Health-focused urban design can roll back the epidemic of noncommunicable diseases (NCDs), making cities a bedrock for healthy lifestyles – as well as climate-friendly and resilient. WHO’s new Urban Health Initiative provides a model for the health sector to contribute to healthy urban planning and policies.

A “health-centric” approach to planning and development

Health is a city’s most important asset. Yet most of the 3.5 billion people living in cities – half of humanity – suffer from inadequate housing and transport, poor sanitation and waste management, and air quality failing WHO guidelines. Pollution and congestion, shifts from fresh to processed foods, and a dearth of space for walking, cycling and exercise also combine to make cities epicentres of the NCD epidemic and drivers of climate change.

As most future urban growth will take place in developing cities, urban expansion needs to be planned from the “ground up” to make cities centres of health and well-being – with durable housing in accessible neighbourhoods, efficient energy and transit networks, robust water, waste and sanitation systems, and ample green spaces – preventing disease and protecting the climate.

WHO’s new Urban Health Initiative creates a paradigm shift in health systems approaches by focusing on urban environment that is the prerequisite for healthy lifestyles – and disease prevention.

The initiative builds a new cadre of health policy leadership positioned to assess and advocate for development that leads to healthier, greener and cleaner cities. This contributes to attainment of a range of SDG goals and the New Urban Agenda of Habitat III.

Major impacts on health, development and climate

Most of the top ten causes of death (2015) are directly or indirectly influenced by faulty urban design and planning policies.

- Heart attack (1), stroke (2), chronic respiratory disease (4), lung cancers (5) – more than a quarter to one-third of deaths are caused by air pollution – with urban traffic, waste, industry, cooking, heating and power production, as leading sources.
- Pneumonia (3) – air pollution causes more than one half of deaths.
- Diabetes (6) – linked to obesity and physical inactivity common in car-dependent cities lacking robust transit and walking/cycling networks, as well as urban fresh food markets.

Healthy cities – key to SDG attainment

Action in cities can drive progress towards multiple SDGs:

- Reduce air pollution (SDGs 3.9 and 11.6)
- Combat noncommunicable diseases (NCDs) and related risks like obesity (SDG 3.4)
- Access to public transport with special attention to women, children, persons with disabilities and older persons (SDG 11.2).
- Sanitation and waste management (SDGs 3.9 and 11.6)
- Equity – SDG 10
- Access to safe public and green spaces, particularly for women, children, older persons and persons with disabilities (SDG 11.7)
- Climate action – climate resilience (SDG 13).

- Diarrhoeal diseases (8) and Tuberculosis (9) are closely related to poor sanitation and waste management and unhealthy housing.
- Traffic injuries (no. 10) Pedestrians & cyclists, including children, older people and the poor are exposed to traffic injury due to lack of safe, rapid transit, walking and cycling.

Poor urban waste management also perpetuates transmission of vector-borne and diseases, including dengue fever as well as Zika and Ebola, two emergent health challenges. Urbanization also is linked to soaring rates of depression, anxiety and other mental disorders, exacerbated by noise, lack of green spaces, and crowding, as well as poverty, poor working conditions and other stressors.

Cities produce 75% of carbon emissions, while urban populations are among the most vulnerable to climate change. Coastal cities suffer from sea level rise and storms. Inland, cities may experience temperatures 3–5°C higher than surrounding rural areas due to the “heat island” effect of large concrete expanses and lack of green cover. Direct climate change costs to health are expected to reach US$ 2–4 billion/year by 2030.
WHO’s response: Building health sector leadership in urban development

1. Monitoring urban air pollution levels as a key health indicator

In 2016, 98% of cities in low- and middle income countries and 56% of cities high-income countries with more than 100 000 inhabitants failed to meet WHO air quality guidelines. Improving air quality is thus a key indicator of sustainable cities. The WHO Urban Ambient Air Pollution Database is a unique resource monitoring SDG 11.6.2.

2. Improved Tools for local decision-makers

WHO’s new online AirQ+ tool enables urban health and air quality experts to quantify both deaths and hospitalizations due to local air pollution exposures. Tools such as HEAT (Health Economic Assessment of Transport for Walking & Cycling) allow policy makers to estimate health improvements and related economic savings of increased physical activity due to walking and cycling. New adaptations of these and other tools will make them easier to deploy in low and middle income cities, which tend have far less data available.

3. Guidance for a healthier urban environment

WHO’s report on Health as the Pulse of the New Urban Agenda applies a “health-centric” lens to urban development trends and offers a pathway for building healthier cities. WHO’s work on Transport in its Health in the Green Economy series and Urban Transport and Health – Handbook for Policymakers – explains how healthy transport and land use development can be a “backbone” for healthy, low-emissions cities. Tools and materials are available on the WHO site “Cities and Health.”

4. Urban Health Initiative

WHO’s Urban Health Initiative is working in low- and middle-income cities to foster health sector leadership in the urban transformation. The initiative focuses on three main areas of activity:

- Cross-sector stakeholder consultations including health, other key urban sectors and civil society, and dialogue on health impacts, issues and “best buys”.

Piloting the Urban Health Initiative – Accra Ghana

In Accra, Ghana, WHO is testing its new approach to urban health and development. The pilot is in collaboration with the Ministries of Health and Environment, the Climate and Clean Air Coalition, Government of Norway, World Bank, UN Habitat and other UN agencies, and civil society groups such as the ICLEI network of local authorities and the Global Alliance of Clean Cookstoves.

The initiative is training health professionals to assess health costs and benefits of interventions in the transport, municipal solid waste and home energy sectors, and identify the optimal package of strategies. A BreatheLife communications campaign will also be piloted in Accra to increase awareness about air pollution in East Africa and communicate about local successes globally.

5. Advocacy for Change – The BreatheLife Cities Network

WHO is building a network of “BreatheLife Cities” (www.breathelife2030.org) that are committed to achieving WHO air quality goals and reducing climate emissions. The BreatheLife campaign is in partnership with UN Environment and the Climate and Clean Air Coalition to Reduce Short-lived Climate Pollutants. Over 2 dozen cities have joined the network, including cities in Jalisco State, Mexico; Greater Manchester Region, UK; and Chile. The campaign is now expanding through Europe, Asia and Africa.

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Ms Elaine Fletcher, BreatheLife campaign coordinator (fletchere@who.int)
http://www.who.int/sustainable-development/cities/en/
http://www.breathelife2030.org

Endnotes:
1 http://www.who.int/gho/mortality_burden_disease/causes_death/tbl10/en/
3 http://www.who.int/mediacentre/factsheets/fs366/en/
Promoting sustainable transport, clean energy, waste management and urban planning can improve air quality and health, as well as contribute to the Sustainable Development Goals for Health (3), Energy (7) and Cities (11).

**The global public health emergency**

Air pollution is a global public health emergency. 92% of the world’s population lives in places where air quality exceeds WHO limits. About 6.5 million deaths – 1 in 9 deaths worldwide – is due to air pollution-related diseases. Air pollution is one of the largest causes of the four top noncommunicable diseases – stroke, lung cancer, chronic respiratory disease and heart disease – accounting for between one-third and one-quarter of those deaths. Air pollution is also responsible for 50% of childhood pneumonia deaths.

**Major impacts on health, development and climate**

- Fine particulate matter (PM) is one of the most health-damaging air pollutants also classified as carcinogen. Fine PM penetrates through the lungs into the bloodstream causing both respiratory and cardiovascular impacts.
- Ambient (outdoor) air pollution caused 3 million deaths (2012), mainly from transport, waste burning, agriculture, building energy use, industry, power production and forest fires.
- Household air pollution causes about 4 million deaths annually (2012), mainly due to smoke from inefficient cookstove technologies and fuels, e.g. biomass, coal, and kerosene.
- About half of the world still cooks over smoky stoves using biomass, coal, charcoal, dung or agricultural residues.¹
- Everyone’s health is affected by air pollution, but low- and middle-income countries as well as poor and marginalized groups in high-income countries are at greater risk. Children, older people, and people with respiratory or heart diseases also are more vulnerable.
- Air pollutants such as methane and black carbon are powerful short-lived climate pollutants (SLCPs) that contribute to climate change. Black carbon, a component of PM, is one of the largest contributors to global warming after CO₂.
- WHO monitors three air pollution-related SDG indicators:
  - 3.9.1 Air pollution-related mortality
  - 7.1.2 Access to clean energy in homes
  - 11.6.2 Air quality in cities

**New opportunities – the time is right**

In 2015, WHO Member States unanimously adopted a resolution recognizing air pollution as a global health risk and committing to action in four areas: building the knowledge base; monitoring and reporting; institutional capacity strengthening and global leadership and coordination. Other recent developments include:

- Technology – More cities are monitoring air quality and low-cost personal sensors also are becoming commonplace. Even so, air quality monitoring networks in developing regions, particularly Africa, still require significant development.
- Public awareness – Increased awareness of air pollution's health and climate impacts has mobilized public opinion.
- Policy action – Reducing air pollution is a key objective of initiatives such as the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC), and increasingly, for urban leaders. For example, Madrid, Paris, Madrid, Athens and Mexico City recently committed to phase out diesel cars and vans by 2025.

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<tr>
<th>Annual mean ambient PM₁₀ (µg/m³)</th>
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<td>Circles: monitoring station/ background: modeled estimates</td>
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**Global ambient air pollution, WHO Guideline values (annual mean), PM₁₀: 10 µg/m³, PM₂.₅: 20 µg/m³**
WHO’s response: and global leadership and coordination on air pollution and health

In line with the 2015 World Health Assembly resolution and a 2016 “Road Map” for enhanced action, WHO is providing global leadership and technical support to member states as follows:

1. Global monitoring of SDG progress

The WHO databases on household energy and air quality are unique resources used by scientists, UN agencies, countries and others to monitor global progress towards clean air. They supply data to track progress on SDG 7.1.2 (access to clean fuels and technologies), as well as SDG 11.6.2 (improving air quality in urban areas). They are the basis for determining disease burden from air pollution for SDG 3.9.1. Ongoing improvements in modeling of air pollution exposures, pollutants (beyond PM$_{2.5}$) and disease outcomes, will further refine analyses.

2. WHO Air Quality Guidelines

WHO’s guidelines are a basis for formulating national standards and policies. These cover:

1. Ambient air quality: health relevant limits for pollutant concentrations indoors and outside;
2. Household fuel combustion: defines clean fuels and technologies, with reference to emissions targets for health-damaging pollutants;
3. Chemical indoor pollutants: limits for pollutants from indoor sources, such as building materials & furnishings;
4. Biological indoor air pollutants: indicators for mould and control measures.

3. Support to countries for evaluating new policies and interventions

WHO has recently launched the AirQ+ software tool, which allows countries and cities to estimate locally deaths attributable to outdoor air pollution based on inputs such as: average ambient air pollution concentrations, population and population health data. Through the Urban Health Initiative, WHO is working with cities and national Ministries of Health to build capacity for evaluating and shaping strategies that reduce pollution from energy, transport, waste and other urban sectors in ways optimal to health. WHO is also working with Member States in the Americas, Africa and Asia to develop a clean household energy solution toolkit with resources for developing national policies and programmes for clean household energy.

4. Leadership

Global Air Quality and Health Platform – WHO, in collaboration with the World Meteorological Organization and UN Environment, convenes regular meetings with other intergovernmental agencies and academia, to harmonize data and methods for assessing air pollution’s health burden, addressing research gaps and trends, such as use of new portable monitoring technologies.

BreatheLife Campaign (www.breathelife2030.org) – A global campaign to raise awareness about the health risks of air pollution and its contribution to climate change in coordination with UN Environment and the Climate and Clean Air Coalition (CCAC). The campaign is building a network of BreatheLife Cities committed to reaching WHO Air Quality guidelines, which already includes major cities and regions such as Jalisco State, Mexico; Mendel in, Colombia; and the Greater Manchester Region, United Kingdom.

Endnotes:
1. Total estimated annual air pollution deaths of 6.5 million is somewhat less than the sum of deaths from indoor and outdoor air pollution, due to overlap in deaths from these two air pollution risk factors.
2. WHO air quality guidelines: www.who.int/airpollution/ambient
Healthy housing   Raising standards, reducing inequalities

Improved housing conditions save lives, reduce disease, increase quality of life, reduce poverty, mitigate climate change and contribute to achievement of the Sustainable Development Goals for Health (SDG 3) and Sustainable Cities (SDG 11).

The world’s urban population will double by 2050 and will require housing solutions. Since over 90% of urban growth is in developing cities, informal settlement and slum dwellers are likely to grow dramatically. In both developed and developing countries improving housing conditions and reducing health risks in the home is thus critically important.

Major impacts on health, development and climate

Poor housing conditions create multiple health risks responsible for considerable disease and deaths worldwide. Inadequate housing also tends to be energy inefficient, in terms of cooking, heating and power systems, as well as poorly protected from weather conditions, creating an array of immediate health risks as well as increasing climate emissions. Key issues include:

- Water, sanitation, and hygiene were responsible for 842,000 deaths from diarrhoeal disease worldwide in 2012. This constitutes 1.5% of the global burden of disease measured as Disability-Adjusted Life Years (DALYs).
- Exposure to lead is estimated to have caused worldwide 853,000 deaths in 2013.
- 828 million people live in slums, where crowding and lack of safe, healthy and durable housing is most pronounced, and the number keeps rising.
- In 2012, 4.3 million deaths globally were attributable to indoor air pollution from the use of solid fuels for heating and cooking, almost all in low- and middle-income countries.
- About 15% of new childhood asthma in Europe can be attributed to indoor dampness. This represents over 69,000 potentially avoidable DALYs and 103 potentially avoidable deaths per year.
- Almost 110,000 people die every year in Europe as a result of an injury at home or during leisure activities, and an estimated 32 million require hospital admission.
- In Europe, household crowding is associated with more than 3,500 deaths from tuberculosis per year.
- Residential buildings are responsible for nearly 18% of direct carbon dioxide emissions, with 11% due to household grid consumption for electricity and district heating, and the remainder from household-level cooking and heating.

Housing and health risks

- LACK OF ACCESS TO CYCLING LANES/WALKING PATHS
- LACK OF ACCESS TO WATER AND SANITATION
- STRUCTURALLY UNSOUND OR UNSAFE
- AMBIENT AIR POLLUTION
- HOME APPLIANCES AND HOUSEHOLD PRODUCTS
- OVERCROWDING
- INDOOR TEMPERATURE
- INDUSTRIAL POLLUTION
- GREEN SPACES
- RESPIRATORY EFFECTS
- INFECTIONS
- LACK OF GREEN SPACES
- ASBESTOS
- CARDIOVASCULAR DISEASE
- INJURIES
- REDUCED BRAIN DEVELOPMENT
- NOISE POLLUTION

Healthy houses should be safe and free of environmental and health threats.
New opportunities – the time is right

The recent United Nations Conference on Housing and Sustainable Urban Development, Habitat III set forward a collective vision of sustainable, liveable and economically vibrant cities. To realize this vision, urban decision-makers must apply a “health lens” to urban policies and programs, and measure their effects, in particular housing policies that generate a range of benefits, as follows:

- **Climate resilience**: Health can be a driver of cost-effective housing climate change mitigation strategies. Particularly in low-income settings, improved housing can increase climate resilience to extreme heat, flooding and storms.
- **Technology**: Better thermal insulation, with adequate management of energy sources and ventilation, and more energy-efficient heating and more energy-efficient biomass and biogas cookstoves in developing countries can significantly reduce health-damaging indoor air pollution exposures and improve thermal comfort, reducing asthma and respiratory illnesses as well as home injuries (e.g. from burns).
- **Economic development**: Stronger building codes and housing finance measures can support investment in healthier and more energy-efficient housing while avoiding excessive fuel costs or “energy poverty.”
- **Housing and health workforce**: There is a need to increase the involvement of the health sector in the development and implementation of policies and programmes dealing with housing and health inequalities.

**WHO’s response: providing evidence based guidance**

Ensuring everyone lives in healthy and safe dwellings has implications for national, regional and local governments who play a major role by setting overall standards and legal context for housing construction and renovation. Therefore WHO provides evidence-based recommendations on healthy housing conditions and interventions and provides leadership in enabling that health considerations inform housing regulations.

1. **New housing and health guidelines: setting health standards**

In late 2017, WHO will publish new housing and health guidelines, addressing key housing issues such as: indoor temperature, crowding, accessibility of dwellings, home injuries, and proximity of housing to walking and cycling infrastructure. The new housing guidelines will also incorporate existing WHO guidance on issues such as indoor air quality, water and sanitation.

2. **Support to countries in implementation of guidelines**

WHO will work with country partners to develop tools and strategies for translating normative housing standards into national action. A package to be prepared comprises: housing and health plans; collection of case studies on healthy housing interventions; and model housing legislations and regulations with a high-equity co-benefit at urban level.

3. **Support to countries in policy/interventions evaluation for addressing slum upgrading**

WHO works in collaboration with a large number of partners ranging from UN organizations (UN HABITAT, UNEP etc.), to experts in public health, epidemiology, urban health and health inequalities and representatives of civil society organizations working on slum upgrading and informal economy (e.g. SDI Slum Dwellers International). This work will lead to identifying and measuring the health benefits of key upgrading interventions and examples of good practice; enhancing monitoring practices of health-related indicators in slums; exploring national and local implementation projects; and creating more opportunities for cross-sectoral dialogue at local and national levels.

4. **Global leadership and advocacy**

WHO is advocating for prioritized action on the health impacts of housing policies with key other UN agencies, e.g. UN HABITAT, UNECE etc. Currently WHO is working to integrating health standards into the Urban and Territorial Guidelines of UN HABITAT.

In the context of the Habitat III Conference on Housing and Sustainable Urban Development, WHO produced a back-up document *Health as the Pulse of the New Urban Agenda*; held a technical meeting on slum upgrading and health; and launched the *BreatheLife Cities Campaign* (www.breathelife2030.org) aiming at mobilizing cities and individuals to protect our health and planet from the effects of air pollution.

**WHO – working at country level to:**

- Assist with assessment of key housing risks for health at national level.
- Support Ministries of Health & Housing & Urban Planning as well as civil society to establish effective collaboration.
- Apply validated tools for assessing expected impacts of intervention options on health, poverty, environment and economic development.
- Support capacity building on housing.
- Communicate country success stories and advocate for housing and health in global fora.

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http://www.who.int/socio_determinants/Guidance_on_pro_equity_linkages/en/

Endnotes:

Measures to improve health care systems access to and use of clean energy sources; support sustainable procurement, management and disposal of pharmaceuticals and other health care commodities can ensure that essential health care services function efficiently without creating unnecessary environmental hazards or climate emissions. This demonstrates the health sector’s commitment to “walk the talk” with respect to sustainable development.

**Health services delivery in an environmental context**

Health services provide lifesaving care. However, they can leave a legacy of waste, pollution and chemical hazards. For example:

- Chemical substances are frequently used for disinfection, sterilization, laboratory diagnostics, as well as for vector and pest management. If not handled, stored, used and disposed properly, these substances can be released into the air or near-by surface waters, for instance used for drinking water or for agricultural purposes.
- The persistence of active ingredients in pharmaceutical waste, for example in landfills and surface and drinking water, is a growing concern vis-à-vis antimicrobial resistance.

- Policies and practices adopted vis-à-vis the segregation, handling and disposal of health care waste can influence the relative risk of health worker and community exposure to infection.
- The incineration of health care waste can also contribute to air pollution and environmental releases of climate pollutants as well as other chemical substances such as dioxins, persistent organic pollutants, and mercury (e.g. from mercury thermometers and sphygmomanometers);
- Other important sources of greenhouse gas emissions from health care activities include procurement of health commodities and energy consumption particularly when used inefficiently.
Climate change and the depletion of natural resources like water and energy also have important implications for health services delivery. For example, extreme weather events arising because of climate change can severely disrupt/hamper provision of health services especially in emergencies. Lack of adequate access to water and energy services (especially electricity) are limiting availability of safe and quality health services, particularly in resource constrained settings.

An "environmentally sustainable" approach to health service delivery creates win-win benefits in terms of safer, more efficient health services, and few risks to health care workers, patients and the community.

Why now…

Global awareness about health and environment linkages is arguably at an all-time high, due in no small part because of global recognition of the consequences of climate change and of the huge health toll attributed to air pollution. This and the 2030 Sustainable Development Agenda have opened an important opportunity to give increased priority to health and environment linkages, particularly across sustainable development goals (SDGs). Greater alignment of interests between SDG3 and goal areas such as water and sanitation (SDG6), sustainable energy (SDG7), and climate change (SDG13) open possibilities to leverage support from other sectors/SDG constituencies to address health systems infrastructure deficiencies and health care delivery constraints.

Measures to “green” health care, are also becoming increasingly accessible/affordable as a result of technological improvements, growth in markets (especially for technologies like solar power), and lowering of costs including in low income settings.

WHO’s response: helping the health sector to lead by example

Our focus is on three areas: a) access to and sustainable use of energy (SDG7); b) environmentally responsible procurement of health commodities (SDG12), and c) addressing unintended environmental consequences of health services delivery. This complements other work underway in WHO to: improve access to water and sanitation in health facilities, promote health worker occupational health and safety, scale-up access to medical technologies, and ensure hospitals are climate resilient and safe in emergencies.

1. Catalysing research to enrich the evidence and knowledge base

- Significance of environmental factors (e.g. access to energy) on health services delivery outcomes
- Effectiveness (in health terms) of measures to “green” health services
- Monitoring access to modern energy services in resource constrained settings (http://apps.who.int/iris/bitstream/10665/156847/1/9789241507646_eng.pdf)

2. Developing tools and guidance

- Developing national strategies to phase out mercury thermometers and sphygmomanometers used in health care as called for under the Minamata Convention on Mercury (http://www.who.int/ipcs/assessment/public_health/WHOGuidanceReportonMercury2015.pdf)
- Modelling minimum energy needs to ensure quality delivery of essential health services

3. Leadership, partnerships and advocacy

- Raising the profile of environmental considerations associated with health services delivery and associated opportunities for health and health systems strengthening associated with alignment with the SDGs, especially outside of SDG3;
- Advocating that increased priority be given to environmental considerations in the design and delivery of specific programmes, e.g. maternal and child health, safe surgery, immunization, etc.
- Providing health leadership in the context of interagency initiatives such as UN Energy, Sustainable Energy for All (SE4ALL) and other multi-stakeholder, multi-sectoral initiatives focused on sustainability issues relevant to health care

4. Reducing the environmental footprint of WHO’s operations and activities

- Application of environmental safeguards to WHO programmes and projects.
- Promoting environmentally responsible procurement in WHO and among health development partners.

For example, WHO is working at country level to:

Evaluate the impact that electrifying 50 rural health care facilities in Ghana and Uganda using solar energy solutions has on the availability, quality and use of maternal and child health services.

This work is being undertaken in collaboration with the Alliance for Health Policy and Systems Research (http://www.who.int/alliance-hpsr/en/) and the United Nations Foundation (http://www.unfoundation.org).

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Universal access to clean energy for cooking, heating, and lighting for households can improve health, reduce poverty, protect the environment, and contribute to the Sustainable Development Goals (SDG) for health and energy.

**Promoting clean household energy for the forgotten 3 billion**

Despite efforts to introduce cleaner household energy solutions, the number of people who still rely on polluting fuels and technologies for cooking has remained largely unchanged for decades at 3 billion. Thus, WHO is working closely with countries and partners to accelerate the transition to clean household energy in order to achieve universal access to clean and affordable energy by 2030, as envisioned by SDG 7: “Ensure access to affordable, reliable and modern energy for all”.

**Major impacts on health, development and climate**

Air pollution from cooking, heating or lighting with polluting fuels using inefficient devices leads to high levels of household air pollution – the world’s largest environmental risk factor.

- Breathing smoke from inefficient cookstoves leads to some 4 million deaths per year.¹
- The toll is particularly heavy for women and children: 60% of all deaths are among women and children.

- It’s not just cookstoves; polluting heating systems and kerosene lighting are also major sources of air pollution in the home.
- Reliance on polluting fuels and technologies causes burns and poisonings and fuel collection leads to injuries.
- Girls in homes using polluting fuels spent about 18 hours weekly collecting fuel or water, while girls in homes mainly using clean fuels averaged only 5 hours in 16 African countries surveyed. (WHO 2016)
- Household emissions from dirty cooking, heating and lighting are an important source of near-term climate pollution, providing an unparalleled opportunity to realize near-term climate and health co-benefits.

**Now is the time for Action**

By promoting clean cooking, heating and lighting, the global community can unleash a wave of progress for billions of people in low- and middle-income countries. Not only will clean household energy technologies protect human health, but also impact climate change and reduce the drudgery of fuel collection for millions of people.
WHO’s response: informing and empowering ministries

1. Support countries in policy evaluation and implementation

WHO works with country partners to increase awareness about the risks of household air pollution, encourage collaboration across Ministries, identify suitable interventions, and develop national plans for the adoption of clean household energy.

2. A global, public database to track progress towards the SDG 7 target for universal energy access

The WHO Global Household Energy database on household cooking, heating and lighting is a unique resource available to countries, UN agencies, and researchers to monitor progress in transition to cleaner fuels and stoves. The database also provides the basis for determining global emissions from household air pollution, which informs disease burden estimates. Future plans include refinement of the data on fuels and stove types to facilitate better assessment of the impacts from household energy interventions.

3. Implementation of guidance for household fuel combustion

WHO is rolling out workshops in Africa, Asia and Latin America to raise awareness about the Guidelines for indoor air quality: household fuel combustion and how they can be used in the development of national policies for clean household energy. The Guidelines provide health-based recommendations on which household fuels and technologies can be considered clean for health, discourages the use of unprocessed coal and kerosene and suggest prioritizing low-emission stoves during the transition to clean household energy.

4. Research and programme evaluation

WHO, in collaboration with surveying agencies, researchers, national statistical offices and other agencies have developed a set of harmonized questions to monitor progress towards the household energy indicator associated with SDG 7.1. In addition, WHO is creating a clearinghouse of national policies and programmes on access to clean household energy to facilitate knowledge exchange and cooperation.

5. Global leadership and advocacy

Clean household energy also needs to be a core element of public health policies, for example the promotion of child survival or prevention of noncommunicable diseases. WHO supports exchanges between health, energy, environment and other relevant ministries and collaborates closely with other key actors like the Global Alliance for Clean Cookstoves, Sustainable Energy for All, and the World Bank to facilitate a global transition to clean household energy.

Endnotes:
1 http://www.who.int/airpollution/publications/burning-opportunities/en/
2 http://www.who.int/airpollution/publications/burning-opportunities/en/
3 http://www.who.int/indoorair/guidelines/hhfc/en/
4 SDG 7 Target 7.1: By 2030, ensure universal access to affordable, reliable and modern energy services

WHO’s Clean Household Energy Solutions Toolkit (CHEST) provides the tools and resources for:

- Stakeholder mapping: Supports Ministries of Health in gathering key actors to advise on the development and implementation of a clean household energy programme or policy.
- Needs assessment & situation analysis: Drawing on WHO databases, examines current household energy use patterns, local policies and behavioural factors important to uptake of clean household energy options.
- Optimized technologies and policies: Supports local adoption of “enabling” policies and selection of household energy devices – assessing their impacts on emissions and health.
- Guidance on standards and testing: How to develop or apply existing standards and testing for clean household energy fuels and technologies.
- Monitoring and evaluation: Clear advice on techniques for measuring household air pollution and the health impacts of household energy use.
- Engaging the health community: Expanding the capacity of health professionals to address health risks from household energy use.
- Communication and awareness raising: Strategies for increasing awareness of household air pollution health risks and the benefits of adopting clean energy.

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http://www.who.int/indoorair/en/
A safe, healthy and protective environment is key to ensuring that children grow and develop normally. Children are particularly vulnerable to air pollution, hazardous chemicals, climate change stressors, and inadequate water, sanitation and hygiene.

**Impacts on children’s health and development**

Environmental exposures start in the womb, and can have effects throughout life.

The prenatal and early childhood period represents a window of particular vulnerability, where environmental hazards can lead to premature birth and other complications. Early childhood exposure to such hazards can also increase lifelong disease risk including for respiratory disorders, cardiovascular disease and cancers. Reducing children’s environmental risks, therefore, offer a major opportunity for improving children’s health in every region of the world.

**Unhealthy environments – the toll on childhood mortality**

Reducing environmental risks could prevent more than a quarter of the 5.9 million deaths of children under 5 years (2015). Childhood deaths from key risks (2012) range from nearly 600,000 preventable deaths annually from air pollution-related diseases to about 200,000 deaths from malaria cases preventable through environmental management.

**Children in the 2030 Sustainable Development Agenda – New Opportunities for Action**

Children are at the heart of the Sustainable Development Goals (SDGs), because it is children who will inherit the legacy of policies and actions taken, or not, by leaders today. The third SDG, to “ensure healthy lives and promote well-being for all at all ages,” has as its foundation children’s environmental health. Since most environmental health risks to children occur in the home and community environment, action requires multisectoral cooperation and action across the SDG spectrum.
For instance, better urban design as represented in SDG 11 for Sustainable Cities, can help reduce the exposure of children to housing risks, traffic injury, and improve children’s opportunities for health physical activity and play in green spaces. Access to safe water, sanitation and hygiene, as per SDG 6, is key to preventing childhood diarrhoea deaths. SDG 12 for Responsible Consumption and Production highlights actions we can take to provide environmentally sound management of chemicals and wastes, preventing childhood poisonings and exposures. And SDGs 7 (Affordable Clean Energy) and SDG 13 (Climate Action) reduce health-harmful air pollution as well as exposures. And SDGs 12 (Affordable Clean Energy) and SDG 13 (Climate Action) reduce health-harmful air pollution as well as the catastrophic effects to children’s health that future climate change and environmental degradation will bring.

**WHO’s Response**

WHO in collaboration with and partners at United Nations level, WHO Collaborating centres, non-governmental organizations and academia is working at global, regional and country level in the following areas:

- Build the capacity of the health sector to prevent childhood diseases of environmental origins;
- Develop technical and training materials to help health professionals recognize and prevent environmentally-related childhood diseases related to key risks, such as air pollution;
- Develop field interventions aimed at reducing exposure and preventing or decreasing the burden of disease on children;
- Develop research agendas aimed at building evidence on topics such as the childhood origins of adult disease;
- Provide health leadership in the context of interagency initiatives on e-waste, chemicals and other multi-sectoral initiatives related to children’s environmental health;
- Raise awareness about the impact of environmental risks on child health and associated solutions in alignment with the SDGs;
- Advocate for environmental determinants and interventions to be included within child and maternal health programmes such as the Global Strategy for Mothers’, Children’s and Adolescents’ Health.

**Children’s environmental health tools and publications**

- Inheriting a sustainable world? Atlas on children’s health and the environment¹
- Don’t pollute my future! The impact of the environment on children’s health²
- Infographics for action (in 6 languages)³
- 10 facts on children’s environmental health⁴
- Training Package for Health Care Providers on Children’s Environmental Health⁵

**For more information:**

Public Health – Environmental and Social Determinants of Health Climate and Other Determinants of Health World Health Organization (WHO), Geneva 27, Switzerland

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**Endnotes:**

A healthy working life reduces poverty and stimulates economic growth, supporting achievement of Sustainable Development Goal 8 (Decent Work).

The workplace is a key setting for preventing disease and promoting health. The WHO Global Workers’ Health Programme addresses the full range of occupational disease and injury risks, environmental, social and individual. Promoting access to health and occupational health services for workers and their families is a key goal of the decade-long WHO Global Plan of Action on Workers’ Health (2008–2017).

Major health impacts related to work

More than 2 million work-related deaths and about 160 million new occupational disease cases are reported every year. Occupational risk factors account for a substantial part of chronic disease (see fig.).

In addition, occupational risks account for 14% of road traffic accidents, 14% of unintentional poisonings, 6% of falls, 10% of burns, 11% of drownings, and 11% of other unintentional injuries. Furthermore, about 11% of the burden of disease from depression is attributable to occupational risks.

Lack of occupational health and safety measures cost the global economy about 4% of GDP, in terms of lost productivity, health care and compensation. Productivity losses due to sickness and disability are exacerbated by the epidemic of non-communicable diseases, often work-related.

For many people worldwide, workplace health care is the only means of access to health care at all. Yet only 30% of workers in the world are covered with essential interventions and basic occupational health services, mostly workers in large enterprises in the formal sector. Conversely, the working poor and informal sector workers largely lack occupational health services or coverage. These groups are more likely to work in hazardous conditions and suffer work-related diseases, injuries, and disabilities, reinforcing poverty. About 942 million workers – nearly one in three – are currently living below the global poverty line of US$2 daily.

A Healthy Workforce – key to the 2030 Agenda for Sustainable Development

Workers represent one third of the world population. People are living longer and working longer, well into the old age. Women are increasingly participating in the labour force. Health-care workers are exposed to significant disease risks as well as being first responders in emergencies, and their occupational health services require special attention. In line with the Sustainable Development Agenda, WHO is providing leadership on the following:

**SDG 1 Elimination of poverty**
- Improving detection and reporting of occupational diseases and injuries to guarantee workers’ access to employment injury schemes and meet the target of universal social protection.

**SDG 3 Health and wellbeing**
- Prevention and control of occupational cancer and respiratory diseases;
- Expanding health coverage of workers in the informal economy by integrating occupational health and safety interventions into people-centred health care;
- Protecting occupational health and safety of responders to public health emergencies;
- Reducing workplace air pollution exposures and occupational poisonings.

**SDG 8 Decent work and economic growth**
- Strengthening the capacities of health systems to address hazardous child labour;
- Improving working conditions of workers in the informal economy;
- Improving the global measurement and monitoring of workers’ health.

### Chronic disease due to Occupational risks

<table>
<thead>
<tr>
<th>Disease</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back Pain</td>
<td>26%</td>
</tr>
<tr>
<td>Hearing Loss</td>
<td>22%</td>
</tr>
<tr>
<td>Chronic Obstructive Pulmonary Disease</td>
<td>12%</td>
</tr>
<tr>
<td>HIV</td>
<td>10%</td>
</tr>
<tr>
<td>Sexually Transmitted Infections</td>
<td>8%</td>
</tr>
<tr>
<td>Asthma</td>
<td>9%</td>
</tr>
<tr>
<td>Lung Cancer</td>
<td>7%</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>2%</td>
</tr>
<tr>
<td>Leukaemia</td>
<td>1%</td>
</tr>
</tbody>
</table>
WHO action on workers’ health

WHO is strengthening the capacity of Ministries of Health to: promulgate programmes on workers’ health; measure and monitor workers’ health; respond to emergencies; promote the health of migrant workers, women, and workers in the informal economy; and eliminate hazardous child labour. Specific WHO activities include the following:

1. Norms, standards and tools
   • Health workforce and emergencies
     – Tools for occupational health and safety in emergency preparedness and response;
     – Training tools for workplace improvement in health care facilities.
   • Universal health coverage and social protection
     – Tools for costing of primary health care interventions for prevention and control of occupational and work-related diseases and injuries;
     – Training materials for healthcare providers;
     – Methods for early detection of occupational diseases.
   • Non communicable and pollution related diseases
     – WHO guide for prevention and control of NCDs at the workplace;
   • Decent work and economic growth
     – Strategies and policy options for improving the health of workers in the informal economy;
     – Guide for health care providers on hazardous child labour.

2. Support to countries in policy development and implementation
   • National situation assessments of the health of workers, followed by national action plans;
   • National programmes and core capacities for protection of occupational health and safety in the health sector;
   • Roadmaps and capacities for scaling up access of workers to essential interventions and basic occupational health services for prevention and control of work-related diseases and injuries.

3. A global, public database to monitor progress on workers’ health

WHO is developing a global database of 41 indicators to monitor the health of working people; environmental and social health determinants; and access to health services. WHO, jointly with ILO, is developing a methodology for estimating work-related health impacts to be used for monitoring progress on SDG 8 and related targets of other SDGs. (SDG targets 1.3, 3.4, 3.8, 3.9)

The Workers’ Health Module in the International OneHealth costing tool allows countries to measure and cost interventions for prevention and control of occupational diseases and injuries and to develop scenarios for scaling up.

4. Research and programme evaluation

The WHO global occupational health collaborating centre network comprises 50 national research and academic institutions that collaborate with WHO to support development of tools, methodologies and standards for protection and promotion of health at work.

5. Leadership, partnerships and advocacy

WHO is advocating for prioritized action on the health and safety of the health-care workforce under the UN High Level Commission on Health Employment and Economic Growth, and the UN Global Compact on Migrants and Refugees.

The International Labour Organization (ILO) is the main international partner for promoting and protecting the health of working people. There is a WHO/ILO joint committee on occupational health that provides guidance by constituents on the interagency collaboration. WHO also contributes to the Future of Work centennial initiative of ILO.

WHO working at country level:

In the wake of the Ebola crisis, WHO and the ILO initiated a collaboration to strengthen the capacities of African countries to address workers’ health in the health care and emergency workforce as well as in the informal economy. Activities have included:

• Expert workshop involving ministries of health of 17 African countries to build capacities for protection of occupational health and safety in public health emergencies;
• Assistance with development of national situation analysis and workers’ health action plans in Tanzania, Madagascar and Togo;
• Support to develop national occupational health and safety programmes for health care workers in South Africa, Tanzania, Madagascar, Botswana, Benin, Togo, Ethiopia, Ghana and Kenya;
• Integration of occupational health services into primary health care systems in South Africa, Tanzania and Benin;
• Communicating country success stories and advocating for the health needs of migrant workers, women, workers in the informal economy and child labourers in South Africa, Tanzania, Madagascar and Benin.

For more information:

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