PEOPLE, TREES, CLIMATE AND INDUSTRY

CECIL KONIJNENDIJK, PROFESSOR OF URBAN FORESTRY

UFORIA – URBAN FORESTRY RESEARCH IN ACTION, UBC
@CECILUFORIA, CECIL.KONIJNENDIJK@UBC.CA

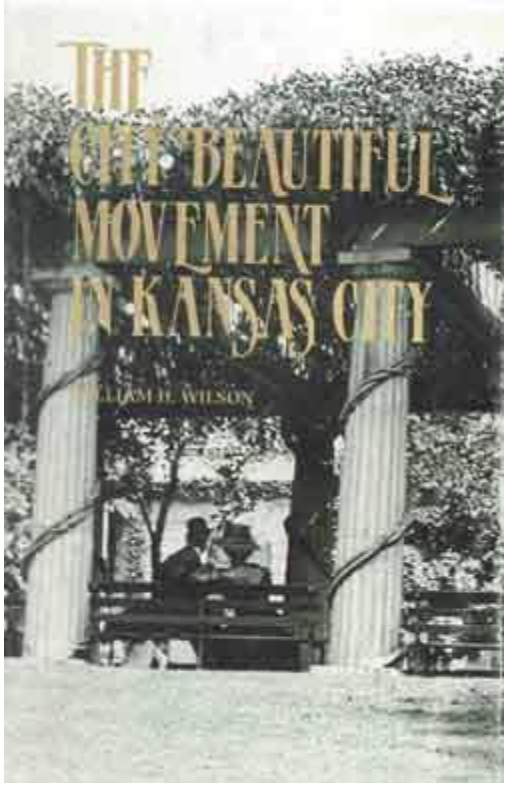

BLADE RUNNER
2049

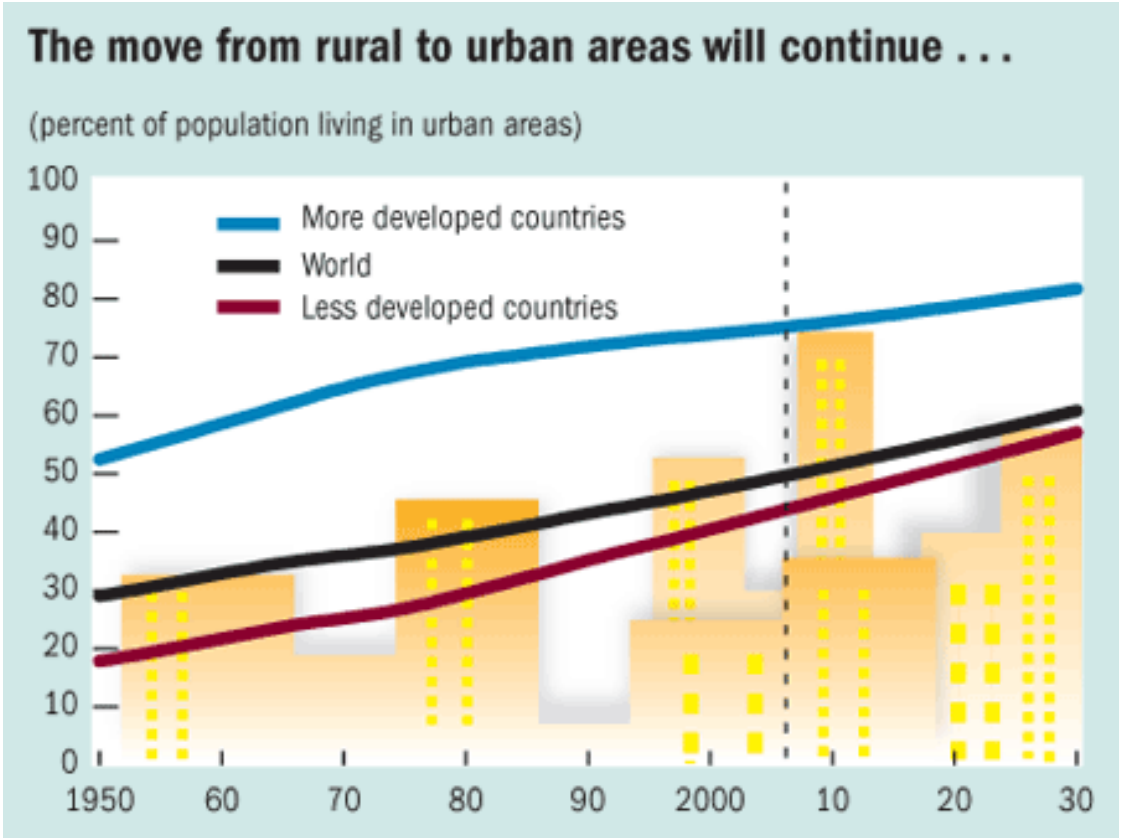

Bob MicMillan / FEMA Photo Gallery
The new normal?

WikimediaCommons / Kentaro IEMOTO from Tokyo, Japan


LE CORBUSIER
LA
VILLE
RADIEUSE
soleil
espace
verdure
ÉDITIONS VINCENT, FRÉAL & Cie

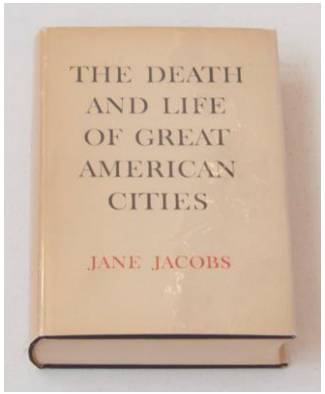

Reproduced from the pages of "Punch" Christmas Number, 1920.
Yesterday
Living and Working in the Smoke
To-day
Living in the Suburbs – Working in the Smoke
To-morrow
Living & Working in the Sun at WELWYN GARDEN CITY


THE
CITY BEAUTIFUL
MOVEMENT
IN KANSAS CITY

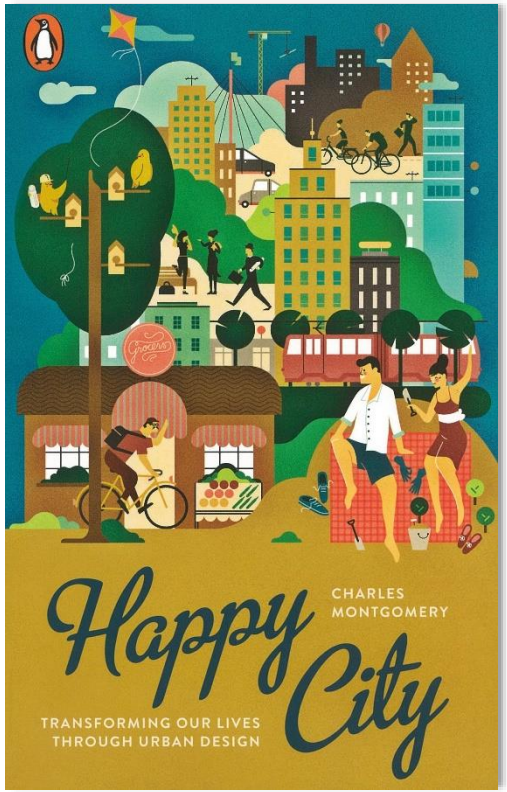


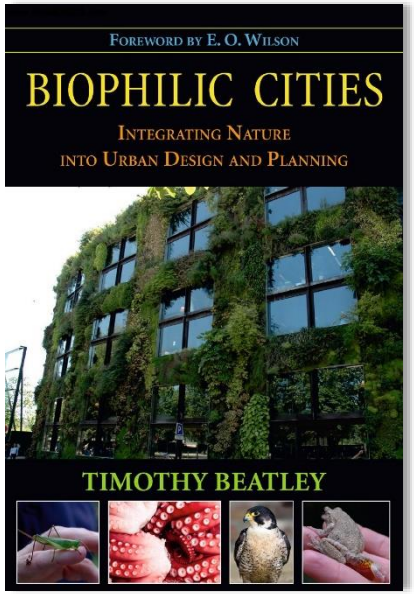
http://www.imf.org/external/pubs/ft/fandd/2006/09/picture.htm

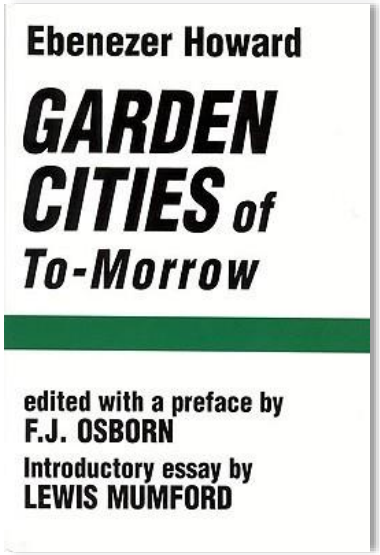
Phil Stanziola - New York World-Telegram and the Sun Newspaper Photograph Collection, Library of Congress, Reproduction Number: LC-USZ-62-137838. Domain, https://commons.wikimedia.org/w/index.php?curid=14636401

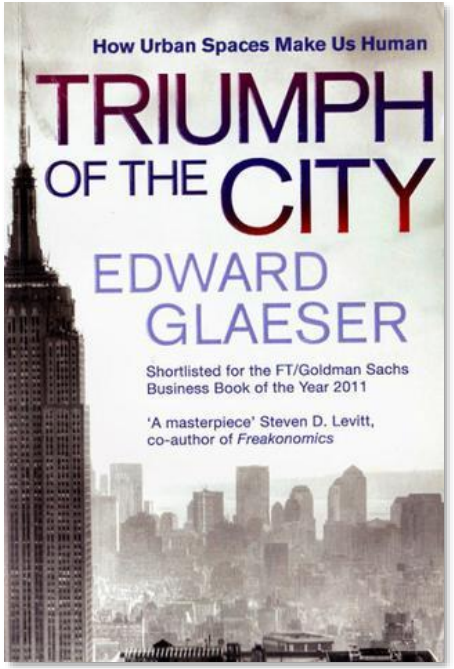


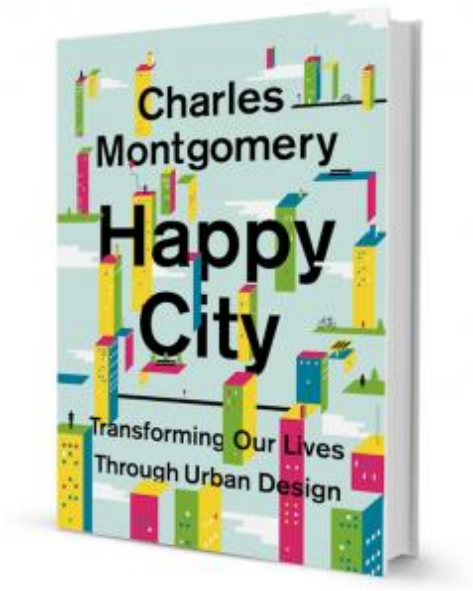
Cities are an immense laboratory of trial and error, failure and success, in city building and city design – Jane Jacobs (1961)


Happy City
CHARLES MONTGOMERY
TRANSFORMING OUR LIVES THROUGH URBAN DESIGN


FOREWORD BY E. O. WILSON
BIOPHILIC CITIES
INTEGRATING NATURE INTO URBAN DESIGN AND PLANNING
TIMOTHY BEATLEY


Ebenezer Howard
GARDEN CITIES of To-Morrow
edited with a preface by
F.J. OSBORN
Introductory essay by
LEWIS MUMFORD

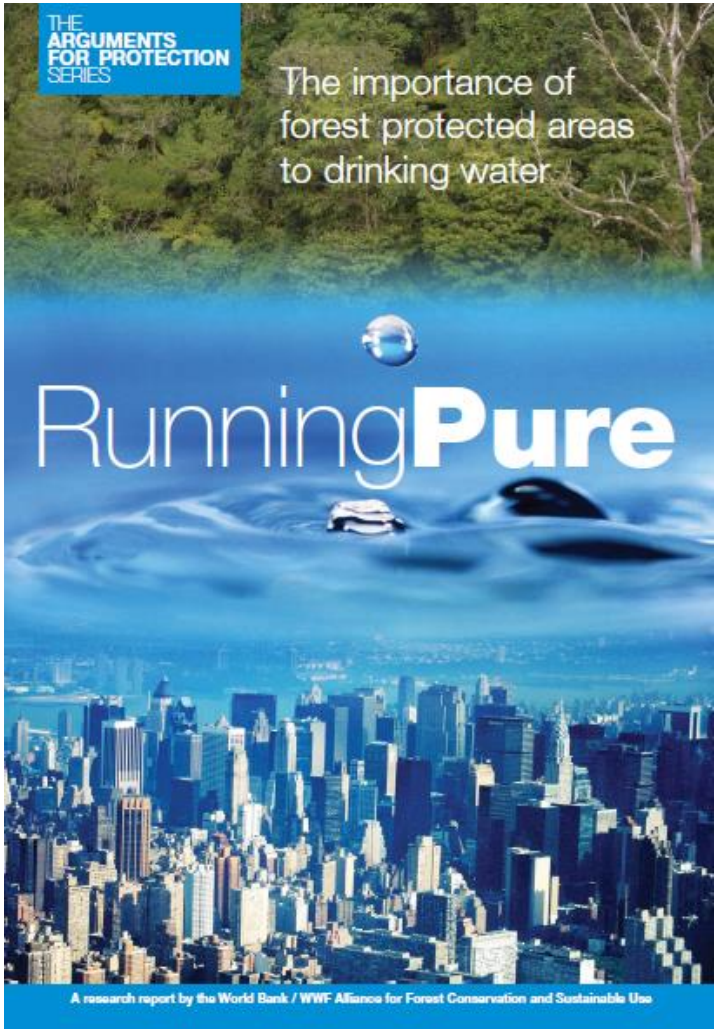

How Urban Spaces Make Us Human
TRIUMPH OF THE CITY
EDWARD GLAESER
Shortlisted for the FT/Goldman Sachs Business Book of the Year 2011
'A masterpiece' Steven D. Levitt, co-author of Freakonomics



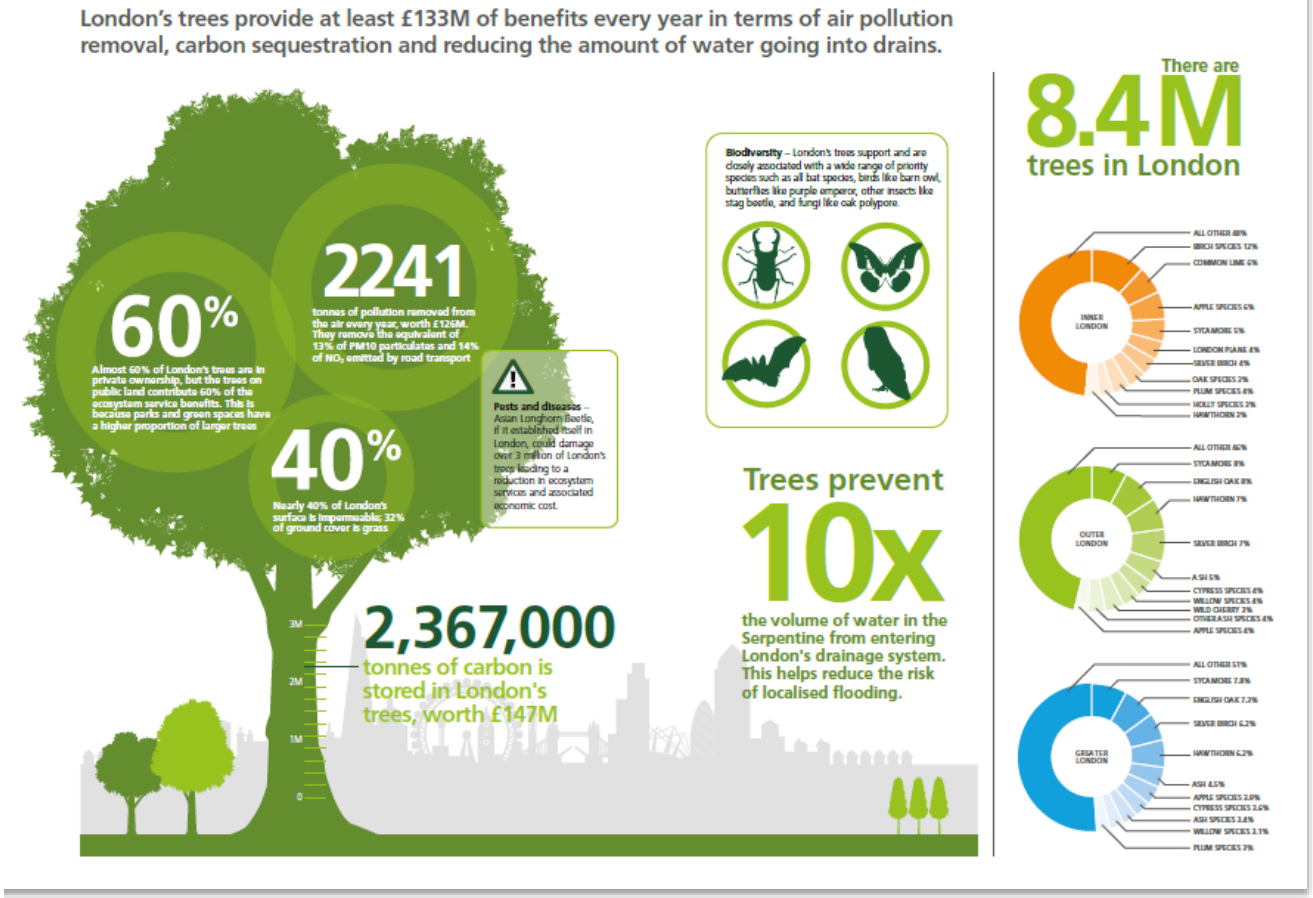
- Focus on Urban Design
- “Retrofitting our cities for *happiness*”
- Soft traffic, shared space
- Importance of biological complexity

By Unknown. Stitch and restoration by Jebulon - Bibliothèque nationale de France, Public Domain, https://commons.wikimedia.org/w/index.php?curid=33748204

TREES ARE GOOD


THE
ARGUMENTS
FOR PROTECTION
SERIES
The importance of
forest protected areas
to drinking water
RunningPure
A research report by the World Bank / WWF Alliance for Forest Conservation and Sustainable Use

Exhausted worker in Dubai, 2015
photo: Kamran Jebreili



SUPPORTED BY MAYOR OF LONDON

Photo: José Maria Mateos / Wikimedia Commons

https://commons.wikimedia.org/wiki/File:Pokestop_in_Alameda_Central,_Mexico_City.jpg

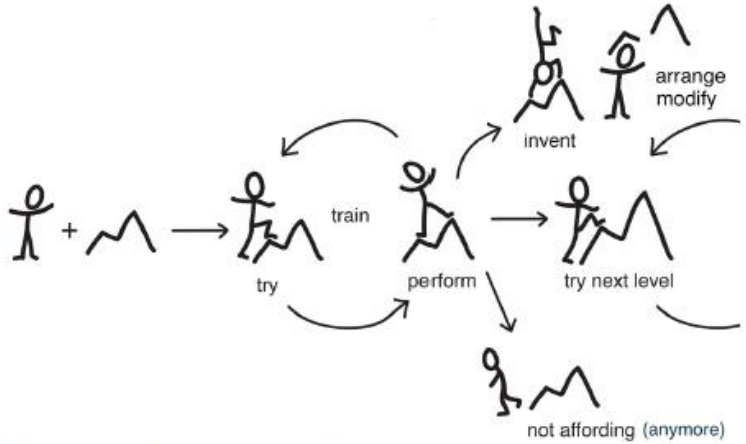


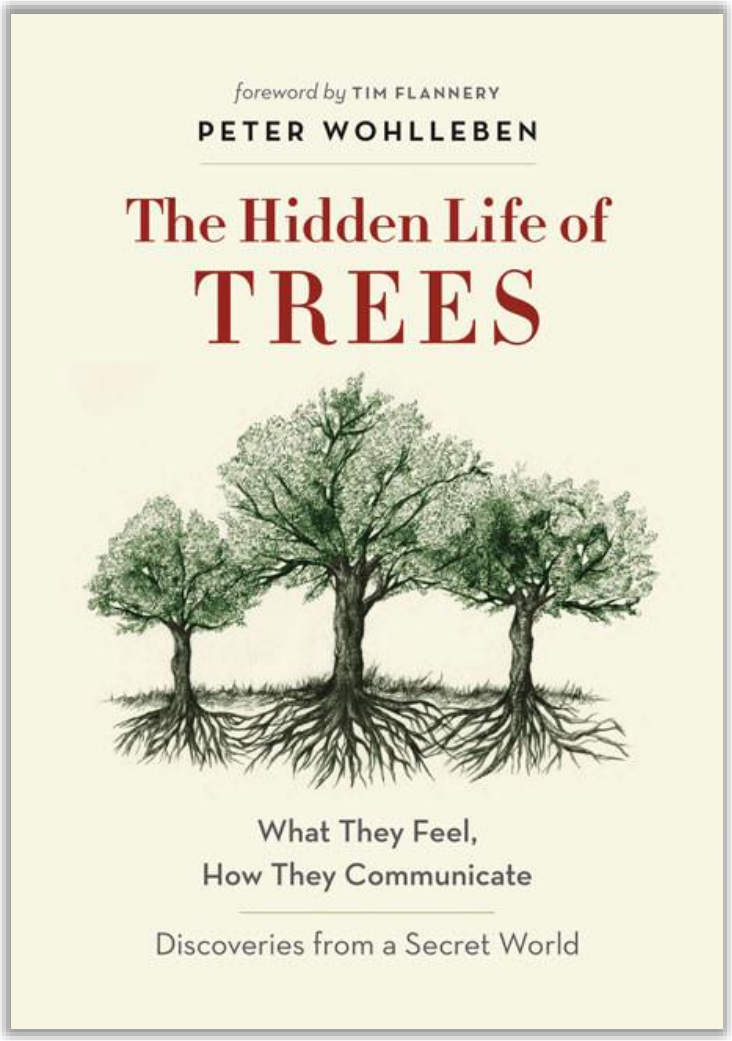
Figure 7. The cycle of trying, training, performing, creating, and continuing to new cycles as observed in this study.

FACULTY OF SCIENCE
UNIVERSITY OF COPENHAGEN

PhD thesis
Inger Lerstrup

Green Settings for Children in Preschools
Affordance-based Considerations for Design and Management

Academic advisor:
Cecil C. Konijnendijk van den Bosch



http://blog.ted.com/forest-for-the-trees-suzanne-simard-at-tedsummit/

the

NATURE FIX

Why Nature Makes Us Happier, Healthier, and More Creative

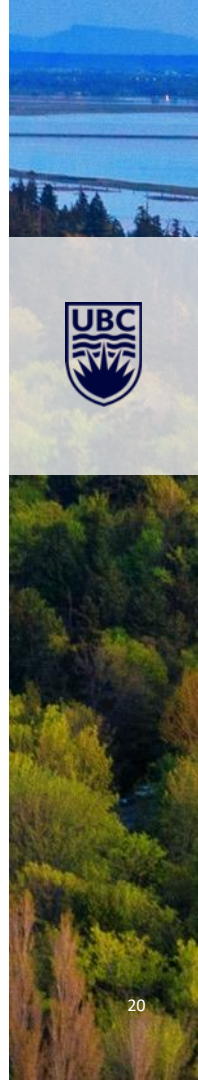
FLORENCE WILLIAMS

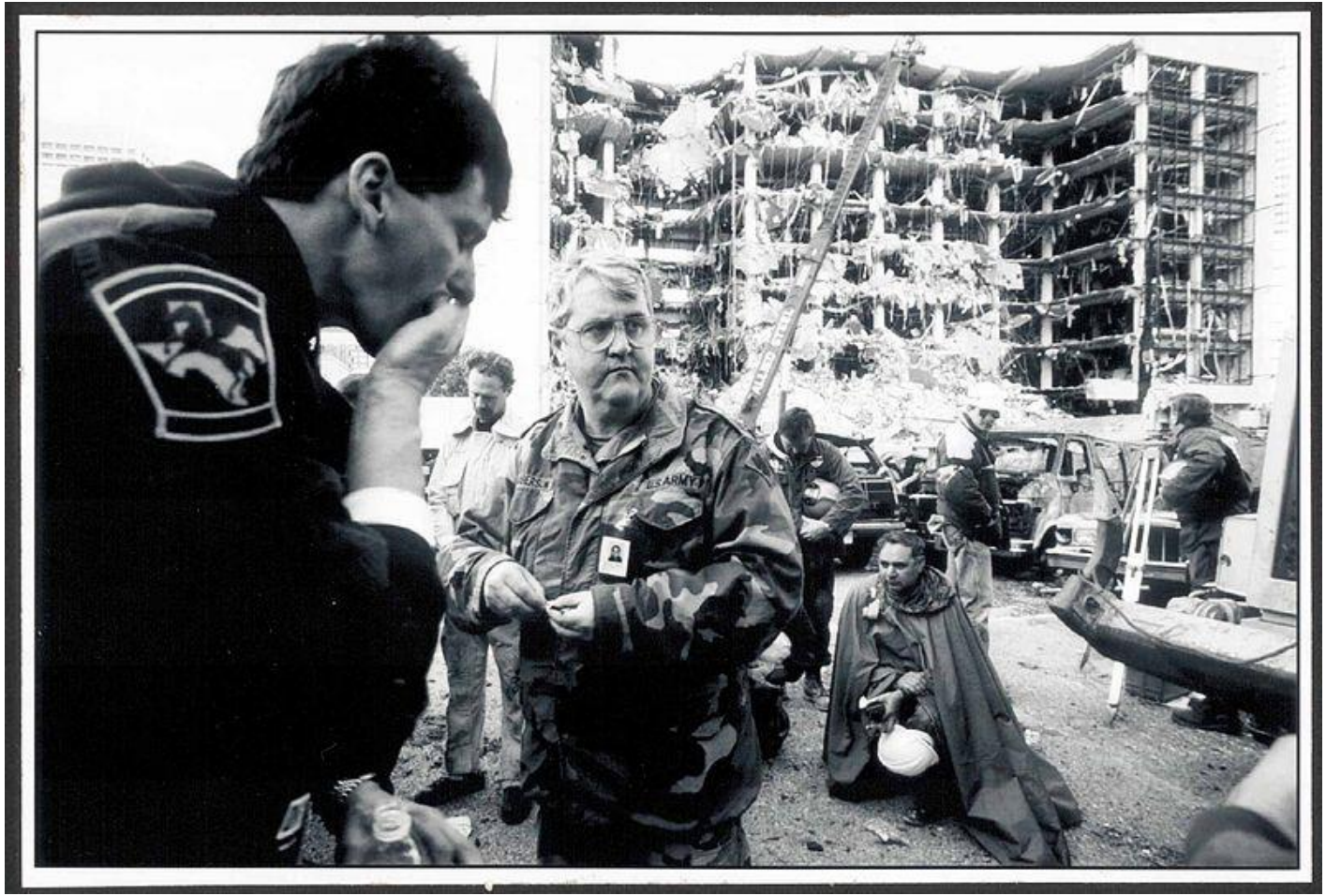
WHAT DO WE KNOW (FOR SURE)?

VAN DEN BOSCH AND ODE SANG (2017)

- Urban trees and other nature **reduce heat**
  - And this has been found to impact all-cause mortality, cardiovascular mortality, mental health, children's birthweight
- Urban trees and other nature **enhance affect**[1]
  - And this has been found to impact cardiovascular mortality, all-cause mortality, mental health and wellbeing

[1] *Affect is the experience of feeling or emotion*





Wikimedia Commons / United States Armed Forces, ID 960509-O-0000N-002


Dustin M. Ramsey / Wikimedia Commons

SURVIVOR TREE

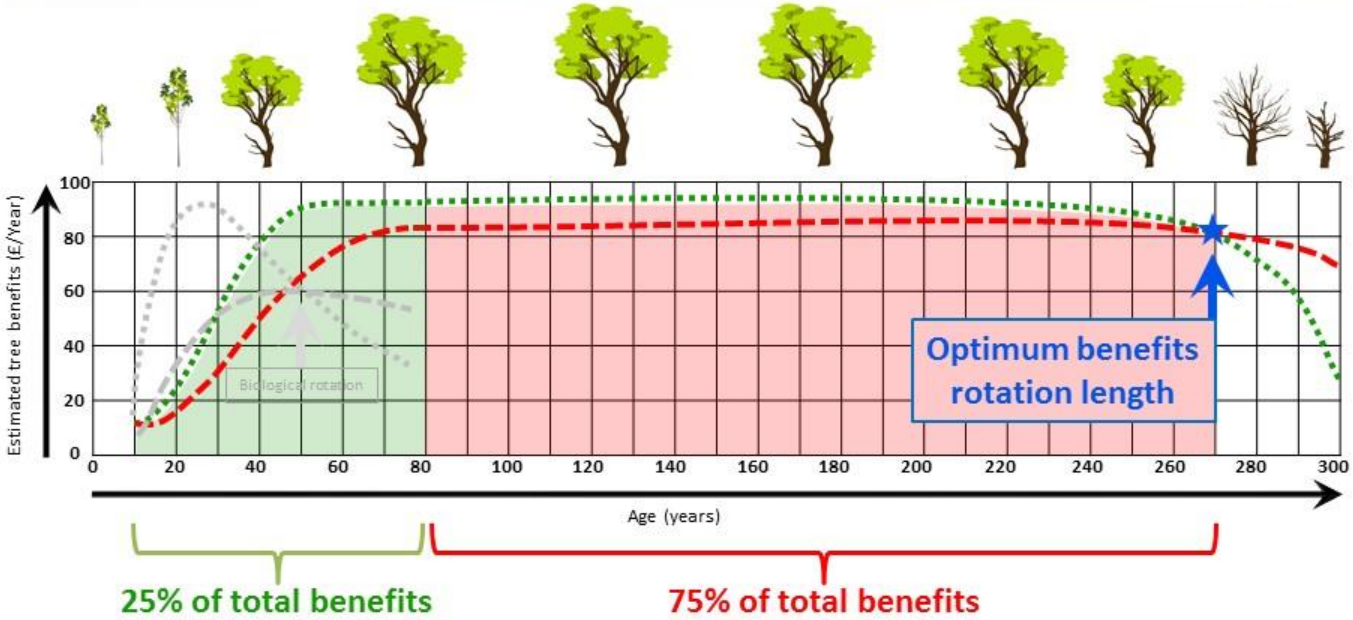
WITNESS TO TRAGEDY, SYMBOL OF STRENGTH

It is more than 90 years old. An American Elm Tree in the heart of downtown Oklahoma City, it survived the bomb's blast and witnessed one of the worst terrorist attacks on American soil. Today, we call it the Survivor Tree.

Before the bombing, the tree was important because it provided the only shade in the downtown parking lot. People would arrive early to work just to be able to park under the shade of the tree's branches.

On April 19, 1995, the tree was almost chopped down to recover pieces of evidences that hung from its branches

Optimised urban tree benefits rotation length



This is a simplistic diagrammatic representation prepared for the Sheffield Trees Action Group seminar held on 21/01/17 showing one approach to estimating the optimum rotation length for urban trees based on the financial benefits they provide. It is a conceptualisation based on estimated figures to demonstrate the principle, and the reality of individual circumstances may vary considerably from this simplistic view. For these reasons, it should be referenced with caution and applied intelligently, taking full account of the individual circumstances of each situation.

From conventional forest management theory for optimising timber volume production, the most efficient point to fell and replant is where the current annual increment and mean annual increment curves cross (both in grey). This is called the biological rotation and is at about 51 years in this example. Extrapolating this principle to urban trees, and considering the delivery of tree benefits rather than timber volume, the current annual tree benefits curve (green dots) crosses the mean annual tree benefits curve (red dashes) around 270 years of age (blue arrow). Felling at around 80 years of age delivers about 25% of the potential benefits (green shading) that leaving the trees to their full optimised benefits rotation could deliver. Put another way, up to 75% of the potential benefits those trees could deliver (red shading) are sacrificed through premature removal.

A NEW ERA OF FOREST CITIES?

SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD

Home | About | Goals | Partnerships | Take Action | News and Media | Social Media | Watch and Listen

Goal 11: Make cities inclusive, safe, resilient and sustainable

Cities are hubs for ideas, commerce, culture, science, productivity, social development and much more. At their best, cities have enabled people to advance socially and economically.

However, many challenges exist to maintaining cities in a way that continues to create jobs and prosperity while not straining land and resources. Common urban challenges include congestion, lack of funds to provide basic services, a shortage of adequate housing and declining infrastructure.

The challenges cities face can be overcome in ways that allow them to continue to thrive and grow, while improving resource use and reducing pollution and poverty. The future we want includes cities of opportunities for all, with access to basic services, energy, housing, transportation and more.

businessinsider.com/stefano-boeri-forest-city-liuzhou-china-2017-6

BUSINESS INSIDER TECH INSIDER

China is building a smog-eating 'forest city' filled with tree-covered skyscrapers

Leanna Garfield

Jun. 27, 2017, 2:36 PM 91,988

FACEBOOK LINKEDIN TWITTER EMAIL PRINT

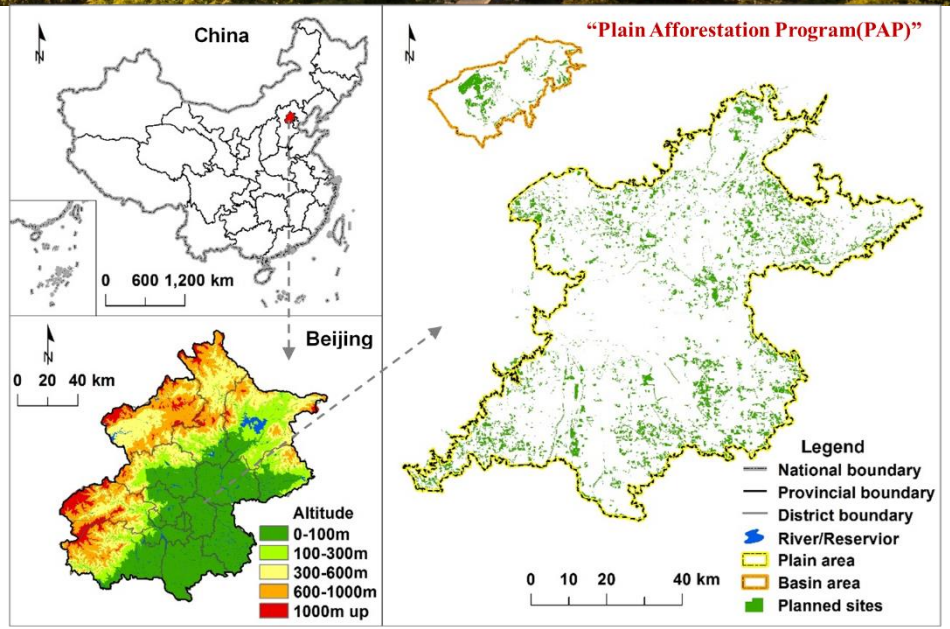
The smog levels in the southern Chinese city of Liuzhou are not yet dire, but if the city fails to deal with its pollution, it will only get worse over time.

Italian design firm Stefano Boeri Architetti believes that building a

https://www.stefanoboeriarchitetti.net/en/

Project: Assessment of large-scale urban afforestation

Na (Alice) Yao
Visiting PhD Student



Large-scale Urban Afforestation Program →

- **Planning**
- **Strategic implementation**
- **Short-term benefits**

https://www.gatheringplace.org

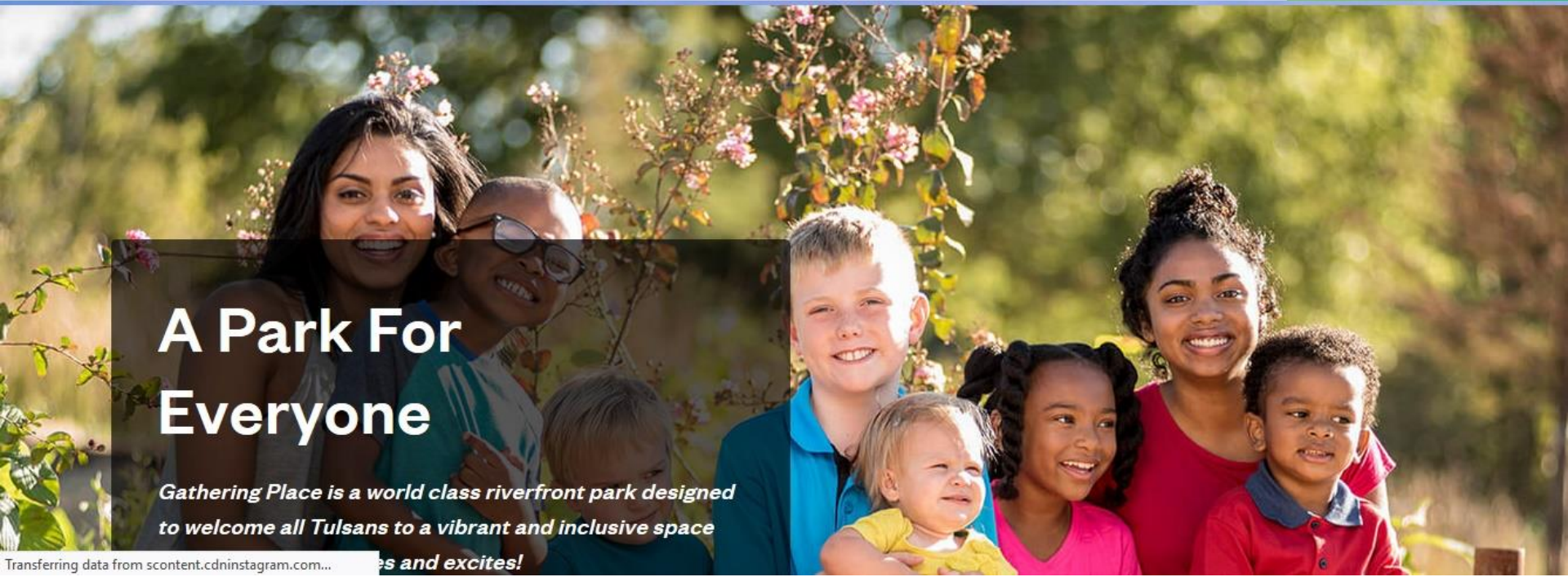
Search

GATHERING PLACE™
TULSA'S RIVERFRONT PARK

About | Visit | Things To Do | Education

Plan Your Visit

Parking | Calendar



A Park For Everyone

Gathering Place is a world class riverfront park designed to welcome all Tulsans to a vibrant and inclusive space

...es and excites!

Transferring data from scontent.cdninstagram.com...


EUROPEAN
GREEN CAPITAL
An initiative of the
European Commission


EUROPEAN
GREEN LEAF
An initiative of the
European Commission

https://www.london.gov.uk/city-hall-blog/mayor-plans-make-london-worlds-first-national-parl

Search

Donate to the Red Cross emergency fund to help victims and families affected by the Grenfell Tower fire DONATE No thanks

MAYOR OF LONDON LONDONASSEMBLY Search...

What we do | In my area | Get involved | About us | Have your say | Media centre

Mayor plans to make London into the world's first National Park City

11 August 2017

The Mayor of London, Sadiq Khan today launched plans to help make the capital the world's first

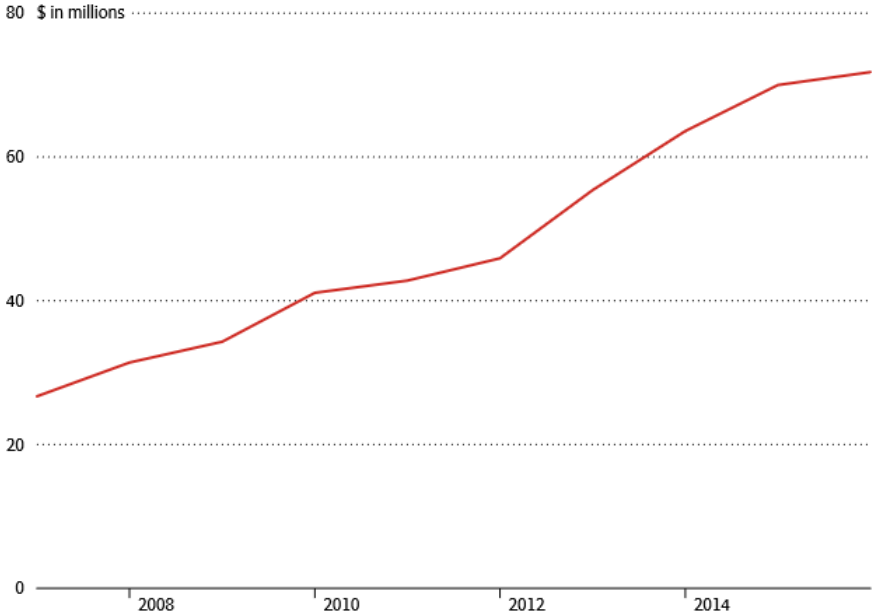
1500 reasons to move to an electric vehicle

03 August 2017

A major step towards zero carbon transport as 1500 new electric vehicle charging points to be installed across London.

Over the past decade, the city has diverted more resources to urban forestry, with the department's gross operating budget increasing to $71.8-million this year from $26.7-million in 2007, with about two-thirds of the current funding going to maintenance. But millions more are needed to bring the city's tree maintenance in line with its objectives.

Gross operating budget for City of Toronto's Urban Forestry department



THE GLOBE AND MAIL » SOURCE:CITY OF TORONTO BUDGET DOCUMENTS

DATA SHARE

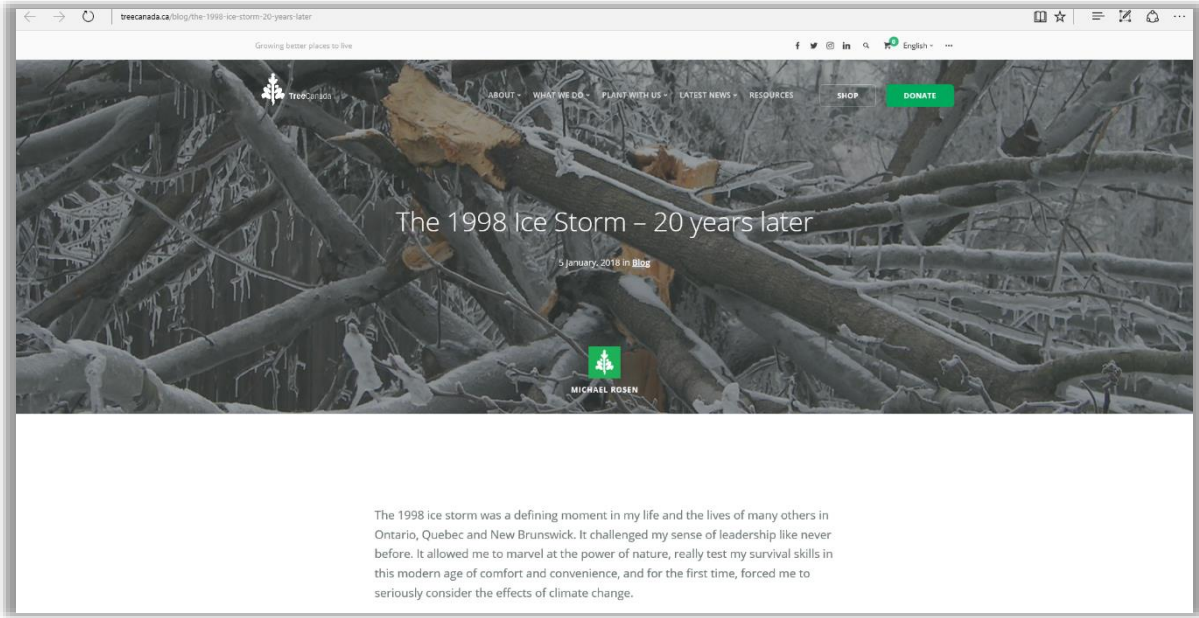
DEALING WITH CHALLENGES

http://thechronicleherald.ca/novascotia/1157015-photos-hurricane-juan-then-and-now

Wikimedia Commons - Johannes Akkach

Wikimedia Commons – Michael Shick

J. Jensenius -
http://www.photolib.noaa.gov/noaa_products/noaa6198.htm



December 16, 2006 – 9AM:

- 2.5 hours of 100 km+ winds
- 42 Ha or 15% of Park forest down
- Roads closed for two weeks
- Trails and facilities damaged
- Outlook for further storms and climate change

Slide courtesy of Paul Lawson

Urban Forestry & Urban Greening

journal homepage: www.elsevier.de/ufug

The impact of significant earthquakes on Christchurch, New Zealand's urban forest

Justin Morgenroth[a,*], Tony Armstrong[b]

[a] New Zealand School of Forestry, University of Canterbury, Private Bag 4800, Christchurch 8140, New Zealand
[b] Christchurch City Council, New Zealand

ARTICLE INFO

Keywords:
City trees
Natural disaster
Land damage
Liquefaction
Tree damage
Urban trees

ABSTRACT

The resilience of Christchurch, New Zealand's urban forest has been tested during a year of major earthquakes and aftershocks. Tree loss has resulted from mass soil movement, soil liquefaction, rockfalls, and land slips. At the time of writing, only 384 trees have been documented as removed, however, thousands more are scheduled for removal. Additionally, the changes to the soil environment resulting from liquefaction will require existing trees to adapt quickly to their new soil environment. Their fate will not be known for years. Though the total number of trees removed is unlikely to reduce city-wide canopy cover appreciably, it is important to recognize that spatial patterns of tree loss were highly localized and thus local canopy cover has been drastically reduced in some areas. Short-term management of the urban

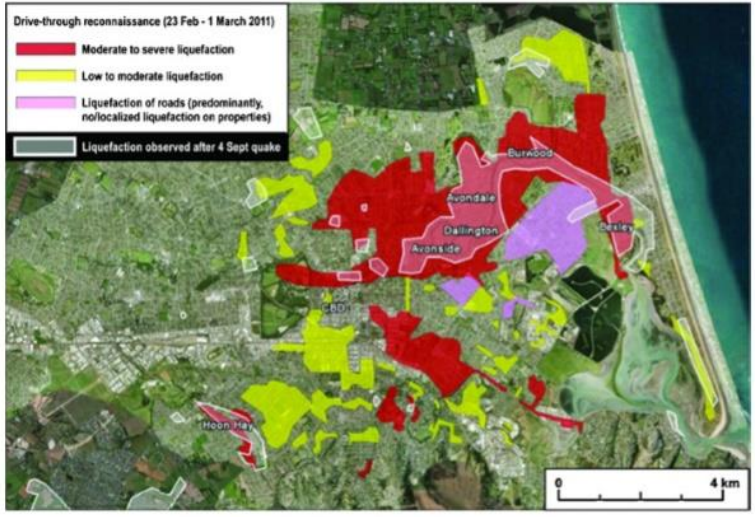


Fig. 1. Extent and severity of liquefaction following the February 2011 and September 2010 earthquakes in Christchurch, New Zealand. Based on drive-through reconnaissance and aerial imagery inspection (Cubrinovski and Taylor, 2011).

Regional Municipality of Wood Buffalo / Wikimedia Commons

NASA Earth Observatory image by Joshua Stevens, using Landsat data from the U.S. Geological Survey

https://commons.wikimedia.org/wiki/File:Dutch_elm_disease_in_Illinois_(1967)_(20493912723).jpg

Carter, J. Cedric (James Cedric), 1905-; Illinois. Natural History Survey Division

Wikimedia Commons. Photo taken by RadRafe on 29 May 2005

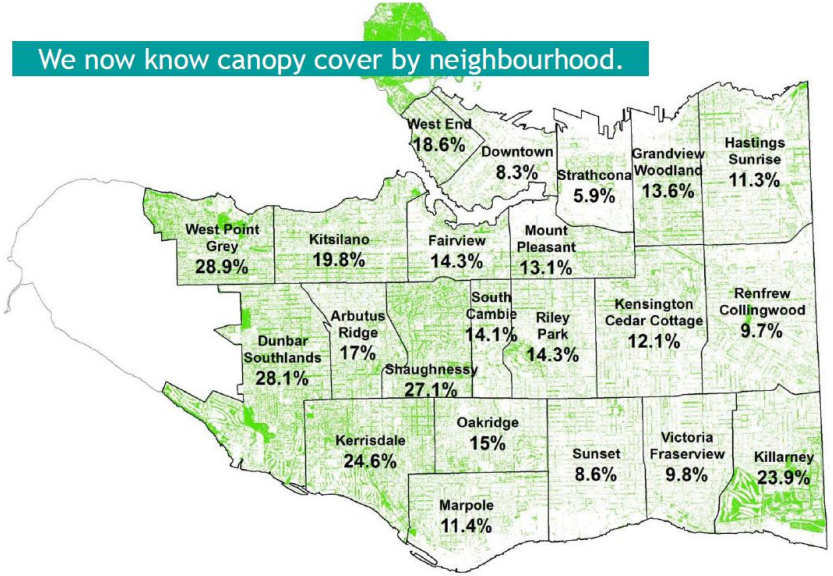
AMERICAN FORESTS
140 YEARS *of Protecting and Restoring Forests*


Eau
d'Amsterdam
Scent of the Elm Trees
Extrait de Parfum

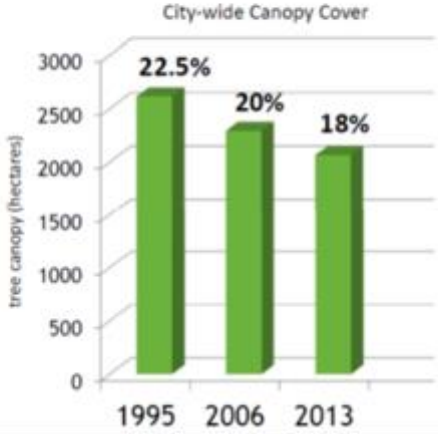

W 6th

Wikimedia Commons / Acabashi

We now know canopy cover by neighbourhood.



However, our canopy cover has been declining over the past two decades. Why is this of concern?



THE STAR VANCOUVER

Vancouver

Vancouver council approves duplex zoning throughout the city

By **JEN ST. DENIS** StarMetro Vancouver
Thu., Sept. 20, 2018

VANCOUVER—Vancouver city council has voted to approve a zoning change to allow duplexes throughout the city after a two-day public hearing.

Dozens of residents spoke for or against the proposal, but the issue also showed how the city's political parties are positioning themselves either on the side of adding more density in single family neighbourhoods or strongly opposing the idea.



North York resident wins right to move city-owned tree based on religious belief

Vastu, an ancient Indian system of architecture involving home design, holds that trees shouldn't be planted directly in front of a home's main entrance.

North York resident Sanjeev Joshi says the 17.5-centimetre diameter maple tree in front of his house violates the principles of vastu. (SAMMY HUDES/TORONTO STAR / SAMMY HUDES/TORONTO STAR)

Photo: Matilda van den Bosch

Over 100 People Killed By Trees Every Year in the U.S.

CALL FOR A FREE CONSULTATION

★★★★★

"The Best Lawyer I've Ever Had. I was a client who was helped by Jeffrey Reiff. He was an excellent attorney that went above and beyond all means to make sure that I got the maximum amount for my auto accident. The case I had was settled with an amount that even I couldn't believe I was getting. He is truly a wonderful and pleasant man..."

Read more Avvo Reviews

OUR RESULTS

$13 MILLION

Auto Defect

Of all nature's flora and fauna, trees seem to be among the very safest. After all, trees cannot sting or bite us. They can't lay eggs in our floorboards, or peck and scratch at our vulnerable flesh. They can't enter a cut to give us an infection, and they can't bite down on our ankles and drag us beneath the surface of the ocean. They seem harmlessly anchored deep in the ground, still and serene for all time. However, while it's true that trees are perfectly safe in the vast majority of instances, it *is* possible for trees to collapse or lose limbs, and to injure or even kill in the process. It may be a bizarre accident which can only be attributed to natural forces – or it may be a matter of negligent maintenance involving premises liability. In this blog post, our Philadelphia personal injury attorneys will take a look at some of the statistics and stories behind tree fall accidents across America.

THERE ARE OVER 250 BILLION TREES IN AMERICA TODAY

While pollution and deforestation are serious and valid environmental concerns, it remains that the United States is home to billions upon billions of trees. As a matter of fact, in spite of a dramatically increased population, there are actually more trees in America today than there were some 100 years ago. FAO, or the Food and Agriculture Organization, reports the following:

> *"Forest growth nationally has exceeded harvest since the 1940s. By 1997, forest growth exceeded harvest by 42% and the volume of forest growth was 380% greater than it had been in 1920."*

With approximately 250 billion trees spreading their leafy arms from coast to coast (not even counting trees which are smaller than one inch in diameter),

HOW TO THINK BIG IN THE ‘GREEN’ INDUSTRY

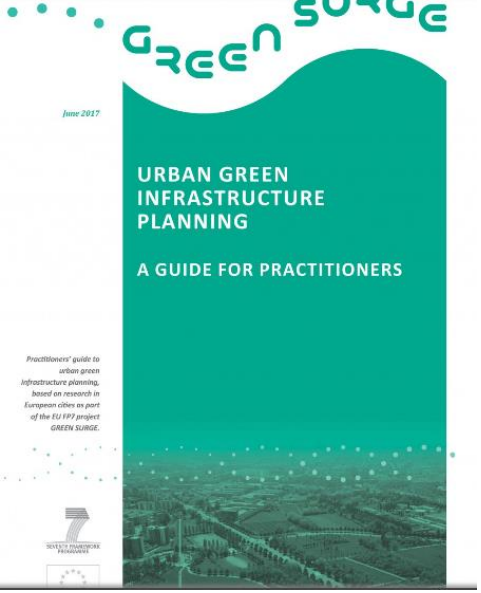
Resilience

The capacity to recover quickly from difficulties; toughness

http://www.oxforddictionaries.com/definition/english/resilience

SUCCESS FACTORS – 8 C'S

- Connection
- Collaboration
- Community
- Communication
- Competence
- Creativity
- Courage
- Champions



...is based on four core principles

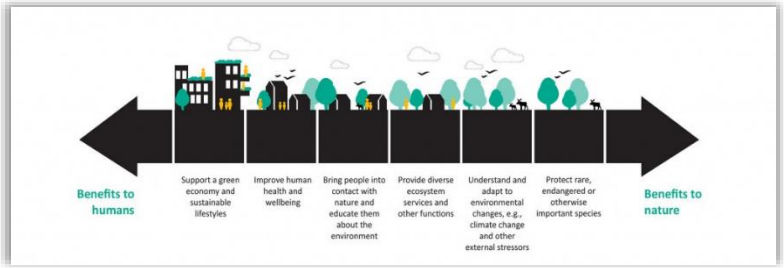
1) Green-grey integration – combining green and grey infrastructure
UGI planning seeks the integration and coordination of urban green spaces with other infra-structure, such as transport systems and utilities.

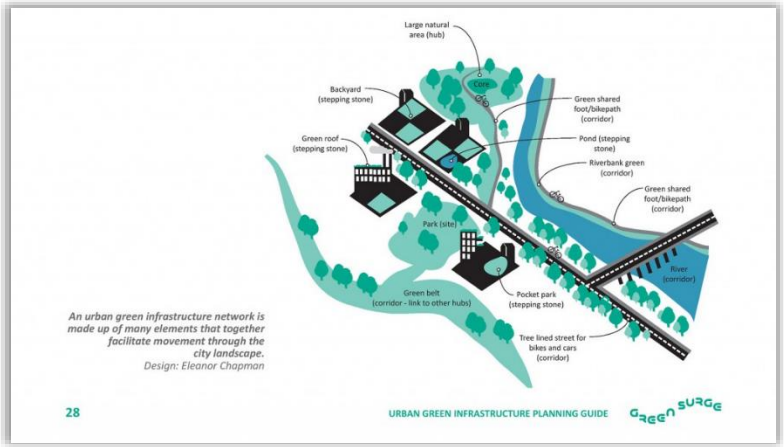
2) Connectivity – creating green space networks
UGI planning for connectivity involves creating and restoring connections to support and protect processes, functions and benefits that individual green spaces cannot provide alone.

3) Multifunctionality – delivering and enhancing multiple functions and services
UGI planning aims at combining different functions to enhance the capacity of urban green space to deliver multiple benefits – creating synergies, while reducing conflicts and trade-offs.

4) Social inclusion – collaborative and participatory planning
UGI planning aims for collaborative, socially inclusive processes. This means that planning processes are open to all and incorporate the knowledge and needs of diverse parties.

All four principles are explored in Part B.





www.greensurge.eu

Urban forestry

The art, science, and technology of managing trees and forest resources in and around urban community ecosystems for the physiological, sociological, economic, and aesthetic benefits trees provide society

(Helms 1998, based on Miller 1997)

IEEE COMMUNICATIONS SOCIETY

"ENGINEERS LIKE TO SOLVE PROBLEMS.

IF THERE ARE NO PROBLEMS HANDILY AVAILABLE,
THEY WILL **CREATE THEIR OWN** PROBLEMS."

SCOTT ADAMS

INTERNATIONAL
URBAN FORESTRY
CONGRESS 2018

The Urban Forest - Diverse in Nature

September 30th — October 3rd, 2018 | Vancouver, BC

Partners

Pacific Northwest ISA

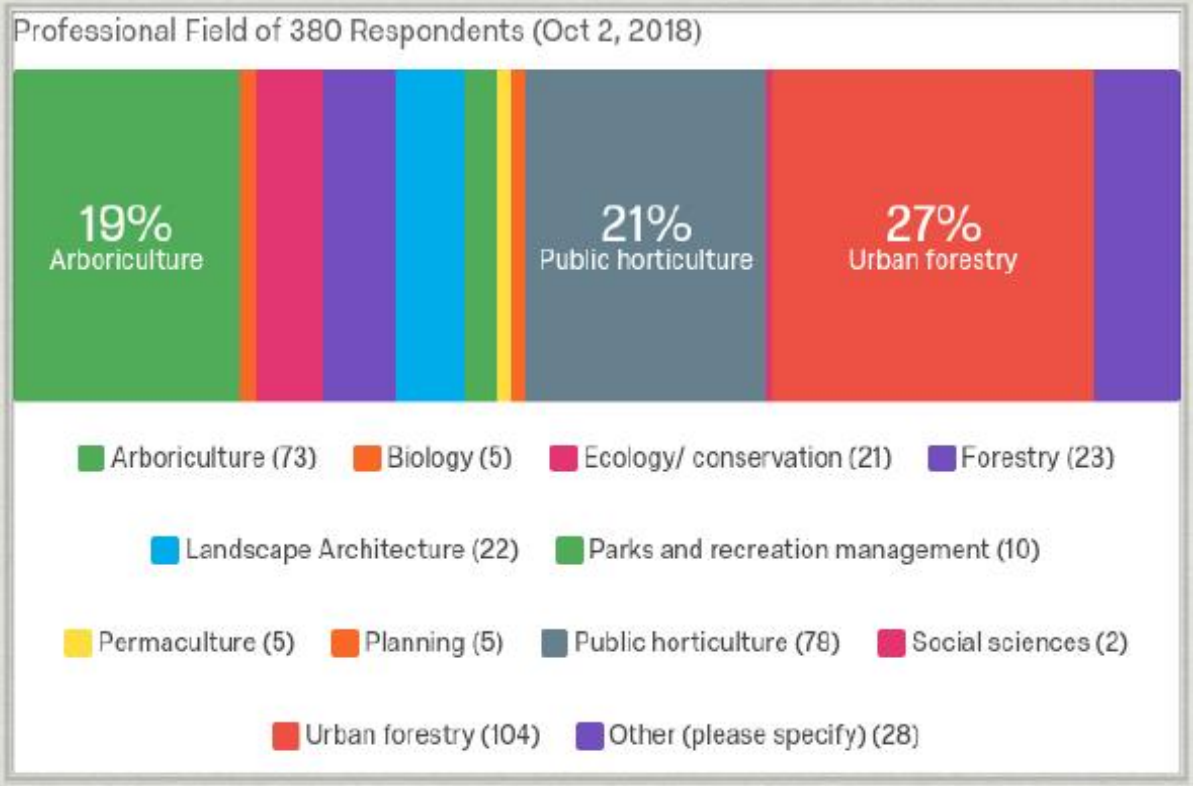
TreeCanada

UBC

Urban Tree Diversity 3 Conference

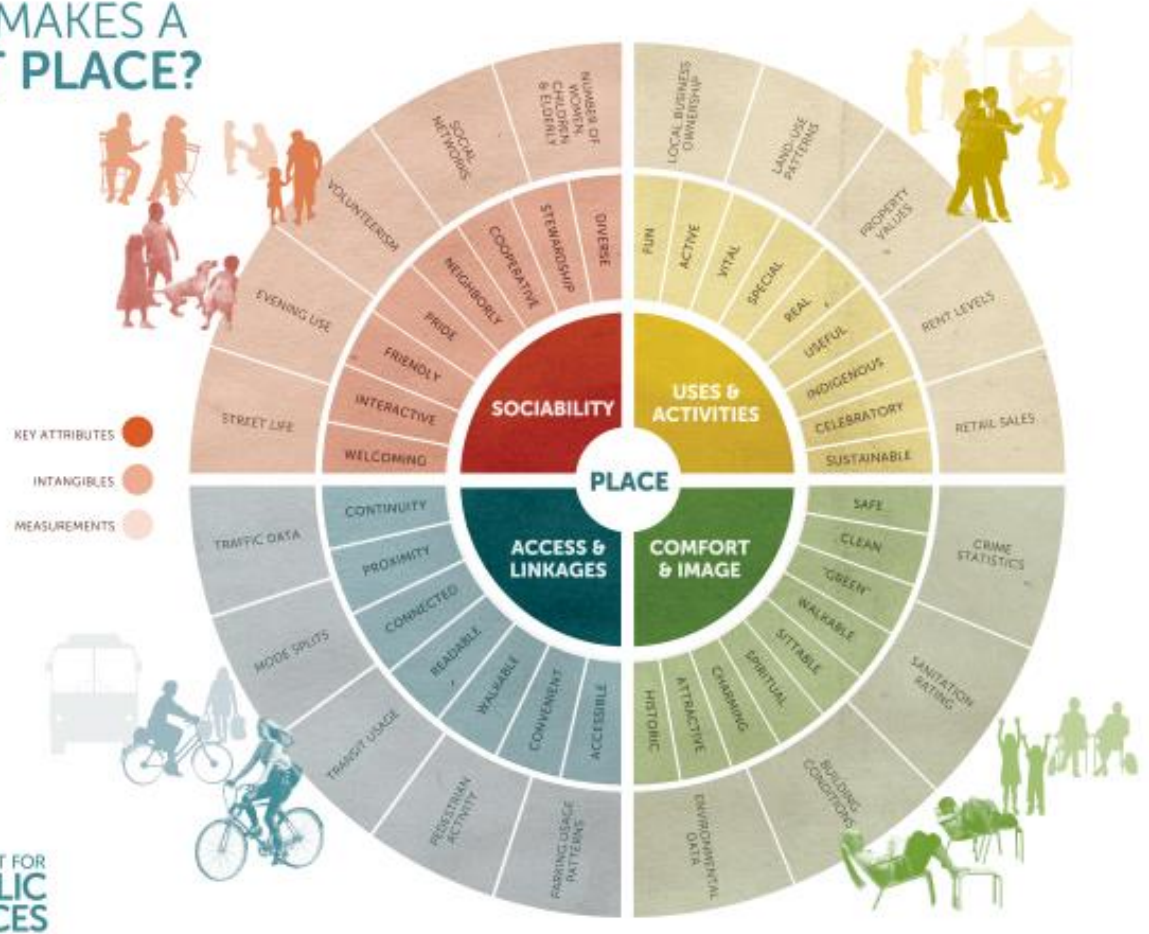
Jehane Samaha
MSc student

Survey Data: in Progress




NATURE-BASED SOLUTIONS
Restoration
Issue-specific
Infrastructure
Management
Protection
Ecosystem-based approaches
Societal challenges
Human well-being
Biodiversity benefits
©IUCN

WHAT MAKES A **GREAT PLACE?**



PROJECT FOR PUBLIC SPACES


@#!
DADDY WENT BALLISTIC.
THUMP!
THUMP!
THUMP!
NO WONDER, BACK IN THE DAY THIS WAS ALSO HIS COURTING GROUND.
RECREATIONAL FOREST PURIFICATION PLAN
– Axing the old, rotten and crooked
– We apologize for any inconvenience
The Urban Forestry Administration
Seppo Leinonen 2014
seppo.net

Sophie Nitoslawski
PhD Student

All urban forest **data stored** in the "cloud"

In the age of **smart cities**

What should **smart urban forests** look like?

Social media images **continuously tracked** for citizen values on urban public spaces

Researchers use **big data** to **quantify health outcomes** from exposure to forest biodiversity

Concordia University and the City of Montréal **team up** to create **AR game for citizens** to water newly planted trees

Tree "Fitbit®" **sensors monitor** indicators in **real time**

Tree climbing robots scan, identify, and prune in higher risk areas

Plans and publications | News and media | Careers | Contact us

CITY OF MELBOURNE

About Council | About Melbourne | Search...

Home
Community
Parks and open spaces
Greening the city
Guide to parks
Open Space Strategy
Park rangers
Tree management
> Urban forest
Urban Forest Strategy
Urban Forest Precinct Plans
Become a Citizen Forester
Urban Forest Fund
Urban nature
Sunlight to Public Space
Parks and Gardens Advisory Committee EOI

Home › Community › Parks and open spaces

SHARE

Urban forest

Melbourne's tree population is vast – we have 70,000 council-owned trees, worth around $650 million. Trees are a defining part of Melbourne and our parks, gardens, green spaces and tree-lined streets contribute enormously to the liveability of the city.

But the trees are now under threat. More than a decade of drought, severe water restrictions and periods of extreme heat, combined with an ageing tree stock, have put our trees under immense stress and many are now in a state of accelerated decline. As a result, we expect to lose 27 per cent of our current tree population in the next decade and 44 per cent in the next 20 years.

Combined with this loss, Melbourne's urban forest is facing two significant future challenges: climate change and urban growth.

The City of Melbourne's Urban Forest Strategy seeks to manage this change and protect against future vulnerability by providing a robust strategic framework for the evolution and longevity of Melbourne's urban forest.

Urban Forest Strategy

The City of Melbourne is facing the significant challenges of climate change, population growth and urban heating, placing pressure on the built fabric, services and people of the city. A healthy urban forest will play a critical role in maintaining the health and liveability of Melbourne.

Related plans and publications

- Renewable Energy Procurement
- Community garden policy
- We Need to Talk About Food

Related news

- Australian first – Melbourne powers ahead with wind farm
- Elizabeth Street to get pop-up park over summer
- Citizen scientists needed to study birds in tree hollows

Report an issue

I want to...

- Become a Citizen Forester
- Report a tree in need of maintenance
- Nominate a tree for the Exceptional Tree Register
- Construct a green roof or wall
- Find a park
- See the Hawke and Adderley Street park plan
- View all services

Recently visited

THE GREENS.

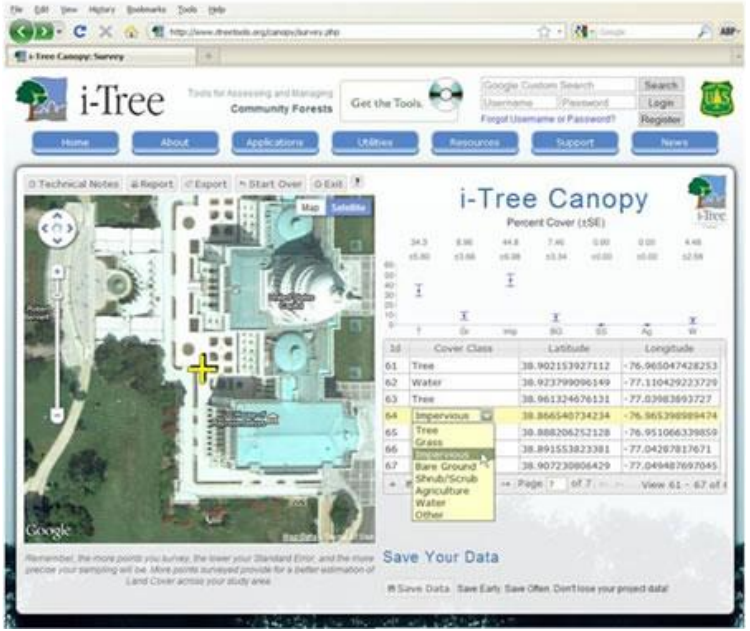
THE UNIVERSITY OF BRITISH COLUMBIA

Vancouver Campus

Forestry Professional Master's Programs

Home | Programs | Admissions | About | Contact Us | Subscribe

MASTER *of* URBAN FORESTRY LEADERSHIP



i-Tree

http://www.itreetools.org/canopy/

Cheongyecheon stream restoration, Seoul

http://landscapeperformance.org/case-study-briefs/cheonggyecheon-stream-restoration


SEOUL SQUARE
Seoulio


CITY OF
VANCOUVER
GREENEST
CITY 2020

Urban forestry champions

http://www.smh.com.au/good-weekend/green-power-nycs-parks-commissioner-on-why-parks-are-essential-20160823-gqytqf.html; Photo: Nathaniel Welch

VISIONS AND MISSIONS

Vision Statement outlines what a company **wants to be / aspires to be** in the **future**.

Vision Statement is a **source of inspiration and motivation**.

Mission Statement concentrates **on the present**; it defines the customer(s), critical processes and it informs you about the **desired level of performance**.

Adaptive management (…) is a structured, iterative process of robust decision making in the face of uncertainty, with an aim to reducing uncertainty over time via system monitoring.

Holling, C.S. (1978). Adaptive Environmental Assessment and Management. John Wiley & Sons

KEY INGREDIENTS OF ADAPTIVE MANAGEMENT

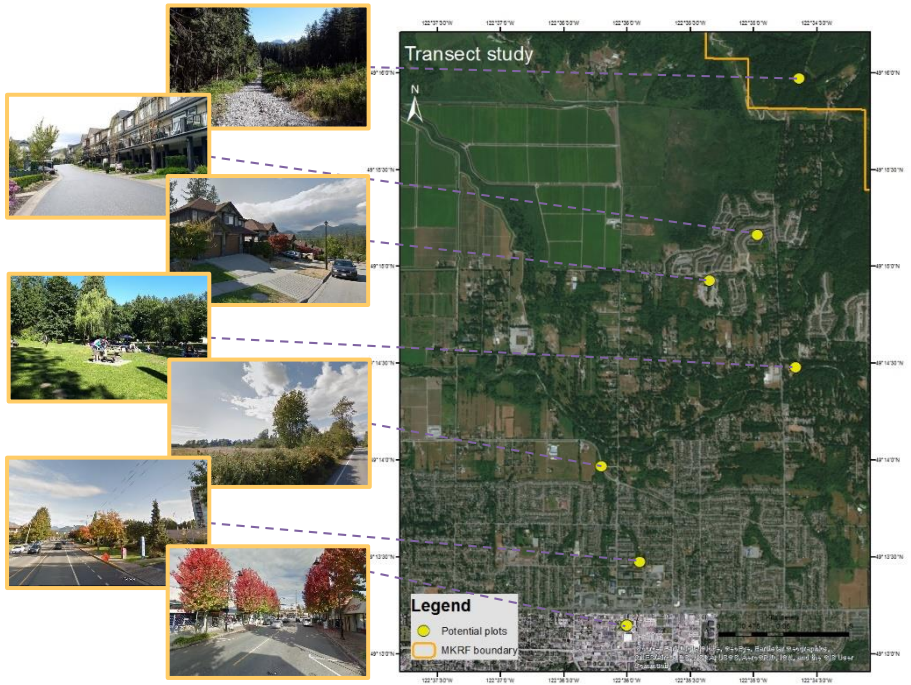
- Purposefulness and leadership
- Dealing with *risk* and *uncertainty*
- Learning (different ways, organisational)
- Increasing knowledge
- Enhancing information flow
- Institutional structures and processes
- Adaptation and flexibility

Photo by Victor Monsour of Monsour's Photography - http://www.fhwa.dot.gov/byways/photos/53219

Focus: Role of urban forests in building social-ecological resilience

Tahia Devisscher
Postdoctoral Research Fellow

- Change in UF ecosystem services along an urbanization gradient
- Social perception and valuation of urban forests within and around cities
- Urban forestry potential for climate change adaptation



PERSPECTIVE

- Have the days of the Forest City arrived?
- Our industry can capitalise on major challenges and opportunities
- Implement the 8 C’s
- Bold visions have to be delivered and designed on the ground – tree by tree