SWIM and Horizon 2020 Support Mechanism

Working for a Sustainable Mediterranean, Caring for our Future

Estimating the Cost of Environmental Degradation in Lebanon

(EFH-LB-3)

4-5 February 2019, Beirut, Lebanon

Hosted by

Republic of Lebanon
Ministry of Environment

This Project is funded by the European Union

SWIM and Horizon 2020 Support Mechanism

Working for a Sustainable Mediterranean, Caring for our Future

SESSION 2: ESTIMATING THE COSTS OF AIR POLLUTION

Anil Markandya

This Project is funded by the European Union

METHOD

- **Two calculations are made – one for outdoor pollution and one for indoor**
- **For outdoor the excel sheets calculate:**
  - Premature mortality due to PM2.5
  - Premature mortality due to Ozone
  - Morbidity due to PM2.5
  - Morbidity due to ozone
- **The calculations first gives the number of cases for all 4 categories and then a spreadsheet does the valuation**
- **For indoor pollution there is a separate file that estimates child and female mortality in the home**

LDK CONSULTANTS

PM2.5 – MORTALITY

Cells in yellow can be changed

- The approach is to calculate the relative risk for the exposed population and then use the epidemiological estimates to work out additional deaths.
- Details are given in the spreadsheet
- Data on population over 30 and baseline mortality from lung cancer and lung and heart disease are old and should be updated. Same applies to infant mortality
- Data on PM10 concentrations can also be updated. Ideal if you have PM2.5 data!

LDK CONSULTANTS

O3 – MORTALITY
Cells in yellow can be changed

- **The method is explained further in the spreadsheet**
- **We need max 8 hour concentrations of O3 in ppb**
- **Population at risk (30+), baseline mortality and threshold value are also things you can change.**

PM2.5 – MORBIDITY
Cells in yellow can be changed

- **There are a lot of ´end points´ that need to be valued.**
- **Basic epidemiological data are given and do not need to be changed.**
- **You can modify/update population at risk and threshold value of PM.**
- **Conversion factor to go from PM10 to PM2.5 are given but could be varied if new data are available (or if PM2.5 data are available)**

LDK CONSULTANTS

O3 – MORBIDITY
Cells in yellow can be changed

- **The method is similar to PM2.5 morbidity and is explained further in the spreadsheet**
- **Data on epidemiological functions are given.**
- **Estimates of cases are by month and added up to give annual values**

LDK CONSULTANTS

VALUATION

Cells in yellow can be changed

- All figures for deaths and cases are valued in this spreadsheet.
- For mortality two approaches are used: one based on VSL and one on converting lives lost into DALYS
- For morbidity values are from local data where possible (but it is old) or from transfers of EU data taking account fo per capita incomes.

LDK CONSULTANTS

شكرا جزيلا

THANK YOU

LDK CONSULTANTS