



SYSTEMS
CHANGE
LAB

Discover Systems Change for People and the Planet

An aerial photograph of a city skyline at dusk. The sky is a pale, hazy blue, and the buildings are silhouetted against it. In the foreground, a dense urban area with brick buildings and a street with a yellow light trail is visible. A large, dark blue, rounded rectangular overlay covers the middle of the image, containing white text. The text is a quote by Donella Meadows. The Allianz logo is visible on one of the buildings in the background.

"The world is a complex, interconnected, finite, ecological–social–psychological–economic system. We treat it as if it were not, as if it were divisible, separable, simple, and infinite.

Our persistent, intractable global problems arise directly from this mismatch."

– Donella Meadows

Photo by: Ben O'bro

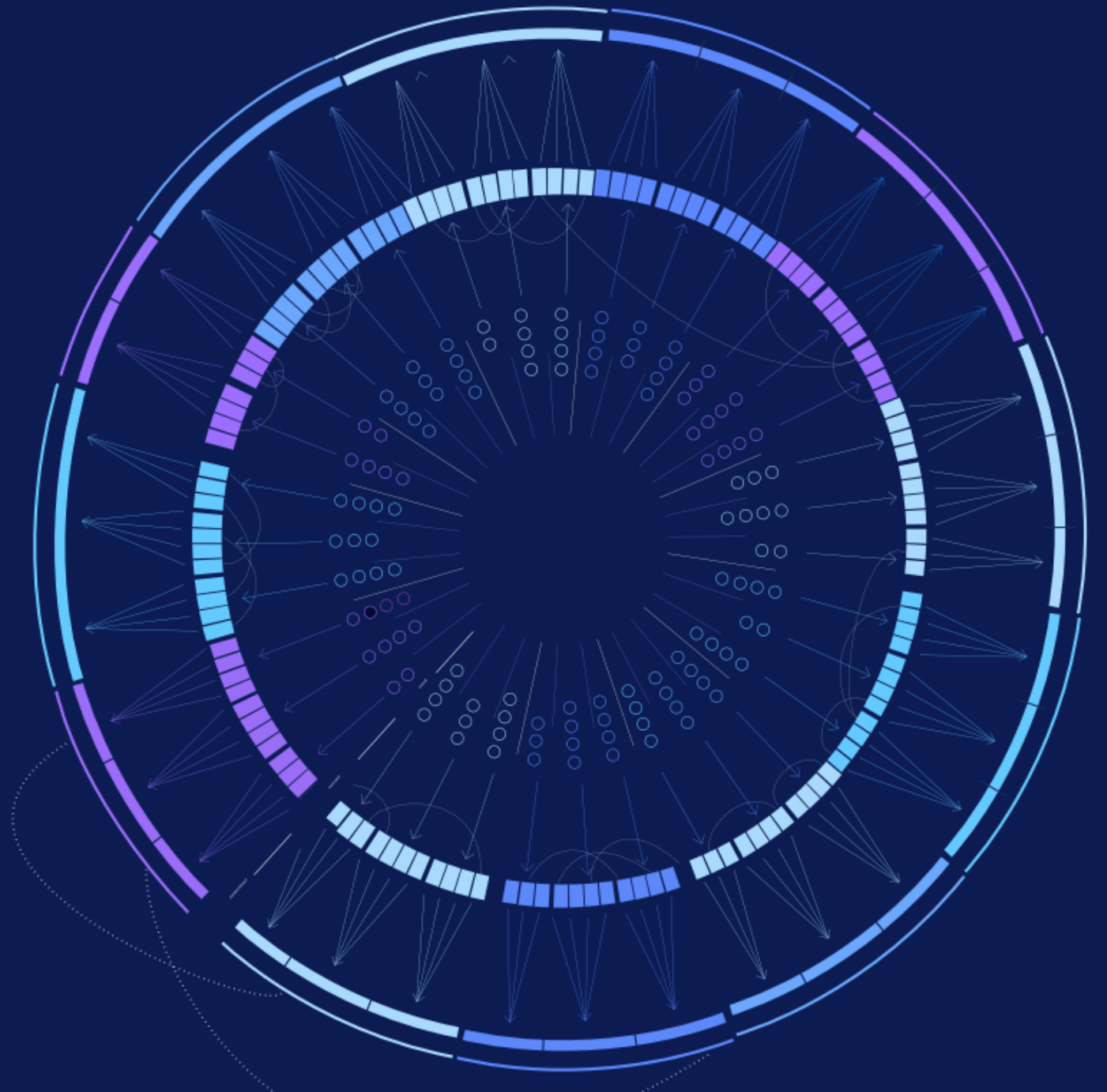


SYSTEMS
CHANGE
LAB

Systems: A traditional approach



But our
reality
looks more
like this



What is Systems Change?

Shifting component parts of a system — and the pattern of interactions between these parts — to ultimately form a new system that behaves in a qualitatively different way.

Thinking Systemically

- Seeing the whole rather than just parts
- Seeing patterns of change rather than static snapshots
- Understanding key interconnections within and between systems
- Engaging different perspectives
- Constantly learning and adapting
- Probing assumptions

Partners

CONVENED BY



WORLD
RESOURCES
INSTITUTE



BEZOS
EARTH
FUND

FUNDERS AND PARTNERS



CLIMATE
ANALYTICS



UN
environment
programme
WCMC



CENTER FOR
GLOBAL
COMMONS



climateworks
FOUNDATION



CONSERVATION
INTERNATIONAL



gef



GLOBAL
COMMONS
ALLIANCE



JUST CLIMATE



MISSION
POSSIBLE
PARTNERSHIP



National
Institute for
Environmental
Studies, Japan



RACE TO
RESILIENCE

RACE TO ZERO



RMI
ENERGY. TRANSFORMED.



SYSTEMIQ

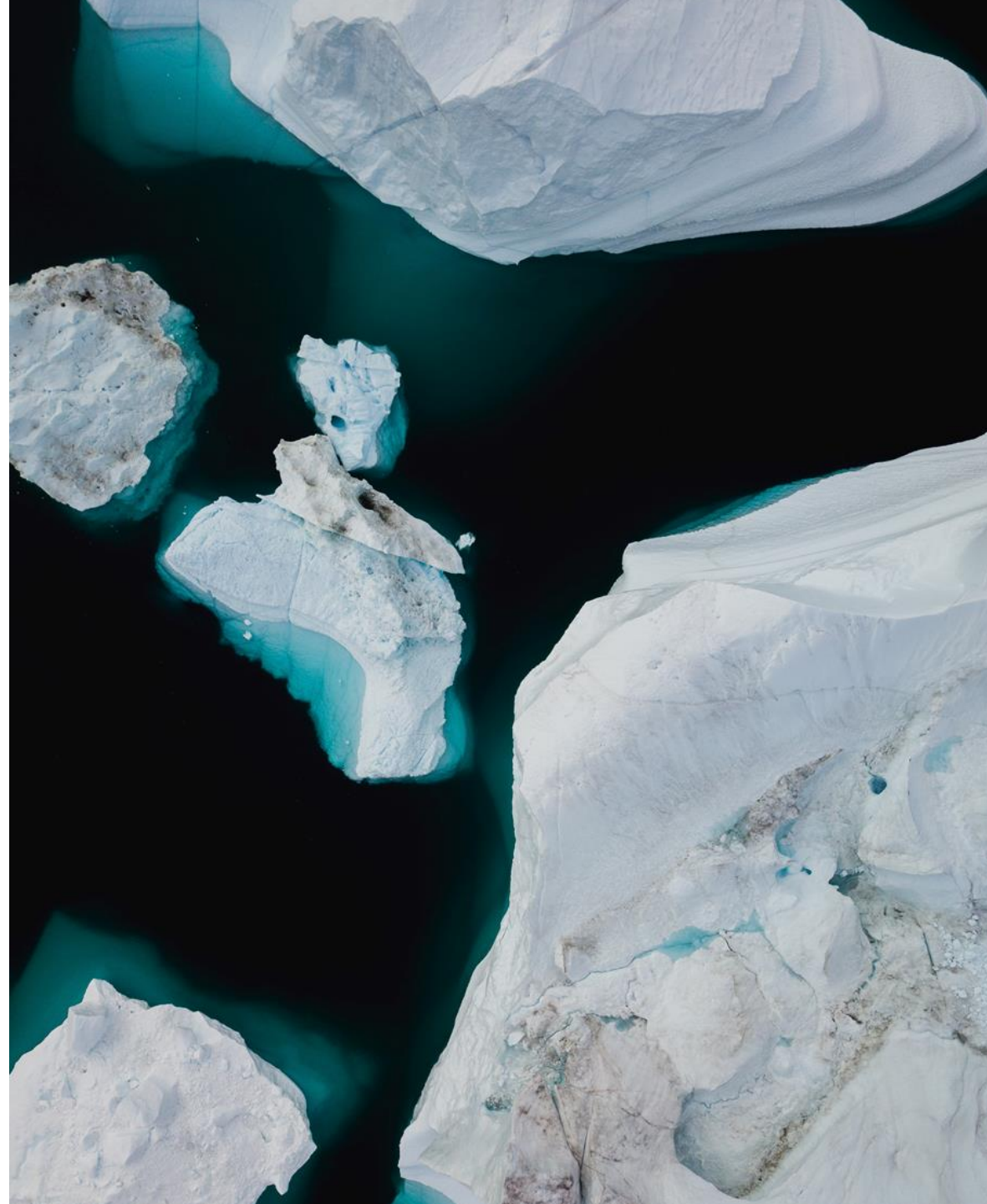


University
of Exeter | Global Systems
Institute

Systems Change Lab

It's time to change the way we think about changing the world.

Systems Change Lab is a collaborative initiative designed to spur action at the pace and scale needed to tackle some of the world's greatest challenges: limiting global warming to 1.5°C, halting biodiversity loss and building a just economy.



Interconnected Systems



Power



Industry



Transport



Cities



Buildings



Carbon
Removal



Forests &
Land



Ocean



Freshwater



Food &
Agriculture



Finance



Circular
Economy



Governance

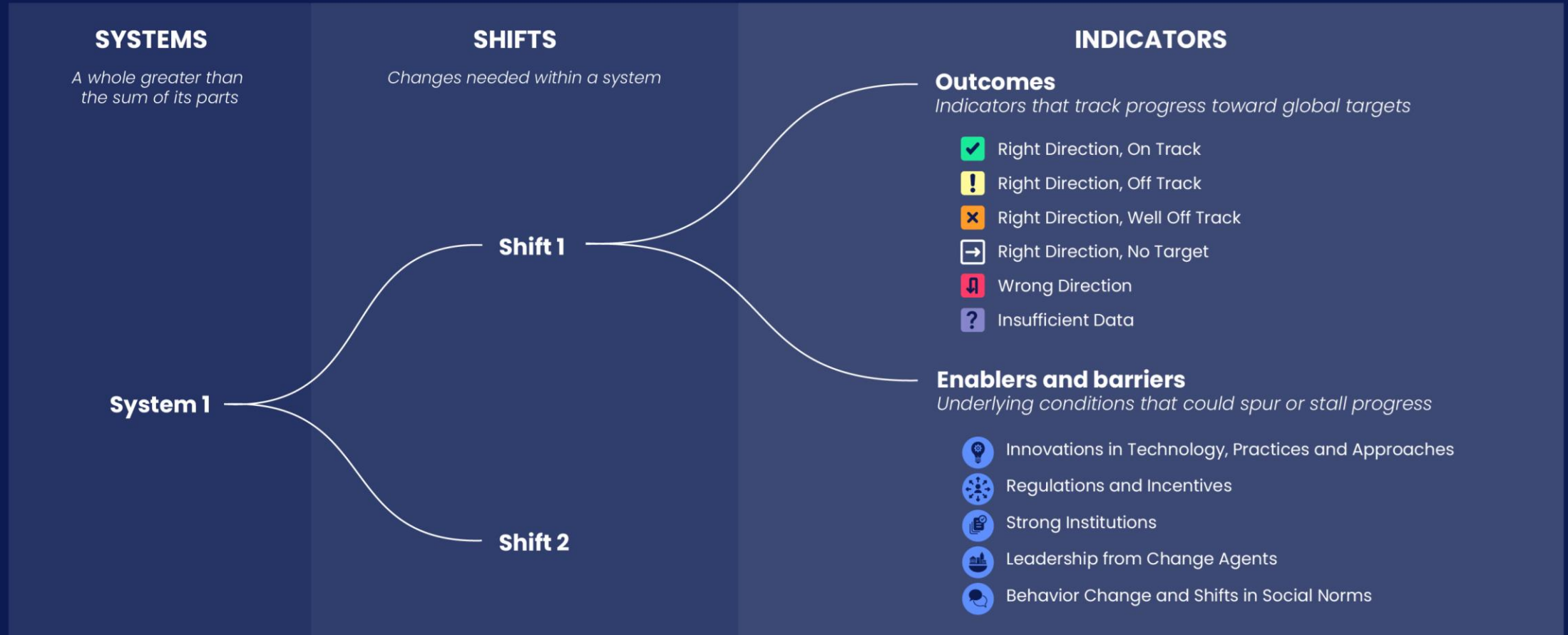


Social Inclusion
& Equity



Economics

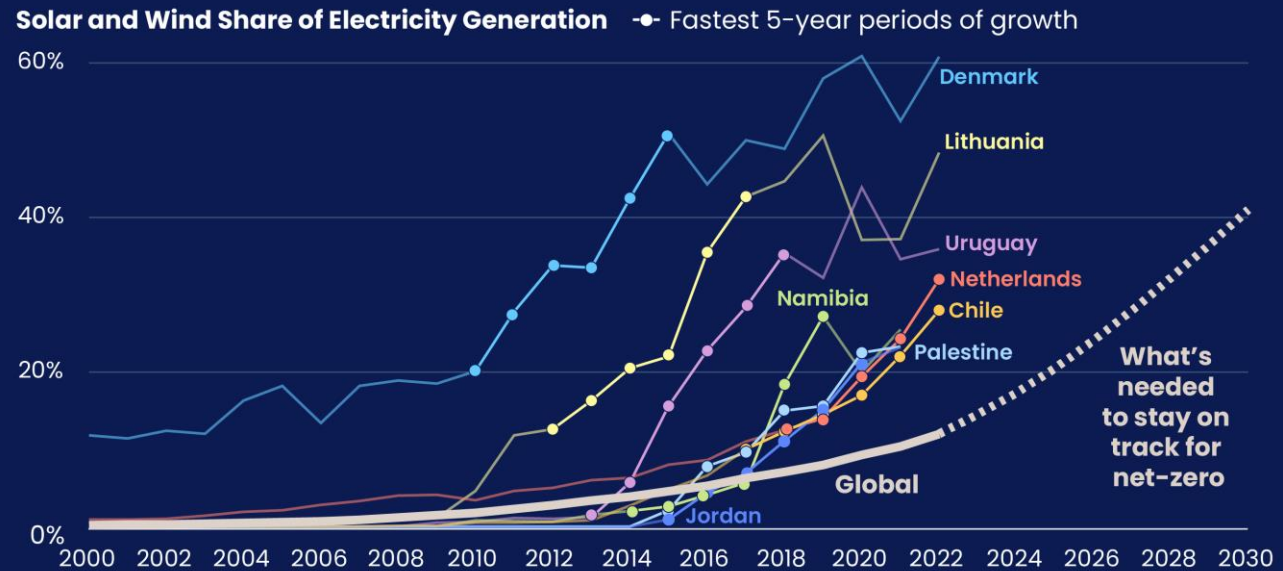
Structure of the Systems Change Lab Platform



Duality of Reality: Off Track & Bright Spots



These eight countries have already grown solar and wind at steeper rates than what's needed globally



Source: Systems Change Lab, based on historical data from Our World in Data, BP and Ember. Global target from IEA.



Across the **8 systems** we've evaluated:

- ✓ **2 indicators are On Track** ⚠ **6 indicators are Off Track**
- ✗ **40 indicators are Well Off Track** ➡ **12 indicators are Right Direction, No Target**
- 📉 **21 indicators are going in the Wrong Direction** 📊 **59 indicators have Insufficient Data**

Platform Updates

DATA &
RESEARCH >

SYSTEMS >

NEWS & INSIGHTS

EVENTS

ABOUT >

SEARCH: Search by Keyword

FILTER BY NEWS TYPE: Platform Update

FILTER BY SYSTEM: - Any -

Showing 6 of 11 [Reset](#)

<p>PLATFORM UPDATE</p> <p>Jan 24, 2025</p> <p>Platform and Data Updates, January 2025</p> <p>READ ARTICLE</p>	<p>PLATFORM UPDATE</p> <p>Nov 18, 2024</p> <p>Platform Updates, November 2024</p> <p>READ ARTICLE</p>	<p>PLATFORM UPDATE</p> <p>Nov 15, 2024</p> <p>Data Updates, October 2024</p> <p>READ ARTICLE</p>	<p>PLATFORM UPDATE</p> <p>Jun 26, 2024</p> <p>Platform and Data Updates, June 2024</p> <p>READ ARTICLE</p>	<p>PLATFORM UPDATE</p> <p>Apr 30, 2024</p> <p>Platform and Data Updates, March 2024</p> <p>READ ARTICLE</p>	<p>PLATFORM UPDATE</p> <p>Feb 07, 2024</p> <p>Methodology Update, February 2024</p> <p>READ ARTICLE</p>
<p>PLATFORM UPDATE</p> <p>Oct 31, 2024</p> <p>The Updated Forest Declaration Dashboard is Here</p> <p>READ ARTICLE</p>	<p>PLATFORM UPDATE</p> <p>Oct 24, 2024</p> <p>Platform Updates, September 2024</p> <p>READ ARTICLE</p>	<p>PLATFORM UPDATE</p> <p>Aug 13, 2024</p> <p>Platform Updates, August 2024</p> <p>READ ARTICLE</p>	<p>PLATFORM UPDATE</p> <p>Dec 15, 2023</p> <p>Platform and Data Updates, December 2023</p> <p>READ ARTICLE</p>	<p>PLATFORM UPDATE</p> <p>Aug 30, 2023</p> <p>Platform Update, August 2023</p> <p>READ ARTICLE</p>	

Platform Updates: Shift Pages

SYSTEMS CHANGE LAB

- POWER > In an increasingly urban world, we must develop zero-waste sustainable cities that are efficient, resilient and equitable for all.
[EXPLORE THE CITIES SYSTEM](#)
- INDUSTRY >
- TRANSPORT >
- CITIES >** Plan urban land use to reduce emissions and increase climate resilience
- BUILDINGS > Increase access to resilient and affordable urban services and infrastructure
- CARBON REMOVAL > Improve urban waste management and transition to zero-waste cities
- LAND
- OCEAN
- FRESHWATER
- FOOD
- FINANCE >

DATA & RESEARCH >

SYSTEMS >

NEWS & INSIGHTS

EVENTS

ABOUT >

CITIES SYSTEM

Plan urban land use to reduce emissions and increase climate resilience

OVERVIEW | OUTCOMES | ENABLERS & BARRIERS | OTHER SHIFTS | RESOURCES

Photo by Parim Sinani via Unsplash

Land use planning that limits urban sprawl and promotes connectivity to infrastructure and services can reduce emissions, provide better access to opportunities and improve resilience to climate risks.

The rapid expansion of urban areas can lead to higher per capita [urban greenhouse gas \(GHG\) emissions](#); [habitat fragmentation and biodiversity loss](#); inefficient use of natural resources like energy, water and land; and [loss of agricultural lands](#).

While there are multiple [demographic, economic and policy drivers](#) of urban land expansion, unplanned and unmanaged urban expansion without supporting infrastructure and services often leads to sprawling cities with [spatial inequalities](#), characterized by poor access to services

[LEARN MORE](#)

[Cities Need Systems Change](#)

A city is a system of systems, bringing together transportation, energy, buildings, water, waste management and more. Transforming these interconnected systems is vital to achieving climate and development goals.

Tracking progress on global outcomes

Platform Updates: Shift Pages

HOME > CITIES > PLAN URBAN LAND USE TO REDUCE EMISSIONS AND INCREASE CLIMATE RESILIENCE

OVERVIEW

OUTCOMES

ENABLERS & BARRIERS

OTHER SHIFTS

RESOURCES

2 Wrong Direction 2 Insufficient Data

Wrong Direction

Land consumption

m²/person

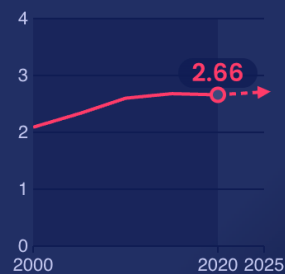


EXPAND & EXPLORE

Wrong Direction

Urban GHG emissions

tCO₂e/capita



EXPAND & EXPLORE

Insufficient Data

Average urban building height

NO PUBLICLY AVAILABLE DATA SOURCE WAS IDENTIFIED.

[Learn more](#)

EXPAND & EXPLORE

Right Direction, No Target

Heat island intensity

°C



EXPAND & EXPLORE

Insufficient Data

Vegetated urban land

Right Direction, No Target

Air pollution in urban

Well Off Track

Urban population in informal settlements

Right Direction, No Target

Fine particulate

Platform Updates: Indicator Windows

HOME > CITIES > SHIFT: PLAN URBAN LAND USE TO REDUCE EMISSIONS AND INCREASE CLIMATE RESILIENCE

OVERVIEW OUTCOMES ENABLERS & BARRIERS OTHER SHIFTS RESOURCES

INDICATOR

Urban GHG emissions

Wrong Direction

Emissions per capita represent the nature of the infrastructure and the economy in a given geographical region, as well as individual lifestyle choices. Frameworks such as the [Global Protocol for Community-Scale Greenhouse Gas Inventories](#) help cities to measure their emissions across three scopes.

According to the IPCC, cities account for over 70% of global carbon dioxide equivalent (CO₂e) across all three scopes of emissions. This indicator, however, measures only scope 1 greenhouse gas (GHG) emissions, which are from sources located within the city boundary. This does not include scope 2 emissions (which occur from grid-supplied energy) or scope 3 emissions (which occur outside the city boundary but are the result of activities within the city boundary, such as waste treatment or transboundary transportation). While not specifically urban, the [power system](#) includes indicators related to emissions from grid-supplied energy.

When it comes to emissions from scopes 1 and 2, cities can sometimes produce half the GHG emissions of suburban neighborhoods thanks to more walking and cycling infrastructure, greater public transport, and building forms that minimize the need for space heating and cooling. As a result, [per capita GHG emissions are lower](#) in many cities than they are on average in the nations where these cities are found. Additionally, cities in developed countries produced nearly [seven times](#) more emissions per capita than cities in African countries, which is the lowest emitting region.

However, there is also a risk that [urbanization can lead to increased GHG emissions](#) as residents of the city consume goods and services produced outside the city boundaries. [Consumption-based GHG accounting](#) is therefore an alternative approach to measuring city GHG emissions.

In 2020, the global average for urban GHG emissions per capita was 2.66 tonnes of CO₂e (tCO₂e), down slightly from 2.68 tCO₂e in 2015 but up from 2.09 tCO₂e in 2000.

There is no agreed-upon global target for urban GHG emissions per capita. However, to remain in line with global climate goals, urban emissions need to decrease significantly.

Timeline Yearly Change Map Table

Urban GHG emissions

Historical Data Current Trend Needed Pace

DATA FOR: WORLD

tCO₂e/capita

Year	tCO ₂ e/capita
2000	2.09
2015	2.68
2020	2.66





S-CURVE UNLIKELY

SOURCE: [MULTIPLE DATA SOURCES](#)

EMBED DOWNLOAD IMAGE DOWNLOAD DATA SHARE

BACK NEXT INDICATOR

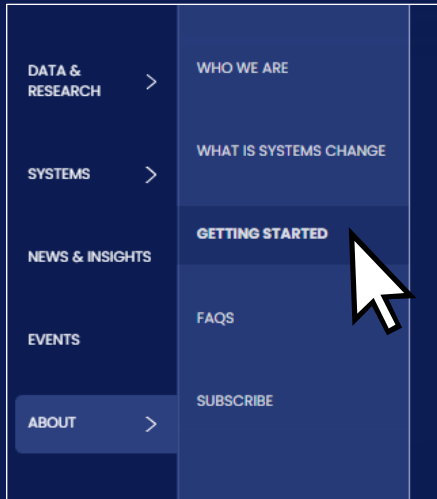
Platform Updates: Navigating Pages

 SYSTEMS CHANGE LAB	 POWER >
	 INDUSTRY >
	 TRANSPORT >
	 CITIES >
DATA & RESEARCH >	 BUILDINGS >
	 CARBON REMOVAL >
SYSTEMS >	 LAND
	 OCEAN
	 FRESHWATER
	 FOOD
NEWS & INSIGHTS	
EVENTS	
ABOUT >	 FINANCE >
	 CIRCULARITY >
	 GOVERNANCE

DATA & RESEARCH >	WHO WE ARE
SYSTEMS >	WHAT IS SYSTEMS CHANGE
NEWS & INSIGHTS	GETTING STARTED
EVENTS	FAQS
ABOUT >	SUBSCRIBE

	DASHBOARD
	EXPLORE SHIFTS
DATA & RESEARCH >	PUBLICATIONS
SYSTEMS >	INSIGHTS
NEWS & INSIGHTS	METHODOLOGY
EVENTS	DATA GAPS
ABOUT >	DOWNLOAD DATA
	PERMISSIONS AND LICENSING

Platform Updates: Getting Started



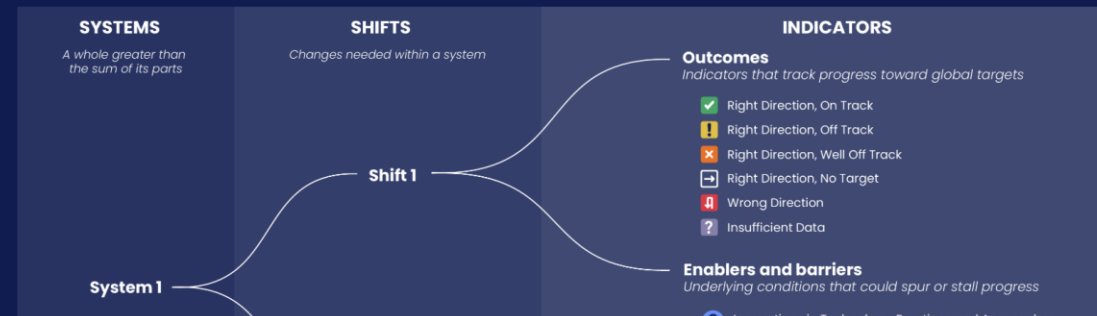
HOME > GETTING STARTED

Getting started

The Systems Change Lab data platform is a tool designed to track global progress toward climate, nature and equity goals.

Within each system, we track more than 70 critical shifts, with indicators that assess progress toward targets and enable or prevent change. Click through the accordions below to learn how to navigate through the platform, what information you can find, and how you can use our insights.

Structure of the Systems Change Lab Platform



Platform Updates: Data Gaps



HOME > DATA GAPS ON SYSTEMS CHANGE LAB

Data gaps on Systems Change Lab

Systems Change Lab uses data to monitor, learn from and mobilize action toward the transformational shifts needed to protect both people and the planet. Data can reveal progress toward global targets, but in some cases, data is missing, incomplete or unknown. We identify data gaps throughout our platform to highlight where more research, funding and publicly available resources are needed to close these gaps.

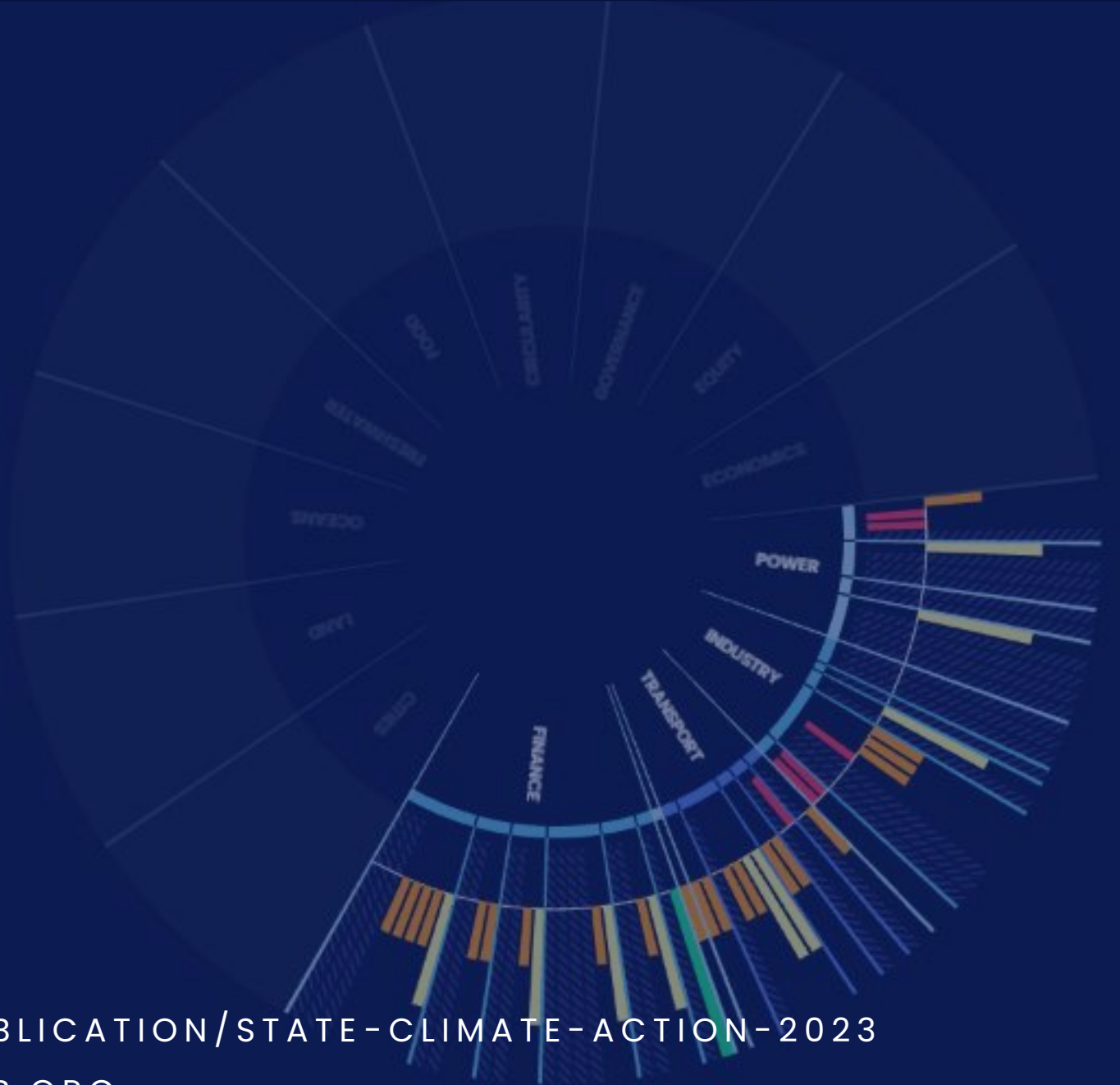
How does Systems Change Lab approach data gaps?

We try to be as transparent as possible about what data is – or isn't – available on Systems Change Lab. If data is incomplete, we add what is available to the platform. If data is incomplete for an outcome indicator with a target, we can't evaluate whether the indicator is or isn't on track. If no data exists, we evaluate whether to remove the indicator or replace it with a relevant proxy indicator. If no proxy can be identified but the indicator is critical to the shift in question, we keep it on the platform to show that there is a gap.

What are the types of data gaps and what can be done about them?

There are four common types of data gaps on the Systems Change Lab platform. For about half of the data

For more information



VISIT: SYSTEMSCHANGELAB.ORG

REPORT: SYSTEMSCHANGELAB.ORG/PUBLICATION/STATE-CLIMATE-ACTION-2023

EMAIL: CONTACT@SYSTEMSCHANGELAB.ORG