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THE SUNDAY TIMES
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GOOD
UNIVERSITY
GUIDE
2022

SCOTTISH
UNIVERSITY
OF THE YEAR

Glasgow as a Living Lab: Delivering a Climate Resilient City through City-University Partnership

Professor Jaime L. Toney

Director of the Centre for Sustainable Solutions

November 8th, 2022

WORLD
CHANGING
GLASGOW



University
of Glasgow

Centre for Sustainable Solutions

Vision: to enable individuals, communities & organisations to act toward a sustainable future through education, research & partnership

Sustainability: Meeting the social foundations of current and future generations while living responsibly within a healthy, natural environment.





Building relationships for local & regional impact

Enabling Conditions

University-City Partnership

Prior Collaborative Success

Interdisciplinary Experts

Open-minded to Change

Community Collaboration

Green Recovery Dialogues

'From Covid-19 to COP26'

University



Engineering



Consumerism



Climate Science



Policy



Ecology

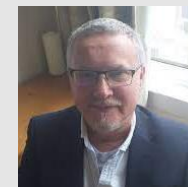
City Council



Sustainability



Planning



Stakeholders



Building relationships for local & regional impact



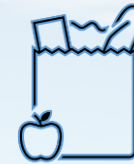
Implementing Green Futures

- Nature-based Solutions
- Green/blue corridors
- Biodiversity
- Health & wellbeing
- Air quality



Low Carbon Energy and Housing

- Renewables
- Heating
- Under-occupancy
- Sensors
- Energy management



Re-thinking Consumption

- Reuse & repair
- Wellbeing & Care
- Consumerism
- Neighborhoods
- Empower communities

Outcomes from 2020 dialogues:

Implementing Green Futures

- Place-/nature-based approaches: neighbourhood environmental audits; green/blue/grey corridors; convert derelict land to sustainably-used green spaces
- Reducing waste, avoid emissions, e.g. reduce light pollution to lower CO₂, and increase urban biodiversity
- Prioritise improved health and wellbeing via a people-centred approach to travel, better air quality, etc.

Ecologist & geomorphologist collaboration with planners

Create green spaces, e.g. in canal- and river-side areas & increase recreational access
 Improve air quality, reduce light pollution
 Increase public appreciation and involvement in greening the city

Understand community aspirational goals

Engage with citizens to turn “spaces” into “places”
 Turn over vacant premises and land to providers of sustainable alternatives
 Create stewards of the environment

Use Covid as an opportunity

Roll out experiments and convert temporary interventions to permanent
 Prioritise interventions that combine socio-economic and environmental objectives
 Make better use of infrastructure & land use data to reduce carbon consumption

Low Carbon Energy and Housing

- Campaign for increased renewables and district heating to reduce carbon & waste emissions
- Make better use of existing/abandoned infrastructure to reduce carbon and waste
- Use underoccupied buildings (esp. in city centre) & make them more people/energy efficient
- Universities as test beds e.g. for the use of sensors and energy data management systems

Meeting the retrofit challenge

Retrofit to reduce wasteful emissions & home energy bills
 Couple retrofit scheme with skills programmes, generating new jobs for a wide range of Glasgow citizens
 Rethink planning regs e.g. for re-purposing of commercial premises & to improve ‘listed buildings’ energy efficiency

Renewable heat

Incentivise supplier & consumer investment in renewable heat, remove NDR barriers to district heat
 Use abandoned mine-workings for thermal energy production and storage
 De-risk heat energy by better co-ordination/ phasing

Better energy management

Use data/flexible grid capacity to control energy use, increase info exchange between suppliers & consumers
 Support innovative construction (pre-fab in housebuilding), maintenance and repair
 Facilitate adoption of low-tech solutions that are already available, but not used

Rethinking Consumption

- All stakeholders blend environmental sustainability with social justice actions
- Objectives and success measures combine inclusivity, social justice, wellbeing and care, not just GDP
- Support for sustainable alternatives: reuse and repair services, sharing and swapping, food growing etc
- Empower citizens/communities to identify & control & benefit from solutions in their neighbourhoods

Reframe the narrative/success measures on work, consumption & sustainability

Embed narratives of citizenship and care into consumption
 Rethink patterns of work both in relation to time (days/week) & commuting
 Embed climate awareness/readiness in education (primary, secondary, HE, community)

Empower sustainable communities

Just transition includes equalising measures (4 day work week, 20 min community)
 Co-create, recognise diverse needs & importance of heeding community voice
 Secure trust by sharing data/information with citizens

Accountability for sustainability

Procurement and HR policies aim to benefit local /regional suppliers
 Make unsustainable practices more costly/subject to penalties
 Decommissioning burden must be factored in alongside upfront costs

This diagram captures the discussion topics from the 2020 dialogues and the consensus on where collaborative action is needed.

Outcomes from 2020 dialogues:

Implementing Green Futures

- Place-/nature-based approaches: neighbourhood environmental audits; green/blue/grey corridors; convert derelict land to sustainably-used green spaces
- Reducing waste, avoid emissions, e.g. reduce light pollution to lower CO₂ and increase urban biodiversity

• Prioritise improved health and wellbeing via a people-centred approach to travel, better air quality, etc.

Overarching themes that emerged:

Low Carbon Energy and Housing

- Environmental sustainability and social justice need to go hand-in-hand to achieve appropriate solutions.
- Understanding and working with communities with diverse needs and perspectives is required. Solutions should be community-driven with an aim to make ‘spaces’ into ‘places’ where citizens are willing to act as stewards.

Rethinking Consumption

- All stakeholders blend environmental sustainability objectives and success measures combine inclusivity, equity and care into community-led initiatives
- Support for sustainable alternatives: reuse and repair
- Empower citizens/communities to identify & control & benefit from solutions in their neighbourhoods

Ecologist & geomorphologist collaboration with planners

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Meeting the retrofit challenge

- Retrofit to reduce wasteful energy use
- Couple retrofit scheme with skills programmes, generating jobs
- Glasgow citizens

• Re-purposing of commercial buildings energy efficiency

Renewable heat

- Incentivise supplier & consumer investment in renewable heat
- Use shared utilities
- Re-risk heat energy by better co-ordination/ phasing

Better energy management

- Use data/flexible grid capacity to control energy use, increase info exchange between suppliers & consumers
- Support innovative construction (pre-fab in housebuilding), maintenance and repair
- Facilitate adoption of low-tech solutions that are already available, but not used

Reframe the narrative/success measures on work, consumption & sustainability

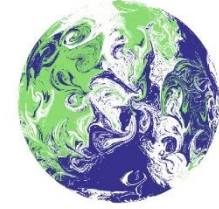
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Leadership Roundtable & Systems Leadership

February 2020

Systems Leadership for a Green Recovery

*System's Leadership: An approach to catalyze and empower collective action among others to achieve transformation of a complex system.**

Characteristics of systems leadership:

- Collaborative leadership
- Coalition-building
- Systems insight
- Mobilization of innovation/action across a large, decentralized network

Leadership Roundtable & Systems Leadership

Agreed Areas of Required Action:



Education, Training, Skills

- Consistency
- Working together
- Break down silos



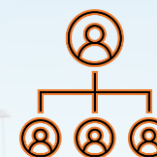
Accelerate Glasgow Partnerships

- Stronger collaboration private sector
- Broker dialogues
- Widen network



Collaborative Climate Finance

- Public sector limited resources
- Prioritize projects
- Opportunities for investment



Collaboration across Senior Leaders

- Common vision
- Enable collaborative working
- Systems thinking



Leadership Roundtable & Systems Leadership

Agreed Areas of Required Action:

Key Message:
Solutions need to simultaneously solve for environment, health & wellbeing, inequalities and economic development.

- Limited resources
- Prioritize projects
- Opportunities for investment
- Common vision
- Enable collaborative working
- Systems thinking



NERC Strategic Programme
 £10.2m (£12.6m FEC)
 Changing the Environment Call
 2022 - 2027



Glasgow as a Living Lab Accelerating Novel Transformation

Delivering a Climate Resilient City through City-University Partnership





Scientific Vision: to use cross-disciplinary expertise from UofG & partners to drive systemic transformation, where innovation & economic development are responsibly considered through ecological & social lenses.

Research Expertise:

- climate change & adaptation
- data science
- social science
- systems science
- fluvial modeling
- sustainable development
- biodiversity
- bioremediation
- carbon sequestration
- ecological pedagogy
- economic futures
- policy
- public health

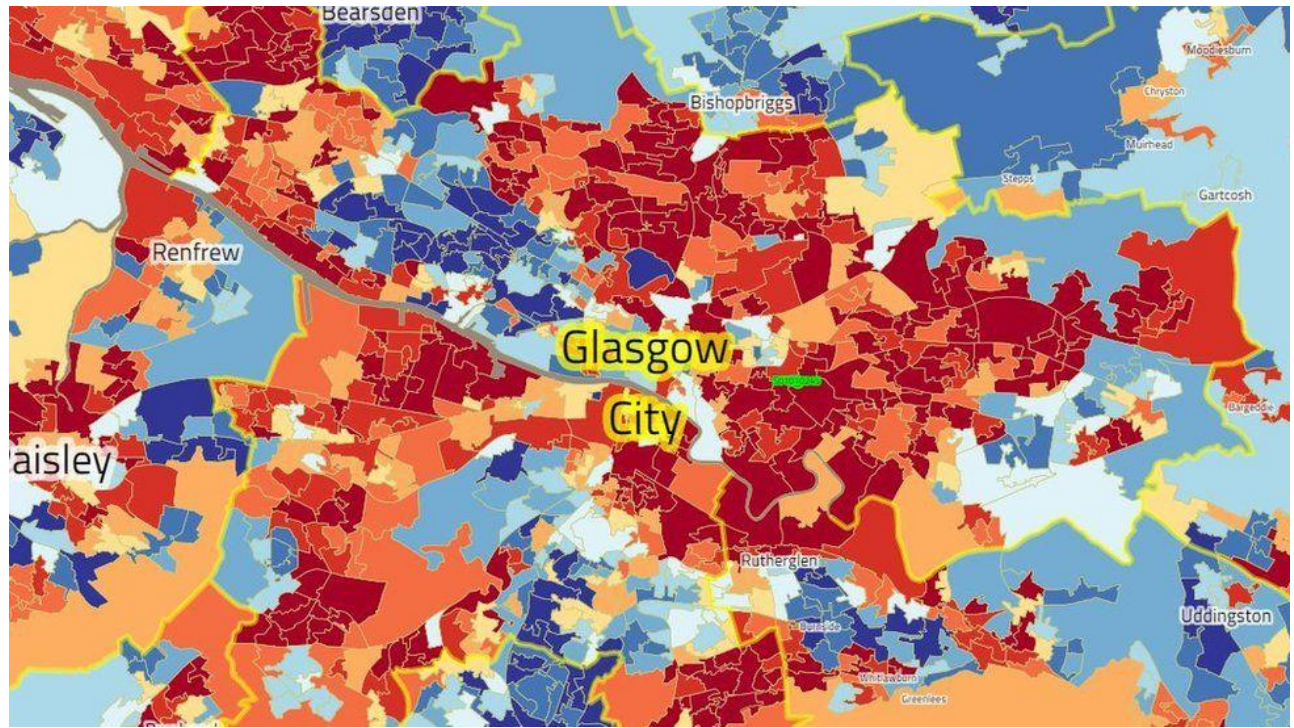
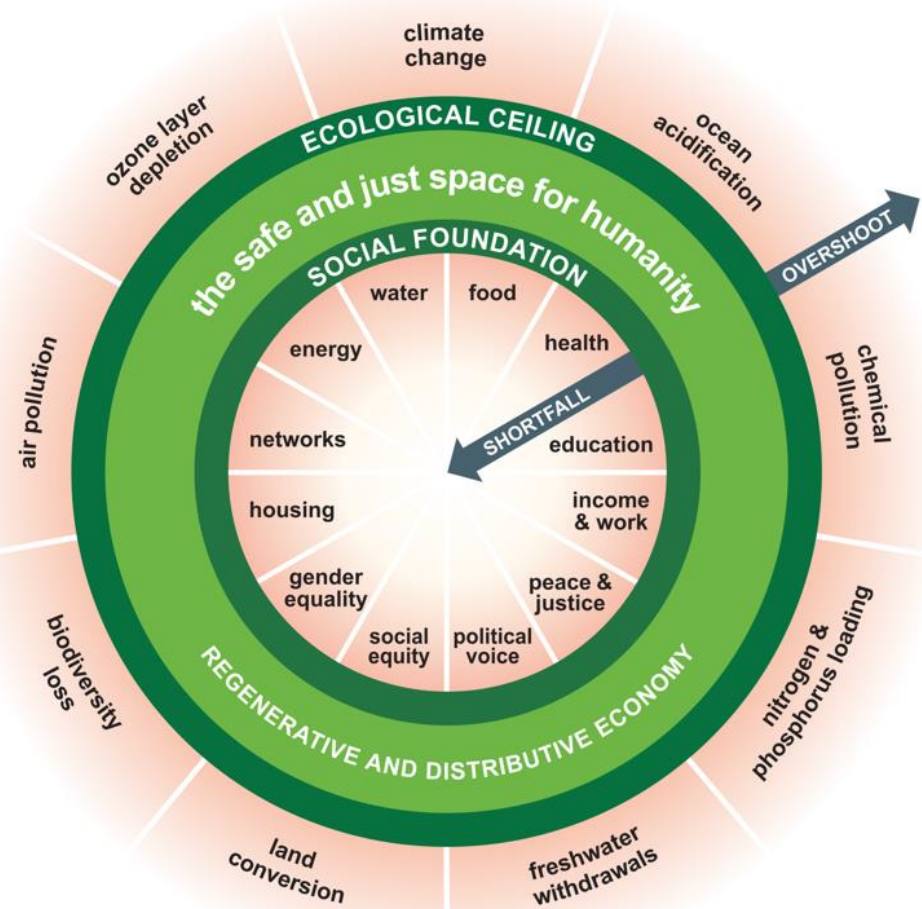
City Council:

- Sustainable Glasgow
- COP26 Stakeholder
- Spatial City Planning
- Circular & Green Economic officers
- Biodiversity officers
- Business Intelligence
- Councillors
- Liveable Neighbourhoods
- Active Travel
- Public Health



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Glasgow's City System: the specific work package interventions are designed to meet Glasgow's challenges, but the approach, methods, and new models will be transferable to other city systems.



Red areas are the most-deprived and blue are least deprived according to Scottish Index of Multiple Deprivation. © BBC



WP1 Climate Resilient
Urban Riverscapes

WP2 Social Benefits of
Urban Biodiversity

WP3 Regenerating VDL via
C-sequestration

WP4 Benefits of active travel
& urban mobility

WP5 Clean Energy at
Community Scale



© AHBE LAB - Yanweizhou Park in Jinhua City by Turenscape

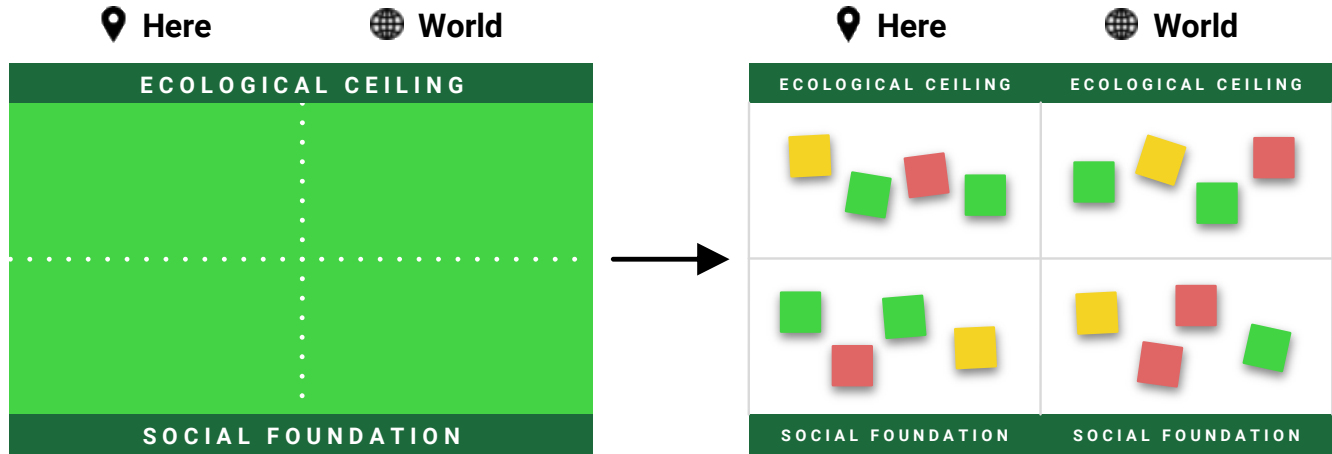
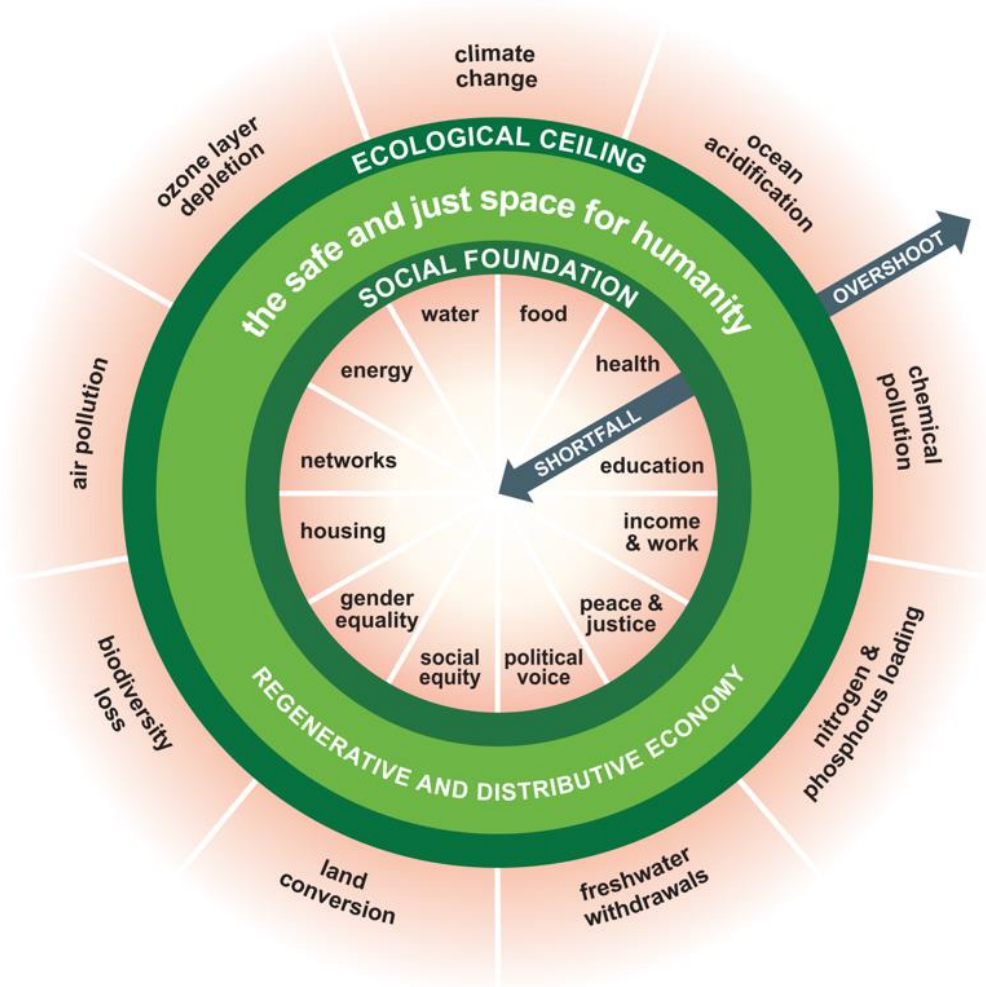


© Green Action Trust



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Glasgow's City System: the specific work package interventions are designed to meet Glasgow's challenges, but the approach, methods, and new models will be transferable to other city systems.



How can this place be as generous as the wildland next door?

What is the generosity of the wildland next door?

How can we store more carbon and harvest solar energy?

How can we better manage water and build more soil?

How can we welcome more wildlife?

Cleanse the air



House biodiversity



Store carbon



Cycle water



Harvest energy



Regulate the temperature



Build & protect soil



Enhance wellbeing



How can this place respect the health of the whole planet?

How can we decarbonise transport and heating?

How can we cut waste and create a circular economy?

How can we produce more locally to reduce global impact?

How do lifestyles here put pressure on the planet?

Climate change



Ocean acidification



Chemical pollution



Excessive fertilizer use



Water withdrawals



Land conversion



Biodiversity loss



Air pollution



Ozone layer depletion



How can all the people of this place thrive?

What does thriving mean to people here?

Whose voices are not being heard?

What has Covid-19 made visible?

What is our hidden strength?



Food



Water



Health



Education



Housing



Energy



Connectivity



Mobility



Community



Culture



Income & work



Social equity



Equality in diversity



Political voice



Peace & justice

How can this place respect the wellbeing of all people?

Whose labour made the products on sale here?

How can cultural connections create opportunity and solidarity?

How do resource-intensive lifestyles here impact people worldwide?

How do we welcome those seeking safety and refuge?



Food



Water



Health



Education



Housing



Energy



Income & work



Social equity



Equality in diversity



Community & networks



Political voice



Peace & justice



Four lenses
Local-social zoom in

How can all the people of Glasgow thrive?



Derived from DEAL CC-BY-SA

How can all the people of Glasgow thrive?

Example Target

Narrow the gap in Healthy Life Expectancy (HLE) for both men and women by 2028

Snapshot Indicator

HLE Glasgow:

56 years (men)

57.4 years (women)

HLE Scotland:

60.9 years (men)

61.8 years (women)

GCR Gap in male HLE: 14 years

East Renfrewshire 68.7 years

Inverclyde 54.4 years



Food



Water



Health



Education



Housing



Energy



Connectivity



Mobility



Community



Culture



Income & work



Social equity



Equality in diversity



Political voice



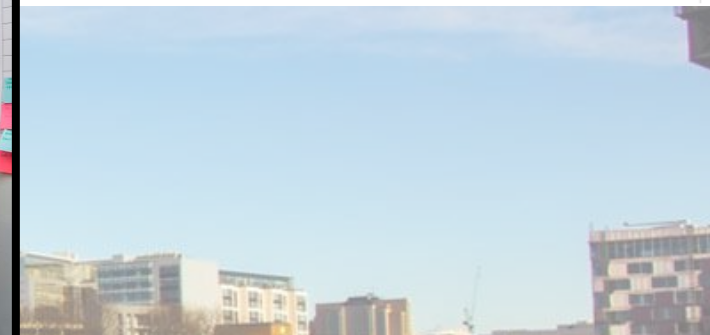
Peace & justice

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A thriving city: Glasgow looks to its COP26 legacy

PRESS RELEASE November 11, 2021

Today Glasgow marks a new milestone as it formally launches its ambition to become a thriving city – a key legacy of its hosting of the COP26 Climate Conference. Aptly announced on the Cities, Regions and Built Environment presidency themed day, Glasgow will join the Thriving Cities Initiative to develop its wider COP26 legacy.



Systems transformation: Understanding & exploiting interconnections

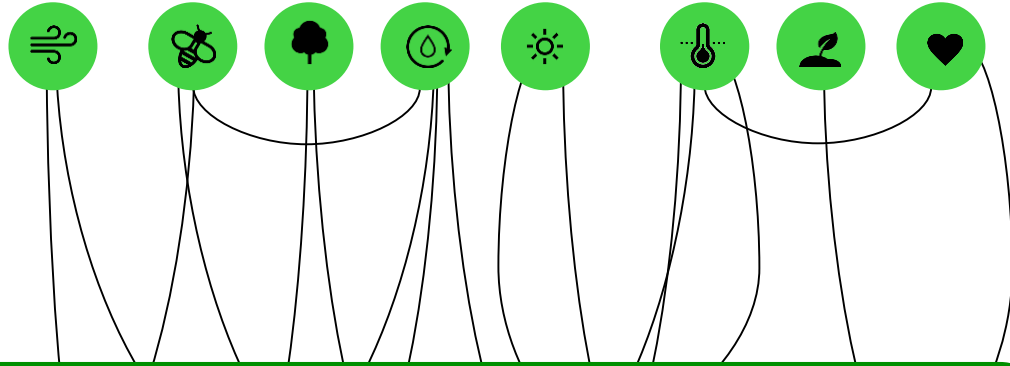
1. CITY PORTRAIT: Work with stakeholders & communities to understand Glasgow as a system of systems: social, economic, political, ecological



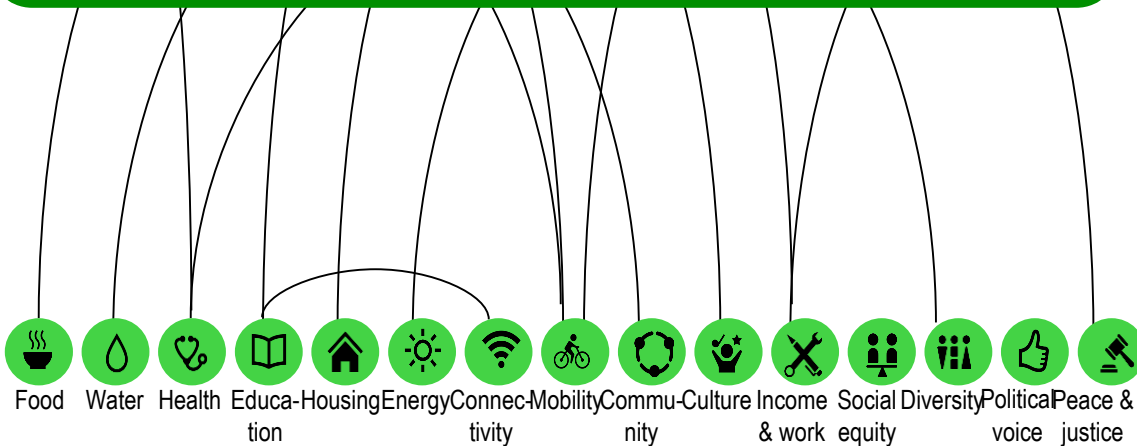
2. FORMAL SYSTEMS REPRESENTATION: causal linkages, feedback processes, temporal/spatial dynamics

ECOLOGICAL CEILING

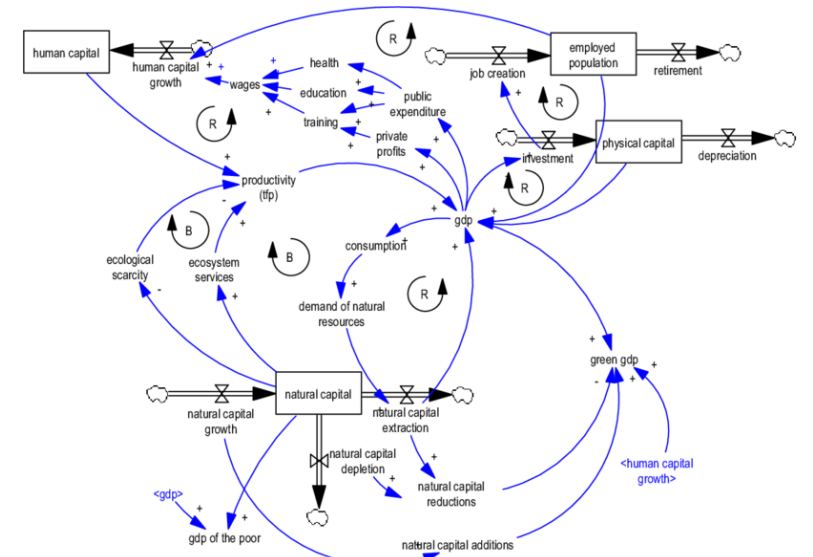
- Cleanse the air
- House biodiversity
- Store carbon
- Cycle water
- Harvest energy
- Regulate the temperature
- Build and protect soil
- Enhance wellbeing



THINGS START MOVING when we see how everything is connected & we understand the dynamics in the system

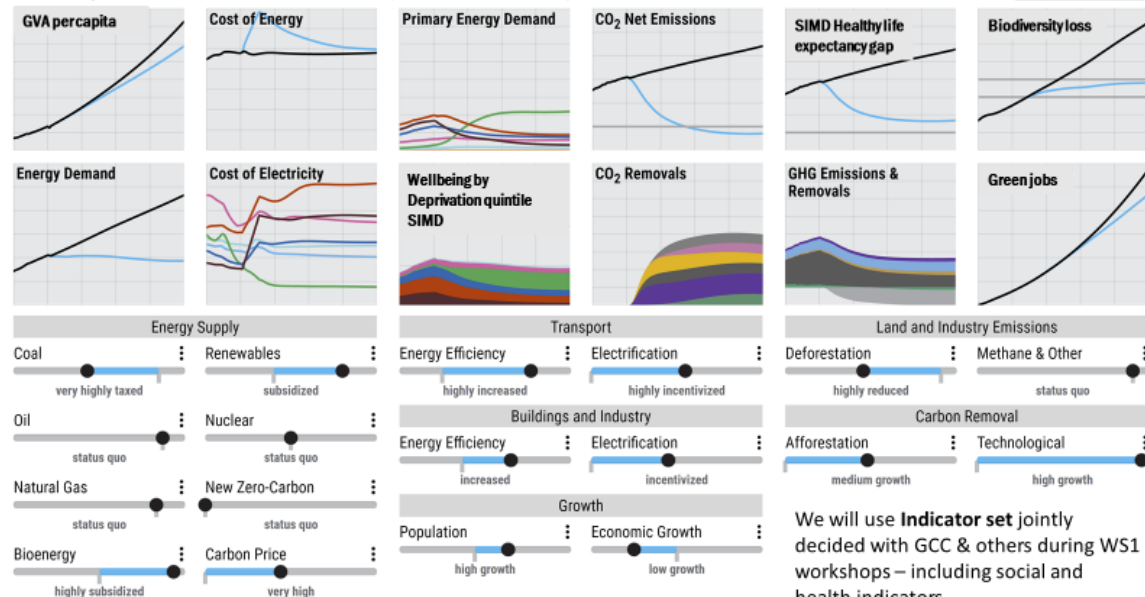


SOCIAL FOUNDATION



3. QUANTIFIED SIMULATIONS & DECISION SUPPORT

Mock-up scenario simulation dashboard (based on ENROADS)



We will use **Indicator set** jointly decided with GCC & others during WS1 workshops – including social and health indicators.



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Five-Year Outcomes

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Work Packages

WP1 Riverscapes: Create a test bed for planning multi-benefit NBS to flood risk, water-edge demonstration site.

WP2 Biodiversity: halt biodiversity loss, connect nature across urban spaces plan ESS roll out.

WP3 Carbon sequestration: regenerate VDL, new closed-loop technology for CO₂ sequestration.

WP4 Active Travel: increase inclusive urban active travel/mobility improving air quality and CO₂ emissions.

WP5 Clean Energy: create & connect community-scale renewable energy sources from green-grey-blue spaces.

Programme

World-leading research **METHODS** shared globally

Decision-making **TOOLS** used beyond partners

EVIDENCE drives policy action beyond partners

Novel environmental **SOLUTIONS** adopted beyond Glasgow

Systems **MONITORING** maximises transformative change & reduces costs from failed actions



Impact Vision: to deliver multidisciplinary methodological innovation & robust evidence on environmental solutions and policies to drive broad, system-level changes.



Green Economy & Innovation Forum



Expertise, benchmarking, outcomes meeting in Geneva



Future of work & re-skilling



Identify private accelerators

- Knowledge exchange with global like-minded cities for thriving within planetary boundaries.
- Thought leadership on emerging trends, challenges, & innovation via **GALLANT Partnership Conferences**.
- Inform city, regional and national-level skills gaps.
- Leverage regional business perspectives on environmental solutions and progress.



GALLANT

GALLANT's Early Career Researchers: vibrant and diverse community benefiting from the cohort effect and interdisciplinary practice and expertise.



19%
Co-Is are ECRs



10
PhD
Studentships



14
New Post-doc
Research
Associates



Defining a new & effective norms
for inclusive participation and
academic careers in STEM



What Success Looks Like



Influencing policy decisions at location, national and global scales.



Sustainable funding to continue to grow as a centre of excellence beyond 5-years



Scalable, transferable environmental solutions for global cities.



Leading systems transformation beyond the scale of our individual WPs.



A new cohort of ECRs using whole systems approaches as the norm



Increased capacity for interdisciplinary research across the UofG



Highly engaged policy, practice & community partnerships for delivery & knowledge transfer



GALLANT is a beacon for whole-systems environmental solutions



Thank you.

<https://www.gla.ac.uk/gallant>

