Dystopia in the world of utopia: Unsustainable realities of sustainably themed expositions

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ABSTRACT: Since the 1970s international expositions have celebrated advances in science and technology as potential ways to lessen modern man's impact on Earth's natural resources. Expositions held in the past couple of decades have presented themes that more directly relate to issues of sustainability. This paper explores the disconnect that exists between the utopian ideas promoted at these "sustainable" expositions and the dystopic realities of the events themselves. In particular, it does this by revealing how both the immense quantity of resources used in the creation and operation of these short-lived events and the decomposing remnants left behind after closing day present tangible evidence of the failure of "sustainable" expositions to reflect fully the fundamental principles that organizers set out to disseminate at these grand, festive events.

KEYWORDS: Expositions, World's Fairs, Sustainability, Utopia, Dystopia

INTRODUCTION

In 1992 the city of Hanover, Germany commissioned William McDonough Architects to prepare guidelines for the construction of Expo 2000. Known as the *Hannover Principles*, the series of declarations McDonough produced addresses the rights for humanity and nature to co-exist in a holistic and sustainable manner, and calls for the optimization of the full life-cycle of products and processes to prevent waste (McDonough 1992).[1] While the *Hannover Principles* have played a significant role in setting the stage for current attempts to *green* modern society (at least in rhetoric and theory), their actual impact on Expo 2000 and, more specifically the site of the event, has been considerably less than what organizers initially envisioned. This paper examines the disconnect that has arisen not only at Hanover but also at other more recent world exposition between the utopian visions of a more sustainable world projected by fair organizers and the reality of the events themselves, particularly in regards to the physical remains of the fairgrounds after closing day festivities have faded into memory.

1.0 Exposition Themes

Since the first international exposition, held in London at the Crystal Palace during the summer of 1851, world's fairs have served as events where nations and corporations could promote ideas, goods, and services to visitors from all over the world. Over the years, these fairs have exhibited a variety of important underlying agendas. For example, expositions held in the nineteenth century highlighted agricultural and industrial advances, including inventions like the McCormick Reaper and the electric light bulb. After the turn of the last century, European fairs were used to maintain and generate greater interest in colonization among both the host country's residents and the subjugated peoples of the colonies during an era when public support for colonization was beginning to wane. In the 1930s, a series of American expositions were held to promote a better tomorrow through highlighting manufactured goods made possible by advances in science and technology in the hope of drawing the nation out of the Great Depression through increasing consumption. In Europe, events, such as the 1937 *Exposition Internationale des Arts et Techniques dans la Vie Moderne* in Paris, tried to hide the emergence of growing political tensions in Europe during the lead up to World War II through the presentation of magnificent festivities.

After an 18-year hiatus due to upheaval from World War II, international expositions returned to a significantly altered world. The central focus of the events evolved to reflect new political and technological realities. While the promotion of corporations and their consumer products continued, the Cold War cast a new competitive atmosphere on expositions, especially apparent in the displays of space-age technology found in the massive Soviet and U.S. pavilions as the two countries battled for the hearts and minds of the peoples of the world. The devastating impact of the atom bomb witnessed in August 1945 caused eyes to open to the darker side of advances in scientific technology. Although Expo '58, the first international exposition held after the war, dramatically celebrated atomic energy with its centerpiece the Atomium, a 335-foot tall giant model of a unit cell from an iron crystal magnified 165 billion times, the fair also began to address more fully the immense impact of modern technology on mankind (*Futuristic and Universal Since* 1958). By the 1970s, as awareness of pollution, population growth, and human-related destruction became more apparent, reactions to the negative effects of human action and inaction on the world's environments and the rapid use of limited resources began to shape the central agenda of these international fairs.

2. Expos and the Environment

While nineteenth-century expositions relied upon themes to help generate publicity, they typically acknowledged the anniversary of major historic events. The 1889 *Exposition Universelle* in Paris celebrated the centennial of the storming of the Bastille, while the 1893 Columbia Exposition in Chicago commemorated the 400th anniversary of Christopher Columbus's discovery of America (albeit a year late). The visibility of the themes themselves at the events was usually limited to historic reenactments and related imagery on souvenirs. Central themes began to become more pervasive during the 1930s, beginning with the Century of Progress International Exposition in Chicago, when organizers attempted to provide a sense of cohesion to hundreds of wide ranging exhibits by linking the displays and attractions to the central theme: "Science Finds—Industry Applies—Man Conforms" (Schrenk 2007). However, numerous venues and presentations with no clear relationship to the main theme still filled the fairgrounds.

After World War II central themes permeated expositions much more thoroughly. Expo '67 in Montreal was the first to present an environmentally related theme--"Man and his World" (Berton 1997).[2] It echoed throughout the fairgrounds through the presence of thematic pavilions, such as Man the Explorer, Man the Producer, and Man the Creator. Although the fair did not take a specific stand on environmentalism, it used multi-screen audiovisual presentations and interactive exhibits to suggest to the global community the need to assess seriously the current ecological state of Earth.

Since Montreal, environmentalism has played a more sophisticated role at most international expositions, as organizers attempt to answer the challenges of the growing unsustainable conditions of our world. In reaction to the 1970s energy crisis, when OAPEC disrupted oil supplies to the United States, the 1982 World's Fair, known as the Knoxville International Energy Exposition, presented the theme "Energy Turns the World". The central goal, as promoted in official fair publications, was to achieve a deeper understanding of energy issues by bring the nations of the world together to consider man's relationship with the pervasive force of energy (Krouse 2008). The fair, which featured the Sunsphere, a 266-foot tall tower topped by a five-story high reflective bronze-coated ball, was poorly attended and beset with financial and administrative mismanagement (Kramer 2008). While a local goal for the event was to revitalize a blighted area of the city, after the exposition closed large segments of the grounds were transformed into a parking lot or fenced-off and left to decay, forming a ruin in the heart of the city for over the next twenty years (Kramer 2008).

What to do with the remains of modern expositions is a major issue that organizers have attempted to address more directly with varying levels of success since the Knoxville event. Sites of many pre-World War II fairs, such as the 1876 Centennial Exposition in Philadelphia and the 1893 World's Columbia Exposition, were turned into large civic parks. Paris, meanwhile, recycled the same site along the Seine for most of its later international

expositions. There was only minimal concern regarding the physical remains of temporary individual pavilions at these earlier fairs, as most were constructed with wood or metal frames and facades made of *staff*, a mixture primarily of gypsum plaster and fibers that could be molded into ornate forms. Except for the framing, little of value remained after the demolition of these short-lived buildings. The 1933-34 world's fair in Chicago was the first to seriously consider the potential resale value of building materials in the finances of the event. In the desire to produce a modern fair, the architectural commission turned to new manmade products, such as Sheetrock and Masonite, to face the pavilions instead of using staff. To make disassembly of the buildings easier after the close of the fair, panels of these products were attached to steel frames with screws (Schrenk 2007).

Ninety-nine years after the World's Columbian Exposition, Seville decided to hold a fair that would symbolically celebrate the 500th Anniversary of Columbus with the theme "The Age of Discovery".[3] While the exposition did include several pavilions that highlighted environmental issues, the main focus of the fair was innovative technological developments envisioned to improve modern life, such as satellites, computers, and even biometric fingerprinting. Most conspicuous was the use of technology to alleviate the uncomfortable environmental conditions Seville's extreme summer heat presented fairgoers (Chadwick 1992).[4] Water mist sprays, as at the Bioclimatic Sphere, provided cooling. A variety of natural and artificial features produced shaded areas offering respite from the hot sun. Examples of environmentally friendly designs were often more show than effectual, such as the water walls that covered the facades of a number of the buildings. The largest, however, at the British Pavilion was powered by 1760 solar panels located on the building's roof

Figures 1 and 2. The post-event derelict remains of the Pavilion of the Future area and an aerial tram entrance from Expo 92. Source: M. Jensen 2011.

(Davies 1992). While exhibits within the Pavilion of the Environment featured energy-saving machines and highlighted the vast disparities between different countries' energy use, the most influential presentation was a film that used 3-D footage to dramatically illustrated deforestation, toxic waste, and other negative impacts of modern, industrial societies on the environment (Marteau 2008). At the exposition's close, plans were made to transform part of the 530-acre site into Cartuja 93, a research and development office park by remaking fair pavilions into corporate and institutional headquarters. Nearby, a lake, once surrounded by the Spanish and provincial pavilions, was re-envisioned as a theme park (Marteau 2008). While these areas have seen relative success over the years, large portions of the fairgrounds were left to deteriorate. Visits to the site by the authors in 2004 and 2011 revealed many abandoned structures, such as the national pavilions for Mexico, France, and Turkey, as well as the once popular Avenue of Europe (figure1). And while the cable cars from an aerial tram that provided bird's-eye views of the fairgrounds are long gone, entrances to the attraction remain, but are in a state of decay (figure 2). Today, pigeons, lovers, and homeless people are the main visitors to large abandoned areas of the former fair site.

3.0 Expo 2000, Hanover

In reaction to post-exposition situations, such as those found in Knoxville and Seville, the organizers of Expo 2000 carefully considered not only issues of sustainability in the construction and running of the event, but also the full life of the fairgrounds and the individual pavilions. William McDonough's *Hannover Principles*, which was first published years before the exposition opened, was an early reflection of the organizers' desire for hosting a more sustainable event. Unfortunately, as with Knoxville, severe mismanagement played a major role in the predominately distopic outcomes of the fair (Janssen 2010).[5]

While Hanover (like Knoxville) did not at first glance seem like a logical site for an international exposition, as it was not a major tourist destination, it was already home to the largest permanent fairgrounds in the world where annual trade shows are held. (Maloney 2008) Several immense permanent halls were incorporated into the fairgrounds. A massive thematic pavilion and some smaller venues built for the exposition remained for use during future trade shows.[6] The theme for the exposition, "Humankind—Nature—Technology, a New World Arising," grew out of *Agenda 21*, a non-binding proclamation in support of sustainable development created at the 1992 United Nations' Earth Summit in Rio de Janeiro and signed by 178 countries. The city of Hanover adopted the principles of *Agenda 21* and made them a binding theme for all nations partaking in the event. Participants were asked to exhibit local solutions to global problems (Malsberger, 2000). Five large thematic pavilions held exhibits that related to the *Agenda 21* initiative, including elaborate displays illustrating how man and technology could improve the natural world. In addition to presentations at the fairgrounds, organizers expanded the event beyond the physical site by sponsoring global initiatives, such as *Projects Around the World*. Envisioned as a worldwide network to solve current and future global problems, it attracted 3000 entries of programs that promoted a wide range of solutions for better living, which potentially could be replicated elsewhere in the world (*The Expo-Guide* 2000). Expo 2000 also hosted a series of Global Dialogue forums to shine attention on critical global issues, such as health and sustainability. These meeting were broadcast throughout Europe (Maloney 2008).

In keeping with *Agenda 21*, all participating nations had to submit a detailed post-exposition plan for their fair pavilions, both "in the name of sustainability and to avoid an 'exposition graveyard'" like the one left behind in Seville (Malsberger 2000). Japan's pavilion, designed by Shigeru Ban, was built out of recycled paper, which was then recycled once again after the fair closed (Malsberger 2000). The wood from Peter Zumthor's Swiss Pavilion was sold as seasoned timber and then recycled for a pavilion at Expo 2002 ("Key Projects" 2009). Other pavilions were moved to different locations, reassembled, and then given new lives. Nepal's wooden temple was moved to Hamburg for use as a tourist information center, while Ricardo Legorreta's Mexican Building went on to serve as the library and media center for the *Hochschule für Bildende Künste Braunschweig*.

Figures 3 and 4. The Dutch Pavilion in Hanover by MVRDV in 2000 and in 2011. Source: R: L. Schrenk, L: M. Jensen.

The area of the fairgrounds that houses the trade fair halls is in regular use today and the adjacent fair pavilions have been replaced by a large parking lot. In contrast, much of the "Pavilions East" section of the site that once held rows of national pavilions from Europe and elsewhere sits largely abandoned. While some buildings have found new uses (the French pavilion is now a BMW dealership), large areas of the fairgrounds sit vacant. About half of the buildings in this area, however, still remain in a "post-expo purgatory" despite the fair's official reuse policy. Most prominently, the Dutch Pavilion by MVRDV, slated to be demolished immediately after the event, lingers as organizers decided to try to find someone to purchase the popular attraction. Even after going up for sale on eBay in 2006, it remains in its original location deteriorating behind metal fencing (figures 3 and 4). The escalators and layers of trees, flowers, and windmills are long gone. In the place of throngs of fairgoers are now occasional party seekers and hundreds of birds (MVRDV 2006). According to Gina Memenga, who works for the real estate firm marketing the Expo Park development with a sleek brochure touting the site's benefits, "It is hardly the sustainable outcome envisioned by the masterminds of the exhibition" (Janssen 2010). The slump in the economy, particularly for the information technology sector, as well as the fact that land-use requirements prohibit the development of individual retail stores or apartments at the site, and that new owners are required to bring the exposition pavilions in line with the latest energy efficiency standards, have made finding businesses willing to move to the former fairgrounds difficult **(**Janssen 2010).

4.0 Expo 2005, Aichi

Organizers for Expo 2005 took the lessons of Seville, Knoxville and Hanover to heart as they planned for their own sustainable-themed fair in Aichi, Japan. But like those in earlier exposition cities, they sought to host an international event primarily as a means to attract capital for major civic improvements, as well as to boost civic pride. The presentation of environmental themes at recent expositions has largely served as a "feel good" front for achieving underlying development goals. In the case of Aichi, the Toyota Motor Corporation and other local manufacturers were attempting to secure major research institutions for the area. The fair offered an ideal way to attract both institutions and the infrastructure needed to support those organizations (Heller 2008).

The goal to maintain the natural setting of a significant portion of the Aichi fairgrounds grew out of the discovery of endangered hawks nesting in the area just as planning for the event was underway (Heller 2008). This eventually led to the selection of "Nature's Wisdom" as the exposition's official theme and the decision to scale back the overall design of the fair to protect as much of the site's forest and other natural features as possible by focusing most of the new construction on parts of the fairgrounds that had already seen development (Heller 2008). Pavilions and raised walkways were designed to minimize damage to the land and to help facilitate the eventual transformation of the site into a nature park. For the first time, foreign pavilions were constructed out of standardized, prefabricated units. Harking back to the 1933-34 Chicago fair, the construction of these buildings consisted of panels attached to steel framing for easy disassembly and later reuse elsewhere.[7]

The stated goal of Expo 2005, echoing *Agenda 21* and the *Hannover Principles*, was to encourage "the global society of the 21st century to work together in the pursuit of a sustainable and harmonious coexistence for all life on Earth (*Expo 2005, Aichi, Japan* 2005). The "greenest" of the modern expositions, the event attempted to boldly address environmental concerns by deeply integrating them into the experience of the fairgoers. It introduced new forms of cleaner transportation to both reach the fairgrounds and to move through the site, including the Linimo, the first commercial magnetic levitation train, and hydrogen-powered hybrid buses. The exposition prominently featured the Bio-Lung, the largest green wall in the world. The Japanese Pavilion included a roof of photocatalytic tiles and an exterior bamboo cage to illustrate how a second skin could reduce a building's energy costs (*Japan Association* 2005).

Organizers dramatically incorporated Expo 2005's subtheme "Reduce, Reuse, and Recycle" not only in the design of the national pavilions, but throughout of the fairgrounds. Garbage, for example, was separated into 17 categories for easier recycling, including separate bins for chopsticks. Enthusiastic attendants at trash stations attempted to educate fairgoers both on how to properly separate their waste and on the benefits of recycling in general. Within the forested part of the fairgrounds was the Seto Area where visitors could learn "how to love the Earth" (*Japan Association* 2005, 155). An educational center and other pavilions presented exhibits on global environmental issues, while instructive nature tours were offered along forest paths (Japan Association 2005).

Figures 5 and 6. Global House and open green at Aichi Expo in 2005 and in 2013. Source: L: L. Schrenk, R: Z. Pierog.

While nature and the environment played more visible roles at Expo 2005, as at other expositions, innovative technologies dominated many of the exhibits, especially in the corporate section. The most popular fair venue was the Toyota Pavilion, which housed a show featuring trumpet playing robots and personal concept vehicles.[8] Like many other corporate pavilions, Toyota's fair building, powered by wind, did reflect the exposition's environmental theme, with outer walls of plastic coated recycled paper and a frame that was assembled with

friction joints to make the building easier to disassemble and elements reused after the close of the fair (*Japan Association* 2005). Although Expo 2005 was admirable in its attempt to promote sustainable practices and the importance of protecting the natural environment, the thematic message (as at other expositions) was lost on many fairgoers who were more interested in being entertained than educated.

Unlike earlier fairs, Aichi organizers have been largely successful in achieving many of their post-exposition goals. All of the prefabricated national pavilions of the Global Commons Area have been removed, while a number of other fair structures remain, housing amenities for current visitors (figures 5 and 6). The park is well kept and a popular place for people to spend their free time. Local residences take advantage of onsite features such as a gymnasium, a conference hall, and sports fields. Teahouse tours and formal tea ceremonies, along with the Satsuki and Mei House from the popular film *My Neighbor Totoro* built for the fair, attract tourists. Other areas, such as the Forest Experience Zone, the remaining section of the raised boardwalk from the Global Commons Area, and an exposition museum see smaller numbers, in part due to their distance from the main train line to the fairgrounds. Maintenance workers and friendly hosts can still be found throughout the site attempting to ensure that people have a positive experience during their visit.

5.0 Expo 2010, Shanghai

In contrast to Aichi's emphasis on nature, Shanghai's Expo 2010 was the first world exposition to specifically focus on the urban condition. It was the largest exposition ever held in both the scale of its site and in the number of participating countries and organizations (Expo 2010 Shanghai Editorial Office 2009).[9] Building upon Confucian philosophy, its official theme "Better City, Better Life" reflects the concept of a "city of harmony." The role of the theme became more pervasive than at earlier fairs, as participants were encouraged to highlight specific projects that promoted environmentally friendly improvements in city living. As at Hanover, the fairgrounds included a series of large thematic pavilions; in Shanghai they explored different aspects of urban development.[10] Also like Hanover, Expo 2010 included a series of events beyond the exhibition itself that directly addressed the fair's theme. Included were a series of academic forums held at other sites in China on the relationships between livable cities, globalization, and sustainable development (Expo 2010 Shanghai Editorial Office 2009).

What was new at Expo 2010 was the Urban Best Practices Area, a large section of the fairgrounds given over to 70 city-sponsored pavilions that showcased practical solutions relating to the exposition's urban theme (Connery 2011). While some of the participants, like Xian, presented poorly veiled promotions for tourism, others, such as London and Madrid, offered innovative, practical solutions to urban issues.[11]

Original post-exposition plans for the fairgrounds included the demolition of all but five of the 54 major pavilions and the site transformed into "China's pre-eminent symbol of sustainable growth" through the creation of a large, high-density residential community designed to serve as a model alternative to the massive sprawl that has appeared on the outskirts of many Chinese cities (Powell 2011). According to the *Master Development Plan of Shanghai Municipality: 1999-2020*, by 2020 the Expo site is projected to house an eco-friendly zone of homes, parks, conference and convention centers, and pedestrian-friendly retail and commercial spaces ("Joint NGO Appeal for 18,000 Victims" 2010).[12] Renewable energy—mainly wind and solar—is proposed to be the primary source of power and all new construction is to consist of eco-friendly materials, including some recycled from demolished fair pavilions.

How much of this plan will be carried out is yet to be seen. Zone B, which housed national pavilions, was cleared in 2011 to make way for the headquarters of "centrally-administrated state-owned enterprises." ("Foreign Pavilions 2011). A former factory building that served as the thematic Pavilion of the Future reopened in 2012 as the Power Station of Art, China's first state-run contemporary art museum, while the massive Chinese Pavilion is now the China Art Palace. Planners expect that construction of a World Expo Museum at the site will be completed by 2015 ("City Gets Official Expo Museum" 2011).[13] However, discussions of a

large-scale, eco-friendly residential development at the site are curiously absent from the international press.

CONCLUSION

Demolition photographs of Zone B at Expo 2010, which recall images of the piles of post-fair debris from nineteenth-century expositions, clearly illustrate a major disconnect between practices put forward in documents such as *The Hannover Principles* and *Agenda 21* and the massive carbon footprints of recent international expositions, particularly in regards to the construction of short-lived pavilions. Fairs since Seville have attempted to lessen the waste of energy in constructing the temporary events by reusing existing buildings, finding long-term uses for pavilions, and making the structures easier to disassemble and parts reused. It remains, however, difficult to repurpose the hundreds of thousands of square feet of space in the dozens of exhibition halls necessary for these events, particularly when the pavilions are of experimental or unusual designs. Combine the immense use of raw materials for the physical fair with the enormous quantity of energy used to bring the "people's of the world together" (an estimated 20 million metric tons of CO_2 carbon emissions for Expo 2010 alone), and the result is an event that cannot in any realistic way be viewed as sustainable.[14]

While Aichi made great strides in realizing an environmentally sensitive post-exposition plan, the partially redeveloped fairgrounds of Knoxville, Seville, Hanover, and Shanghai illustrate that this is not an easy task. Even when plans do come to fruition, it can take years of good economic conditions for the transformation to happen. While expositions attract significant economic development to the host city in the years leading up to and during the event, they act like vacuums, drawing the momentum of future development into the present. Once the lights of the fairgrounds dim and the exhibitors and visitors return home, the cities are often left with a colossal exposition hangover marked by massive civic debt and a large patch of real estate to repurpose.

Experiencing underutilized or abandoned former fairgrounds leads one to ask the question: Is it responsible to host an international exposition in the 21st century, especially one marketed as sustainable? Organizers of the upcoming Expo 2015 in Milan, Italy are currently preparing a "sustainable event" with the theme "Feeding the Planet, Energy for Life" that addresses links between food, sustainability, and biodiversity. Expo 2017 in Astana, Kazakhstan plans to more directly explore the goal of sustainable living through the theme "Future Energy". Cities currently bidding for Expo 2020 are focusing on health or global harmony, with sustainability presented as a strong subtheme.

While current expo organizers have learned much from past events and are more critically addressing uses of energy in the construction and operations of the fairs, as planned these future events will not be not radically different from the expositions of the recent past—large fairgrounds with numerous experimentally pavilions and entertainment venues designed to attract millions of visitors. Even if an exposition does manage to become "fully energy self-sufficient," as the organizers for Expo 2017 boast that their event will be in promotional videos, it will take substantial amounts of energy to construct the buildings and bring the crowds to the fairgrounds (Astana 2013). Is there a better way? Is it possible to design a holistically sustainable exposition? Or does it make more sense to coordinate a virtual global event? The Urban Best Practice area at Expo 2010 allowed cities to demonstrate their innovative initiatives at the fair. A virtual expo would let them to build venues within their own boundaries and then connect the individual, distantly located pavilions to millions of "visitors" from throughout the world via modern technology.

The non-fairground initiatives connected to earlier fairs, such as the "Projects around the World" program, could serve as models for various expo-related symposiums and other events providing the impetus for worldwide dialogs through virtual conferencing and other innovative technologies. Would too much be lost in holding a site-less world's fair? Or is the extra energy involved in presenting a traditional international exposition worth the larger benefits of being able to experience face-to-face interactions? Would witnessing people from all over the world

join together to celebrate in peace the many facets of human civilization, the latest technological developments, and the dreams of mankind's future potential be lost? These are all important questions worthy of further exploration.

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ENDNOTES

[1] The term *sustainable* is used in relation to the built environment in many different ways. By 1996 scholars had identified over 80 different definitions for just the phrase *sustainable development* (Fowke 1996).
[2] The theme was inspired by the philosophy of French airman and author Antoine de Saint-Exupéry, whose book *Man and his World* was widely read in the mid twentieth century.
[3] A related exposition was planned for Chicago in 1992, but was later canceled as plans were underway.
[4] August temperatures in Seville have reached as high as 113 degrees Fahrenheit.
[5] Mismanagement, political infighting, and a lack of publicity led to a poorly perceived and attended event, despite reduced cuts in ticket prices and parking fees.
[6] At the time of its construction the new exhibition building, now known as Hall 13, contained the largest interior space in the world without internal structural beams.
[7] The downside to this practice was that it limited the formal aesthetics of the national pavilions and the more elaborately designed corporate pavilions often overshadowed the foreign buildings.
[8] The Toyota androids were not alone. Human-like robots could be found throughout the main fairgrounds.
[9] The fair covered over 1300 acres and included presentations from 192 countries and 50 organizations.
[10] These included the harmonious co-existence of diverse cultures, harmonious economic development, harmonious living in the age of science and technology, harmonious functioning of communities, and harmonious interactions between urban and rural areas.
[11] Unfortunately, the area was located on a less prominent section of the fairgrounds and received significantly fewer visitors than the national and corporate zones.
[12] It is not yet clear how many people and businesses the new plans are to accommodate. Over 18,000 families, 275 factories, and 10,000 workers were displaced from the site before the fair was held.
[13] Plans are for the museum to house more than 30,000 exhibits from Expo 2010.
[14] This estimate was reached by using 1.5 metric tons of CO2e per international visitor (five percent of fair attendees) flying to the fairgrounds and .21 for domestic travelers (95 percent of visitors).