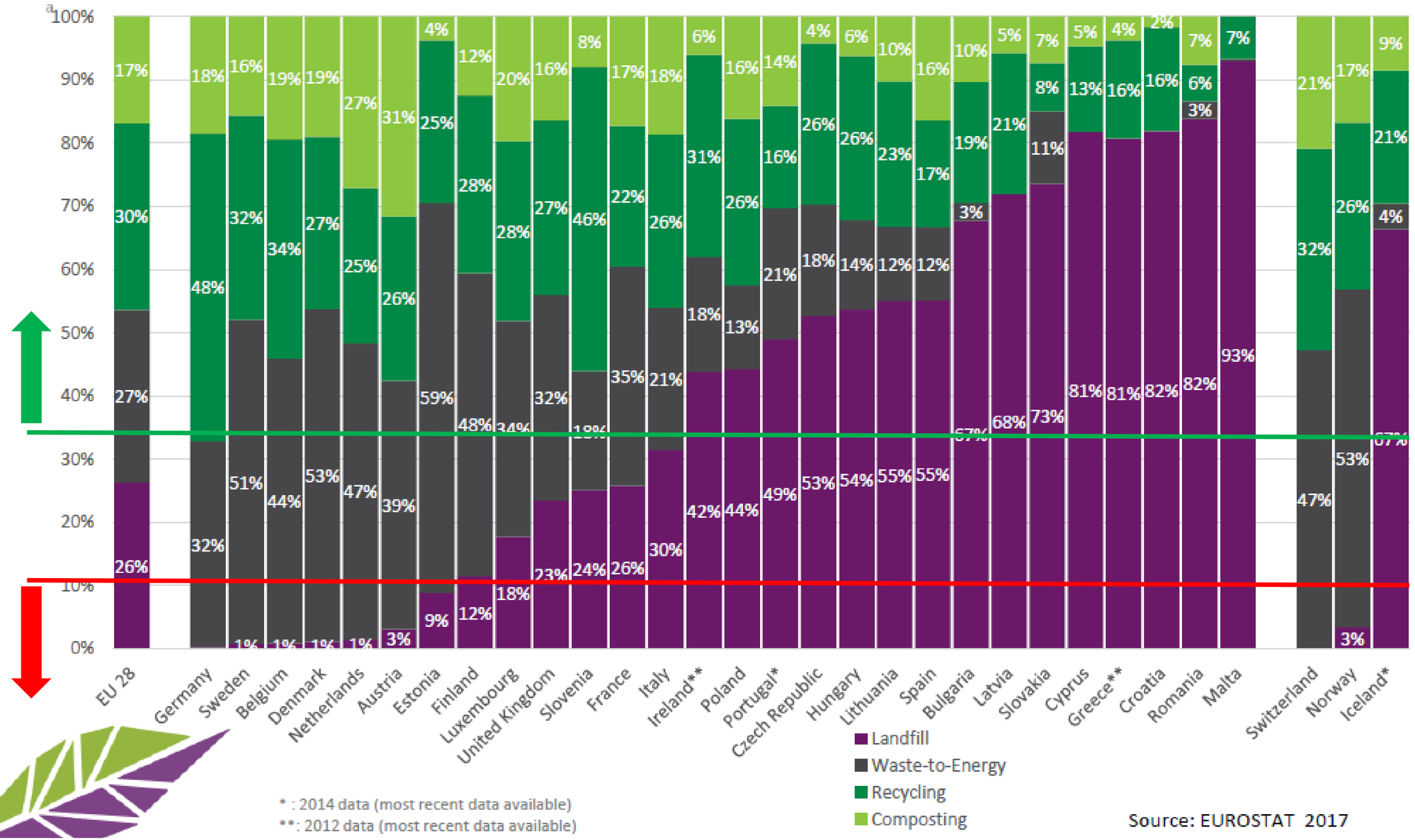
Note: estimated by Eurostat.

Source: Eurostat (online data code: env_wasmun)

eurostat

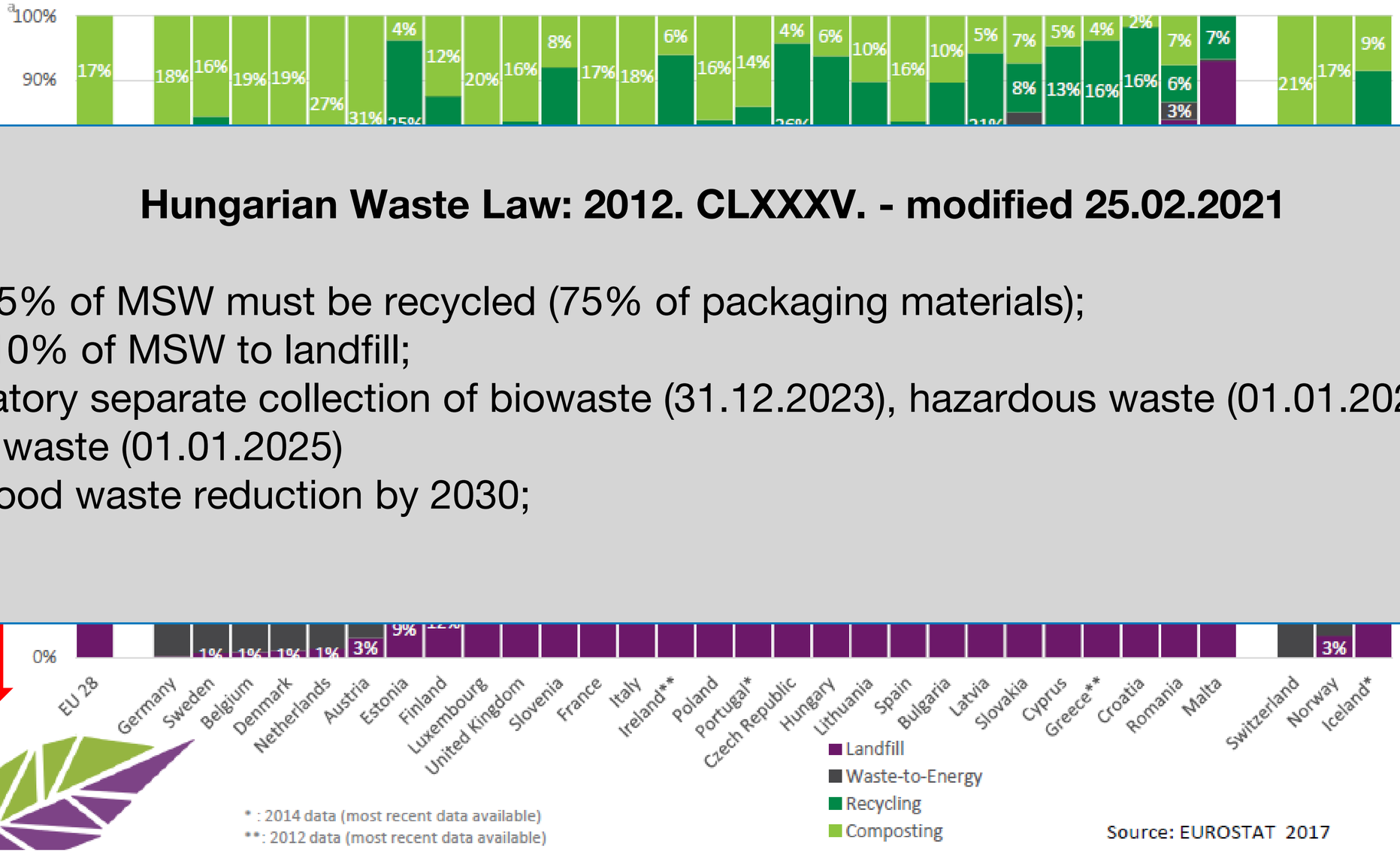
WASTE TREATMENT IN EU

MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM



WASTE TREATMENT IN EU

MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM

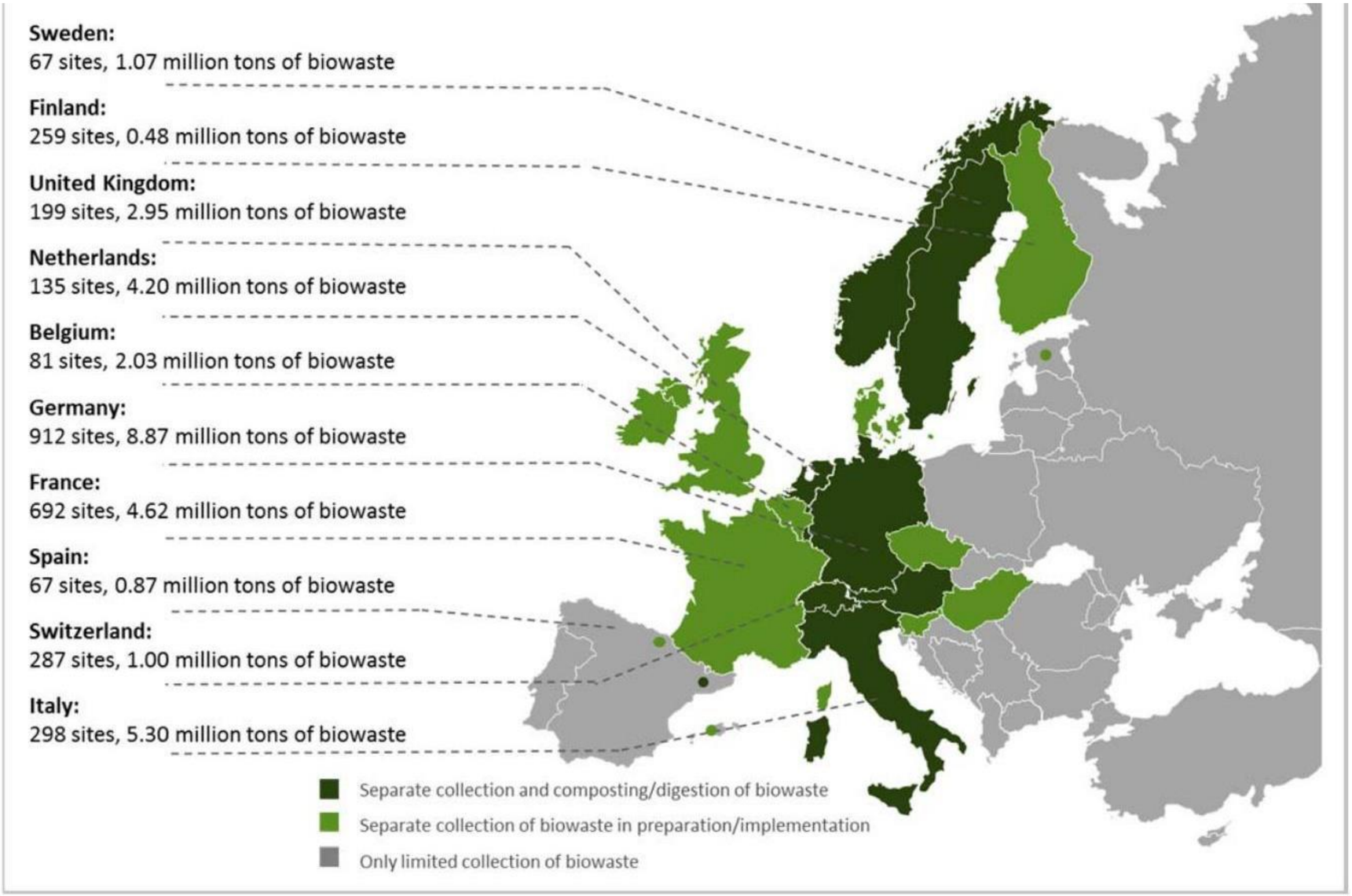


Hungarian Waste Law: 2012. CLXXXV. - modified 25.02.2021

- min. 65% of MSW must be recycled (75% of packaging materials);
- max. 10% of MSW to landfill;
- mandatory separate collection of biowaste (31.12.2023), hazardous waste (01.01.2025), textile waste (01.01.2025)
- 50% food waste reduction by 2030;
- …

BIOWASTE TREATMENT IN EU

MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM



- ✓**123 million tons/year: EU biowaste production;**
- ✓**4200 biowaste treatment plants;**
- ✓**47,5 million tons/year biwaste recycled;**
- ✓**117 kg/person/year;**
- ✓**25 kg/person/year (2004/2007 joiners)**
- ✓**28 kg/person/year in Hungary**

OPPORTUNITIES IN CIRCULAR ECONOMY

MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM

Hungary potential:

- ✓30 million tons agricultural by-products;
- ✓1,5 million tons biowaste (kitchen and green waste);
- ✓1,8 million tons food-waste (0,75 mio tpy households, 0,7 mio tpy processing, 0,25 mio tpy catering, 0,1 mio tpy trading);
- ✓1,2 million tons dewatered sewage sludge (biosolids);

MATE Circular Economy – R+D priorities:

- ✓Aerobic treatment – Hungary: 150 000 hectares/year organic fertilizer with biowaste compost (without manure);
- ✓Anaerobic treatment - biomethane: min. 500 million m^3 (5% of Hungarian natural gas consumption);
- ✓Phosphorus recovery - 15 000 tons/year P recovery (without manure);
- ✓Second generation biofuels (using by-products and biowaste)
- ✓Biodegradable polymers;
- ✓Thermochemical treatment (pyrolysis, HTC…);
- ✓Animal feed production (directly or insects protein);
- ✓…

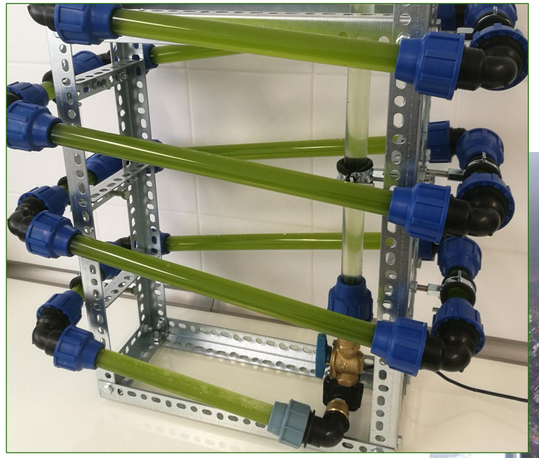
EXAMPLE I. – AGRÁR-BÉTA LTD.

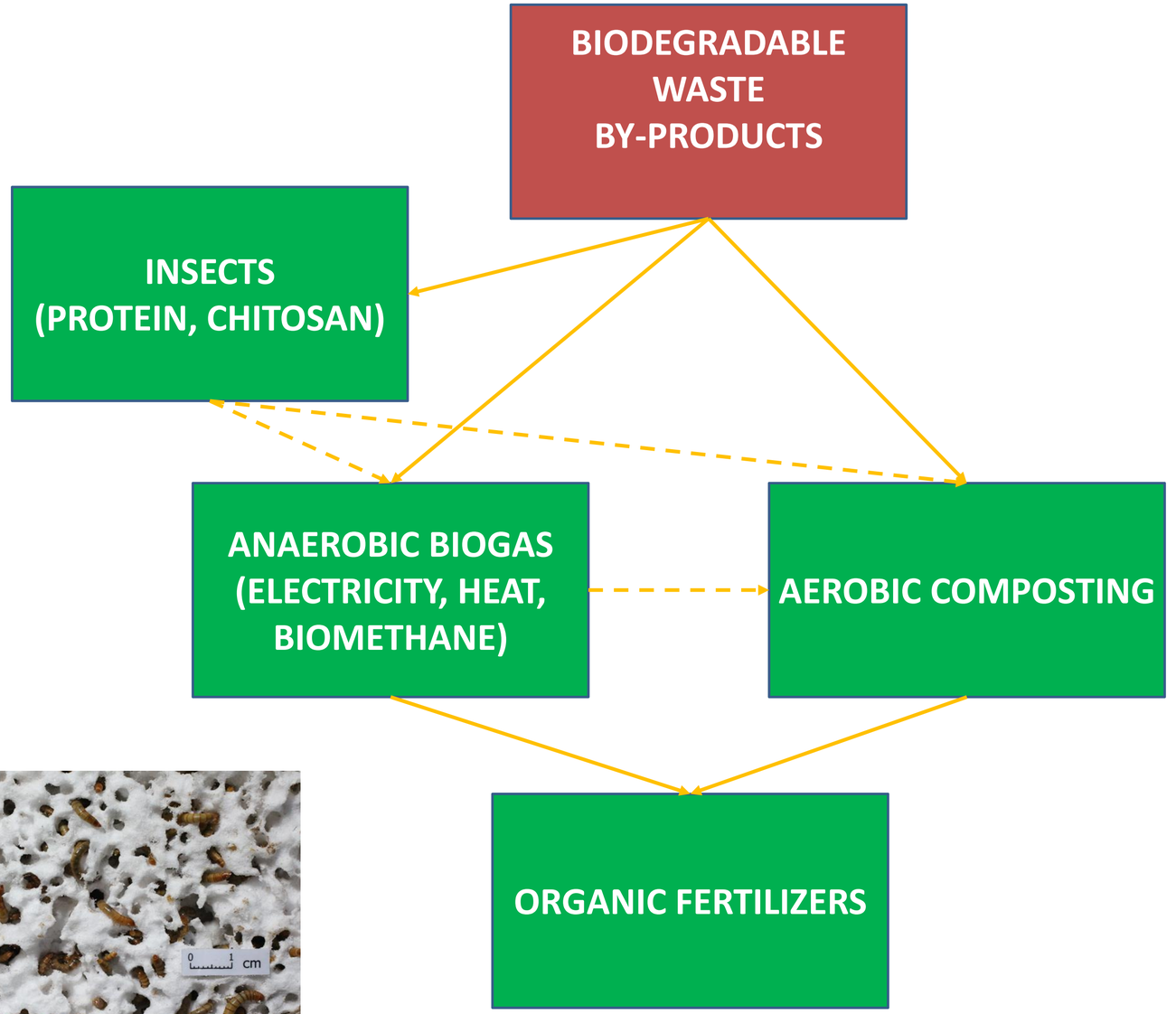
MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM

- ✓Biogas production – anaerobic treatment (1,5 MWhe)
- ✓Bioethanol production (15 000 tons/year)
- ✓Energetic plantation (100 hectars)

EXAMPLE II. – PROFIKOMP INC.

MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM





EXAMPLE III. KNOWLEDGE CENTER OF CIRCULAR ECONOMY AT MATE (KEHOP 3.2.1.)

MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM

- ✓2013 – Founding of Waste Management Department
- ✓2014 – Starting of separate collection of waste

EXAMPLE III. KNOWLEDGE CENTER OF CIRCULAR ECONOMY AT MATE (KEHOP 3.2.1.)

MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM

Budget: 1 billion HUF

Deadline: 31.12.2023

Activities:

- ✓Waste analysis;
- ✓R+D activities;
- ✓Introduction of separated biowaste collection on campus;
- ✓Infrastructure for onsite and industrial composting;
- ✓Utilization of all biodegradable waste and by-products on campus;
- ✓…

MATE CIRCULAR ECONOMY PROJECT – INTERNATIONAL COMPARISON

MATE
MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM

MATE CIRCULAR ECONOMY PROJECT – INTERNATIONAL COMPARISON

MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM

	University	Zero waste program	Separated collection	Separate biowaste collection	Community composting	Comprehensive on-site biowaste treatment
1.	Harvard University	YES	YES	YES	YES	NO
2.	University of Cambridge	YES	YES	YES	NO	NO
3.	Wageningen WUR	YES	YES	YES	NO	NO
4.	Edinburgh University	YES	YES	YES	NO	NO
5.	Michigan State University	YES	YES	YES	YES	NO
6.	Massachusets Ins. of Technology	YES	YES	YES	YES	NO
7.	Berkley University of California	YES	YES	YES	NO	NO
8.	University of Oregon	YES	YES	YES	NO	NO
9.	Warsaw Univ. of Life Sciences	NO	YES	NO	NO	NO
10.	Kozminski University (Lengyelo.)	YES	NO	NO	NO	NO
11.	Universität für Bodenkultur Wien	NO	YES	YES	NO	NO
	MAGYAR AGRÁR- ÉS ÉLETTUDOMÁNYI EGYETEM	**YES**	**YES**	**YES**	**YES**	**YES**

MAGYAR AGRÁR- ÉS
ÉLETTUDOMÁNYI EGYETEM

THANK YOU VERY MUCH FOR YOUR KIND ATTENTION!

aleksza.laszlo@uni-mate.hu