

Consolidation of existing research on air pollution in dense, low-income communities in South Africa

Nova Institute

Brief overview of the report

This research is carried out on behalf of the Royal Danish Embassy, as part of the Urban Environmental Management Programme in co-operation with the South African Department of Environmental Affairs and Tourism. The rationale is to synthesise the findings of the hitherto uncoordinated research concerning all aspects related to the problem of air pollution in dense, low-income communities in order to draw useful conclusions and recommendations that will serve as the basis for the development of an integrated strategy and action plan.

The introductory **Chapter 1** provides some background and defines the most important terms as they are applied in the document. **Chapter 2** provides an overview of the nature and extent of the problem. This chapter gives a detailed description of domestic fuel use (wood, coal, biomass, paraffin, as well as the impact of thermal efficiency of houses), key advantages and disadvantages related to the use of various fuels, the potential extent of the problem, key impacts on health and well-being, economic and social cost, the geographic areas that are most affected, fuel conversion technologies, non-fuel burning sources of air pollution, and, finally, those vulnerable people that are most at risk because of air pollution. **Chapter 3** analyses past and current interventions (*e.g.*, electrification, housing related interventions, BnM) relating to the health and well-being of households as the most basic social institution. The international case studies presented in **Chapter 4** comprise improved cook stoves and various national biogas programmes. **Chapter 5** identifies biomass gasification as a promising novel intervention with the potential application to this problem. **Chapter 6** discusses indicators that can be used to measure and evaluate various aspects of air pollution in dense, low-income communities. Finally, **Chapter 7** summarises the most important conclusions and provides a brief analysis of the changing context to inform recommendations for viable intervention options categorised according to their level of development and potential impact. Finally, a description of the most important role-players and their respective potential contributions is presented.

The full text of the report is available on www.nova.org.za.

1. How does the project link with the bigger context of your institution ?

The Nova Institute is an independent not-for-profit organisation pursuing the vision of a *healthy household culture* in Southern Africa. This is done through participatory research and development of smart solutions for low-income households. Nova has extensive experience in research into energy use in low-income households. As such the research project was well aligned with Nova's vision and experience and Nova's own program to develop smart energy solutions for low-income households.

2. Provide a honest description of the project and highlight how challenges were overcome in the implementation ?

The project consisted of a desktop consolidation of all existing research into the various aspects of air pollution in dense, low-income communities. A team of experts in environmental health, architecture, atmospheric modeling and chemistry and the socio-economic and cultural aspects of energy use as well as a trained librarian was contracted. A series of workshops to clarify conceptual issues as well as the structure of the report was held. Parallel to this a massive effort to collect data was coordinated by the librarian. An extensive collection of literature was collected and categorised (and indexed in some cases) and provided to the authors. Authors reviewed each others work. A final workshop discussed the conclusions and recommendations.

3. How did or will the outcomes of the project contribute to improved Institutional / Legislative and/or Policy changes ?

The finding the domestic energy is responsible for the bulk of the health impact of air pollution was again highlighted by the study. The study also highlighted the fact that the scale of health impact of indoor pollution is potentially massive but largely unquantified. The study also highlighted domestic wood use as probably the single largest contributor to the health impact of air pollution in South Africa. There are very few policies and programmes in place to address this problem both in urban and in rural areas.

4. How does the project link to programmes on national, provincial or local level ?

The report tried to give an assessment of various interventions that are currently being implemented that will have a positive effect on air pollution in dense, low-income communities. The use of dirty fuels, especially for space heating, continue after electrification. Electrification should therefore not be seen as the only solution for air pollution in dense, low-income communities.

5. How sustainable and replicable is this project ?

The project should be repeated once per decade, preferably shortly after the release of the national census data.

6. What major contribution or value was added by this project to your institution ?

The report provides an systematic overview of the problem of air pollution in dense, low-income communities and assesses and prioritises the different courses of action that can be taken. As such it has value to inform a national strategy on air pollution in dense, low-income communities.

7. What are the major lessons learnt that this project can teach others ?

- Never underestimate the scale of the task of a literature study.
- Use the best experts from a variety of disciplines.
- Use the best support personnel you can find. The librarian on the project has a PhD and is a meticulous and hard worker. He provided invaluable support to the authors.