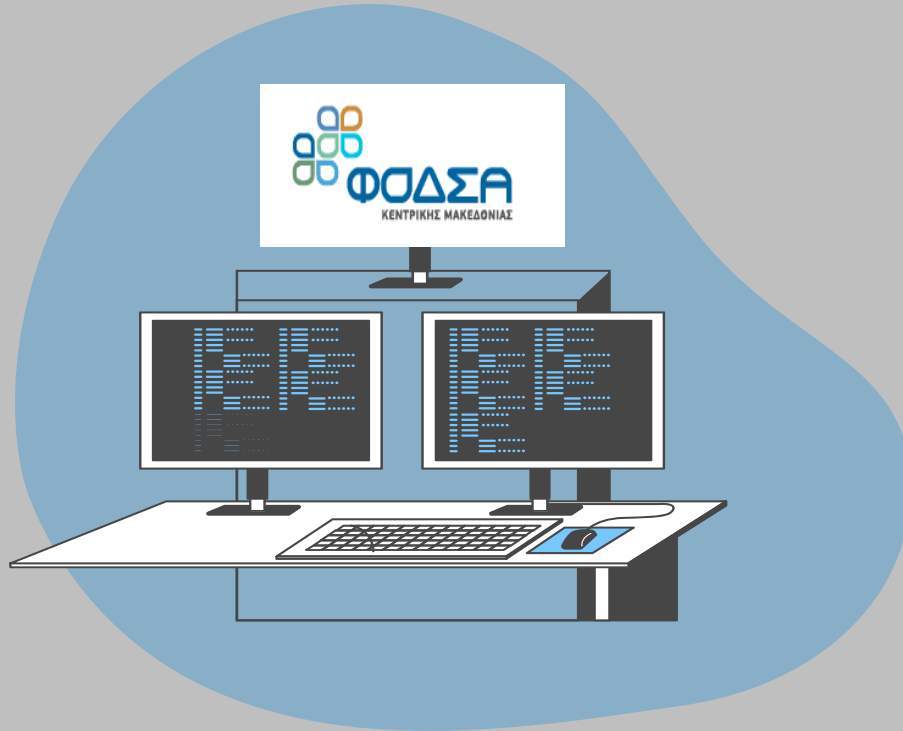# e-Governance in Solid Waste Management of Central Macedonia

**David Tangilis**
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*Regional Association of Solid Waste Management Agencies of Central Macedonia (FoDSA CM)*

# Regional Association of Solid Waste Management Agencies of Central Macedonia (FoDSA CM)



*Solid Waste Facilities in the Region*

**7** Regional Units

**38** Municipalities

**1.8** million Citizens

The **mission** of FoDSA CM is the integrated treatment of Municipal solid waste, aiming to reach the targets that have been set by the European and National Laws. Its basic **priority** is the protection of the environment and the public health.

# Facilities according to the Regional Waste Management Plan

**Current Facilities**

| 1 | 4 | 0 | 1 | 9 |
|---|---|---|---|---|
| Recycling Facility Shorting Center | Waste Transfer Stations | Biowaste Management Facilities | Recovery Recycling Facilities | Sanitary Landfills |
| 4 | 8 | 2 | 2 | |

**Future Facilities**

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# WEAKNESSES of the previous database system (BASIC SYSTEM)

Monitoring of waste data is **mandatory**…BECAUSE OF reporting obligations of waste legislation AND pricing policy

Reasons to leverage change:

**01** time-consuming procedures

**02** difficulty in interconnecting datasets

**03** fragmented information

**04** creation of multiple databases

**05** over-employment of staff to collect the data

**06** comparability and reliability of real time data

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# E-Governance

**2030 Digital Compass**

**Digital Single Market Strategy**

**GR_Digital Transformation "bible" for the years 2020-2025**

*Digital solutions will help in the transition towards a climate neutral, circular and more resilient economy*
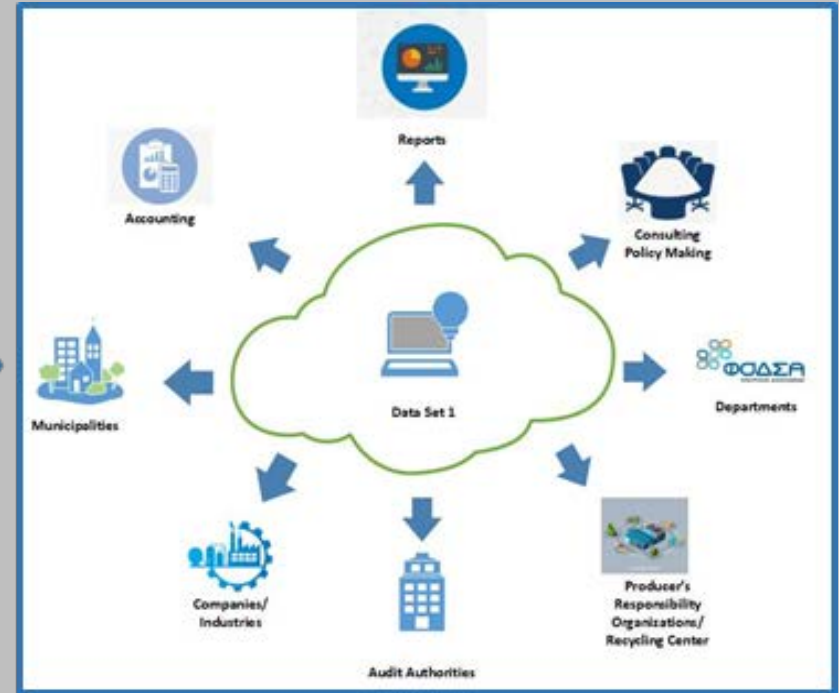
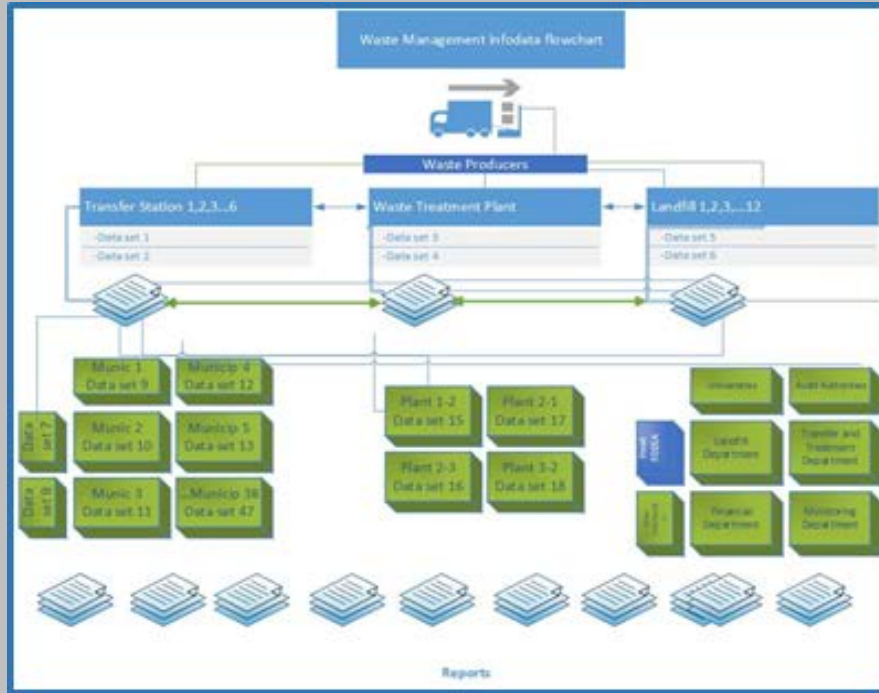*Online public services are crucial to increasing cost-efficiency and quality of services provided*

*Digital Waste Registry, aims at the valid tracking and monitoring of waste management*

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# e-Governance in Solid Waste Management

# New system requirements

*Integrated Monitoring Information System in Solid Waste Management*
***IMIS-SWM***

## 01

To meet the requirements of management of each level (FoDSA Departments, General Assembly, personnel from the highest to the lowest level)

## 02

To ensure the appropriate correlations between FoDSA and Ministries, Municipalities, Private Companies

## 03

To allow the competent officials:
-check that commitments are being fulfilled
-introduce modifications
-monitor rates of implementation and assess results

# Methodology

To export results the two monitoring systems were compared *(Basic system and IMIS - SWM system).*
The main criteria checked concern the following variables:

1. The number of employees

2. The calculation of person- hours

3. The personnel cost calculation

4. The number of datasets (worksheets)

5. The qualitative composition of the errors- Risk

# Criteria 1. Number of employees
## 2. Person-hours
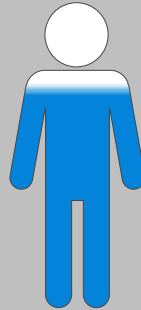### BASIC SYSTEM VS IMIS-SWM

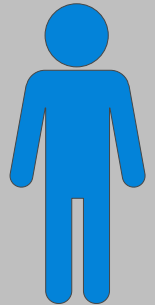**23,6% difference**

**Basic System**
**4.382 person hours/month**

**IMIS-SWM**
**3.348 person hours/month**

**Basic System**
**47 Employees**

**IMIS-SWM**
**47 Employees**

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# Criterion 3. Personnel cost
## BASIC SYSTEM VS *IMIS-SWM*

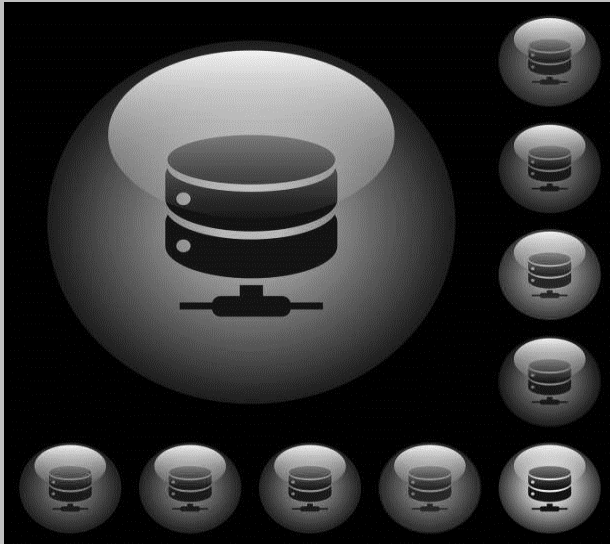| System | Personnel cost €/month |
|---|---|
| Basic | 44.258 |
| IMIS-SWM | 33.814 |

**Benefit per year**

125.320€

# Criterion 4. Number of datasets

## BASIC SYSTEM VS IMIS-SWM

**BASIC SYSTEM**
**720** DATASETS

**98%** decrease

**IMIS-SWM**
**15** DATASETS

# Criterion 5. qualitative composition of the errors- Risk
## BASIC SYSTEM VS IMIS-SWM

| Error factors | Basic system | | | IMIS- SWM system | | |
|---|---|---|---|---|---|---|
| | Probability | Impact | Risk | Probability | Impact | Risk |
| Data entry of waste tonnage | 3 | 5 | **15** | 1 | 5 | 5 |
| Data entry of waste producer | 5 | 5 | **25** | 1 | 5 | 5 |
| Data entry of waste truck | 5 | 3 | **15** | 1 | 3 | 3 |
| Data entry of the debtor | 3 | 5 | **15** | 1 | 5 | 5 |
| Data entry of European Waste Code (EWC) | 3 | 3 | **9** | 2 | 3 | 6 |
| Data entry of waste transporter | 2 | 5 | **10** | 1 | 5 | 5 |
| Duplicate data entries | 2 | 5 | **10** | 1 | 5 | 5 |

- **Red flag** *13-25 Unacceptable:* **Immediate action required to control the risk**
- **Amber flag** *9-12 Issue:* **Action required to control the risk**
- **Yellow flag** *5-8 Supplementary Issue:* **Action is advisable if it is cost-effective**
- **Green flag** *1-4 Acceptable:* **No action required**

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# Disclosure of results per criterion between two systems

| Criterion | Basic system | IMIS-SWM system |
|---|---|---|
| Number of employees | 47 | 47 |
| Calculation of person-hours | 4.382 | 3.348 |
| Personnel cost calculation (per month) | 44.258,2 | 33.814,8 |
| Number of datasets (worksheets) | 720 | 15 |
| Qualitative composition of the errors- Risk | Red and Amber area | Yellow and Green |

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# RECOMMENDATIONS

## SKILLS

**up-skilling of personnel**
Provide training programs that will expand personnel's abilities and minimize skill gaps

## INTERCONNECTION

connection and interoperability with other National databases and registers e.g. Digital Waste Registry, Digital Environmental Registry

## DATA TRANSER

transfer historical data of the previous years from the Basic System to the new IMIS-SWM system, in order to have integrated information under one single database

## CONNECTIVITY

Non-stop and high speed internet connection. Otherwise bottlenecks might occur leading to high traffic of vehicles

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**Thank you!**

For any questions you may contact to
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