The Campus as a Living Laboratory: Clean, Connected and Safe Transportation

Asia Clean Energy Forum, Manila (June 4-8, 2018.)

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CERC Clean Energy Research Centre

Energy system challenges

HEALTH

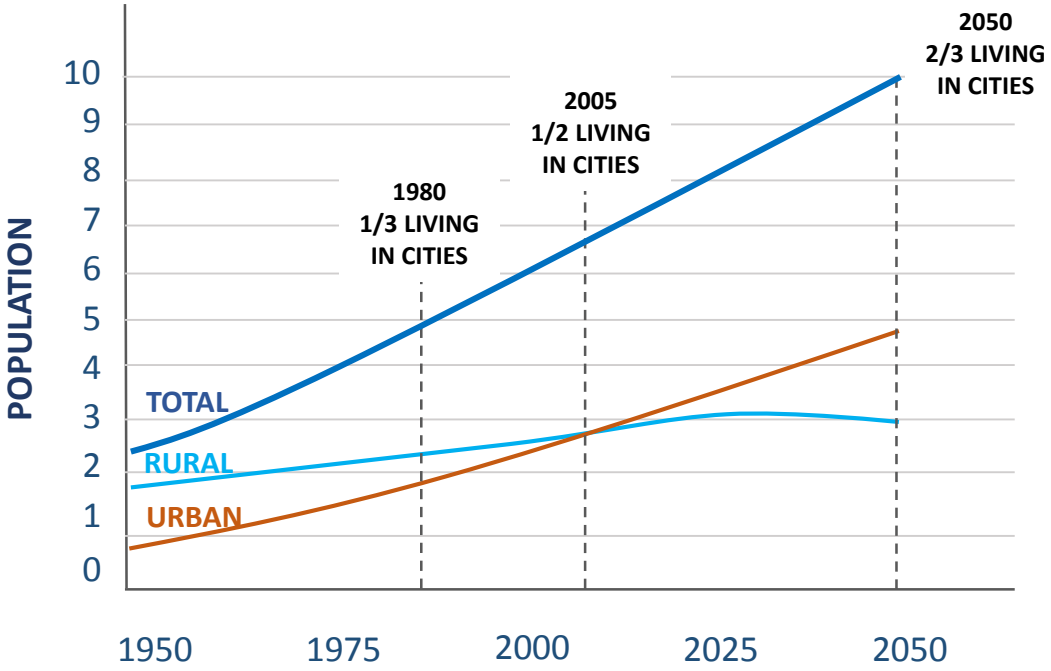
- Air quality: 9 million premature deaths/yr (more than Tuberculosis, Malaria, and HIV – combined.)
- Road transportation: sixth global burden of disease

CLIMATE CHANGE

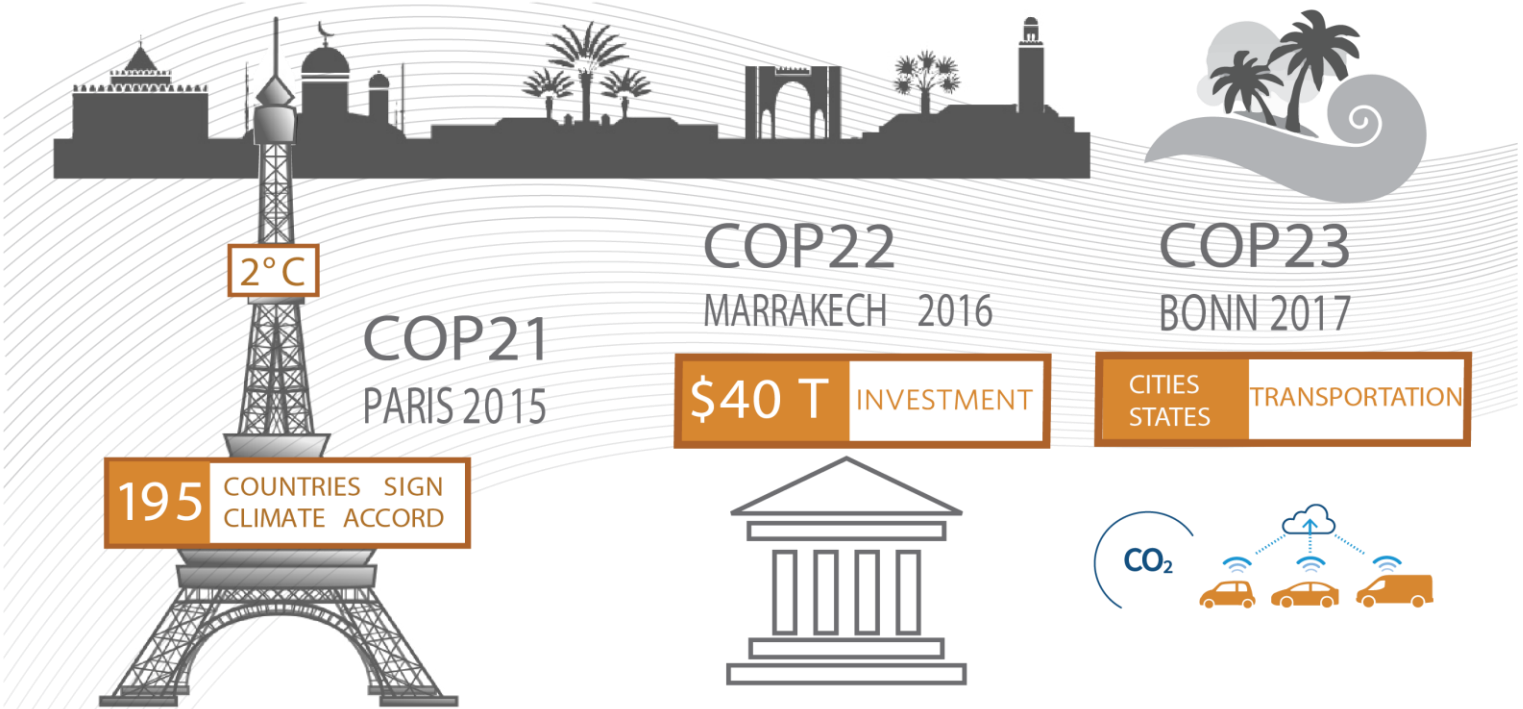
- Global environmental and economic impacts
- Fossil Fuel is the primary source of CO_2

GEOPOLITICAL STABILITY

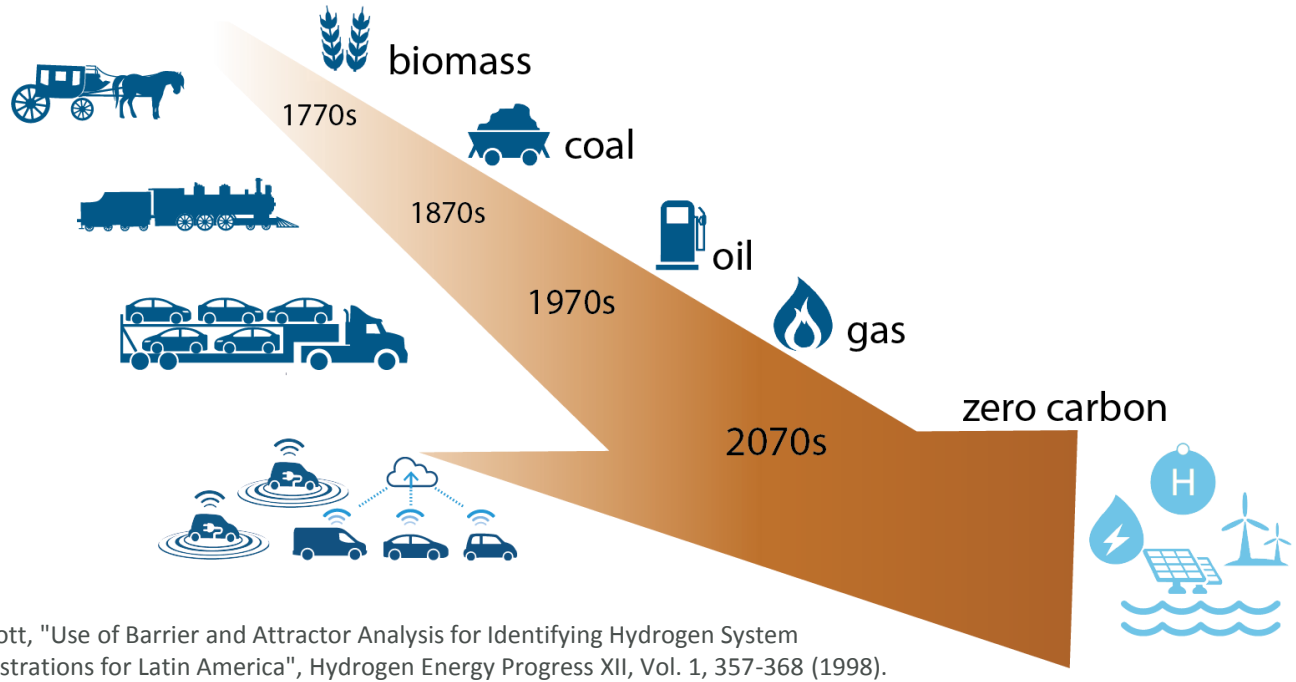
- Energy security
- Food security



Growing global awareness: not a zero sum game



Energy system evolution: land transportation



W. Mérida and D.S. Scott, "Use of Barrier and Attractor Analysis for Identifying Hydrogen System Opportunities with Illustrations for Latin America", Hydrogen Energy Progress XII, Vol. 1, 357-368 (1998).

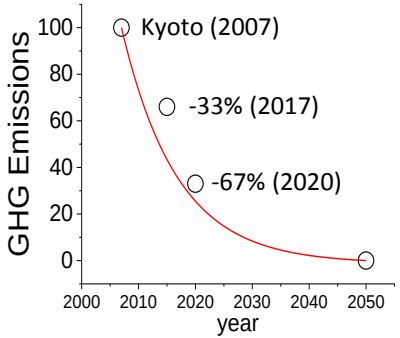
“The existing system of basic research, clean energy deployment, regulatory frameworks, and subsidies fails to sufficiently mobilize investment in truly transformative energy solutions for the future. We can’t wait for the system to change through normal cycles.”

Bill Gates (29 Nov 2015.)

UBC: the campus as a living laboratory

$50/t CARBON TAX

10% LOW-C FUEL STANDARD



+20% STUDENTS

+16% BUILDINGS

THE UNIVERSITY OF BRITISH COLUMBIA

Clean, connected and safe transportation testbed

Renewables to transportation

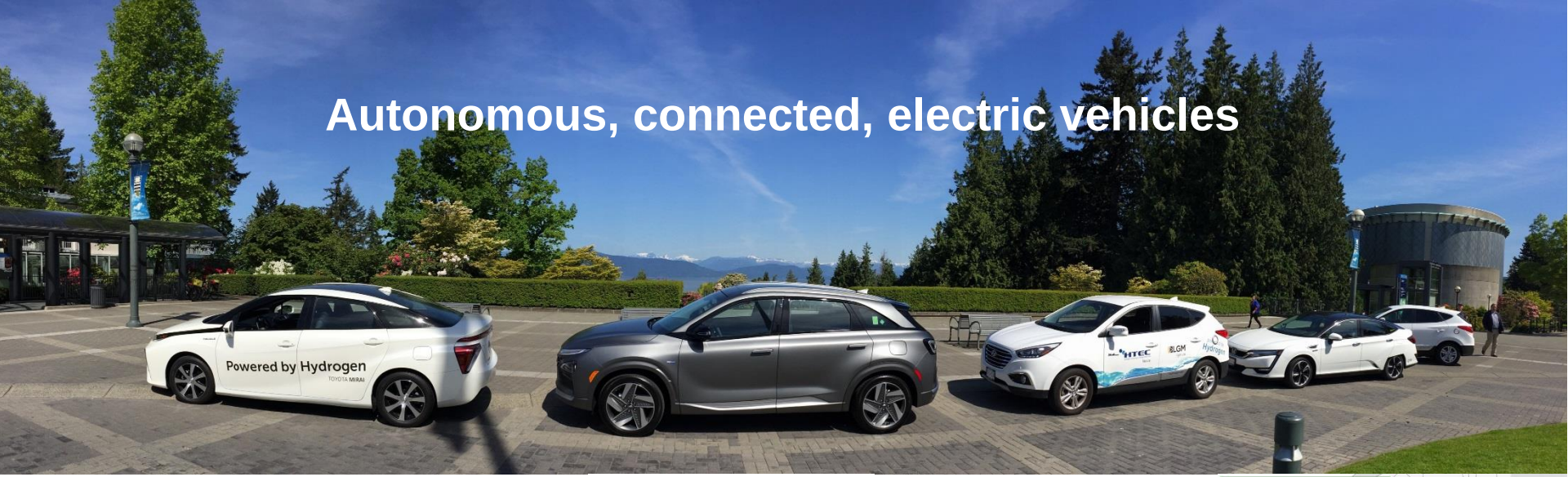
Low-carbon fuels (H_2, synthetic)

Autonomous, connected, electric

Connected infrastructure

Urban well-being

Autonomous, connected, electric vehicles

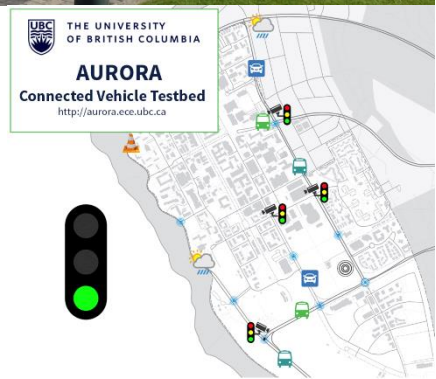


SENSORS
& POWERTRAINS

CONNECTED
INFRASTRUCTURE

CONNECTED
VEHICLES

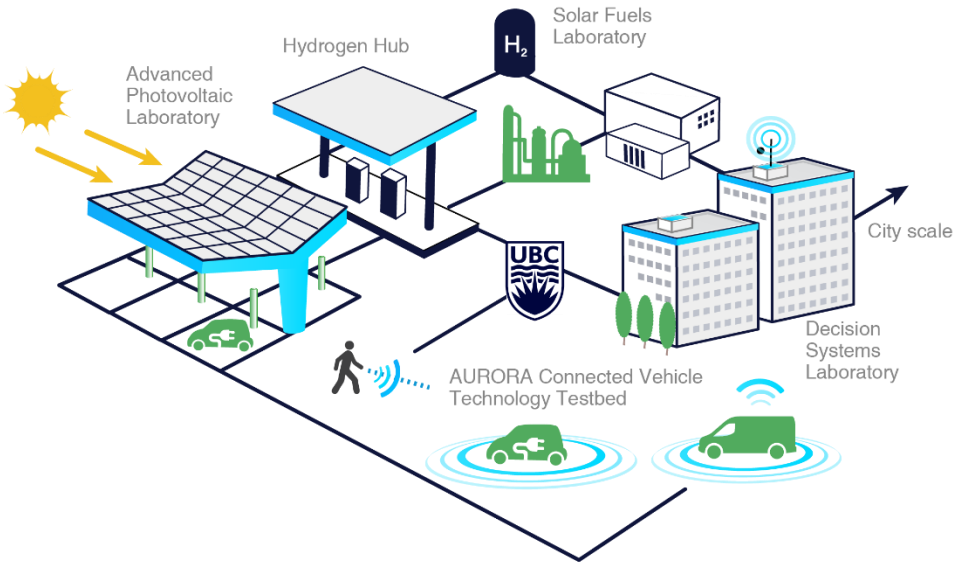
HUMAN INTERFACE
SAFETY & ETHICS



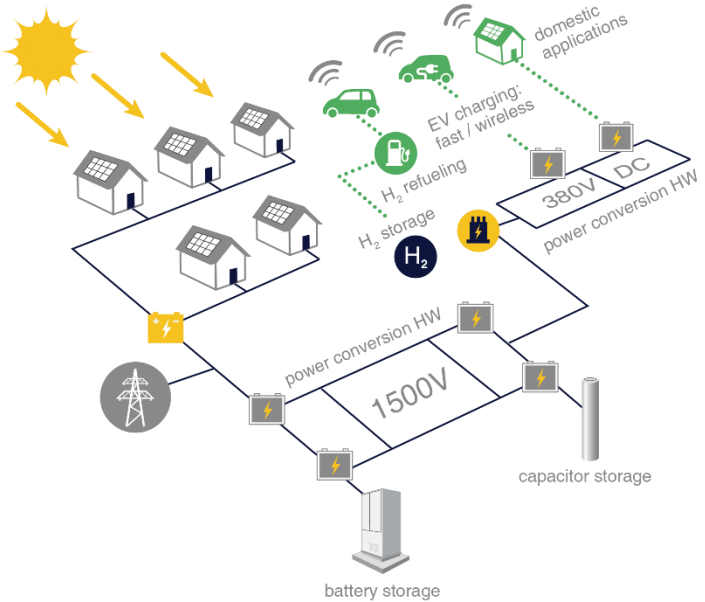
THE UNIVERSITY OF BRITISH COLUMBIA

Service convergence: new business models

R&D + DEMONSTRATION + VALIDATION (CAMPUS)



SCALE UP + IMPLEMENTATION (MUNICIPALITIES)



Knowledge mobilization, engagement and partnerships

Sḵwx̱wú7mesh Úxwumixw
Squamish Nation

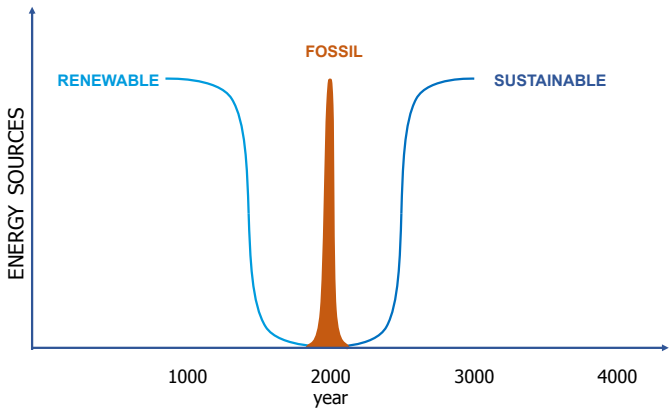
CERC

SQUAMISH
HARDWIRED for ADVENTURE

SQUAMISH
OCEANFRONT

Carbon Engineering

Thank you!



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