TITLE: From Waste to Energy by Optimization Modelling

Abstract: The presentation will carefully discuss selected modelling challenges related to the whole waste-to-energy management cycle.

The chosen application problems will be introduced and formulated, especially, for waste collecting, transportation, and processing stages. The availability of real-world input data will be presented and some difficulties will be mentioned. Related sources of uncertainties will be identified and underlying programs will be built.

Deterministic reformulations following the application area requirements and principles of stochastic programming will be chosen and specified. Comparisons to existing similar models will be accompanied by the shared particular experience with the general modelling rules from literature. The original modelling recommendations will be derived and presented. Properties of models will be discussed and transformations and modifications to obtain scenario-based solvable approximating models will be applied. Remarks on the choice of solution algorithms and software implementation will follow.

Some interesting results will be visualized and interpreted.

Outline:
1. Introduction: "Wasting waste in Czech Republic/EU by landfilling?"
2. Waste collecting and sources of uncertainty.
3. Waste transportation: local and global models.
4. Intermediate and final waste processing.
5. Waste-to-energy: classical models gradually built from the easiest one to the most realistic one, comparisons of models.
6. Integrated models: steam plants combined with incinerators in strategical planning.
7. Suboptimal allocation of new incinerators.