Duncan Geere

An information designer, offering bespoke services to visually guide your audience through complex information.

Portfolio, October 2020
The Drawdown Solutions Framework organizes climate solutions by sector and by subgroup, within three overarching areas of action. Here, you see the potential emissions impact of each sector, as well as the solution subgroups therein. Using two different scenarios of solution implementation, we derived the minimum and maximum impact shown here. (See more on scenarios below.)

Reduce Sources

**Electricity**
- Shift Production
  - 163.8 / 3670
- Enhance Efficiency
  - 34.0 / 46.7
- Protect Ecosystems
  - N/A

**Food, Agriculture & Land Use**
- Address Waste
  - 18.4 / 183.9
- Shift Agriculture Practices
  - 15.5 / 28.0
- Address Refrigerants
  - N/A

**Industry**
- Address Refrigerants
  - 101.3 / 126.3
- Enhance Efficiency
  - 15.9 / 33.1

**Transport**
- Use Alternatives
  - 19.3 / 54.8
- Shift Energy Sources
  - 46.3 / 108.4
- Enhance Efficiency
  - 32.4 / 32.9

**Buildings**
- Improve Materials
  - 5.9 / 19.3
- Use
  - 12.7 / 21.4
- Shift to Alternatives
  - 19.3 / 54.8
- Address Refrigerants
  - N/A

Support Sinks

Land Sinks
- Shift Agriculture Practices
  - 156.9 / 193.3
- Address Waste & Diets
  - 1.0 / 1.0
- Protect & Restore Ecosystems
  - 1.5 / 1.5
- Use Degraded Land
  - 43.0 / 77.6

Coastal & Ocean Sinks
- Protect & Restore Ecosystems
  - 78.1 / 100.1

Engineered Sinks
- Remove and Store Carbon
  - 2.3 / 4.4

Improve Society

Health & Education
- Health & Education
  - 85.4 / 85.4

Client: Project Drawdown
Date: January 2020
The landscape of solutions to the climate crisis.

Project Drawdown, a non-profit focusing on solutions to the climate crisis, reached out to me after seeing my data visualization work.

They were putting together a report that quantified the carbon reduction potential of 223 different climate solutions. They wanted a series of eye-catching visuals that could be used to present that information to an audience of policymakers.

After establishing a thorough understanding of the data and putting together a series of concepts, we decided on an approach that used circles to show the minimum and maximum potential of the solutions. The circles were then clustered into different sectors and subcategories of solutions.

The biggest challenge was showing the detail in the data while also giving the big picture, which we solved by creating an overview graphic at the front of the report, and then showing the detail of individual solutions where they were explained in the text.

The result was a comprehensive, visual guide for policymakers to the most impactful solutions for solving the climate crisis.
### Exponential Roadmap

**Client:** FutureEarth  
**Date:** June 2018 to Feb 2020

#### ENERGY SUPPLY
- Solar photovoltaics  
- Concentrated solar power  
- Wind power  
- Reduced methane emissions  
- Grid flexibility and storage  
- Other low-carbon energy

#### INDUSTRY
- Circular economy  
- Supply side efficiencies  
- Refrigerant management

#### BUILDINGS
- Digital automation  
- Retrofitting  
- Low-carbon heating and cooling  
- Low-carbon construction

<table>
<thead>
<tr>
<th>Category</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENERGY'S OWN EMISSIONS</td>
<td>5.9</td>
<td>5.29</td>
</tr>
<tr>
<td>INDUSTRY</td>
<td>16.9</td>
<td></td>
</tr>
<tr>
<td>BUILDINGS</td>
<td>9.7</td>
<td></td>
</tr>
<tr>
<td>TRANSPORT</td>
<td>8.4</td>
<td></td>
</tr>
<tr>
<td>FOOD CONSUMPTION</td>
<td>5.6</td>
<td></td>
</tr>
<tr>
<td>AGRICULTURE &amp; FORESTRY</td>
<td>6.6</td>
<td></td>
</tr>
</tbody>
</table>

#### TRANSPORT
- Mass transit  
- Bikes  
- Electric vehicles  
- Mobility and accessibility  
- Reduced air transport  
- Efficient shipping  
- Remote work and meetings  
- Low-emission trucks

#### FOOD CONSUMPTION
- Reduced food waste  
- Plant-based diet  
- Composting

#### AGRICULTURE AND FORESTRY
- Sustainable agriculture  
- Agroforestry  
- Precision agriculture  
- Farmland restoration  
- Forest management  
- Peatlands and wetlands

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Duncan Geere - Information Designer  
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Page 3 of 10
A ‘Carbon Law’ to halve global emissions by 2050.

**FutureEarth**, an international research organisation, hired me as an editor to bring together the work of an interdisciplinary team of scientists into a “roadmap” for climate action.

The goal was to show an audience of business leaders and public officials how carbon emissions must halve every decade between now and 2050 to keep global heating below 1.5C. We called this approach the **“Carbon Law”**.

As well as editing together the work of more than a dozen authors into a single compelling voice, helping define the structure, look and feel of the report, and managing layout and production tasks, I also developed a series of data visualizations showing how each sector can halve emissions by 2030 using existing, proven technologies.

The report was presented in 2018 at the **Global Climate Action Summit** in San Francisco, and we updated it in 2019 with newer data and additional visualizations.

The project also led to work on the **1.5°C Business Playbook**, showing businesses how to take a leading position in the upcoming economic transition.
Getting To Zero Emissions

Client: New Internationalist
Date: April 2019

Current Emissions

<table>
<thead>
<tr>
<th>Category</th>
<th>CO₂e* per year</th>
<th>Gigatonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buildings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current Emissions</th>
<th>gigatonnes CO₂e* per year</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy industry</td>
<td>6.2%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Energy production</td>
<td>5.2%</td>
<td>14</td>
</tr>
<tr>
<td>Transportation</td>
<td>10.6%</td>
<td>3.6</td>
</tr>
<tr>
<td>Land</td>
<td>6.5%</td>
<td>3.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Energy industry buildings transport</th>
<th>gigatonnes CO₂e* per year</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy industry</td>
<td>8.1%</td>
<td>1.4</td>
</tr>
<tr>
<td>Industry</td>
<td>5.8%</td>
<td>3.6</td>
</tr>
<tr>
<td>Buildings</td>
<td>3.6%</td>
<td>3.4</td>
</tr>
<tr>
<td>Transport</td>
<td>10.6%</td>
<td>3.6</td>
</tr>
<tr>
<td>Land</td>
<td>6.5%</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Halving by 2030

<table>
<thead>
<tr>
<th>Category</th>
<th>Reduced per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased solar energy</td>
<td>-11</td>
</tr>
<tr>
<td>Widespread wind energy</td>
<td>-14</td>
</tr>
<tr>
<td>Other renewables</td>
<td>-0.7</td>
</tr>
<tr>
<td>Better recycling of raw materials</td>
<td>-3.2</td>
</tr>
<tr>
<td>Less materials to make the same things</td>
<td>-1.0</td>
</tr>
<tr>
<td>Disassembling products to make new ones</td>
<td>-1.1</td>
</tr>
<tr>
<td>Waste reduction in production of steel plastics and other industrial materials</td>
<td>-1.9</td>
</tr>
<tr>
<td>Reduced use of refrigeration gases (CFCs and HFCs)</td>
<td>-1.6</td>
</tr>
<tr>
<td>Low-carbon heating and cooling</td>
<td>-1.1</td>
</tr>
<tr>
<td>Low-carbon construction</td>
<td>-0.9</td>
</tr>
<tr>
<td>Retraining buildings with better insulation energy efficient lighting automation and temperature and lighting</td>
<td>-1.5</td>
</tr>
<tr>
<td>Electric vehicles</td>
<td>-1.3</td>
</tr>
<tr>
<td>Increased use of public transport</td>
<td>-0.7</td>
</tr>
<tr>
<td>Bike, carsharing, scooters</td>
<td>-0.5</td>
</tr>
<tr>
<td>More efficient shipping of goods with reduced air transport</td>
<td>-1.0</td>
</tr>
<tr>
<td>Low emission trucks</td>
<td>-0.5</td>
</tr>
<tr>
<td>Halting deforestation planting trees</td>
<td>-2.0</td>
</tr>
<tr>
<td>Sustainable agriculture techniques</td>
<td>-0.9</td>
</tr>
<tr>
<td>Plant-based diets</td>
<td>-1.7</td>
</tr>
<tr>
<td>Reduced food waste</td>
<td>-0.7</td>
</tr>
<tr>
<td>Other measures</td>
<td>-0.9</td>
</tr>
</tbody>
</table>

Policies to Zero by 2050

<table>
<thead>
<tr>
<th>Policy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Carbon Tax / Carbon Pricing</td>
<td>A progressive tax on fossil fuel producers and users dramatically reduces global emissions.</td>
</tr>
<tr>
<td>Energy</td>
<td>- Renewable electricity by law and subsidies.</td>
</tr>
<tr>
<td>Industry</td>
<td>- New efficiency standards.</td>
</tr>
<tr>
<td>Buildings</td>
<td>- Solar incentives.</td>
</tr>
<tr>
<td>Transport</td>
<td>- Fossil fuel vehicles phased out.</td>
</tr>
<tr>
<td>Land</td>
<td>- Methane capture and destruction.</td>
</tr>
<tr>
<td>Justice and Equity</td>
<td>- Climate finance flows to Global South.</td>
</tr>
</tbody>
</table>

YEARLY EMISSIONS (gigatonnes of CO₂e*)

<table>
<thead>
<tr>
<th>Yearly Emissions</th>
<th>Gigatonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy industry</td>
<td>8.1%</td>
</tr>
<tr>
<td>Industry</td>
<td>5.8%</td>
</tr>
<tr>
<td>Buildings</td>
<td>3.6%</td>
</tr>
<tr>
<td>Transport</td>
<td>10.6%</td>
</tr>
<tr>
<td>Land</td>
<td>6.5%</td>
</tr>
</tbody>
</table>

EMISSIONS REMAINING

<table>
<thead>
<tr>
<th>Emissions Remaining</th>
<th>Gigatonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy industry</td>
<td>11%</td>
</tr>
<tr>
<td>Industry</td>
<td>14%</td>
</tr>
<tr>
<td>Buildings</td>
<td>7%</td>
</tr>
<tr>
<td>Transport</td>
<td>10%</td>
</tr>
<tr>
<td>Land</td>
<td>6%</td>
</tr>
</tbody>
</table>

Total Emissions Remaining: 24.3 gigatonnes

Information is Beautiful

Sources: ECOFYS, Exponential Climate Action Roadmap, Project Drawdown, IEA

Duncan Geere - Information Designer
www.duncangeere.com
Climate solutions for a general audience.

While working for Information is Beautiful, I was approached by New Internationalist magazine to design a graphical blueprint on how we might get to net zero carbon emissions.

Drawing on my deep knowledge of environmental science and climate change, as well as my work on the Exponential Roadmap, the IIB team and I put together this graphic.

Optimised for a general audience, it breaks down the different sources of our current emissions, and then lays out how we can reduce them.

The biggest challenge was the uncertainty inherent in predicting the future. We handled this by choosing not to quantify the far-future solutions – presenting them as a simple list instead.

We then solved the resulting problem of the use of different kinds of visualization with the clear use of colour, and making sure time runs left to right across the page.

The result is a three-step data narrative that readers can use to understand how the world can reach zero emissions by 2050.
Beautiful News

Client: Information is Beautiful
Date: Jan 2019 - Jan 2020

Every Single Year We’re Adding More and More Solar Power

Global Tree Cover Is Expanding

Almost Half of California’s Electricity Now Comes from Renewables

Biodiversity Is Flourishing in the Thames

Atmospheric Acidity Is Back to Normal

Renewables Are Rapidly Outpacing Coal

Female and Male Literacy Rates Have Almost Equalised

In-Stream Hydro Generates Zero-Carbon Power Without Environmental Damage

Slavery Is Illegal Almost Everywhere

Livestock Fed Seaweed Emits Less Methane

Everyone, Everywhere is Living Longer average life expectancy in each country

Some EU States Are Recovering Almost All Plastic Packaging

Sweden Sends Almost No Trash to Landfills

25% or more of the plastics produced each year end up as waste

www.duncangeere.com
A chart a day; the world becoming a better place.

The biggest project I worked on during my time at Information is Beautiful was called Beautiful News. It’s a collection of 365 data visualizations, - released daily for a year.

I coordinated and managed the team working on the project from the start of production, building the systems and processes necessary to shepherd each graphic from a rough idea to a polished product.

I also contributed in terms of sketching and developing concepts, researching data, designing the graphics, developing the audience for the project, and perfecting the editorial elements.

At the time of writing, the project has amassed 40,000 Instagram followers, 14,000 Twitter followers and 10,000 Facebook followers. It has earned plaudits from Bill Gates, Max Roser, Steven Pinker and other thought leaders.

Most importantly of all, it’s fighting the dominant media narrative that the world is a terrible place that’s getting worse. Instead, it highlights the slow developments and quiet trends that go unseen and uncelebrated.
Carbon in Context

An alternative to log scales for comparing diverse numbers.

When communicating climate change, the media throws around kilograms, tonnes and gigatonnes of carbon, but it’s hard for a general audience to understand how they compare.

To solve this problem, I developed a new type of chart. Instead of the poorly-understood log scale, I stacked a series of linear scales on top of each other. Each scale makes up just a tiny sliver of the one below.

To ensure this new graphical form was effective, I went through several rounds of user testing. During the process the visual forms changed a lot and the communication of information improved dramatically.

The resulting graphic allows the viewer to quickly put emissions figures into context, finding others that are comparable.
Air Travel Inequality

Client: Personal Project
Date: September 2019

A poster raising awareness of the injustices around climate action.

A common belief is that the most impactful thing you can do to reduce your carbon footprint is to stop flying, but this is not true. For most people, a short-haul family holiday each year makes a negligible contribution to global emissions.

To combat this misconception, I created a simple poster that visualizes UK transport statistics from the UK Department of Transport. It shows how a very small number of people are responsible for a majority of the UK’s aviation emissions.

Individuals can and should aim to reduce their personal emissions, but a focus on individual action distracts from the need for larger structural changes in how our society operates.

This personal project was created to further my goal of encouraging effective climate action. The colour scheme calls to mind the transition from a cooler to a warmer world, as well as clear blue skies, while the shapes resemble the wings and tail fins of aircraft.

The poster was created in Figma, and published on the web where it can be freely downloaded and used with a “No Rights Reserved” public domain license.
Get in Touch

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