

Ten Principles of Good GraphicsSM

Visualizing Complex Information to Support Strategic Analysis & Decision-making

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TRUTHstudio brings clarity to strategy and communications. We specialize in research, analysis, strategy, and information design. We support organizations and initiatives working in the public interest.

This handout is adapted from a poster highlighting 10 principles that we have learned in our work helping clients and collaborators to visualize complex information to support strategic analysis and decision-making.

Contact: Jason Pearson / jason@truthstudio.com / +1 202 642 2336

OUR THEORY OF CHANGE
visualization of a system
supports
understanding of system relationships
enables
prioritization of leverage points
guides
action to achieve goals

TRUTHSTUDIO

Prototype with humility.

www.truthstudio.com

Example / Explanation

1. Be clear in your **purpose** for visualization.

Is my purpose to experiment with visualization methods?

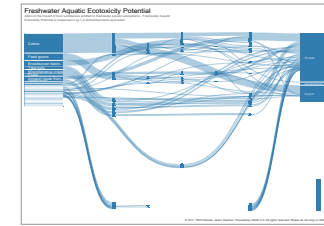
To explore the data? To explain my results?

Economy Map 2.0

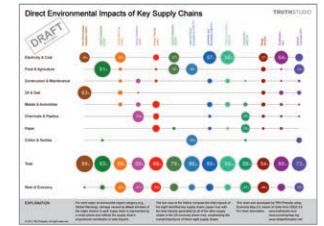
Economy Map uses economic input-output life cycle assessment (EIO LCA) data to provide a visual explanation of how economic demand signals in one part of the economy drive environmental impacts elsewhere in the economy. In developing the project, we started by **experimenting** with different visualization methods before settling on three visual modes: circle, bar, and flow. In the next phase, we used the flow (network) mode, in particular, to **explore** the data, looking for significant leverage points in the economy where policy or advocacy might achieve positive influence. Finally, we created a set of custom visualizations to **explain** our conclusions: that eight key supply chains drove 50-99% of environmental impacts in the US economy.

Data source: CEDA 3.0

EXPLORE



EXPLAIN



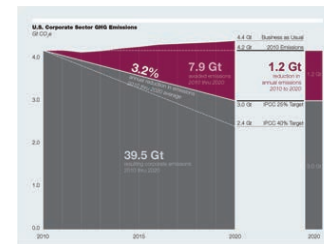
2. Create a **hierarchy** of messages and information.

What is the primary message? What is secondary? Tertiary?

The 3% Solution

TRUTHstudio developed a series of charts that visually communicate key messages of *The 3% Solution*, a WWF/CDP/McKinsey report that describes an opportunity, over the next ten years, for the US corporate sector to invest in a 'Carbon Productivity Portfolio' that would capture almost \$200 Billion in net present value (NPV) revenue/savings while simultaneously achieving the level of greenhouse gas (GHG) reductions (1.2 Gt CO₂e) recommended by the Intergovernmental Panel on Climate Change (IPCC) as their "25% Target" for the US corporate sector. The charts convey the concept of a "carbon budget": the maximum amount of carbon that we can afford to emit over the next 40 years without risking serious climate consequences.

Client: WWF-US



PRIMARY

- Overall scale of reduction
- 3% annual reduction

SECONDARY

- 1.2 Gt 2020 reduction target
- Ratio of avoided emissions

TERTIARY

- IPCC target levels
- Additional details

3. Emphasize the **information/data**.

Is the key data (or key message) the boldest element on the page?

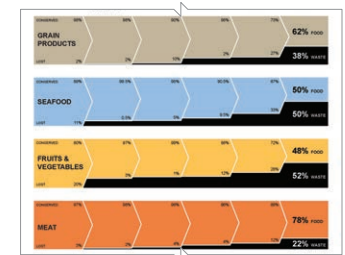
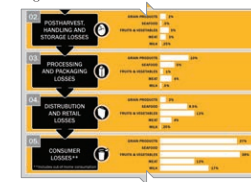
Food Waste in North America

These charts show where food waste is generated in five key supply chains in North America. The data is drawn from the excellent 2012 NRDC report, *Wasted: How America is Losing up to 40 Percent of its Food from Farm to Fork to Landfill*.

The original chart in the report did not provide an intuitive visual understanding of where waste occurs in each supply chain. The revised version, proposed as an alternative to the graphics published in the original report, emphasizes the most important data: the amount of food wasted in each supply chain phase.

Sources: FAO, NRDC

original version



4. Match data **variables** to retinal variables.

Does more than one retinal variable (color, shape, location, shade, pattern) change when one data variable changes?

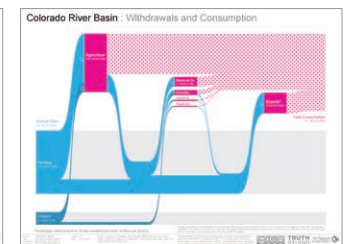
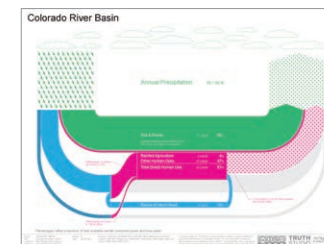
Visualizing Water

Visualizing Water is a collaboration with The Nature Conservancy (TNC) to create a series of graphics that can be used by environmental advocates to explain water systems at global and regional scales. The project aims to provide advocates with effective tools to communicate complex concepts to non-technical audiences in order to support better decision-making. In this project, retinal variables are mapped to data variables as follows:

size (width)	volume of flow relative to overall annual flow
color	role/disposition of water in context of overall system
location	position of flow/activity along annual cycle

Note that only one visual variable (size, color, location) changes with any change in a single data variable describing the physical system.

Collaborators: The Nature Conservancy (TNC), National Geographic



5. **Prototype** with humility. (Iterate, iterate, iterate!)

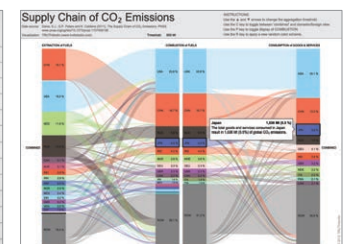
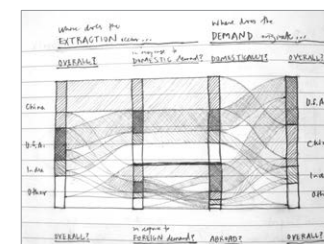
Have I tried other ways to represent this information?

Have I solicited feedback from others?

Supply Chain of CO₂ Emissions

If burning fossil fuels (coal, oil, gas) is a major cause of anthropogenic (human-caused) global warming, which countries are most responsible? There are three ways to answer this question: 1) Where are fossil fuels extracted; 2) Where are they burned; and 3) Where does the economic demand originate that drives their combustion? To explore these questions, TRUTHstudio created interactive visualization of a dataset developed by Davis et al., in order to highlight linkages in the data, showing visually, for example, that not much of the coal burned in China is caused by American consumer demand for Chinese goods, and that fossil fuel emissions are generally a domestic problem: an important policy conclusion. Development of the visualization involved multiple iterations to arrive at a final working prototype.

Data source: Davis, Peters, and Caldeira. *The Global Supply Chain of CO₂ Emissions*



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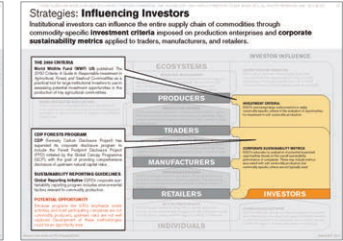
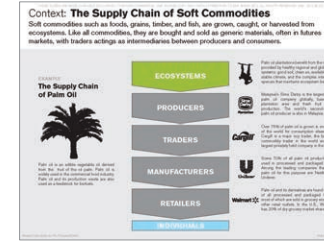
Example / Explanation

6. Create a consistent visual vocabulary in a series.

Have I minimized variation of background context across multiples in a series?

NGO Work on Soft Commodities: A Strategic Landscape Review

TRUTHstudio was commissioned by the Environmental Defense Fund (EDF) to provide a framework for understanding the landscape of non-governmental organizations (NGO's) working along the supply chains of soft commodities, and to document key system-level insights that emerged from interviews with the leadership of these organizations. The final report includes a series of slides that visually map the supply chain of a typical commodity and then locate various NGO strategies in relation to this supply chain. The full version was used by EDF internally for strategic planning and a public version of the report was circulated to interviewees. The slides use a common vocabulary and layout to progressively build a strategic narrative, one step at a time.
Client: Environmental Defense Fund (EDF)



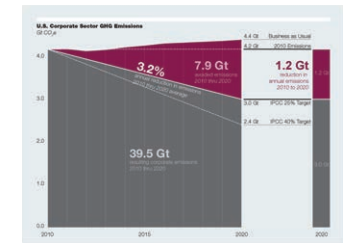
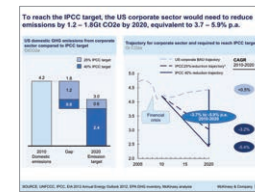
7. Integrate visual information wherever possible.

*Is there redundancy that can be eliminated?
Can different graphics be combined?*

The 3% Solution (PowerPoint Version)

In addition to the charts that TRUTHstudio developed a series of PowerPoint slides to supplement the charts created to visually communicate key messages of the WWF / CDP / McKinsey report, *The 3% Solution*. In both the PowerPoint slides and in the report charts, information that had been represented on multiple slides or in separate charts was condensed to create integrated graphics that demonstrated the relationship between data components and provided a more coherent overall understanding of the messages of the report.
Client: WWF-US

original version

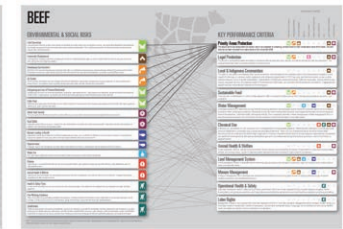
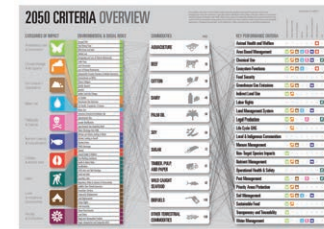


8. Focus information design where it counts.

Where should I invest design time for maximum understanding?

2050 Criteria: A Guide to Responsible Investment

This series of information graphics was developed in collaboration with the World Wildlife Fund (WWF) as part of *The 2050 Criteria: Guide to Responsible Investment in Agricultural, Forest, and Seafood Commodities*, a guidance report for loan officers at international financial institutions. The report provides a summary framework for mainstream financial actors to promote the global sustainability of 10 major global 'soft' commodity sectors. In light of the project's limited budget, TRUTHstudio focused the majority of design time on the creating a flexible template that could be used to create one dense, two-page summary layout for each commodity, together with an overview layout that doubled as a table of contents.
Client: WWF-US



9. Specify your needs, priorities, and audiences.

*Where do I want graphic design? Infographics?
Information design?*

The best communication designs emerge from a clear understanding of the unique needs, priorities, and audience for a specific project and context. As a simple shorthand, it may be useful to think about three types of visual communications design, each of which has a different goal:

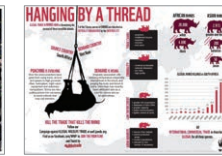
- graphic design The designer will work to make it *beautiful*.
- infographic The designer will work to make it *fun*.
- information design The designer will work to make it *accurate*.

While these objectives and modes are not mutually exclusive, it is worth being clear, as both client and designer, about the needs, priorities, and audience for a specific design. The more clearly these are defined in advance, the more successful the final design is likely to be.

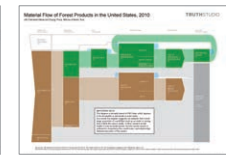
GRAPHIC DESIGN Designer works to make it *beautiful*.
INFOGRAPHIC DESIGN Designer works to make it *fun*.
INFORMATION DESIGN Designer works to make it *accurate*.



Source: WWF



Source: WWF



10. Learn from existing examples.

Have others visualized similar issues?

A wide range of online and print resources are available to support background research on existing and historical approaches to different information design challenges. Prior to initiating a new design exercise for visually communicating a specific type of complex information, it makes sense to consult these resources. In many cases, more than one information designer has already confronted the same challenge, and reuse or adaptation of their design may prove the most efficient solution. In other cases, review of design solutions for analogous types of information may suggest a parallel or related solution. As the online community of information designers grows, online collaboration and dialogue is increasingly possible, as well.

ONLINE RESOURCES



edwardtufte.com infosthetics.com flowingdata.com visualizing.org visualized.com

PRINT RESOURCES

Tufte, E. *The Visual Display of Quantitative Information, Envisioning Information, The Cognitive Style of Powerpoint*
Bertin, J. *The Semiology of Graphics*