AN INTEGRATED APPROACH TO AFFORDABLE HOUSING
<table>
<thead>
<tr>
<th>City/region</th>
<th>House price-to-income ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kuala Lumpur</td>
<td>6.88</td>
</tr>
<tr>
<td>Penang</td>
<td>6.32</td>
</tr>
<tr>
<td>Malaysia</td>
<td>6.17</td>
</tr>
<tr>
<td>Selangor</td>
<td>5.10</td>
</tr>
<tr>
<td>Johor</td>
<td>4.51</td>
</tr>
</tbody>
</table>

House prices are severely unaffordable. It is more than six times the median household incomes nationally.

**WHAT THE B40 & M40 CAN AFFORD VS ACTUAL MEDIAN PRICE IN THE MARKET**

<table>
<thead>
<tr>
<th>City/region</th>
<th>B40</th>
<th>M40</th>
<th>ACTUAL PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysia</td>
<td>RM108,000</td>
<td>RM226,000</td>
<td>RM387,000</td>
</tr>
<tr>
<td>Kuala Lumpur</td>
<td>RM192,000</td>
<td>RM380,000</td>
<td>RM749,000</td>
</tr>
<tr>
<td>Selangor</td>
<td>RM158,000</td>
<td>RM309,000</td>
<td>RM442,000</td>
</tr>
</tbody>
</table>

Median Multiple method is applied where a ratio of less than 3 is considered affordable. This is due to the assumption that the House Cost Burden should only be at 30% of household income as to preserve an acceptable quality of life.

Source: The Edge Markets, Bank Negara Malaysia, JPPH, NAPIC (2017)
Mismatch between supply and demand

- Supply has fallen short of growing demand from households since 2012

Launched are predominantly unaffordable

- Almost 70% of launches in 2016/17 are above RM250,000

House price growing faster than household income

- Household income’s growth is slow and made worse by high indebtedness

A THEORETICAL MODEL OF AFFORDABLE HOUSE PRICE:
Status quo

EFFECT OF DEMAND SIDE INTERVENTION ON AFFORDABLE HOUSE PRICE

House price increases as a result of relaxed financing policies.
Government relaxes mortgages and increases quantity demanded.

Gap between supply and demand is narrowed.

THE NEED FOR SUPPLY SIDE INTERVENTION

Current Median Price (RM387,000)

Max Affordable Price (RM226,000)

HOUSE PRICE DECREASES
A much better strategy to achieve

References:
- KRI Making Housing Affordable (2015)
- Urban Economics (2009)
- Equilibrium Price Modelling of an Affordable Housing in Malaysia UTHM (2017)
The National Housing Policy (2018-2025)

• Focus 1: Ensuring Quality housing for all

• Focus 2: Improving accessibility and affordability to home ownership

• Focus 3: Ensuring a cohesive neighbourhood of quality

• Focus 4: Improving coordination between housing development and transportation for a quality life

• Focus 5: Strengthening institutional capacity to deliver NHP (2018-2025)
The National Housing Policy is still private sector-led and remains focused on demand side

- Funding programmes are directed to “eligible” buyers
- Private sector is expected to lead the housing construction with public sector facilitation/direction
- Expanding rental economy as a permanent part of the solution set
- Looks at the spatial structure of the metropolis but at a very general way
- One of the Five Focus is to “improve coordination between development and transportation”
Focus 4: Improving the coordination between housing and transportation

- **STRATEGY 4.1:**
  - To streamline planning process, local and regional planning to express the clarity of the vision as well as increasing community participation

- **STRATEGY 4.2:**
  - To strengthen the capacity of the local authorities to supervise and integrate housing into transportation – at analysis, planning and implementation stage
Cost of material and labour has remained stable for almost one decade. What gives?

- Materials
- Labour
- Development fees (taxes etc.)
- Machinery and equipment
- Procurement method
- Cost to acquire land

Figure 22: House prices and construction costs according to states, 2008-2014
DEMAND SIDE
(House buyers)

• demographic factors (population growth, age groups)

• the levels and distribution of income

• the availability and cost of financing

• government policy, which includes taxation and property rights

• personal preferences (car culture, aesthetics, location)

SUPPLY SIDE
(HOUSE BUILDERS)

• Land costs

• Procurement system

• government policy, which includes land use and planning policy

• the availability and cost of financing

• construction costs (materials, machinery and equipment, and labour)

• compliance costs (development fees, utilities surcharge)

Supply-side intervention should not be forgotten in the efforts to improve home ownership.

Affordable housing costs must be reviewed at the different scales. It requires an integrated solution.
Architectural thought + Economic thought
Note: Costing based on JUBM Arcadis Construction Cost Handbook (2017) for a development of 936 units of 900 sqft, at 85% efficiency and based on current requirements by the authorities. It excludes land price as to avoid it being skewed by location factors.
MICRO-LEVEL: HOME

- Materials
- Labour
- Machinery and equipment
- Land cost
SIMPLE GROUND RULES
1. No site abnormal costs
   - Flat land
   - Good soil condition
   - No issues with land ownership
2. Limit height to 18 storeys
   • Avoids the break tank and associated building services costs
3. Separate tower and car park podium
   - Avoids the costly transfer floor
   - Creates an engaging ground level
4. Floor efficiency must be more than 82%

- Reduction of corridors to an acceptable minimum
- Units are in a compact arrangement with access corridors
- Lift and staircase cores to minimum fire standards
5. Repeatable standard layout

- Maximise economy of scale
- Standard structural grid can be pre-fabricated too
6. Naturally ventilated units and corridor

- Ensure an acceptable level of air and spatial quality
- A crucial factor in determining property value
7. **Full shear wall system**

- allows developer to claim structure and walls together during the construction process, i.e. better *cash flow*

- more efficient layouts
• 85% efficiency
• 13 units per floor
• Natural ventilation for lift lobby, staircases and corridors
• Natural ventilation for all rooms in unit
• Air wells to allow natural and cross ventilation

PROTOTYPE

• Repeatable standards layouts to minimize cost
• 1.65m clear corridor width
• All units within 30m from fire staircase
• unit main doors not facing each other to create privacy
**PROTOTYPE**

4 Blocks (18 Storey) + 1 Block Carpark (6 Storeys) + surface carparks

- Separate podium carpark to omit transfer floor (high cost)
- 6 storeys podium carpark
- Surface carparks provided
- 18 storeys residence block
- Centralised green area
- Centralised podium parking for easy access
- Residence blocks not facing each other
- Wide road 12.2 m
- Facilities provided – surau, nursery, gym, hall, office, functional landscape area

Total units: 936 units
Car park: 1292 bays
Area: 7 acres
Density: 133 units/ acres

- **residence block**
- **parking block**
- **facilities**
- **green**
• Rooftop facilities and not fully obstructing residence view as built-up only partial
• Rooftop landscape space
• Linked bridge to connect residence and podium
OPTION
2 acre land
1 Block (8 Storey) + Surface Carparks
MICRO-LEVEL: HOME CONSTRUCTION COSTS

High level of IBS in Singapore

• 25-40% cost saving on labour

• 15-20% saving in construction time

Nanyang Technological University's North Hill Campus, Singapore
MICRO-LEVEL: HOME CONSTRUCTION COSTS

Industrialised building system
i) System formwork

- Significant time and labour savings
- 45% savings on Labour costs when Singapore implemented IBS*

Micro-level: Home Construction Costs

Industrialised building system

ii) Prefabricated modules/elements

- Significant time and labour savings
- Consideration for logistics cost and site planning (eg. Just-in-time assembly)
Industrialised building system

iii) Prefabricated modules/elements ("hybrid precast")

- More likely to find acceptance due to similarity to conventional methods
- However, can still achieve time savings 6-9 months on typical projects
- Large reduction of unskilled foreign labour

References: Gamuda IBS
Industrialised building system

iv) Lightweight panels

- Reduces on-site trades and construction schedules
- Reduces the required capacity of foundation and superstructure costs
- Reduces freight and crane costs
MESO-LEVEL: NEIGHBOURHOOD

- Shared facilities
- Building services
- Common infrastructure
Cost of facilities are quite high as the development built in isolation. As a result in one precinct there is redundancy in provision, therefore cost.

- Multipurpose hall
- Surau/mosque
- Nursery
- Recreational

Note: Costing is based on JUBM Arcadis Construction Cost Handbook (2017) for a development of 936 units of 900 sqft, at 85% efficiency and based on current requirements by the authorities. It excludes land price as to avoid it being skewed by location factors.
Investing in existing facilities in the area or sharing the cost of building a precinct-wide facility

- Increase cohesion with local area
- Prevent the development from being an isolated unit
- Encourage local regeneration
- Enables smaller plots to be developed efficiently
- Requires proactive local authority and a precinct masterplan
Singapore’s Neighbourhood Centres are shared by several developments.

Oasis Punggol, Punggol Township

References: Roadmap to Better Living by Singapore HDB
Cost for new community facilities are shared.

Existing facilities in the area are upgraded so it can be shared by new residents.
Weaving the development back into the local community, creating an interdependence – reduces costs!

- Removal of fences and hard boundaries such as the perimeter planting (at street-front boundary).
- Developers to provide publicly accessible walkways around the site through regulation.
- 10% green can be pooled together to create a bigger open space.

Legend:
- Separate housing developments
- Facilities
MACRO-LEVEL: URBAN

- Car park space
- Compliance fees
MACRO-LEVEL: URBAN
THE COST OF INEFFICIENT CITY ON HOUSING

Up to 20-30% of construction cost of housing is due to required car park space in KL’s city centre.

Another 9-15% of cost comes from compliance fees from utilities companies and local authorities.

Note: Costing based on JUBM Arcadis Construction Cost Handbook (2017) for a development of 936 units of 900 sqft, at 85% efficiency and based on current requirements by the authorities. It excludes land price as to avoid it being skewed by location factors.
<table>
<thead>
<tr>
<th>No</th>
<th>City</th>
<th>Car park required for residential</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Selangor</td>
<td>1 unit : 2 CP&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>2</td>
<td>Seoul</td>
<td>1 unit : 1.44 CP</td>
</tr>
<tr>
<td>3</td>
<td>Kuala Lumpur</td>
<td>1 unit : 1.35 CP&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>4</td>
<td>Singapore</td>
<td>1 unit : 1.30 CP&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>5</td>
<td>Beijing</td>
<td>1 unit : 0.52 CP&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>6</td>
<td>Barcelona</td>
<td>1 unit : 0.25 CP&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>7</td>
<td>Hong Kong</td>
<td>1 unit : 0.24 CP&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>8</td>
<td>Central London (2-bed)</td>
<td>1 unit : less than 1 CP&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Reduce minimum car park requirement

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17% of Greater KL residents use Public Transportation

62% of Singaporeans use Public Transportation

250 million hours
time spent on the road every year by Greater KL residents

2 Nielsen Global Survey of Automotive Demand (2013) by Nielsen Holdings
3 Department of Statistics Malaysia (2014)
Seoul has less kilometres of rail (per million people) than KL but it is far more effective in getting residents to adopt it.

Kuala Lumpur
Density = 29 people/acre

Seoul
Density = 65 people/acre

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2. Department of Statistics Malaysia (2017) estimate
Amongst top 50 highest in the world for percentage of car ownership per 1,000 people

Up to 2.2% of GDP (RM24.7bil) Of economic losses due to traffic congestion

Road accident is 2\textsuperscript{nd} top cause of death for Malaysians between 16-65 year olds

3. Department of Statistics Malaysia (2014)
To reduce car park space, we need to re-organise the whole metropolitan area and its land-use patterns.

To achieve affordable housing, we need to move away from the current status quo where people use private vehicles to travel between home and work. Instead, we need to adopt a multi-modal transit system.
Space Required To Transport 60 People
Klang Valley jobs are mostly concentrated in KL.

Therefore the Transit System is only centred around serving KL.
As a result, location of jobs continue to be in expensive areas.

We must develop other centres of gravity, where there are opportunities for cheaper land and reduce job-home distance.
DBKL’s Pedestrian Masterplan for KL City Centre is an example of a successful infrastructure to support the TOD zone.
Encourage new centres (polycentric city) along Transit lines

- TOD as town centres: Basic government services, healthcare, schools/universities, banks

- Affordable housing in the extended TOD zones

- Diverse commuting pattern with secondary transit lines crossing the primary lines

Source: UN Habitat Sustainable Housing For Sustainable Cities A Policy Framework For Developing Countries
The TOD Zone requires a further expansion to **create more spaces that are cost-effective** for development of affordable housing - without eliminating future potential for higher value developments at prime areas next to the station.
TOD Zone (300m radius) leaves many areas unserved. As a result it is often viewed as premium land. Affordable housing in the this zone will be met with reluctance.
Expanded TOD Zone

Introduction of local transit and non-motorised transport infrastructure will unlock a vast area for affordable housing.
1. **BRT & Buses**
- Effective, low construction, operational and maintenance cost
- Success models across Asia & Latin America
- Can be upgraded into Tram system and self-driving tram lanes without interruption

Secondary transit systems are crucial to the success of the new Expanded TOD zone, therefore crucial to unlocking new affordable housing zones.

2. **CYCLING INFRASTRUCTURE**
- Success depends on the continuity and length of network
- Must be accompanied by city-wide showering facilities
- Mechanised and surface bike parking
- Can include segway and e-scooters

3. **PEDESTRIAN PRIORITY ZONES**
- The last leg of transit requires an uninterrupted pedestrian environment
- Traffic calming strategy is essential at TOD town centres
More mixed-use zones, reduce single-use zoning

- Distribute jobs and services across the metropolitan area
- Live/Work/Play within walking distance
- Transit station-accessible
Incorporate new forms of private transport into housing regulations

- Discourage private ownership of cars
- Incentivise shared systems
- Provide the proper legal and physical infrastructure for car-sharing, bike-sharing, and ride-hailing apps
- Some included in housing complex, many more in Neighbourhood Centres
Hyperdrive

Uber Will Rent Scooters Through Its App in Partnership With Lime

Uber-Lime partnership Invests as part of $335M round
Free yourself. Own the experience.

Download our app to start driving today.

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How it works

Book

Unlock

Drive

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Get it on Google Play
Our Fleet
8 types of cars in over 166+ locations.

- AXIA
  From RM 8/hr

- Honda City
  From RM 14.90/hr

- Honda HR-V
  From RM 17/hr

- Mini 3door
  From RM 30/hr

- Perodua Myvi
  From RM 12.90/hr

- Toyota Vios
  From RM 15.50/hr

- Perodua Alza
  From RM 13.90/hr

- Polo
  From RM 13.90/hr
Multi-flex means having multiple options to get from point A to point B at the flexibility of when you need it.

A. Encourage new centres (polycentric city)
B. More mixed-use zones, reduce single-use zoning
C. Reduce minimum car park requirement
D. Incorporate new forms of private transport into housing regulations