

THE ECONOMICS OF CHANGE

PROJECT OVERVIEW

2012

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WWW.LIVINGBUILDINGCHALLENGE.ORG/ECONOMICSOFCCHANGE

RESEARCH PARTNERS

The multidisciplinary research team behind *Economics of Change* is comprised of experts in the fields of ecosystem services, real estate finance, appraisal and sustainable design. By integrating practical knowledge of the real estate market with expertise in complex systems analysis and ecological economics, this diverse team has the ability to catalyze a shift in both theory and practice. A robust advisory board of leading thinkers in financing, appraisal, development, policy and ecosystem services provides support to the research team.



The International Living Future Institute serves as the lead agency on this project. A non-governmental organization (NGO) committed to catalyzing a global transformation toward true sustainability, the Institute created and oversees the Living Building Challenge—a certification program and advocacy tool for buildings and developments at all scales.
www.livingbuildingchallenge.org



Stuart Cowan

Stuart is the co-founder of Autopoiesis LLC and has 15 years of experience in designing, planning, and financing sustainability projects in ecological design, renewable energy, and biocultural restoration. Stuart was a founding member of Portland Family Funds, a sustainable community bank, and co-author of Ecological Design, an overview of the integration of ecology, architecture, land use planning, and product design.
www.apoiesis.com



Theddi Wright Chappell

Cushman & Wakefield is the world's largest privately held commercial real estate services firm. In collaboration with the Northwest Energy Efficiency Alliance and Cushman & Wakefield's Research Group, Theddi developed the Green Building Opportunity Index, the first office market assessment tool to evaluate U.S. office markets on the basis of both real estate fundamentals and green development considerations. She serves as the Ambassador of Sustainable Initiatives for the Appraisal Institute and a Director of the Green Building Finance Consortium.
www.cushwake.com

The Bullitt Foundation

The Bullitt Foundation is a funder and research partner on the Economics of Change project. The mission of the Bullitt Foundation is to safeguard the natural environment by promoting responsible human activities and sustainable communities in the Pacific Northwest. The Foundation strives to build the intellectual foundations and political support needed for sweeping innovation.
www.bullitt.org



Green Valuation and Finance, The Missing Puzzle Piece

When the Living Building Challenge was first issued in late 2006, some people argued that the bar had been set too high. The Challenge called for the creation of building projects at all scales that operate as cleanly, beautifully and efficiently as nature's architecture, meeting a series of rigorous requirements (including net zero energy, waste and water) over a minimum of 12 months of continuous occupancy. We believed that by defining a clear end-game vision for the built environment, we would unleash incredible innovation and wisdom from building practitioners the world over. The response has been remarkable. Well over a hundred teams are currently pursuing this standard, and we can now point to several certified projects that prove that the Living Building Challenge is as attainable as it is ambitious.

Unfortunately, for all of the hurdles that Challenge project teams have overcome, a major barrier continues to prevent the broad adoption of advanced green building practices: our 20th century real estate financial system—the lending approaches, appraisal protocols and valuation models that determine how a given building is valued. We cannot truly address the built environment's contribution to climate change and a host of other environmental problems until our financing models reflect the true externalized costs of doing “business as usual”.

The Economics of Change is a groundbreaking effort to do just that.

This research digest summarizes the Phase I report *The Economics of Change: Catalyzing The Investment Shift for a Restorative Built Environment* authored by leading thinkers and practitioners in the real estate and ecological economics fields. It also ushers in phase 2 of the project, developing new tools for more accurately appraising, valuing, and investing in a restorative built environment.

We're proud to have joined this all-star team in creating compelling alternatives to the current financial and policy framework that drives real estate decision-making. This is a bold project, but we believe that the world right now needs more bold ideas, not less, and an overhaul of what we value and how we value is at the heart of the paradigm shift we need to move towards a restorative future.

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INTRODUCTION

The built environment provides shelter and workspace. It is an environment for production and commerce as well as daily life and enjoyment. These are essential goods and services. Yet the built environment and building industry together also account for about 50% of U.S. carbon emissions and contribute to a web of significant, interconnected problems: climate change, persistent toxins in the environment, dwindling supplies of potable water, flooding, ocean acidification, habitat loss and more. Over the past decade, the green building movement has helped to create a critical mass of professionals capable of producing buildings that dramatically reduce or eliminate greenhouse gas emissions and other negative effects. These are fundamentally better buildings, providing greater benefits and fewer lifecycle costs.

TRANSFORMING EXPECTATIONS: THE LIVING BUILDING CHALLENGE

Launched in 2006, the Living Building Challenge provides a philosophical framework and certification program for the design, construction and symbiotic relationship between people and all aspects of the built

“Living Buildings demonstrate the most advanced measures of sustainability possible in the built environment today.”

environment. The Challenge applies to development at all scales, from single buildings to entire communities and is comprised of seven performance areas: Site, Water, Energy, Health, Materials, Equity and Beauty which define the most advanced measures of sustainability possible in the built environment today.

As the October 2010, certification of the first projects through the Living Building Challenge demonstrates that the building industry can play a leading role in helping to solve the critical problems of our day.

Over the last few years, the Challenge has served as a valuable transformational tool, providing the platform for industry change at many levels:

- Manufacturers of building materials have begun to change their practices, eliminating worst-in-class chemicals from their products.

- Regulatory agencies have realigned policies and codes to apply a deeper definition for protecting the health, safety and welfare of all people.
- Building owners and tenants have adopted behavioral changes to reduce energy, water and waste consumption and to operate within the carrying capacity of the limited resources available onsite.



**LIVING
BUILDING
CHALLENGE**



**The Bullitt Center:
Meeting the Living Building Challenge**

Located in Seattle, WA, the Bullitt Center is slated to be the world's first urban office building striving to meet the requirements of the Living Building Challenge. The 50,000-sf building will generate as much energy as the building consumes on an annual basis; will supply all water from captured rain, and will treat all wastewater onsite.



Image: The Miller Hull Partnership.

THE ECONOMICS PROBLEM

Unfortunately, the uptake of advanced and effective sustainable building practices has been stymied by the idea that building green means paying more. As a result, transforming our built world into a force for environmental and cultural restoration will mean tackling head-on the financial framework in which the real estate industry operates. Just as appraisal, valuation, and investment marshaled the resources to build the infrastructure we have today, a deeper understanding of value is necessary to guide investment towards a healthier, more productive and sustainable 21st century built environment.

OUTDATED MODELS

Current lending approaches, appraisal protocols and valuation models have hindered the adoption of environmentally sound building practices because they do not fully capture the additional benefits created. This is slowing innovation and market growth at green building's leading edge. These barriers affect the perceived financial viability of environmentally sound projects. As a result, long-term deep sustainability is often considered a luxury available only for those who can afford 'extras', and green building best practices

To fully realize true sustainability, a shift in real estate investment is urgently needed.

are generally ignored for many market-rate building projects—to say nothing of the below-market, affordable housing efforts where they are needed most.

Existing models for valuing and financing development projects largely exclude social and environmental impacts and associated costs. Currently, advanced green projects, including those that aim at “Living” performance levels, are not valued for their ability to reduce, mitigate or even reverse the damaging impacts created by conventional development practices. To fully realize true sustainability, a shift in assessing and evaluating real estate investment is urgently needed. This shift will be driven by expanded industry valuation models and changes to regulatory structures and incentive programs. Only when we have acknowledged and monetized the full economic costs and benefits of every building decision will we see broader adoption of advanced green building practices.

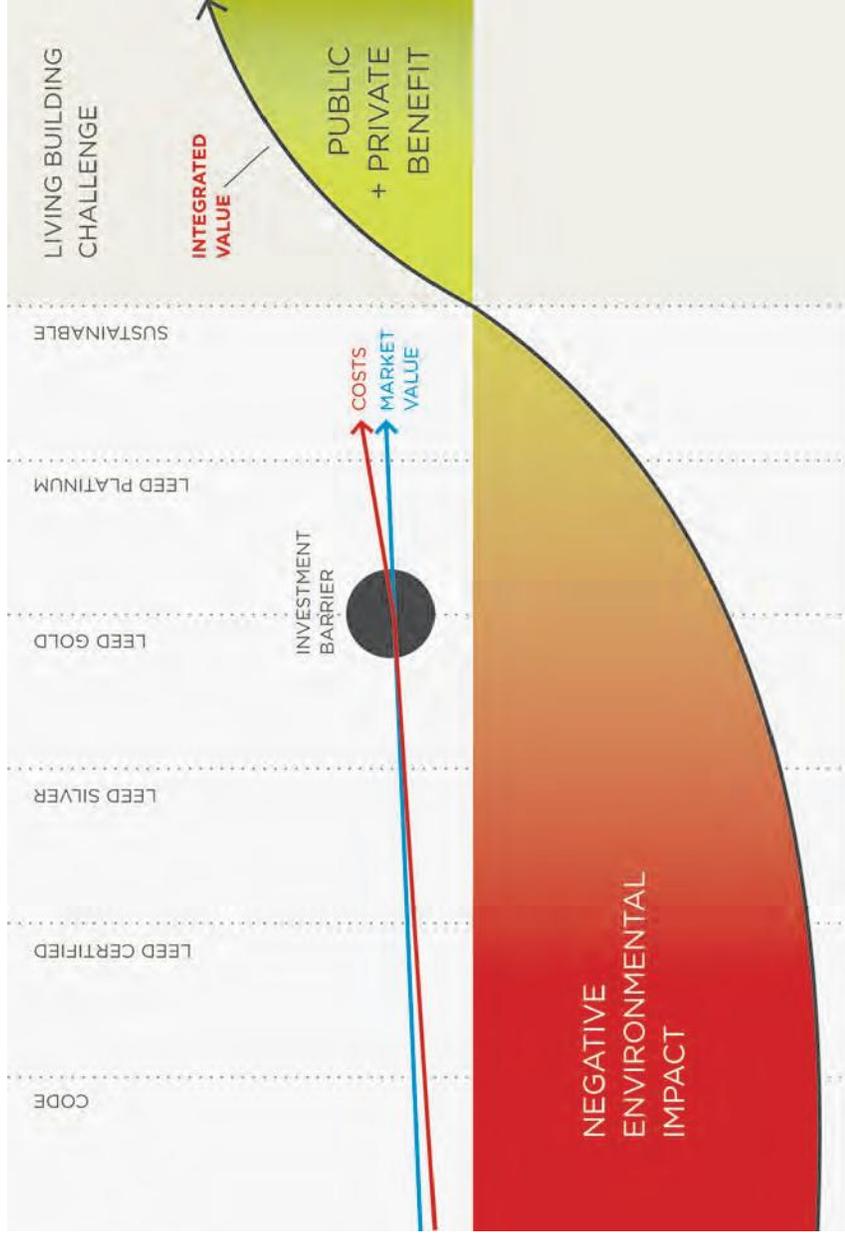
LIMITED DEFINITION OF “VALUE”

The lending/underwriting and valuation communities assess “value” primarily by their return on investment, that is, through the quantifiable, measured costs and income to the property. The value of less tangible benefits, such as reduced occupant absenteeism from sick leave or increased resilience of a building in the event of power supply disruptions, cannot be easily measured and are often overlooked. The “value add” of green buildings is rarely captured in a property's market value, presenting a challenge to developers who are seeking financing. For example, green building elements like high performance windows and geothermal systems can be difficult to finance because any ‘value’ they add is currently hard to quantify. Policies, appraisals and investment standards need to be broadened to enable the current financial framework to include the monetized value of ecosystems services provided by high performance green buildings.



LACK OF INSTITUTIONAL UPTAKE

Approximately a trillion dollars are invested annually in the residential and commercial real estate market¹. This vast market has not responded coherently or consistently to the changes wrought by over a decade of green building innovation. Progress has been so rapid that there is still an insufficient amount of empirical data to provide statistically relevant and defensible norms to document the added benefits, and hence “value”, of high performing green buildings. As a result, appraisers, investors, lenders, policy-makers, insurers, real estate developers and building owners—the people with the greatest influence on the real estate market—continue to rely on outdated assumptions and practices in setting the economic value of any given project.



As buildings move from “code” minimum standards toward built capital that is sustainable or even restorative, as with Living Buildings, their environmental and social impact begins to shift from burden borne solely by the public to that which benefits both private developers and the public as a whole.

Currently, an investment barrier exist around LEED-Gold thresholds when the costs incurred to achieve more sustainable buildings begins to outweigh their market value. By updating economic models to include the negative externalities associated with the built environment, an “integrated value” emerges.

A green building’s integrated value includes its traditional market value in addition to the environmental and social value which it provides. This project seeks to shift the current investment barrier to the right through recognition of integrated value, potentially unlocking a trillion dollars of investment toward restorative building.

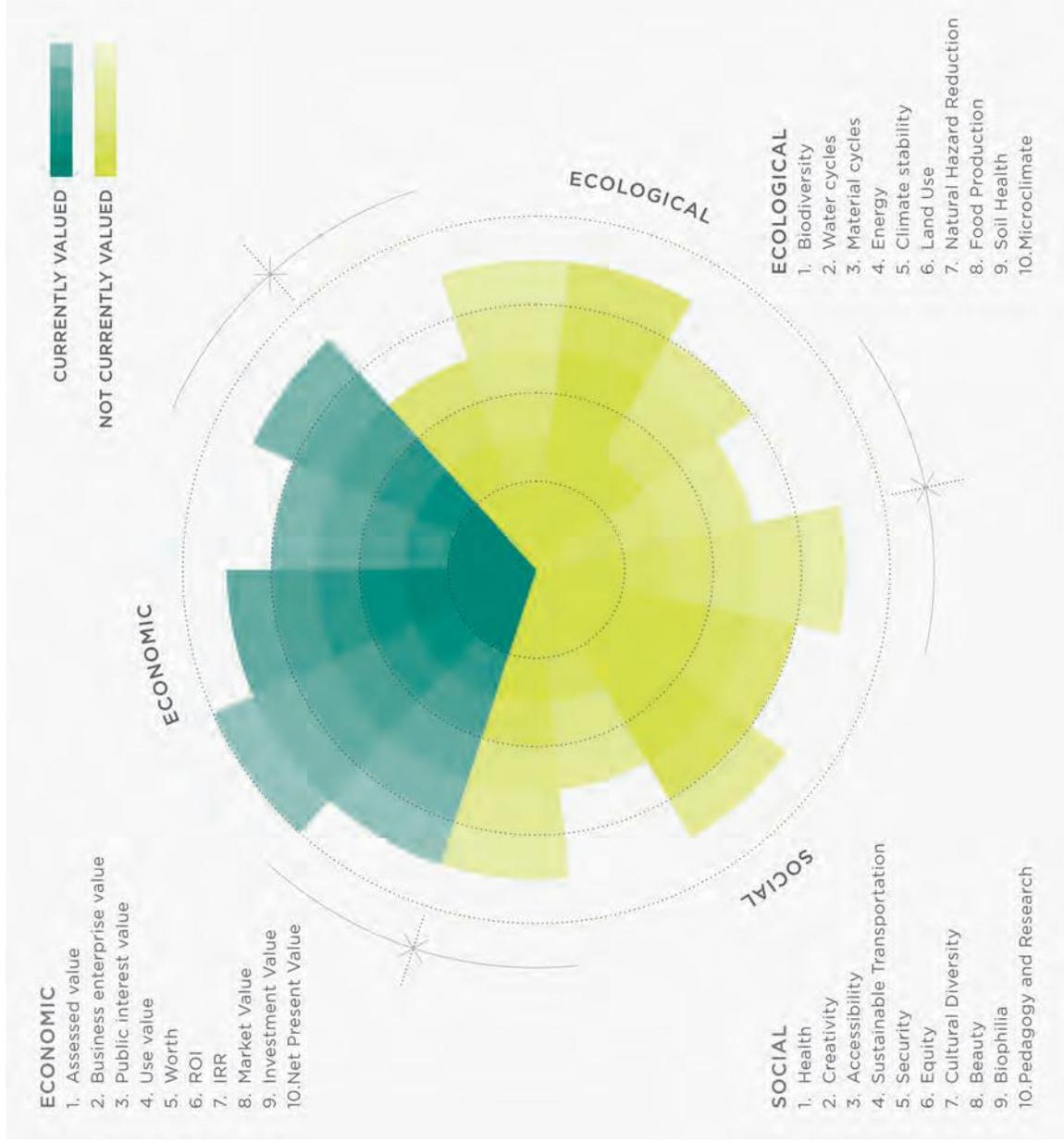
¹Projection based on U.S. US Census Bureau data from “Value of Construction Put in Place”, February 2012.

WHAT'S NEEDED

The Economics of Change project seeks to define a new metric, called **Integrated Value**, which captures not only traditional market value, but includes both the negative and positive externalities associated with the built environment. A green building's integrated value (market value + net externalities) also accounts for ecological and social costs and benefits, providing a means for overcoming the economic obstacles that frequently hinder high performance building and retrofit projects.

ACCOUNTING FOR ECOSYSTEM SERVICES

The natural environment provides critical components, or services, which create and maintain the conditions conducive for life on our planet—breathable air, drinkable water, food and stable atmospheric conditions. Nature, like a human life, is priceless. Yet, just as people do work, and receive pay, it is important to value the economic “work” that nature does, or it may be foolishly lost. Often we ignore the ‘value’ of one of nature’s free services, such as stormwater conveyance or flood control, and end up with another tax district and/or expensive infrastructure projects to replace nature’s previously free





service. There are over 23 categories of “ecosystem goods and services”, including climate regulation, water, food and energy provisioning, biodiversity, recreation, spiritual and aesthetic value, flood and storm protection, education and health benefits. These goods and services provide vast benefits to society with tremendous economic value.

Over the last 40 years, methodologies have been developed to value ecosystems services. While complex, many ecosystems services, such as the resources needed to support carbon sequestration, can now be physically measured and, in many cases, monetized. Current policies, appraisal and investment standards need to be advanced to incorporate the monetized value of ecosystems services provided by high performance green buildings.

ACCOUNTING FOR SOCIAL COSTS AND BENEFITS

The built environment also has a significant impact on health, comfort, productivity, and many other aspects of our daily lives. Methodologies exist to estimate the financial equivalent of social costs and benefits

resulting from the built environment. This provides additional guidance for calculating the integrated value of a building, district, or city. Using this information, policymakers can help unlock new avenues for value creation driven by a linked social-ecological-economic model of the built environment.

THE TIME TO TAKE ACTION IS NOW

As the building industry makes great strides towards making Living Buildings a reality, time is of the essence to institutionalize a new financial paradigm, redirecting policies and incentives to support the industry’s transformation. Our opportunity is unprecedented. The U.S. cannot advance in a globally competitive economy with an inefficient building stock, one that continues to place environmental and social stress on its population. With the real estate market on the verge of recreating itself, the time to align valuation models with energy policy and to integrate ecosystem services into the economic framework is now. In doing so, we can overcome the existing barriers to innovation and to a future where Living Buildings are commonplace within our communities.

WHAT’S NEEDED NOW

- Strong analysis and understanding of current systems. The interactions and relationships that influence the real estate industry are complex. A comprehensive understanding is necessary to fully evaluate how these systems function, what and who drives decision-making and where the points of leverage exist to facilitate change.
- Connecting existing research and innovation. Bridging together the efforts already underway to shift policies and practices towards higher performance green buildings with expanded approaches for valuation and financing is critical. In addition, robust market research documenting the actual, measured performance of green buildings is needed to help inform the environmental, social and economic value of innovative green building and infrastructure projects.
- More comprehensive integration of ecological, social and economic costs/benefits. A new, institutionalized model for real estate investment is needed, one that appropriately addresses implied financial disincentives for deep green buildings and clears the way for dramatic improvement in the built environment’s relationship to the ecosystems it inhabits.

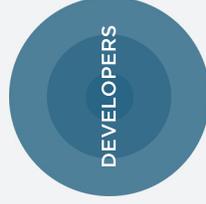
CATALYZING THE SHIFT

The overarching goal of The Economics of Change is to shift mainstream real estate practices to document the full value of a built environment that is compatible with healthy natural systems. By enhancing the underlying investment model, which includes appraisal, risk assessment, finance, and lending, transformation to a high performing built environment appropriate for the 21st century is achievable. Our research, including strategic policy recommendations, will demonstrate the necessity to catalyze this shift, initiating systematic integration of externalized environmental and social costs and benefits into real estate valuation and investment.

TARGETED AUDIENCES

The targeted audiences for this research each play a unique role in the current real estate market and seek to benefit from its outcomes and findings:

Appraisers provide an impartial analysis of the “market value” of real estate, typically based on three approaches incorporating market comparables, replacement cost, and income generation potential. However,



social and environmental costs and benefits are typically not addressed. The Economics of Change will equip Appraisers with new data sets and tools to effectively incorporate social and environmental factors to more accurately reflect the broader investment criteria and parameters of an increasing number of national, international and institutional investors.

Lenders provide both short-term construction loans and long-term “permanent” loans for a wide variety of building types based on appraised value, ability to repay loan from building net operating income, and general creditworthiness. The Economics of Change will provide Lenders with financial models of “integrated value”; help them work with appraisers to provide more complete analyses of environmental and social costs and bene-

fits, and arrive at a net operating income that more accurately reflects both utility savings and other benefits of green buildings.

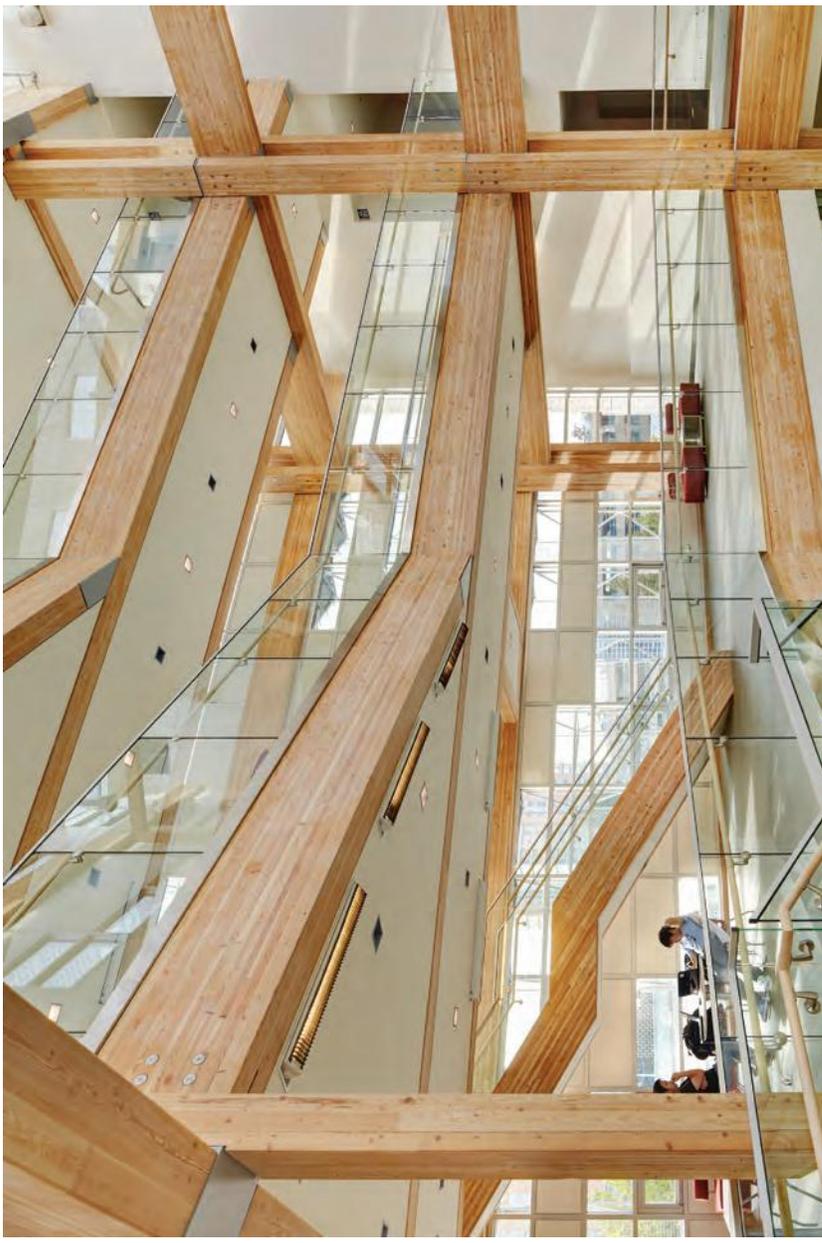
Developers invest in buildings with their own money, matching it with commercial loans and other sources, for either short-term sale or long-term hold. The Economics of Change will provide Developers with an understanding of “integrated value”; helping them look for ways to turn the environmental and social attributes of their buildings/portfolios into monetized benefits that both directly and indirectly impact their bottom line. Our work will provide greater understanding of the reduced long-term risk of high-efficiency buildings in a resource-constrained world.



Policymakers and planners influence the built environment through building codes, permitting processes, land-use zoning, regulations, and a variety of taxes, fees, and incentives. The Economics of Change will support Policymakers by recommending incentives and policy interventions favoring a restorative built environment that are simple, transparent, high impact, low cost, and politically viable.

Investors/Owners make real estate decisions based on their own investment models, weighing risk and return to determine the feasibility of potential projects. The ongoing real estate crisis has demonstrated that current models are deeply flawed in many aspects. The Economics of Change will provide Investors with more integrated models, linking financial, social, and environmental factors more accurately; thereby facilitating a more complete assessment of risk and return, both in the near and long-term, and improving and shifting investment decisions towards more restorative projects.

Correcting real estate incentives and improving financial models will shift investment toward buildings and infrastructures that are financially rewarding, resilient, socially just and economically restorative.



The Center for Interactive Research on Sustainability (CIRS), Vancouver, BC. Photo courtesy of Perkins + Will.

NEXT STEPS

Next steps include a two-year program of research, including integrated analyses, policy work and partnerships within the real estate industry. Once funding for the project is secured, activities include:

POLICY AND MARKET RESEARCH

- Research and assemble economic case studies of completed Living Building projects and a select group of high performing buildings. Identify cost data, economic models, environmental/cultural/social benefits realized and analyze costs/benefits based on data collected from project teams.
- Analyze existing policies and identify potential policy modifications to determine the best leverage points for economic change.
- Develop an implementation strategy for proposed recommendations to include legislative action, amendment to regulations, funding, measurement methodologies, and other key industry changes.

DEPLOYMENT OF MODELS

- Develop an evolved real estate investment model that systematically incorporates environmental and social costs and benefits, as well as the impacts of specific building features.
- Deploy models through an open-source format, reflecting policy and regulatory realities in different regions.
- Apply the tool to actual case study Living Building projects and a select group of high performing buildings to allow for comparative analysis of the benefits and enhanced value.

COALITION BUILDING

- Build coalitions within the investment and valuation communities and develop strategic partnerships to enhance and disseminate the research broadly.

RESEARCH PHASES

- 1. In Phase 1**, The Economics of Change project team created a prototype tool to demonstrate how the ecological and social benefits of green buildings can be monetized in real estate investment models.
- 2. Phase 2** will expand and pilot the tool in an interactive and open-source format while deepening ties to leading practitioners within the financial industry to leverage the shift from theory into action.

RESOURCES

DIGGING DEEPER

Living Building Challenge

The Living Building Challenge defines the most advanced measures of sustainability in the built environment possible today. www.livingbuildingchallenge.org

Economics of Change

The phase 1 research report provides an overview of ecosystems services that can be applied to the built environment, an analysis of current and future real estate investment frameworks, and a description of the prototype investment modeling tool.

www.livingbuildingchallenge.org/economicsofchange

ADDITIONAL RESEARCH

High Performance Green Building: What's it Worth?

A 2009 study assessing the asset value and market potential of three high performance case study buildings <http://cascadiagbc.org/news/GBValueStudy.pdf>

Living Building Financial Study

A comprehensive study, complete in 2009, to evaluate the cost premium to achieve a Living Building, taking into account building typology and climate region. <https://ilbi.org/education/reports/financial-study>

Value Beyond Cost Savings

A 2010 book published through the Green Building Finance Consortium designed to assist private investors in making better financially based sustainable property investment decisions.

www.greenbuildingfc.com/Documents/Value%20Beyond%20Cost%20Savings--Final.pdf

An Investors' Perspective on Environmental Metrics for Property, UNEP Finance Initiative.

UNEP Finance Initiative report published in 2011.

www.unepfi.org/fileadmin/documents/EnvironmentalMetrics.pdf

Recognition of Energy Costs and Energy Performance in Real Property Valuation

2012 report published by the Institute for Market Transformation

http://imt.org/files/Energy_Reporting_in_Appraisal.pdf

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Front and back cover photo courtesy of Perkins + Will