



Adaptation Strategies



Four models for adapting to climate change will emerge over the coming decade, pairing simple and complex strategies with conditions of constraint and transformation.

A decade ago, the dialog about climate change began with a focus on *mitigation*: how can we slow or stop it? More recently, scientists and technologists have turned their attention to *geoengineering*: international efforts to modify large-scale climate systems in order to reduce the impact of global warming. But as we enter the next decade, there's growing discussion about a third approach that we need to watch carefully: *adaptation*. Adaptation is the process of making persistent local changes in response to changes in the broader context. Put more simply, adaptation means changing ourselves to deal with a changing environment. Over the next decade, as climate effects worsen, we will explore surprising combinations of simplicity and complexity, constraint and transformation, in our search for the most effective strategies for climate adaptation.

—Jamais Cascio

critical balances



DISINTEGRATION
integration

Simple but transformative strategies leverage disintegration to create simple building blocks of entirely new systems of materials and energy.



EXPOSURE
accountability

Simple adaptive strategies may reduce risks of unwanted exposure, but complex strategies could provide greater accountability on a greater scale.



PERSUASION
regulation

Persuasive tools and platforms speed the adoption of complex strategies for managing climate constraints.

climate: adaptation strategies

ADAPTATION STRATEGIES:

SIMPLICITY VS. COMPLEXITY

Adaptation attempts to reduce the amount of friction between the capabilities of a group and its survival requirements. Although reducing friction often means simplifying systems, adaptation does not inherently demand simplification. Increased complexity can also be adaptive; indeed, the evolution of human civilization shows ongoing adaptation through complexity.

We don't have to rule out simplicity, of course. Strategies that seek to reduce the "brittleness" of a system by reducing dependencies can be adaptive, as with efforts to shorten supply chains and reduce the variety of production inputs. As a strategy for dealing with climate disruption and energy uncertainty, the increasingly popular local food movement is an example of adaptive simplicity. Proponents hope that combining smaller scale, local logistics, and more direct visibility of risks provides greater flexibility in response to an increasingly uncertain climate. Conceptually, migration can also be a form of adaptive simplicity: people respond to a changing environment simply by leaving it.

Adaptation through complexity means meeting the demands of a changing environment by creating or altering interconnected systems to fit the new landscape better. This new complex system may have new dependencies, but it may also have increased power to achieve necessary goals. Breeding crops to withstand temperature extremes is an example of a complex adaptation to climate disruption, as is a shift to hybrid and electric personal vehicles.

“ We're really going to have to have a better appreciation of the role of oceans in climate and how a changing ocean will affect us all. Most people are living near the ocean, along the coast. As sea level rises and as the ocean changes and becomes warmer, it will be invading our world in completely new ways. We'll have ocean water in our backyards. So the key is to begin to understand that climate change is fundamentally an ocean issue. ”

Wallace "J" Nichols
Ocean Scientist and Activist,
Ocean Revolution



“ The best way to empower people to address climate change and rise to the occasion is to build tools and platforms that enable the population to act. The approach we're taking is to focus on frontier markets, developing economies in places such as India or Kenya, and provide them with tools that enable them to create their own indigenous solutions. The ability to take action and take control into your own hands, to come up with a solution, I feel is the best way to enable a community to adapt and combat climate change. ”

Mike Lin
CEO, Fenix International



ADAPTATION CONDITIONS: CONSTRAINT VS. TRANSFORMATION

Another filter we can use to understand adaptation looks at the broader conditions that limit our adaptive strategies. Often these conditions are set by the values and expectations of society. The “alternate scenario archetypes” that we explored in the *2010 Ten-Year Forecast* provide a useful framework for thinking about the conditions we expect to adapt to. *Growth. Collapse. Constraint. Transformation.*

Each of these embodies a set of conditions that determine the practical frame for our adaptive response. In a global economy that tends to swing between cycles of growth and collapse, we often focus on those conditions to the exclusion of constraint and transformation. But the alternatives—constraint and transformation—can actually provide more fertile ground for innovation.

Adaptation under constraint can be thought of as “doing more with less.” In a constraint scenario, existing options and resources have become limited. Adaptation here is often intended to maintain existing capabilities with fewer or degraded resources. Efforts to use resources more efficiently, to reduce costs without reducing benefits, and to minimize waste outputs are all values that find expression in an environment of adaptive constraint.

Adaptation under transformation, conversely, focuses on embracing new systems and taking advantage of new capabilities in evolving systems. The goal is less to maintain existing capabilities, and more to re-imagine the potential of a system or systems. An emphasis on experimentation, an acceptance of high-risk/high-reward situations, and the disruption of existing technological, economic, and social models are all hallmarks of an adaptive transformation environment.



Pablo Handl
Founder, Saõ Paulo Hub

“ How do great ideas actually get generated? Most actually come from a failure loop. Experiences of unsuccessful projects feed together and then become something useful. What would happen if, instead of incentivizing success so strongly, we find a way, a very concrete way, a monetary way, to incentivize people sharing what they did wrong and other people listening to it and building on that. ”

ADAPTATION MODELS: FOUR LENSES

The combination of these two adaptation strategies and two adaptation conditions gives us a set of lenses through which we can see a set of forecasts for climate adaptation.

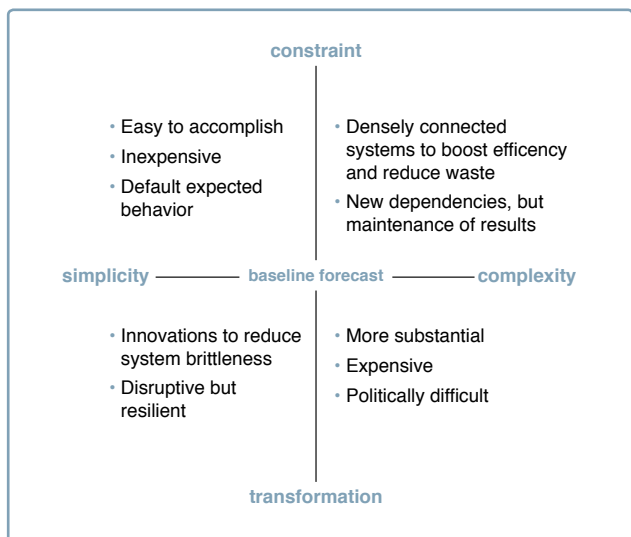
Simplicity/Constraint and Complexity/Transformation are, in many respects, the baseline forecasts. Much of what we think of as personal sustainability efforts, such as switching to compact fluorescent light bulbs, falls into the Simplicity/Constraint model. As these approaches are generally easy to accomplish and inexpensive, we will see their continued growth over the next ten years, and they may even become the default expected behavior in a world of slow growth and/or local collapse. Their overall impact tends to be low, however, which is why the more substantial plans to fight climate disruption, such as the redesign of urban habitation and transportation systems, tend to fall into the Complexity/Transformation model. These, too, will continue to grow over the next decade, particularly in frontier economies where investment will spur impressive local growth.

While less obvious, Simplicity/Transformation and Complexity/Constraint adaptation models are also possible, and it's within these paradigms that we can see the more surprising, and potentially more disruptive, outcomes. Simplicity/Transformation looks to lightweight implementations of emerging innovations to help reduce system brittleness; distributed energy production, for example, uses small-scale building-block technologies to transform a complex large-scale infrastructure and increase energy grid reliability and resilience. Complexity/Constraint, however, relies on densely interconnected systems to boost efficiency and reduce waste; carbon-trading regimes, for example, are both inherently complex and the product of constrained conditions.

We can think of these four models with shorthand labels:

- The Light Bulb model is Simplicity/Constraint
- The Hybrid Car model is Complexity/Transformation
- The Distributed Energy model is Simplicity/Transformation
- The Cap & Trade model is Complexity/Constraint

Over the next ten years, we'll see many examples of Light Bulb and Hybrid Car adaptations. They will spread rapidly but will have less impact than the Distributed Energy and Cap & Trade models. While there will be fewer of these less obvious adaptations, they will be the zones to explore if you want to uncover the most surprising innovations.



IFTF

Adaptive strategies (Simplicity and Complexity) intersect with adaptive conditions (Constraint and Transformation) to create a grid of possible adaptive responses to climate change. These **four innovation zones of climate adaptation** can be used both to forecast innovations in the coming decade and as a framework for expanding the innovation zones we explore.



IFTF

Present-day signals of the four innovation zones can serve as shorthand tags for them. Light Bulb and Hybrid Cars are the baseline innovation zones where much of the innovation will happen. Distributed Energy and Cap & Trade are emblematic of the kinds of the innovation zones that will offer up the big surprises.

the quick list

- › *Deep Economy: The Wealth of Communities and the Durable Future*, Bill McKibben. *New York Times Books*, 2008
- › *Plan B 4.0*, Lester Brown. Washington, D.C.: Earth Policy Institute, 2010

- › *Worldchanging: A User's Guide for the 21st Century*, Alex Steffen, ed. Revised and updated 2011