

# Creating Circular Area Developments

May 2017

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Innovation & Sustainability  
Delta Development Group

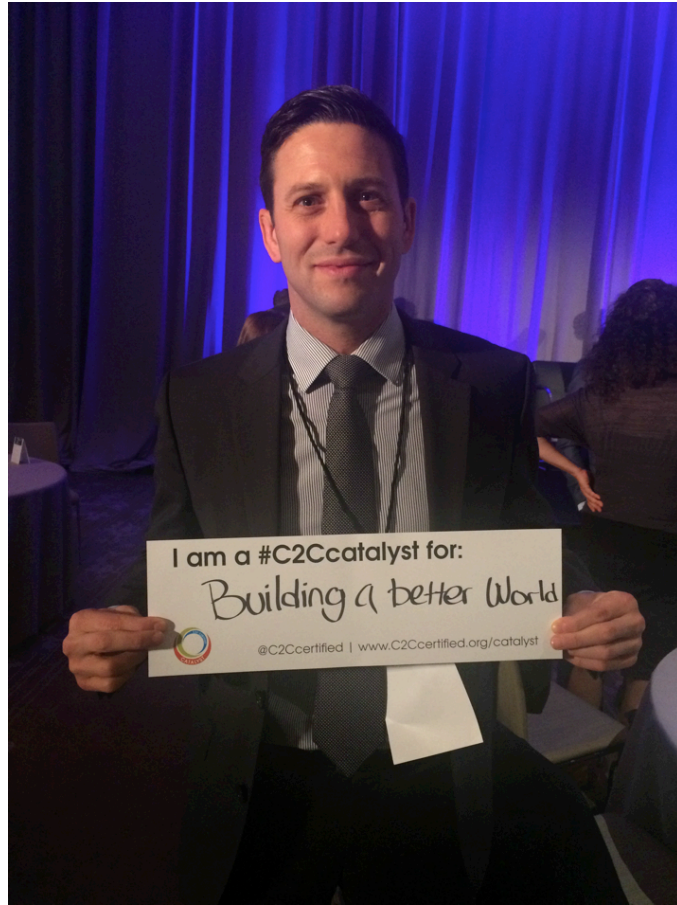






“Design is the first signal of human intention”

- William McDonough

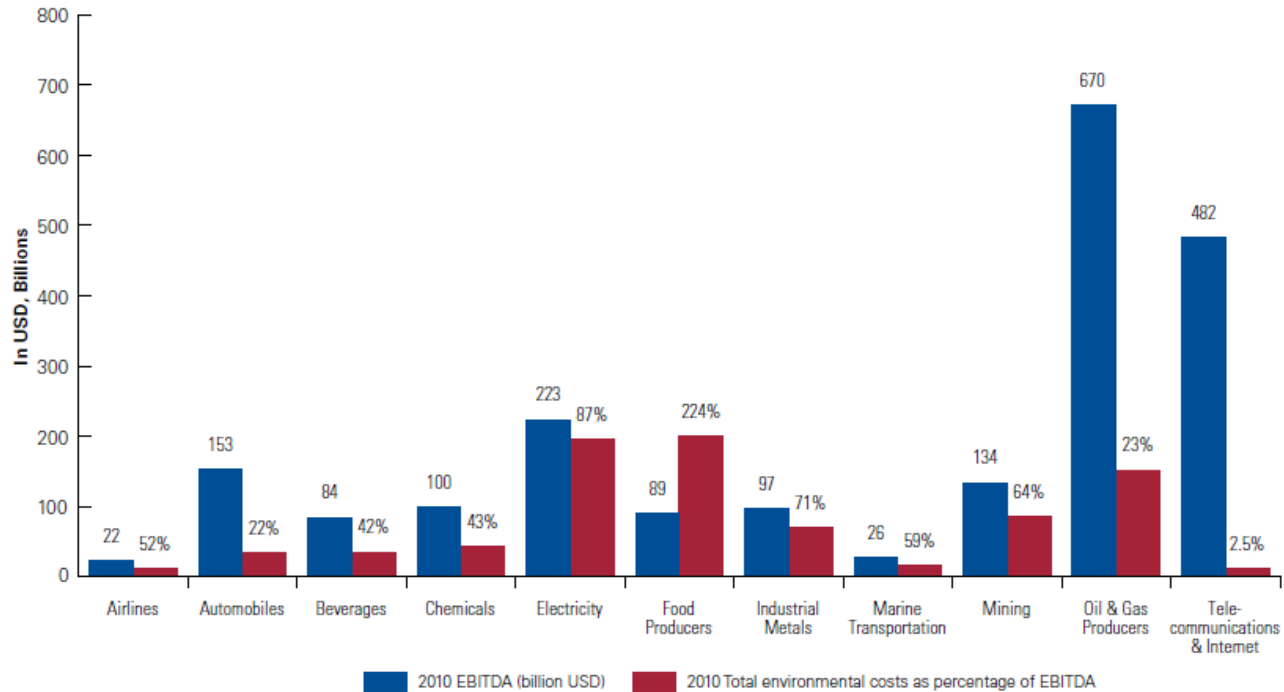


# BUSINESS

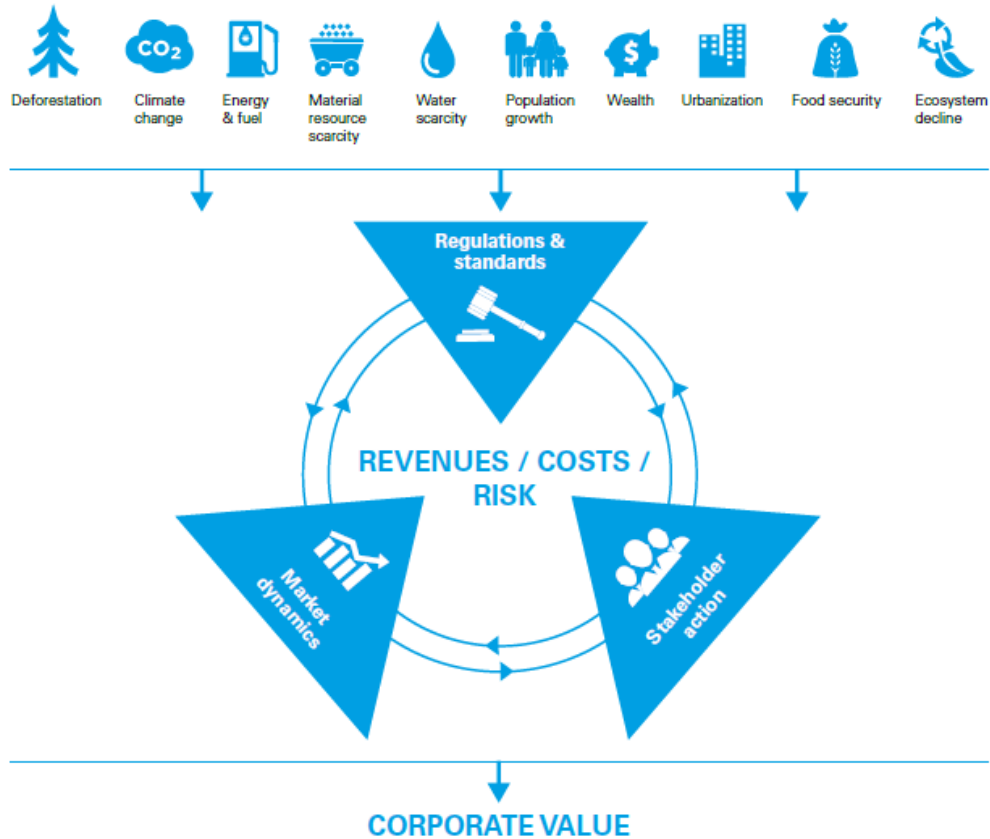
as an engine for

# CHANGE

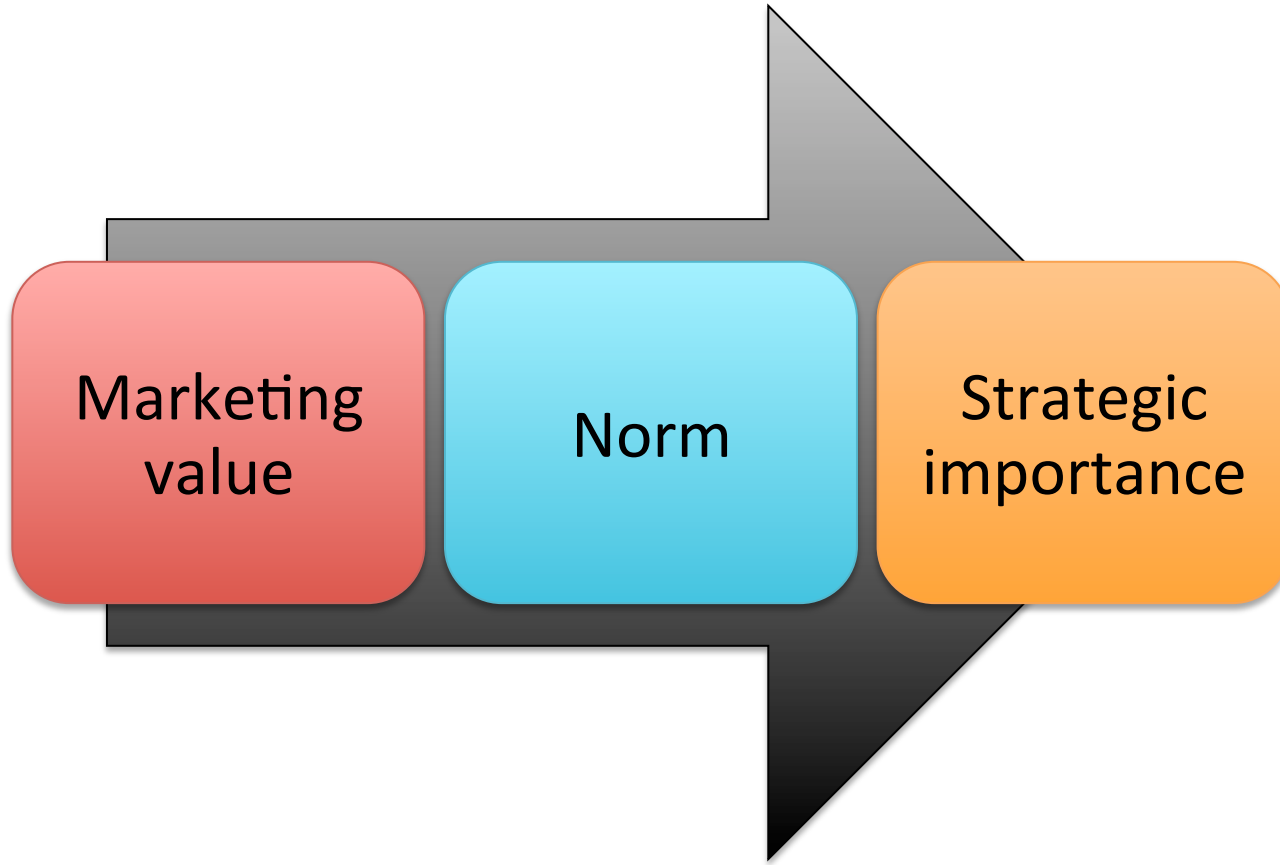
# The method on which we traditionally measure value is incomplete



Source: Trucost 2012







Marketing  
value

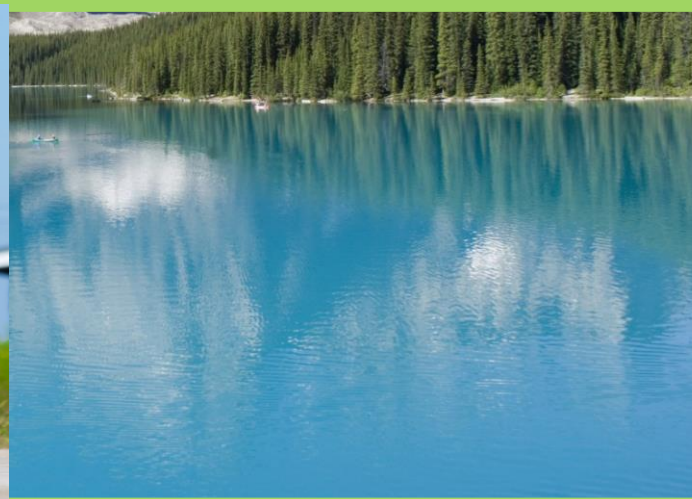
Norm

Strategic  
importance

# accenturestrategy | 2016 CEO Study

- 80% of CEOs say that demonstrating a purpose-driven commitment to sustainability is already a differentiator in their industry.
- 70% of CEOs see Sustainable Development Goals as a clear framework
- Nearly two-thirds of CEOs report they engage investors on the value of long-term strategies and investments addressing global challenges
- 59% of CEOs say their company is able to accurately the business value of of their sustainable initiatives (up from 38% in 2013)





It is clear we need to  
**RE-think**  
the way we do things

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cradle to cradle



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Material  
Health



Material  
Reutilization



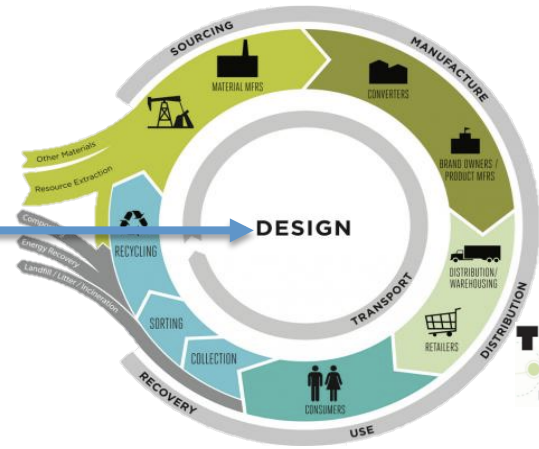
Renewable  
Energy



Water  
Stewardship



Social  
Fairness



**The Circular Economy**  
Unleashing New Business Value



Designing Cradle  
to Cradle Certified™  
Products for the  
Circular Economy



ENGLISH ▾



Made possible by:

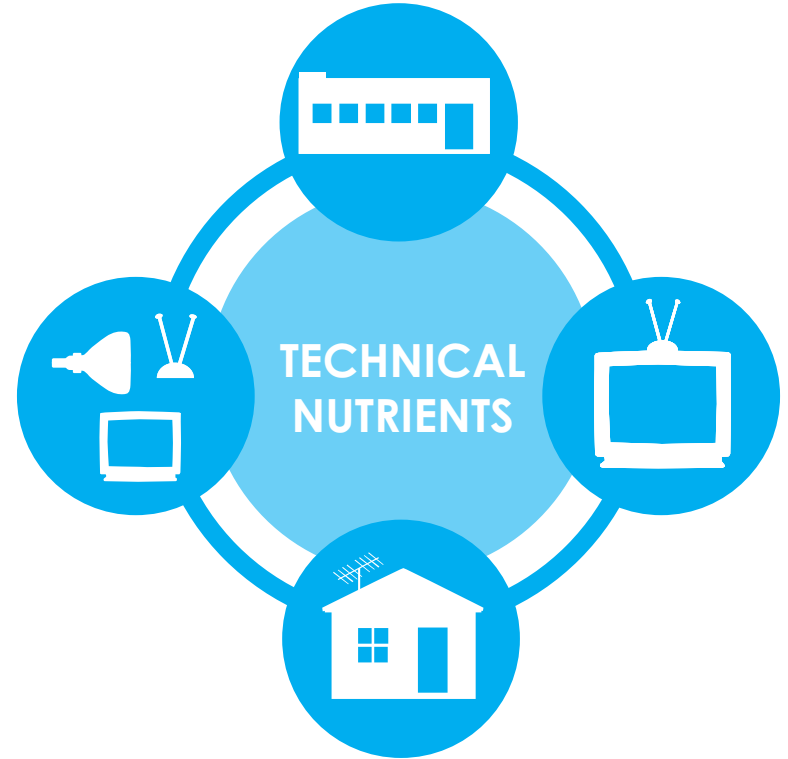
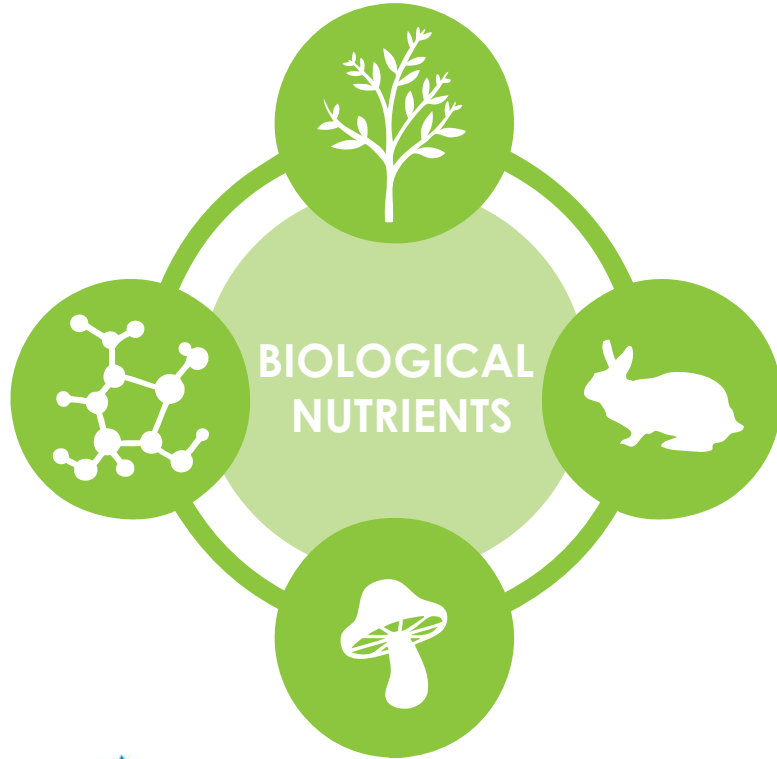


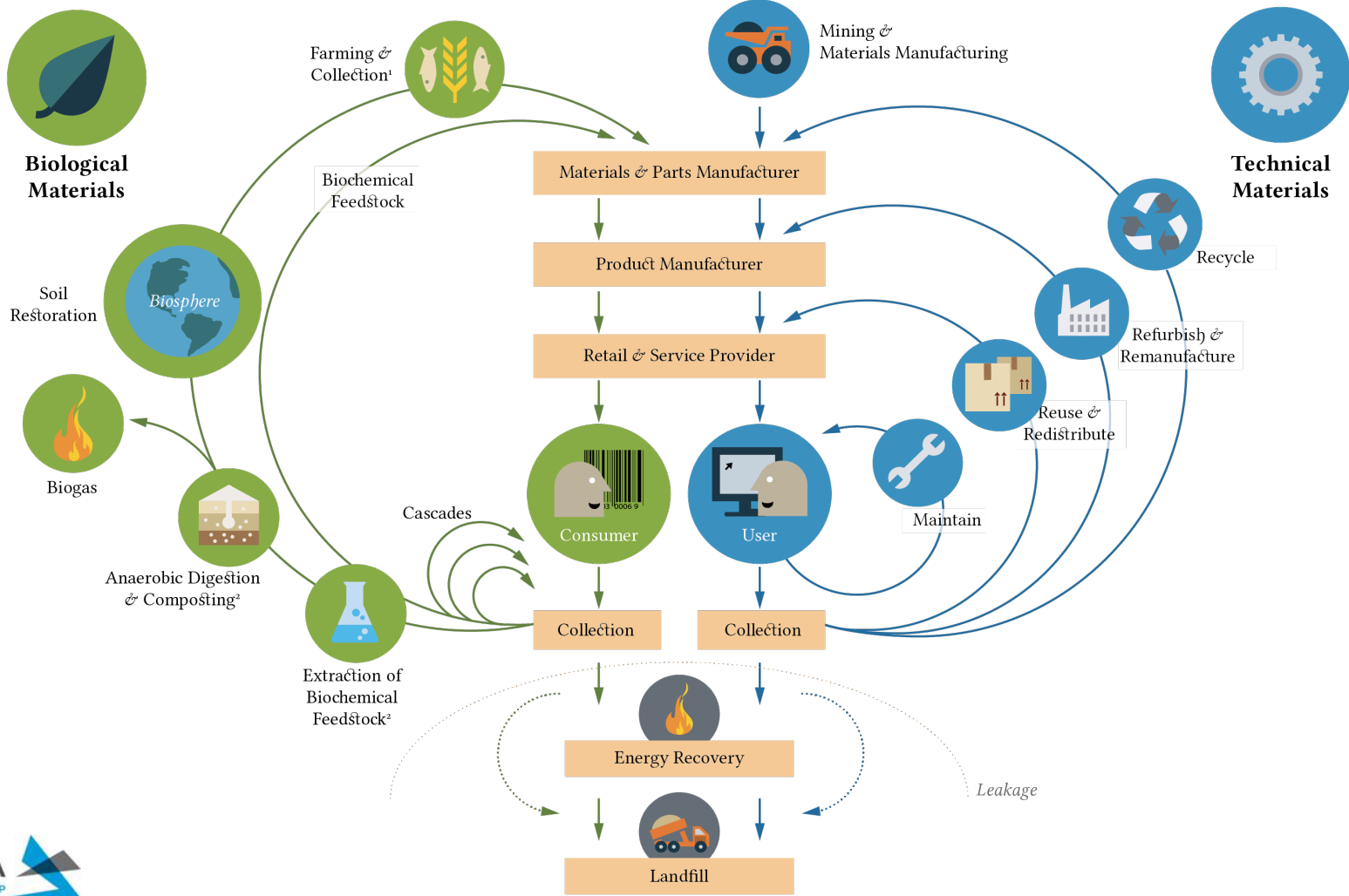
In partnership with:





# CRADLE TO CRADLE® DESIGN FRAMEWORK





# Results from Implementing Cradle to Cradle® for the Circular Economy

- Successful **product differentiation**
- Improved **brand identity**
- Improved **customer & employee engagement**
- Improved ***tacit knowledge*** = sustainable competitive advantage

# Park 20 | 20 Financial Results:

- Budget deviation so far **-1,4% (within budget)**
- Rental levels **outperformed market by 15 – 30%**
- Exit yields consistently **outperformed market by 6 – 12% (40 – 80 bps)**
- **Construction costs reduced by 19%**
- Consistent **user satisfaction > 95%**
- Project **ROI so far 13.36%**



Park 20|20 Master Plan, Technical Pavilion, FIFPro House, ANWB Travel designed by William McDonough + Partners.

Any business can do this  
Let me show you how...

# Efficiency vs. Effectiveness



## Effectiveness is:

1. Getting what you want
2. Continuing to get what you want

### P / PC Balance

P = Production (the golden eggs)

PC = Production Capability (maintaining quality)

# EFFICIENCY

Doing things the “right” way

# EFFECTIVENESS

Doing the right things

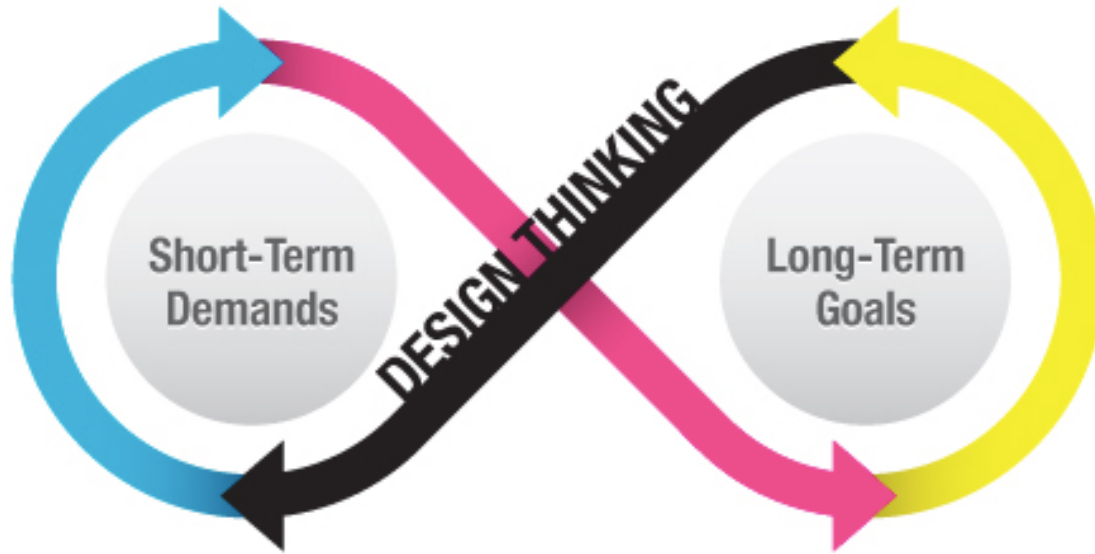
Adapted from [The Effective Executive](#) (1967) by Peter F. Drucker



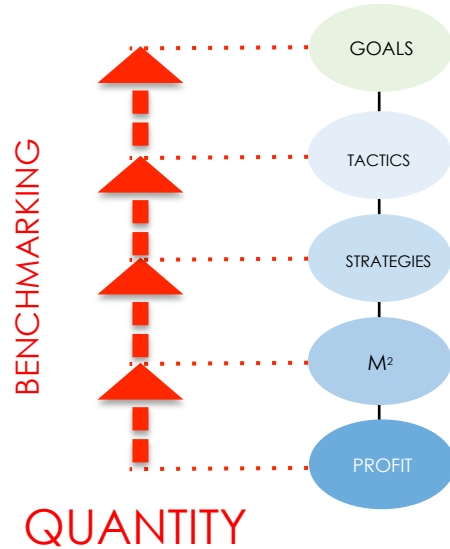
# Our Fundamental Goals are no Longer Aligned in Real Estate



Our **short term transaction** incentives are often times **counterproductive** to the **long term success** of **projects**, the **community** and our natural **environment**

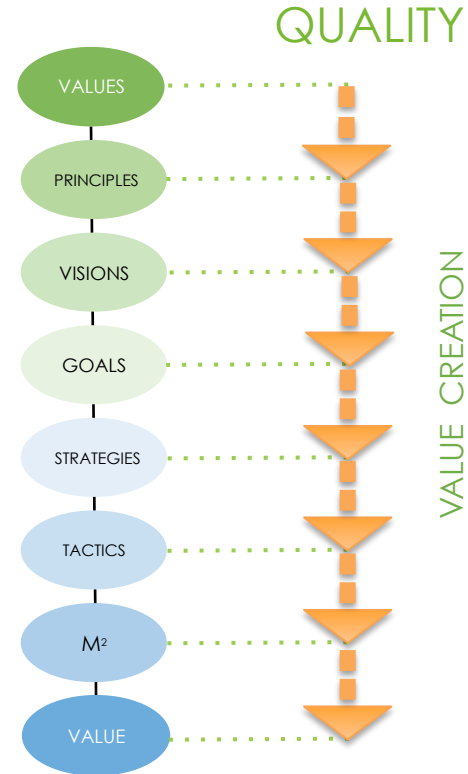


“Efficiency” aims to maximize the golden eggs



Effectiveness stems from

- Principles and Values
- Principles & Values = P/PC Balance



# The Golden Circle

## WHAT

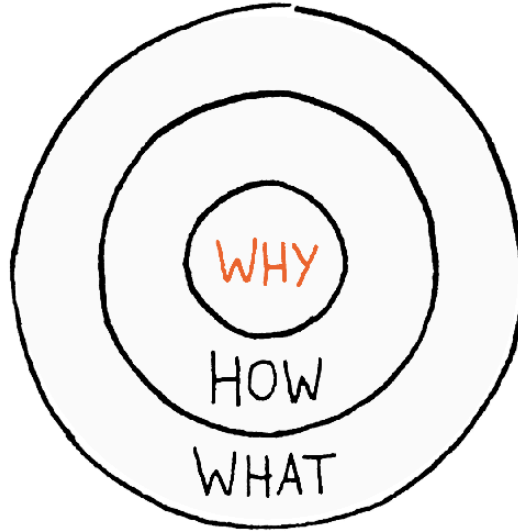
Every organization on the planet knows WHAT they do. These are products they sell or the services

## HOW

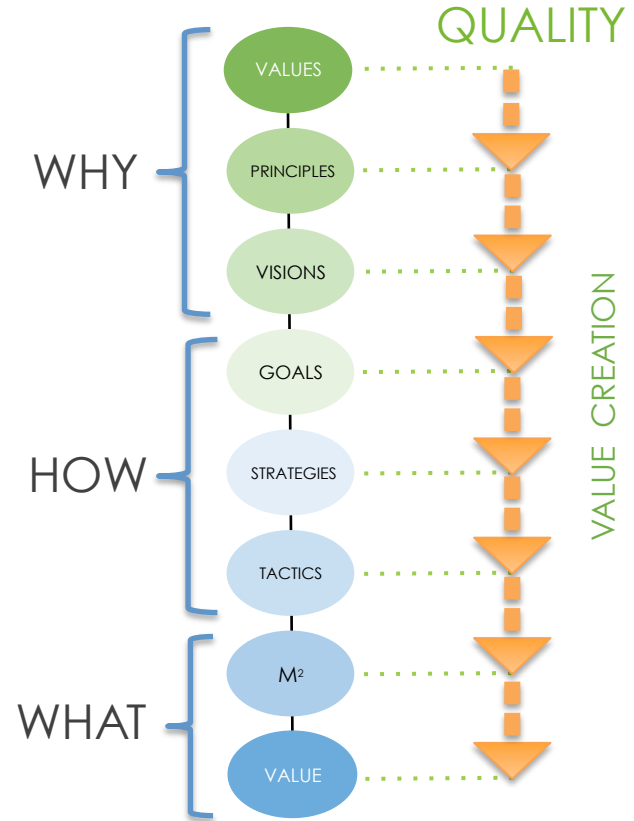
Some organizations know HOW they do it. These are the things that make them special or set them apart from their competition.

## WHY

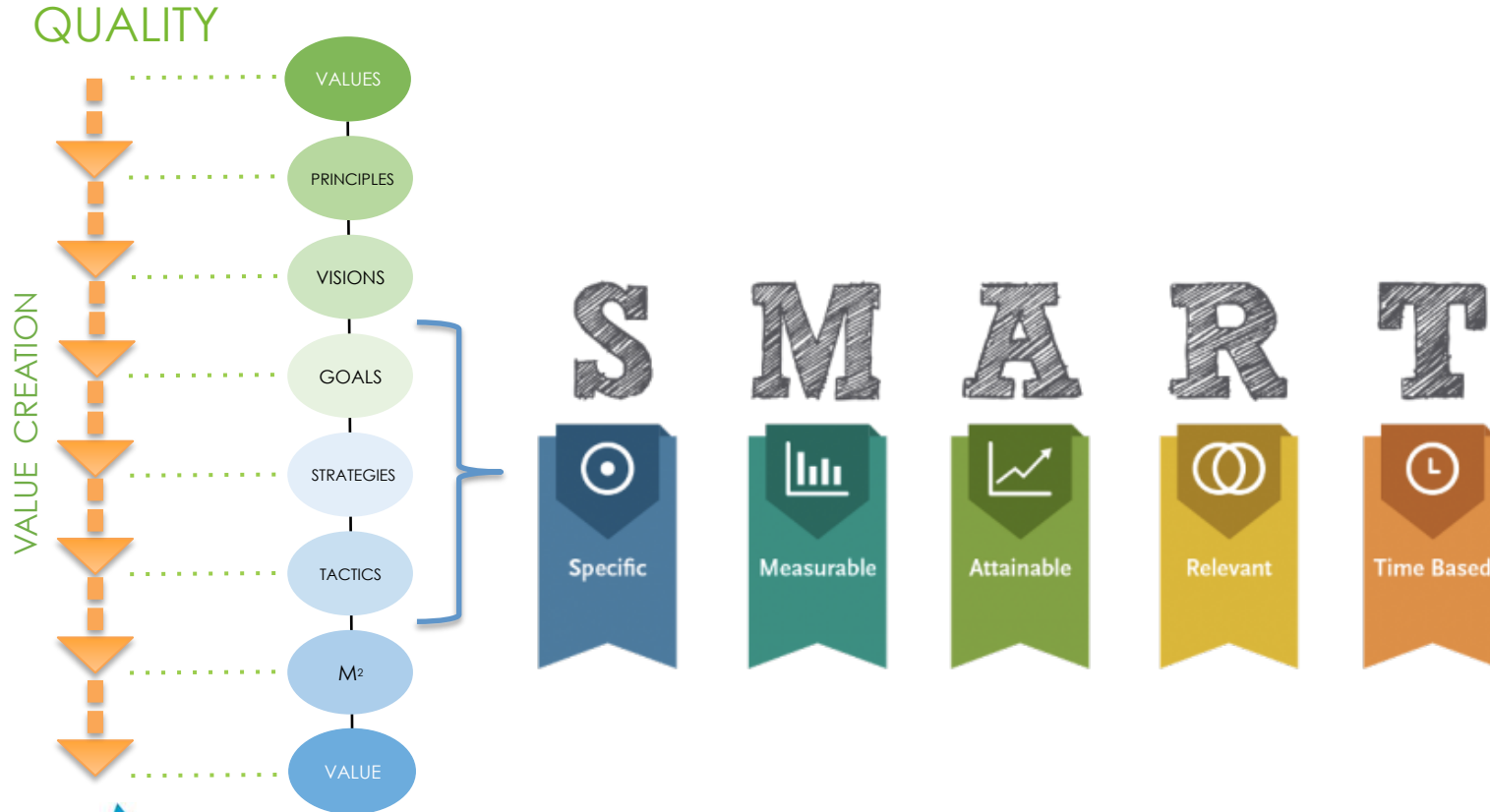
Very few organizations know WHY they do what they do. WHY is not about making money. That's a result. WHY is a purpose, cause or belief. It's the very reason your organization exists.



 ©2015 Simon Sinek, Inc.



# From Values to Value



Park 20 | 20 designed by William McDonough + Partners.

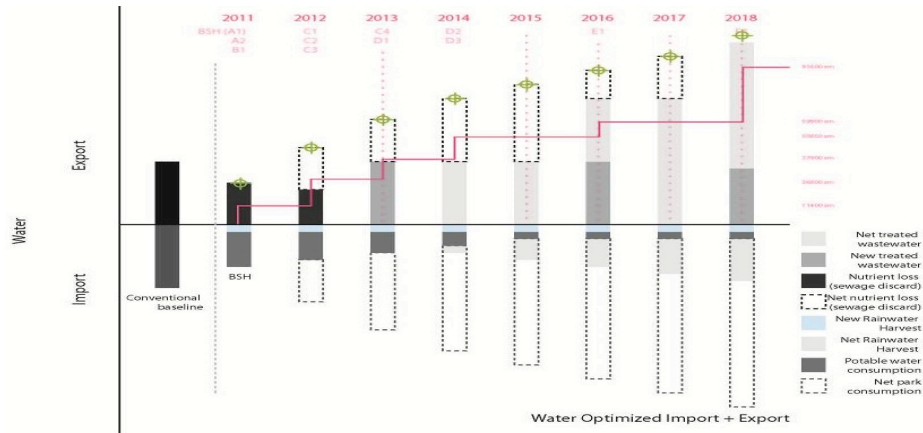


# PARK 20|20

The work benefits, the world benefits



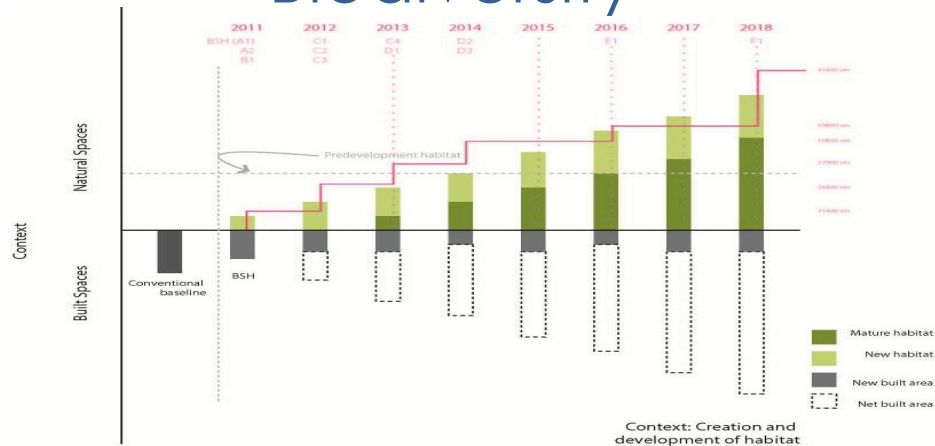
# Water



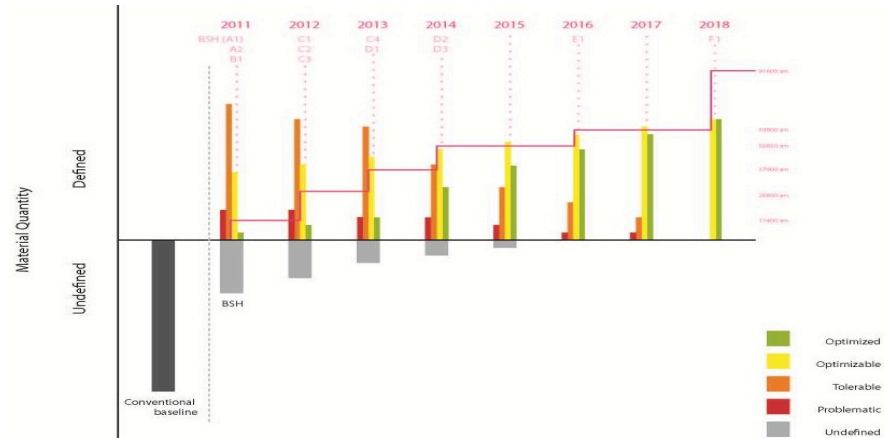
# Energy



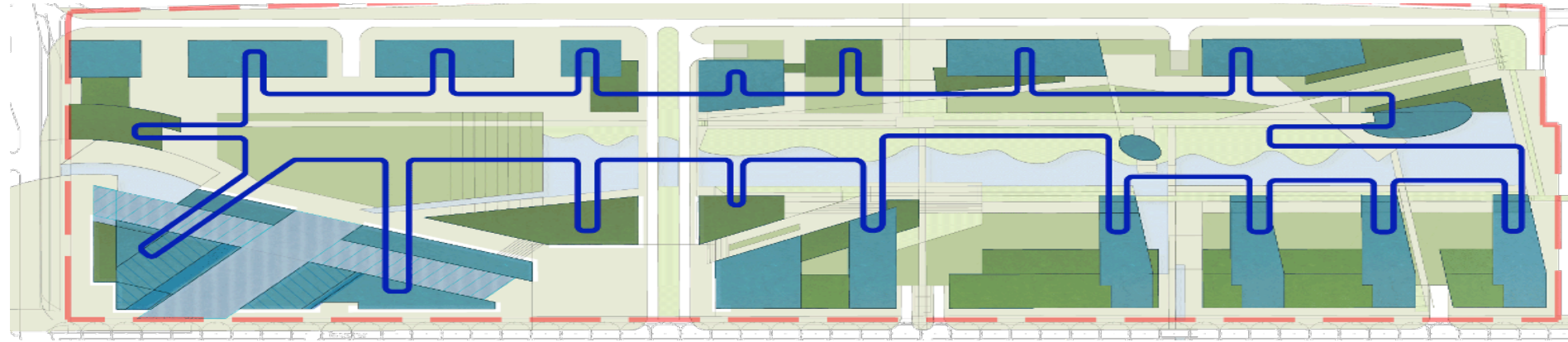
# Biodiversity



# Materials

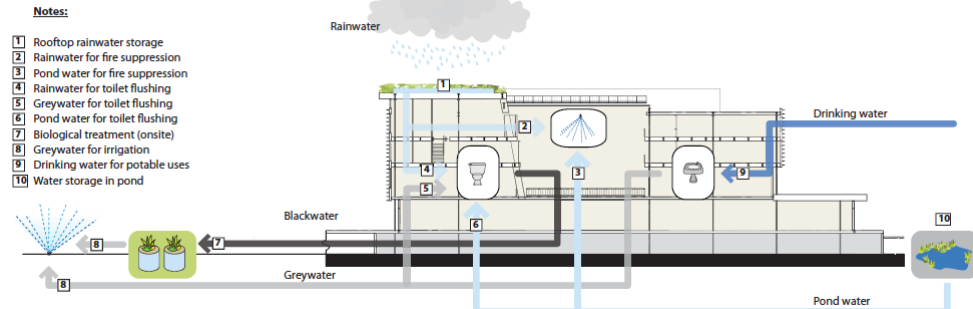


# Integrated water systems



## Capture, Recycle and Reuse

- INTEGRATED STORMWATER MANAGEMENT
- CAPTURE, RECYCLE AND REUSE
- WATER EFFICIENCY



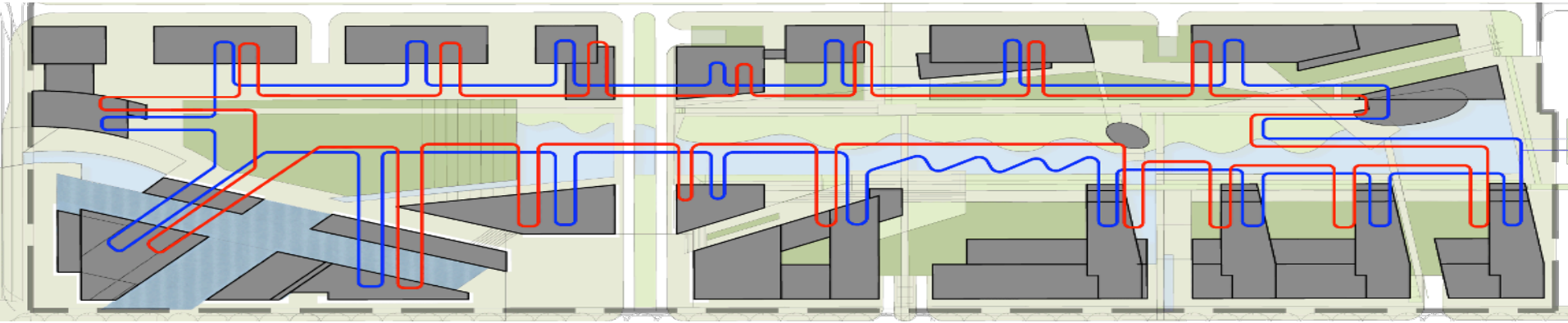




FOX Holidays at Park 20 | 20 designed by William McDonough + Partners.



# Centralized energy net



- Integrated Systems for Optimized Performance
- Campus-wide Ground Source Loop
- 480 kWp (from Fokker)
- 100 renewable purchase of electricity
- No Fossil fuels (small gas line in B/S/H/ for cooking studio)

## Additional PV from Fokker Logistics Park





The Technical Pavilion at Park 20 | 20 designed by William McDonough + Partners.



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The Technical Pavilion at Park 20 | 20 designed by William McDonough + Partners.



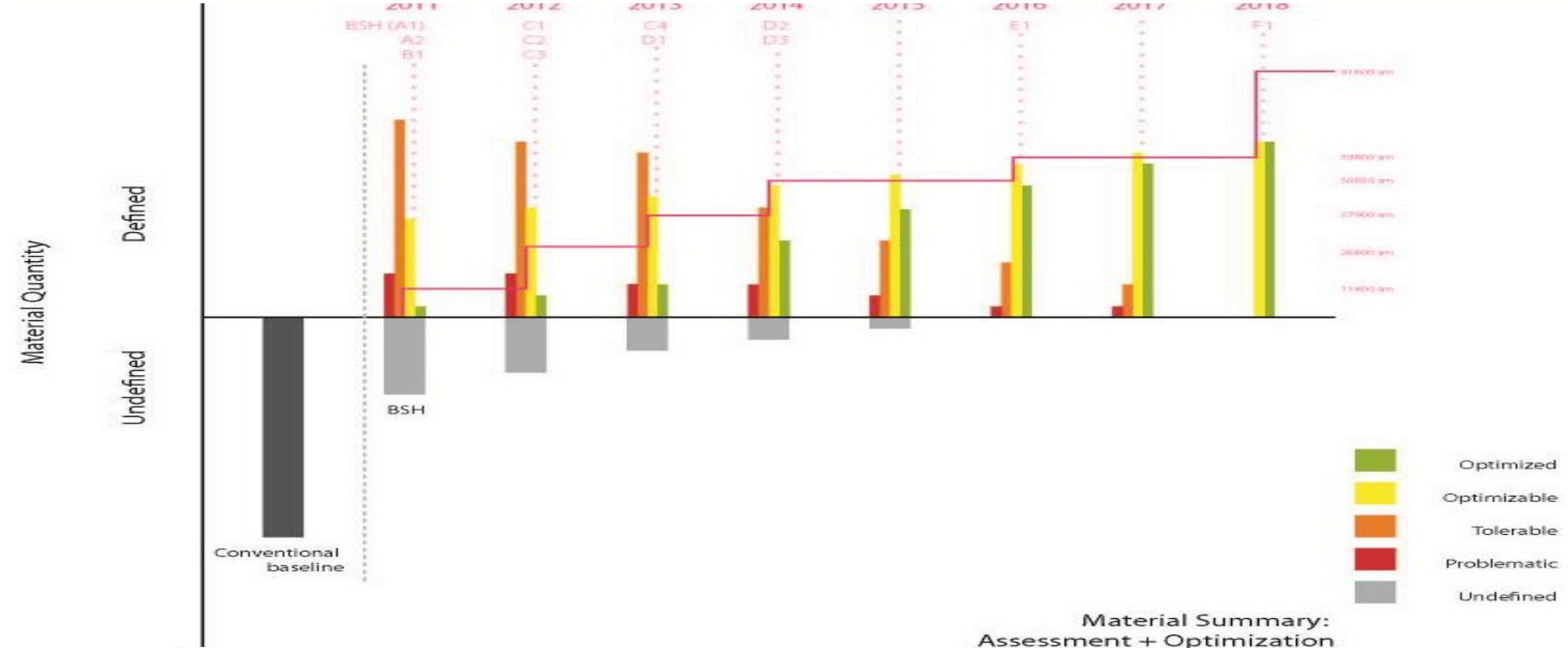
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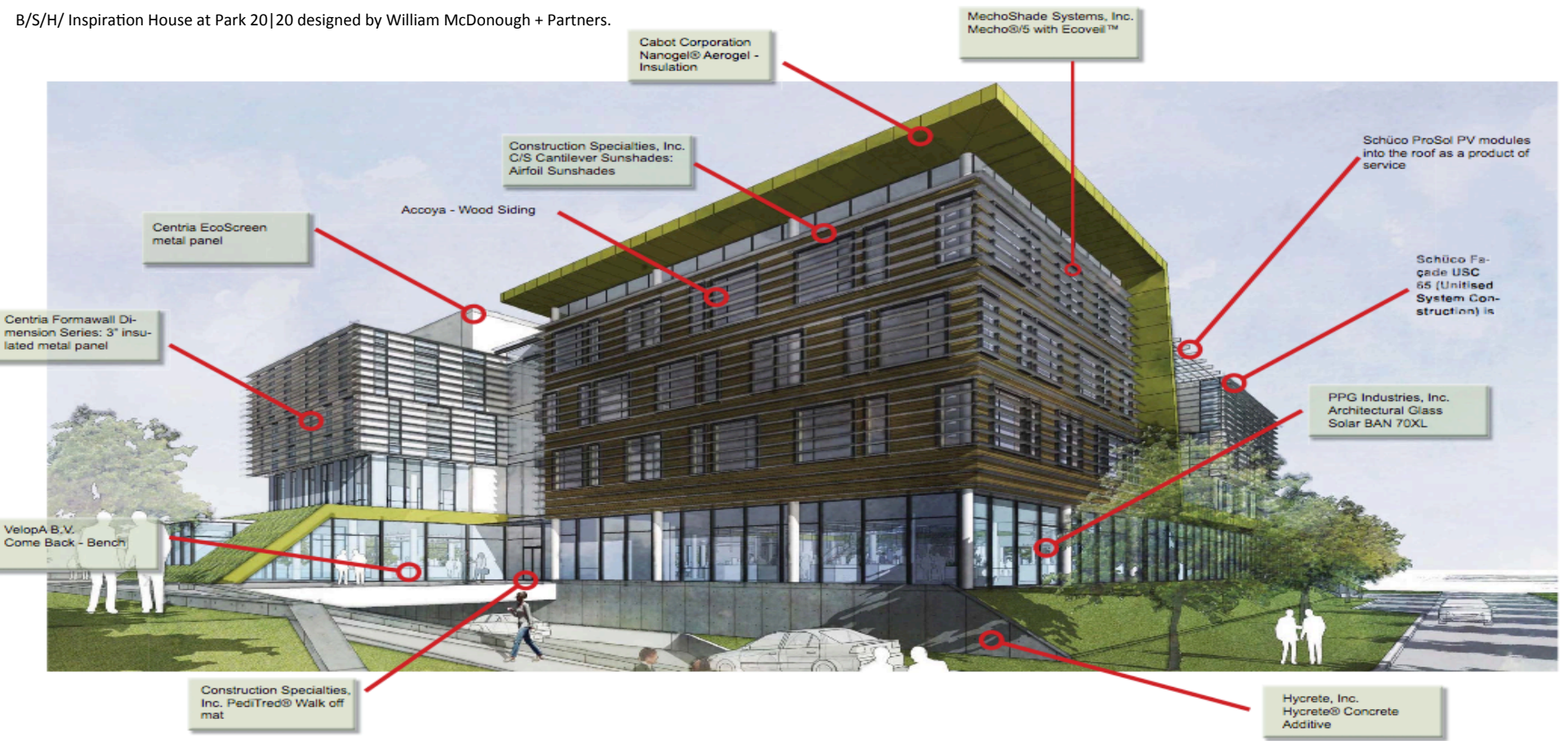
The Biological Pavilion at Park 20 | 20 designed by William McDonough + Partners.



# Improvement of materials







Cabot Corporation  
Nanogel<sup>®</sup> Aerogel -  
Insulation

MechoShade Systems, Inc.  
Mecho<sup>®</sup>5 with Ecoveil<sup>™</sup>

Construction Specialties, Inc.  
C/S Cantilever Sunshades:  
Airfoil Sunshades

Schüco ProSol PV modules  
into the roof as a product of  
service

Centria EcoScreen  
metal panel

Accoya - Wood Siding

Schüco Fa-  
çade USC  
65 (Utilised  
System Con-  
struction) is

Centria Formawall Di-  
mension Series: 3" in-  
sulated metal panel

PPG Industries, Inc.  
Architectural Glass  
Solar BAN 70XL

VelopA B.V.  
Come Back - Bench

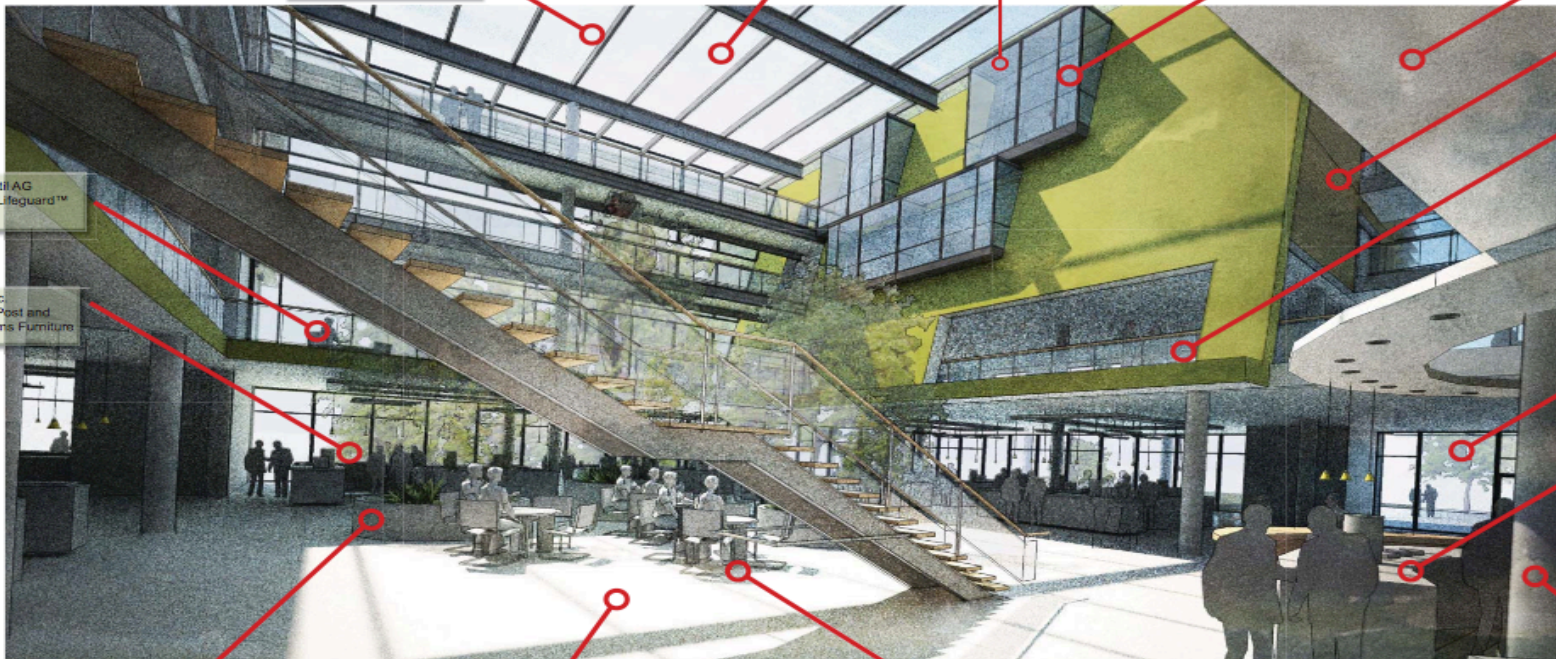
Construction Specialties,  
Inc. PediTred<sup>®</sup> Walk off  
mat

Hycrete, Inc.  
Hycrete<sup>®</sup> Concrete  
Additive

# BSH - Cradle to Cradle™ Certified

## MATERIAL INNOVATIONS - INTERIORS

into the roof as a product of service



Construction Specialties, Inc.  
C/S Cantilever Sunshades:  
Airfoil Sunshades

MechoShade Systems,  
Inc. Mecho®/5 with Ecov-  
el™

Steelcase Inc.  
Privacy Wall - Demount-  
able Partition

Armstrong World Indus-  
tries -Tierra™ Acoustical  
Ceiling Tile™

Serious Materials, Inc.  
EcoRock™

Desso B.V.  
Penta Carpet Tiles

Rohner Textil AG  
Climatex® Lifeguard™  
Fabric

Steelcase Inc.  
Pathways® Post and  
Beam Systems Furniture

PPG Industries, Inc.  
Architectural Glass  
Solar BAN 70XL

IceStone® LLC  
Icestone® Durable Surface

EuroCeramic B.V.  
EuroTrad Ceramic  
Pipes

VelopA B.V.  
Come Back - Bench

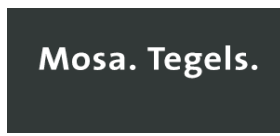
Coverings Etc, Inc.  
Bio-Glass™ Flooring

Steelcase Inc.  
Think® Chair and Stool

B/S/H/ Inspiration House at Park 20|20 designed by William McDonough + Partners.

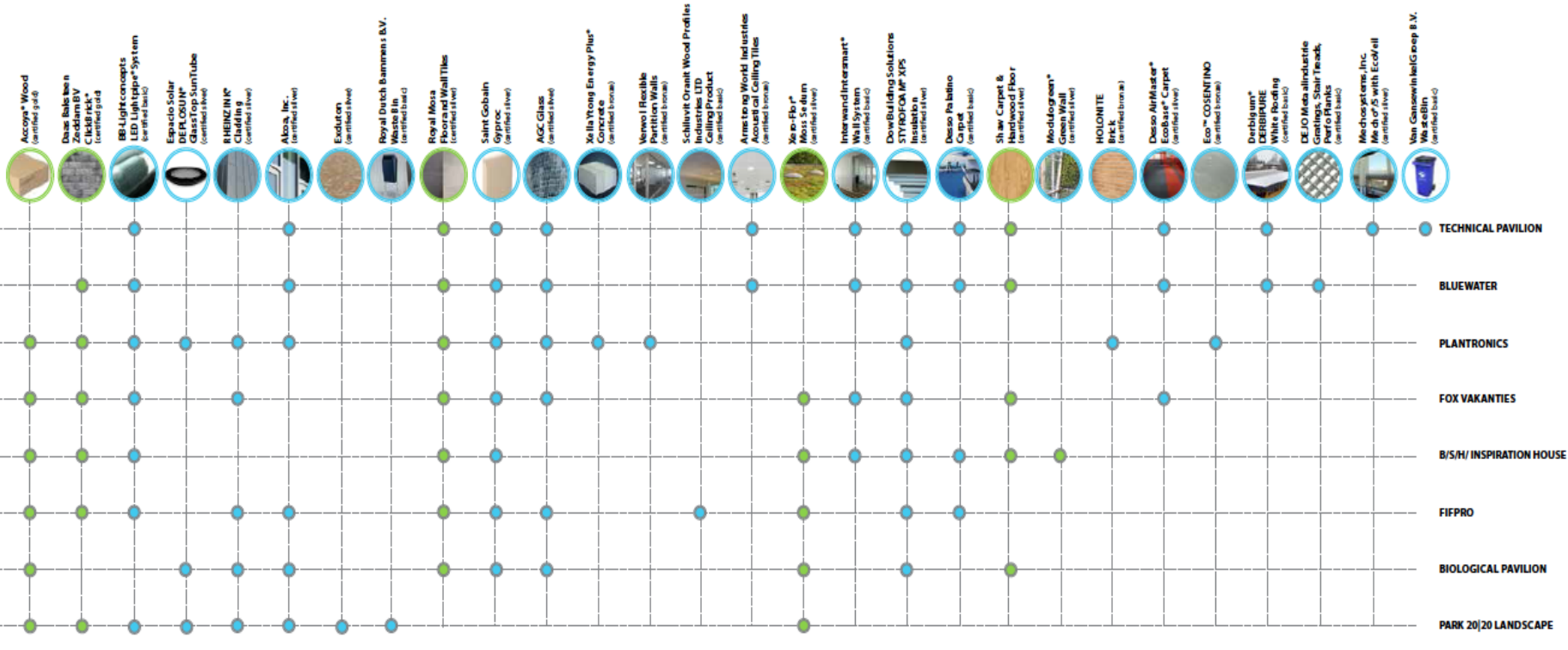






# CRADLE TO CRADLE CERTIFIED™ PRODUCTS AT PARK 20|20

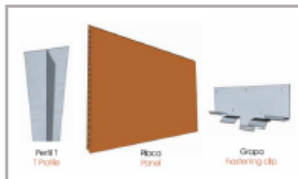
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EIG

eco intelligent growth



**PRODUCT NAME:**

Ceramic Façade System

**MANUFACTURER:**

Favemanc

**CONTACT INFORMATION:**

Persona: Mr. Ole Veiseth

Email: export2@favemanc.com

Phone: +34 925 322 522

Location: Los Yébenes, Toledo (Spain)

**PRODUCT DESCRIPTION**

Ceramic ventilated façade system by Favemanc is an extruded ceramic honeycomb piece (different thicknesses) with metallic anchorage system, which provides the opportunity to replace individual elements easily. An Environmental Product Declaration is available with the Life Cycle Assessment analysis for this product.

**CRADLE TO CRADLE POTENTIAL**



**Material Health**

- Product meets C2C® Banned List Chemicals based on manufacturer declaration. This is generally sufficient but EIG's impression is that, in this instance, the declaration seems to be the result of poor understanding. EIG has requested a validated test for presence of problematic heavy metals, not yet available.
- Composition has not been disclosed, but generic components disclosed (clay and water) are acceptable & compatible in a Cradle to Cradle® Certification Program.
- No further information regarding ceramic enamel has been shared. But as stated before, it complies with C2C® Banned List Chemicals, the major concern related to this kind of product. In the case that the product installed contains enamel, we would like to include it in the assessment.
- Metallic parts are also acceptable and compatible with C2C® Certification. Structure is from Aluminum 6063 and screws are made of stainless steel.



**Material Reutilization**

- Technical Nutrient.
- Product could be up to 100% recyclable (clay can be downcycled as a post-consumer raw material and aluminum minor components are fully recyclable into new raw material with post-consumer recycled content).
- Product includes more than 50% of Pre-consumer recycled content, from their own manufacturing process. Thus, it will not be included neither considered in the C2C program Standard.



**Renewable Energy**

- Purchased electricity includes 18% from renewable sources.
- Manufacturer also uses fuel in its manufacturing process and no further information has been shared, about the proportion or nature of the fuel.
- Main site facility and all raw material are from Spain.



**Water Stewardship**

- Favemanc has NOT received a sanction for water quality on the last two years.
- Water is recycled in an in-house closed loop, it's reintroduced at the beginning of the manufacturing process.

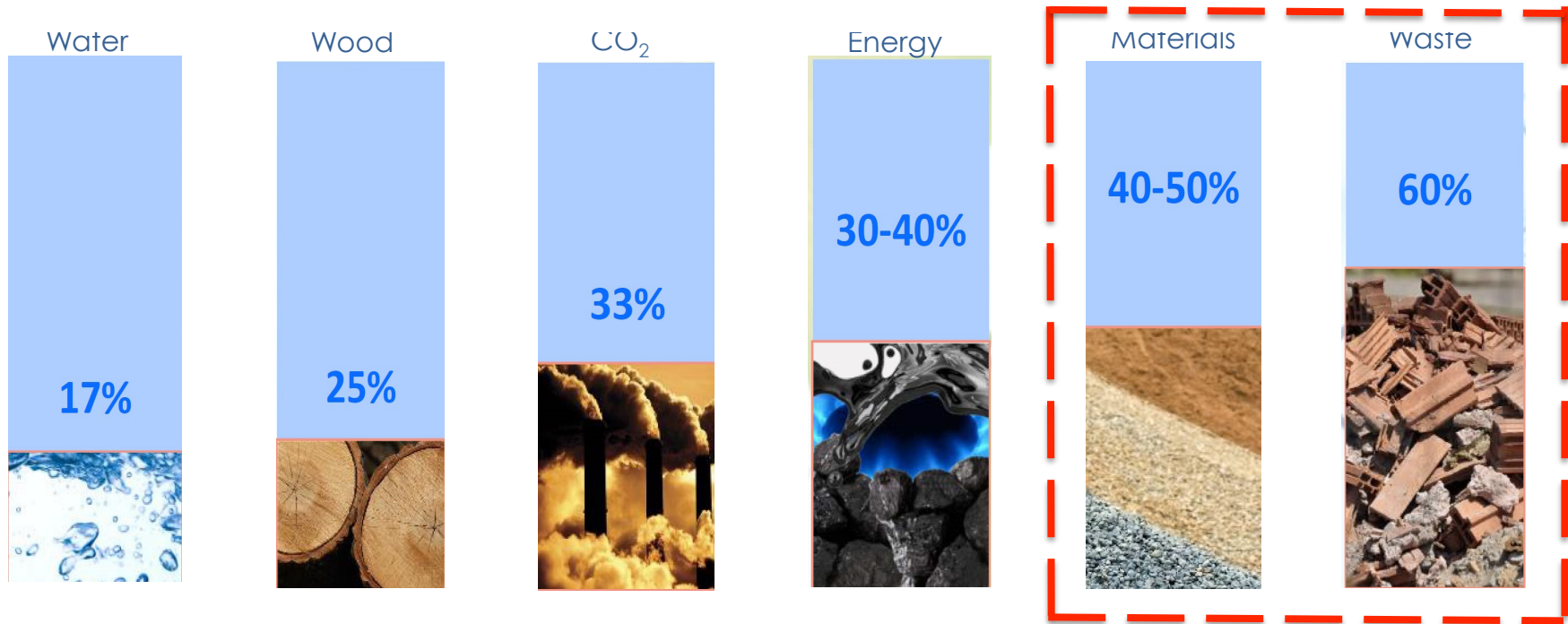


**Social Fairness**

- Favemanc has develop an Environmental Product Declaration of this system, including an LCA.
- Favemanc is ISO 9001 & ISO 14001 certified.

# Buildings as Material Banks

# Built Environment Resource Consumption



source: UNEP



# Copper, grade A cathode Monthly Price - Norwegian Krone per Metric Ton

Range

Apr 2002 - Mar 2017: 35,827.130 (261.69 %)



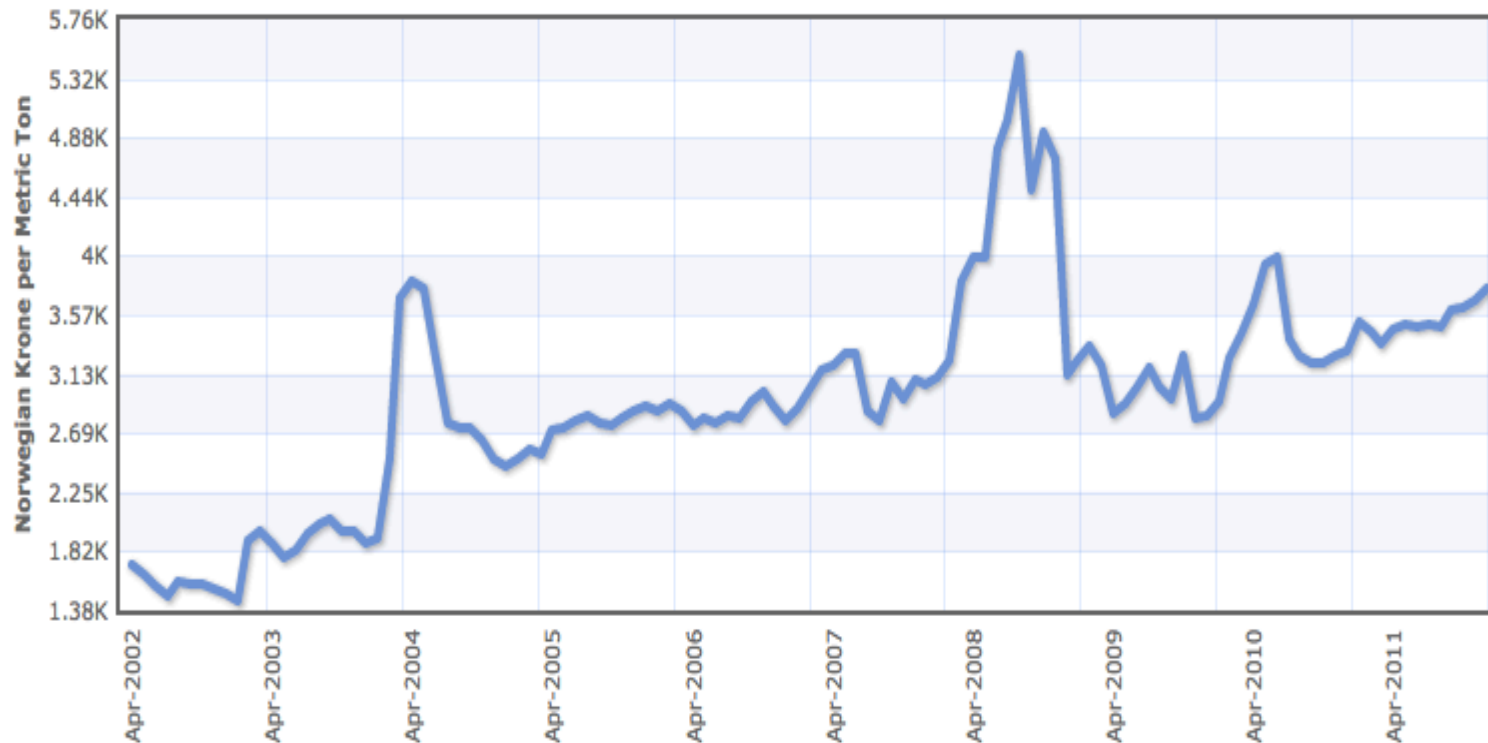
## Historic Norwegian Inflation (CPI) 15 year

2002	2,75%
2003	0,63%
2004	1,07%
2005	1,85%
2006	2,24%
2007	2,78%
2008	2,13%
2009	2,01%
2010	2,76%
2011	0,15%
2012	1,38%
2013	2,04%
2014	2,03%
2015	2,33%
2016	3,47%
<b>Total</b>	<b>32,25%</b>

## Rebar Monthly Price - Norwegian Krone per Metric Ton

Range

Apr 2002 - Dec 2011: 2,038.483 (118.27 %)



### Historic Norwegian Inflation (CPI) 15 year

2002	2,75%
2003	0,63%
2004	1,07%
2005	1,85%
2006	2,24%
2007	2,78%
2008	2,13%
2009	2,01%
2010	2,76%
2011	0,15%
2012	1,38%
2013	2,04%
2014	2,03%
2015	2,33%
2016	3,47%
2017	2,63%
<b>Total</b>	<b>32,25%</b>



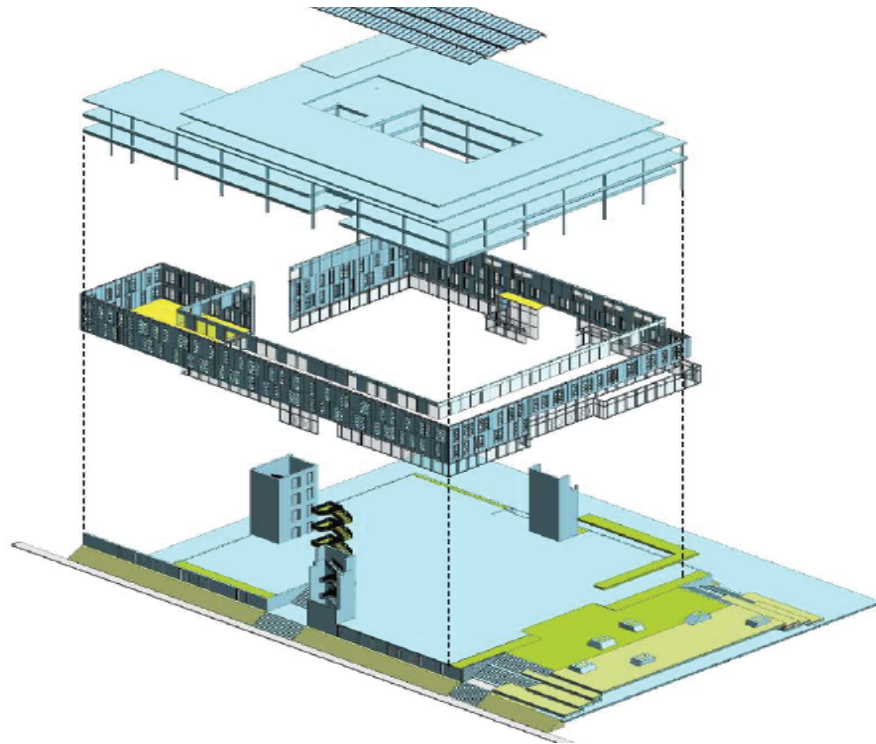
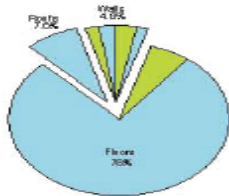
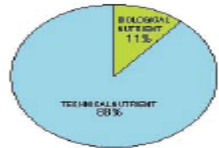
# Total Value uncovered was incredible...

	TOTAAL		Waarde (€/ton)
	29.402	eenh	
Hout	53.500.711	kg	€1.070.014,23
Steen	111.285.026	kg	€389.497,59
Kunststof/pvc	5.414.811	kg	€0,00
Beton/voegwerk	4.392.998.346	kg	€15.375.494,21
Aluminium	2.651.148	kg	€2.651.148,00
Staal/ijzer	52.671.984	kg	€10.534.396,72
Glas	23.738.870	kg	€0,00
Lood	2.510.919	kg	€3.640.832,38
Keramique	44.867.276	kg	€157.035,47
Bitumen	1.092.525	kg	€98.327,25
Grind	15.607.500	kg	€54.626,25
Zink	2.068.748	kg	€2.730.747,36
Koper	863.240	kg	€3.358.003,60
Kalkzandsteen	721.404.000	kg	€2.524.914,00
Isolatie	48.818.900	kg	€4.393.701,00
<b>TOTAAL</b>	<b>5.479.494.004</b>	<b>kg</b>	<b>€46.978.738,05</b>



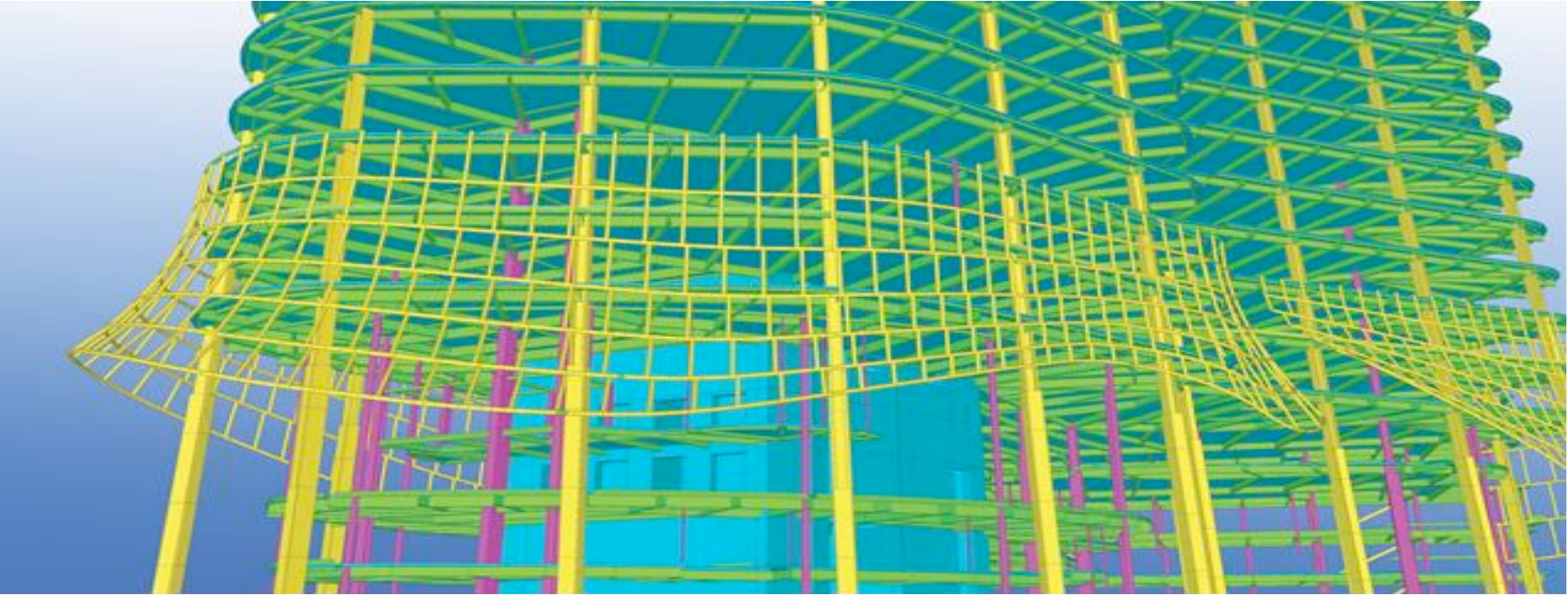
# Design for disassembly

Category	Nutrient Potential	Volume
Ceilings	BIOLOGICAL	19.49 m <sup>3</sup>
Curtain Panels	BIOLOGICAL	307.28 m <sup>3</sup>
Curtain Panels	TECHNICAL	151.19 m <sup>3</sup>
Doors	TECHNICAL	0.12 m <sup>3</sup>
Floors	BIOLOGICAL	539.65 m <sup>3</sup>
Floors	TECHNICAL	7252.07 m <sup>3</sup>
Generic Models	TECHNICAL	3.36 m <sup>3</sup>
Roofs	TECHNICAL	714.70 m <sup>3</sup>
Stairs	BIOLOGICAL	1.87 m <sup>3</sup>
Stairs	TECHNICAL	54.14 m <sup>3</sup>
Structural Columns	TECHNICAL	13.14 m <sup>3</sup>
Walls	BIOLOGICAL	191.75 m <sup>3</sup>
Walls	TECHNICAL	215.39 m <sup>3</sup>
Windows	TECHNICAL	0.25 m <sup>3</sup>
<b>BIOLOGICAL</b>		<b>1059.23 m<sup>3</sup></b>
<b>TECHNICAL</b>		<b>8384.35 m<sup>3</sup></b>
<b>Grand total: 3523</b>		<b>9443.58 m<sup>3</sup></b>

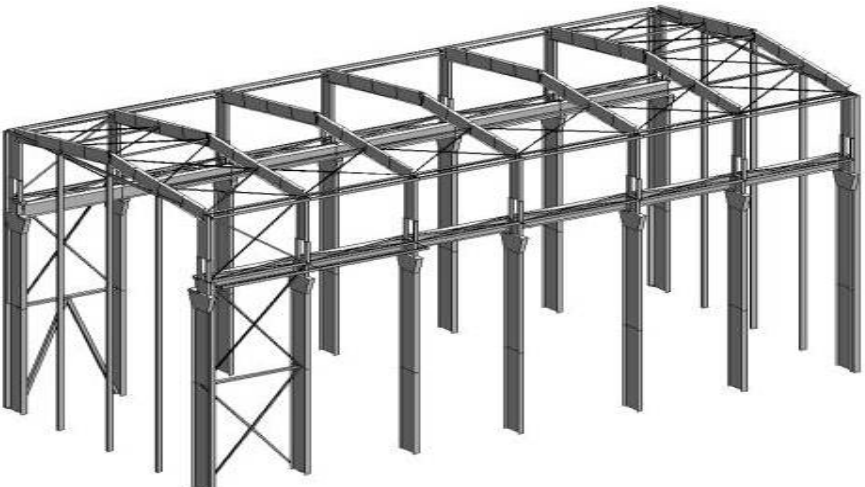


Bluewater Energy Services at Park 20 | 20 designed by William McDonough + Partners.

# Materials tracking – B.I.M.



# Valuation and Products of Service



**LEDLEASE** **LUXIMPROVE**  
duurzaamlicht.nu

**Start saving energy today!**

Calculate LED savings

Assess LED Quality

Optimize Cash Flow

Category	Buy LED Lighting	LED Lease
Initial Cost	High	Low
Operating Cost	Low	Low
Maintenance	High	Low
Replacement	High	Low
Resale Value	Low	High

Compare LED Lamps





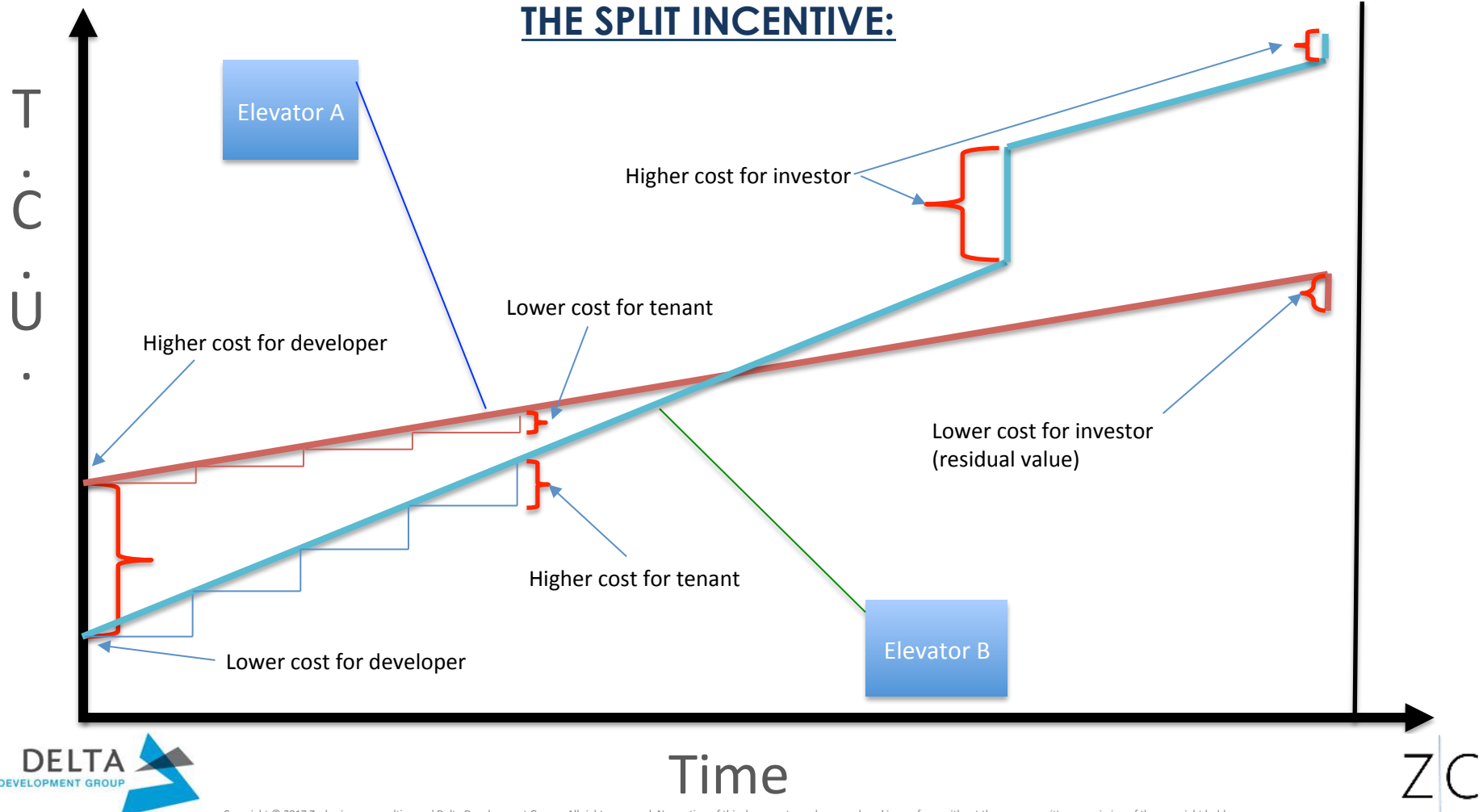
# From Ownership to Use



van bezit naar gebruik

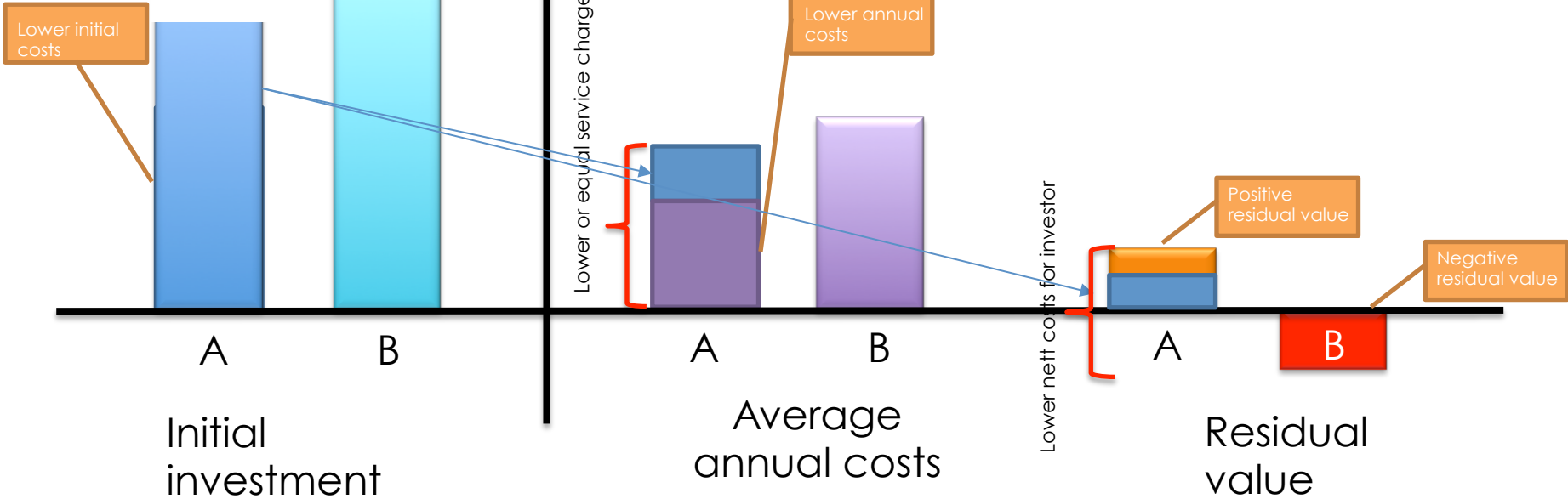


# THE SPLIT INCENTIVE:



developer

Investor/tenant



We're in the People  
business...

we engage people  
through buildings





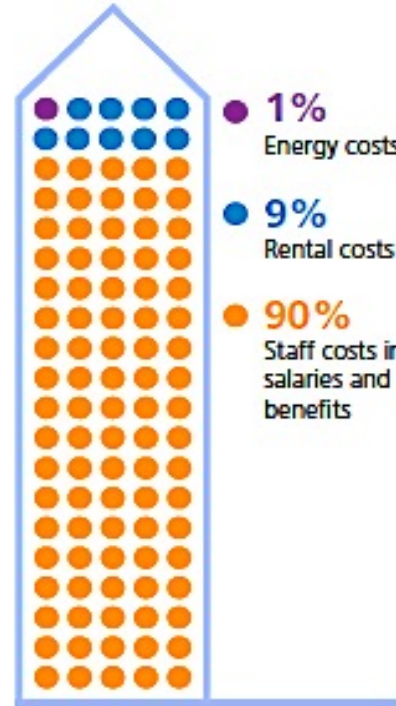
WORLD  
GREEN  
BUILDING  
COUNCIL

Staff costs, including salaries and benefits, **typically account for about 90% of business operating costs.**

Source: "Health, Wellbeing and Productivity in Offices: The Next Chapter for Green Building" – pgs. 3 & 8



## Typical business operating costs<sup>1</sup>



### 10% Variation

A 10% variation applied equally to each cost has a far from equal impact

**+/- 0.1%**

Energy costs

**+/- 0.9%**

Rental costs

**+/- 9.0%**

Staff costs



What really matters to most executives is this: How does *my* building impact *my* people?

Source: "Health, Wellbeing and Productivity in Offices: The Next Chapter for Green Building" – pg. 54







Air Quality



Thermal Comfort



(Day) Lighting



Interior Plants



Acoustics

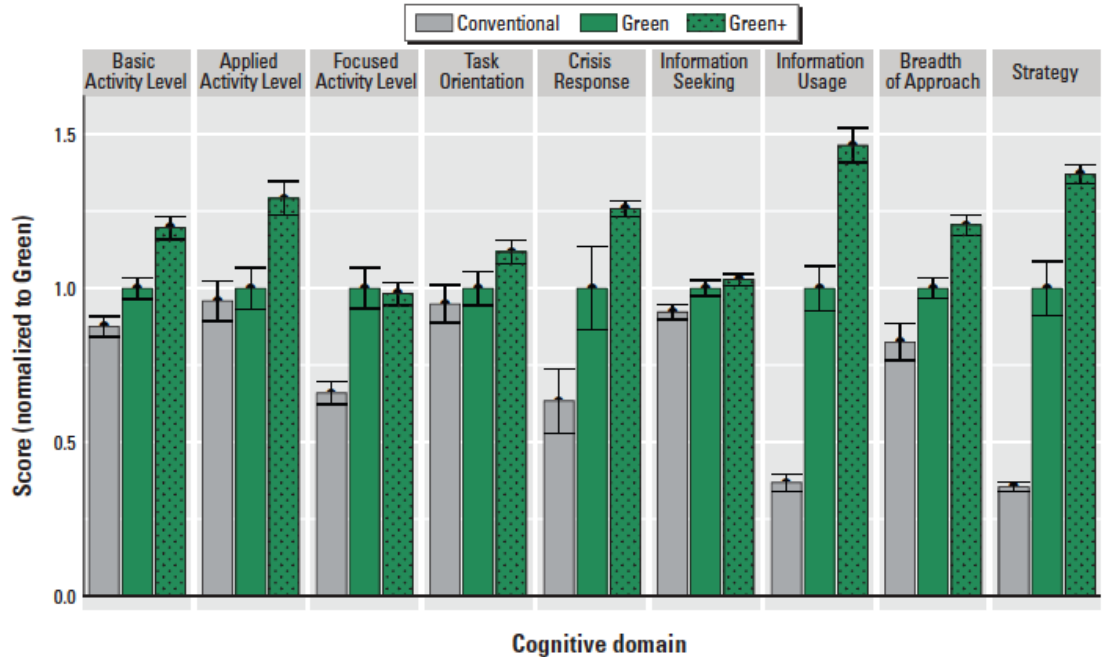


Interior Layout

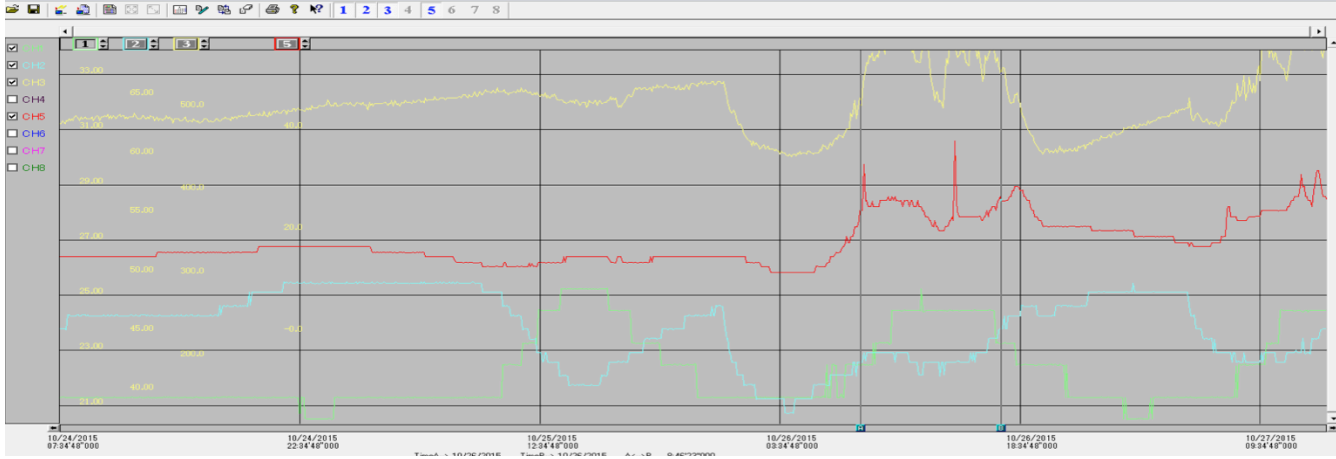
# Effects of poor air quality on cognitive function

Cognitive scores were 61% higher in the Green Building than in the conventional building.

Cognitive Scores were 101% higher in the Green+ Building than in the conventional building.

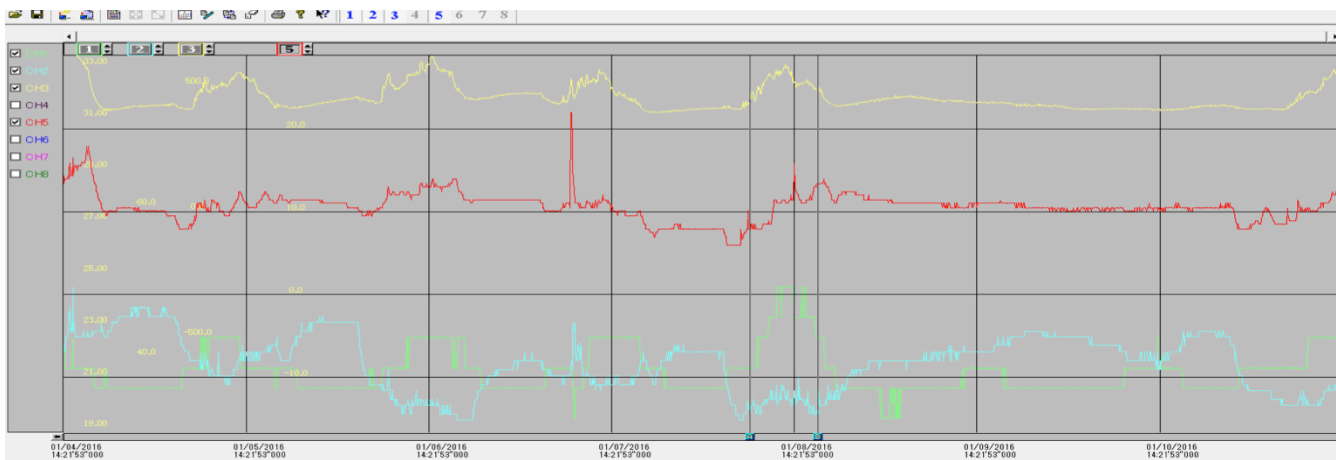


**Figure 1.** Average cognitive function scores and standard error bars by domain for the Conventional, Green, and two Green+ conditions, normalized to the Green condition by dividing all scores by the average score during the Green condition.



## Without Plants (ppm)

Calculation Range		
Max.	Min.	Avg.
37.820	11.880	17.852



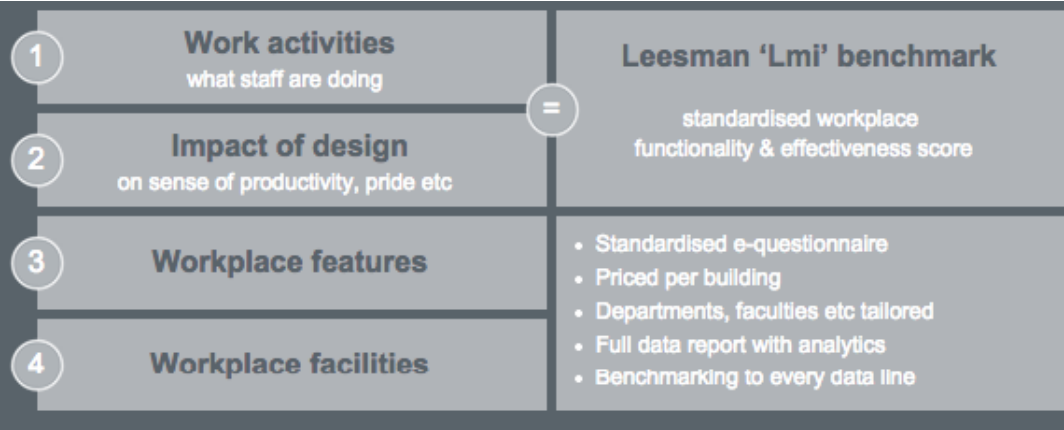
## With Plants (ppm)

Calculation Range		
Max.	Min.	Avg.
15.850	7.9000	10.515

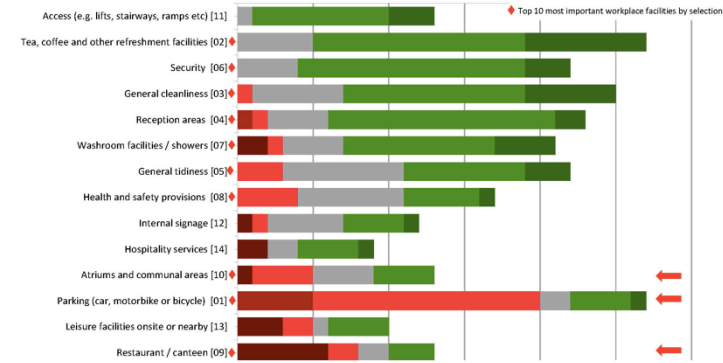




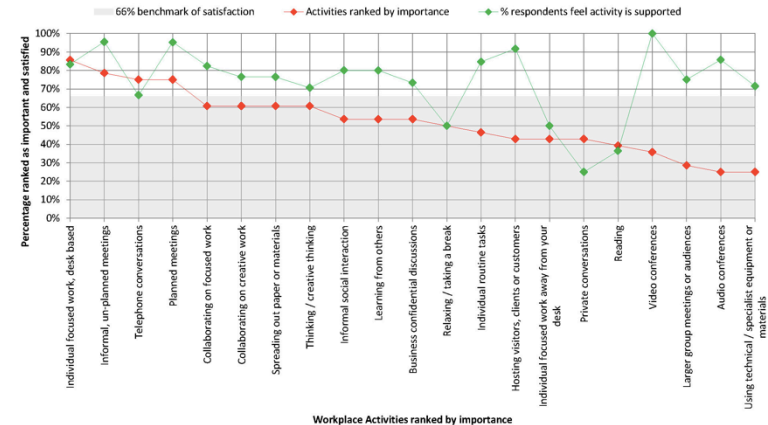
# Leesman Index



Workplace Facilities by Satisfaction: Which facilities do you consider to be an important part of an effective office and how satisfied are you with them?



Profile of Workplace Activities



# CASE STUDY: DELTA DEVELOPMENTS GROUP



Heerema expects to realise €42 million (\$47 million) in value over 20 years in their new global headquarters due to increased productivity, staff retention, and reduced absenteeism, according to KPMG.



## ABOUT THE OFFICE

Voldellaan 47 is the global headquarters for Heerema Marine Contractors B.V. (HMC), housing 1100 full time employees within 23,336 m<sup>2</sup> over 12 stories.

The project was Delta Development Group's first foray into jointly measuring workplace effectiveness using the Leesman Index and KPMG's holistically True Value methodology for the measurement of social, environmental and economic impacts of a commercial building; the first such attempt world-wide.

## HEALTH AND WELLBEING ACTIONS

- Orientation of facades to optimize views and natural daylight while blocking solar heat gain
- LED lighting for artificial lighting needs
- Solar boilers combined with groundwater heating and cooling for further improvements to thermal comfort
- The use of low VOC and where possible Cradle to Cradle Certified™ materials.
- 78% More biophilia than the previous building

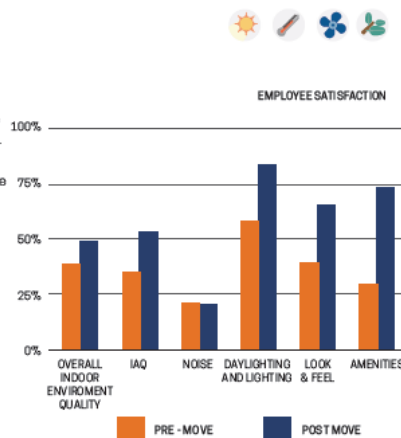


## LEESMAN OCCUPANT SURVEY RESULTS

At Vondellaan 47, Delta and HMC worked together with Leesman to measure workplace effectiveness. Pre and post move Leesman surveys were conducted with a response rate of 405 employees (35%) pre-move and 433 (38%) post-move.

The Leesman Index (Lmi) increased from a 57,7 Lmi pre-move to a 70,1 Lmi post-move. Making HMC Vondellaan 47 the highest scoring building housing over 500 employees within the Benelux. With this score it is within the top 5% of all Leesman projects world-wide.

A number of factors were considered when asking the Leesman survey as shown in the opposite graph. There is a clear increase in employee satisfaction with a number of the features associated with health and wellbeing. Moreover the Leesman study gives actionable results to further improve the working environment for those who are using it.



## ECONOMIC IMPACT

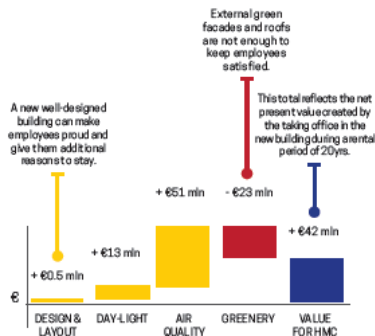


KPMG supported the Delta Development Group with the application of its True Value assessment tool to quantify the impact of the building on productivity, absenteeism, and retention, using the results of the Leesman surveys and multipliers from literature on variation in those factors and the influence on costs and revenues. The results are shown below.

The office design potentially increased retention rate

Improved daylighting and air quality reduced absenteeism

Further increase in greenery could increase user satisfaction



**+€42 million**  
net present value benefit over the 20 year rental

For more information on the KPMG True Value Methodology visit <https://www.kpmg.com/Global/en/topics/climate-change-sustainability-services/Documents/introduction-kpmg-values.pdf>





"We choose to go to the moon in this decade and do these other things, not because they are easy, but because they are hard, because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win..."

John F. Kennedy, Rice University, Houston Texas, September 12, 1962

# Thank You



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