

**Combined household water treatment and indoor air  
pollution projects in urban Mambanda, Cameroon and rural  
Nyanza, Kenya**



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# **Combined household water treatment and indoor air pollution projects in urban Mambanda, Cameroon and rural Nyanza, Kenya**

**Report of a mission to Mambanda, Cameroon and Nyanza, Kenya  
Carried out from 10 to 18 December 2009**

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## ***Acknowledgements***

The authors thank the project officers and health promoters, government officials, small-scale business people and household respondents in Cameroon and Kenya who offered their time and expertise to inform this evaluation. In addition, appreciation is extended to all those stakeholders who helped initiate these household environmental health integration projects and continue to carry out this important work.

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## ABBREVIATIONS

ACMS	Association Camerounaise de Marketing sociale (Social Marketing Association of Cameroon)
ALRI	Acute Lower Respiratory Infection
AQG	Air Quality Guidelines
GTZ	Gesellschaft für technische Zusammenarbeit (German Technical Cooperation)
HAP	Household Air Pollution
HHE	Household Energy
HWT	Household water treatment
HWTS	Household water treatment and safe storage
IAQ	Indoor Air Quality
ITN	Insecticide treated nets
LP	Liquefied petroleum
JMP	WHO/UNICEF Joint Monitoring Program
MMS	Mambanda Multi Stove (Cameroon)
NGO	Non-governmental Organization
NICHE	Nyando Integrated Child Health and Education Project
PCIA	Partnership for Clean Indoor Air
PSI	Population Services International
RFP	Request for proposals
SWAP	Safe Water and AIDS Project (Kenyan NGO)
SWAp	Sector-wide approach (Kenyan Government)
UNICEF	United Nations Children's Fund
WG	WaterGuard <sup>®</sup> ("Sur'Eau" in French)
WHO	World Health Organization

## **EXECUTIVE SUMMARY**

### **1. Background to RFP**

In 2007, the World Health Organization (WHO) issued a request for proposals (RFP) on the integration of Indoor Air Quality (IAQ) and Household Water Treatment (HWT) at the household level in Africa. Globally, the burden of ill-health in Africa due to unsafe drinking-water, inadequate sanitation and polluted indoor air stands out prominently. Among African children under 5 years of age, 18% of all deaths are due to diarrhoea, and 17% to pneumonia (UNICEF/WHO, 2009). Around 40% of these pneumonia deaths can be attributed to indoor air pollution, and approximately 88% of diarrhoea deaths to inadequate water, sanitation, and hygiene (WHO, 2007).

The aims of this initiative were:

1. To explore whether or not it is possible to achieve synergies and economies of scale by linking HWT and IAQ interventions
2. To examine the potential for expansion and scaling up in the implementation of projects combining these interventions
3. To document integration models for these interventions
4. To examine the added-value of integrating these two approaches, in a way that contributes to an improvement in health outcomes, as well as sustainability and adoption of use.

Following appraisal of the proposals received, two projects were selected, one in urban Douala, Cameroon, the second in rural Nyanza, Kenya. A brief overview of each project is provided in the country report sections in the main report.

### **2. Evaluation Terms of Reference (ToR) and methods**

WHO project support in the overall management plan made provisions for an evaluation visit to each country. These were carried out in December 2009 by two WHO Consultants, Mr Ameer Shaheed (Cameroon and Kenya) and Dr Nigel Bruce (Kenya), with the following ToR:

1. Prepare background information and compile contextual information on the areas/study communities with respect to water supply/quality, household fuel type and supply/IAQ (subject to availability) and related health data (diarrhoea, acute lower respiratory infection (ALRI))
2. To conduct a field-visit to the two projects in Cameroon and Kenya, and perform a basic evaluation
3. Prepare a comprehensive factual account of project activities and outputs, describing the experience of residents, project staff and other relevant key informants (e.g. local government, partner organizations) concerning project delivery, achievements, problems and issues, and concerning future prospects for this combined environmental health approach targeted at households. Particular emphasis should be given to assessing the added value of linking drinking-water safety and indoor air quality.

The methods used for the evaluation drew on techniques of rapid appraisal, involving (i) review of **Documentation** (all available project documentation, country statistical data, relevant published papers and reports; (ii) **Interviews** with key informants (project staff, residents/users of the products and services, and other stakeholders), and (iii) **Observation** (project management and procedures, households, photographs). Interviews were recorded by manual note-taking, and responses synthesized using a simple form of framework analysis. The background paper in the RFP by Clasen and Biran (2007) which proposed criteria on potential synergies and antagonisms, also contributed to structuring the evaluation.

### 3. Country Reports

#### CAMEROON

##### Local situation

Cameroon is a country of 18.2 million people. Mean life expectancy at birth is 50/52 years (m/f), and under-5 mortality is 149/1000 live births. Diarrhoea accounts for 16.4% of under-5 deaths, and pneumonia, for 20.4% (WHO, 2009). According to 2008 figures, an estimated 92% of urban Cameroon has access to an "improved" drinking-water source as defined by the WHO/UNICEF Joint Monitoring Programme (WHO/UNICEF, 2010). This does not guarantee safe water however, and a large proportion of such sources may be subject to contamination especially through unsafe water handling and storage practices. Additionally, 56% of urban areas lack access to "improved" sanitation (WHO/UNICEF, 2010). Regarding urban fuel use, approximately 52% consists of wood and sawdust, 25% of LPG gas, 5% of charcoal, and 13% of kerosene (WHO, 2010).

The project was spearheaded by the German Technical Cooperation (GTZ) in Cameroon, in Mambanda, a semi-formal settlement in Douala, Cameroon's largest city. Situated on an island, access to water is limited, and groundwater is brackish, containing heavy iron deposits. Furthermore, the poor system of pipelines and management of treatment plants results in contaminated, unsavoury, and insufficient drinking-water. Fuel use consisted primarily of wood and sawdust, and to a lesser extent, charcoal and LP gas.

##### Project activity and achievements

###### *Project objectives*

The project piloted a method of integrating the delivery of a water treatment device with

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