# “Portuguese Sludge Strategy 2014-2020 ”,

Comissão Especializada de Águas Residuais (CEAR)

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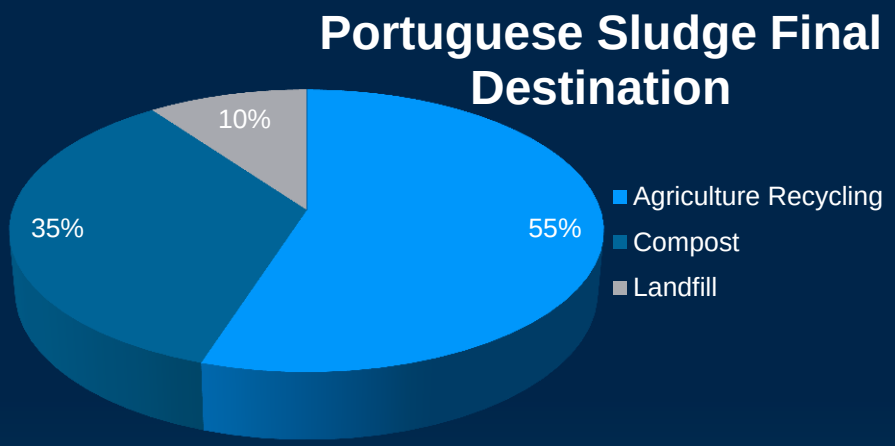
# Summary

# I. Brief Characterization of Portuguese WW Sludge Treatment and Final Destination

- In the last 20 to 30 years, Portugal had an amazing increase in the number of WWTP - and, consequently, in the sludge volume produced;
- Sewer rates are extremely low, leading to low financial capacity for investment and exploitation – many of the investments were supported by EU funds;
- Portugal has transposed the sludge EU Diretive 86/278/EEC. The Portuguese law for sludge recycling is Decreto-Lei (DL )n.º 276/2009.
- WWTP are not prepared to meet Portuguese legal requirements of DL 276/2009, in particular in the hygenization (sanitation) and storage of sludge;
- Except some specific cases, most of the sludge produced is not fully stabilized;
- Almost all the sludge produced from WWTP is not totally sanitized (presence of pathogenic microorganisms);

# I. Brief Characterization of Portuguese WW Sludge Treatment and Final Destination

- Portugal produces 450 to 500.000 ton/year of domestic WWTP sludge;
- Historically, and in the absence of a better alternative, sludge has been used for agricultural development;
- Almost 90% of the sludge final destination is recycling – directly or for composting;




- Sludge producers (Management Entities) produce thousands of tons of sludge WWTP daily, which are sent to final destination by licensed private companies;
- Those companies are responsible for the sludge final destination according to the portuguese law (Decree n.º 73/2011, 17th of June);

# I. Brief Characterization of Portuguese WW Sludge Treatment and Final Destination

- The current economic crisis, together with the limited financial resources available to the sanitation sector, are constraining the final destination of sludge (“where nobody sees”);
- The Portuguese average cost of the sludge final destination is **18 to 35€/ton;**
- Management entities are concerned about proper sludge final destination, specially when media often mentions uncontrolled discharges of sludge;
- However, the actual scenario is that producers want to get rid of sludge at the lowest cost, the licensed companies can’t suply a technically correct service at low prices and the governmental inspection doesn´t have enough resources to conduct inspection.

# II. Possible Scenarios to apply in Portugal

## *I)* Scenario: Sludge recycling (direct and indirect, by composting)

### *I.I) Major benefits*

- Lower costs;
- Simple technical operation;
- If properly applied, is an efficient way to correct the poorness of Portuguese soil.

### *I.II) Main disadvantages*

- very difficult to comply with and enforce the legal aspects;
- sludge production does not match the needs of the soil and the seasonality of agriculture (without cleaning sludge and sludge storage requirements);
- competition with other products (chemical fertilizers, compost, etc.);

### *I.III) Expected development*

- EU trend to reduce the analytical sludge parameters;
- Increasing difficulty in placement of dewatered sludge in agriculture
- EU will realize that procedures applied in Portugal are incorrect and require operational corrections.

# II. Possible Scenarios to apply to Portugal

## *II)* Scenario: Implementing the new Sludge Strategy

### *II.I) Major benefits*

- To use one of the main Portugal resource: the Sun;
- To solve the sludge problem in Portugal, with lower costs (investment and exploitation);
- Huge reduction on sludge sent to final destination;
- Diversification of final destination allowing industrial use as fuel (sold dried sludge);

### *II.II) Main Disadvantages*

- Possible odor emission during sludge treatment;
- Large treatment areas required;
- Dependence of the cement industry;
- Change the current status quo, which is appropriate to all involved in the sludge process

### *II.III) Expected development*

- Industry interest on dried sludge as secondary fuel will increase;
- It is urgent to reduce the dependence on agriculture as final destination;
- The cost of final destination will increase, therefore the reduction on sludge sent to final destination will be benefit all sludge producers.

# III. Portuguese Strategy for 2014-2020 (PENSAAR)

- Operational goal 1. to verify the sludge legal compliance;
- Operational goal 2: to reduce the amount of sludge to final destination;
- Operational goal 3: to strengthen and enforce the diversification of final destination;
- Operational goal 4: to improve the agronomic characteristics of sludge for agricultural recovery;
- Operational goal 5: to support investment for the construction of sludge treatment units;
- Operational Goal 6: to implement a national Management Company for WWTP sludge (to all portuguese sludge production).

# III. Portuguese Strategy for 2014-2020 (PENSAAR)

- Operational goal 1. Verification of sludge legal compliance
  - Inspection of the sludge producers - special attention to heavy metals, hygienization and sludge storage;
  - Inspections of licensed private companies - special attention to heavy metals, hygienization, sludge storage and sludge treatment capacity;
  - Verification of the actual final destination of sludge;
  - Verification of the sludge compost characteristics;
  - Effective application of fines to non-compliant legislative processes

- **Operational goal 2: Reduce the amount of sludge to final destination**
  - Implementation of sludge treatment units that promote the effective reduction of sludge volumes;
  - Support to research universities for the specific conditions of the Portuguese sludge (non digested, high metals, etc.)

# III. Portuguese Strategy for 2014-2020 (PENSAAR)

- **Operational goal 3: To strengthen and enforce the diversification Final Destination**
  - Implementation of treatment units that promote the diversification of final destination;
  - Promote and support research in universities adapted to the Portuguese reality;
  - Support and promote to industrial sludge consume;

- **Operational goal 4: Improvement of agronomic characteristics of sludge for agricultural recovery**
  - WWTP construction or new equipment in the solid phase (sludge);
  - Construction and upgrading of sludge treatment facilities and sludge compost treatment units;
  - Support research in agronomic universities;
  - Promote the sludge agronomic characteristics.

# III. Portuguese Strategy for 2014-2020 (PENSAAR)

- **Operational goal 5: Support investment for the construction of sludge treatment units (most important)**
  - New WWTP construction and re-equipment of the existing on the solid phase (sludge);
  - Construction and upgrading of treatment facilities and sludge compost units;

- **Operational goal 6: Implementation of a** national Management Company for WWTP sludge
  - Effective regulation of the sludge market in Portugal;
  - Effective responsibility for sludge final destination (producer and licensed private companies);
  - To promote good practices in the final destination, including GPS monitoring transport;
    Higher demand and effective legal compliance throughout all the process.

# IV. Main Benefits of Implementing the Recommended Strategy

- **Reducing dependence on agriculture, as final destination;**
- **Industrial use (dried sludge) as energy and as raw material (cement industry);**
- **Obtaining revenue (from industry) for the dried sludge (5 to 7,5€/Ton);**
- **Lower investment and operating costs**

## V. Major Drawbacks and possible Disadvantages

- **Need huge areas inside WWTP;**
- **Odor production;**
- **Dependence of industries – cement industry had decrease production in PortugaL;**
- **Great resistance to change the current operating model.**

# VI. Final Conclusions

- The actual Portuguese Government as already highlighted sludge malfunction sector;
- Due to the Portuguese financial crisis, it's very important to make an effort not to increase sanitation gate fee;
- The Portuguese sludge strategy must be precedeed by corrective measures to correct the currently existing dysfunctions, specially the governmental inspections. Without this step, it is not possible to get it;
- Portugal relies almost exclusively on agricultural sludge as final destination (90%), (Europe 50%), while the EU limits the use of sludge arising from a "precautionary principle";
- Is essencial to build sludge treatment systems that enable the implementation of the recommended strategy;

# VI. Final Conclusions

- It is time to define the scenario Portugal intends to have: to keep the current and do nothing, or take advantage of the latest EU funds and implement the beforementioned strategy;

- It is essential that the new strategy doesn't increase significantly the costs of final disposal of sludge and sanitation gate fee. In this context, it stresses the importance of support to investment, because the sludge solar drying have extremely low operating costs;

- Without one sludge strategy, Portugal will miss the last opportunity to undergo a sustainable and integrated way to solve the sludge problems, with all the possible repercussions in the environmental, in the population, in the public health and, eventually, in the sanitation gate fee praticed.

Thank You.

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