**MasterClass « Decision analytics for sustainable development » :**

**CASE STUDY 15/3/2021**

1. **Indices**

i = 1,2 : products

j = 1,2,3 : pollutants (NO2, SO2, particles)

k= 0,1,2,3 (0 = no anti-pollution system, 3 = 1+2 combined)

1. **Data**

eij : # units of pollutant j emitted by the production of 1 T of product i

pi : profit (in €) associated with selling 1 T of product i

ti : time (h) to product 1 T of product i

Rj : maximum # units of pollutant j to be rejected

ajk: % reduction of emissions of pollutant j using system k (aj0 = 0%)

sk : slowing-down factor for system k (> 1) (s0 = 1)

ck : cost (€) per ton for system k

1. **Decision variables**
2. **Constraints**

**5. Objective function** :

*(in red : new scenario where the company is allowed to exceed emissions limitations but with a tax fixed by the authorities)*