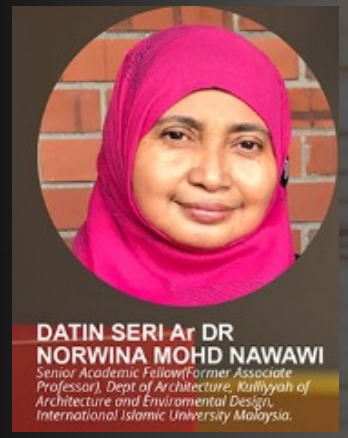
Our HOMEs

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

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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.

International housing reference

UN-HABITAT AND WHO

UN-HABITAT

Housing For All Campaign

- 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.

#Housing2030

Effective policies for affordable housing in the UNECE region

Affordability, Accessibility

UNITED NATIONS

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.

World Health Organization

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, by providing shelter from the elements and from excess moisture, and by facilitating comfortable temperatures, adequate sanitation and illumination, sufficient space, safe fuel or connection to electricity, and protection from pollutants, injury hazards, mould and pests.
- Similar 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 is 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.

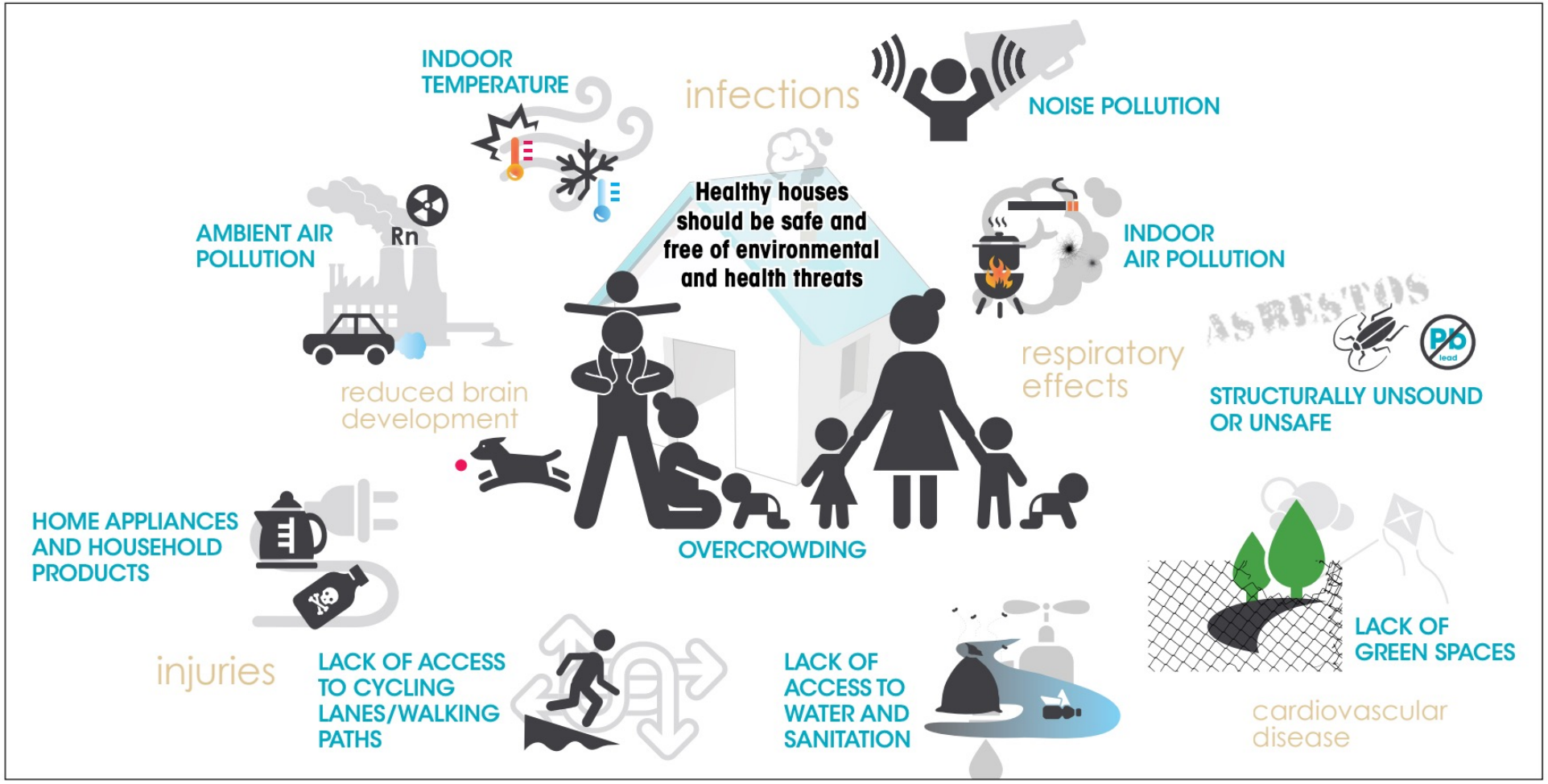
WHO Housing and health guidelines (HHGL)

- 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)
- low indoor temperatures (Chapter 4)
- high indoor temperatures (Chapter 5)
- injury hazards in the home (Chapter 6)
- 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).

World Health Organization

Housing and health risks



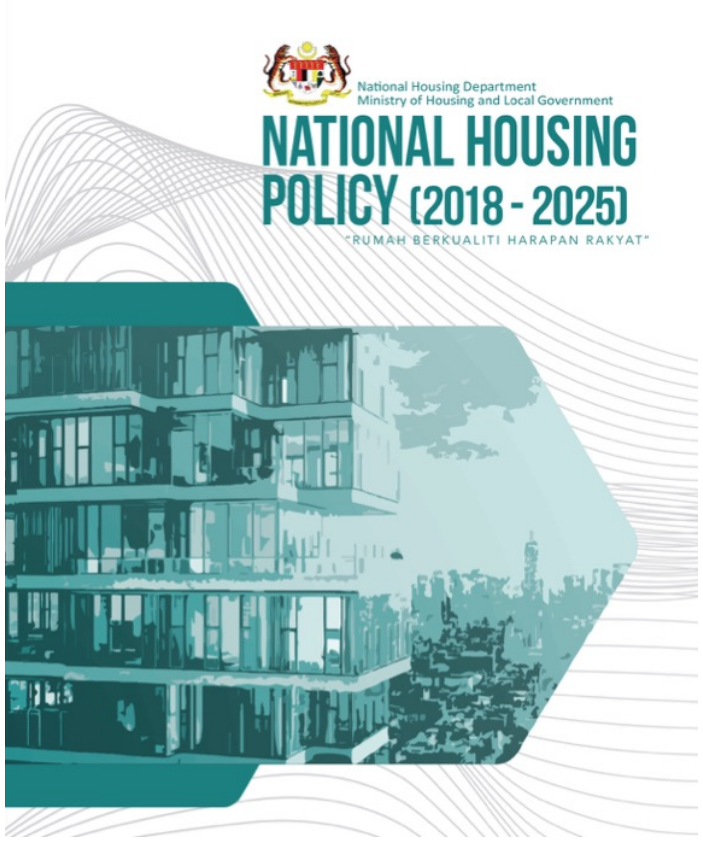
Housing governance in Home ground (Malaysia)

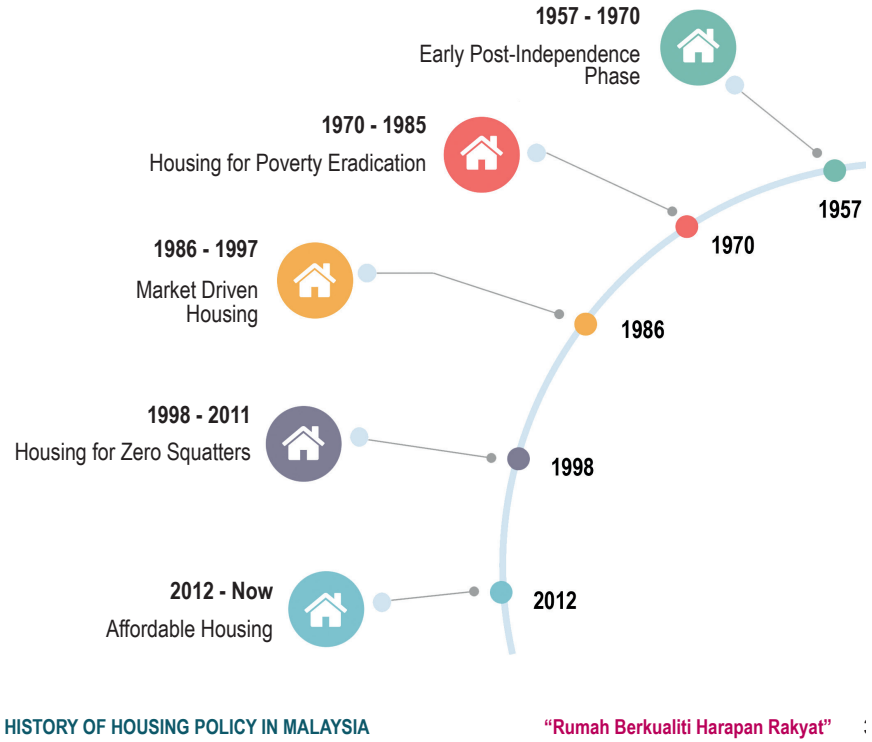
NATIONAL HOUSING POLICIES, KPKT-UBBL CIDB

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.





National Housing Policies

GOAL

NATIONAL HOUSING POLICY (2018 - 2025)

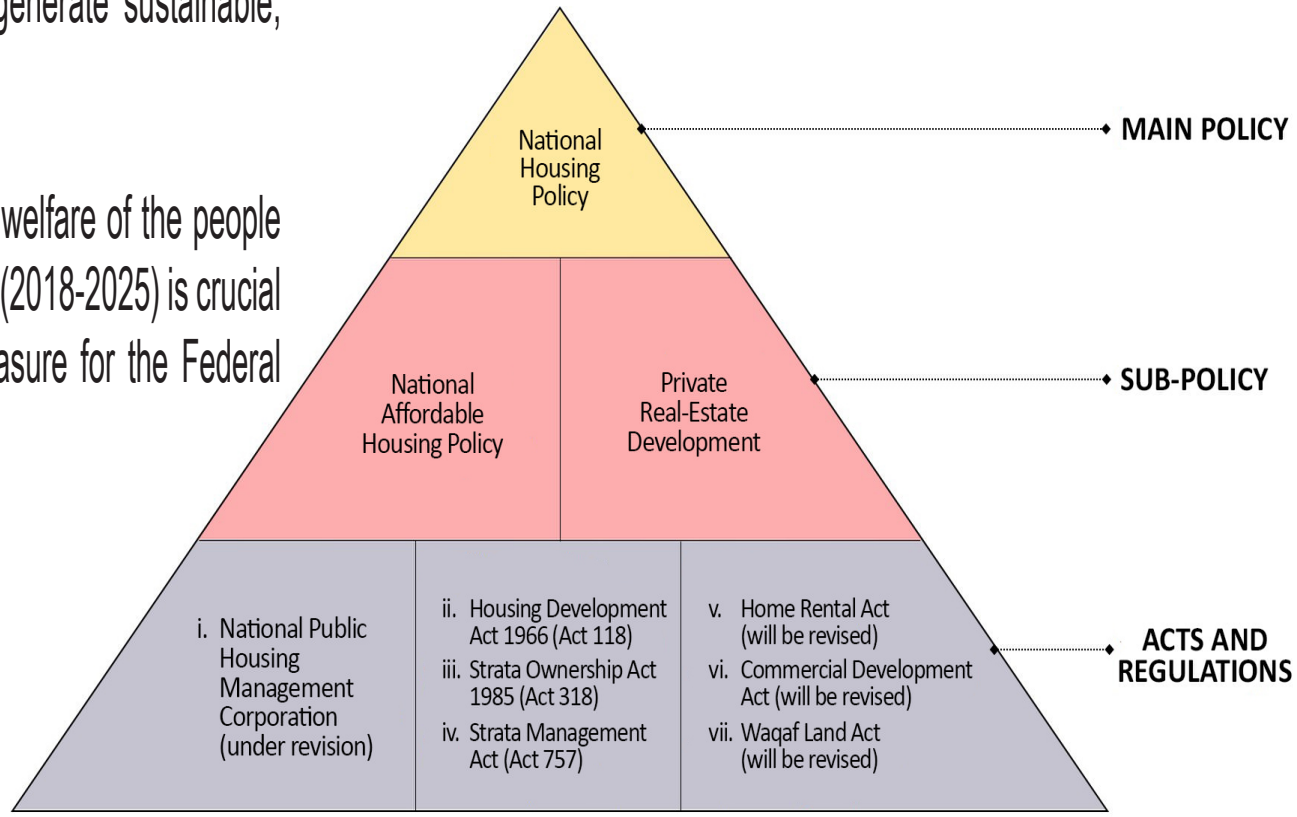
National policies are regularly reviewed and updated to address issues and challenges of current development. As the National Housing Policy (DRN) 2013-2017 has expired, the Ministry of Housing and Local Government (KPKT) has re-evaluated the existing DRN to identify the gaps to set the basis for a new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

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.

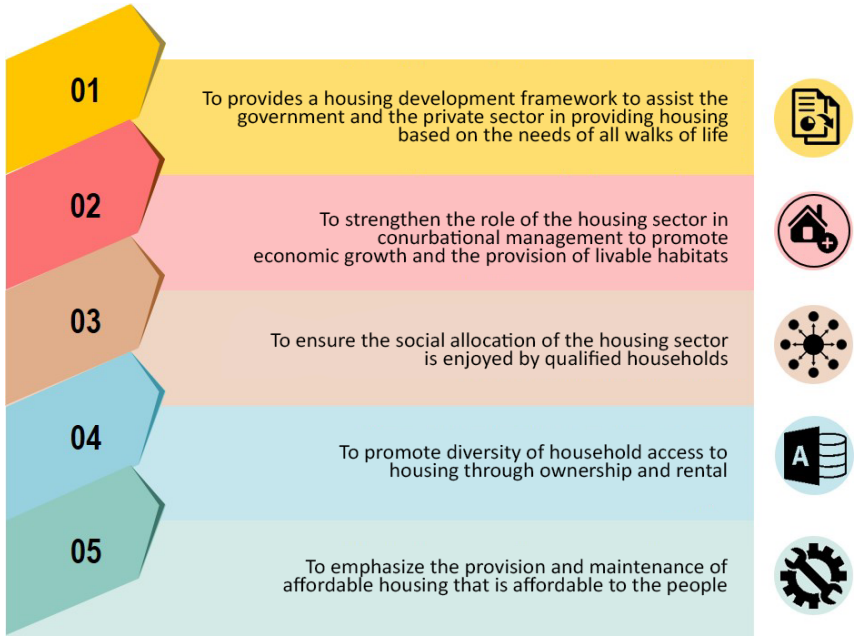


National Housing Policies

OBJECTIVES

NATIONAL HOUSING POLICY
(2018 - 2025)

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:



FOCUS OF DRN (2018-2025)

Dasar Perumahan Negara (2018 - 2025)

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 evelate 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.

"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 Goverment, PLANMalaysia, PAM, MIP, IEM, ISM

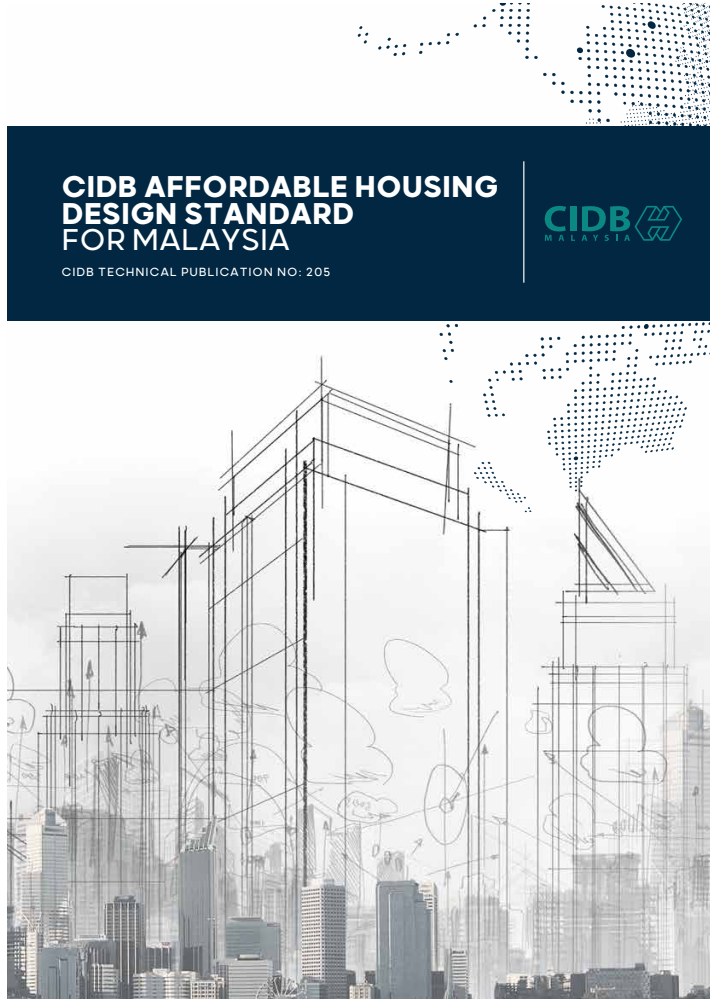
Time Frame	Short (2018-2020)	
Indicator	Establishment of new unit within JPN to govern and monitor the implementation of GQHS by 2020	
Assessment	Yes No	Satisfactory Unsatisfactory

FOCUS 1 — ENSURING GOOD QUALITY HOUSING FOR ALL

KPKT-UNIFORM BUILDING BY LAWS (UBBL)

- Regulated detailed requirements 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)

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- supporting 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.

DESIGN GUIDES

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)

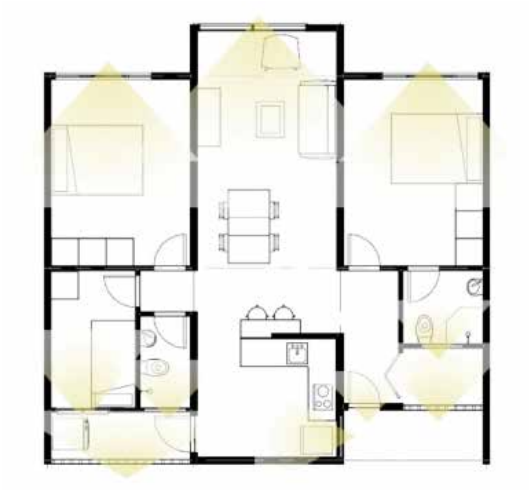
DESIGN GUIDES

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)

DESIGN GUIDES

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)

DESIGN GUIDES

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.

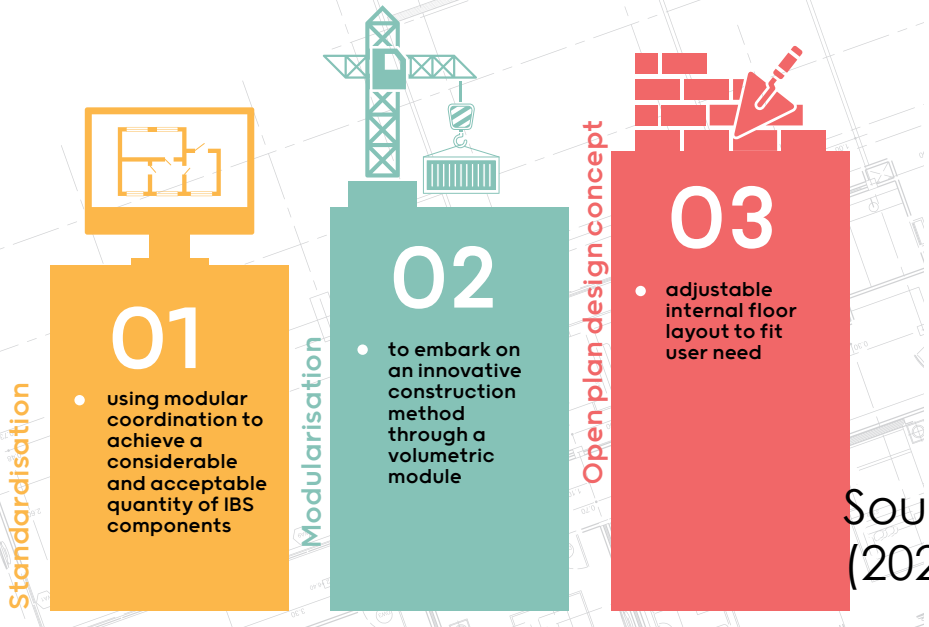
Example of sidewalk around the building

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.

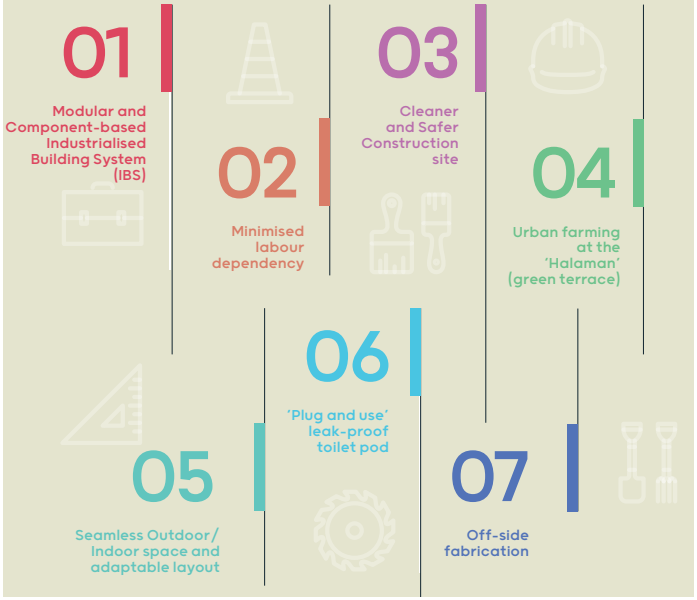
The IBS term has been described as the technology adoption of construction industrialisation, mechanisation, and the use of prefabricated components in building construction. IBS technology has the ability to complete homes at a faster rate–about half the time that conventional construction would take–with 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)

Special features of D3 Homes are as follows:



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.

'Kampung' house

D3 concept house

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

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

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 [34]. 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 [14]. 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.

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

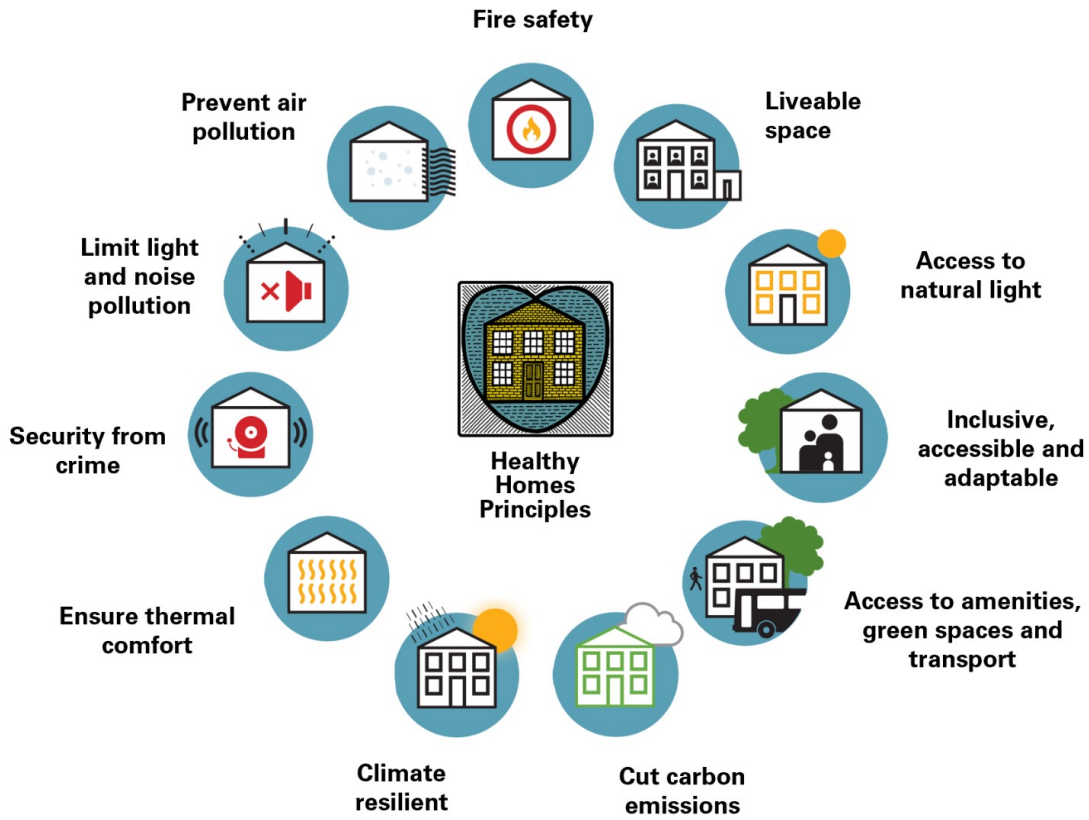
- The need for **home office space** where their findings have confirmed the significance of having a home office space as a desirable home design feature. Working and studying from home is expected to become the "new normal" in people's lifestyle. An interest in the effects of working from home is not 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 [35,36,37]. 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 [38]. 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 [39]. 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 [20, 22].**

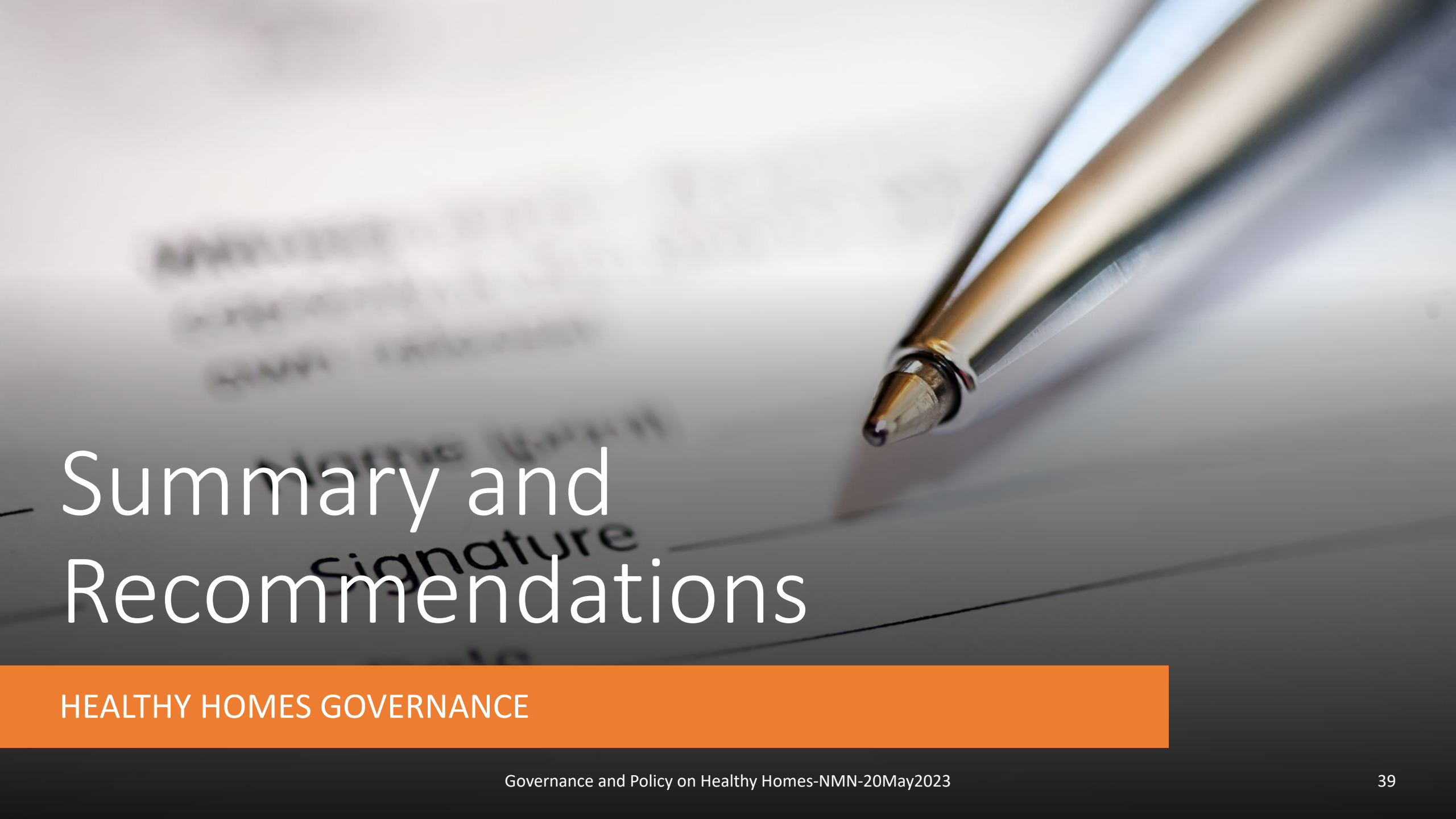
Lessons learned from Cairo, Egypt from quantitative survey and interview of residents in Greater Cairo during Covid19

- **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 [22]. 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 [40].
- 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.

Lessons learned from the UK-11Healthy Homes principles

- TPCA. 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).





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.
- 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.
- All findings agree that a home and a house cannot be healthy if the immediate environment and the macro environment are not supportive-thus requires appropriate neighbourhood design that addresses the needs.
- There were recommendations as the outcome from the post pandemic that the new requirements for a healthy home should be clearly be drafted in the respective housing policy

Thank you for listening.

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