Bangladesh is becoming increasingly vulnerable to air pollution, sea level rise, high tide and river flood by cyclone, potentially caused by greenhouse gas emissions from rising fossil fuel consumption. The Nationally Determined Contribution of Bangladesh focussing on climate commitments hints at a targeted 25% reduction of overall energy consumption in commercial buildings. Green buildings have proven to yield energy savings of 40 to 50% and water savings of 20 to 30% when contrasted against conventional buildings thereby contributing towards sustainable energy and supporting the climate goal of limiting global temperature rise to 2°C (above pre-industrial levels). Estimates by IFC suggest that the green buildings market is worth USD 1 billion (commercial) and USD 2.2 billion (residential) by 2025.
The building sector in any given economy is known to have significant environmental impacts, including a toll on electrical and thermal energy consumption, and carbon dioxide emissions. Energy demand has been on a constant upsurge in the country, and a lot of it is attributed to industrial sector, to the tune of 50% of national primary energy. By 2025, the demand for electricity is likely to rise by 3,000 MW. Currently there are 21 industrial zones in the country and a soft target of scaling it up to 42 is in the pipeline. This is a straight indication at the sharp rise in electricity needs, which can essentially be catered through green building strategies in the industrial sector of the economy, to start with.

Coupled with strong energy demand is the rising population and improving economy of Bangladesh. Bangladesh is the eighth most populated country in the world, with tremendous urban growth. While all sub-sectors are growing, the residential sector is projected to take the majority of future floor space. Multi-unit buildings are expected to be the primary area of growth within residential, with an emphasis on affordable housing.

Estimations suggest, there is a shortage of about 5 million houses in Bangladesh, as of 2018. A third dimension parallel to the energy challenge and perhaps most critical is the high climate vulnerability of Bangladesh as outlined in the two recent key reports – The Intergovernmental Panel on Climate Change’s ‘Fifth Assessment Report’ and World Bank’s ‘Turn Down the Heat’. The country is becoming increasingly vulnerable to air pollution, sea level rise, high tide and river flood by cyclone, potentially caused by greenhouse gas emissions from rising fossil fuel consumption.

To fight all the above challenges with a view to futuristic climate resilience and bridging the energy gap, green buildings which are principally designed and built with a focus on energy and water conservation, reduction of material waste, flexibility, durability, and comfort are a need of the hour. The Nationally Determined Contribution of Bangladesh focussing on climate commitments hints at a targeted 25% reduction of overall energy consumption in commercial buildings. Green buildings have proven to yield energy savings of 40 to 50% and water savings of 20 to 30% when contrasted against conventional buildings (World green Building Council). Green buildings can act as an effective tool towards sustainable energy and support the global climate goal of limiting global temperature rises to 2°C (above pre-industrial levels) positively.
Bangladesh is demonstrating strong regulatory intent to abide by a green development philosophy

The Bangladesh National Building Code was formulated in 2006 to achieve satisfactory performance of any building, control and regulate construction in the country. It establishes minimum standards for design, construction, quality of materials, use and occupancy, location and maintenance of buildings within Bangladesh in order to safeguard within achievable limits, life, health, property and public welfare. This was followed by development of Building Construction Rules after a couple of years.

The green building movement was triggered afterwards when in 2012, a Recommendation document for Green Building Code was brought out with the help of International Finance Corporation. Bangladesh government policies are encouraging green and sustainable buildings, as is evinced through the 7th Five Year Plan outlining incorporation and introduction of Green Building Code considerations in the National Building Code, standardization and labelling of energy efficient electrical appliances & equipment, implementation of Energy Management system for industries.

A significant stride in the green building space was formulation of the Building Energy & Environment Rating for Design and Construction of Buildings (Draft) in 2018. Further, Bangladesh’s Ministry of Housing and Public Works is currently creating Green Buildings Guidelines.

Exhibit 2: Timeline of policy based developments in real estate space of Bangladesh

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Key roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architects &amp; consultants</td>
<td>Innovative designs</td>
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<tr>
<td></td>
<td>Code compliance and technical due diligence</td>
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<tr>
<td>Code Development Agencies</td>
<td>Code development</td>
</tr>
<tr>
<td></td>
<td>Awareness programs, market development</td>
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<tr>
<td>Financial institutions</td>
<td>Financial products:</td>
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<tr>
<td></td>
<td>Targeted investments in green buildings</td>
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<tr>
<td></td>
<td>Discount in insurance premiums</td>
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<tr>
<td>Government organisations</td>
<td>Regulations with strong compliance mechanisms</td>
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<tr>
<td></td>
<td>Capacity building and job creation</td>
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<tr>
<td></td>
<td>Property and sales tax incentives</td>
</tr>
<tr>
<td>Owners and occupants</td>
<td>Take responsibility of built environment</td>
</tr>
<tr>
<td></td>
<td>Demand for sustainable and efficient buildings</td>
</tr>
<tr>
<td>Real estate developers</td>
<td>Adaptation to market needs</td>
</tr>
<tr>
<td></td>
<td>Skills development</td>
</tr>
<tr>
<td>Technology providers</td>
<td>Innovation and localisation of state of art technologies</td>
</tr>
<tr>
<td></td>
<td>Train people in technology/ service operation</td>
</tr>
</tbody>
</table>
Expected market potential of over US$3 billion reflects significant untapped potential in the market

The building stock is projected to yield a total market of US$ 9.7 billion for commercial property and US$ 62.6 billion for residential units. Estimates by IFC suggest that out of this market potential, the green buildings market is worth US$ 1 billion (commercial) and US$ 2.2 billion (residential) by 2025. The green market, while not fully established, grew considerably in 2015 and is making strides mostly attributed to the industrial sector. The garment industry is primarily driving growth in green building. The country had its first green building back in 2011. As of now (2018), Bangladesh has witnessed 62 LEED certified activities, and close to 1 million LEED certified square metres.

The additional cost of constructing green building is projected depending upon the size and extent of project and the amount is US$ 5,800 to US$ 9,500. It has been estimated for green buildings that the financial payback typically exceeds the additional cost of green building by 4-5 times over 20 years. The savings in monetary terms come from the efficient use of utilities which results in decreased energy expenses and the projected savings in different sectors is to the tune of US$ 130 billion on energy bills.

Figure 3: Projected building stock and anticipated share of green buildings in Bangladesh till 2025

Bangladeshi garment industry is currently leading the world in adding green factories to the economy. There are 67 LEED certified green factories in the apparel sector in Bangladesh and more than 280 factories registered for LEED certification. Apart from LEED, IFC has developed the Excellence in Design for Greater Efficiencies (EDGE) tool which empowers developers and builders to quickly identify the most cost effective ways to reduce energy use, water use and embodied energy in materials. The strategies integrated into the project design are verified by an EDGE Auditor and certified by Green Business Certification Inc. (GBCI).

Case in point: Plummy Fashions Ltd.

A knitwear manufacturing unit located in Narayanganj, 20 kms south from Dhaka city centre. The site is 5.5 acres. Platinum Rating under LEED for New Construction 2009

Platinum certified on 09/22/2015

Points earned: 92 out of 110

Tangible benefits and actions:
- 42% improvement on baseline building performance rating
- 13% onsite renewable energy
- 35% green power purchase
- 20% recycled content building materials
- 20% regionally extracted, harvested, recovered, or manufactured materials
- 50% FSC-certified wood products
- 75% diversion of construction and demolition debris
- 75% of occupied space has daylighting
- 100% reduction in potable landscape water use
- 40% reduction in baseline indoor water use
- 50% reduction in wastewater generation

Source: GBIG
Stakeholders are coming together to position Bangladesh as world leader in green factories and best adapt from international experience.

**Certified Green Buildings in Bangladesh**
A total of 96 projects with LEED certification from USGBC
17.91 M LEED certified sqft
67 certified LEED factories in apparel sector – highest in the world

**Bangladesh Green Building Academy**

**National Housing Authority (NHA)**

**Architects and Consultants**

**IDCOL**

**Real Estate and Housing Association in Bangladesh (REHAB)**

**EDGE tool**

**LEED**

**Run the business**

**Bangladesh House Building Finance Corporation**

**International financiers**

**Tech providers**

**Assurance**

**IDCOL**

**Tangible benefits**
Renewable energy, emissions, water, energy efficiency

- 9% onsite renewable energy
- 35% green power purchase
- 40% improvement on baseline building performance
- 100 tons/ year CO2 emissions reduction (building is functional since January 2004)
- 40% reduction in potable water consumption

**Remi Holdings Ltd**

**Location**
Adamjee EPZ, Narayanganj, Bangladesh

**Developer**
Bitopi Group

**Use**
RMG Factory

**Size**
Total area: 245,947 sqft

**Product :** Bottoms

**Capacity :** 450,000 pieces / month (approximate)

**Rating**
Highest rated green factory in Bangladesh (97/110) LEED for New Construction 2009 Platinum certified on 07/15/2016

**Energy and atmosphere**
- 40% improvement on baseline building performance rating
- 9% onsite renewable energy
- 35% green power purchase

**Materials and resources**
- 20% recycled content building materials
- 20% regionally extracted materials
- 50% FSC-certified wood products
- 75% diversion of construction and demolition debris
- 10% salvaged or reused building materials
- 2.5% rapidly renewable materials

**Indoor environment quality**
- 75% of occupied space has daylighting
- 90% of occupied space has quality views

**Water efficiency**
- 100% reduction in potable landscape water use
- 40% reduction in baseline indoor water use
- 50% reduction in wastewater generation
**Imperial Homes, Philippines**

**Location**
Manila, Philippines

**Developer**
Imperial Homes Corporation, known for designing green community that embraces the perks of eco-friendly lifestyle

**Statistics**
1,456 green apartments priced at approx. $40,000 each

**Use**
Residential building

**Rating**
EDGE for Homes Certificate

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**Tangible benefits**
Renewable energy, water, materials

- 26% monetary savings through choice of sustainable building materials
- 42% energy consumption reduction: savings of USD11/month/home
- 0.4 tCO2/year/home GHG reductions
- 20% reduction in potable water consumption: savings of 2.4kL/month/home

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**Green Measures undertaken**

- Reduced window to wall ratio
- Use of efficient LED lighting
- Installation of solar photovoltaic panels on home roofs
- Low flow faucets for washbasins, kitchen sinks and showerheads
- Corrugated Zinc sheets for roof
- In situ reinforced wall for external walls
- Ferro-cement Wall Panel for Internal Walls

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Remi Holdings Ltd, Bangladesh
Imperial Homes, Philippines
Multidimensional challenges are hindering the proliferation of green buildings in Bangladesh

The green building market is perceived to have immense potential in Bangladesh but requires a highly conducive ecosystem to help realise the potential. The adjacent exhibit demonstrates positioning of the green building landscape in the country with respect to five major facilitating pillars.

Evidently, there are three very particular areas that need deep strengthening to realise the growth potential of the green building market.

- a. Policy incentives are being created by the government. It is now also and equally important to raise awareness among project developers on the long-term benefits of green buildings. Further instruments of the likes of public housing of green building, rent certification, bonus density, could be explored to attract investors, developers and owners/ tenants.
- b. The Green Building guidelines, or incorporation of such considerations in the building code is of utmost importance. It can be complemented by an abiding policy on voluntary certifications for all new constructions, which can give additional branding based driver for developers to pursue.
- c. As is understood from the gaps, climate-smart investment, including in green buildings to improve access to low-cost, long term finance has a huge role to play. Going forward, access to finance is required to be heavy eased for promoting greater green building development in Bangladesh.
What IDCOL offers:

Bangladesh. IDCOL is playing a major role in developing and financing infrastructure, renewable energy and energy efficiency projects in Bangladesh. Today the company stands as the market leader in private sector energy and infrastructure financing in Bangladesh.

- Long Term Local and Foreign Currency Loan for Infrastructure Projects
- Agency services
- Debt and Equity Arrangements
- Corporate Advisory Services
- Training and Capacity Building Services
- Soft Loan and Grant for Renewable Energy Projects


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