MICAT

Multiple Impacts Calculation Tool

Empirical Basis of Social Impacts

Human Health due to Reduced Air Pollution: Air Pollution-Related Mortality and Morbidity

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Fabian Wagner & Gregor Kiesewetter
International Institute for Applied Systems Analysis

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Quantification method

Definition

Energy efficiency measures affect the mortality from ambient air pollution from fine particulate matter (PM2.5) through the channel described in Figure 2, i.e. via an associated reduction in emissions of primary PM2.5 and relevant precursor substances (SO2, NOx, NH3, VOCs). This bottom-up ex-ante assessment proceeds in six steps:

- **Step 1:** Quantify the amount of energy (direct combustion and electricity) saved by an intervention. Such an intervention can affect the direct consumption of fuel as well as the consumption of electricity. For example, heat pumps replace direct combustion, but consume electricity.
- **Step 2:** Determine the corresponding supply-side changes in the use of technologies. For example, saving electricity would result in less electricity being produced. An assumption needs to be made about what kind of source of electricity is being reduced, whether the most carbon-intensive (coal-based electricity), or an average (country) fuel mix, or else. Moreover, for the emission characteristics further assumptions would need to be made, in the case of thermal power plants, whether the cleanest, the dirtiest, or the average device (in terms of air pollutants) are assumed to be reduced. Finally, if the energy efficiency measure reduces direct combustion of fuel, the emission characteristics of that reduction need to be specified. For example, increasing the energy efficiency of a particular process in the chemical industry may result in all direct fuel uses being reduced proportionally, or only one particular fuel (e.g., gas) being reduced, and again the vintage of the installation may be relevant.
- **Step 3:** Calculate the resulting changes in the emissions of primary PM2.5 and relevant precursor substances.

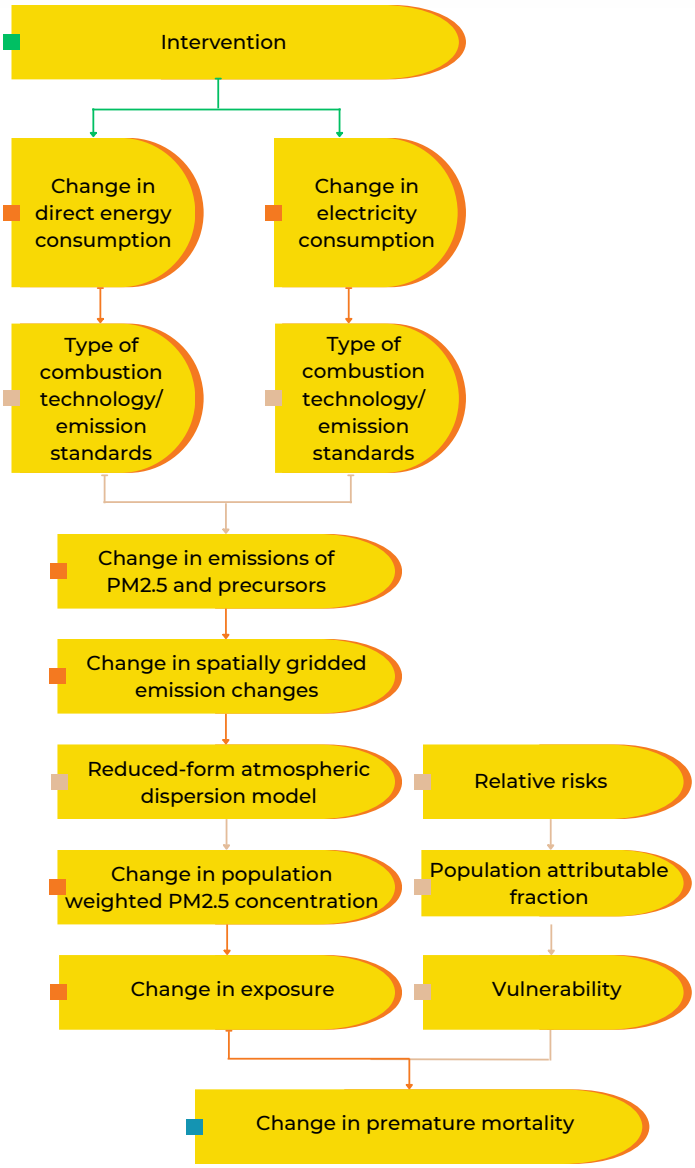

Figure 2: Impact pathway and calculation method for changes in premature mortality from air pollution from energy efficiency measures.

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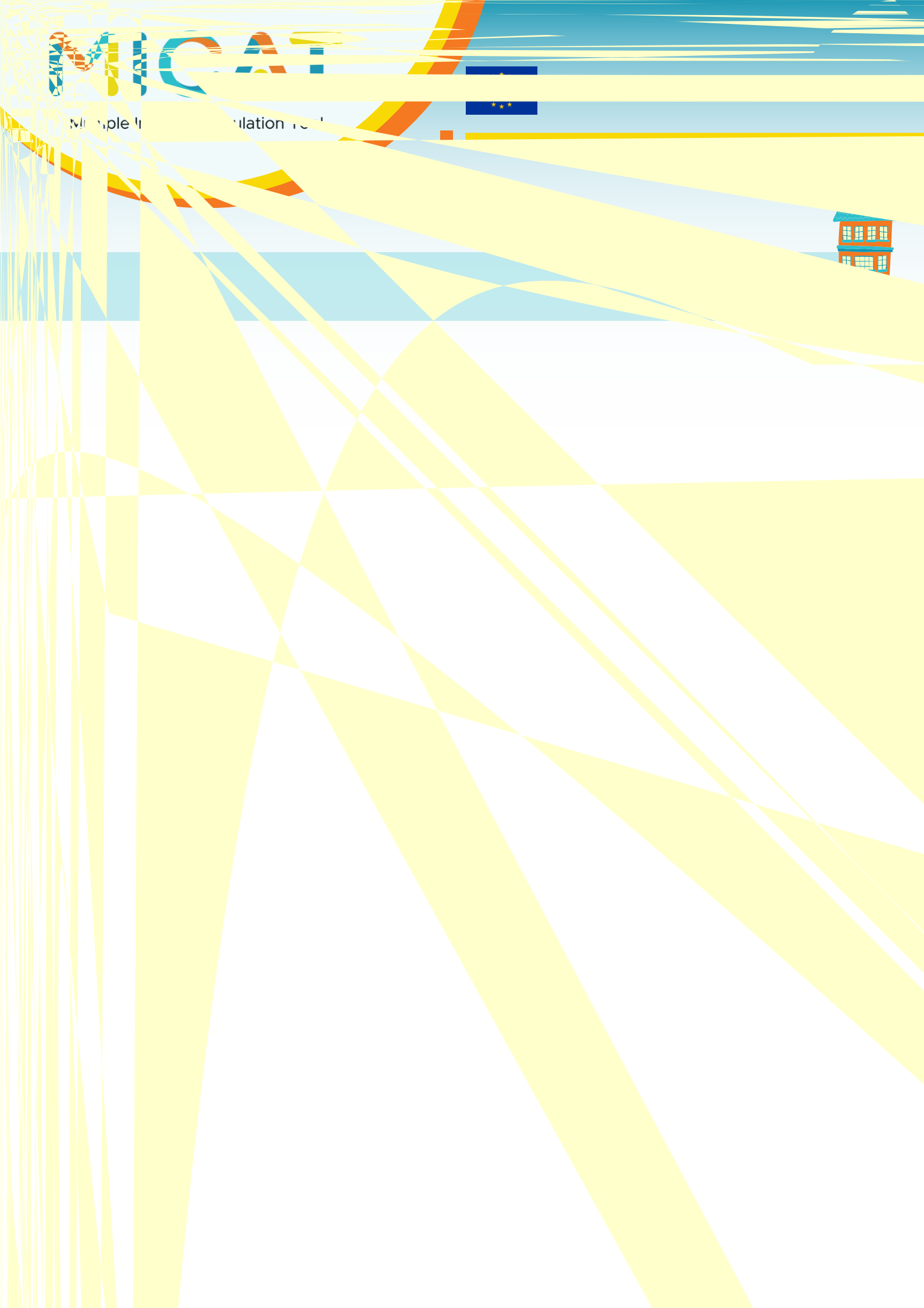

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