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2020 Jun 22 EMA of BC Nelson Lee, P.Eng.

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<u>Climate Change and COVID-19:</u> <u>Challenges and Opportunities for</u> <u>Environmental Professionals</u>

Outline







Introduction - Mindsets

Who is Nelson Lee, P.Eng. Why does he think the way he does?



BSc U of A Chemical Engineering 1979 Joined Suncor and ended up in Fort St John – upstream oil & gas

Mindset - Smell of money some pollution is inevitable



Mohawk at their used lube oil rerefinery

(later Newalta waste recovery programs – oilfield, industrial)

Mindset – what if waste wasn't

Revelation! Go into environmental management

UBC MASc Environmental Engineering 1988

Levelton Engineering – federal and provincial emissions inventories - first CO2 inventory in 1990

Mindset – pollution is everywhere from everything

How I got here

to Asia Pacific 1990 – **mindset –** underdeveloped! Environment, health and safety management & auditing for global 500 industry in Asia Amoco Chemical Asia Pacific - Regional Manager, Environment, Health and Safety

> Environment impact assessments – risk assessments for 6 PTA plants

Environment, health and safety management for joint-ventures Lloyds Register – certified a variety of systems for manufacturers across Asia Pacific

ISO 14001

OHSAS 18001

OHSAS 1800

Responsible Care for chemical industry

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COVID-19, BLM and Climate Change

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Like you, simplified (restricted) or focused my life as a Result of COVID-19 – to what matters 02

All life matters, the black (and other colours) have been treated unfairly – tipping point? 03

Eventually we will suffer climate change more locally too – tipping points are physical laws

Mindset

CLIMATE CHANGE IS THE BIGGEST THREAT WE HAVE EVER FACED

> OUR RESPONSE MUST BE QUICK AND OF WAR-LIKE PROPORTIONS – LIKE COVID-19 RESPONSE + ADDRESSING INEQUALITIES

> > THE OPPORTUNITIES FOR ENVIRONMENTAL PROFESSIONALS AND SERVICE INDUSTRY IS THEREFORE UNIMAGINABLE HUGE





Challenges

Not just physical, but the transitional



Physical changes

Solar radiation in the form of lightwaves passes through the atmosphere

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man

Climate change context

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Climate hazards

- •Temperature change
- Precipitation change
- •Barometric pressure change (i.e., wind)

Extremes are more extreme Variability and unpredictability of change •Mindset - climate is getting weird



NASA GISS https://data.giss.nasa.gov/gistemp/graphs_v4/graph_data/GISTEMP_Seasonal_Cycle_since_1880/graph.png

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GISTEMP Seasonal Cycle since 1880



NOAA https://www.climate.gov/news-features/understanding-climate/climate-change-ocean-heat-content

Annual ocean heat content compared to average (1993-2018)

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The same extra heat that evaporates more water from the ocean, causing bigger downpours and floods...

ResearchGate

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https://www.researchgate.net/figure/PDF-IDF-curves-for-intensities-of-rainfall-predicted-from-Pearson-Type-3-IDF-general_fig5_331936289



NOAA https://www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level

Possible future sea levels for different greenhouse gas pathways

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Adapted from Sweet et al., 2017

How climate change impacts us

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NOAA https://www.climate.gov/news-features/videos/earths-temperature-history-roller-coaster



COVID-19 and Climate Change







Transitional changes

Complexity – where we are as professionals



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- Early adopters
- Getting onboard
- Interested
- Waiting
- Disinterested
- Denial

Willingness.... to change



TO EMBRACE CHANGE

TO BOUNCE FORWARD / BUILD BACK BETTER TO BECOME (MORE) RESILIENT



CLIMATE CHANGE GRADUALLY SNUCK UP ON US AND WE FAILED TO ACT

COVID-19 CAUGHT US BY SURPRISE, BUT WE ACTED DRASTICALLY

> WE CAN ACT TO ADDRESS CLIMATE CHANGE TOO – NOW, DECISIVELY





Opportunities





GHG mitigation



Enough solar energy reaches Earth every hour to fill all the world's energy needs for a full year



Globally, wind could supply worldwide electricity consumption 40 times over



THAWING PERMAFROST

COAL PLANTS

COAL MINING

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INDUSTRIAL PROCESSES

FERTILIZATION

LAND TRANSPORT

LANDFILLS

AIR TRANSPORT

OIL PRODUCTION

© 2017 Don Foley



Climate change adaptation

 enhancement and/or replacement of many places we live and work because they will become uninhabitable



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NRCan

https://www.nrcan.gc.ca/environment/res ources/publications/impactsadaptation/reports/municipalities/10081







https://www.infrastructure.gc.ca/gmapgcarte/index-eng.html

- Climate Lens
 Assessment
 Guidance
 - GHG Mitigation Assessment
 - Climate Change Resiliency Assessment



Infrastructure Canada

Home > Investing in Canada Plan Project Map

Investing in Canada Plan Project Map

The map below presents a broad cross-section of projects that have been approved under the \$180+ billion *Investing in Canada* plan. It is updated monthly to reflect newly approved projects under the funding programs of the 14 federal departments delivering the Plan. We continue to gather project details and will add them to the map as available. Visit often. More information below. 1 2 3 4 5

Canada



Sustainability

- attaining long-term equitable balance within (social justice) and between human and ecosystems (environmental justice)
- e.g., circular economy, eco-footprint reduced to less than 1 planet from current 2-3





Resilience

 developing the flexibility to survive and thrive in the future turbulence of climate change on top of other societal-economic-geo-political-biological changes





Calgary

https://www.calgary.ca/UEP/ESM/PublishingImages/ Adaptation_Mitigation_Infographic_FullSize.jpg

Building Climate Resilience



Scale: \$ and decades - work force and GDP

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Scale: \$ and decades - work force and GDP



Imagine the Scale: \$ and decades - work force and GDP



Imagine the Scale: \$ and decades - work force and GDP



Build better buildings and sustainable/resilient communities; Retrofit existing buildings



Renewable energy + energy efficiency – 3-4 x jobs per \$ vs. FF investments



Circular economy and resource recovery



New materials for energy generations, storage, insultation...



All the policy, regulatory and services to go with these



And all the legal work in new business, claims, patents.....



For every project... a feasibility study

Of the project impacts on the climate
Of the climate impacts on the project
E.g., strings attached to COVID-19 loans
Not just government driven...

- ...but client driven
- ...and financier driven
- ...with public support

\bigcirc What I do – you can do and more

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Standards to Manage Uncertainty **CLIMATE CHANGE MITIGATION**

ISO 14001:2015

Environmental management systems - Requirements with guidance for use

Environmental management systems conforming to ISO 14001 reduce the uncertainty of achieving organizational goals by providing the structure for a systematic (plan - do - check -Polic act) approach to managing climate change mitigation Act and adaptation (as well as other environmental issues). Check

ISO 14064-1

Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals

Greenhouse gas (GHG) inventories conforming to ISO 14064-Part 1 reduce uncertainty when comparing different organizations' GHG inventories by specifying the approaches to quantifying GHG emissions.

ISO 14064-2

Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emissions reductions and removal enhancements



ISO 14067

Greenhouse Gases - Carbon footprint of products -Requirements and guidelines for quantification Product carbon footprints 000. conforming to ISO 14067 reduce uncertainty and risk to consumers from product claims by specifying principles and approaches to quantification.

CLIMATE CHANGE MITIGATION

ISO 14065

ISO 14064-3

Specification with guidance for validation and verification of greenhouse gas statements

Validations and verifications conforming to ISO 14064-Part 3 reduce uncertainty and risk to users of validation and verification reports by specifying the principles and GHG processes for conducting validations and verifications

ISO 14066

Greenhouse gases: requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition The uncertainty in the



requirements for greenhouse gas validation teams and verification teams The uncertainty in the quality

of validation teams and verification teams is reduced when competencies conform \square to the requirements in ISO 14066.





Standards to Manage Uncertainty CLIMATE CHANGE ADAPTATION



ISO 14090

Adaptation to climate change -

Green New Deals





















Equality

• sex, race, physical / mental abilities, First Nations

Twin crises – twin emergencies

COVID-19...drives change even when there is no market or political appetite for it

Climate change...likewise will force itself on us

Suggested sample of references to start:

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Discussion



Nelson....

- Has over 30 years international experience in environment, health and safety auditing
- Has over 20 years experience with environmental and occupational health and safety management systems
- Has over 14 years as a GHG verifier AB, BC, SK, ON, the US and the EU and has completed ~300 GHG report and offset validations and verifications
- Has been an SCC Mirror Committee Working Group expert on ISO 14064 series and ISO 14065 revisions and ISO 14091 and ISO 14097 since 2012
- Has been a presenter at EMA of BC events since 2008
- Now focuses on climate action helping industry enhance their resilience and adaptive capacity and create bounce-forward opportunities
- A channel (not a reservoir) by sharing

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