Life Cycle Thinking
For Decision Making
Design
Decision Making
Design
Decision Making
Material/System Selection
Decision Making
Hello!

You can find me at
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RESIDENTIAL TOWER, LONDON

24 Floors

8100 Square Meters

Concrete Frame
Post Tension Slabs
Precast Concrete Stairs
PPC Aluminum Curtain Wall
Blockwork with Plasterboard
Wall Finishes
Floor Finishes
Ceiling Finishes
Services
To truly understand how we gained these insights and how they aid green decision making – we must first re-align with a holistic concept.
Life Cycle Thinking
Integrated approach to evaluate the environment & economic performance of a product, process or service during its entire life cycle.
Let’s look at LCT Toolbox

**Life Cycle Costing (LCC)**

A systematic consideration of **all relevant costs and revenues associated with the ownership of a product/asset throughout its life cycle.**

**Life Cycle Assessment (LCA)**

A systematic compilation and evaluation of the potential **environmental impacts** of a product/asset system throughout its life cycle.
Most relevant as means of ensuring that the improvements in one stage are not creating a greater cumulative impact by shifting the burden to another stage.
The added information came from Life Cycle Costing and Life Cycle Assessment. Both Methods Have Respective ISO standards. They are not new at all. And are used extensively to
- influence design
- make better investment and
- green choices.
And it is this Injection of Life Cycle Thinking in the building design and construction process – that we need to inculcate to shape a more sustainable building future.
This is Life Cycle Framework

LCC – ISO 15686
- Construction Cost
- Operation Cost
- Maintenance inc Replacement Cost
- End-of-Life Cost

LCA – ISO 14044
- Goal and Scope Definition
- Inventory Analysis
- Impact Assessment
- Interpretation
LCC can be performed at two levels

- Whole Building Level
- Building System Level
LCA can be performed at three levels:

- Whole Building Level
- Building System Level
- Building Product Level
**Benefits in Construction LCC**

**Why**

**encourages** discussion and recording of decisions about the **durability** of materials and components at the outset of the project

**offers** a business case for capital intensive **clean technology & green design**. Provides an understanding of paybacks.

**providing** data on actual **performance and operation** compared with predicted performance for use in future planning and benchmarking

**facilitates** **value decision making** in industry, government and non government organisations

**Typically adopted by clients who have a long term interest** in the property concerned.

1. **public** sector who own a large portfolio of property as part of delivering Best Value.
2. **private** clients who intend to own a property over a long-time period.
3. **PFI** project consortia to develop their designs & bids; and to monitor & control costs thereafter
4. **funders** & insurers for due diligence enquiries into how robustly bids have been constructed & how successfully design & construction risks have been tackled
Benefits in Construction LCA

Why

**identifying** opportunities to improve the **environmental performance of products** at various points in their life cycle.

**prevents burden shifting**, helps focus action to address the most impactful areas

**selection** of relevant **indicators of environmental performance**, including measurement techniques

**implementation** of **eco-labling** scheme, producing EPDs & making environmental claim

**facilitates value decision making** in industry, government and non government organisations

Typically adopted by clients who take **interest in optimising on sustainability** requirements

1. **public** sector and large property portfolio for minimum/target requirements & for delivering Best Value
2. **material** manufacturers to present sustainable optimisation of their products
3. **designers** and specifiers for ensuring a sustainable design approach
4. **academics** and students for researching impacts from construction and for material innovation
1950s Onwards

- UN Stockholm Conference
- Earth Summit, UNFCCC and Green Diplomacy
- Oslo Symposium Sustainable Consumption
- First UNFCCC Meet
- Kyoto Agreement Concluded

2002-07
- World Summit on Sustainable Development adopts SCP, 10YFP Rio 20+

2007-12
- Post Kyoto global climate agreement failed
- Earth Summit supports development of SDGs

2012-17
- Paris Agreement, UN adopts SDGs

UNEP/SETAC LIFE CYCLE INITIATIVE

- Post Kyoto global climate agreement failed
- Earth Summit supports development of SDGs
- Paris Agreement, UN adopts SDGs
**LIFE CYCLE MANAGEMENT IN PRACTICE**

### 1950s Onwards

- **1972**: UN Stockholm Conference
- **1992**: Earth Summit, UNFCCC and Green Diplomacy
- **1994**: Oslo Symposium Sustainable Consumption
- **1995**: First UNFCCC Meet
- **1997**: Kyoto Agreement Concluded
- **2002**: World Summit on Sustainable Development adopts SCP, 10YFP Rio 20+
- **2009**: Post Kyoto global climate agreement failed
- **2012**: Earth Summit supports development of SDGs
- **2015**: Paris Agreement, UN adopts SDGs

### UNEP/SETAC LIFE CYCLE INITIATIVE

- **2002-07**: Griha Acknowledged as Innovative Tool by UN
- **2012-17**: Griha National System, ECBC Released (2007)

**TERI aims environmental protection (1978)**

**India Enters Paris Agreement (2016)**
Life Cycle Thinking is critical for achieving targets of UN SDGs & Paris Agreement
Let's wind up with a holistic picture of our residential project, as it stands today
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Emulsion Ceiling Paint Finish
Steel Frame Plasterbord Ceiling
Granite Flooring
Ceramic Tiles
Carpet Flooring
Metal Floor Covering
Emulsion Paint Corridors
Paint Finish
Solid Core Laminate Door
Blockwork with Plasterboard
Aluminium Frame Glass Door
Aluminium Detailwork
PPC Aluminium Curtain Wall
Aluminium Double Glaze
PT Slab-Reinforcement
PT Slab-Formwork
PT Slab-Concrete C35/45

Construction Cost (£)
Major Replacement Cost (£)
Global Warming Potential (kg CO2 eq)
Life Cycle Thinking For Decision Making

- Thank You