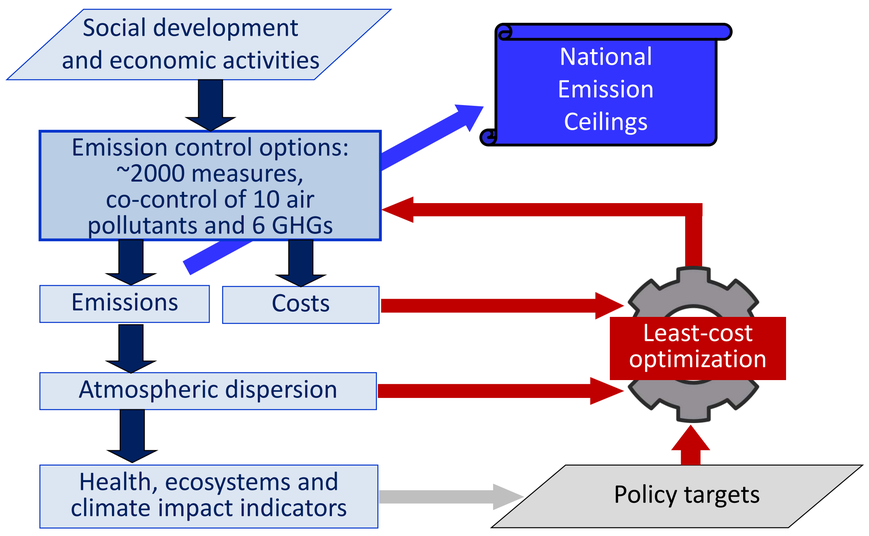
Air quality and greenhouse gases (AIR)

AIR's program objectives

Interdisciplinary research into strategies to protect the atmosphere while maximizing co-benefits with other policy objectives

IIASA's GAINS (Greenhouse gas – Air pollution Interactions and Synergies) model



Around the world, IIASA's systems approach is framing new policies that maximize co-benefits between air quality management, greenhouse gas mitigation and other policy priorities.

http://gains.iiasa.ac.at

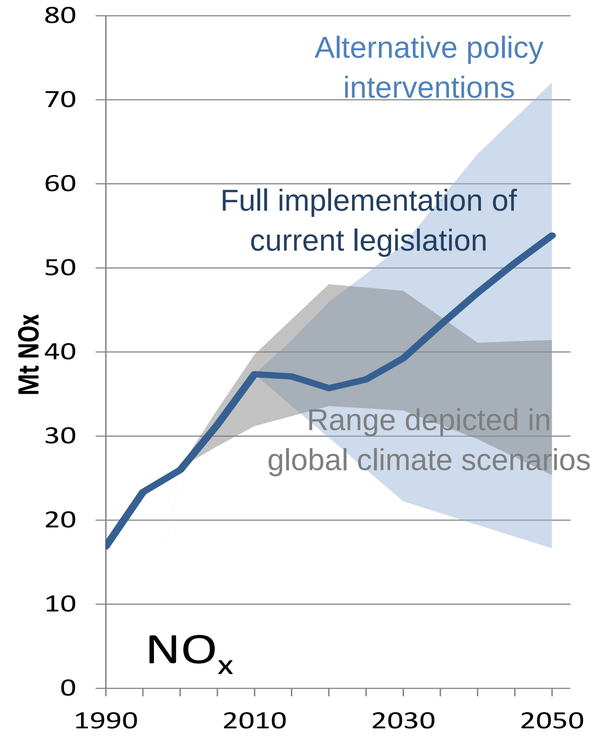
Global air pollution scenarios

Future air pollution levels will be determined by the quality of governance

Recent GAINS analyses highlight the importance of dedicated policy interventions on emission controls and enforcement with existing regulations.

Clean air does not fall from sky, nor does it autonomously emerge from economic development without proper governance.

Projections of global NO_x emissions

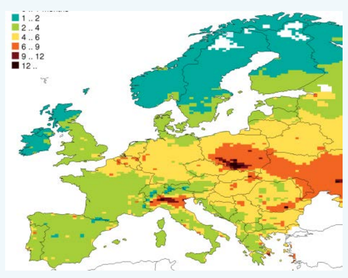


Reference:
Amann et al. (2015) doi:10.1146/annurev-environ-052912-173303

Policy applications in Europe

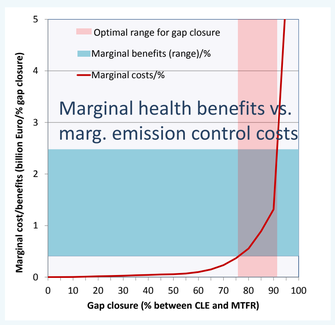
IIASA's GAINS analysis provides the scientific backbone for European air quality policies

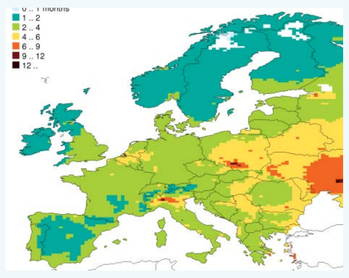
Shortening of life expectancy in Europe



2030 baseline

Marginal costs and benefits





2030 max red.

IIASA analysis has laid the groundwork for air pollution policies in Europe, including the Convention on Long-range Transboundary Air Pollution and the EU Directives on National Emission Ceilings for 2010 and 2030.

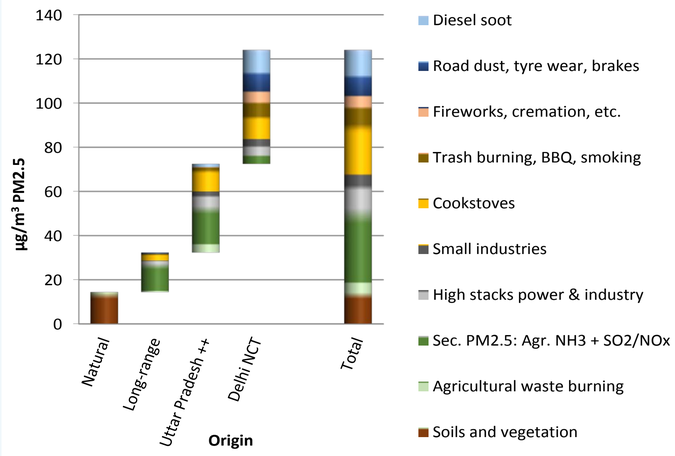
The latest agreement will cut health impacts of air pollution in Europe by 50% in 2030, in addition to forest damage and biodiversity threats.

Reference:
Reis, Amann et al. (2013) *Science* doi:10.1126/science.1226514
Amann et al. (2013) EU Thematic Strategy on Air Pollution - Report #11

Policy applications in Asia

Urban air quality management requires regional cooperation involving all sectors incl. agriculture

Origin of PM2.5 in ambient air in Delhi



The GAINS approach is now promoted by the World Bank as a practical tool for air quality management planning in the mega-cities of developing countries.

Cooperation has been established with city administrations and scientists in IIASA Member Countries, incl. China, India, Vietnam, Egypt, South Africa and Iran.

Reference:
Amann et al. (2017) Managing future air quality in megacities: A case study for Delhi. *Atm.Env.* (submitted)