# Promoting healthy housing for all – Towards an implementation strategy for the WHO Housing and health guidelines

Summary report of the housing and health expert consultation

15–17 January 2020
Geneva, Switzerland

**World Health Organization**

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# Acknowledgements

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# Abbreviations

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| BAR-HAP | Benefits of Action to Reduce Household Air Pollution |
| CHEST | WHO Clean Household Energy Solutions Toolkit |
| COSHH | Control of Substances Hazardous to Health |
| CRAFT | Comparative Risk Assessment Framework and Tools |
| HHGL | WHO Housing and health guidelines |
| HiAP | Health in All Policies |
| SDG | United Nations Sustainable Development Goal(s) |
| UN-Habitat | United Nations Human Settlement Programme |
| WHO | World Health Organization |

# Introduction

## Background

Improved housing conditions can save lives, prevent disease and injuries, increase quality of life, reduce poverty, and help mitigate climate change. Housing is increasingly important to health in light of urban growth, ageing populations and climate change. According to estimates by the United Nations Human Settlement Programme (UN-Habitat),[1] 3 billion people, corresponding to approximately 40% of the world's population, will require access to adequate housing by 2030. In addition, one in four people currently live in conditions that are detrimental to their health, safety and prosperity. In this context, housing is not only a major entry point for primary prevention to improve human health but a key sector to address larger planetary health concerns linked to urban and rural environments and climate change.

WHO recognizes the significant impact of housing conditions on health and provides normative guidance and technical support to Member States to promote healthy housing for all. Housing is considered to be healthy if it supports a state of complete physical, mental and social well-being. Besides referring to the physical structure of the dwelling, and the extent to which it enables physical health, healthy housing also provides a feeling of home, including a sense of belonging, security and privacy.

To reduce the health burden due to unsafe and substandard housing, WHO developed the WHO Housing and health guidelines (HHGL),[2] which bring together the most recent evidence to provide practical recommendations promoting healthy housing. Based on newly commissioned systematic reviews, the HHGL provide recommendations relevant to inadequate living space (crowding), low and high indoor temperatures, injury hazards in the home, and accessibility of housing for people with functional impairments. In addition, the guidelines identify and summarize existing WHO guidelines and recommendations related to housing, with respect to water quality, air quality, neighbourhood noise, asbestos, lead, tobacco smoke and radon.

The HHGL take a comprehensive, multisectoral perspective on the issue of housing and health and highlight co-benefits of interventions addressing several risk factors at the same time. As such, housing improvement measures are not only discussed in relation to their health benefits but also to their positive impact on areas such as climate change mitigation. However, due to the complexity inherent in housing and health, the HHGL cannot cover all aspects relevant to the topic. Important issues like homelessness, indoor pollution stemming from furniture or energy poverty, for example, were not considered in the current version of the guidelines.

The HHGL aim to inform housing policies, regulations and legislation at the national, regional and local level. They are further relevant in the daily activities of implementing actors who are directly involved in the design, construction, maintenance and demolition of housing in ways that influence human health and safety. The guidelines therefore emphasize the importance of collaboration between the health and other sectors and joint efforts across all government levels to promote healthy housing. The HHGL implementation in countries will contribute to the achievement of the Sustainable Development Goals (SDGs) on good health and well-being (SDG 3), affordable and clean energy (SDG 7), reduced inequality (SDG 10), sustainable cities and communities (SDG 11) and climate action (SDG 13).

As part of the first phase of the guidelines' implementation, WHO convened a global expert consultation in Geneva from 15 to 17 January 2020. International housing and health experts working in policy, research and practice gathered to discuss priorities, challenges and opportunities of the implementation process (see List of participants in Annex 1).

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[1]   Housing: The challenge [website] Nairobi: UN-Habitat (https://unhabitat.org/topic/housing, accessed 10 March 2021).
[2]   WHO Housing and health guidelines. Geneva: World Health Organization; 2018.

## Scope and purpose

The objectives of the expert consultation were to discuss potential components of the implementation strategy of the HHGL; identify priority areas for implementation activities; discuss the structure and content of an implementation toolkit; and learn from country experiences and pilot projects. The consultation was structured according to the following activity areas to be covered by the implementation strategy:

- research needs;
- structure and content of the toolkit;
- communication and knowledge translation activities;
- capacity building; and
- pilot projects.

The sessions were highly interactive, each starting with a short presentation or impulse statement by an expert, followed by small group work or round-table discussion. The respective chair of the day introduced the meeting agenda and objectives in the morning and summarized the main insights at the end of each day.

The consultation convened global experts in housing and health who work in policy, research and practice. In line with the multisectoral approach taken by the HHGL, experts' professional backgrounds covered areas such as public and/or environmental health, medicine, architecture, urban planning, design, public policy, and engineering. Participants' work experience spanned from governmental authorities to academia, civil society and nongovernmental organizations and private sector entities. In line with the global nature of the guidelines, experts from all six WHO regions were present at the meeting.

## Outputs

The outputs of the meeting were the following:

- elements of the implementation strategy for the HHGL were identified;
- a snapshot of existing tools eligible for inclusion in the implementation toolkit was developed, and tools that are still needed were identified;
- research to advance the implementation of effective housing improvement interventions was identified; and
- communication, engagement and advocacy activities and materials to increase awareness of the guidelines were proposed.

# Challenges, opportunities and priority steps for implementing the guidelines in a broader urban and planetary health context

## Chair: Michael Davies, Institute for Environmental Design and Engineering, University College London, United Kingdom of Great Britian and Northern Ireland

The HHGL make global, evidence-based recommendations on how to reduce the disease burden from housing risks such as excess indoor temperature, crowding, injury hazards, a lack of accessibility, toxic building materials and indoor air pollution. Yet, housing needs, conditions and institutional competence depend on the country context, making a "one size fits all" approach to implementation impossible. Translating the guidelines' global recommendations into impact at the country level will, therefore, require context-specific action plans tailored to the country's current priorities, to its status quo on available resources and capacities, as well as to envisaged outcomes. Implementation of the HHGL aims to address healthy housing from a comprehensive, national perspective and activities could, as such, go beyond the recommendations made in the guidelines.

Meeting participants identified priorities for implementation in a broader urban and planetary health context through considering key challenges and opportunities.

The following were considered the main challenges for translating the HHGL recommendations into action at local, regional and national level:

- **Lack of financial resources or insufficient allocation**. The construction of new housing stock and renovation of existing buildings require substantial financial resources. Factors such as urbanization and population growth create an enormous demand for new housing stock; this poses a major investment and planning challenge for governments and the private sector while competing for funds with other issues of public concern. In settings with sufficient resources to build healthy housing or refurbish the existing housing stock, resources are often allocated to priorities other than healthy housing.

- **Unclear responsibilities at the government level**. The responsibility for healthy housing cuts across different sectors and government levels. Its realization therefore requires the involvement of different ministries including health, housing, finance, environment, transport and energy. This may create confusion about roles and responsibilities and thus lead to a delay in project planning and implementation. Shared budgets and regular multisectoral meetings to ensure seamless coordination may further be perceived as challenging and time consuming. In addition, housing responsibilities may be located at the national, regional and/or local level; a rapid turnover of policy-makers at any level will impede stable collaborations and cooperation, just when these are needed across all government levels in a fast-changing environment.

- **Responsibilities of the public vs private sector**. While housing policies, regulations and legislation fall under the auspices of the public sector, the implementation of these is highly dependent on private sector entities and civil society, including construction companies, architects and designers, professional associations, financial institutions and home and land owners. The latter, especially, may face a financial burden through new regulations and building codes, highlighting the importance of public financing and subsidy mechanisms to encourage implementation and avoid increasing inequalities.

- **Multiple disciplines, multiple priorities and mindsets**. The multidisciplinary nature of healthy housing convenes professionals with different priorities, mindsets, traditions and work routines. Uniting these requires all involved actors to demonstrate a genuine interest in and understanding of the other profession's perspective. In addition, stakeholders coming from different disciplines may not speak the same language, i.e. they may use different terminology and approach issues from another viewpoint.

- **Refurbishment needs of existing housing stock**. Housing is usually built to last for many decades, if not centuries. With ageing populations and more people living with chronic diseases or disabilities, housing should fulfil universal design standards to be accessible and barrier-free for all residents. Older housing stock may not be fit for new functions such as the transfer of social activities and health care into private homes. There is therefore the technical challenge of housing being a rather inflexible public commodity as its ability to adapt to the changing needs of societies is limited.

- **Informal housing**. As this falls outside the regulated housing market, the improvement of housing conditions is especially hard to realize in slums and informal settlements. Governments may not feel responsible for enforcing housing policies in informal settlements and residents may resist upgrading interventions if they are linked to increased expenditures, forced evictions or changes to their social environments.

- **Healthy housing as a complex system**. The concept of healthy housing goes beyond the physical structure of a dwelling. It also refers to the promotion of mental well-being by a house providing a sense of security and privacy, as well as protection from factors outside its walls. Characteristics of the peridomestic environment include access to services, green spaces and active and public transport options, as well as social participation in the local community and protection from waste, pollution and the effects of disasters. The broad array of factors determining healthy housing as well as the influence housing may have on its environment may complicate the definition of an adequate scope of housing improvement projects and hinder the assignment of roles and responsibilities.

The issues below were identified as the main opportunities when implementing the HHGL in countries:

- **Access to healthy housing is a human right**. Access to adequate housing is a recognized human right. Having a home that protects the family from health, environmental and climate risks, and provides a sense of belonging and shelter, is relevant to everyone, independent of individual, political or environmental conditions. Besides, adequate housing is a prerequisite for access to employment, education, and health and social services, making it an indispensable element of a well functioning society.

- **Housing is a main entry point for primary prevention to promote health and well-being**. Acknowledging the impact of housing as a social and environmental determinant of health offers various entry points for primary prevention programmes. Housing improvement interventions can address several health risks at the same time while producing co-benefits in other areas such as climate change mitigation. A closer integration of housing-related health issues into primary health care allows for the prevention and early mitigation of a large disease burden including respiratory, cardiovascular and mental health diseases.

- **The global relevance of healthy housing is increasing**. Global trends relating to urbanization, population growth and ageing societies will increase the importance of healthy housing even further. According to estimates by UN-Habitat,[3] about 40% of the world's population will need access to adequate housing by 2030. This translates into a demand for 96 000 new affordable and accessible housing units per day. In addition, a considerable proportion of the existing housing stock needs to be refurbished to become accessible for the increasing share of ageing populations. The construction and maintenance of the housing stock should therefore be among the top priorities on the development agenda of many countries.

- **Housing is becoming the most important spatial scale for health and well-being during emergencies**. The COVID-19 pandemic has highlighted the importance of people's homes during disaster and emergency situations. The pandemic has transformed homes into workplaces, school settings, health care facilities and the main place for leisure activities. While people depend on the resources and "capacities" of their home, and its quality and location during crisis situations, this is also a window of opportunity to alert policy-makers to the importance of housing for people's health and well-being. The rationale is that the more people can stay at home in times of need to be managed by public authorities. This is an incentive to invest in adequate housing and ensure its access for all, especially those living in vulnerable populations.

- **Housing is a main driver of climate change mitigation measures**. According to the Global Status Report 2017 of the United Nations Environment and International Energy Agency,[4] "buildings and construction together account for 36% of global final energy use and 39% of energy-related carbon dioxide ($CO_2$) emissions when upstream power generation is included." Many housing interventions to improve residents' health also have positive effects on the energy efficiency of buildings, e.g. the instalment of safe thermal insulation or efficient heating systems. In addition, the use of clean household energy for cooking, lighting and heating considerably reduces dwellers' exposure to deadly air pollutants like PM2.5 and carbon monoxide that are also key drivers of the climate crisis.

[3]   Housing: The challenge [website]. Nairobi: UN-Habitat (https://unhabitat.org/topic/housing, accessed 10 March 2021).
[4]   Towards a zero-emission, efficient, and resilient buildings and construction sector: *Global Status Report 2017*. Paris: United Nations Environment and International Energy Agency; 2017.

- **Progress on healthy housing can accelerate progress on the sustainable development agenda**. Due to their cross-cutting nature, initiatives promoting healthy housing not only contribute to good health and well-being (SDG 3) but can produce significant co-benefits in areas relevant to achieving affordable and clean energy (SDG 7), reduced inequality (SDG 10), sustainable cities and communities (SDG 11) and climate action (SDG 13). This makes housing a major entry point for primary prevention programmes to improve human health while benefiting sustainable development in general.

- **Collaboration with existing civil society, professional and nongovernmental organizations is critical**. Worldwide, a number of organizations and associations are acting as vocal advocates for the promotion of healthy, affordable and sustainable housing. These groups may focus on certain vulnerable populations like slum dwellers or people with physical impairments, convene the interests and ideas of home owners and professionals working in the housing and health sectors, or aim at driving inclusive societal change. Partnering with existing associations and organizations helps to create synergies in terms of fundraising and project implementation, and make use of standing networks to assist with securing buy-in from target groups.

- **The HHGL provide evidence-based guidance for multisectoral collaboration**. The guidelines highlight important health risks associated with poor housing conditions and provide practical recommendations at a global level on how to address them. Publication of the first WHO guidelines focusing on a non-health sector was welcomed by actors from multiple fields. This new opportunity for collaboration provides practitioners, researchers and policy-makers working within and outside the health sector with trusted, evidence-based guidance for the planning and implementation of projects promoting healthy housing.

Based on the discussion of key challenges and opportunities, the following priority actions to enable the successful implementation of the guidelines were derived:

- **Use the HHGL to initiate multisectoral dialogue and collaboration**. The need for solid, evidence-based information highlights the importance of collaboration between the housing and health sectors and can be the basis for justifying and initiating joint projects to improve housing conditions and health at the same time.

- **Embed healthy housing interventions into the sustainable development agenda**. This approach would build on existing global political commitment. With the potential to contribute to the achievement of at least five SDGs, healthy housing is an excellent entry point for projects that promote the sustainable development agenda.

- **Adapt global guidance to national and local priorities**. Every country, every community has its own priorities in terms of healthy housing. While for some the focus may be on upgrading informal settlements or building new housing stock to meet increasing demands, others may prioritize refurbishments to improve accessibility, thermal insulation or safety. Defining the priorities early on through inclusive dialogue with all relevant stakeholders, and mapping desired outcomes of healthy housing initiatives, will provide all project partners with a clear vision of the expected goals and required inputs.

- **Convene stakeholders from all relevant disciplines, sectors and government levels**. Healthy housing for all can only be realized if all relevant stakeholders work hand-in-hand. This includes representatives from the public and private health, housing, energy, environment and transport sectors, and actors working for the national and local government, academia and implementing agencies. A "systems-thinking" approach, viewing healthy housing in a comprehensive manner, will help to map all relevant stakeholders in a specific setting and ensure projects are designed in a multisectoral and collaborative fashion. While such an inclusive approach may be perceived as complex and time-consuming, it will largely increase the chances of successful project implementation and can be considered as investment in future initiatives, which will be more easily established once trust has been built among the stakeholders.

- **Create synergies with existing networks**. Drawing on the networks, experience and expertise of existing interest and professional groups will accelerate the planning and implementation process. Instead of starting from scratch, the sharing of resources and know-how will create a sense of co-ownership among all involved stakeholders, avoid known pitfalls and, as such, serve as a smooth entry point for fundraising and implementation. The involvement of publicly vocal and renowned interest groups may further help to put the issue of healthy housing higher on the political agenda by sparking public interest.

- **Use co-benefits as an argument for multisectoral collaboration**. When actors from different disciplines and sectors work together, they might not have the same interests and priorities. The gap can be bridged by highlighting aspects of relevance to the other sector: using co-benefits of healthy housing interventions, e.g. climate gains or upgrading of poorer neighbourhoods, is a compelling argument to engage the support of partners from other sectors in joint projects, and help them see their benefits from such a collaboration.

- **Make use of innovations**. Many grass-roots and nongovernmental organizations are already promoting healthy housing by developing new construction materials, testing various forms of cohabitation and tackling global health and climate challenges through innovative projects. Scaling up such pilot projects, collaborating with and learning from these organizations, will add a new perspective to approaching the issue of healthy housing and may help to find unexpected solutions to longstanding problems.

- **Integrate funding streams**. Highlighting the co-benefits possible through housing improvement, and linking healthy housing to the climate change, urban development and ageing societies agendas, will allow for integrating otherwise separate funding streams and leveraging of existing financial resources.

- **Highlight cost–benefits of healthy housing**. In particular, multifactorial housing improvement interventions are shown to have a positive cost–benefit ratio. Highlighting the positive return on investment when applying for funding for healthy housing projects may be the decisive factor in the process of allocating scarce (public) resources.

# Increasing the evidence base of healthy housing through research generation

## Chair: Michael Davies, Institute for Environmental Design and Engineering, University College London, United Kingdom

Besides making recommendations based on evidence from across the globe, the HHGL also identify gaps in the existing evidence on housing and health. These gaps prevented the HHGL, for example, from providing concrete cut-off values to determine unhealthy indoor temperatures. In addition, areas like the health impact of housing as a vector control mechanism or the consequences of energy poverty on health could not be covered adequately in the guidelines as there was not enough evidence available to establish a clear recommendation.

In general, experts noted that healthy housing, and in particular its co-benefits, needs to be studied applying a broader systems-thinking approach to account for its interlinkages with the immediate outdoor environment, urbanization, climate change and planetary health. Experts also identified the following topics for further research:

- land tenure and the adaptation of interventions to informal settlements;
- the effects of housing conditions on the mental health of residents;
- applying a gender lens to investigate whether interventions and conditions have differential effects;
- stronger consideration of new health risks linked to housing arising from climate change, e.g. flooding and excess indoor temperatures due to heatwaves, as well as potential mitigation measures, e.g. a reduction in carbon emissions;
- further insights into the interlinkages between healthy housing and healthy environments including public spaces, as well as the so-called green building that, "in its design, construction or operation, reduces or eliminates negative impacts, and can create positive impacts, on our climate and natural environment."[5]

In addition, meeting participants strongly emphasized the need to further develop **health economic analyses** in the area of housing and health. Taking a business case approach helps to shape the narrative of healthy housing when communicating with policy- and decision-makers, and stakeholders from the construction industry including developers and product manufacturers. Being able to make an economic argument for investment in healthy housing could be an important step to increase the buy-in of stakeholders allocating resources and putting healthy housing higher on the political agenda. To provide solid evidence on the cost–benefit ratio of housing interventions, currently applied methodologies require standardization and further development. The complex nature of such interventions and their outcomes relating to multiple sectors, poses a challenge for health economic assessments. Good practice from other complex intervention settings such as transport or agriculture could serve as a model to develop a standard methodology for healthy housing.

The true costs of poor housing are often not visible to decision-makers as they are not being attributed to their actual cause. Experts therefore called for stepping up efforts to uncover the hidden "costs of inaction" to provide healthy housing for all through **burden of disease assessments**. The Housing health and safety rating system[6] was cited as a good example of bringing together exposure to unsafe housing conditions and related injuries, which could serve as a model for other countries to assess the actual impact of poor housing on health and related costs.

In addition, **health impact assessments** were mentioned as crucial to demonstrate the added value of healthy housing interventions. Yet, the vast number of health risks associated with poor housing conditions and the multiple benefits of interventions on health and other outcomes, may complicate a rigorous application of these approaches and be unable to capture an intervention's positive effects on outcomes beyond health. As a possible way forward, it was suggested to develop a framework and a set of indicators based on the HHGL to assess the risks and impact of housing conditions and interventions in a comparable manner across countries.

5   What is green building? World Green Building Council [website], https://www.worldgbc.org/what-green-building
6   Housing health and safety rating system: Guidance for landlords and property related professionals. London: United Kingdom Department for Communities and Local Government; 2006 (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/9425/150940.pdf, accessed 16 March 2021).

Standardized, regularly conducted **national housing surveys** would enable international benchmarks of healthy housing and monitoring of progress over time. In addition, methodologies need to be developed to compare the cost of housing improvements to their benefits. An example of a national survey is the American Healthy Homes Survey II.[7] The United States Department of Housing and Urban Development has already conducted several such surveys, the last of which was completed in May 2019. The results will provide the first national estimates of lead in water, lead service lines, and formaldehyde in air, and will update previous estimates of lead in paint, dust and soil, and other contaminants and pesticide levels.

Finally, experts highlighted the importance of **better integrating research into the policy context**. On the one hand, the evidence on healthy housing is crucial to inform priority-setting and decision-making. On the other, national housing surveys and evaluations of large-scale government-supported projects would significantly contribute to data collection efforts and evidence generation. A systematic mapping of stakeholders and ongoing initiatives was identified as a useful tool to determine entry points for discussions on healthy housing projects and establish sustainable partnerships between research and policy.

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7 American Healthy Homes Survey II [website]. Washington: United States Department of Housing and Urban Development (https://www.hud.gov/program_offices/healthy_homes/ahhs_ii, accessed 21 March 2021).

# Experiences from the local, regional and national level in providing sustainable and healthy housing for all

## Chair: David Jacobs, Chief Scientist, National Center for Healthy Housing, United States of America

Depending on the governmental structures and processes at the national and subnational levels, collaboration between sectors varies greatly. This influences the possibilities of developing and implementing healthy housing policies. Meeting participants involved in policy formulation and implementation processes provided insights into their experiences and made suggestions on how to ensure effective implementation of the HHGL.

### Providing affordable housing for all – Experiences from the Philippines
**Presented by Dolores Manese, Non-Communicable Disease Program Coordinator, Manila Health Department**

Manila is a rapidly urbanizing city facing challenges such as overcrowding and multiple environmental hazards that threaten the health of its residents. Migrants from rural areas are often unable to afford housing in Manila and hence live on riverbanks, which are especially at risk of natural disasters. In the past, policy has focused on resettling people to purpose-built mid-rise housing. However, these buildings are often placed away from services such as health care or jobs, which has led to residents being denied access to social participation and is having an unintended negative effect on their health.

Dr Manese suggested the following **actions to increase the uptake of the HHGL by local governments** like Manila:

- develop concrete packages of interventions that can be adopted in the local context;
- raise awareness among health professionals about the links between housing and health and make them advocates for healthy housing in their communities;
- create a public sense of urgency around the issue of healthy housing, so that policy-makers can easily buy into the guidelines;
- promote the development of a set of national standards that serve as a basis for the development of context-specific, local monitoring indicators;
- leverage the guidelines through the WHO Country Office, which has trusted relationships with the local and national government;
- designate champions to help with advocacy and fundraising.

### From research to policy – Experiences from New Zealand
**Presented by Kimberley O'Sullivan, Research Fellow, Housing and Health Research Programme, University of Otago**

New Zealand is one example to illustrate how research and policy effectively work in parallel to have an impact on people's lives. In February 2019, the Government of New Zealand announced the **healthy homes standards**, which became law on 1 July 2019. These standards aim to improve the quality of rental homes and cover aspects of heating, insulation and ventilation; they also address issues of moisture ingress, drainage and draughts.[8]

The standards were driven by a group of academics working together for the past 20 years as part of the He Kāinga Oranga / Housing and Health Research Programme, University of Otago, led by Prof. Philippa Howden-Chapman who also chaired the HHGL guideline development group.

The different perspectives often held by researchers and policy-makers can create challenges for collaboration and achieving translation of research to policy: while research tends to take a problem-driven approach, policy focuses rather on the expected outcomes.

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[8] Healthy homes standards. Wellington: New Zealand Ministry of Housing and Urban Development [website], https://www.hud.govt.nz/residential-housing/healthy-rental-homes/healthy-homes-standards/, accessed 21 March 2021.

Developing trusted relationships and maintaining a dialogue with policy-makers while developing the research agenda on healthy housing was important; partly this was helped by the relatively small size of the country. A high level of community engagement, particularly with marginalized groups who might be most affected by poor housing was also important for the research group to preserve. Civil society organizations facilitated the participation of vulnerable groups in research studies, a study sample that is otherwise hard to reach.

Proactive media engagement also facilitated successful community outreach, and public and political support for advancing healthy housing. For example, the results of a randomized controlled trial studying the health impacts of insulation was shared widely with the media to place the issue of healthy housing higher on the public agenda. This generated public interest and urged policy-makers to take action. Media engagement was consistently included as part of research dissemination. The initiative also benefited from a window of opportunity related to a recent change in government, which led to renewed interest in general well-being and evidence-based policy-making. This change has accelerated the researchers' long-term efforts to drive the housing and health agenda. Collaborating with WHO on the HHGL was also noted as beneficial for policy advancement as the weight of international recommendations provide a solid evidence-base and international recognition of the topic.

Finally, linking healthy housing to the urban development agenda helped to raise recognition of the topic at policy level and generated a sense of shared ownership.

## Making research relevant for policy – Experiences from the USA
**Presented by David Jacobs, Chief Scientist, National Center for Healthy Housing**

One of the main lessons learnt from the United States context was that building a coalition to inform policy was essential. It was important to connect government stakeholders with academic experts and those affected by poor housing conditions. Giving a voice to the community through direct interactions with policy-makers ensured they would focus on the most relevant issues and create a sense of accountability to provide solutions, including financial ones. Similarly, practitioners from all relevant sectors need to be involved in the policy dialogue as they can offer innovative solutions and will have to implement policies and regulations.

As the housing market does not incentivize health investments, it was vital to clearly articulate the implications of not having a healthy home to create policy action. The use of burden of disease data can help provide evidence to guide policy discussions on housing and health. Like in the New Zealand example, the different entry points in the United States for action by research and policy pose a challenge: **while research focuses on what we do not know, policy-makers want to know what you can do**. It is vital for evidence-based policy-making to bridge this gap. Researchers need to learn to talk to a policy audience and translate the research into actionable recommendations. They need to press for legislation and guidance; make sure the solutions work. Dr Jacobs proposed the following actions for academia to increase the uptake of evidence in policy-making:

- Illustrate the costs of inaction, e.g. through burden of disease data.
- Conduct more intervention studies so that policy-makers can promote concrete action. Although intervention studies are harder to complete than epidemiological studies, they will provide insights into what works.
- Provide costs and benefits of interventions and inaction.
- Develop fact sheets and policy briefs summarizing key information on housing and health issues so that policy-makers can easily be informed about the most relevant evidence.
- Focus on specific health outcomes and interventions as the breadth of issues related to housing and health can be overwhelming.

In general, the experts agreed on the importance of an ongoing dialogue between research and policy to ensure policies are informed by the latest and best available evidence. This requires academics to engage proactively in policy-making spheres and processes at the local, national and international levels.

# Tools to facilitate the implementation of housing policies that promote health

## Chair: David Jacobs, Chief Scientist, National Center for Healthy Housing, USA

### WHO Healthy Housing Implementation Toolkit

To support the implementation of the HHGL in countries, WHO is developing a modular implementation toolkit to help translate the global evidence-based recommendations into context-specific action at the policy and programme level.

One key element of the toolkit is a WHO repository of policies, regulations and legislation promoting healthy housing[9] containing examples from all six WHO regions. The repository serves as an aid for policy-makers and stakeholders seeking to plan, formulate and implement similar policies to promote healthy and safe housing for all. It is accompanied by a report summarizing the main findings of the comprehensive policy review and analysing the main barriers and enablers for their implementation at the local or national level. The report further provides a set of eight best practice principles for the effective formulation and implementation of housing policies with the potential to promote health. Both documents are available on the WHO healthy housing website.[10] The repository is dynamic and will be expanded as implementation of the HHGL proceeds.

During the consultation, experts discussed further elements of the toolkit according to two categories: (i) existing tools that could be adapted or directly included, and (ii) tools that need to be newly developed.

### Existing tools

Examples of tools deemed useful for inclusion in and/or adaptation for the HHGL toolkit are:

- **Tools supporting the planning and construction process such as SHERPA**:[11] a self-evaluation tool for project managers, communities, and other stakeholders involved in the planning, design, construction and assessment of housing projects. The tool allows users to identify and analyse the strengths and weaknesses of new, current, and past housing projects, scoring them in view of social, economic, environmental and cultural sustainability. SHERPA was developed in partnership with members of the Global Network of Sustainable Housing.

- **Tools to conduct risk assessments**

  o **Control of Substances Hazardous to Health (COSHH) assessment**[12] to identify hazards and assess risks is a step-by-step guide that provides advice and guidance to employers on assessing their activities under the COSHH Regulations 2002.
  o **Comparative Risk Assessment Framework and Tools (CRAFT)**[13] is a decision-making process relying on the use of probabilities to capture and understand the relationships among objectives, actions, and consequences. Originally designed for natural resource managers, CRAFT offers a simplified approach to: identify and clarify objectives; gain a feasible set of alternatives; match real-life problems to existing models and tools; and calculate the risks and trade-offs associated with different management scenarios.

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9   Healthy housing policy repository [online database] Geneva: World Health Organization; 2021 (https://www.who.int/teams/environment-climate-change-and-health/air-quality-and-health/housing/indicators-guidance-and-tools, accessed 15 March 2021).

10  Policies, regulations and legislation promoting healthy housing: a review. Geneva: World Health Organization; 2021 (https://www.who.int/publications/i/item/9789240011298, accessed 15 March 2021).

11  SHERPA for sustainable housing projects [website] (https://www.sherpa4housing.org/, accessed 15 March 2021).

12  A step by step guide to COSHH assessment [e-book]. London: United Kingdom Health and Safety Executive: 2004 (https://www.hse.gov.uk/pubns/books/hsg97.htm, accessed 15 March 2021).

13  United States Department of Agriculture. Comparative Risk Assessment Framework and Tools [website] (https://craft.forestthreats.org/index.htm).

- **Logic models, theory of change and health impact assessment**. There are several templates available to develop logic models and theories of change that can help to structure the planning of an intervention or programme. Such analytic frameworks describe the causal pathways of an intervention to its outcomes and ensure that no intended effects or implementation steps are being overlooked. The application of logic models further supports a systems-thinking approach as it depicts the relationships between variables and puts the intervention in a broader systems context.[14]

- **Draw on existing model processes and implementation toolkits**

  o Applying existing model processes like the **WHO Urban Health Initiative**[15] – which aims to strengthen health evidence, competencies and communications to address urban environment issues affecting population health – to the context of housing and health could accelerate planning and implementation processes by building on the experience of previous pilot projects.

  o The **WHO Clean Household Energy Solutions Toolkit (CHEST)**[16] provides tools for countries and programmes to create or evaluate policies that expand clean household energy access and use. The toolkit includes resources to conduct stakeholder mapping; accomplish a needs assessment and situation analysis; identify technological and policy intervention options; set standards; perform monitoring and evaluation; engage the health community; and improve communications and raise awareness.

## New tools

Group discussions led to the identification of new tools that should be developed for HHGL implementation to ensure the recommendations can be translated into context-specific policy and programme action.

- **Healthy housing checklist**. This is a scoring grid to evaluate housing based on its impact on health. Possible assessment criteria could include living space per person in square metres, the existence of toxic building materials, dampness and mould, availability of safe insulation, indoor temperatures, affordability and tenure security as well as access to public transport. Examples that could serve as a template are the United Kingdom Housing Health and Safety Rating System,[17] the United States National Healthy Housing Standard,[18] the Healthy Housing Inspection Manual,[19] the French Domiscore[20] (in development) and the pilot New Zealand Healthy Housing Index.[21] Besides the assessment criteria, timing of evaluation and evaluator, the point at which housing conditions are considered poor would need to be defined, and who would be accountable for funding and implementing respective improvement interventions.

- **Glossary**. A resource explaining specific housing and health terminology could facilitate multisectoral collaboration and help to establish a common policy language for both areas.

- **Health and housing chart**. An overview explaining the associations between housing conditions and health outcomes could also outline potential interventions to avoid health risks. This chart is currently being developed by ARCHIVE Global with input from several experts and WHO. It will be available on the website of the Health through Housing Coalition by July 2021.

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[14] For more information see for example Rehfuess EA et al. Towards a taxonomy of logic models in systematic reviews and health technology assessments: A priori, staged and iterative approaches. *Res Synths Methods.* 2018:9(1):13–24.

[15] Implementing the Urban Health Initiative. In: WHO/Activities [website]. Geneva: World Health Organization; 2021 (www.who.int/activities/implementing-the-urban-health-initiative, accessed 15 March 2021).

[16] Clean Household Energy Solutions Toolkit (CHEST). In: WHO/Air pollution [website]. Geneva: World Health Organization; 2020 (https://www.who.int/airpollution/household/chest/en/#:~:text=CHEST%20is%20an%20analytical%20framework,%2C%20programmatic%2C%20or%20national%20level, accessed 15 March 2021).

[17] Housing health and safety rating system: Guidance for landlords and property related professionals. London: United Kingdom Department for Communities and Local Government; 2006 (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/9425/150940.pdf, accessed 16 March 2021).

[18] United States National Healthy Housing Standard. Washington: United States National Center for Healthy Housing; 2014 (https://nchh.org/resource-library/national-healthy-housing-standard.pdf, accessed 16 March 2021).

[19] Centers for Disease Control and Prevention and United States Department of Housing and Urban Development. Healthy housing inspection manual. Atlanta: United States Department of Health and Human Services; 2008 (https://www.cdc.gov/nceh/publications/books/inspectionmanual/Healthy_Housing_Inspection_Manual.pdf, accessed 16 March 2021).

[20] The Domiscore, characterization of a habitat according to its impact on health [website]. Paris: High Council for Public Health (https://www.hcsp.fr/explore.cgi/avisrapportsdomaine?clefr=802, accessed 16 March 2021).

[21] The Healthy Housing Index [online database]. Wellington: University of Otago (http://www.healthyhousing.org.nz/research/past-research/healthy-housing-index/#:~:text=A%20Healthy%20Housing%20Index%20is,to%20housing%20factor(s), accessed 16 March 2021).

- **Stakeholder mapping tool**. The structures and responsibilities of stakeholders in housing and health vary greatly depending on the national or local context. To ensure all relevant stakeholders are involved in discussions about policy and programme action, a comprehensive overview of actors, their interests, authority and relations to other stakeholders is required.

- **Cost–benefit tool**. A tool calculating the costs and benefits of housing improvement interventions can help to showcase the true monetary value of investments and highlight the co-benefits of multifactorial interventions. For example, the Benefits of Action to Reduce Household Air Pollution (BAR-HAP) [22] is a strategic tool for medium-term planning (15 years) that addresses cooking-related household air pollution. It can be used to generate forecasts of financial resource needs at the national or subnational level; and compare those resource needs with the value of the net economic benefits from clean cooking transition interventions proposed. The WHO BAR-HAP could serve as a template for a similar tool for healthy housing.

- **Case studies of multifactorial interventions**. A database of case studies describing multifactorial interventions, actors involved, costs and benefits and lessons learnt could promote knowledge exchange among stakeholders responsible for healthy housing programmes, and inspire the design of similar interventions. Concrete examples from the field can provide valuable insights into context-specific implementation barriers and enablers, with their analysis leading to more general conclusions about the effective design and realization of healthy housing interventions at different scales. WHO plans to develop such a database through a public call for examples in collaboration with the WHO Collaborating Centre at the University at Buffalo, New York, USA.

- **Burden of disease assessment tools**. Quantifying the burden of disease of poor housing conditions is crucial to show the costs of inaction and increase the visibility of housing and health issues among policy-makers, the media and the public. Assessing the burden of disease from inadequate housing is difficult due to the topic's complex nature. WHO is currently developing a burden of disease methodology and manual specifically geared to healthy housing, together with the WHO Collaborating Centre at the University of Otago in Dunedin, New Zealand. It will first be tested in the WHO Western Pacific Region and launched through a capacity-building workshop with regional stakeholders.

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22  Benefits of Action to Reduce Household Air Pollution Tool [online database[. Geneva: World Health Organization (https://www.who.int/airpollution/household/interventions/chest-module3-BAR-HAP-tool/en/, accessed 16 March 2021).

# Healthy housing contributes to the achievement of the SDGs on:

**3 GOOD HEALTH AND WELL-BEING** — Good health and well-being

**7 AFFORDABLE AND CLEAN ENERGY** — Affordable and clean energy

**10 REDUCED INEQUALITIES** — Reduced inequality

**11 SUSTAINABLE CITIES AND COMMUNITIES** — Sustainable cities and communities

**13 CLIMATE ACTION** — Climate action

# Strategic communication about healthy housing

The multisectoral nature of healthy housing requires strategic communication to ensure all target audiences have the same understanding of what healthy housing means and why it is so important. Key messages about healthy housing for policy-makers, the public and practitioners are:

- **Housing is a public health issue and the costs of inaction are high**. Poor housing conditions cause a significant burden of noncommunicable and infectious diseases ranging from cardiovascular to respiratory disease to impaired mental health. In addition, housing is a key determinant of people's well-being.

- **Housing is the most important setting in times of emergencies and disasters**. The COVID-19 pandemic has highlighted the need for healthy, affordable and safe housing more than ever as people are required to stay at home for large parts of their days to work, learn, live and sleep. Especially in such times of crisis, it is of utmost importance that housing protects them from health risks instead of exposing them to further risks caused by excess indoor temperature, overcrowding, toxic building materials or alike.

- **People suffer from poor housing inequitably**. Vulnerable populations like older people, children, people with disabilities, and migrants and refugees are especially exposed to health risks from poor housing. Apart from costs to the health care system, poor housing conditions also cause higher absenteeism at school and work, which leads to increased poverty and lower social participation. Hence, poor housing is a main driver for health, social and environmental inequalities.

- **There are effective solutions**. Individual and multifactorial housing improvement interventions exist that tackle one or several health issues in a cost-effective manner. Available instruments range from subsidies to construction programmes, technical capacity-building and standard-setting. These tools can be applied according to the desired outcome and context-specific conditions.

- **Healthy housing is of universal concern**. Everyone requires a healthy, safe and affordable home. While there may be different concerns depending on the geographical and economic context of a country, poor housing conditions can be found almost everywhere. Due to the large amount of time people spend in their homes, this topic is directly relevant to the public – making the engagement of the general population even more important.

- **Action for healthy housing requires the involvement of policy, practice, research and the public**. Effective housing solutions can only be implemented in collaboration with all relevant public and private stakeholders including home owners, practitioners and governments.

- **Healthy housing produces co-benefits**. Many housing interventions are not only beneficial for health but also for the environment, the economy, and society at large. For example, safe insulation improves indoor temperatures, increases the energy efficiency of buildings, creates jobs, and saves on heating and cooling costs that can be invested in other areas. Healthy housing contributes to the achievement of the SDGs on good health and well-being (SDG 3), affordable and clean energy (SDG 7), reduced inequality (SDG 10), sustainable cities and communities (SDG 11) and climate action (SDG 13). As an entry point for primary prevention and a social and environmental determinant of health, healthy housing also has downstream co-benefits for health systems by reducing burdens on treatment of patients and the health workforce.

- **Housing is becoming more important in view of urbanization, demographic and climate changes**. By 2030, more than three billion people will require healthy and affordable housing (UN-Habitat, 2020);[23] by 2050 the world's population aged 60 and above is expected to double; and climate change is causing more natural disasters forcing people to leave their homes. These challenges need to be met by innovative and sustainable housing solutions, including the building of new housing stock and refurbishing existing buildings. Integrating health concerns into both short- and long-term disaster recovery will become increasingly important.

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[23] Housing: The challenge [website]. Nairobi: UN-Habitat (https://unhabitat.org/topic/housing, accessed 10 March 2021).

Research and action on housing and health is complex, multidisciplinary and requires long-term investments. There are several knowledge translation tools including policy, issue and evidence briefs, policy dialogues, infographics and fact sheets that support the effective communication of evidence on healthy housing to policy-makers and practice stakeholders. For evidence-informed policy-making that places health at the core of housing policies, information needs to be presented in an understandable, relevant, actionable, accessible and credible manner. Together with its collaborating centres, WHO will develop communication materials targeted to different stakeholders to ensure an effective translation of the evidence on housing and health into policy and practice. Alongside these tools, effective and long-term engagement with communities, stakeholders and policy-makers can serve as a solid foundation for iteratively redefining research questions and priorities.

To be effective, communication efforts need to be tailored and speak to their respective target audience. In the case of housing and health, this involves a large range of public and private actors from the health, housing, finance, energy and urban planning sectors, their interest groups and all levels of the government. Collaborating with "champions" and opinion leaders from the target group can be highly effective as it increases the communication's credibility and introduces role models that can act as inspiration and sources of advice.

Strategic communication also includes the dissemination of information through channels used by the target audience. This comprises interpersonal relationships, the publication of peer-reviewed articles in academic journals, and active engagement with the media, civil society and professional interest groups through websites, articles, presentations, social media and targeted outreach.

When addressing the target audience, it is further essential to use terminology with which they are familiar and explain processes, terms and conventions of other actors that might not be the same in their daily routine. Equally important is a proactive approach to strategic communication, one that does not wait for the audience to approach the communicator. Finally, the reduction of language barriers is vital. This includes not only the avoidance of jargon but also the translation of communication materials, normative documents and presentations into multiple languages to ensure people can comfortably access and understand them.

# Promoting sustainable change through capacity-building

## Chair: Yonette Thomas, USA

Besides the formulation and enforcement of policy and regulations, the improvement of housing conditions also requires capacity-building among policy-makers, housing practitioners and health professionals. If professionals from all groups are aware of the links between housing and health as well as the available solutions to address poor housing conditions causing ill health, implementation of the HHGL can be effective in the long run.

Experts suggested approaching capacity-building development from a needs-based perspective, i.e. which expertise does a general practitioner need to recognize disease caused by poor housing conditions; which capabilities does an urban planner need to design healthy environments, etc.?

The following ideas were discussed to deliver capacity-building for the different actors:

- **University courses**. To promote sustainable change and reciprocal understanding, it is important to train students early on in taking a multidisciplinary and holistic perspective to address the problems in their respective fields. Raising awareness on the links between housing and health among medical students as well students who will work in the housing sector is hence crucial. Field trips, lectures by professionals from other disciplines and cross-disciplinary group activities will facilitate a broad problem-solving perspective.[24] The exchange at university and training colleges will further foster interdisciplinary partnership building at an early stage, which can positively impact professional relationships and networks after graduation.

- Health in All Policies[25] (HiAP) training for policy-makers. Multisectoral collaboration can be challenging due to varying political interests and measures of success. The HiAP approach aims to increase understanding of the importance of health as a key element in all policies among policy-makers of all sectors and governmental levels. In the context of healthy housing, HiAP training for policy-makers from the housing, health, energy, finance and urban planning sectors could support the multisectoral collaboration needed for the development and implementation of policies promoting health through housing.

- Professional development for practitioners in the housing sector. Post-graduate short courses, certificate programmes and seminars contribute to capacity-building among professionals. As these courses are directed to stakeholders with at least some work experience, they should be tailored to the needs and working realities of attendees. Multidisciplinary approaches to housing and exchange of experiences will support mutual understanding and the creation of new professional networks. Courses could, for example, focus on how building materials, ventilation, proximity to streets with heavy traffic or standing water and energy efficiency can influence residents' health and which "healthy" solutions are available.

- Integration of environmental health into primary health care. General practitioners play a vital role in recognizing if a patient is suffering from a disease caused by poor housing conditions. This expertise requires training in environmental health. To address the disease-causing conditions, several countries have developed a system of environmental home inspection services[26] that can be prescribed by a medical doctor and are covered by health insurance. A better integration of environmental health into primary health care is indispensable to reduce the disease burden caused by inadequate housing.[27]

- Capacity-building through interdisciplinary exchange. Informal exchange among professionals working in different disciplines, shared interests and collaboration on projects can lead to new problem-solving approaches and ensure that health is being considered when developing housing programmes. Knowledge-exchange platforms like the Health through Housing Coalition[28] facilitate interdisciplinary exchange and partnership-building and provide a repository for tools, guidance and case studies from both areas of work, which can promote formal collaboration.

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[24] WHO is currently developing a resource guide on the integration of the social determinants of health into health workforce training, which includes a chapter on housing and health. The guide will be available on WHO's website.

[25] Health in all policies: training manual. Geneva: World Health Organization; 2015 (https://www.who.int/social_determinants/publications/health-policies-manual/en/, accessed 16 March 2021).

[26] For more information, see Charpin D et al. Environmental home inspection services in Western Europe. *Environ Health Prev Med*. 2011;16(2):73–79 (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3047667/, accessed 16 March 2021).

[27] WHO is currently developing a capacity-building package on air pollution for health care professionals. The course will be available through the WHO Academy.

[28] Health through Housing Coalition [website]. New York: ARCHIVE Global (https://healththroughhousing.org/, accessed 16 March 2021).
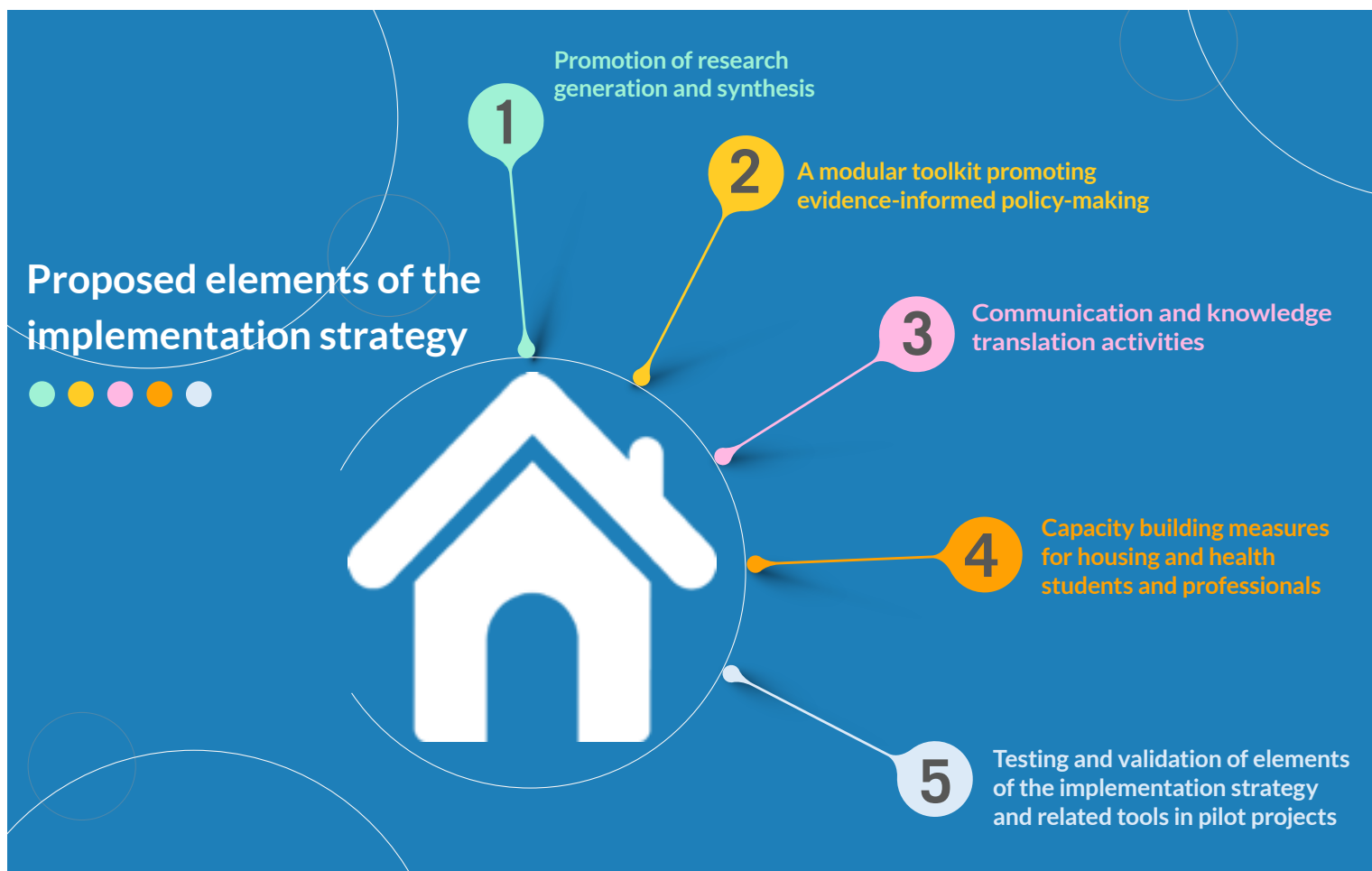
# Proposed elements of the implementation strategy

Based on the discussions during the meeting and a previously developed, peer-reviewed draft of the implementation strategy, the expert group proposed the following elements for the healthy housing implementation strategy aimed at translating the evidence-based recommendations of the HHGL into national or subnational policy and practice:

- the promotion of research generation and synthesis;
- a modular toolkit promoting evidence-informed policy-making;
- communication and knowledge translation activities;
- capacity-building measures for housing and health students and professionals; and
- the testing and validation of elements of the implementation strategy and related tools in pilot projects.

These elements are expected to address the current challenges to promote healthy housing identified during the meeting. The realization of each of the strategy's components will be enabled by the previously identified priority actions to promote healthy housing. Countries will be able to access freely the tools, training materials, research and communication resources developed for the implementation of the HHGL through WHO's website. In addition, WHO will provide technical assistance in translating the guidelines into policy and practice upon Member States' request. WHO as well as its partners will engage in outreach and advocacy activities to promote the HHGL and their implementation and convene multisectoral dialogues and collaborations to advance the healthy housing agenda globally.



**Proposed elements of the implementation strategy**

1. Promotion of research generation and synthesis
2. A modular toolkit promoting evidence-informed policy-making
3. Communication and knowledge translation activities
4. Capacity building measures for housing and health students and professionals
5. Testing and validation of elements of the implementation strategy and related tools in pilot projects

# Next steps for the implementation of the WHO Housing and health guidelines

The meeting closed with a discussion of the next steps to advance the implementation of the HHGL at national and subnational levels. The following four main activities will be pursued:

- **Guideline expansion**. Several areas of great global health interest are currently not covered by the HHGL, either due to a lack of evidence or priority-setting applied by the guideline development group: (i) housing as a vector control mechanism, (ii) energy poverty, (iii) the role of housing location and neighbourhood, (iv) safe construction and interior finishing materials, and (v) social and affordable housing to address tenure security and homelessness. In the regular updating process of the HHGL, the evidence for these areas will be reviewed and – if possible – new chapters and recommendations added.

- **Guideline adaptation**. While the HHGL focus on formal housing, more than a billion people are living in slums and informal settlements.[29] To provide safe and healthy housing for all, the HHGL need to be adapted to the context of informal housing. This will be done through an expert consultation reviewing the recommendations and refocusing them on the conditions of informal housing.[30] Similarly, the contexts of emergency and post-disaster housing, including shelters and camps for refugees and internally displaced people, will be considered in future adaptation processes.

- **Moving from discussions to action**. To advance the agreed-upon implementation strategy, partnerships need to be formalized and funds raised. This includes the (re-) designation of WHO collaborating centres that will support the implementation through the development of tools, capacity-building and knowledge-translation materials. Further, collaborations between meeting participants were discussed and will support the implementation of the HHGL through joint projects in the spirit of healthy housing. WHO will initiate the development of key elements of the toolkit with selected partners and develop communications materials. WHO will also start a dialogue with interested countries to assess their needs in terms of housing and health, provide technical support to implement the HHGL and leverage collaborations with internal and external partners to bring healthy housing to their agenda and create synergies for the implementation.

- **Integrating the HHGL implementation into pilot projects**. Small-scale pilot projects testing the tools, capacity-building materials and knowledge-translation products will help to refine them and build proof-of-concept of the implementation strategy; this can be used for resource mobilization efforts and will demonstrate the added value of investing in healthy housing.

In collaboration with its partners, WHO will support Member States to adapt the HHGL to their contexts and priorities to provide safe and healthy housing for all.

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[29] Sustainable Development Goals Overview. Make cities and human settlements inclusive, safe, resilient and sustainable [website]. Washington: United Nations Department of Economic and Social Affairs Statistics Division (https://unstats.un.org/sdgs/report/2019/goal-11/#:~:text=The%20absolute%20number%20of%20people,Southern%20Asia%20(227%20million), accessed 16 March 2021).

[30] WHO is currently developing a policy brief on integrated slum upgrading approaches, which will serve as a background document for the adaptation.

# Annex: List of participants

## Expert participants

Professor Michael Davies (Co-chair), Institute for Environmental Design and Engineering, University College London, United Kingdom

Assistant Professor Emmanuel Frimpong, Department of Urban and Regional Planning, University of Buffalo, USA

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