JustBioFiber

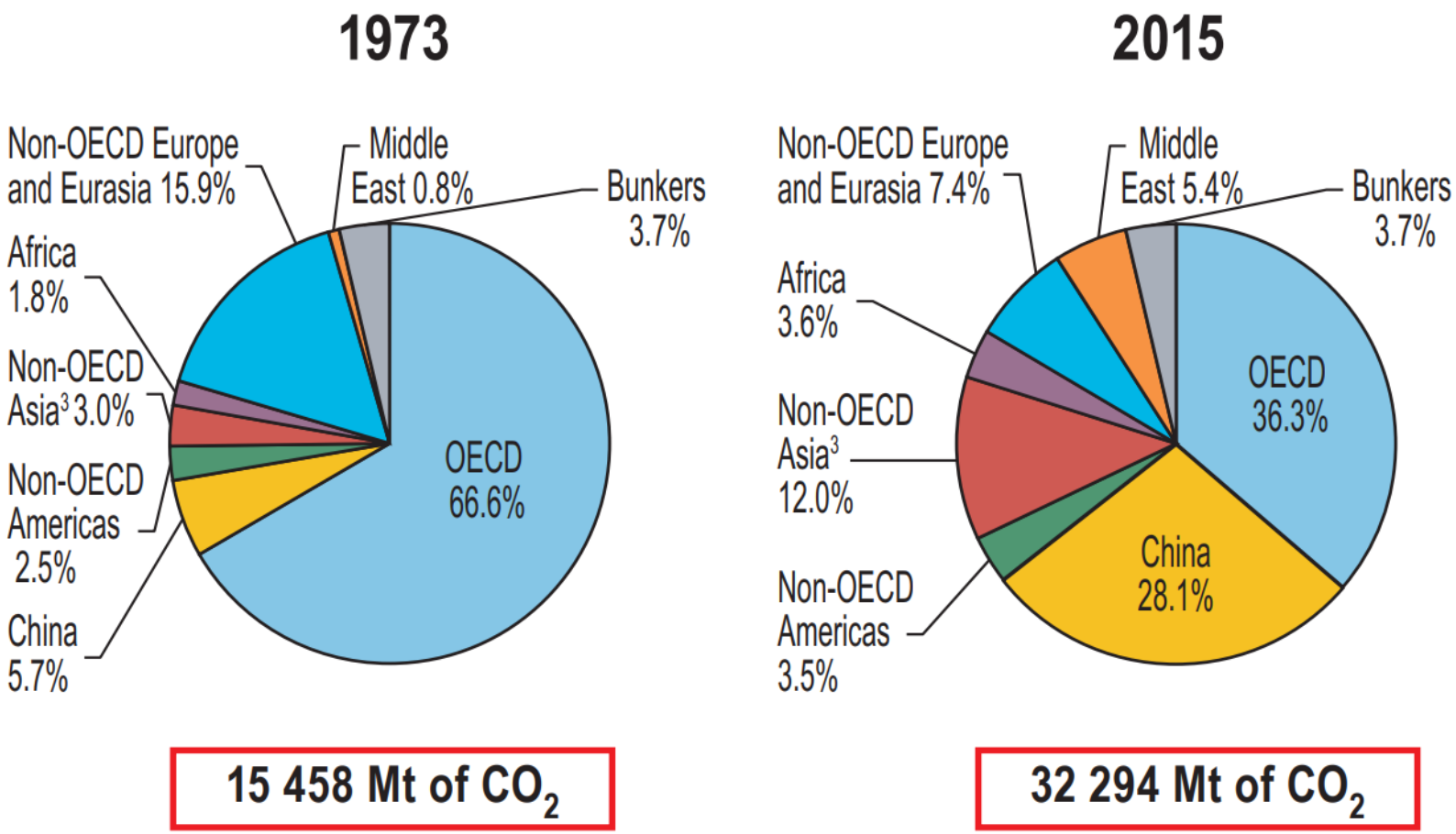
Structural Solutions

Bio Fiber Building System for

Carbon Sequestration and Energy Efficiency

Terry Radford presenter

1973 and 2015 regional shares of CO_2 emissions from fuel combustion[2]

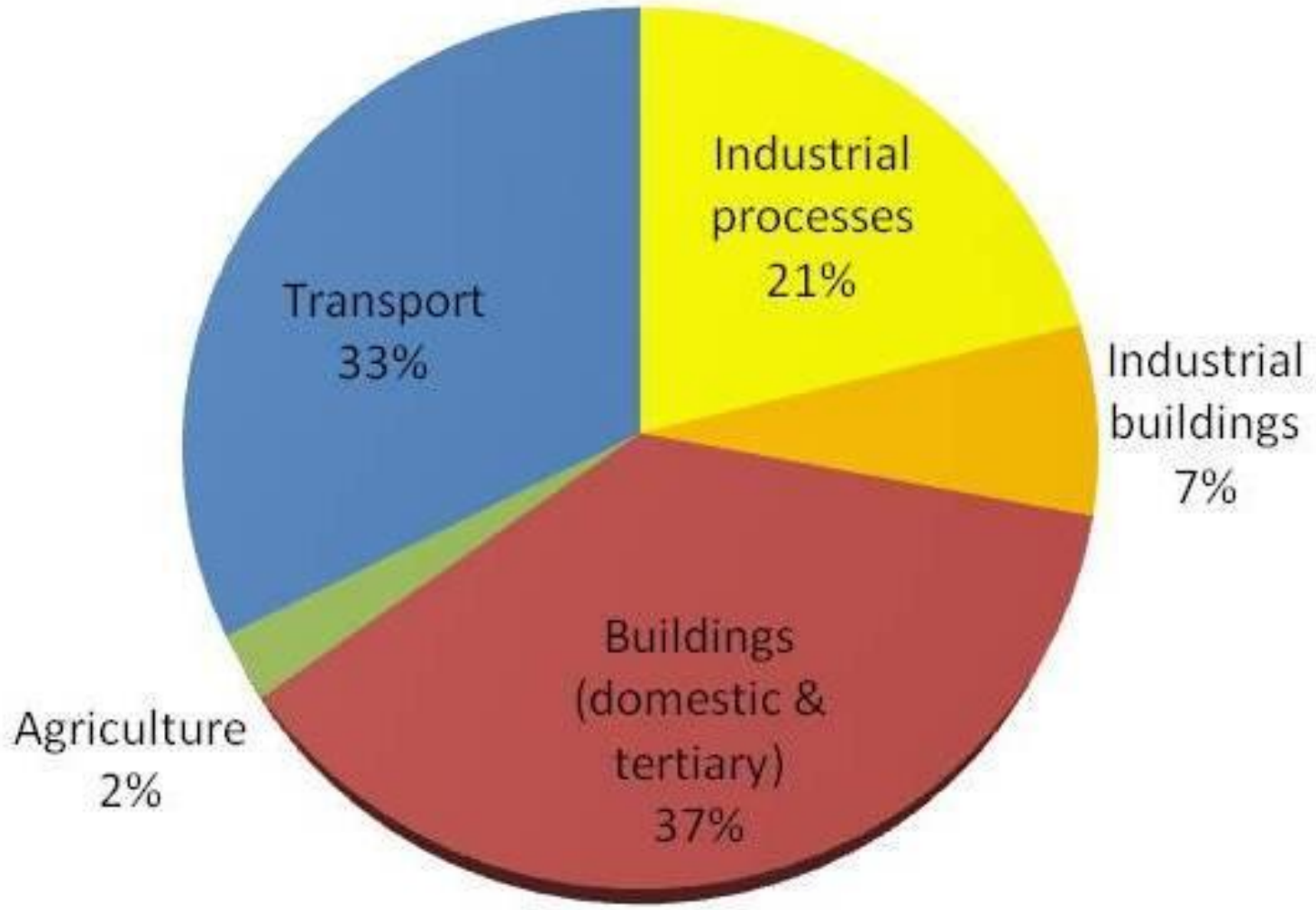


15 458 Mt of CO_2

32 294 Mt of CO_2

1. World includes international aviation and marine bunkers, which are shown together as Bunkers.
2. CO_2 emissions from fuel combustion are based on the IEA Energy Balances and on the 2006 IPCC Guidelines, and exclude emissions from non-energy.
3. Non-OECD Asia excludes China.

Share of total EU energy consumption



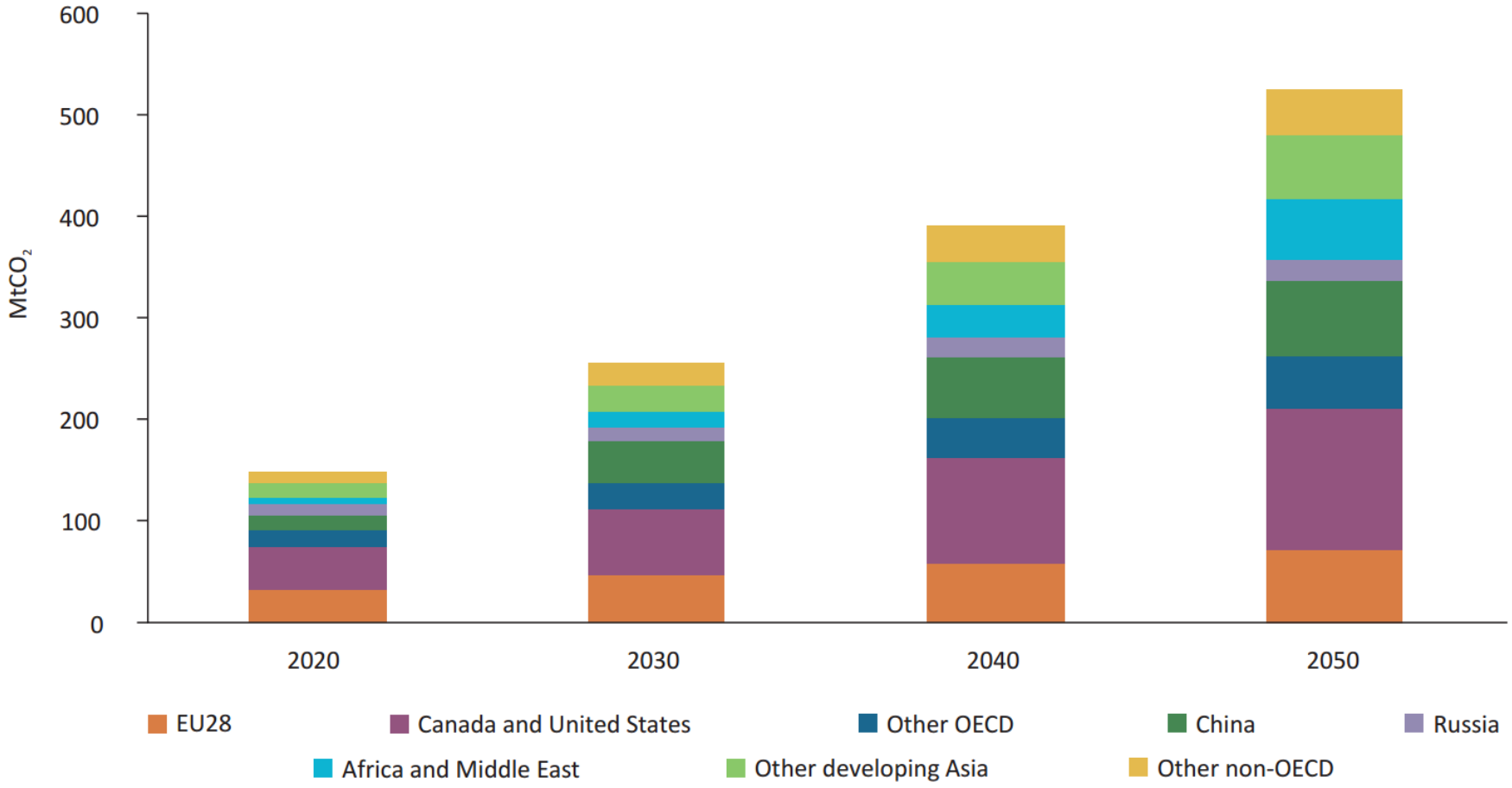
Green House Gas Reduction

“If all new building used hemp for insulation we would meet Canada’s 2030 Green House Gas Emission Goals.”

Chris Magwood, Executive Director of The Endeavour Centre, Sustainable Builder

Canadian Hemp Trade Alliance Conference, Ottawa 2017

Figure 9: Direct emissions savings from improvement in building envelopes between the 6DS and 2DS, in Mt CO_2



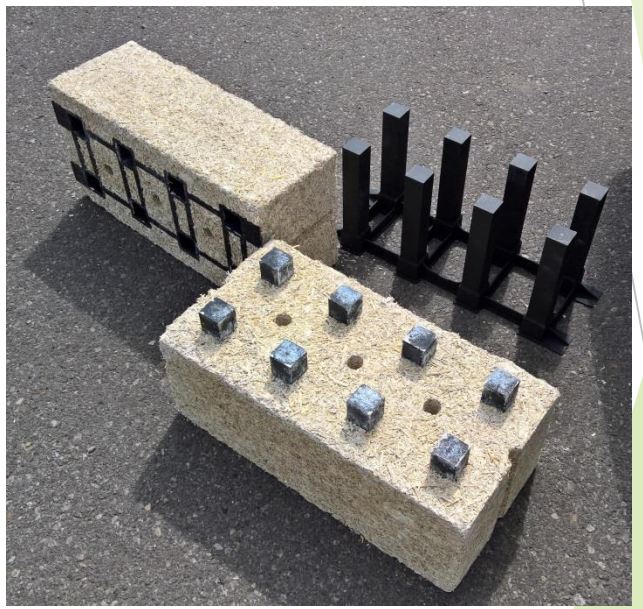
Note: these savings exclude indirect emissions for electricity that are greatest for electricity end-uses (e.g. does not reflect air-conditioning electricity generation benefits).

Problem Change Opportunity

- International Energy Agency develops policy for governments
- Governments implement policies to reduce problem GHG
- November 2016 new building energy requirements in Alberta
- Local municipal codes enforce policies for building permits
- Builders must comply to new building energy efficiency requirements
- Using conventional materials incrementally increase costs
- Just BioFiber increases energy efficiency while reducing costs
- Change creates opportunity

The Product

- modular building block system for fast flexible construction
- Structural load bearing and weather resistant
- Reduces building energy requirements by %20
- CO2 sequestering Hemp 6.4 kg per block
- Lime formulation continually absorbs CO2
- Non Toxic and permeable
- Monolithic structure resists seismic and wind loads

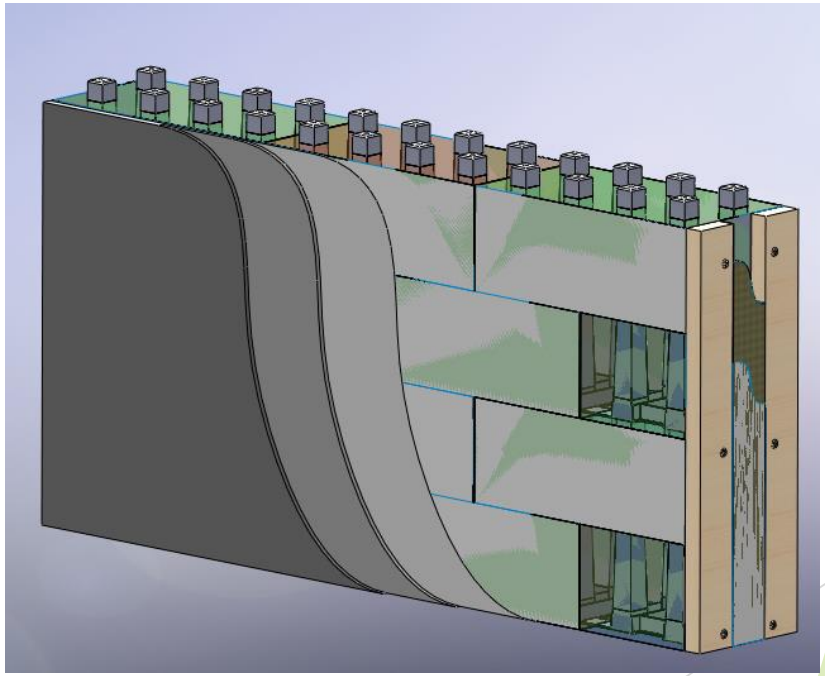


The Value Proposition

- 15% lower construction cost
- Fast build times and lower labour costs.
- R30 effective U-value minimum R-Value of 22
- Safety Fire rating of >1 hour
- Mold and insect resistant
- interior comfort Warm and Quiet
- Healthy indoor air quality.
- Longevity over 7 generations

The Target Market

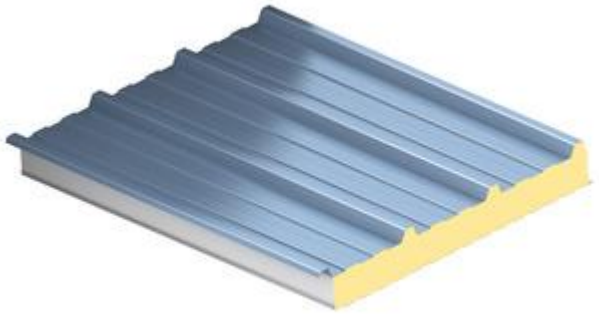
- Commercial demising fire walls between tenants
- Commercial exterior walls systems
- Residential exterior wall systems
- Perimeter sound barriers for communities
- Green Builders, Architects, Engineers



Net Zero Commercial Building

JBFSS Block Competitors – Commercial/Industrial and Institutional Construction

Higher cost



Higher cost

Similar cost, Low thermal insulating value, most CO2

The Competition

Building System	R Value	*Cost $/ft2*
JBF SSR Hemp Block	30	**31**
BC Code Wood frame	29	32
Concrete masonry block	17	64
JBF SSR HD Commercial	**30**	**41**
Precast insulated concrete	19	43
Hempcrete	26	27
Steel frame Metal siding	9	34
Insulated Concrete Form	20	54
SIP OSB	24	28

Sustainability Benefits

- Reduces energy needed to heat and cool buildings
- CO2 is sequestered in the building material for the life of the building
- Rapidly renewable hemp grows 20 times faster than trees
- agricultural diversification through value added agri-products;
- water reclaimed and reused in manufacturing
- Recyclable material with minimum construction waste
- cost effective, high performance building solutions exceeding LEED
- Durable buildings for strong, resilient communities
- Local job creation

The Numbers

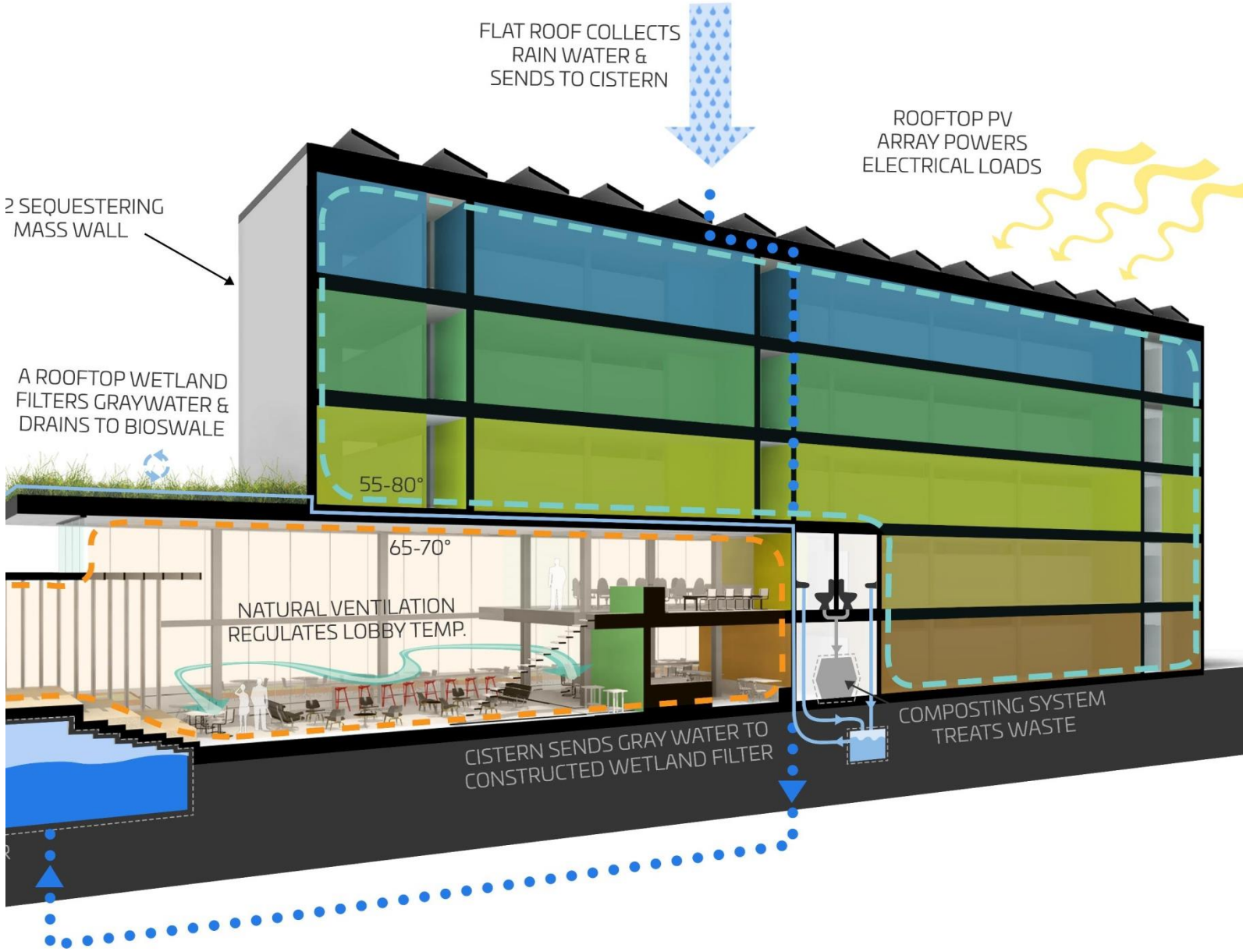
- Total Investment from R&D to commercialization =$30 million
- Full Capacity Plant Size = 4 million blocks annually
- Total Annual Carbon Sequestration = over 88,400 tonnes CO_2e
- Total hemp hurd required annually = 15,630 tonnes
- Total hemp cultivation required = 7,000 hectares
- Total CO_2 flue gas absorbed = 6,500 tonnes annually
- Water reclaimed and reused = 20 million liters
- Product is 15% more cost-effective than traditional building materials
- Provides a 20% increase in energy efficiency compared to traditional building

Hemp Hurd / Shiv

- 2018, 10 – 100 Tn per month
- 2019, 400 – 1500 Tn per month over 3000 Tn straw
- Currently grain production, need more straw
- Larger stock diameter for increased hurd
- Not combined
- Lightly retted

Building Green Features

- CO2 Sequestering Wall (700,000 lb. of CO2)
- Rainwater Collection for Irrigation
- Roof Top Solar Array Powers Climate Controlled Building
- Composting Sanitary System
- Rooftop Wetland Filters Greywater to Bioswale



Canada Green Building Council
Every Building Greener

out | Advocacy | Chapters | CaGBC Membership | LEED | Zero Carbon | Programs | Events | Education

/e chose the CaGBC Zero Carbon Standard because it lets us make a old statement and helps identify ourselves as leaders in our industry"

Redden, Managing General Partner, EcoLock Self Storage, CaGBC ZCB Pilot Project

d more about our pilots and be one of the first projects to register in 2018 »

ZERO CARBON
CARBONE ZÉRO

PILOT PROJECT

Become a CaGBC member

in the green building movement

A Roadmap for Retrofits in Canada (2017)

Charting a path forward for large buildings

GBCI Canada

Coming January 2018

EcoLock Kelowna
Redefining Urban Self Storage

Building Section Cut | SSR Construction Blocks

Highlights

• EcoLock is a Self-Storage, Wine Storage and Co-Work building proposed for downtown Kelowna, BC.

Sooke BC Harmless Home


GREEN CONSTRUCTION
Net Zero Home Uses Cutting-Edge Materials
Global BC

nytimes.com/2018/01/29/science/hemp-homes-cannabis

In October, representatives from 14 countries attended the seventh annual Hemp Building Symposium at the International Hemp Building Association in Quebec. Terry Radford, the president of Just BioFiber Structural Solutions, an I.T.-pro-turned-tinkerer, unveiled a prefab hemp composite that could be more attractive to city planners and government building code officials.

“The problem with hempcrete right now,” he said, “is each one has to be inspected and have an exemption from the building code. It’s difficult for builders to get approved. If you’re trying to get a mortgage on your house, it’s pretty restrictive. That’s our biggest challenge.”

“Our idea is to get the material certified for national building codes, rather than have each one approved,” he added. “The difference between hempcrete and my block product is that we’re a structural product. Hempcrete by itself is just an insulation.” The start-up is preparing to produce a 112,000-square-foot facility in British Columbia.

Thank You

Terry Radford

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