EUSDR PA4 SG MEETING

report on sewage sludge management

TRENECON

02.10.2024

BACKGROUND

- Objective: contribute to the efforts of the EUSDR PA4 in the sound management of sewage sludge
- Following the
  - preparatory study conducted in 2020 (EUSDR PA4)
  - workshop on sludge management in 2021 (EUSDR PA4)
  - community level initiatives and plans to revise the Sewage Sludge Directive and the existing policies on the management of sludge as a source of energy and nutrients

ADMIN BACKGROUND

- Title: The opportunities of sewage sludge utilisation in the Danube Region

  (Update of the study for the development of sludge management in the Danube Region)
- Client: Hungarian Ministry of Foreign Affairs and Trade / EUSDR PA4
- Assigned to: Trenecon Planning and Consulting Ltd.
- Deadline for the 1st draft: October 31.
- Final deadline: November 22.

CONTENT OF THE STUDY – HIGHLIGHTS

- Presenting data on recent trends of sewage sludge management in the EUSDR countries
- Discussion on recent policy developments
- Presentation of case studies / good practices – pros and cons
- Assessment of the state of play through a survey of stakeholders within the EUSDR

STATEMENTS OF THE PREPARATORY STUDY – POLICY CHALLENGES

According to the Green Deal and the Circular Economy Action Plan sludge is considered

- a material to be used in agriculture to preserve and improve soil quality,
- a raw material for industrial processes, and
- an energy source.

Challenges

- Growing quantity and the changing quality of wastewater / sludge (technology, institutional and legal background, feasibility)
- Varying issues along the Danube (dominant type of disposal, quality and quantity, expected trends, etc.)

STATEMENTS OF THE PREPARATORY STUDY – THEMES OF COMMON INTEREST

- Research and development of techniques based on best practices
- Assessment of available technologies in specific socio-economic situations (feasibility)
- Feasibility of cross-border sludge management systems
- Pollutants' pathways related to sludge management and recovery (soils, groundwaters and surface waters – various recovery types)
- The specific characteristics of agricultural sludge, special treatment and recovery techniques, pathways of typical pollutants
- Monitoring systems for the tracking
  - sludge related pollutants
  - recovery pathways
- Financing/funding possibilities for the development of sludge management systems

STATEMENTS OF THE WORKSHOP ON SEWAGE SLUDGE MANAGEMENT – HIGHLIGHTS

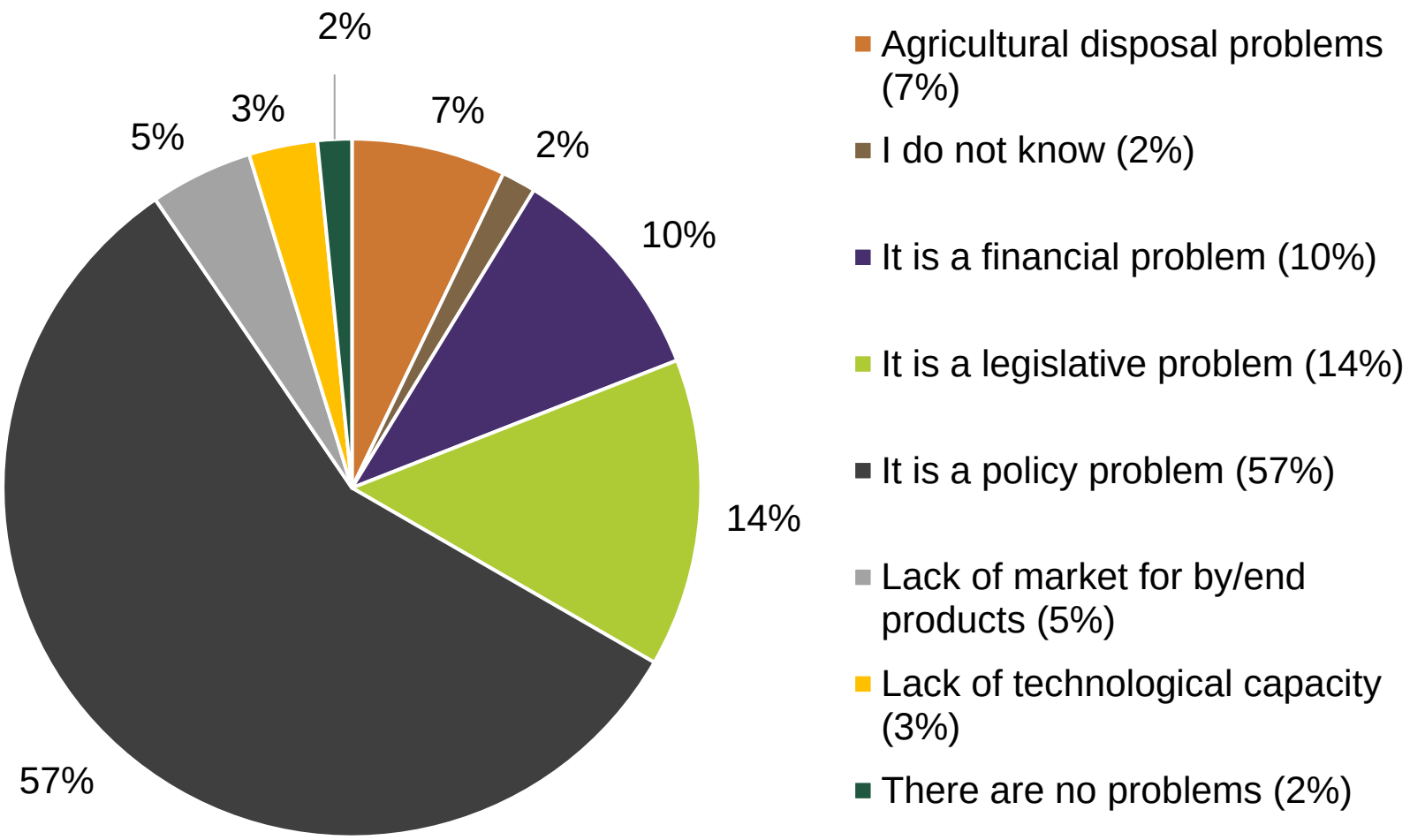
- Increasing sludge volumes along with expanding wastewater treatment
- Pollutants in sludge
- Data quality, national and regional differences
- Mix of possible sludge management solutions tailored for specific environments (social, economic and environmental)
- Common approaches in similar environments
- Stakeholder and public acceptance of various solutions
- Knowledge sharing
- Better regulations
- Affordability

STATEMENTS OF THE WORKSHOP ON SEWAGE SLUDGE MANAGEMENT – MAIN MESSAGES

- Strong need for strict and uniform regulation at EU level
- Shift in the approach to sludge management; sludge should be considered as a product, a source of energy than waste
- Further discussions with policy makers – circular economy
- Pollution control at source

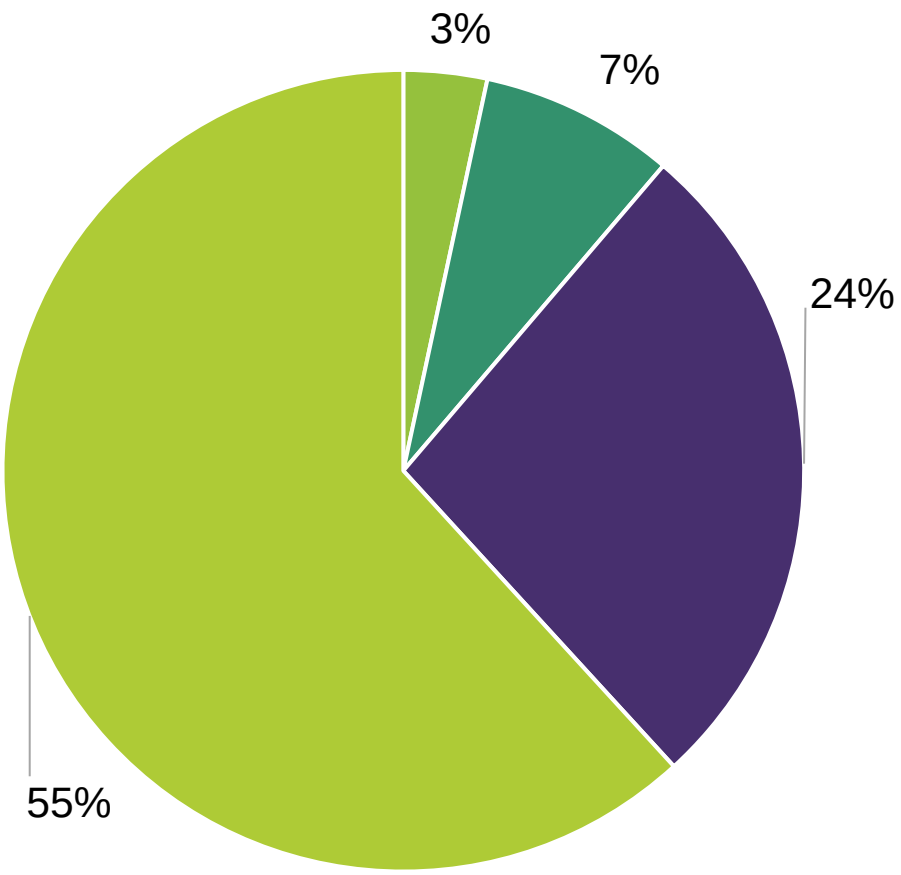
STATEMENTS OF THE WORKSHOP ON SEWAGE SLUDGE MANAGEMENT / POLL

RELEVANCE OF SEWAGE SLUDGE MANAGEMENT PROBLEMS



STATEMENTS OF THE WORKSHOP ON SEWAGE SLUDGE MANAGEMENT / POLL 2

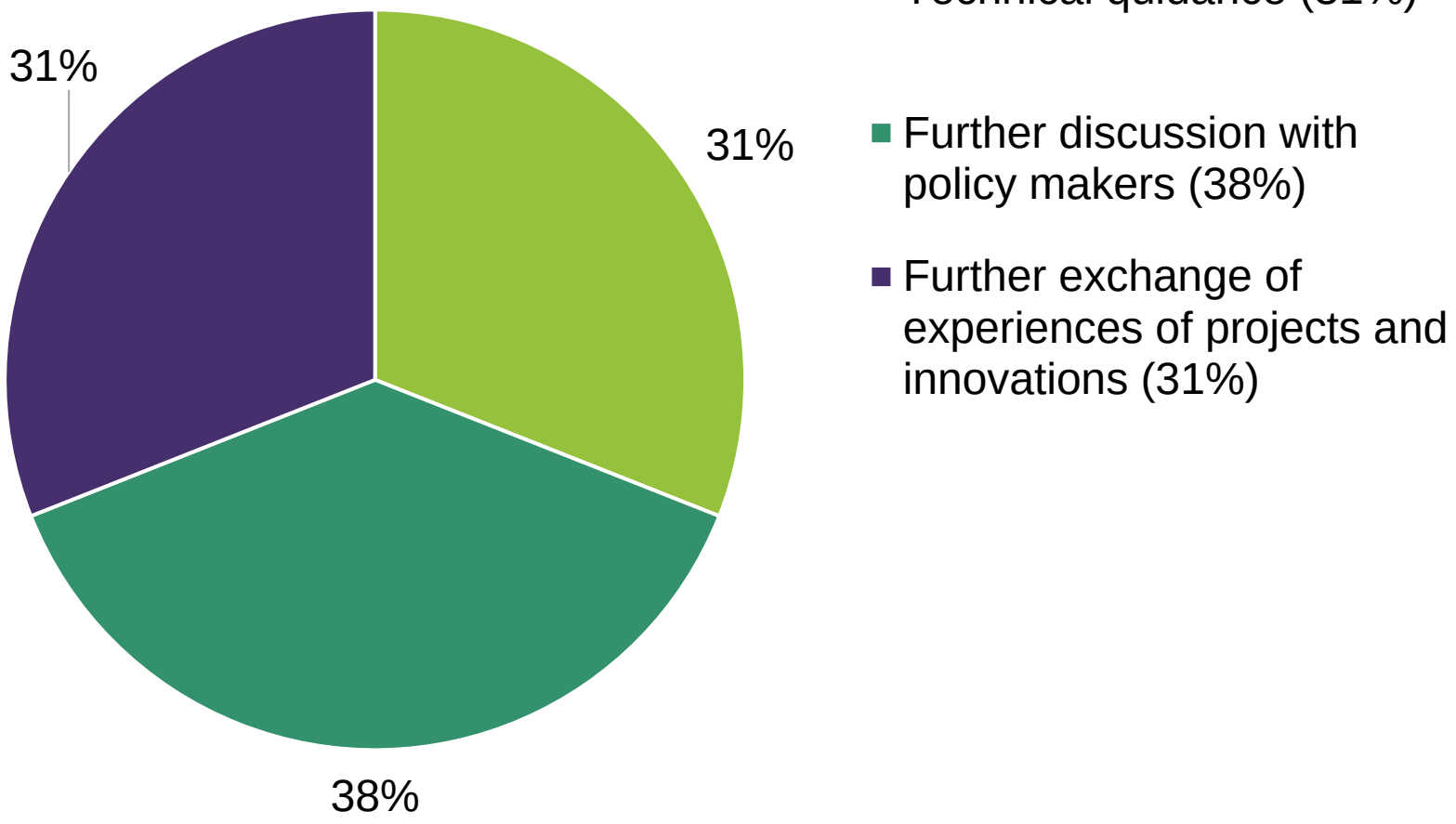
SUPPORT OF SELECTED KEY MESSAGES FOR POLICY MAKERS



- Regulation of sludge reuse should be separate from the UWWTD (3%)
- To facilitate discussion with the agricultural users to reach a balanced situation (7%)
- To focus on the management of wastewater as a resource rather than focusing only on the end of pipe aspects (24%)
- To have more specific legislation on sludge and that there is a strong need for regulation at the EU level to set safe limits for use (55%)

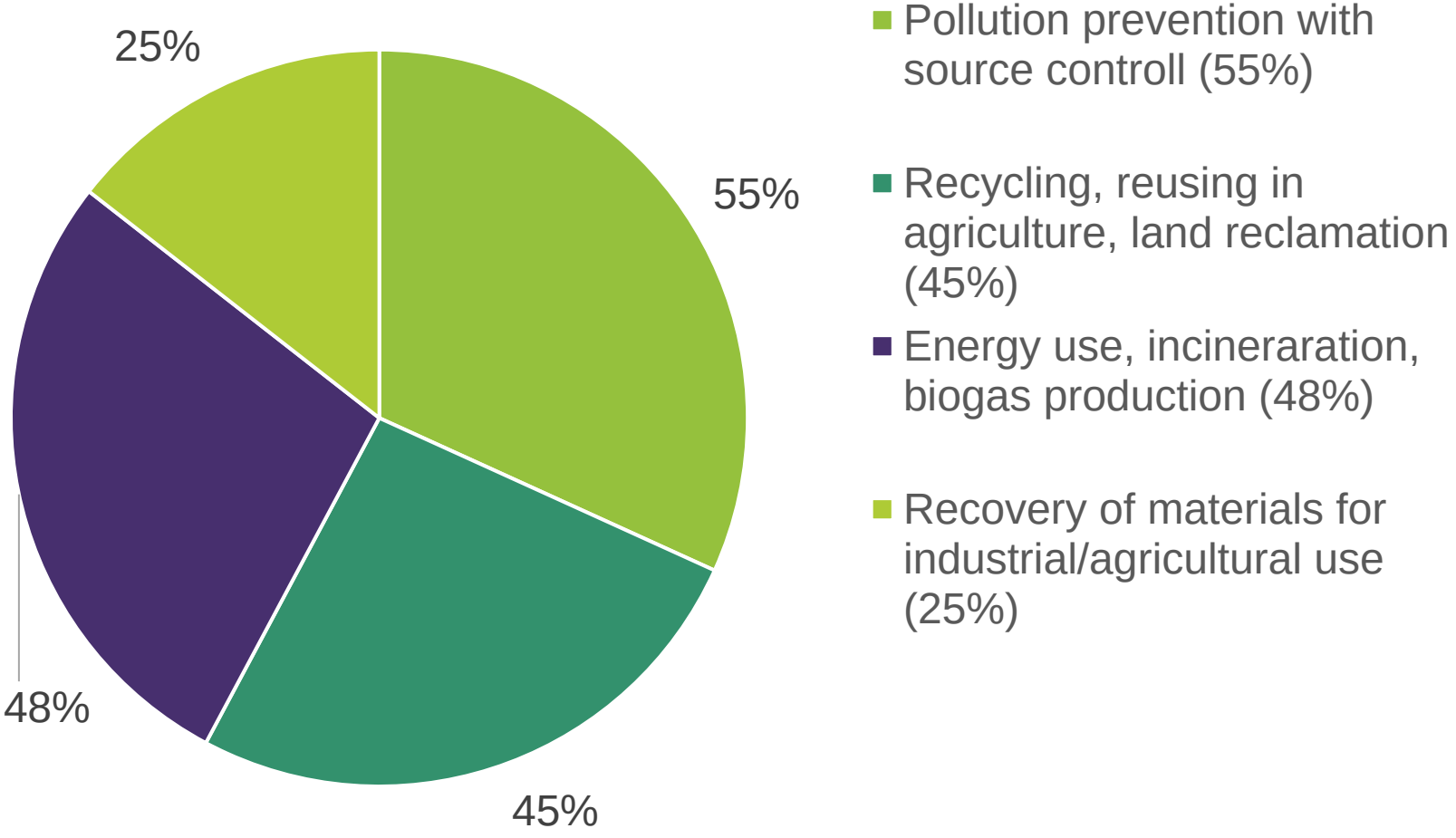
STATEMENTS OF THE WORKSHOP ON SEWAGE SLUDGE MANAGEMENT / POLL 3

SUPPORT OF SELECTED FOLLOW-UP ACTIONS



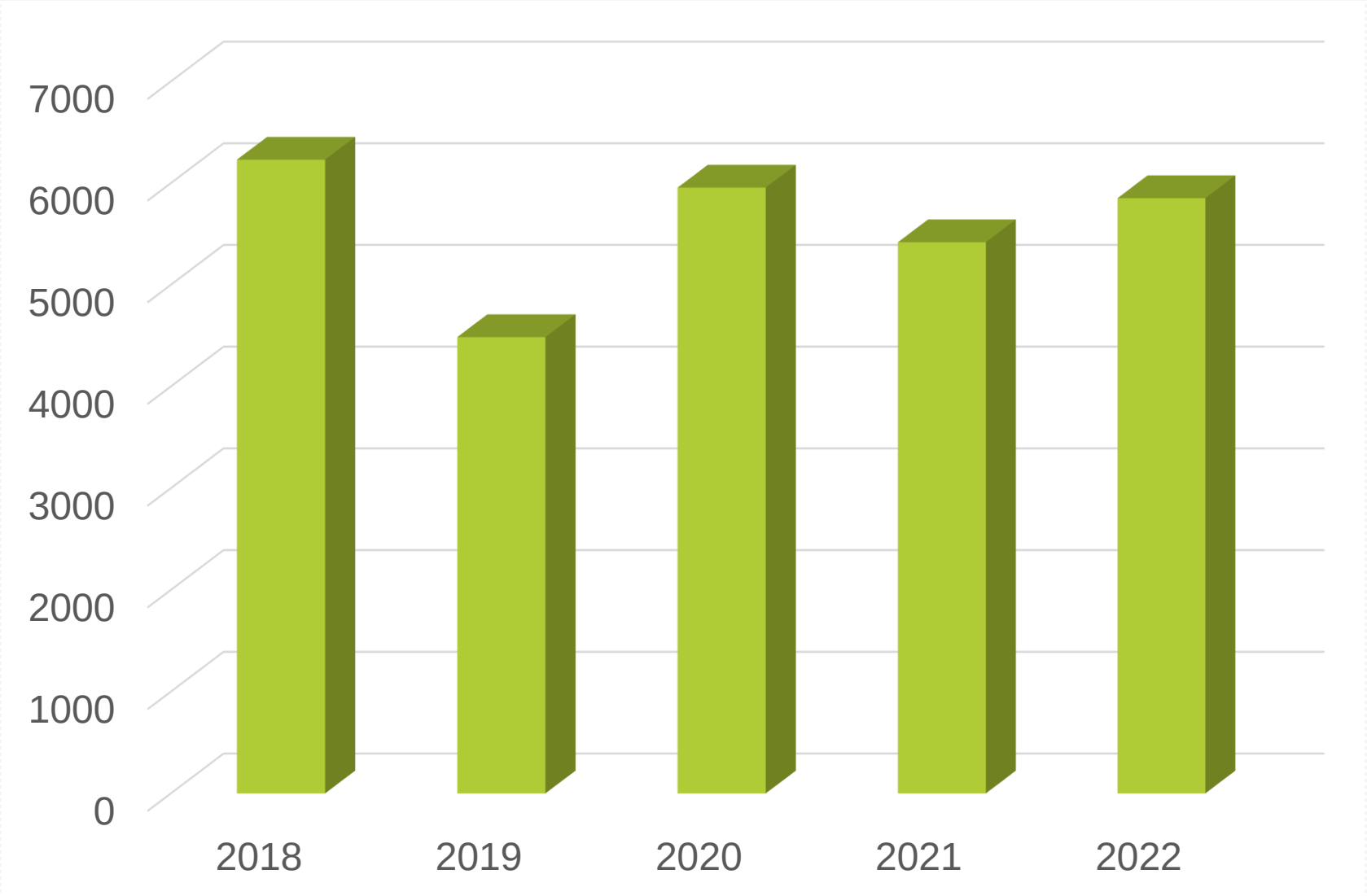
STATEMENTS OF THE WORKSHOP ON SEWAGE SLUDGE MANAGEMENT / POLL 4

PREFERRED SLUDGE MANAGEMENT OPTIONS



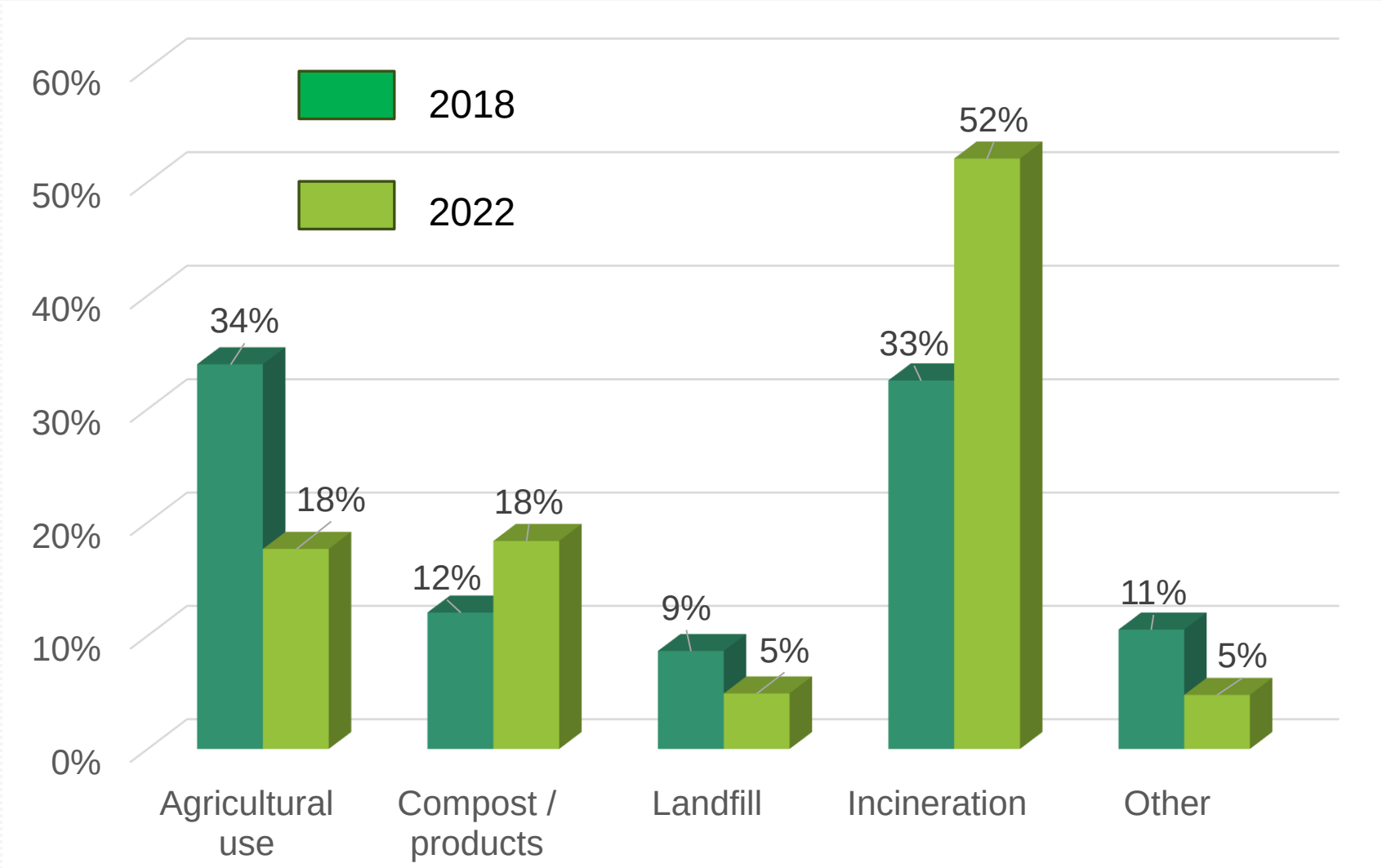
MAJOR TRENDS IN SLUDGE MANAGEMENT

SLUDGE PRODUCTION (TONNES PER YEAR)



MAJOR TRENDS IN SLUDGE MANAGEMENT

SLUDGE RECOVERY (IN THE PERCENTAGE OF TOTAL, 2018 - 2022)



MAJOR TRENDS IN SLUDGE MANAGEMENT

SLUDGE MANAGEMENT MODES, 2022

	Total/Treated (%)	Agricultural use (%)	Compost and similar (%)	Landfill (%)	Incineration (%)	Other (%)
Bulgaria	**77**	**53**	8	5	0	11
Czechia	100	35	46	8	11	0
Germany	100	15	8	0	**76**	1
Croatia	**27**	2	6	2	0	17
Hungary	**88**	4	**78**	1	4	0
Austria	100	26	20	0	45	10
Romania	100	30	1	37	0	31
Slovenia	100	0	1	3	23	**74**
Slovakia	100	0	52	20	19	9
Bosnia and Herzegovina	100	0	0	**100**	0	0
Serbia	100	0	0	**100**	0	0
Moldova	-	-	-	-	-	-
Ukraine	-	-	-	-	-	-
Montenegro	-	-	-	-	-	-

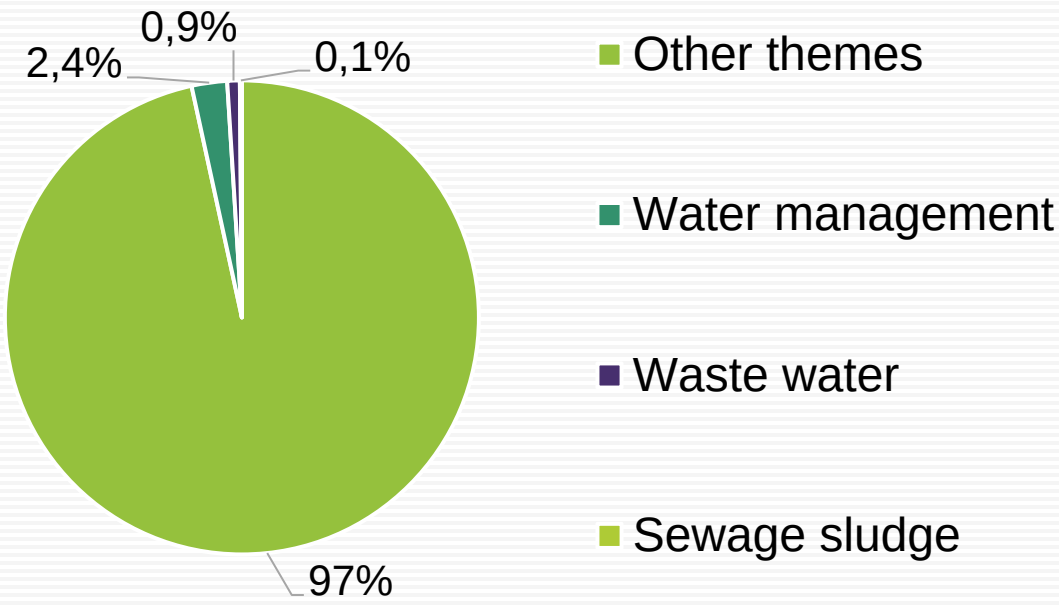
MAJOR TRENDS IN SLUDGE MANAGEMENT
HIGHLIGHTS

- No data for Moldova, Montenegro and Ukraine
- No data on export – import; issues with the "management gap"
- No trend showing increase in sludge quantity
- Trends in the modes of recovery:
  - Landfilling strongly decreases
  - Direct agricultural use strongly decreases
  - The relevance of incineration greatly increases
  - The production of compost and other related products for agricultural/horticultural use slightly increases
- Countries differ greatly in the applied technologies

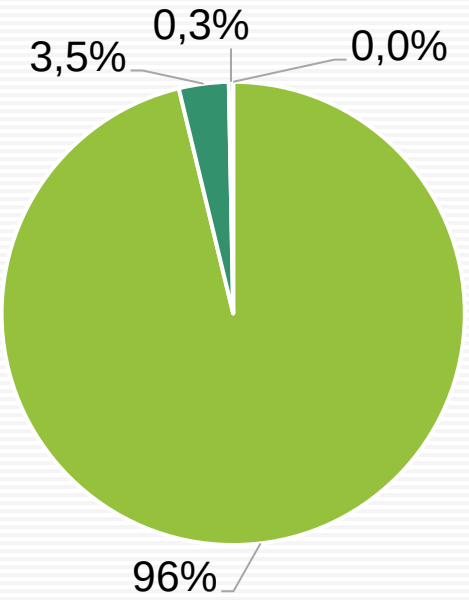
PROJECTS RELATED TO SLUDGE MANAGEMENT

TRANSBOUNDARY PROJECTS FINANCED (KEEP)

2014-2020



2021-2027



Keywords	2014-2020	2021-2027
Sewage sludge	0,1%	0,0%
Waste water	0,9%	0,3%
Water management	2,4%	3,5%
Other themes	97%	96%

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PROJECTS RELATED TO SLUDGE MANAGEMENT

TRANSBOUNDARY PROJECTS FINANCED ON SLUDGE MANAGEMENT (KEEP) 2014-2020

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PROJECTS RELATED TO SLUDGE MANAGEMENT
EUSDR 2014 – 2020

- 2014 - 2020 INTERREG V-A Austria - Czech Republic Technology innovations for composting, compost use and soil protection
- 2014 - 2020 INTERREG V-A Austria - Germany / Bavaria (Bayern - Österreich) The wastewater treatment plant in interaction with the waste and energy industry: A German-Austrian Dialogue
- 2014 - 2020 INTERREG V-A Austria - Hungary Cross-border raw and residual material collection and recovery system in the eco-energy country and in the small region of Körmend
- 2014 - 2020 INTERREG V-A Germany / Bavaria - Czech Republic Green Infrastructure Measures from sewage sludge cascade use (green IKK) through cross-border interregional cooperation
- 2007 - 2013 Hungary - Romania (HU-RO) Alternative Energy Based Heat and Electricity Production in the Border Region

PROJECTS RELATED TO SLUDGE MANAGEMENT
EUSDR ONGOING

Projects:

- Aquatic plastic
- Danube indeet – energy
- DanubeSediment Q2
- DECA – Energy communication accelerator
- Esinergy – renewable
- NRGCom – renewable
- Thetys – water quality

Flagships:

- Climate change
- Emerging substances
- (Migratory fish)

POLICY DEVELOPMENTS – FINDINGS FROM 2014 EVALUATION OF THE SSD

DG ENVIRONMENT SYLVIE GRAJALES, 2021

- Fit for purpose and effective in achieving its objectives
- Induced technological development
- Discouraged disposal
- Increased soil organic matter and water retention
- SSD did not fully match the needs and expectations:
  - EU circular economy ambitions
  - The potential need to regulate other uses of sewage sludge
  - Regulation of pollutants in sludge
  - Coherence with the Urban Waste Water Treatment Directive

POLICY DEVELOPMENTS

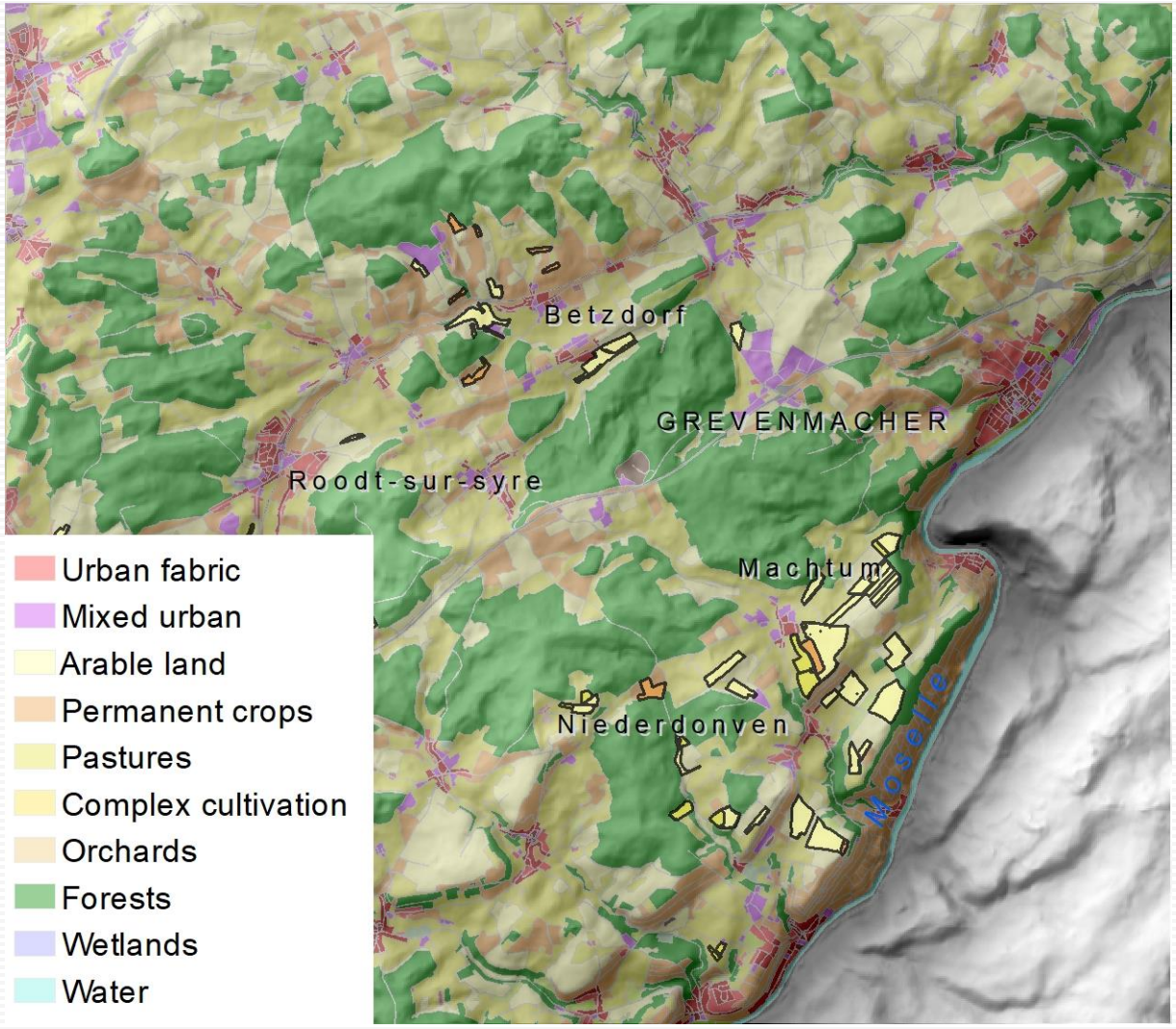
- Setting up monitoring schemes for sludge reporting
- Ongoing revision of the Sewage Sludge Directive
  - Background research
  - Research on feasibility
  - Working paper on sludge management
  - Public consultation

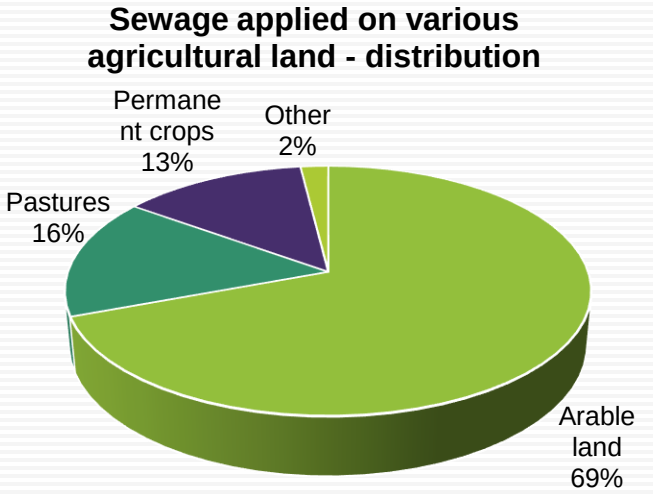
POLICY DEVELOPMENTS
MONITORING SCHEME

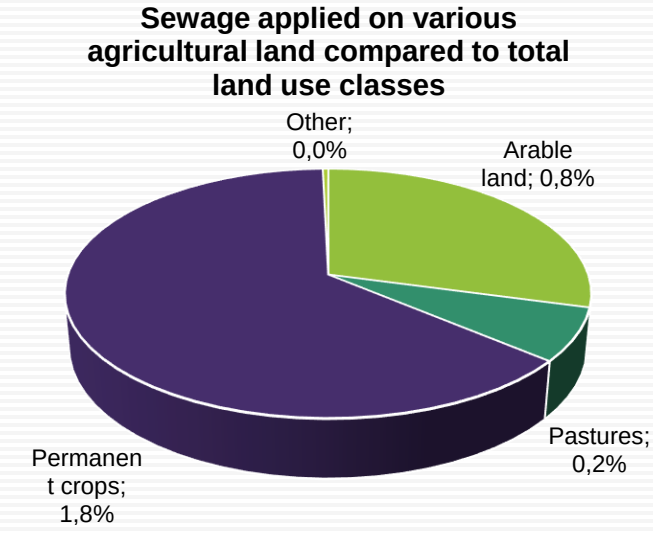
- Legislation:
  - REGULATION (EU) 2019/1010 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 5 June 2019 on the alignment of reporting obligations in the field of legislation related to the environment, and amending Regulations
  - DECISION (EU) 2018/853 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 May 2018 as regards procedural rules in the field of environmental reporting
- Highlights:
  - Up to date records on quantity, composition, treatment, recipients, etc.
  - Public access to spatial data

(Data is scarcely found…)

POLICY DEVELOPMENTS
MONITORING SCHEME – LUXEMBURG SPATIAL DATA PUBLICATION







POLICY DEVELOPMENTS
SUPPORT TO THE EVALUATION OF THE SEWAGE SLUDGE DIRECTIVE, 2022

- Issues:
  - national limit values for the application of heavy metals in soils, sludges and to agricultural land,
  - sludge treatment techniques, frequency of soil analysis, and
  - any national prohibitions on the use of sludge
- Highlights:
  - Effectiveness; varying, relatively effective / focus on agricultural use and related pollution issues
  - Efficiency; incomplete due to its limitation of not considering the full management cycle and all technological possibilities
  - Coherence; though “self standing”, +/- coherent with other legislation, however focused on agricultural use (versus varying capacities of other applications), and sees sludge as “waste”
  - Relevance; pollution / monitoring, feasibility and public concern

POLICY DEVELOPMENTS
EVALUATION OF THE SEWAGE SLUDGE DIRECTIVE, 2022

- Data gaps, reporting and monitoring
- Putting sewage sludge management into the wider context of
  - sustainable development,
  - zero pollution,
  - climate change, and
  - EU policies of strategic autonomy.
- Community level guidance on sludge treatment
  - Nutrient recovery
  - Energy issues
- Internal market of sludge / products

POLICY DEVELOPMENTS

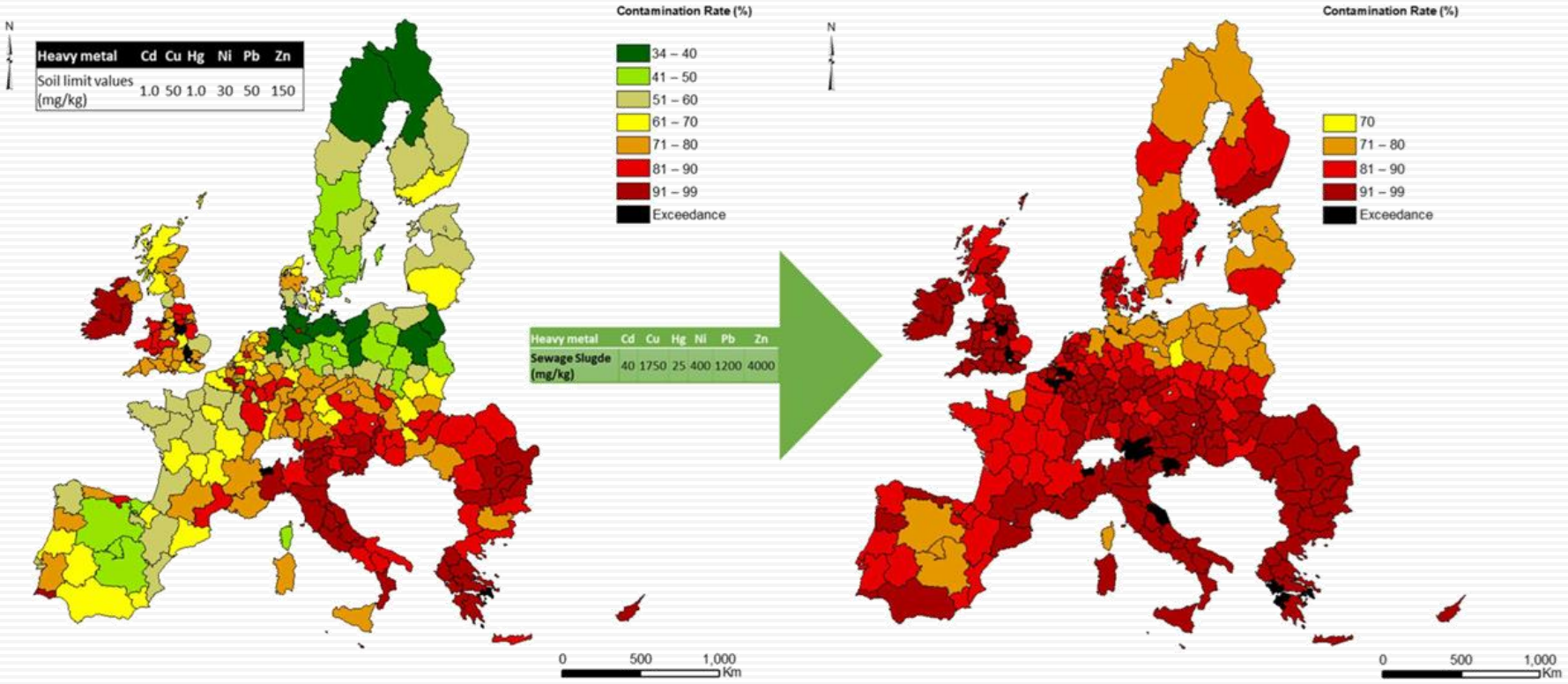
FEASIBILITY STUDY IN SUPPORT OF FUTURE POLICY DEVELOPMENTS OF THE SEWAGE SLUDGE DIRECTIVE, JRC, 2023

- Set up the state of play (technologies, trends and feasibility)
- Setting objectives
  - General: increase the resource efficiency of sewage sludge management
  - Specific:
    - ensure environmental and human health protection when sewage sludge is returned to the environment
    - sewage sludge management should be aligned with circular economy principles
  - Operational:
    - Precautions with contaminants
    - Market (incentives)
- Modelling possible policy options (result being rather balanced)
  - monitoring and control of sewage sludge recycled on agricultural land (business as usual with strict control)
  - transformation of sewage sludge into EU fertilising products (new business, high investment costs, more sustainable)

POLICY DEVELOPMENTS

FEASIBILITY STUDY IN SUPPORT OF FUTURE POLICY DEVELOPMENTS OF THE SEWAGE SLUDGE DIRECTIVE, 2023

Increasing soil contamination: a hypothetical case



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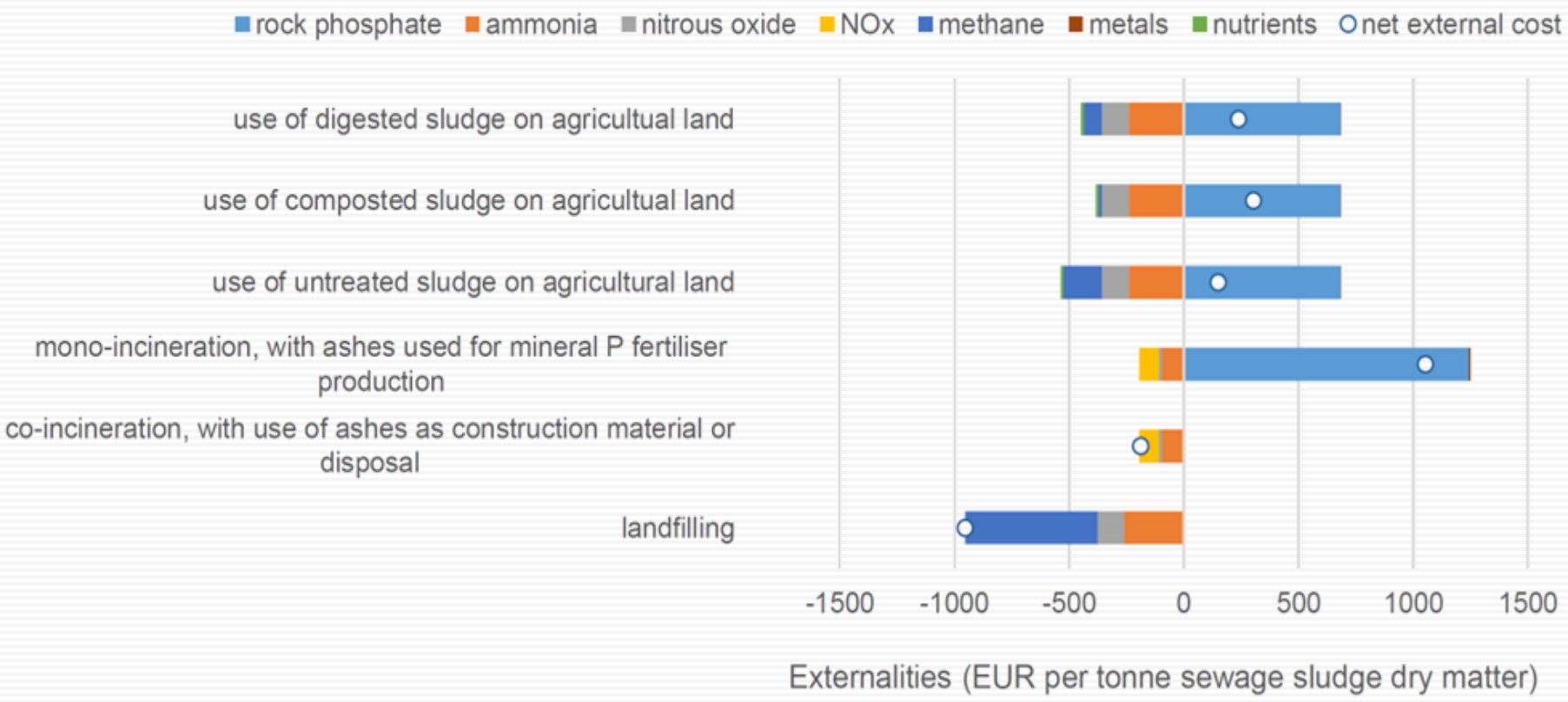
POLICY DEVELOPMENTS

FEASIBILITY STUDY IN SUPPORT OF FUTURE POLICY DEVELOPMENTS OF THE SEWAGE SLUDGE DIRECTIVE, 2023

Externalities of different sewage sludge management routes



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POLICY DEVELOPMENTS
OTHER PUBLICATIONS (A LOT)

- Technical proposals for selected new fertilising materials under the Fertilising Products Regulation
- End-of-waste criteria for biodegradable waste subjected to biological treatment (compost & digestate): Technical proposals
- Report on the occurrence and levels of selected compounds in European sewage sludge samples
- Environmental, economic and social impacts of the use of sewage sludge on land
- Feasibility study on heavy metals (trace elements) and organic matter content of European soils
- Progress report on trace element and organic matter content of European soils
- Report on organic contaminants in sewage sludge for agriculture use
- Report on the disposal and recycling routes for sewage sludge
- Study on pollutants in urban waste water and sewage sludge
- Evaluation of sludge treatments for pathogen reduction
- Screening risk assessment of organic pollutants and environmental impacts from sewage sludge management
- Exploratory study for the evaluation of the Sewage Sludge Directive

CASE STUDIES

- Case studies presented in the previous report are still relevant
- New cases are considered
  - to give detailed insight into the operation of specific sludge routes
  - put more emphasis on energy recovery issues
- Possible cases (consultations are being arranged):
  - The complex sludge management system of the North-Pest Sewage Treatment Plant
  - Innopellet: self-supporting biofuel pellet producing system (Horizon 2020)
- “Micro-cases” to support statements: the introduction of specific cases demonstrating issues related to specific themes (based on literature reviews)

THE SURVEY

1) Introduction
2) Basic info
3) Policies, strategies and legislation – EU and national as well as EUSDR level
4) Technology – availability, recent trends, monitoring issues, problems and bottlenecks
5) Management, including finance – supportive legislation, actors' performance, feasibility and managerial bottlenecks; EUSDR's role in promoting sound management
6) Additional info

THANK YOU FOR YOUR ATTENTION (AND CO-OPERATION)

Attila Fürstand
fua@trenecon.hu

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