DEVELOPING HEALTHY CITIES

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INNOVATIVE SOLUTIONS FOR A BRIGHT FUTURE

From planning new, sustainable urban areas to redeveloping former industrial sites for residential or commercial use, Ramboll’s holistic approach aims to create the space for people to thrive. We are at the forefront of designing for long-term liveability, and challenge assumptions to create healthy, practical communities.
CLIMATE ADAPTATION

Ramboll’s sustainability and climate change specialists offer climate risk assessment, climate adaptation and flood risk management services that help our clients quantify the financial implications of climate change, and find alternative solutions.

We are equipped to conduct climate vulnerability assessments, which can identify particularly susceptible communities. These evaluations include spatial information about health outcomes (e.g., cardiovascular complications during heat waves) and important social, economic and housing or neighbourhood-related risk factors.

We develop environmental health indicators associated with climate change; measure and predict changes in disease transmission due to climate-related impact to disease vectors; and incorporate complex atmospheric data and climate projections to anticipate, prepare for and respond to related health impacts.
COMMUNITY HEALTH ASSESSMENT

Ramboll’s team of recognised and experienced epidemiologists works closely with our other health professionals, including experts in medicine, chronic and infectious diseases, exposure science, toxicology and risk assessment to advise on a wide variety of human health risks.

We offer baseline community health assessments; scenario analysis to compare health improvement impact and cost of competing initiatives; and monitoring of impacts of implemented measures. Our analyses can help clients secure funding to implement proposed improvements.
SCENARIO ANALYSIS

Our thorough approach to human health and sustainable living is aided by our experience with evaluating future events/outcomes associated with proposed solutions to current issues.

• Evaluating the impact of control measures and proposed planning options on local and regional air quality, addressing a multitude of options related to transit, redevelopment, facility controls and beneficial impacts of active transport measures (ie bike paths)

• Combining predictive climate models and health vulnerability assessments to evaluate long-term impacts of climate change when changing underlying assumptions related to time and the severity of climate effects

• Evaluating the impact of vector population interventions and personal protective measures on the spread of vector-borne diseases for multiple clients, including global health organisations and the US Department of Defense
BUILDING UP

The built environment is the cornerstone of urban climate adaptation. Communities thrive with access to healthy food and services through new or enhanced public spaces. Our experts design, develop and/or redevelop from a single commercial space to entire city centres, all with a focus on reducing or eliminating adverse human health impacts.
BUILDING MATERIALS

Ramboll has over 30 years’ experience incorporating risk-based approaches to support the safe use of chemicals. We apply these principles to help builders or developers evaluate a range of options using a formalised alternatives assessment process, which considers exposure risks throughout a product’s lifecycle to human health and the environment, and offers options for substitution.

We are also well versed in numerous hazard and exposure screening tools relied upon by local and federal governments, and international agencies.
**AIR QUALITY**

Ramboll’s air quality professionals apply cutting-edge science and methodologies to the development of tailored solutions to facility, local and regional air quality issues. We provide comprehensive services including community air monitoring, transport corridor master planning, and GHG studies and emissions assessment.

**Indoor air**
We provide expert indoor air quality services, evaluating concerns related to exposures to a range of chemicals, metals, mold, and aerosolised viruses and/or bacteria in homes, offices or other indoor spaces, and developing monitoring plans and remediation strategies.

We have also conducted investigations related to concerns about “sick building syndrome” or possible cancer clusters among occupants believed to be due to exposures in buildings.

**Environmental noise assessment**
Our noise experts use state-of-the-art computer models to predict impacts from increased traffic volumes or other activities associated with proposed land uses. Predictive studies may address a variety of variables, such as traffic volumes, vehicle mix, stationary source operation patterns, topographic conditions and mitigation options.
WATER MANAGEMENT

We address global water and climate challenges by working across the water cycle from resources and supply, processing and treatment, to sewerage and discharge.

Ramboll can evaluate the impact of improved sanitation and wastewater control on community levels of morbidity and mortality resulting from waterborne diseases including cryptosporidium, cholera, polio, and other viral and bacterial contaminants. We also assess human health risks related to surface water quality and/or fish consumption, among other considerations.

**Blue-green infrastructure**

Hydroclimatic challenges induced by urbanisation, density and impervious land cover require an innovative approach to water management.

Blue-green infrastructure (BGI) offers a feasible and valuable alternative to the traditional “grey” approach (discharging rainwater into pipes). BGI connects urban hydrological functions (blue infrastructure) with vegetation systems (green infrastructure) in urban landscape design, strengthening urban ecosystems by employing natural processes in man-made environments. Ramboll’s Liveable Cities Lab has worked with major cities around the world on improving their water management with BGI.
Urbanisation, globalisation and climate change are major global challenges that have profound effects on the transport arena and our need to create denser, well-functioning, healthy corridors.

Ramboll provides active transport planning (ie walking, biking, safe routes to school). We also provide traffic pollution exposure assessment, assess air quality and noise impacts related to proposed transit plans and offer planning services to reduce traffic fatalities.
DATA MANAGEMENT & VISUALISATION

Reliable data management is essential to supporting strategic and technical decisions. Ramboll administers data for hundreds of projects, ranging in size from 100 to over one million analytical results.

We apply state-of-the-art and innovative data analysis, design tools and methodologies to solve challenging environmental, health and social issues. A central repository to support our data analysis efforts allows us to make better decisions and leverage tools across our portfolio of projects.

Health science data interpretation and presentation involves a complex blending of scientific facts and professional judgment. We are skilled at the difficult but essential tasks of explaining and justifying our assessment of human health risks to regulators, the courts and the community or population under study.
ENGAGING THE COMMUNITY

Ramboll is committed to corporate responsibility, sustainability and transparency, and supports clients with comprehensive services that help facilitate communication with the public and external stakeholders. Our experts develop and implement stakeholder engagement strategies, plans and presentation material. We can also quantify and communicate health benefits and risks of proposed projects, and secure funding opportunities.
SOCIAL & ECONOMIC IMPACT ANALYSIS

Many aspects of urban life directly and indirectly impact human health, including housing quality, transportation access, air and water quality, noise and access to green space. There can be significant variability in these factors between neighbourhoods. The task falls to planners and policy-makers to improve the quality of life within their cities, and to address inequities between urban neighbourhoods. But with limited budgets, it is critical to invest intelligently in improvement projects, which optimise benefits to populations. To do so requires quantifying both health impacts and costs associated with these proposed improvements. Through the application of social and economic impact analyses we can describe in concise, commensurate, and easily understandable numbers what environmental stressors or improvements will mean for health, and provide key information to enable health-sustainable decisions on green infrastructure and resiliency projects.

Cost-benefit analysis
Planning for the future is a process defined by uncertainty. A cost-benefit analysis (CBA) can facilitate informed decision making when it comes to large investments. In close cooperation with clients, cost and benefits are identified, quantified and subsequently distributed over time in comprehensive cash-flow modelling. CBAs can be very effective in investment decisions, choosing between different plans or designs or developing alternative finance structures.
SELECT EXPERIENCE

Holistic city planning
To support Finland’s second largest city, Tampere, in preparing for intense population growth, Ramboll has helped define, guide and pursue a comprehensive plan that includes strategic regional land use and multimodal regional mobility, large neighbourhood area redevelopment concepts, and core infrastructure hub planning and redesign.

Creating resilient and sustainable cities
To provide an overview of investment options for increasing resilience and reducing carbon emissions in large cities across the Asia-Pacific region, Ramboll is conducting a study for the Asian Development Bank. The project draws on multidisciplinary experts within our Water, Energy, Transport, Management Consulting and Environment & Health business units.

Adaptation and preparation
Ramboll is working with authorities in Copenhagen, Denmark, to establish waterways that can transport stormwater into ports or lakes while creating an attractive living environment. For four of the catchments in the cloudburst plan, covering half of the city, Ramboll provided the technical expertise, socio-economic calculations, architectural and engineering design, traffic solutions and stakeholder engagement.

Addressing climate challenges
Ramboll has been enlisted by the New York City Department of Environmental Protection (NYCDEP) to conduct a best-practice study to determine economical ways to reduce flooding while improving water quality. NYCDEP’s primary objective is to prevent pollution in the canals and waterways where several marinas and other recreational areas are located - and ultimately on some of the city’s beaches. Our study is meant to demonstrate the effectiveness of the department’s current and future undertakings in blue-green infrastructure, and determine whether other similar projects can be considered in the long term.
**SELECT EXPERIENCE**

**Present and future air modelling**
Ramboll conducted a technical analysis in support of San Francisco’s Community Risk Reduction Plan. Air modelling was used to identify and map regions of the city where residents are exposed to higher levels of air pollution. Predicted exposures were used to estimate cancer risk due to air pollution. The analysis looked at three time points: Baseline (2010); a project development year (2014); and a future year (2025). Numerous sources of air pollution were assessed, including vehicles, gas stations, generators, industrial facilities, public transit, ships and construction projects.

**Human health risk assessment**
Ramboll evaluated the potential impact of changes in traffic flow in city centre areas. We modelled several options, assessed community health impacts and provided information to decision makers that has led to reduced automobile-emissions-related pollution and projected changes in community incidence of respiratory, pulmonary and cardiovascular disease.

**Building material concerns**
Nearly 100,000 homes built in the southwestern United States with defective “Chinese drywall” began to emit a strong odour, and had extensive corrosion of copper pipes and electrical wiring behind their walls. Ramboll scientists were integral in determining that the Chinese drywall had high levels of pyrite, which oxidised to release sulfur compounds. Air samples were collected inside the homes in order to characterise health risks to the residents. We learned that, once initiated, the corrosive process could continue to occur – even if the defective drywall was removed or replaced – an important consideration in the efforts to repair and remediate these homes.
ENVIRONMENT & HEALTH
GLOBAL SERVICES

- Air Quality
- Compliance Assurance & Performance
- Ecological Services
- Environmental & Community Risk Assessment
- Impact Assessment
- Occupational Health & Safety
- Product Safety & Stewardship
- Resource & Waste Management
- Site Solutions
- Sustainability
- Transactional Due Diligence
Ramboll is a leading engineering, design and consultancy company employing 13,000 experts. Our presence is global with especially strong representation in the Nordics, UK, North America, Continental Europe, Middle East and Asia Pacific.

We constantly strive to achieve inspiring and exacting solutions that make a genuine difference to our clients, end-users and society at large.

Environment & Health
A globally recognised environmental and health practice, our 2,100 experts have earned a reputation for technical and scientific excellence, innovation and client service. Advances in science and technology and evolving regulatory, legal and social pressures create increasingly complex challenges for our clients. We evolve to keep pace with these changes - by adding new services, contributing to scientific advances or expanding geographically.
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