Badyã

Palm Hills Developments Egypt

Guidehouse BUILD_ME PALM HILLS DEVELOPMENTS Badyã

Agenda

1. Who we are?
2. Badyã
3. Our cooperation with the BUILD_ME team

Who We Are?

Introduction of Palm Hills Developments

Corporate Milestones

1997 — Al Ethadia established & launched Palm Hills October residential development in West Cairo

2005 — PHD founded by MMID as a sister Co to Al Ethadia

2008 — PHD acquires the assets of Al Ethadia, PHD is then IPOed on the EGX and the LSE

2013 — PHD concludes EGP600 mn capital increase to expedite construction

2014 — Ripplewood and Aabar Investments acquires 2.5% and 5.5% stake in PHD
PHD concludes EGP2.4 bn Syndicated Loan

2015 — PHD concludes EGP1.65 bn rights issue to finance new growth endeavors
PHD inks EGP750 mn Medium Term Loan
PHD pioneers revenue sharing model and concluded two deals adding 603 feddan

2016 — PHD inks co-development agreements with Private Investor to develop 135 feddan in North Coast
PHD launches Securitization of Receivables program

2017 — PHD inks co-development agreements with NUCA of 3,000 feddan in West Cairo and another co-development agreement with a state entity for 135 feddan in Alexandria & acquires 190 feddan in West Cairo from NUCA

2018 — Launching of Badya In May 2018 with total sales of EGP5 billion.

2019 — Launching of Palm Hills Alexandria

Projects Launches

1997-2004
- PALM HILLS OCTOBER

2005
- PALM HILLS OCTOBER GOLF VIEWS

2006
- PALM HILLS KATAMEYA
- THE VILLAGE

2007
- casa
- haciendabay
- PALM PARKS

2008
- PALM HILLS OCTOBER
- VILLAGE GATE
- PALM HILLS OCTOBER BAMBOO EXTENSION

2009
- VILLAGE GARDENS KATAMEYA
- Hacienda White 1

2010
- PALM HILLS
- Hacienda White 2

2013
- VILLAGE AVENUE KATAMEYA

2014
- WOODVILLE

2015
- CAPITAL GARDENS

2016
- PALM VALLEY
- PALM HILLS newcairo

2017
- THE CROWN

2018
- Badyã

2019
- PALM HILLS ALEXANDRIA

2021
- HACIENDA WEST a boutique DEVELOPMENT

Badyã

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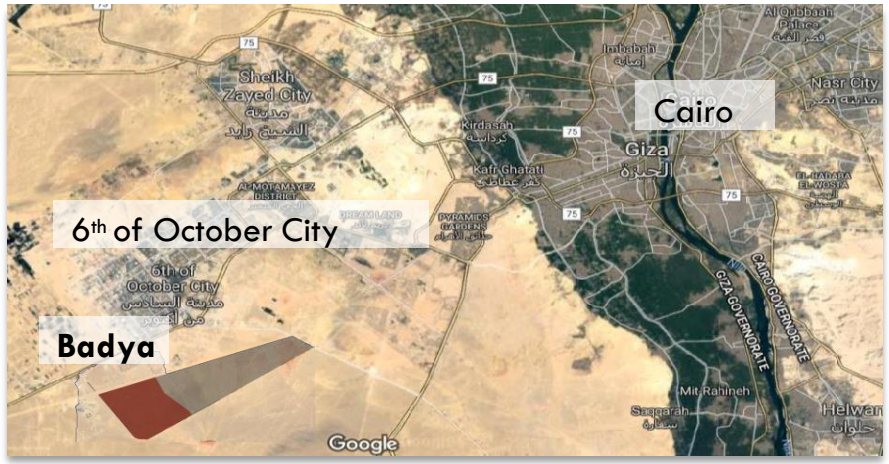
Who We Are?

Badya Project Strategically Located in of 6th of October City

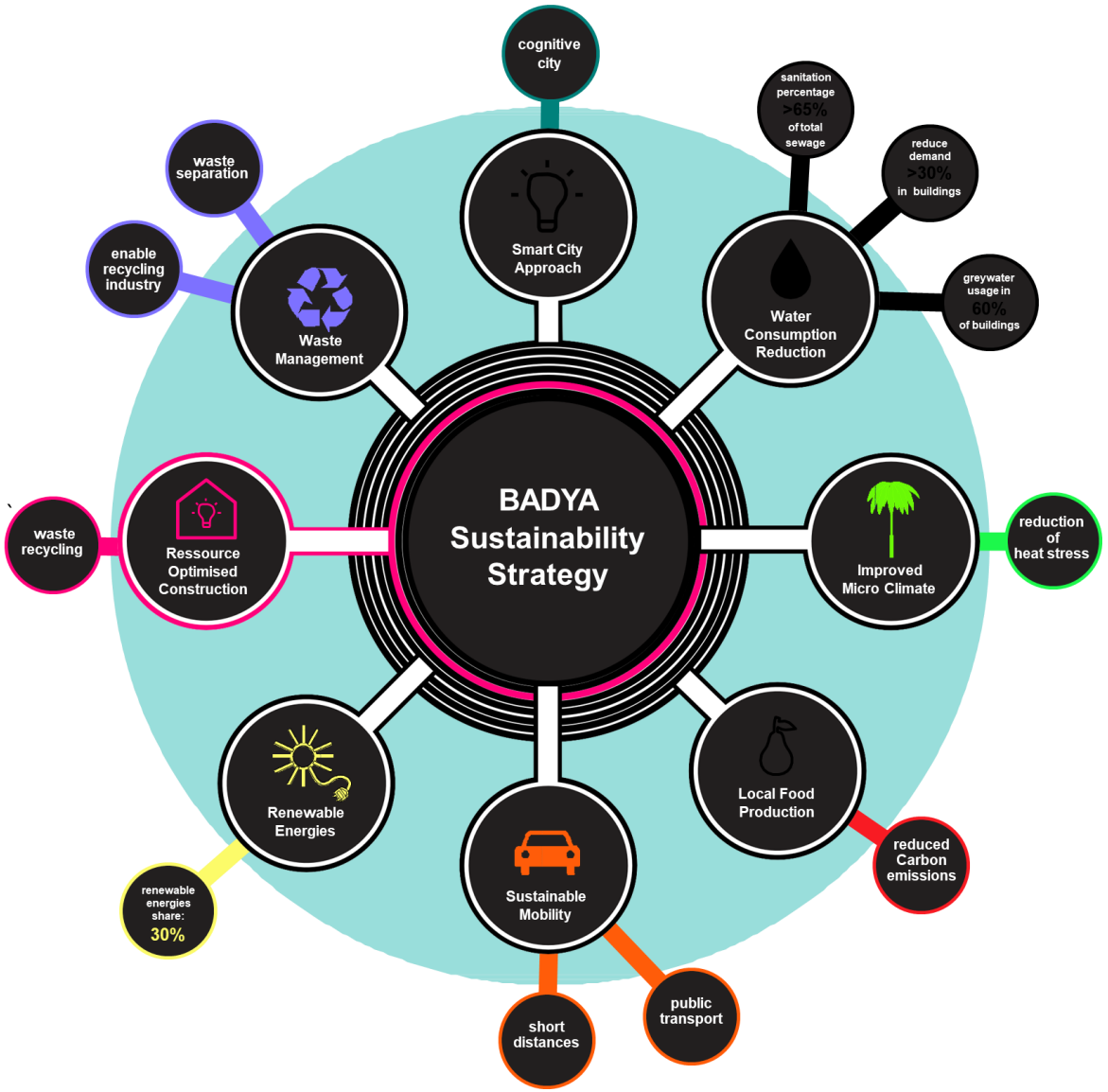
Location



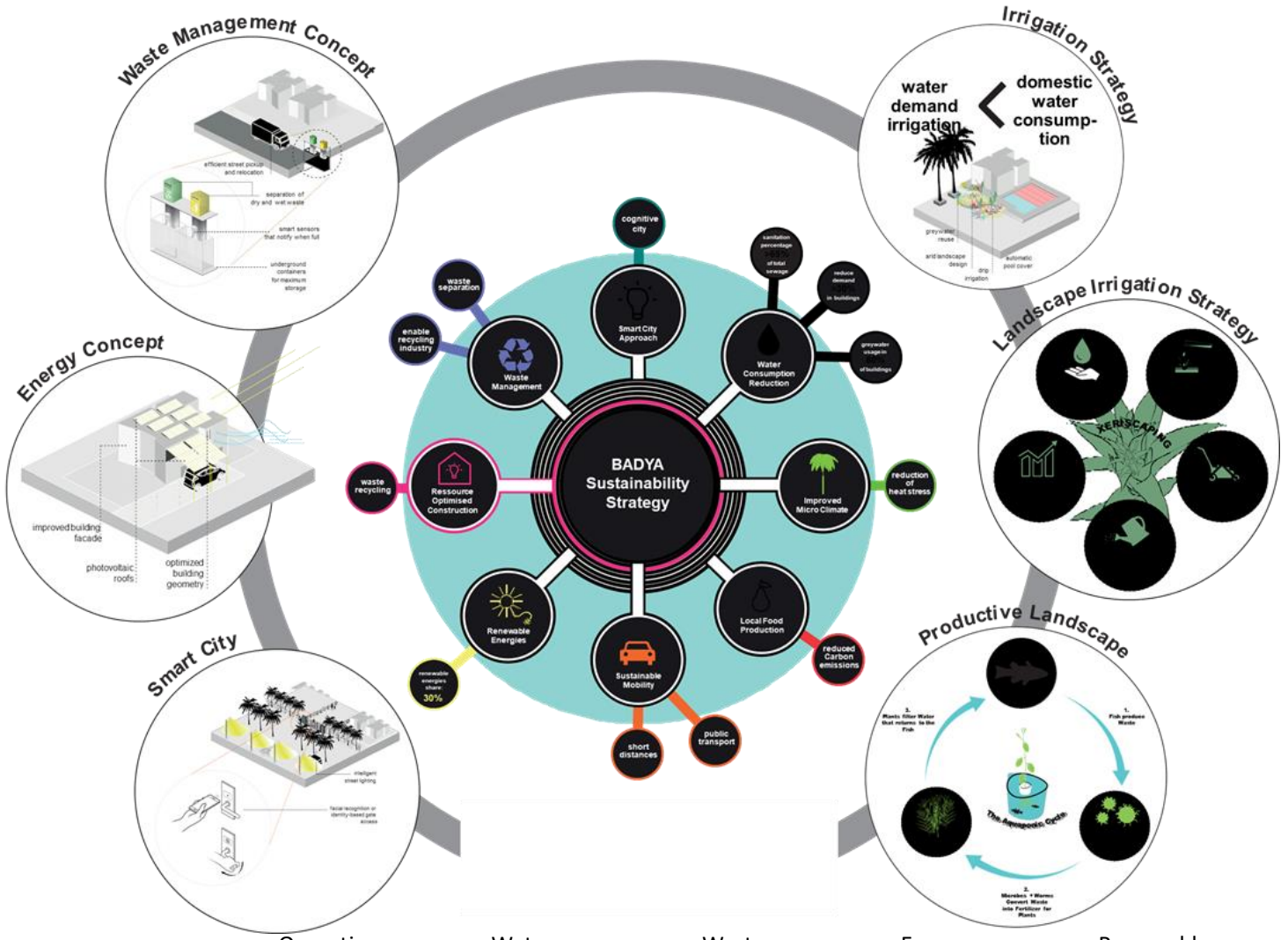
Accessibility

- Located in the South-Western edge of 6th of October City
- Close to industrial areas located north of Wahat Road
- 15 kilometers away from the pyramids, 45 minutes away from the New Administrative Capital
- Bound by regional road network including a new ring road currently under construction that will directly connect West Cairo to East Cairo without any exits, in addition to other accessible ring roads and highways
- PHD signed the co-development agreement with the Egyptian Ministry of Housing/NUCA on September 11, 2017
- The project will encompass 12.6 mn sqm (3,000 feddan) with an option to add another 12.6 mn sqm with 18-24 month
- PHD will be responsible for the development and management of the project. PHD may act as a Master Developer with the rights to: develop the master plan, sell land parcels to other developers, and may return land to the government if the development schedule is not satisfied

STRATEGY ALIGNED WITH - UNDP SUSTAINABLE DEVELOPMENT GOALS



BADYA
SUSTAINABILITY STRATEGY



Badya Sustainability Quick Facts:

Operation	Water	Waste	Energy	Renewables
20% reduction of operational costs	**30%** reduction of domestic water consumption	**30%** reduction of waste production	**30%** reduction of energy demand by green buildings	**30%** production of renewable energy by on-site PhotoVoltaics

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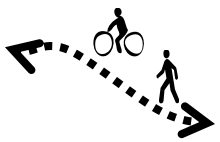
THE GREEN CITY CONCEPT

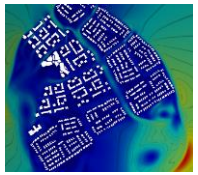
Connecting all neighbourhoods and districts conveniently to the Green Network.

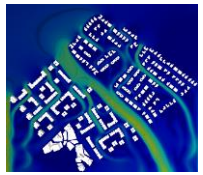
The green network serves multiple purposes:

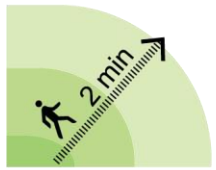
1. **CONNECTIVITY:** it accommodates the slow traffic network and always offers the **most direct connection** to point of interest. 95% of residents live within 2 min. walk to the park.
2. **VENTILATION:** it provides **ventilation/fresh air corridors** and natural cooling throughout the development.
3. **FUNCTION:** parks, playgrounds, pavilion cafés, running tracks and sports facilities are located within the network.
4. **VIEWS:** Providing various opportunities to create valuable prime view locations.

> 22% Green open space









DECENTRALIZATION

6 Districts + 1 Core

- **ONE MAIN URBAN CORE** area with large commercial, cultural, administration and office facilities that is adjacent to the university campus and the sports club
- M**ixed-use commercial DISTRICT CENTRES** in each residential district and neighbourhood to ensure a conveniently distributed provision of services, leisure, sports & social structure through out the city

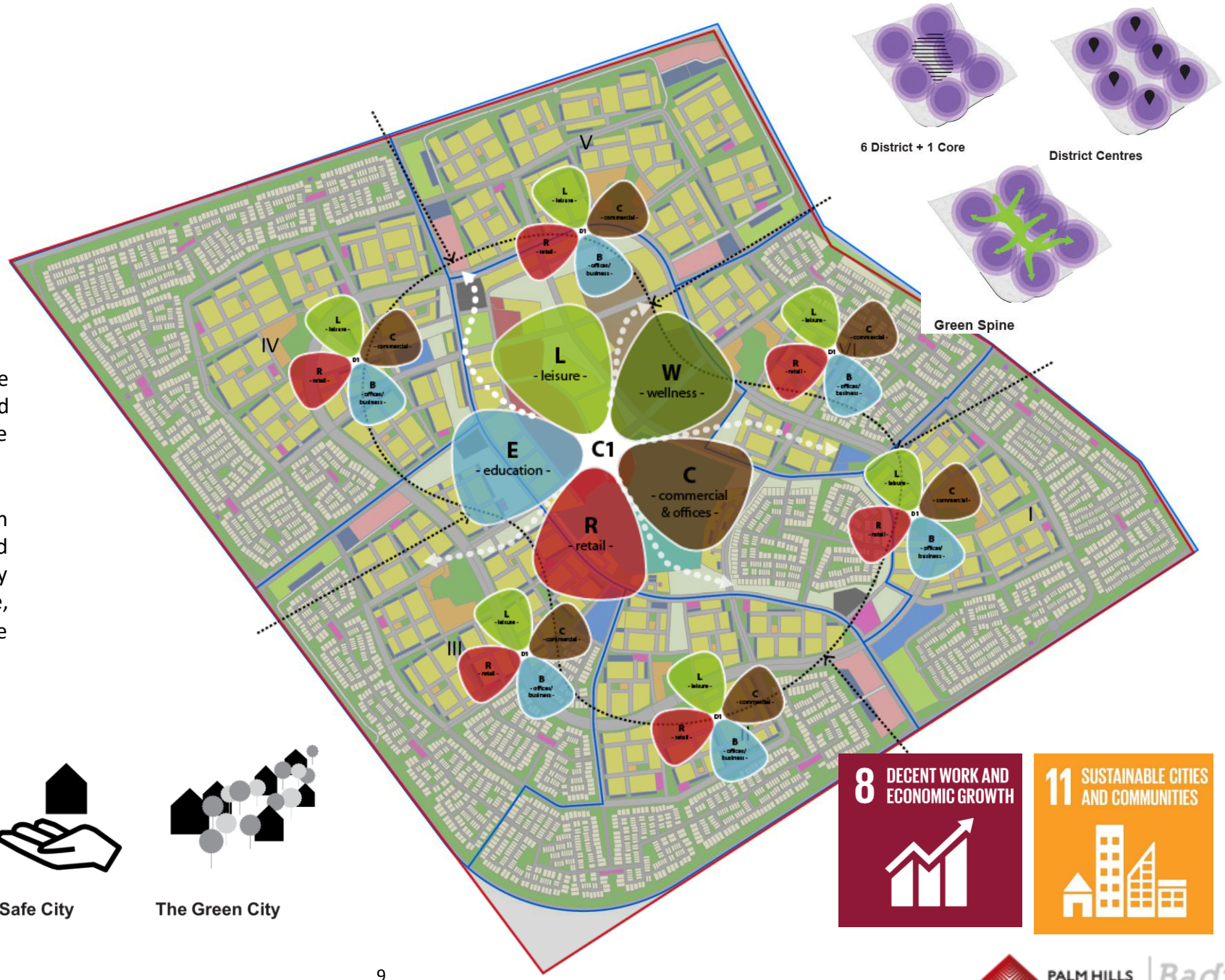
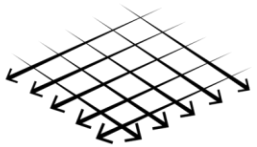


Figure 6. Badya City Main Principles



The Convenient City | The Connected City | The Safe City | The Green City

8 DECENT WORK AND ECONOMIC GROWTH

11 SUSTAINABLE CITIES AND COMMUNITIES

URBAN STRUCTURE - DECENTRALIZATION

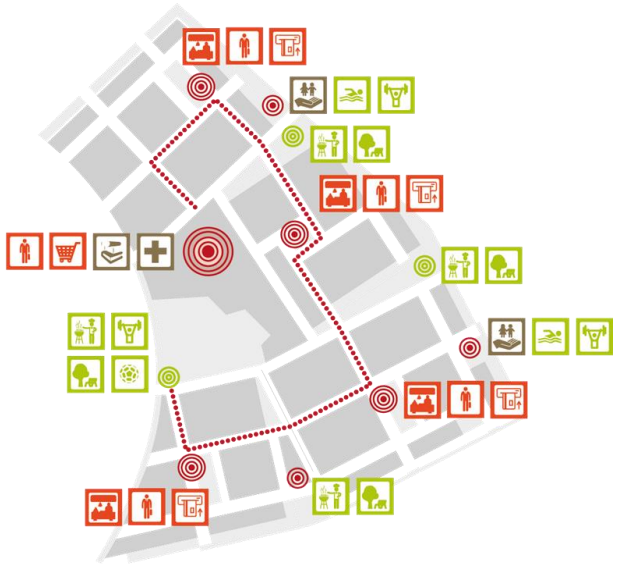
A WALKABLE CITY

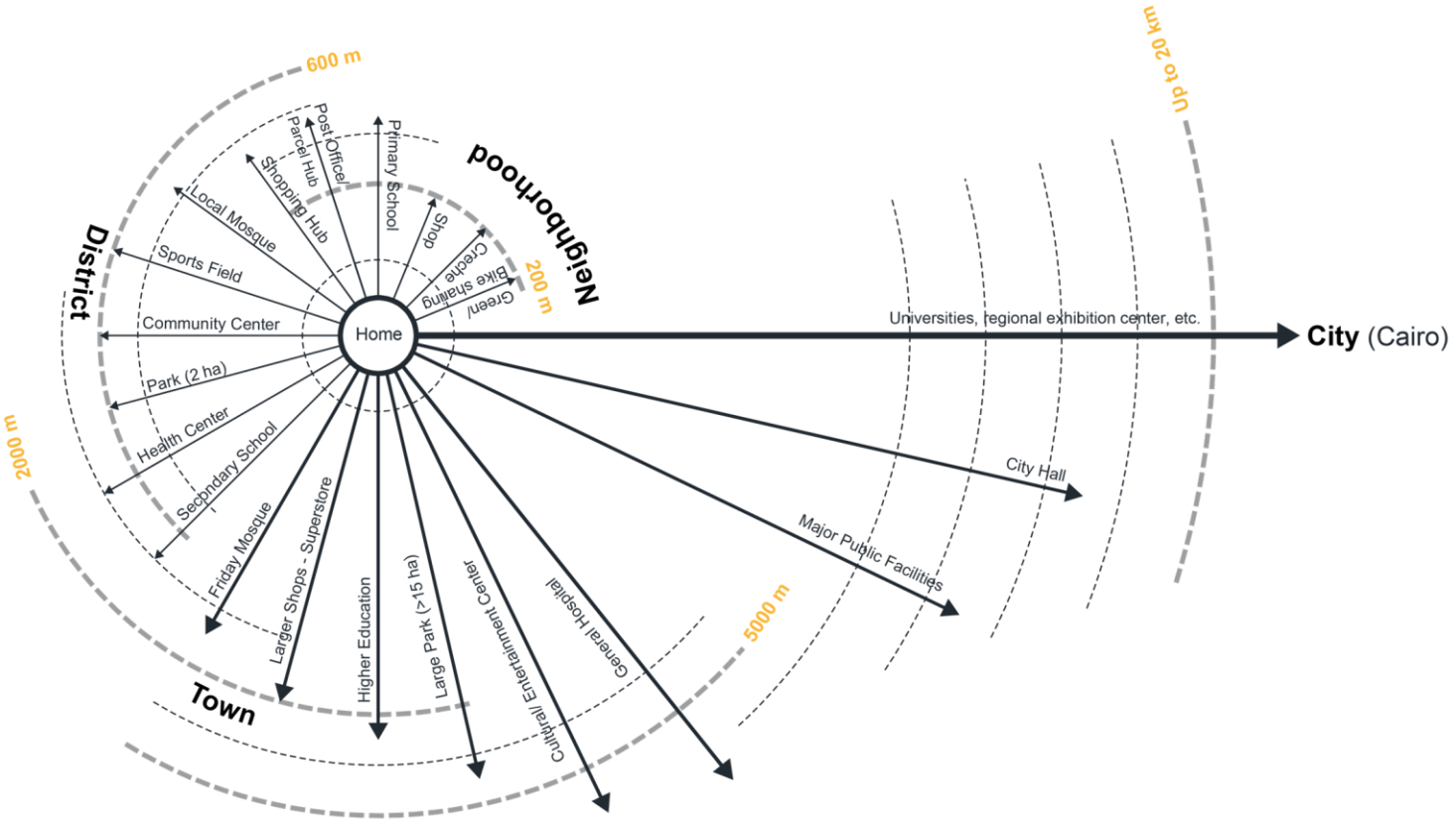
A CITY OF SHORT DISTANCES

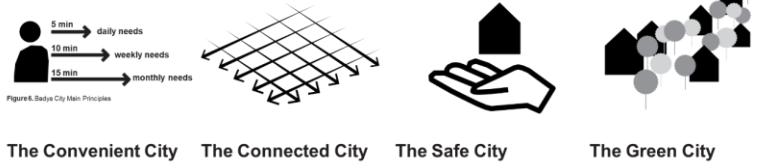
The masterplan is strategically designed to encourage residents to walk or cycle instead of using the car for all journeys.

The masterplan provides:

I. Facilities of daily need within 5-minute walking distance for all residents
II. Weekly facilities in 10-minute walking distance
III. Monthly facilities in 15 minutes cycling distance







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11 SUSTAINABLE CITIES AND COMMUNITIES

A CONNECTED CITY

1. **NEIGHBORHOOD PARK**: In the center of each cluster, within walking distance of each unit.
2. **DISTRICT PARK:** At the nucleus of the district, providing a communal open space for all residents.
3. **BOULEVARD & LINEAR GREEN CORRIDORS:** Connecting parks & open spaces. The Green Boulevard is a green ring encircling the city center; connecting all of the district parks **Linear Corridors** radiates outwards from the boulevard.
4. **BUFFER ZONES:** Providing additional green areas enabling a subtle yet distinct separation of the public and private realm.

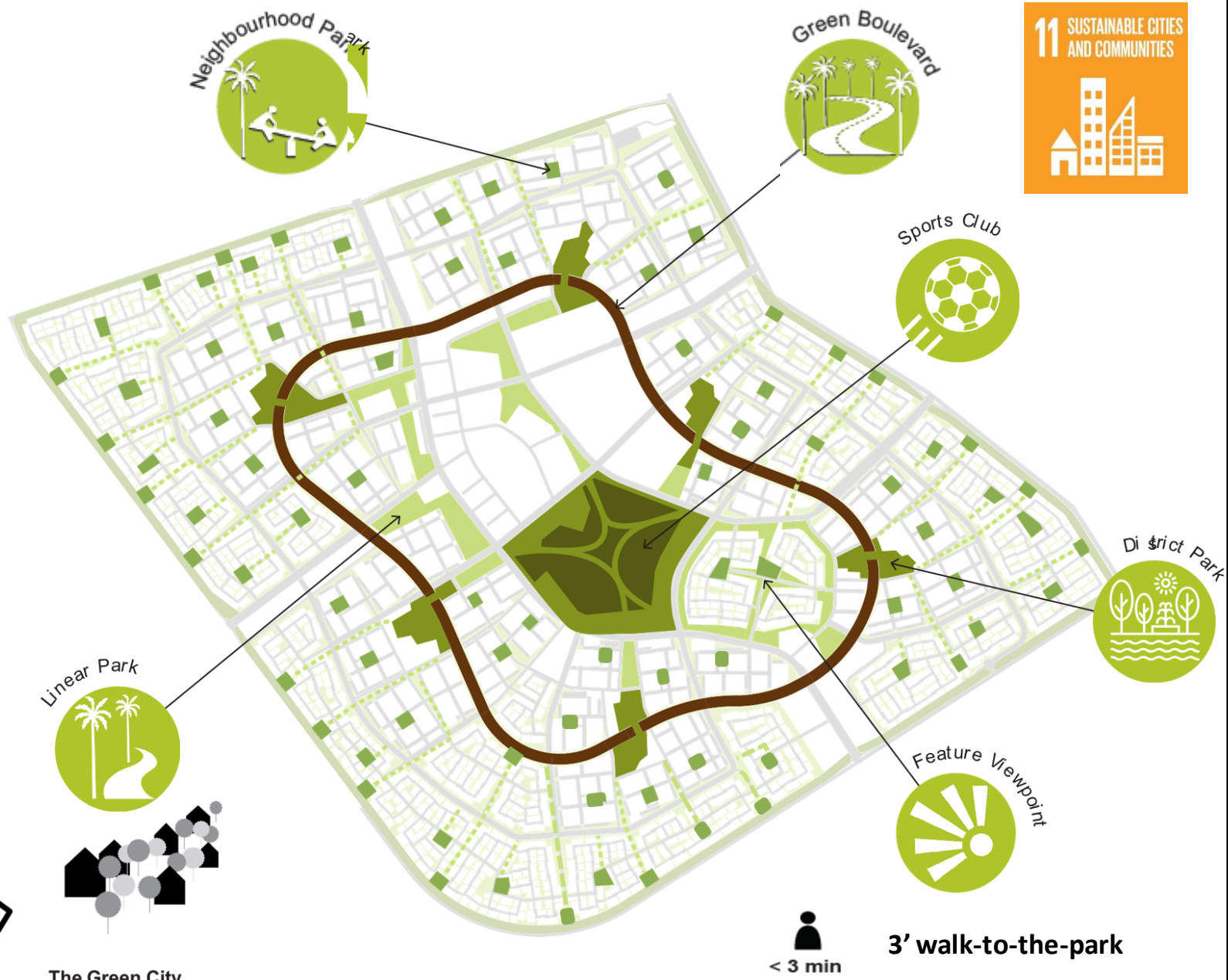
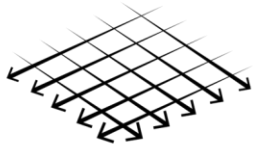


Figure 6. Badya City Main Principles



The Convenient City | The Connected City | The Safe City | The Green City

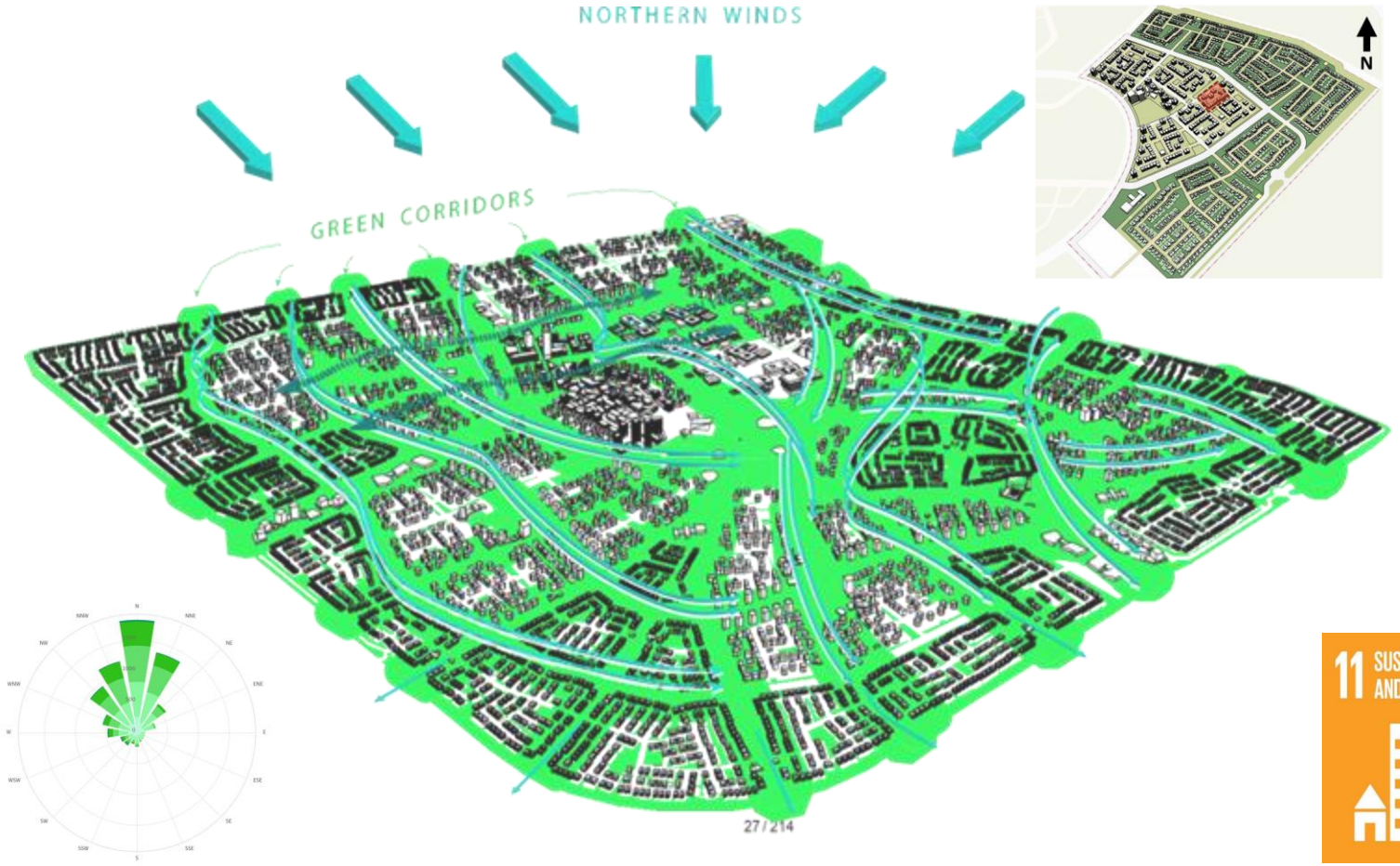
A FRESH CITY

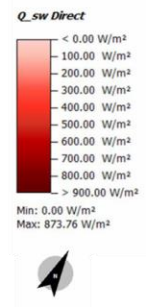
GREEN CORRIDORS enhance city **ventilation** and provide a natural cooling effect for the local microclimate.

Temperatures in cities are amplified by the urban heat island effect, typically by an additional 2-4˚C. Keeping this in mind and taking regional climate conditions into account as well, Badya has been thoughtfully designed to create channels of cool air which will permeate the entire development.

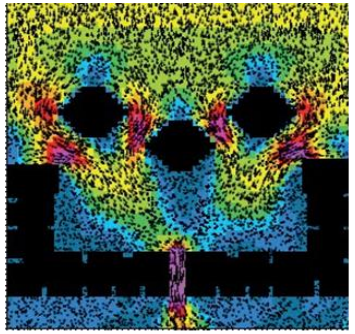
Taking advantage of winds out of the north, the city contains a number of green corridors; as breezes reach the development, they are forced downward by air pressure and are carried through the streets of Badya.

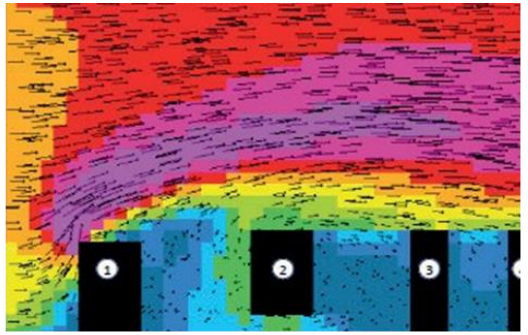
The Corridors are not only **continuous** but also planted with **vegetation,** the shade supplied by such plantings is amplified by the movement of air.

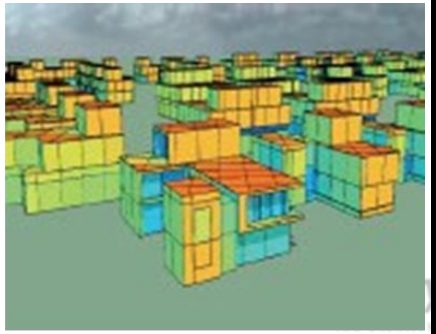




11 SUSTAINABLE CITIES AND COMMUNITIES





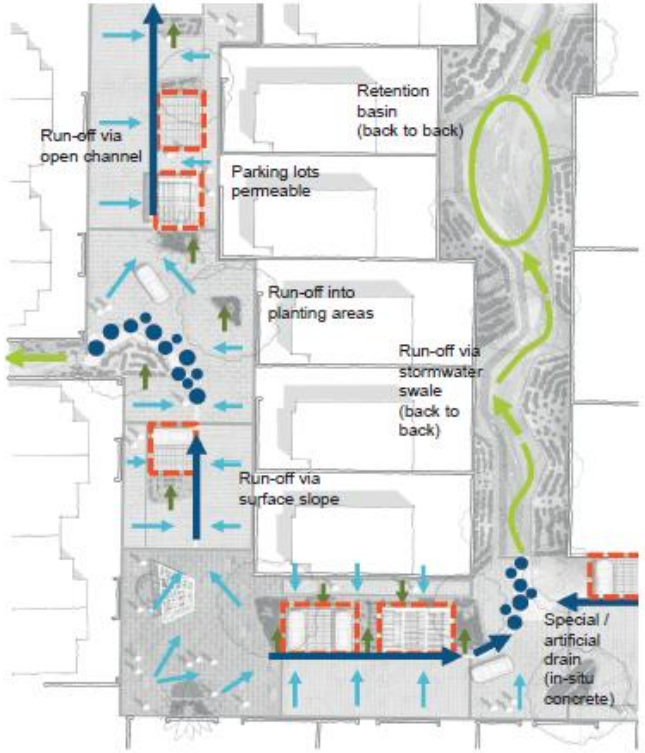


STORM WATER MANAGEMENT

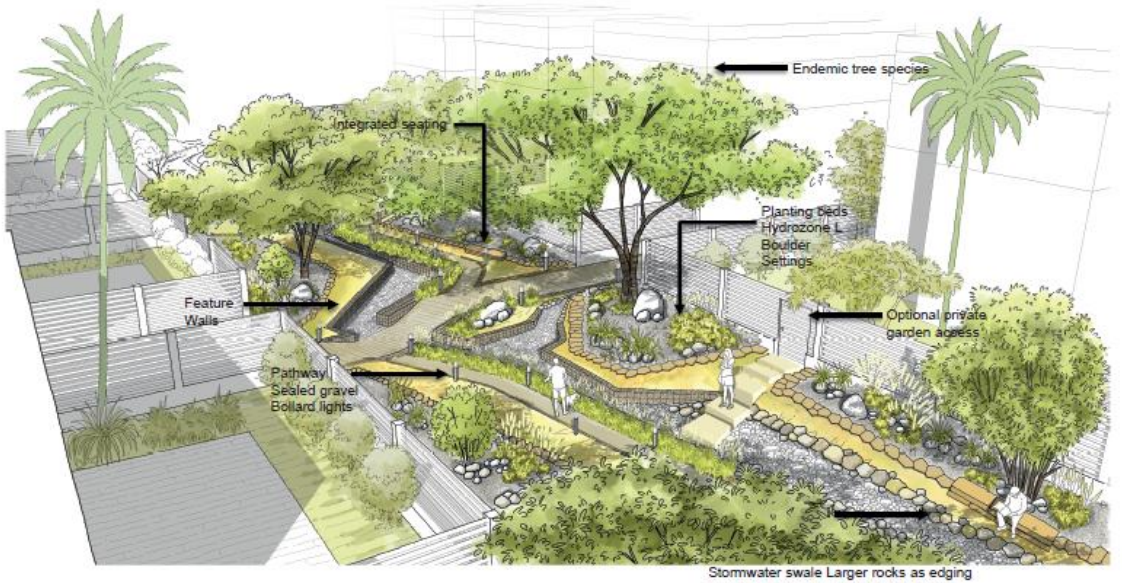
SWALES IN BACK-TO-BACK AREA helped to optimize the design and sizing of the storm network by decreasing the amount of water directed to the network.

These swales and infiltration basins in the back-to-back area are both functional elements of the storm management strategy and are also aesthetic elements that helped in completing the image of providing a **NATURAL LANDSCAPE** in contrast to the **ENGINEERED LANDSCAPE** in the **LIVING STREETS**.

11 SUSTAINABLE CITIES AND COMMUNITIES



Stormwater diagram



MAXIMIZING PRIME VIEWS

11 SUSTAINABLE CITIES AND COMMUNITIES

German Design Council: Best Urban Design Award
August **2019**

The Jury Statement

"Badya City is the ambitious concept of a user-oriented and zero-emission mobility-optimized city of short distances. Actively usable spaces such as networked residential streets and parks for shortest cycling and walking paths, which also absorb sudden water masses, offer a high level of quality of life, conserve resources and contribute to a better urban climate. In a time of rapidly growing cities with all the associated disadvantages such as traffic collapse, housing shortages and air pollution, the intelligent, sustainably planned construction project is an excellent solution with a strong exemplary character."

https://www.iconic-world.de/directory/integrierte-planung-badya-city

This is a prestigious prize in Germany & Europe and the award ceremony will take place at the coming EXPO REAL in Munich next October.

Movie

https://www.youtube.com/watch?v=Uj8-H029dck&feature=youtu.be

Our cooperation with the BUILD_ME team Palm Hills Badyã

Boundary Conditions | Building

Building Data

Status

A prototype of a multi-family house that will be constructed several times in the project of Badya. This may allow for the EE to be multiplied/repeated in the project.

Specific Challenge

The building will not be operated by the project developers and the concerns of most of the end-user focus on prices of the housing unit not EE measures.

Building Key Information	
Data	Input
Latitude	29.8562
Longitude	30.9015
Elevation [m]	255
Utilization	MFH
Number of floors	6
Number of apartment	11
Conditioned floor area [m²]	2,000
Clear room height [m]	2.7
Conditioned volume [m³]	5,400
Number of inhabitants [#]	42
Year of construction	2020-2023

Comparison: BAU and Current Planning

As the global cost of the BAU construction of such a building will be 233 euro/m².

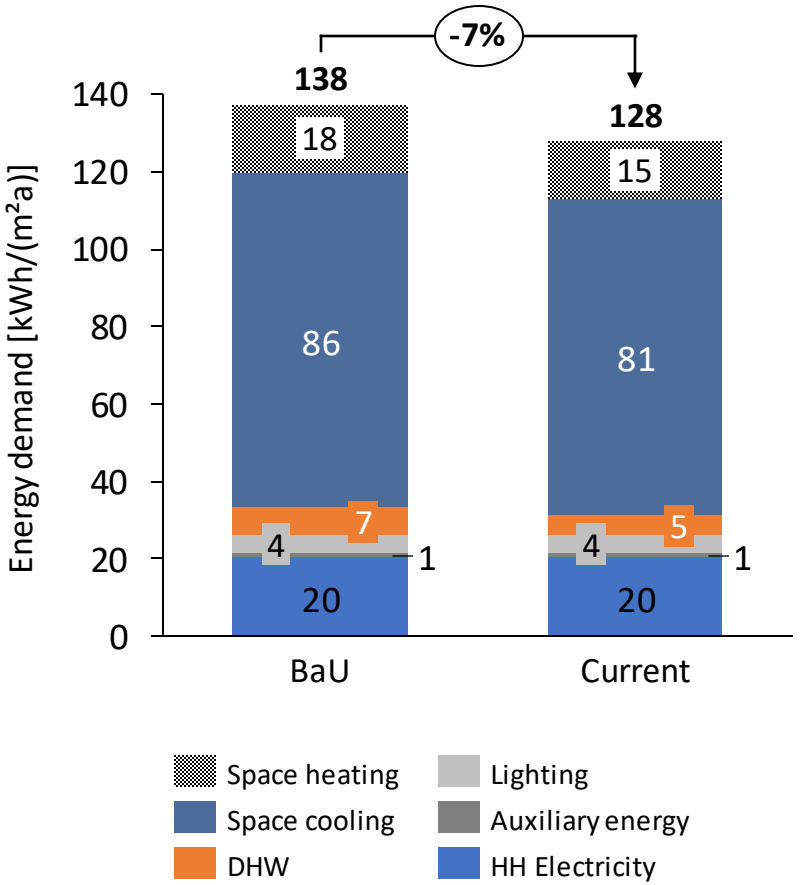
The proposed design cost will be 219 euro/m².

While the proposed design is more energy efficient in comparison to the BAU cases, there is still room for further energy related improvements.

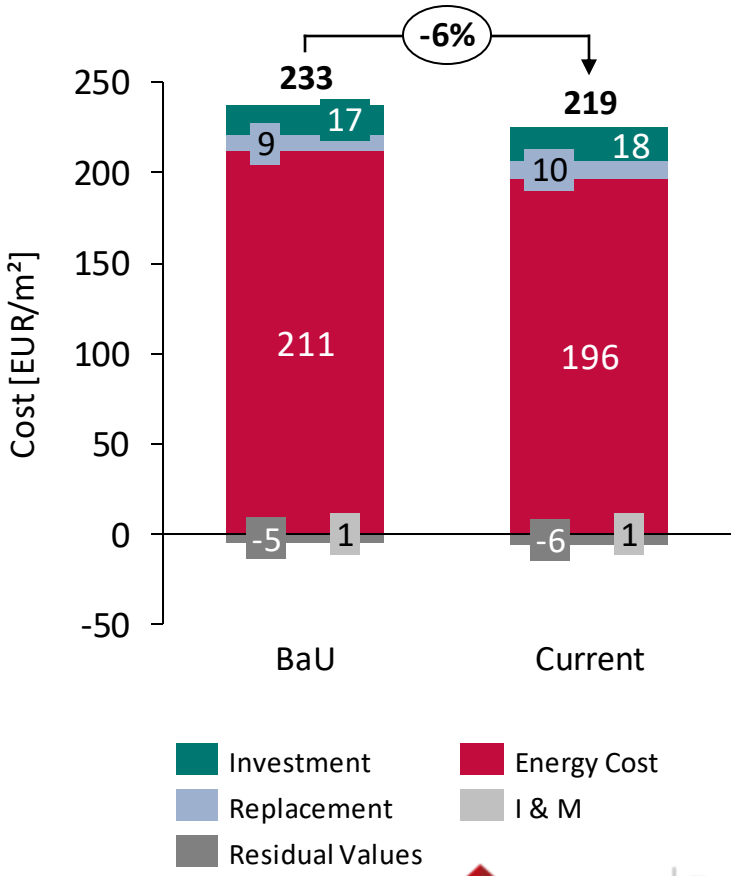
Energy savings: 7%

Global cost savings: 6%

Final Energy Demand



Global Cost



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Overview of Analyzed Measures

Scope of Measures

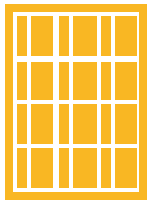
Envelope

- Roof insulation
- External wall insulation
- Low-E glass windows
- Shading
- Air tightness

Systems

- Heating
- Cooling
- Hot water supply

Renewable



- PVs, Solar Thermal
- Solar water heaters

Comparative Overview

Current vs. Optimized

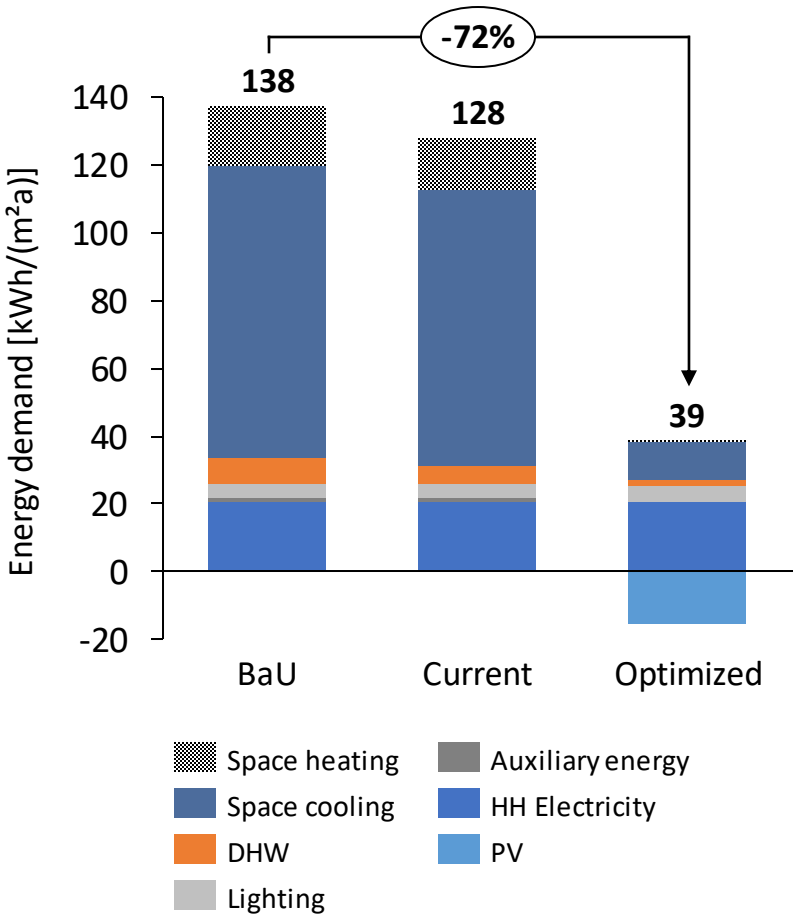
Conclusion

- The suggested measures of the selected package and the optimized lead to a **significant decrease in energy demand and cost savings.**

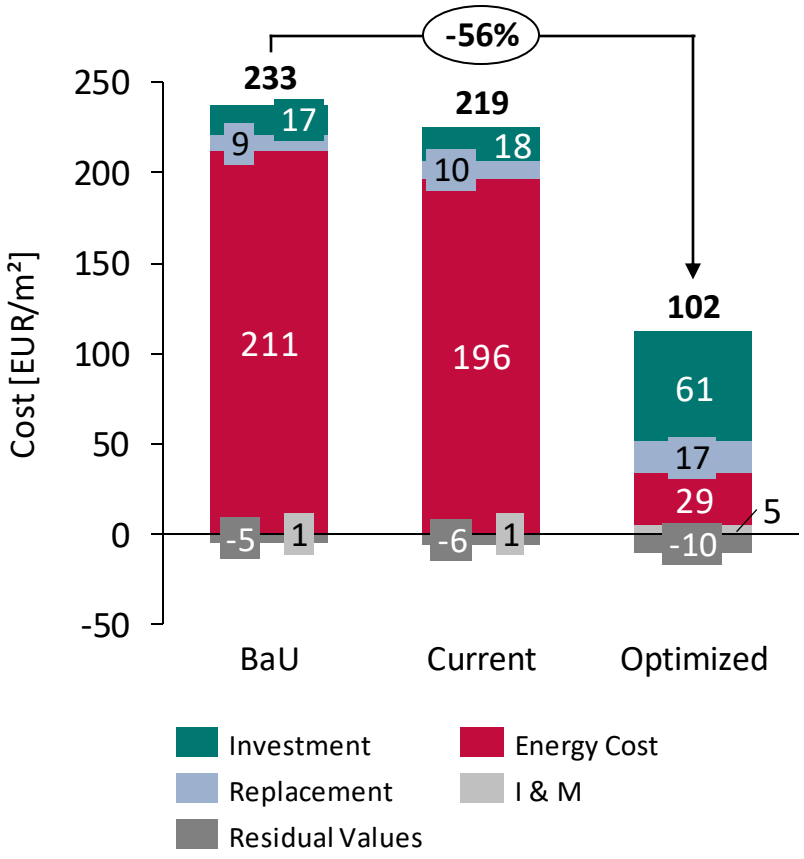
Savings compared to BaU

	Energy	Costs
Optimized	72%	56%

Final Energy Demand



Global Cost



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Optimized Solution

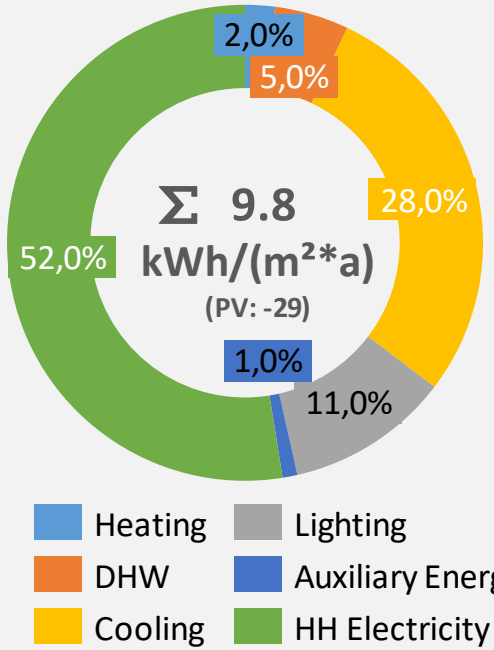
Results

The key components of the energy concept are illustrated in this table, it shows that the building envelope is significantly enhanced compared to the business as usual and current plan.

Special attention is given to the use of renewable energy sources in terms of PV (for electricity).

This leads to energy savings and emission reduction.

Parameters	Optimized Building
Roof insulation (U-Value)	**0.3 W/m²K**
Wall insulation (U-Value)	**0.38 W/m²K**
Floor insulation (U-Value)	2.2 W/m²K
Windows (U-Value; G-Value)	**0.9 W/m²K; 0.5**
Window fraction	Ø 19%
Shading	**Shading elements**
Air tightness	**0.05 1/h**
Heat supply	VRF - **COP 5**
Cold supply	VRF - **COP 5**
Hot water	Direct electric & **8 m² solar**
Ventilation systems	Natural ventilation
Lighting systems	LED
Renewable energy	**34 kWp (PV)**
Set temperature cooling/heating	**26°C** / 20°C



Energy Cost
0.6 EUR/(m²a) | 11 EGP/(m²a)

CO2 - Emission
4.3 kg / (m²*a)

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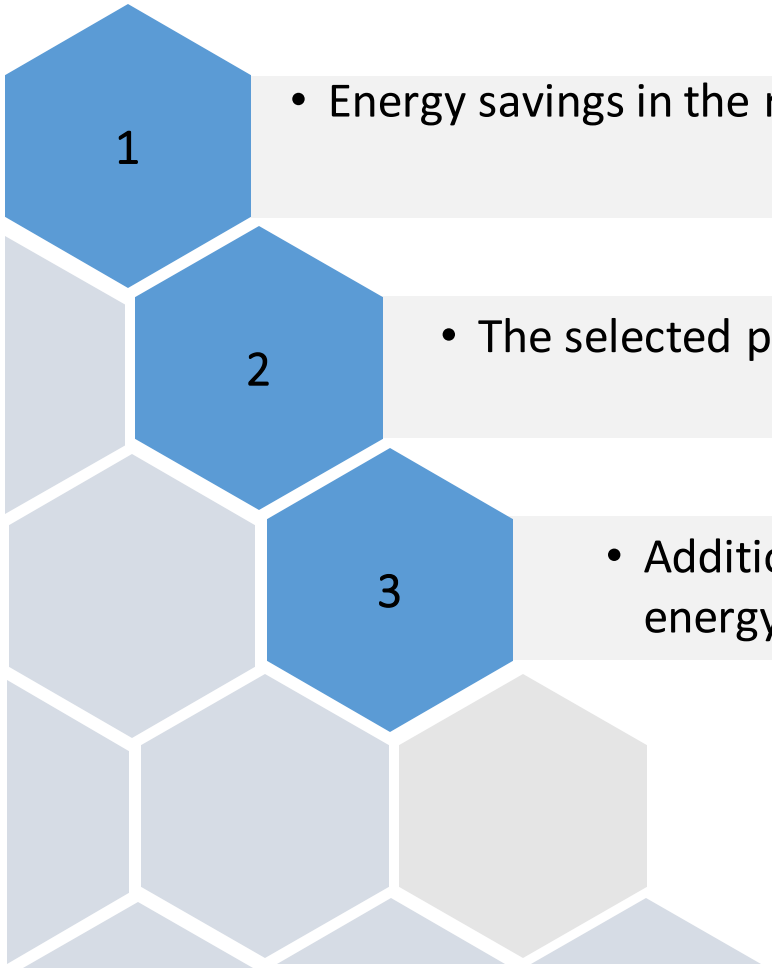
Key Conclusion

Main Take Aways for Palm Hills Badya Project



- Energy savings in the range of 70 - 80% are possible
- The selected package is also attractive in economic terms with a payback below 5 years
- Additional costs per apartment of 1,000 € / 17,000 EGP looks appealing for a low energy building