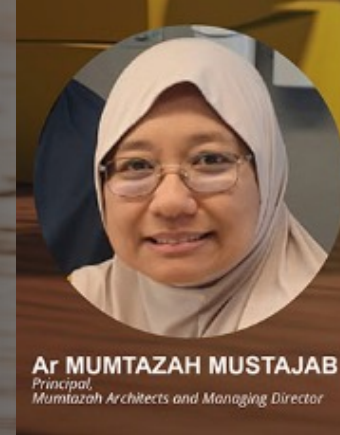




Our HOMEs

Our castle, our sanctuary
Comfort, safe, secure, blessed.....

Are our homes
resilient to
harm and
able to sustain
happiness?



GOVERNANCE
AND POLICY-
DESIGN OF
HOMES: FROM
THE ASPECTS
OF HEALTH

HAPPINESS IS A
FRAME OF
MIND: MENTAL
HEALTH IN
HOMES

HAPPINESS IS IN THE
DETAILS: MICRO
DESIGN OF HOMES
WITH CARE

Lessons learned from these exercises will be part of the guidelines for the homeowner, the designers and the policymakers in making the home – healthy, safe and happy again.

GOVERNANCE AND POLICY-DESIGN OF HOMES: FROM THE ASPECTS OF HEALTH



Presented by

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and

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Governance and Policy on Healthy Homes-NMN-20May2023

Abstract

UN-Habitat places affordability, sustainability and inclusiveness of the housing sector at the core of the urbanisation process to ensure access to adequate housing for all. However, the provision of just any housing will not remove harm from within nor its immediate surroundings and environment. Thus, World Health Organisation (WHO), under Housing and Health guidelines, bring together evidence to provide practical recommendations to reduce the health burden due to unsafe and substandard housing. Hence this presentation, as an introduction to subsequent speakers, focus on Malaysia and the Malaysian available governance and policies on the planning and design of homes to identify the gap in its provision for health and find ways to improve the condition to be resilient to current and future health issues. With the intention of understanding our very own available legislative parameter with its opportunities and constraints in the health provision particularly, this presentation put together available data from the various ministries (Housing and Works), CIDB and other related sectors to the fore for us to contemplate and work forward towards achieving optimum designs that care for the rakyat (people of the nation).

Keywords: Home, Housing, Health, Governance, Policy

Outline

- Introduction
- WHO, UN-Habitat
- Malaysian existing law and legislation on Health in homes
 - KPKT –UBBL, local by-laws
 - Affordable housing – CIDB, PR1MA, PPA1M
- Research on health aspects of homes
- Summary and Recommendation
- References



Introduction

Shelter over our heads as a home, although a basic humanitarian need for all, is not something that everyone can take for granted as default haves.

The state of the homes varies within cultures, inter cultures, geography and economy. From the aspects of health, the direct and indirect impact transcends beyond homes and engulfs neighbourhoods, regions, nations and the globe. Humans are social beings and, therefore, mobile.

Home is normally the base station to come back to after work, travel and meet others for whatever functions and needs, with or without companions or family members.

Whether the 'home' is permanent or temporary or even in transit, it must be the place where safety and health, i.e. overall well-being, are sustained and constantly nurtured/refreshed.

Introduction

- Despite the assurance of the roofs over our heads, the next question would be, is our home safe? Is our health protected?, ***‘Are our homes resilient to harm and able to sustain happiness?’***
- Hence, the aim of this research **is to explore available and existing laws and policies in Malaysia that govern and regulate the design of homes from the aspects of health to ensure future policies and governance of homes in Malaysia include designs that are healthy and resilient to future health hazards.**





Introduction

To achieve the aim, the objectives include

- (1) Defining health in homes from UN-Habitat and WHO as an international benchmark for healthy homes ;
- (2) Identifying health factors from existing Malaysian policies and governance for home designs; and
- (3) Analyses of findings and recommendations made by researchers from home and abroad on the criteria for a healthy home.

A qualitative method is adopted for this research. Secondary data is sourced using relevant keywords on health in designing homes for both government policy publications and scholarly articles.

Introduction

There are many definitions and criteria made on what makes a healthy homes.

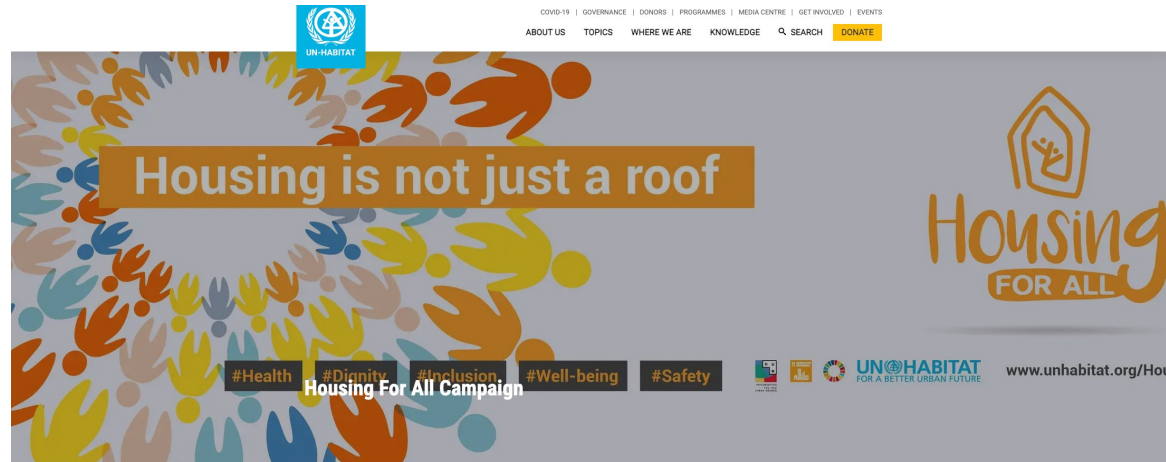
- The UK Green Building Council, Health and Wellbeing in Homes in Lloyd, A (2018), reviews the history of healthy homes from works of 1929. Richard Neutra built the Lovell Health House with the key elements of lots of sunlight and fresh air and believed that his houses could cure neuroses, that houses could affect the occupants' psyches. For healthy homes UKGNC cited includes **Light, Internal Air Quality, Thermal comfort, Moisture, Noise** and Design to be in balance.
- The National Centre for Healthy Housing (NCHH) (2023), Columbia, USA list healthy homes as 10 principles that includes the following:
 - **Dry, Clean, Pest Free, Ventilated, Safe, Contaminant Free, Maintained, Thermally Controlled, Accessible and Affordable**
- For Malaysia, let's dive into the existing policies and actions before more recommendations can be made to make the roof over our head as a place of happiness.



International housing reference

UN-HABITAT AND WHO

UN-HABITAT



- UN-HABITAT states that home or 'housing' is more than just a roof; it's the opportunity for better lives and a better future.
- The meaning of home is different in different communities. To the UN-Habitat, access to housing is a precondition for access to employment, education, health, and social services.
- In order to address the current housing challenges, according to UN-Habitat, all levels of government should put housing at the centre of their respective urban policies and by placing people and human rights at the forefront of urban sustainable development.
- 'Housing for All' campaign covers **health, dignity, Inclusion, Well-being and Safety**

UN-HABITAT

Related Sustainable Development Goals



The target for 'Housing for All' includes the 10 Sustainable Development Goals (SDGs), including health and well-being. Access to housing means access to holistic better living. UN-Habitat needs to work with partners and donors to help achieve its goals collaboratively.

Affordability, Accessibility



UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE
HOUSING EUROPE

#Housing2030

Effective policies for affordable housing in the UNECE region



WHO – WORLD HEALTH ORGANISATION

- The *WHO Housing and health guidelines* (HHGL) provide evidence-based recommendations for healthy housing conditions and interventions.
- According to WHO, 'Healthy housing is shelter that supports a state of complete physical, mental and social well-being. Healthy housing provides a feeling of *home*, including a sense of belonging, security and privacy.'

<https://www.who.int/publications/i/item/9789241550376>



WHO Housing and health guidelines (HHGL)

- Healthy housing also refers to the physical structure of the dwelling and the extent to which it enables physical health, including by being structurally sound, providing shelter from the elements and from excess moisture, and facilitating comfortable temperatures, adequate sanitation and illumination, sufficient space, safe fuel or connection to electricity, and protection from pollutants, injury hazards, mould and pests.
- In tangent to UN-Habitat, in order to gauge whether the housing is healthy also depends on factors outside its walls, i.e. depends on the *local community*, which enables social interactions that support health and well-being, and the *immediate housing environment*, and the extent to which this provides access to services, green space, and active and public transport options, as well as protection from waste, pollution and the effects of disaster, whether natural or man-made.

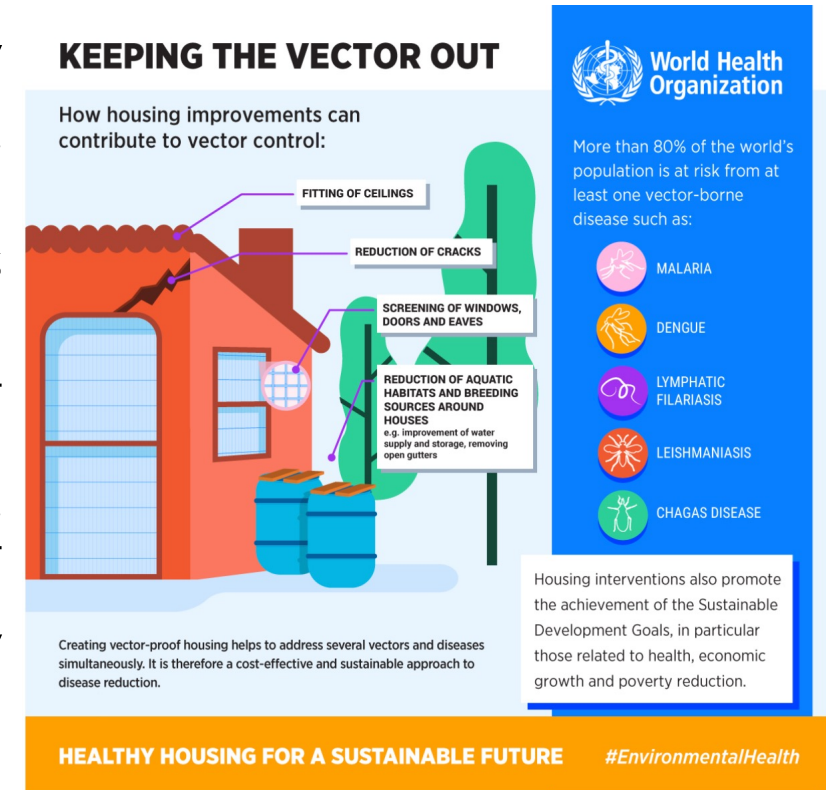


WHO Housing and health guidelines (HHGL)

- According to WHO, Exposure and health risks in the home environment are critically important because of the duration people spend at home.
- Research has noted that in high-income countries, around 70% of people's time is spent inside their homes. In some places, including where unemployment levels are higher and where more people are employed in home-based industries, this percentage is even higher.
- Children, the elderly, and those with a disability or chronic illness are likely to spend most of their time at home and are, therefore, more exposed to health risks associated with housing, such as toxins in lead paint.
- Poor housing can expose people to several health risks, such as structurally deficient housing due to poor construction or maintenance, which can increase the likelihood that people slip or fall, increasing the risk of injury.

WHO Housing and health guidelines (HHGL)

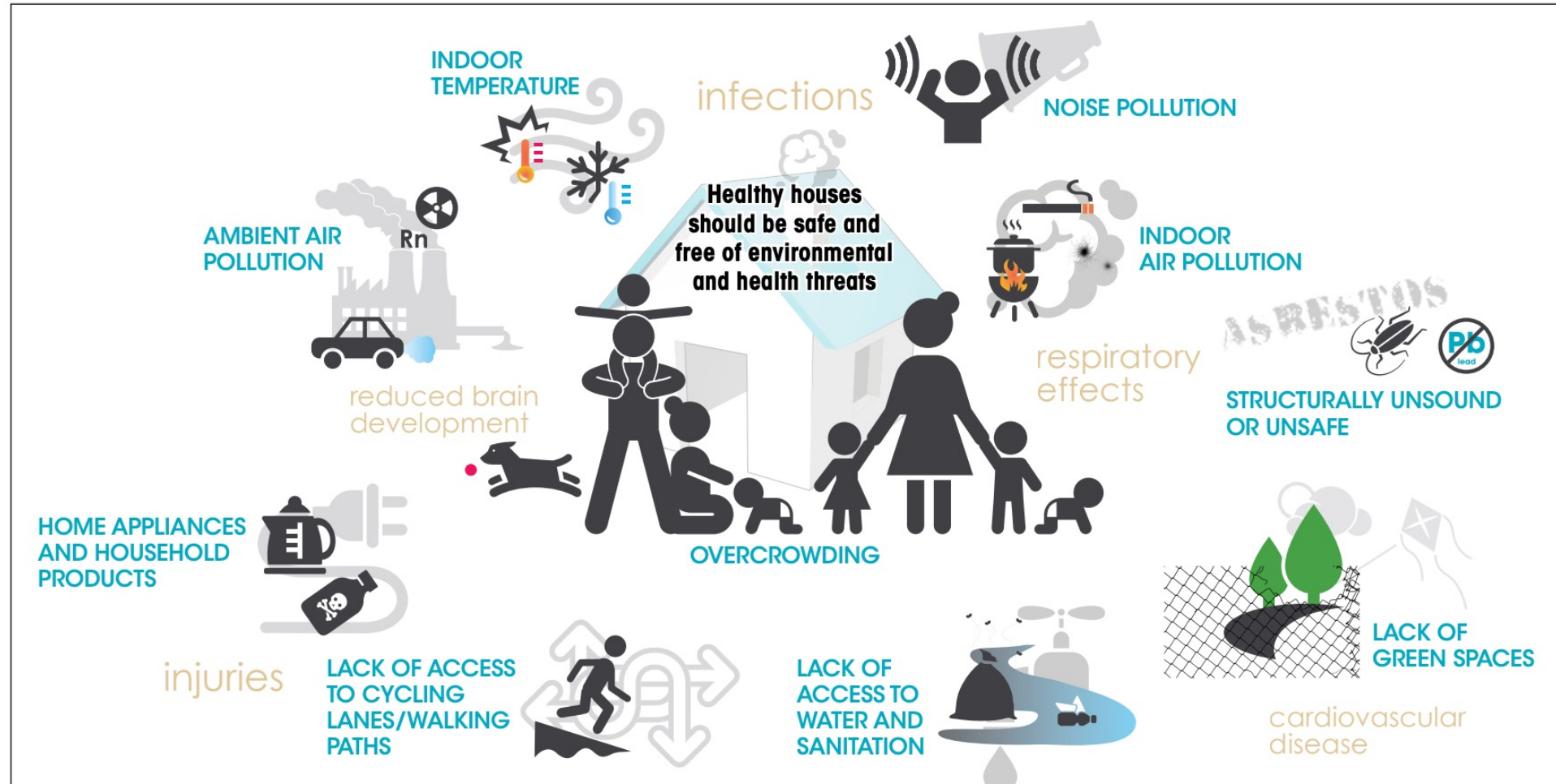
- These HHGL add to existing WHO guidelines by providing evidence-based recommendations on healthy housing conditions and interventions that are not covered by the other guidelines.
- Target groups for the guidelines are policy-makers who are responsible for housing-related policies and regulations, enforcement measures, and initiating intersectoral collaborations that seek to support healthy housing from a government perspective.
- The guidelines are also of direct relevance to the daily work of implementing actors - government agencies, architects, builders, housing providers, developers, engineers, urban planners, industry regulators, and financial institutions, as well as social services, community groups, and public health professionals.
- These stakeholders are ultimately required to ensure that housing is built, maintained, renovated, used and demolished in ways that support health.



WHO Housing and health guidelines (HHGL)

- WHO states that “healthy housing” is associated with several factors, inside and outside the home.
- The HHGL do not address all possible risk factors related to housing but focuses on **priority areas** that have not yet been addressed by existing WHO guidelines, such as follows:
 - inadequate living space (crowding) (Chapter 3)
<https://apps.who.int/iris/bitstream/handle/10665/275838/WHO-CED-PHE-18.02-eng.pdf>
 - low indoor temperatures (Chapter 4)
<https://apps.who.int/iris/bitstream/handle/10665/275839/WHO-CED-PHE-18.03-eng.pdf>
 - high indoor temperatures (Chapter 5)
<https://apps.who.int/iris/bitstream/handle/10665/275840/WHO-CED-PHE-18.04-eng.pdf>
 - injury hazards in the home (Chapter 6)
<https://apps.who.int/iris/bitstream/handle/10665/275843/WHO-CED-PHE-18.06-eng.pdf>
 - accessibility of housing for people with functional impairments (Chapter 7).
 - water quality (section 8.1)
 - air quality (section 8.2)
 - tobacco smoke (section 8.3)
 - noise (section 8.4)
 - asbestos (section 8.5)
 - lead (section 8.6)
 - radon (section 8.7).

Housing and health risks



Source: WHO at [healthy-housing0c8b2c72-8137-4b15-b3a4-eac6940ae528.pdf](https://www.who.int/publications-detail/healthy-housing)

Summary

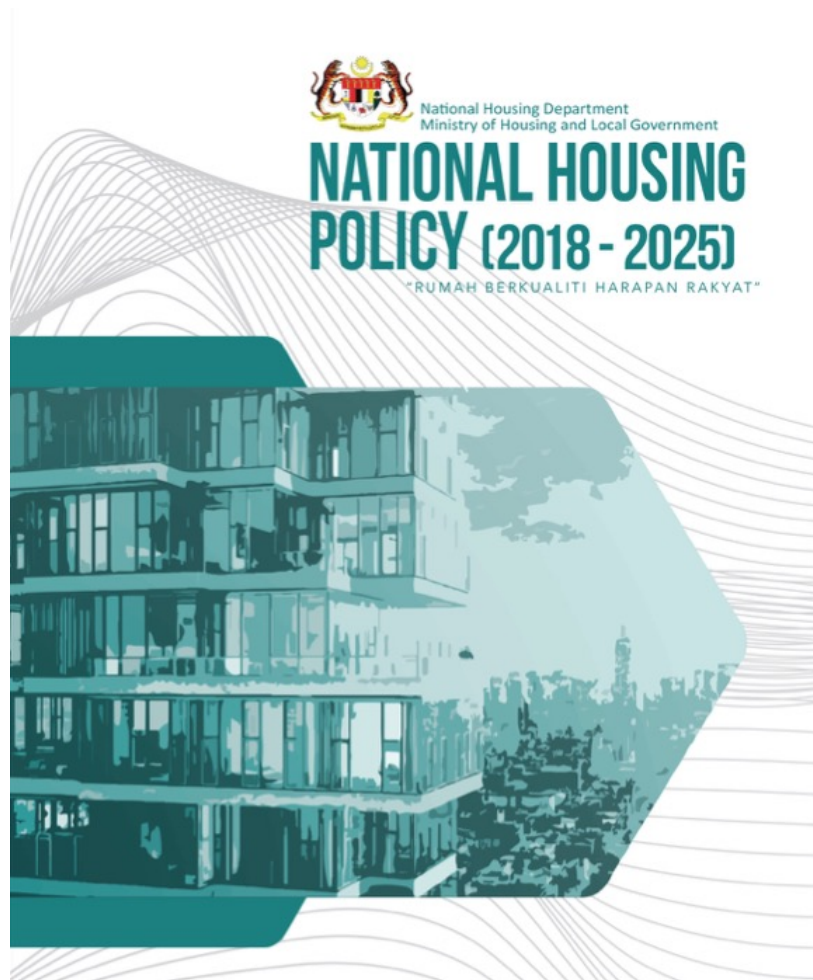
- UN-Habitat concerns on the roof over the head for everyone as a 'Housing for All' campaign. To UN –Habitat access to housing means access to a better life. Hence the concept of health is implicit in the quality living environment that promotes better well-being of humans to live well.
- WHO focuses on physical homes as evidence-based health determinant of the community that relates to public health and primary health and eventually draw up the effects of immediate surrounding or neighbourhood on the family and individual. While extending its guidelines to earlier guidelines on healthy homes, WHO, informed on the priority areas of concern that involved policymakers in considering and making planning decisions.
- While WHO provide detailed guidelines on the design of a healthy home, both UN UN-Habitat and WHO agree on the importance of the environment, immediate community and generally urban form, which should be able to support the community's well-being.

The background of the slide features four white, three-dimensional house models with red roofs, arranged in a row on a dark wooden surface. The houses increase in size from left to right. The text is overlaid on the left side of the image.

Housing governance in Home ground (Malaysia)

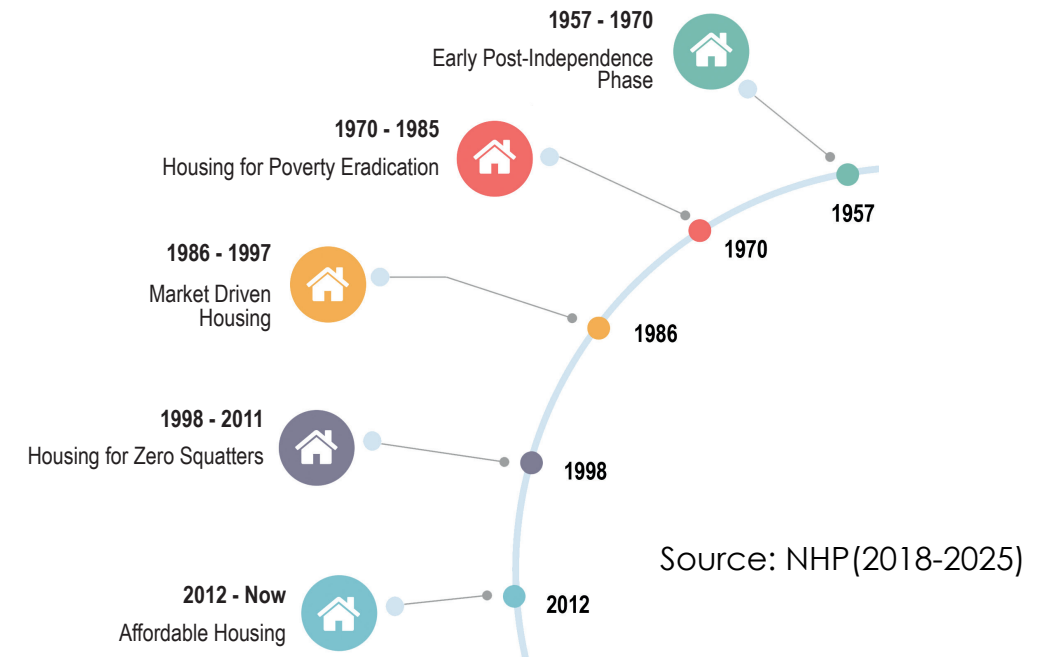
NATIONAL HOUSING POLICIES, KPKT-UBBL
CIDB

National Housing Policies



The Malaysian government has a responsibility and determination to provide adequate, affordable and quality housing for all its citizens as a national agenda.

The government has introduced various housing policies and programs to achieve the agenda outlined in the five-year Malaysia Plans and the longer-term Outline Perspective Plans.



HISTORY OF HOUSING POLICY IN MALAYSIA

"Rumah Berkualiti Harapan Rakyat"

National Housing Policies



GOAL

NATIONAL HOUSING POLICY (2018 - 2025)

National policies are regularly reviewed and updated to address issues and challenges of current development. As the National Housing Policy (DRN) 2013-2017 has expired, the Ministry of Housing and Local Government (KPKT) has re-evaluated the existing DRN to identify the gaps to set the basis for a new policy and strategy for the DRN (2018-2025).

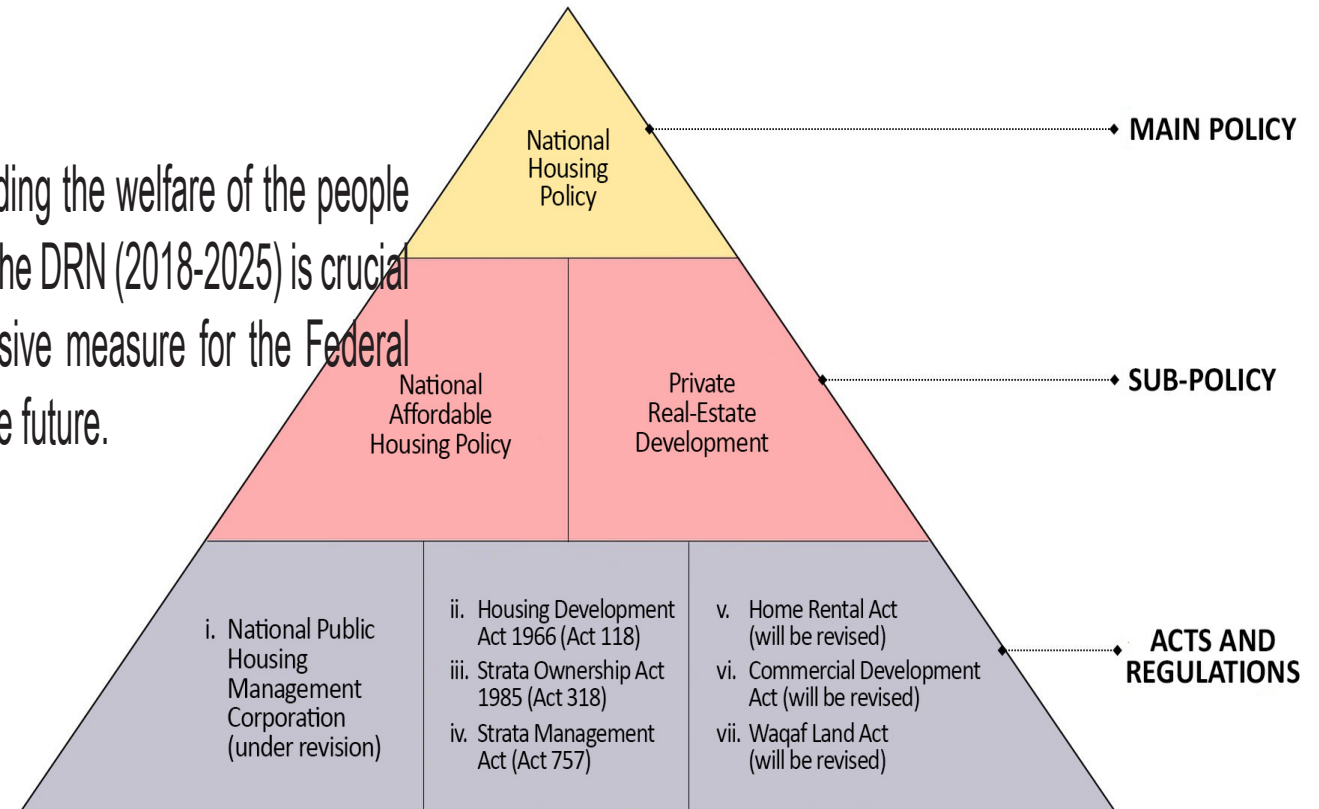
DRN (2018-2025) is intended to detail policies and action plans for the period 2018-2025 which take into account current housing issues. It functions as a national framework for driving housing development at the Federal and State level and is a catalyst for systematic housing provision, and on demand and housing needs. A comprehensive housing policy that is consistent with current requirements is essential in ensuring economically viable townships and conurbations.

Source: NHP(2018-2025)

National Housing Policies

The goal of the DRN (2018-2025) is to guide and drive the country's housing sector by emphasizing the systematic and efficient planning, development and management of housing to generate sustainable, affordable, affordable and affordable habitats for the people.

Strategies and action plans are holistic in meeting the needs and safeguarding the welfare of the people besides fulfilling the national housing industry. Implementing and monitoring the DRN (2018-2025) is crucial to address current housing issues as well as a proactive and comprehensive measure for the Federal Government to achieve the aspiration of a sustainable housing industry in the future.



Source: NHP(2018-2025)

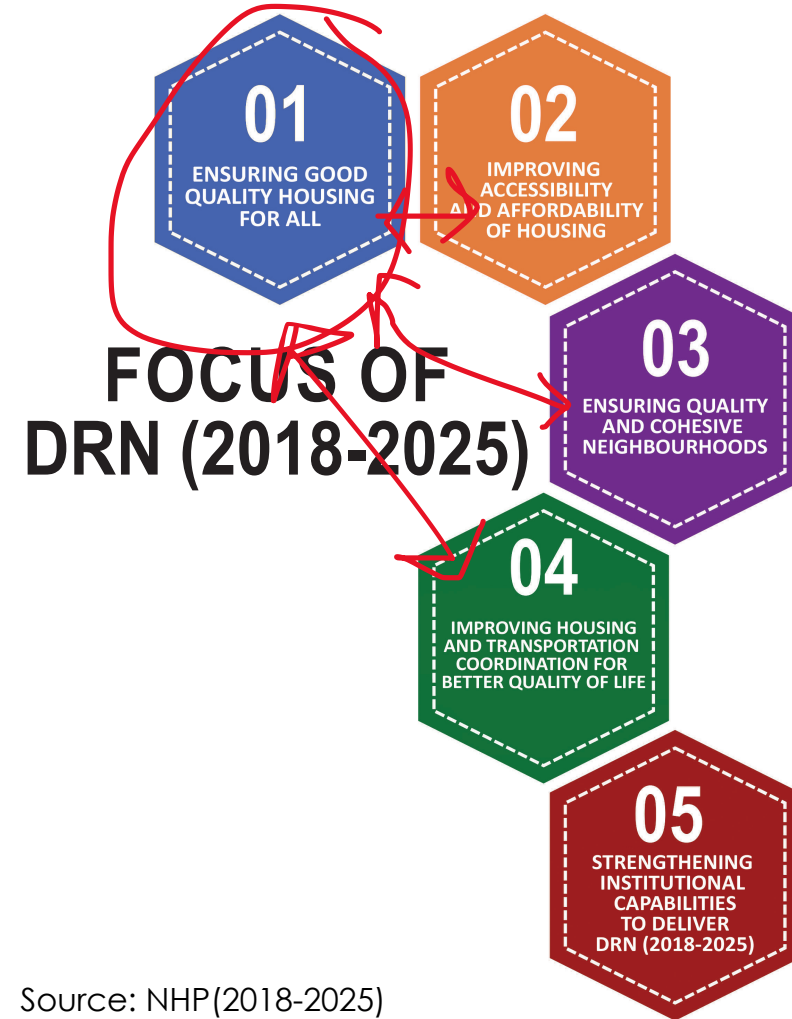
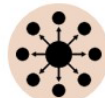
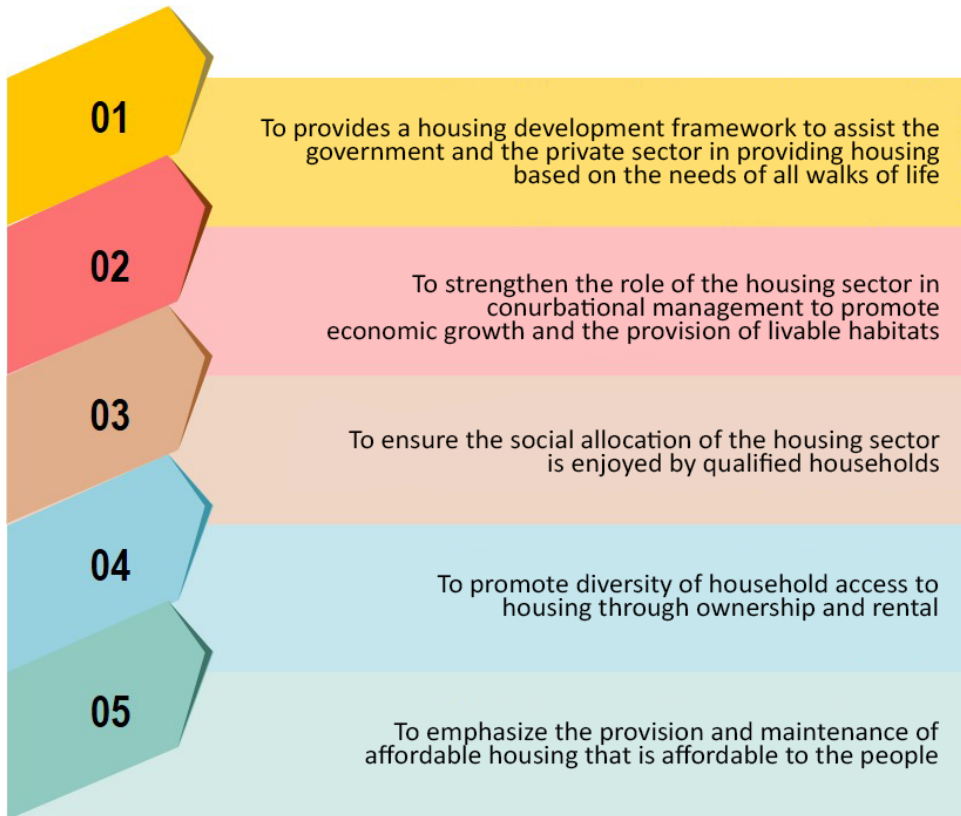


OBJECTIVES

NATIONAL HOUSING POLICY
(2018 - 2025)

National Housing Policies

The National Housing Policy (2018-2025) is the basis for determining the direction of planning and development of the housing sector in Malaysia. It is a guide to all entities related to housing planning and development either at the federal, state, local, or private levels. This NHP (2018-2025) sets out the following objectives:



Source: NHP(2018-2025)

Dasar Perumahan Negeri (2018 - 2025)

National Housing Policies

- The Malaysian Government create many housing programmes in NHP as the government's vision of providing quality, affordable housing for the Rakyat.
- This vision has been translated into the Eleventh Malaysia Plan (2016-2020) and continued into the current Twelfth Malaysian (2021-2025). However, the policy emphasises providing adequate and quality affordable housing not only for the poor and low-income groups (the B40) but also for middle-income households (M40) based on the differing levels of need.
- Housing for the hardcore poor (PPRT), People Housing Project (PPR), 1Malaysia Civil Servants Housing (PPA1M) and Schemes under Syarikat Perumahan Negara Berhad (SPNB), Scheme RTO (Rent-To-Own), or Sewa-Untuk- Beli, Youth Transit Housing Scheme (MyTransit), Rumah Mesra Rakyat (RMR) are among the schemes the government had launched to making cities and human settlements inclusive, safe, resilient and sustainable considering the burdensome effect of COVID-19 (Nor Haniza (2016), Aida Kesuma Azmin et al (2020).

National Housing Policies: Quality Housing

- According to Nor Haniza Ishak et al. (2016), the term 'quality housing' in the National Housing Policy is too generic and comprises several broader elements such as construction quality, facility management quality, neighbourhood quality, public hygiene & safety quality, including internal housing space quality.
- The findings indicate that excellent quality and affordable housing is an indication of high quality of life as the attributes not only fulfil the basic human need for shelter but also contribute to the physical and psychological well-being of the occupants. In the same research, many aspects of the quality of affordable housing in Malaysia were written; however, very few discussed the very space design standards provided as a requirement for this housing.
- So how is the quality of a home assessed and verified? Is health aspects as defined by WHO for home included?

National Housing Policies: Quality Housing

- Nor Haniza (2016) related that standards as in Malaysian Standards stipulated by the Standards of Malaysia Act 1996 (Act 549), whether in design, operation or spatial templates, although available as the compilation of best practices by experts, there are not mandatory for designers or the stakeholders to adhere too. However, a standard only becomes mandatory when a regulatory agency enforces its use through the relevant Act and Regulations.
- Standards concerning residential development cover different aspects and stages of the development process. Planning standards, Design standards, Space standards and Technical construction standards are crucial as a means of measuring the quality of the physical construction integrity, which includes the psychological well-being of the occupants.
- In NHP 2018-2025, the government will develop Quality Standard of Housing (PBB) guidelines to assess the quality of existing and planned housing. According to Alauddin Sidal (2019), the Quality Standard of Housing (PBB) makes the process mandatory to be assessed using QLASSIC certification based on the Construction Industry Standard Quality Assessment System for Building Works Construction (CIS 7); Use life-cycle costing to support a more informed decision-making process on technology choices; and Leveraging on technology and its supporting ecosystem to improve the quality of the house.

National Housing Policies



FOCUS 1

ENSURING GOOD QUALITY HOUSING FOR ALL

Quality housing is important in helping to achieve a livable and sustainable living environment. Quality housing refers to the provision of housing that meets the minimum standards, well-maintained, equipped with convenient amenities and ventilation aspects. Quality Housing Standards (PPBs) will be provided to detail the definition of “quality housing” as well as to ensure the quality of new and existing housing. Negotiations with stakeholders and the general public will be conducted to form the definition of suitable quality housing for Malaysians.

PPB will also take into account the existing housing maintenance requirements to improve the life span of a residential building, maintain the value of building investment, improve the safety and comfort of the occupants, and ensure a resilient environment.

To enable effective PPB implementation, the appropriate bill will be enacted. In addition, the role and awareness of institutions involved in the implementation of PPB such as Government Departments, Joint Management Corporation (JMB) and Management Corporation (MC) will be strengthened.

STRATEGY 1.1

Developing a ‘Good Quality Housing Standard’ to elevate the overall quality of housing in the country.

STRATEGY 1.2

Establishing redevelopment programs to facilitate the rejuvenation of buildings to meet the ‘Good Quality Housing Standard’.

STRATEGY 1.3

Improving building maintenance practices to ensure adherence to the ‘Good Quality Housing Standard’.

STRATEGY 1.4

Refining the role of Government and establishing appropriate institutional frameworks in the provision and maintenance of good quality housing.

STRATEGY 1.5

Demarcating housing needs and wants in improving the provision and targeting of Government housing assistance programs.

Source: NHP(2018-2025)

“Rumah Berkualiti Harapan Rakyat”

National Housing Policies

DRN (2018 - 2025) ACTION PLAN

FOCUS 1	:	Ensuring good quality housing for all
STRATEGY 1.4	:	Refining the role of Government and establishing appropriate institutional frameworks in the provision and maintenance of good quality housing
ACTION PLAN 1.4.2	:	To establish a unit within JPN to govern and monitor the implementation of GQHS

IMPLEMENTING AGENCY

KPKT, JPA

SUPPORTING AGENCY

MOF, PBT, JKR, CIDB, Housing Board / State Government, PLANMalaysia, PAM, MIP, IEM, ISM

Time Frame	Short (2018-2020)
Indicator	Establishment of new unit within JPN to govern and monitor the implementation of GQHS by 2020
Assessment	Yes No
	Satisfactory Unsatisfactory

FOCUS 1

ENSURING GOOD QUALITY HOUSING FOR ALL



Source: NHP(2018-2025)

Architects' minor role?

National Housing Policies: Quality Housing

- In examining the detailed housing layout and space, Nor Haniza (2016) defined Space Standards as a set of frameworks which dictates fixed internal space minimums. It is the basic rules which govern, among others, the quantity of living space that must be provided, minimum acceptable ceiling heights, ventilation and light requirements.
- Design standards indicate design guidelines that need to be adhered to as to ensure that all housing units are functional, comfortable and fit to be inhabited. Design standards usually address the minimum requirements for the spaces or rooms to function well such as the water retention system, electrical and gas installation, internal wiring for telephone, sanitary waste disposal system, plumbing, health and safety, as well as security (Nor Haniza (2016)).

National Housing Policies: Quality Housing

- NHP (2018-2025) will review existing housing standards (by CIDB), i.e. CIS 1,2,3 and 4, to include the various aspects of the occupants' needs, such as culture, demographic patterns, climate, and local materials.
- In Malaysia, apart from the design brief of requirements stipulated by the clients on needs, there is only one legal jurisdiction or law that has made provision for minimum space and design standards for all building typologies, including homes. It is the Uniform Building By-Law 1984 (UBBL 1984).
- The UBBL 1984, among other provisions, prescribes plan submission procedures, provisions on space and design methods, temporary works provisions, construction requirements, structural requirements, fire requirements, alarm, detection, extinguishment and access with Part III specifically on the required space [dimensions], natural light and ventilation to be provided in buildings.

KPKT-UNIFORM BUILDING BY LAWS (UBBL)

- The UBBL 1984, recently revised in 2022 is a regulated detailed requirement for the design of individual facilities/buildings, including houses, apartments, and residential units, high-rise or low-rise, private or public, under the purview of the local authority- local government, fire department and other authorities.
- The spirit of the UBBL is safety and health for the inhabitant
- Maintenance and operation of the buildings, especially low-cost housing after completion, are the issues highlighted in the research by Ramli, Z. A. Akasah, M. I. M. Masirin (2013)



National Housing Policies: Quality Housing

- Since 1981, the Ministry of Housing and Local Government or Kementerian Perumahan dan Kerajaan Tempatan (KPKT) has introduced and implemented a concept of low-cost housing incorporating the characteristics that provide the parameter based on cost, the income of target groups, type of houses ranging from flats, single-storey terrace to detached houses with minimum design standard with a built-up area of 550-600 square feet, two bedrooms, a living room, a kitchen and a bathroom-cum-toilet (Nor Haniza (2016)).
- With the need for housing standards arise, the Construction Industry Development Board (CIDB), a statutory body established under the Parliamentary Act 520 (Construction Industry Development Board of Malaysia Act 1994) worked together with the Ministry of Housing and Local Government (KPKT) setting up a technical committee to derive the National Housing Standards series. The move was initially started as two volumes; Construction Industry Standard 1 for Single/Double-Storey Low-Cost House and Construction Industry Standards 2 for Low-Cost Apartment. Both were in 1998 but have since advanced to more improved options such as D3, DeLight, IOS (CIDB Technical Publication No.205 (2020)), and IHSAN homes (CIDB Technical Publication No. 216(2021)).

CIDB- supporting agency



SECTION 1

D3: Divergent Dwelling Design

Overview of D3 Design

D3 Housing Category

- 01 D3 Apartment

SECTION 2

DeLIGHT Homes: Design for Low-Income Group Housing Through Technology

Overview of DeLIGHT Homes Design

DeLIGHT Homes Housing Categories

- 01 DeLIGHT Homes Apartment
- 02 DeLIGHT Homes Terrace House
- 03 DeLIGHT Homes Townhouse
- 04 DeLIGHT Homes Single House

SECTION 3

MyIOS: Malaysian IBS Open System

Overview of MyIOS Design

MyIOS Housing Categories

- 01 MyIOS Apartment
- 02 MyIOS Terrace House
- 03 MyIOS Single House

Housing Design Principles

- 01 Build Functional Homes
- 02 Use Sustainable Solution
- 03 Humanise Quality of Life
- 04 Adoption of Technology

CIDB Design Collaboration of Eleena Jamil Architect and CREAM (Construction Research Institute of Malaysia)

Source: CIDB at <https://www.cidb.gov.my/wp-content/uploads/2022/07/205-CIDB-Affordable-housing-design-standard-for-malaysia-min.pdf>

CIDB- supporting and collaborative agency

Good quality housing can play a significant role in facilitating residents by improving their health and wellbeing. Healthy homes stimulate physical performance and mental health. Good health depends on having homes that are safe and free from physical hazards. In contrast, poor quality and inadequate housing contributes to health problems such as chronic diseases and injuries and can have harmful effects on childhood development. Poor indoor air quality, lead paint, and other hazards often coexist in homes; placing children and families at great risk of multiple health problems. The wrong choice of building system in construction also can lead to low building performance, durability, and resilience of homes.

Along with conditions in the home, the surrounding neighbourhoods where homes are located can also have powerful effects on health. The social, physical, and economic characteristics of neighbourhoods and community have been increasingly shown to affect short- and long-term health quality and longevity.








A safe neighbourhood's characteristics may promote wellbeing by providing places for children to play and for adults to exercise that are free from crime, violence, and pollution. Social and economic conditions in neighbourhoods may improve health by affording access to employment opportunities and public resources including efficient transportation, an effective police force, and good schools.

01 BUILD FUNCTIONAL HOMES

Good housing design should achieve functionality for a variety of household types, including families with children. The design should consider the unique needs of today’s diverse families, accommodate a variety of physical abilities, adapted to changing household composition and changes in the developmental needs of family members, and balance competing demands for privacy and community. These are important criteria present in today’s society. To be functional, the homes should be designed to accommodate household variety.

Household Variety

While there is a strong need for family housing, a full range of housing types that reflect our current household needs must be considered as well. Adult children living at home with parents, older residents, singles, adults sharing units to reduce housing costs, and shared housing for seniors are all very common practices. For housing with a variety of household types, some of the most compelling solutions provide a variety of unit types and sizes. In addition, there is a need to provide units that will accommodate residents with physical disabilities and units with children’s play areas.

Demographic	House Type
	Single Person > 1-Bedroom Home
	Young Couple > 1-Bedroom Home > 2-Bedroom Home
	Nuclear Family > 2-Bedroom Home > 3-Bedroom Home
	Extended Family > 3-Bedroom Home > 4-Bedroom Home (universal plan)
	Elderly Couple > 1-Bedroom Home > 2-Bedroom Home (universal plan)
	Living with a Disabled Person > 2-Bedroom Home > 3-Bedroom Home (universal plan)
	Elderly Couple with one Adult > 2-Bedroom Home > 3-Bedroom Home (universal plan)

Examples of demographics and house types for household variety

Adaptable Plans

Many homes built today cannot effectively accommodate changes in family sizes, physical abilities, incomes, and ages. Given that an important attribute of sustainability is the ability to meet today’s needs as well as tomorrow’s, designs that allow for adaptability over time play a role in sustainability.

Defined Circulation

In small units, the area for circulation oftentimes limits the usefulness of rooms. Walkways cut through living areas, kitchens become passageways, and dining areas are little more than hallways. In public areas (living rooms, dining areas, and kitchens), circulation routes pass by, rather than through, the furnishings. In private areas (bedrooms and bathrooms), circulation patterns can be used to help maintain privacy. Similarly, residents are not required to go through a bedroom to get to the only bathroom in a unit. A unique need with non-traditional households is to provide access to the private area without going through the public space of the unit.



Example of dedicated public and private spaces in a home

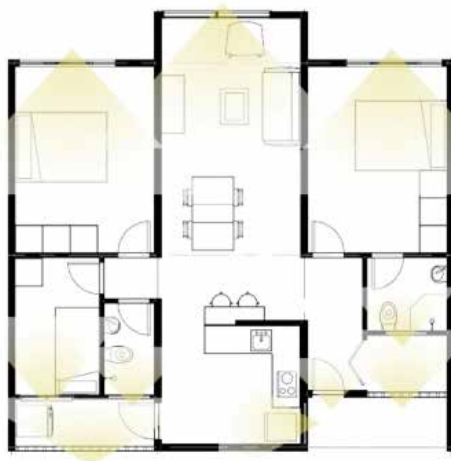
Source: CIDB (2023)

02 USE SUSTAINABLE SOLUTION

In a world of diminishing natural resources and increased populations, it is important that all new residential developments be designed with sustainable practices in mind. The designs should recognise the importance of sustainability of the building using sustainable technologies, resource conservation, and energy efficiency. The principles in this category deal with passive design strategies and enhancing sustainability.

Natural Lighting

Units that have little respect for the orientation of the sun or the desirability of balanced natural light are not very pleasant to live nor efficient in terms of energy use. To achieve the best possible advantages of capturing natural lighting, more opening should be provided in north-south direction. Louvred panels, sliding glass panels, and ventilation blocks are used to allow natural lighting into internal spaces.



Example of natural daylighting in all the rooms

Natural Ventilation

Natural ventilation for a home is required to eliminate the maximum usage of air conditioning in hot weather. The designed units have natural ventilation patterns that maximise air circulation from cross and stacked ventilation. The use of operable windows for light and ventilation can also reduce energy usage as well as provide a more attractive environment.



Example of adequate well-ventilated space for private outdoor activity



Green Roofs

Green roofs are one effective way of enhancing sustainability. While the traditional pitched roof has many aesthetic and practical benefits, it is difficult to incorporate into sustainable strategies. Green rooftops have begun to appeal to homeowners and even businesses as an attractive way to promote the green concept while solving the problems of conventional roofs. Green roofs last longer than conventional roofs, reduce energy costs with their natural insulation, and create peaceful retreats for people. They also minimise water run-off, potentially lessening the need for complex and expensive drainage systems. On a wider scale, green roofs improve air quality and help reduce the urban heat island effect, a condition in which city developments absorb and trap heat.



Example of green roof on top of apartment building

Sustainable Building Materials

Most housing incorporate sustainable building materials and practices such as high-efficiency windows and doors, recycled and environmentally friendly materials, and low-maintenance materials to reduce energy use and to maintain a sustainable environment. The more successful courtyards minimise hard surfaces such as concrete and asphalt, and effectively reduce the urban heat island effect.

Source: CIDB (2023)

03 HUMANISE QUALITY OF LIFE

Courtyard housing allows occupants to share outdoor spaces that can meet the needs of families with children and serve as a gathering place for residents. Landscaped courtyards can serve a variety of community functions, such as common open spaces, gardens, child play areas, and recreational areas. It also can provide a functional role for environmental benefits, extending far beyond simply providing aesthetic benefits.

Shared courtyards

Courtyard housing projects should address the relationship between indoor and outdoor spaces in a way that balances community orientation with privacy needs, as this balance is a central design issue for housing oriented to shared courtyards. To promote a strong sense of community, engagement with the street, a safe and secure environment, and compact design to assist in issues of sustainability and affordability are among the requirements.



Example of shared courtyard with green open public spaces around the housing property

Common greens

Common green areas should be centrally located for all units. This is especially important for the safety of small children. Landscaped courtyards can also serve a valuable environmental role in providing opportunities for stormwater management. Common green areas work well in conjunction with shared courts designed to serve as an expansion of the people-only courtyard space when not in use by cars.



Example of landscaped courtyard in central location

View on Open Spaces

Open spaces like courtyards, streets, and sidewalks that are visible from the units are likely to benefit from surveillance by residents. This type of surveillance has security benefits as well as liveability benefits. This concept promotes safety and security for residents as public spaces face the street or courtyard and parents can monitor their children playing in the courtyard. The concept offers returns beyond the functionality of the areas themselves.



Example of view out

Transitional Spaces

The importance of transitional spaces between interiors and exteriors is to eliminate potential privacy problems. These transitions are made with porches, landscape buffering, balconies, and front-door gardens. These zones help to ensure that window coverings would not always be required for privacy. Hence, units with these transitional spaces could have an outward-focused orientation to provide eyes on common open spaces without compromising privacy.



Example of outdoor private space



Source: CIDB (2023)

Engaging the Street

A housing design which effectively engages with the street provides a positive relationship between the public realm of the street and pavement and the more private space of the buildings. This principle is also facilitated by minimising the width of dropped kerbs for vehicles, avoiding placing parking structures and areas along the street frontage, and by orienting doors and windows to the street instead of blank walls.

Courtyard housing provides unique opportunities to use open spaces for landscaping to continue neighbourhood patterns. Other approaches utilise courtyard space to provide trees and other plantings that can help blend into the neighbourhood where lush vegetation is a key part of neighbourhood character.



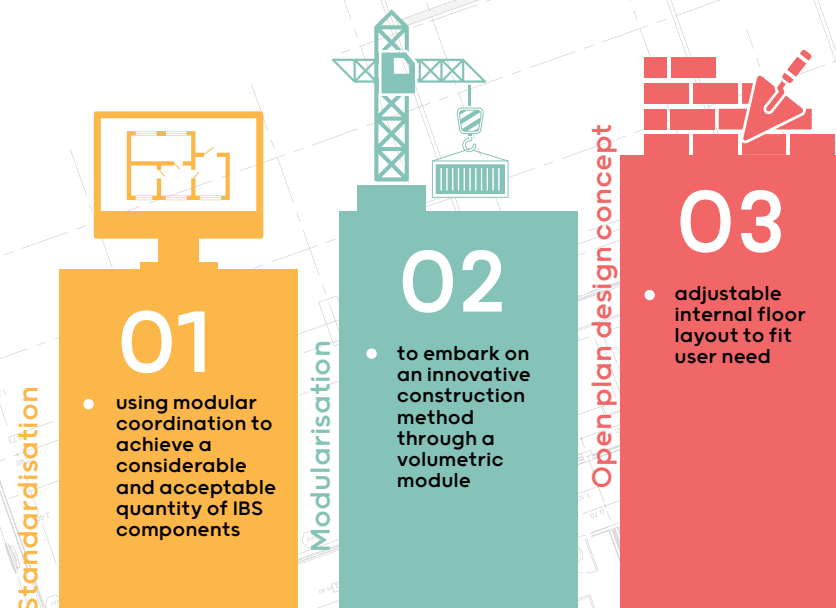
Example of sidewalk around the building

04 ADOPTION OF TECHNOLOGY

The Government has launched initiatives to produce more affordable and quality homes for Malaysians at a higher rate. IBS is one of the solutions. IBS is intended to help developers build better quality homes at a faster rate resulting in a higher volume of units to cater to the increasing demand for affordable homes.

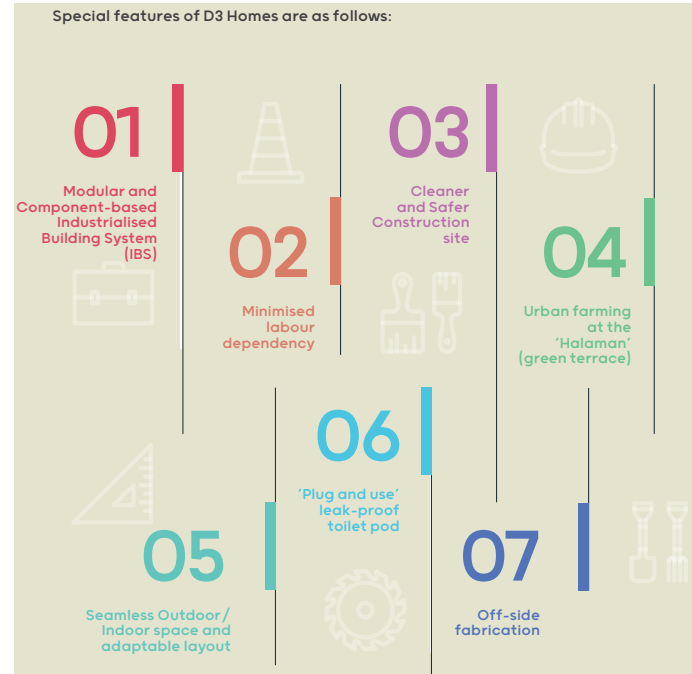
The IBS term has been described as the technology adoption of construction industrialisation, mechanisation, and the use of prefabricated components in building construction. IBS technology has the ability to complete homes at a faster rate—about half the time that conventional construction would take—with no compromise on quality.

The adoption of this technology on a large scale will encourage even lower construction costs, resulting in the ability to build cheaper, quality homes at a faster rate. The method will contribute towards the improvement of design, components, and building quality. More importantly, it will improve the net profit margin of companies.



Source: CIDB (2023)

Example of the D3 house Design



The D3 design contributes in providing innovative and sustainable solutions to the problems of the tropics and how the application of the innovative solutions could further improve quality of life and contribute towards the prosperity of the region. D3 is an inherent design strategy of sustainable development that fully utilises the idea of flexibility. This flexibility was inspired by the traditional Malay 'kampung' house design approach.

Generally, a 'kampung' house is a combination of units (rumah ibu, dapur, anjung, serambi, etc) that diverges to reduce the immense intricacy of architecture to simple units and bring about an effective formation of a flexible dwelling system. The concept makes the Malay 'Kampung' house special as it results in flexibility using the addition (expansion) and subtraction (reduction) system.

D3 adapts the concept layout from the kampung house which has 'rumah ibu' and 'halaman'. In short, D3 is a 'Kampung' House Design built vertically.



IHSAN HOMES

Innovative Affordable Housing Design for
Tropical Climate Through Technology

CIDB TECHNICAL PUBLICATION NO: 216



INTRODUCTION TO IHSAN HOMES

IHSAN Homes Design Philosophy
IHSAN Homes Design Approaches
IHSAN Homes Housing Types

SECTION 1: IHSAN HOMES HIGH-RISE APARTMENT

Architectural Design Concept
Civil & Structural Design
Mechanical, Electrical & Plumbing Design
Construction Cost Estimation

SECTION 2: IHSAN HOMES SINGLE-STOREY TERRACE HOUSE

Architectural Design Concept
Civil & Structural Design
Mechanical, Electrical & Plumbing Design
Construction Cost Estimation

SECTION 3: IHSAN HOMES TWO-STOREY TOWNHOUSE

Architectural Design Concept
Civil & Structural Design
Mechanical, Electrical & Plumbing Design
Construction Cost Estimation

BUILDING INFORMATION MODELLING(BIM) INTEGRATION FOR IHSAN HOMES

BIM Workflow
Modelling Standard
BIM Collaboration Protocol – BIM Execution Plan
Common Data Environment (CDE) – BIM360 Docs BIM360 Docs for IHSAN Homes Proj
Appendix A: Typical BIM Elements by Discipline
Appendix B: BIM Objective & Responsibility Matrix
Appendix C: BIM Modelling Guidelines

ANNEX: IHSAN HOMES DESIGN OPTION

IHSAN Homes Apartment
IHSAN Homes Single-Storey Terrace House
IHSAN Homes Two-Storey Townhouse

IHSAN HOMES DESIGN PHILOSOPHY

The global market is witnessing increasing demand for affordable housing, even in Malaysia. Over the years, CIDB comes up with initiatives to develop affordable housing designs via research and publication according to the industry of standard support government's effort in providing affordable housing to the nation. The collaboration between CIDB, CREAM and industry players has resulted in a new affordable housing design known as IHSAN Homes. The term IHSAN reflects the characteristics of the design concept as follows:

I Innovative
H Humanising
S Sustainable
A Affordable
N New technology

The concept of IHSAN Homes focuses on balancing good design with cost consideration. It adheres to the National Affordable Housing Policy (Dasar Perumahan Mampu Milik Negara, DRMM) guidelines in terms of specifications and dimensions. It is suitable for all household variety while being able to adapt to the changes in household.

In addition to affordable housing, the quality and sustainability aspects of the design are taken into consideration, since Malaysia is a tropical country. Sustainable affordable housing design is the main concern in this region. Furthermore, the comfort and wellbeing of the occupants in a home is the utmost priority.

The philosophy of this design concept is beyond provision of adequate shelter, it is to bring joy in living via affordable housing.

Source: CIDB (2021)

Research Collaboration



IHSAN HOMES DESIGN APPROACHES

A good design is essential for cost saving, particularly in affordable housing development. Hence, a development that provides a convenient and quick access to commute to work should be the aim for affordable housing.

The design allows each unit to enjoy good ventilation and natural lighting while offering a conducive living environment for the residents. The key aims in developing this design are to take into account these four components:



IHSAN HOMES HOUSING TYPES



National Housing Policies: Quality Housing

- On quality improvement prior to NHP (2018-2025), Abdul Mohit (2010) in Nor Haniza (2016) accounted that in 2002 the low-cost housing design in Malaysia had undergone changes from the provision of two bedrooms to three bedrooms with the addition of a dining room, a separate bathroom and a toilet, and a drying area. The new revision is also to accommodate social and cultural preferences, such as the need to separate children of a different gender from sharing rooms. Hence it is necessary to have at least 3-bedroom units in low-cost housing schemes.
- According to (Mohit et al., 2010) in Aida Kesuma Azmin et al (2020), the two main issues with affordable housing in Malaysia are the inadequate supply and the quality of housing that do not meet the “family housing needs, comfort, social, cultural and religious needs”. So, the government’s effort to improve the quality of life for high-density urban communities has not been fulfilled.
- Findings by Wahi et al. (2018) and Mohamed et al. (2014) in Aida Kesuma Azmin et al (2020) were inadequate and uncomfortable indoor spaces, inadequate community facilities, low quality of materials, poor workmanship, and lack of security. It is found that when the residents are not happy with the size and form of the house, and when their privacy within their own house is compromised, the house loses the qualities of the home. There is also a very critical health aspect connected to the small unit size other than the privacy issue. The congestion of people within the small space will encourage the spread of diseases among the residents (Mersal Mahmoud, 2018 in Aida Kesuma Azmin et al (2020)).

National Housing Policies: Quality Housing

- Aida Kesuma Azmin et al (2020) states that Designing a residence or a house is an act of problem-solving based on the client's requirements within the parameters set by the regulatory bodies and the technical specifications' parameters. When an architect designs a residential building for a personal client, the client's requirements are usually precise, such as the spaces within the building, the area of each space, and the type of building materials. All aspects are communicated directly between the client and the architect. However, when the client is the developer and not the actual residence for the individual units, the developer provides the architect with the requirements of the project. Hence the end-user who occupies the home will not be able to satisfy all his/her wishes/needs.
- In redefining the Quality of Life for the Urban High Density Community, according to Qun, (2018) in Aida Kesuma Azmin et al (2020), the quality of urban life for the high urban population is closely related to architecture and urban planning where Architects and urban planners are the professionals responsible for creating happier and healthier cities for the people. Qun (2018) in Aida (2020) added that the need to design happier and healthier cities would become more critical in the near future as the urban population is expected to be higher than the rural population by 2025 due to the continuous migration of people to urban areas.

Summary

The NHP outlines the framework and action plan very broadly and leaves the details to implementing and supporting agencies to interpret.

The question on the aspect of health for detail unit design is not obvious in the requirements but implicitly implied and perhaps regulated by the Uniform Building By-Laws.

CIDB's new design guidelines are action plans for the implementation of some of the housing agenda. However, research findings highlighted the need for personal satisfaction in the design where the community's participation should take place in decision making.

Most of these policies were set prior to Covid19, and the expectation of changes perhaps in action plans should take place to reflect the needs.

Similar to UN-Habitat and WHO, the reference to quality neighbourhoods and accessibility are consistent for quality housing homes.



RESEARCH FINDINGS FROM ABROAD ON HEALTHY HOMES

UK, CAIRO, OTHERS

Lessons learned from Cairo, Egypt from quantitative survey and interview of residents in Greater Cairo during Covid19

According to the research results by Alhadedy, N. H., & Gabr, H. S. (2022) study that has explored some of the demands regarding health, safety, security, and daily activities' spatial needs of 315 participants in Greater Cairo, Egypt, residents' and industry professionals' point of view during the pandemic Covid19 in 2020; the followings are their findings:

- (1) the most significant feature to be considered is the availability of **natural light** and **ventilation**. In general, studies have proved that natural light and ventilation in households are the key elements for maintaining residents' health and well-being. Their impact on promoting health and resisting infections has been well recognized. Yet, the implementation of this feature in the design has faced certain challenges. Thus, prior to the COVID-19 outbreak, the world was already concerned with the energy consumption levels in the households and other negative effects on the environment due to the excessive use of mechanical ventilation systems . Promoting natural lighting and ventilation solutions for future home designs will support residents' health and well-being and will positively contribute to preserving the environment and sustainable development.

Source: Alhadedy, N. H., & Gabr, H. S. (2022)

Lessons learned from Cairo, Egypt from quantitative survey and interview of residents in Greater Cairo during Covid19

- The need for **home office space** where their findings have confirmed the significance of having a home office space as a desirable home design feature. Working and studying from home is expected to become the “new normal” in people’s lifestyle. An interest in the effects of working from home is not new. Thus, various research before COVID-19 had reported a positive relationship between working from home (WFH) and organizational outcomes of productivity, retention, turnover intent, commitment, and performance. The onset and rapid development of the COVID-19 pandemic in early 2020 fueled the interest in WFH as millions of people were forced to socially isolate themselves to control the spread of the virus that has allowed for an “enforced experiment,” offering a significant learning opportunity for organizations to evaluate what “works” and what does not, and in what ways WFH could be best managed to benefit both workers and organizations. Besides, WFH has been found to promote sustainable cities, especially in terms of urban environmental management and spatial planning. In line with facilitating urban sustainability, WFH has shown a positive impact on reducing traffic congestion, air pollution, and the need for space for offices, which ensures a reduction in the burden on cities in the future by reducing the accumulation of activity in the city center. Hence, it is not surprising that the users/residents in our study perceived the home office space as essential. Given the relative neglect of this feature by the construction-related professionals revealed in this study, we believe it is crucial to communicate our findings to the target professionals. **We recommend that the home office space is technologically well-equipped and planned in an enclosed area, sufficiently far from the living room to minimize noise and interruptions.**

Source: Alhadedy, N. H., & Gabr, H. S. (2022)

Lessons learned from Cairo, Egypt from quantitative survey and interview of residents in Greater Cairo during Covid19

- **Flexible open spaces** have also been favoured under pandemic conditions because they may be partitioned into clean and polluted zones, as well as quiet and active zones, which serve as a barrier to infections and facilitate daily hygiene. Besides, flexibility in design enables residents to personalise, adapt, and adjust the space with the interior environment to meet their changing demands, hence giving a larger range of options than moving to a new location. It can provide a more comfortable household environment in every way, benefiting the resident's physical, mental, and socio-emotional health, thus allowing for social and physical change in housing seems self-evidently rational.
- The availability of a **terrace with a nice view, or a private garden, food and supplies** storage, bedroom with an enclosed bathroom, indoor entertainment space, and separated entrance were found to be significant for the residents' well-being during the pandemic. They will continue to positively affect the quality of their lives inside homes in the future, whether there is an outside threat or not.

Source: Alhadedy, N. H., & Gabr, H. S. (2022)

Lessons learned from London, UK from quantitative survey and interview of residents in London during Covid19

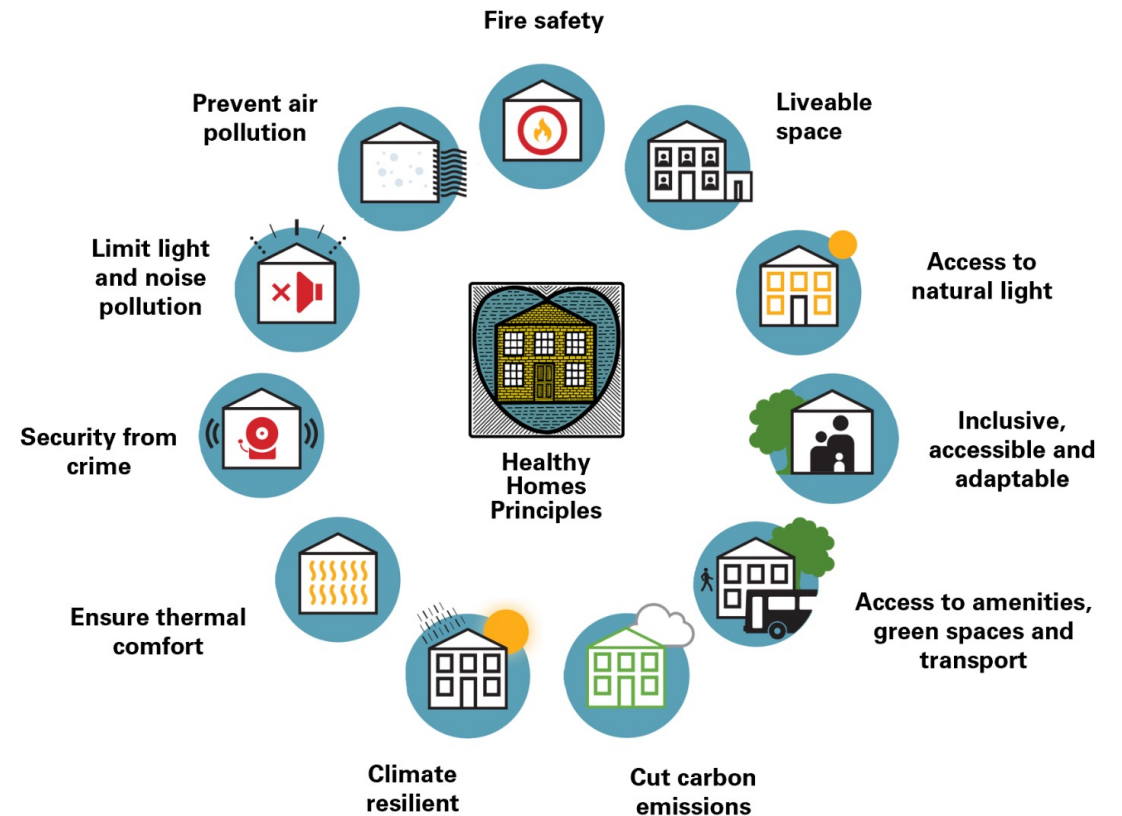
Alonso, L and Jacoby, S (2022). In the findings of a survey of London residents during Covid19, in order to improve housing quality and design, the following policy recommendations should be considered:

- Making minimum space standards mandatory across all tenures and sectors while giving greater flexibility in the distribution of floor space to meet them. For example, permitting smaller but more rooms for uses such as home working.
- Increase minimum standards for built-in storage.
- Complementing existing technical evidence underpinning housing design standards with lived experiences, home use studies, and demographic data.
- Including a wider range of home uses and household compositions in housing provision and design standards to cater to demographic shifts, for example, a growing ageing population, a rise in single-person homes, and an increase of non-related adults living together.
- Making access to private outdoor space compulsory.
- Supporting and funding local authorities to better enforce regulations in place that protect people from poor-quality homes.
- Providing more grants for home improvements, particularly adaptations that will help reduce carbon emissions and improve environmental comfort inside the home

Lessons learned from the UK-11 Healthy Homes principles

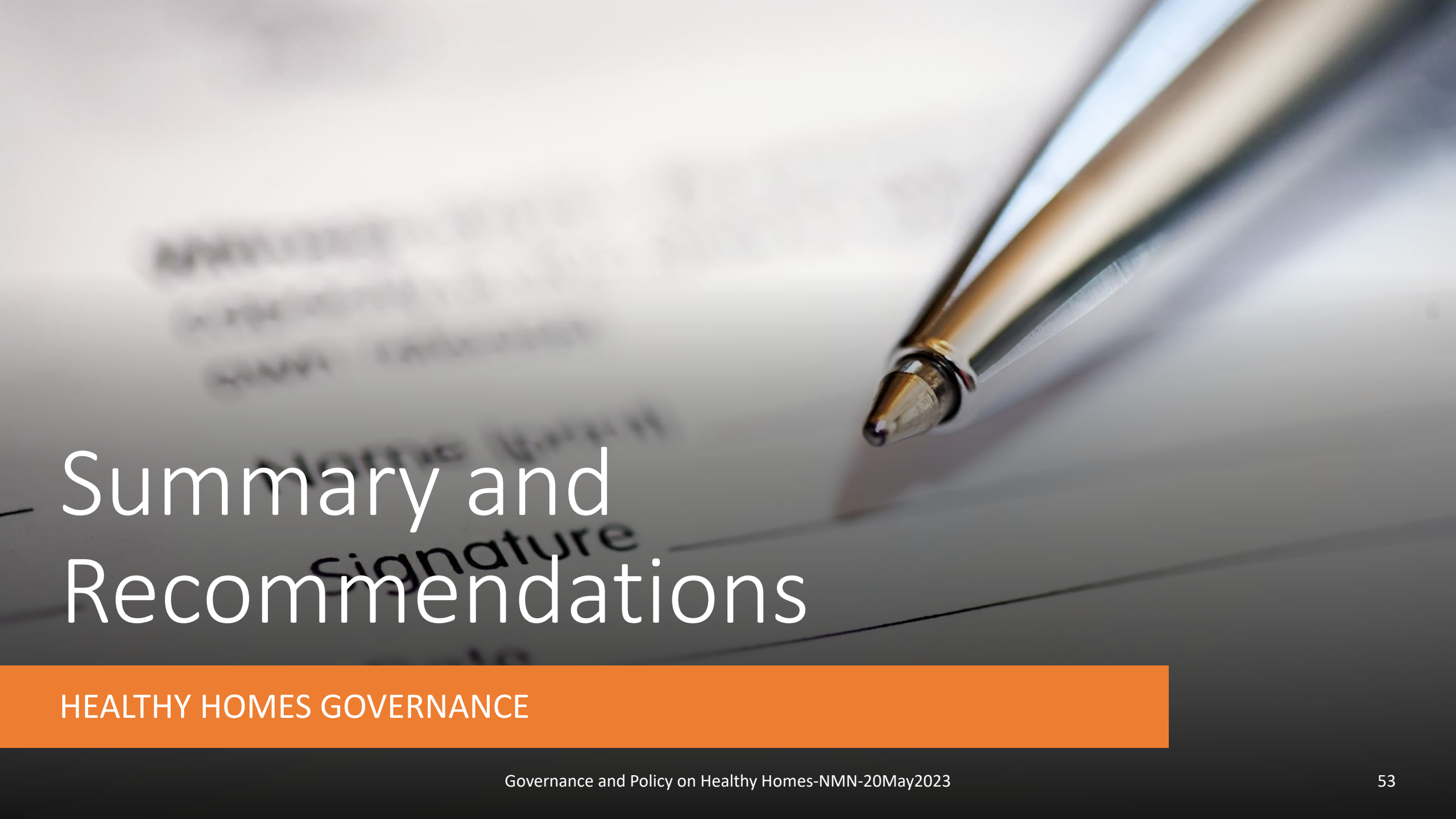
- Town Planning Council Association (TPCA) UK in The Healthy Homes Principles-why do we need them? (May, 3, 2023) states that there is an established body of evidence which shows how the location, layout and quality of homes and neighbourhoods do have direct and indirect impacts on mental and physical health of the occupants.
- A recent review of English planning policy and building regulations highlighted these weaknesses. It found that 'Health is not integrated into the legal requirements that LPAs can rely on to base their decisions'. The review recommended establishing the Healthy Homes Principles into law and calls for the better use of local health evidence base to shape decisions ([Montel, L., 2023](#)).

Source: TPCA(2023)



Lessons learned from the UK-11 Healthy Homes principles

- In the Healthy Homes Act campaign, TPCA(2023) states that People living in poor quality homes are twice as likely to have poor general health than people who don't (11% of people compared to 22%)¹. Poor quality homes are estimated to cost the NHS £1.4 billion every year. There is a wealth of evidence which shows how the quality of our homes and neighbourhoods, directly and indirectly, impact both mental and physical health. Poor quality homes increase the likelihood of respiratory, cardiovascular, and communicable diseases, along with risk of mortality². They increase the risk of severe ill health and disability during childhood³ and the proportion of children citing housing concerns as an obstacle to school attendance jumped from 11% in 2022 to 19% in 2023, an increase of 73%⁴. In 2021, 2.6 million homes in England (11%) were found to be poor quality and hazardous to occupants⁵
- According to TPCA(2023), setting the Healthy Homes principles as a mandatory obligation will create clarity about the level of quality of housing that developers must provide. The 11 principles, based on clear evidence that better quality housing is vital for promoting health and avoid harm, establish the scaffolding that frames the quality of all new homes – setting housing as a cornerstone for promoting people's health.



Summary and Recommendations

HEALTHY HOMES GOVERNANCE

Summary and Recommendations

This paper explored some of the existing local governance, international references and recommendations from researchers at home and abroad for the way forward towards healthy homes. It is not conclusive and requires further exploration. However, in this short research, the following findings can be summarised:

- Similar remarks and findings focus on the detailed home as to the design and layout, which may differ geographically, climatically and culturally, of which the general requirements for universal health unite in the need for good ventilation, natural lighting, access to exterior, flexible space and adaptive spaces were highlighted. Additional remarks include the presence of noise, lack of privacy, the need for maintenance and a manual on how the house operates or should function.
- All findings agree that a home and a house cannot be healthy if the immediate environment and the macro environment are not supportive-thus require appropriate neighbourhood design that addresses the supportive and complimentary needs.
- In mass housing, individuals have no control over their dwelling environment. Any home designed without consultation with the end-users is inclined to lack consideration for the essential aspects of meaning and aesthetic values, i.e., the accommodation for cultural, religious, or traditional activities in the living environment.
- Various efforts were made by the government and private sectors for the range of communities based on affordability and need through collaborative efforts from micro design to neighbourhood facilities. This should continue.
- The subject of health and safety in these efforts was implicit and applied under 'Quality Housing requirements' and was not highlighted, perhaps to give flexibility for designers to interpret them. For the government sector, Qlassic is made mandatory as an assessment tool.
- There were recommendations made as the outcome of the post-pandemic that the new requirements for a healthy home should be clearly drafted in the respective housing policy

Thank you for listening.

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