

The Next Decade's Top Sustainability Trends [WorldChanging Team](#), 5 Jan 10

By Warren Karlenzig

What trends are likely the next ten years? One thing for sure, 2010 through 2019 will be one day looked at as 1) the turning point for addressing climate change by using effective urban management strategies, or it will be remembered as 2) the time when we collectively fumbled the Big Blue Ball.

1. Bikes Culture 2.0

Time period: 2010-2019

Around the world, bicycles are becoming a potent talisman of our urban post-carbon future. The city of Copenhagen is making noise to replace the Little Mermaid of Hans Christian Andersen fame with something two-wheeled. Copenhagen residents use bikes for 37 percent of all their transit. But bikes in Europe represent more than utility; riding a bicycle with the Velib' bikeshare program in Paris now easily competes (42 million registered users) with taking a spring walk along the Seine. Bikesharing abounds in dozens of European cities as well as in Rio de Janeiro and Santiago, Chile. Look for North American burgs to continue their proliferation of bicycles-as-transit use and bike lane expansion (NYC bicycle use is up 61% in two years). Bikesharing on a large scale should follow new programs in Montreal, Washington DC, and Minneapolis. Note to China: time to reclaim your status as the world's "bicycle kingdom."

Indoor bicycle parking will be common in commercial garages and offices even in businesses like cafes, bars (Gastalt Haus in Fairfax, California, is pictured above), stores and restaurants. On public transportation bicycles will be allowed access at any time. In short, bicycles and their riders will become legit, which will influence fashion, the economies and the design of cities in particular. As musician-turned-bike-rack designer David Byrne observed in his surprise 2009 bestseller *Bicycle Diaries*, US metro areas in particular might have to be re-engineered completely in some cases to accommodate this massive social transformation:

I try to explore some of these towns--Dallas, Detroit, Phoenix, Atlanta--by bike and it's frustrating. The various parts of town are often "connected"--if one can call it that--mainly by freeways, massive awe-inspiring concrete ribbons that usually kill the neighborhoods they pass through, and often the ones they are supposed to connect as well.

2. Mexico City, Climate Change, and the Future of Cities

Time Period: November-December 2010

Because "Nopenhagen" was a semi bust, the Mexico City United Nations Climate Change conference is taking on much bigger proportions than initially envisioned. The UN COP15 Copenhagen conference resulted in no binding treaty status among any of the attending 128 nations that attended for them to reduce global greenhouse gas emissions. This year's late fall gathering in Mexico City is likely to set national binding targets for greenhouse gas emissions. If enacted, these targets will set the stage the coming entire decade's greenhouse gas reduction strategies, including sub-national efforts at the regional and city level. After disappointment in Copenhagen, UN Secretary Ban Ki-moon lost no time in preparing for Mexico City, calling on world leaders to sign a legally binding carbon-emission reduction treaty and to contribute to a multi-national fund for developing nations that will be opened this month. Let's hope such a fund adequately addresses sustainable urban development in Asian cities, whose currently unregulated hyper-growth is expected to contribute more than half the world's greenhouse gas increases between now and 2027.

3. The Rise of Cellulosic Biofuels

Time Period 2014-2019

Creating conventional biofuels from corn, soybeans and palm oil as an alternative to petroleum-based gasoline hit numerous roadblocks in the past decade. Carbon-sequestering rainforests in Indonesia continue to be burned down for palm oil plantations; this unforeseen consequence of biofuel demand caused the European Union to back off on large orders of palm oil. Another big unintended consequence emerged when crude oil prices rose to record levels in 2007-2008. Biofuels, including corn-based ethanol created competition for agricultural land, resulting in an increase in the cost of food staples. Global corn prices, which biofuels caused to increase an estimated 15% to 27% in 2007 alone, was especially impacted

Cellulosic biofuels, in contrast, offer the promise by the middle of the decade of creating a viable energy source (one of many that will be needed) from waste products, such as wood waste, grasses, corn stalks, and other non-food products. The trick will be to balance land use with energy production http://news.mongabay.com/2008/0602-ucsc_rogers_biofuels.html so that unintended consequences, particularly burning rainforests and urban food price riots (Mexico City in 2007 pictured above) will be a thing of the past. Backed by research funding from the Obama Administration's US Department of Energy (DOE), companies such as Mascoma Corporation and Amyris Biotechnologies (with former Amyris founder Jay Keasling now at the helm of the DOE Joint Biosciences Energy Institute) are some of the current leaders in the quest for a non-food biofuel.

4. The marriage of ICT and Green Cities

Time Period: 2013-2019

Called "the great digital underbelly" of new and retrofitted sustainable cities by Gordon Feller of Urban Age, green ICT (information and communications technologies) holds promise for increasing the energy and resource efficiency of most aspects of urban development. If these technologies can offset their operating and production resource impacts (estimated to use 2-3 percent of total industry energy used, but forecast to double by 2022), the world could benefit from initial increased efficiencies in the 15-25 percent range. A crowded field of IBM, Cisco, General Electric, Siemens and others is positioning for implementing new ICT for sustainability in cities, demonstrating applications at the pilot project level. Cities with pilot or operating projects in green ICT include Amsterdam, San Francisco, Masdar City (United Arab Emirates), Seoul, London, Singapore, Beijing, New Delhi, Mumbai, Stockholm and Oslo. The following are Green Smart City applications and examples of companies involved:

- o traffic congestion monitoring and pricing systems: IBM, Capita Group
- o water applications (leakage detection, purification): IBM, Siemens
- o building applications (sense-and-respond technologies to monitor temperature, light, humidity and occupancy): Johnson Controls, Siemens, IBM
- o intelligent public transportation and logistics: PwC, Samsung, Cisco
- o public shared offices with telepresence (pictured above): Cisco, Hewlett-Packard
- o home and office smart appliances that can tie in with smart grid energy applications: General Electric, AT&T, Whirlpool
- o smart grids: General Electric, Schneider Electric, SAP, Oracle, ABB
- o data centers for cities: Google, Hewlett-Packard, Cisco
- o carbon inventories and carbon accounting: Microsoft, Oracle

5. Implementation of Carbon Taxes

2010-2019

Exxon Mobil surprised many in early 2009 when it called for a carbon tax as a way to address global climate change. Whether the former denier of global climate change got religion remains to be seen. Carbon taxes have been proposed for oil, natural gas and coal by many as a way to adjust former so-called market "externalities," or impacts beyond classically defined air pollution, which now includes greenhouse gas emissions in the United States. A handful of nations have some form of carbon tax, mostly in Scandinavia. On the sub-national level, British Columbia and the San Francisco Bay Area recently proposed some form of the tax. Costs for carbon taxes can be passed on to consumers directly, or they could be levied on industry, which would likely cause manufacturing and operating costs to be wholly or partially passed onto consumers.

Currently, the costs of producing and using fossil fuels does not take into account the vast damage these activities do to the earth's climate, which is gaining atmospheric carbon dioxide concentrations that endanger at a rapid rate the climate, ecosystems and people's health, and the economy.

6. The First Big Urban Climate Change Adaptation: Drought

2010-1019

A major effort at climate change adaptation is underway in California as well as other urban areas that are experiencing or are likely to feel the early effects from climate change. Prolonged droughts consistent with the impacts of climate change are being seen in Beijing, Southwestern North America (Mexico City/ LA, etc.) and urban areas in Southeast Australia.

As Maude Barlow writes in her 2008 book *Blue Covenant*, cities are becoming hotspots not only for suffering from the effects of water shortages, but in many cases urbanization may be actually creating or exacerbating the severity of drought:

Massive urbanization causes the hydrologic cycle to not function correctly because rain needs to fall back on green stuff -- vegetation and grass -- so that the process can repeat itself. Or we are sending huge amounts of water from large watersheds to megacities and some of them are 10 to 20 million people, and if those cities are on the ocean, some of that water gets dumped into the ocean. It is not returned to the cycle.

Adaptation strategies will focus on preparing government, business and citizens for extreme heat events, wildfires (including urban/suburban wildfires), disease, and large-scale migration of populations from impacted areas. Some of the efforts will involve education and community outreach, such as Chicago's efforts to alert the elderly and handicapped to imminent heat waves, or having people check on others that may be vulnerable when conditions warrant. Other measures will require huge chunks of investments in urban public and private infrastructure to prevent coastal flooding and to store dwindling seasonal water supplies, while health and professionals are likely to be first responders to new climate change-boosted disease outbreaks, such as dengue fever. The military is also likely to be added to the mix of climate change adaptation actors.

7. End of Cheap Oil/ Onset of Fossil Fuel Shortages

2012-2019

Besides fresh water, oil is the most threatened increasingly imported resource in developed economies. Energy shortages or supply disruptions are expected to continue to develop because of political acts, terrorism, warfare and natural disasters. The issue is not that the reserves are "running out," but that getting at the remaining oil in a cost-effective manner is becoming increasingly more difficult, as has been outlined in multiple books by author Richard Heinberg (*The Party's Over, Peak Everything*) and others. As former Shell Oil CEO Jeroen van der Veer said in a 2008 email to employees, "Shell estimates that after 2015, supplies of easy-to-access oil and gas will no longer keep up with demand." Add the coming impacts of global climate change regulations to the scarce oil equation (see Trends numbers 2 and 5 in this post), and oil will continue to be an unpredictable flashpoint for the world economy. In 2007-2008, rapidly rising oil prices helped trigger a deep world recession; during the next decade oil may set off a chain of economic and civil events that could be far more severe.

With market uncertainty for oil prices and oil supplies, this new decade will witness the sunset of exurban-style automotive dependant sprawl in the United States and in many overseas copycat developments, particularly Asia. The overbuilt market for large, totally car-dependent single family homes in outer suburbia is expected by even some developers to not be viable for almost a decade, even if oil prices and supply stay relatively stable. A prolonged recurrence of oil prices above \$100-150 a barrel will drive a stake through the heart of the exurban car-only model of real estate speculation, and will hit many other elements (food, imported goods, oil-based products) of the Western economy.

8. Focus on Urban Agriculture and Foodsheds

Time Period: 2012-2019

As fuel prices rise and unexpected energy shortages occur, food prices will rise rapidly, especially for food that must be transported long distances via airplanes, stored and processed. The alternative is greater local and regional food production in and around cities. Existing cities in Latin America (Havana, Cuba--pictured above--and Quito, Ecuador), Africa (Dar Es Salam, Tanzania; Kampala, Uganda) and Asia (Seoul, South Korea), have produced significant quantities of produce or aquaculture within their city limits. Cities in North America that have maintained or are building or rebuilding strong regional food networks include Seattle, Honolulu, Boston, Philadelphia and San Francisco. Some newly planned cities are being engineered to produce significant amounts of food that can also be used as a potential energy source or rich compost nutrient. Examples include Masdar City in Abu Dhabi (United Arab Emirates) and a supposedly scalable community plan called NewVista that is expected to be prototyped in the United States and in Asia: both are innovating the production of food from algae and other low-energy input nutrient sources.

9. Resiliency planning: cities, towns, homes

Time Period: 2010-2019

Resiliency is about making a system or one's self stronger and more able to survive adversity. As the previous items portend, there will no shortage of adversity during the coming decade from climate change and energy supply instability. One of the major social phenomena related to resiliency has been the emergence of the Transition Town movement, which has grown from a few villages in the United Kingdom to Barcelona, Spain, Boulder, Colorado, and Sydney, Australia. The founder of the phenomena, Rob Hopkins, also a Post Carbon Institute Fellow, has used his transition model of Totnes, United Kingdom, to devise a global organizational playbook. The purpose of transition thinking is to prepare people for potential shortages in global energy supplies and food caused by peaking oil and climate change. In contrast to earlier "off-the-grid" movements of the 1970s, Transition Towns can be located in urban neighborhoods as well as in the distant boonies, and they focus on community-scaled solutions in transportation, health, economics and people's livelihoods and personal skills. Tactics of local groups vary

widely, with events ranging from the familiar--clothing swaps and art festivals to the seemingly more obscure--"unleashings,"--to policy-laden activities, such as launching a long-term (15-20 years) "Energy Descent Action Plan." The emphasis is on understanding and using collective community resources, including knowledge and skills, that people have in their own sphere of influence, versus waiting for top-down government decrees.

10. Sustainability Movie/ Novel /Art/ Song

Time Period 2010-2019

There has yet to be a significant work of popular art that I am aware of that captures the modern systemic aspirations of sustainability. In terms of modern life, some works have focused on environmental destruction, (Marvin Gaye's song "Mercy Mercy Me"), the terror of abrupt climate change (the unsuccessful 2004 film *The Day After Tomorrow*), the international political subterfuge behind oil (2005's *Syriana* with George Clooney, one of my personal favorite films), and the destruction of natural systems (Dr. Seuss's 1971 book *The Lorax*) or cultural/species depletion (James Cameron's 2009 film *Avatar*), but no novel, song, painting or movie has come close to depicting a fictional world of what holistic sustainability solutions might look like, even feel like.

Odds are that breakthrough art successfully depicting sustainability will feature urban life in some fashion. After all, cities have gone from being perceived as the opposite of what the "environmental movement" has been trying to save, to ground zero for this new revolution that is launching in a city or neighborhood near you.