

**China's Eco-cities as Variegated Urban Sustainability:  
Dongtan Eco-city and Chongming Eco-island**

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## Abstract

Proliferating environmental sustainability policy frameworks suggest that sustainability and economic competitiveness are essentially interdependent and mutually enhancing. Under these policy discourses, cities are designated as strategic geographical locales for fulfilling the green capitalist goal of reconciling the contradictions between environment and development that long have bedeviled capitalism. While most urban sustainability agendas are crafted based on the experience of post-industrial countries, the promise of green capitalism and sustainability faces different challenges where industrial production still dominates the economy. However, research on whether and how urban sustainability policies are geographically variegated is still sparse, particularly beyond western (post)industrial capitalism. Examining the Dongtan eco-city project and associated Chongming eco-island project in Shanghai, we interrogate how sustainability is imagined and practiced on the ground within the distinctive Chinese context. The meanings of sustainability in Dongtan and Chongming reflect the context of Chinese urbanization in the Shanghai area. Both Dongtan and Chongming seek to develop green technologies as a way to resolve the dilemma of being caught between urbanization and agriculture. This approach is also shaped by Chongming's island geography as enabling a self-sufficient development trajectory, and its desire to attract a cosmopolitan population. Through these place-specific contexts, the ecology and economy of the Dongtan and Chongming become intertwined, producing and reproducing a variegated form of urban sustainability, and of "green capitalism".

Key words: green capitalism; eco-cities; variegated urbanism; urban sustainability; Dongtan; Chongming

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## **Introduction**

Particularly as the global economy stagnates, policy frameworks such as “the Green New Deal”, “green competitiveness” or “eco-economic stimulus packages” portray environmental sustainability as a growth opportunity. This greening of capitalism challenges conventional thinking on economic development. Since the rise of industrial production in 18th century Europe, the persistence and expansion of industrial capitalism was seen as predicated on the exploitation of natural resources (O’Conner, 1998). In contrast, claims for green capitalism maintain that environmental sustainability and economic competitiveness can be mutually enhancing (Gibbs, 2009).

Cities have become a major focus of policy discourses and proposals propounding environmental sustainability and green capitalism. Previously blamed for their exploitation of the environment, cities are increasingly presented as the hope for sustaining humanity, and the source of new environmental remedies and experiments (Davis, 2010). Urban sustainability policies highlight the role of cities as strategic geographical locales for the emergence, translation, circulation and realization of sustainability, at all scales. Correspondingly, urban sustainability agendas have become a primary concern for scholars and policy makers over the last two decades, increasingly coupled with proposed solutions for long-term economic sustainability. For example, the World Bank’s Eco<sup>2</sup> Cities Initiative seeks to help cities “build on the synergy and interdependence of ecological sustainability and economic sustainability and the fundamental ability of these to reinforce and strengthen each other in the urban context” (Suzuki et al, 2010:xviii).

Sustainability initiatives like Eco<sup>2</sup> Cities significantly contribute to envisioning a symbiosis of urban ecology and urban economy in contemporary urban policies, shaping the construction of green urbanism and closely related eco-city projects in the pan-Asian area. Yet dominant urban sustainability initiatives were produced within the historical contingencies of “post-industrial” Europe and North America. The urban sustainability agenda emerged in the 1970s in response to post-war urban sprawl, particularly in North America, subsequently acquiring an egalitarian

disposition in the context of Western environmental movements and middle-class politics in the 1980s and 1990s. This agenda also has been susceptible to changes in the global political economy. When Anglo-American neoliberal capitalism seemed dominant, in the late 1970s to early 1990s, sustainability discourses focused primarily on assisting less developed countries with issues like over-population, over-urbanization, and poverty. With Anglo-American economic hegemony declining, attention there has shifted toward maintaining self-reliant local communities.

These contexts underwriting the dominant sustainability agenda pay little attention to developments outside Western advanced capitalist countries. In East Asia, urban sustainability should be re-read through the specific contexts of national and urban economies, urbanization patterns, and developmental ideologies. Research exists on the variegation of capitalism, with limited attention to interrogating East Asian variants, but limited attention has been devoted to variegated urban sustainability practices and policies, with almost none beyond Europe and North America.<sup>i</sup>

In this paper, we seek to enrich understandings of variegated urban sustainability policies and practices, using the case study of urban sustainability and green capitalism in Dongtan eco-city and the socio-spatially associated Chongming eco-island project, near Shanghai (China). China has come to be seen as the world's factory, a place of over-population, with an acute urban-rural contrast, a developmental mindset and a strong state—a very different context to that of post-industrialism. Focusing on the social construction of these related projects, we interrogate local actors' conceptualizations of and meanings given to urban sustainability, arguing that for Dongtan and Chongming these must be placed within the context of urbanization in the Shanghai area. Stated intents behind these projects have been to build local industrial sectors in green technologies as a solution to tensions between urbanization and agriculture, a vision that also reflects Chongming's island geography, but also the desire to create a cosmopolitan city. In this place-specific context, the ecology and economy of Dongtan and Chongming have intertwined to (re)produce a variegated form of urban sustainability that differs from western eco-city norms. Dongtan eco-city project was indefinitely suspended in 2008, but remains worthy of study in seeking to understand variegated eco-city policies and practices. As we discuss below, Dongtan

remains influential in China and abroad. In China, it was resumed as part of the wider, undergoing Chongming eco-island project and became a referred model for China's current high-profile eco-city outside Tianjin. Beyond China, Dongtan eco-city planning principles are circulated as eco-city "best practices", for example through the international C40 Cities Climate Leadership Group supported by the Clinton Foundation.

### **Sustainability, green capitalism and eco-cities**

Two influential publications shaped current conceptualizations of sustainability. *The Limits to Growth* (Meadows, 1972) and to *Our Common Future* (WCED, 1987) drew wide attention to environmental constraints on economic growth. In these accounts, urbanization was presented as a challenge to sustainability, consuming considerable natural resources, producing heat-island effects, and catalyzing environmental and social problems (WCED, 1987: 241-243, Meadows, 1972: 73). UN Habitat subsequently took the opposite position, arguing that cities, with their compactness, large populations and agglomeration economies, can provide unique opportunities for reducing environmental damage at low average costs by improving public infrastructures and services (UNCHS, 1996).

Whether seen as a problem or a solution in sustainability studies, cities are framed as objects that need to be "cured", "reined in" and "directed" towards a more sustainable future. This perception has underwritten a policy toolkit of urban sustainability remedies proposing to balance economic development, environmental production and social equality, using such tools as: land use regulation, low-carbon and public transportation, pollution prevention and reduction, energy and resource conservation, "smart-growth" and compact development initiatives, and democratic and participation-oriented governance (Meadows, 1999; Portney, 2003). Yet cities are not simply policy objects—geographical units awaiting governance. They play an active role in constructing their ecologies and have become proactive contributors to crafting sustainability discourses and practices. Locally, an emerging paradigm of "actually existing sustainability" has been proposed to make sense of the variety of burgeoning bottom-up sustainability agendas and practices (Krueger and Agyman, 2005). Internationally, proliferating transnational urban networks and intra-urban organizations proactively propagate sustainability policymaking across space. A

number of cities also market their sustainability practices to others, wielding considerable influence over urban ecological landscapes beyond their own locality (Bulkeley, 2005; Fitzgerald, 2010; Hodson and Marvin, 2009; 2010). Bringing these processes together requires a dynamic, relational and multi-scalar perspective that understands urban sustainability, green urbanism initiatives and eco-cities as (re)produced in specific social contexts, and as intermediating between global sustainability discourses and local practices.

Drawing on pre-existing urban planning tools, eco-cities were proposed as a novel end in themselves: as an integrated sustainable urbanism that addresses multiple urban issues simultaneously (Register, 1987; Beatley, 1999; Suzuki et al., 2010). Eco-cities, a term coined by Register (1987) expressing the principle that human settlements can be ecologically sustainable and livable, are often traced to Ebenezer Howard's "Garden City" movement, which brought nature back into cities through carefully allocating greenbelts, residences, industry and agriculture. Through proliferating policy discourses of and academic research on urban sustainability in the past three decades, the eco-city vision has been revised into a more pragmatic urban planning paradigm, incorporated into urban sustainability policy agendas. Register's (2002) influential *Ecocities: Building Cities in Balance with Nature* argues that eco-cities should: be designed from scratch to be compact, be designed for living beings, fit the bioregion and heal the biosphere, reduce energy consumption, promote social equity, community and health, prioritize pedestrians and bicycles, and contribute to the economy (pp. 174-6). In White's terms (2002: 3) an eco-city "provides an acceptable standard of living for its human occupants without depleting the ecosystem and biochemical cycle on which it depends." The World Bank defines eco-cities as places that "strive to function harmoniously with natural systems and value their ecological assets, as well as the regional and global ecosystems on which we depend.... [T]hey drastically reduce the net damage to the local and global environment, while improving the overall well-being of their citizens and the local economy" (Suzuki et al, 2010: xvii). In short, eco-cities express the possibility for an urban future in which urban growth becomes compatible with ecological processes.

*Eco-cities and green capitalism*

After an earlier politics of sustainability predominantly led by international organizations and national governments, there has been a noticeable increase of private sector actors participating in current environmental politics (in domains of climate change in particular). This increased participation has been dubbed “green capitalism”, which refers to “a set of responses to environmental change and environmentalism that relies on harnessing capital investment, individual choices, and entrepreneurial innovation to the green cause” (Prudham, 2009: 1595). A core principle of green capitalism is that market-based mechanisms and economic efficiency can be harnessed to tackle environmental problems. Abstractly, green capitalism commodifies nature, incorporating and internalizing ecological processes into circuits of capital accumulation.<sup>ii</sup> This attaches environmental politics, semiotically and ideologically, to the reproduction of conditions of capital accumulation (Smith, 2008; Prudham, 2009:1596).

Green capitalism connects with eco-cities in two principal ways. First, recent narratives of eco-cities massively emphasize “selling the nature” of eco-city sites. Whether nature is inherited (e.g., the natural wetlands of Chongming Island) or human-produced (e.g., Masdar City’s manufactured oasis in the United Arab Emirates), an eco-city’s ecology is drawn into “place-branding” that differentiates it, as a commodity, from others. Eco-cities are thus “themed” and capitalized through regional differences in urban nature (Prytherch, 2002; Hudson and Marvin, 2009; 2010).<sup>iii</sup> Second, the eco-city sustainability paradigm emphasizes environmental governance through community-driven environmental regulation, green consumerism, best practice environmental management technologies, and eco-monetary tools (for example, household-produced energy trade and green accounting). Such environmental governance deviates from traditional “command-and-control” approaches to incorporate neoliberal doctrines, paralleling the shift from managerialism to entrepreneurialism in urban governance more generally (Leitner, 1989).

This approach to eco-cities generates some fundamental contradictions. First, in the literature on entrepreneurial cities environmentalists’ concern for urban nature and ecology is generally associated with anti-urban and anti-growth politics, contesting urban growth coalitions. Secondly, when eco-cities capitalize on their natural ecology to promote urban growth, this may undermine these same ecological conditions: “entrepreneurialism constructs nature only to

promote its destruction” (Prytherch, 2002:787). Prytherch’s analysis suggests two important questions about eco-cities, as an expression of green capitalism: Why and how does an eco-city capitalize on its nature/ecology? How can an eco-city be legitimized given immanent contradictions between ecology and economy?

### *Variegated eco-city practices*

Design principles for eco-cities, as discussed above, emerged from the particular context of a post-industrial (deindustrializing) Europe and North America, where the vast majority of the population lives in cities. In this context, sustainability in general, and eco-cities in particular, stress compact, self-sufficient communities with minimal ecological impact, constrained economic growth, orientation toward the locality, community participation and social equity. This should not be taken as the norm for an eco-city, however. Socioeconomic policies never produce ‘pure’ models against which others are to be judged. It is “not a matter of measuring degrees of deviation from a supposedly paradigmatic norm... or perfect form; it calls for... qualitative analysis of conjunctures and connections” (Peck, 2010: 33). Eco-cities should thus be analyzed through the same relational perspective as discussed above for urban sustainability more generally.

We interrogate how an eco-city/eco-island project was conceived and planned in Dongtan and Chongming, outside Shanghai, examining how they (dis)articulate with prevailing sustainability discourses. In so doing, we attempt to disentangle the relationship between economy and ecology of eco-cities in China’s industrializing, fast growing and rapidly urbanizing context, under the guiding hand of a strong state. Dongtan eco-city and Chongming eco-island projects belong to a global diffusion of urban sustainability initiatives, embedded in and layered onto pre-existing socioeconomic institutions and cultural contexts. This multi-scalar relationship creates geographically variegated eco-city practices and norms. With limited space, we focus particularly on the local context of how ecology and economy are intertwined.

## **Methodology**

We draw on archival research documenting Dongtan eco-city since 2005 and Chongming eco-island since 2006, together with field research in Shanghai City and on Chongming in Summer 2010. Archival research includes reports and documents concerning sustainability policies (both for China and Dongtan), government publications, sustainability and eco-city brochures and educational booklets, press coverage, online resources (such as sustainability internet groups and Chinese eco-city advocacy blogs), and academic publications.

Through the archival research we identified key informants to interview. Invitations were sent in the summer of 2010 to 27 relevant knowledgeable local informants, in academia, local government and associated planning institutes. Since its suspension in 2008, Dongtan eco-city has become taboo among local government officials and planning professionals, only six of whom accepted our interview invitation. Although the number of key informant interviews might be comparatively small, these informants held critical professional positions enabling them to provide sufficient information for us to reconstruct the eco-projects' development. Semi-structured interviews were conducted with each informant, mostly in Mandarin and usually lasting between sixty and ninety minutes. Informal interviews were also conducted with eleven local households who once lived on the project site. Participant observation was undertaken throughout the four weeks of fieldwork.

This paper draws heavily on these interview data, triangulated with participant observation and archival research, and in consultation with local long-term eco-city observers. While each interview highlights different aspects of these eco-projects, their perspectives in reading the process of eco-development display considerable consistency. Interview quotes were selected based on informants' professional position and the clarity of their statements; for local residents' interviews, quote selection largely is based on clarity.

## **Dongtan eco-city and Chongming eco-island**

Dongtan Eco-City was a Sino-British project under planning and implementation since 2005, located at the east end of Chongming Island in the mouth of Yangtze River north of Shanghai (*Fig 1*). A joint project of Arup (a London-based transnational engineering and design firm), the Shanghai Industrial Investment Company (SIIC, a Shanghai municipal government public-private pharmaceutical and real estate company listed on Hong Kong's stock market), as well as Chinese and British state agencies, universities, and planning institutions, the intent was to create an ecologically, socially and economically self-sufficient city. Other participants included Sustainable Development Capital LLP (finance); Monitor Group (consultant); with the Hong Kong and Shanghai Banking Corporation (HSBC), Rider Levett Bucknall, Jones Lang LaSalle, and CB Richard Ellis acting as real estate development consultants. Chongming's county government subsequently established several relevant construction and real estate companies, seeking to raise Chongming's visibility in the domestic housing market by building eco-housing in and around the Dongtan site.

Arup's original plan was to create a city with a 60% smaller ecological footprint, 66% reduction in energy demand, 40% energy use from bio-energy, 100% renewable energy use for buildings, on-site transportation, 83% reduction of landfill waste, and almost no carbon emissions. Dongtan was envisioned as a compact city with low-rise condominiums and high-tech energy-saving homes interspersed with green spaces, that would rely completely on electricity generated by burning rice husks, and from solar panels and wind turbines. Organic "plant factories" would be installed underground using solar powered LED lights, and only zero-carbon-emission vehicles would be permitted to operate in the area. The waste management system would utilize recycling, reuse, and organic waste methods. Consumer-driven green-governance would be promoted, encouraging local residents to conserve energy through smart metering and financial incentives (SIIC and Arup, 2006; Arup, 2008). While on the outskirts of Shanghai, Dongtan was not planned as another dormitory town for Shanghai commuters. Instead, it was projected to become a city of 500,000 people employed locally in businesses, ecotourism, ecological/environmental related education institutions, and research and development firms. Three villages were planned, to be surrounded by farms, parks and wetland, with the city

growing along public transportation corridors. Only 40% of Chongming Island was planned for urban use, with the remainder expected to remain under agricultural production. Current agriculture and fishing activities would be moved back from the coast, creating a 3.5 km wide “buffer-zone” for migratory birds along Chongming’s eastern fringe.

Dongtan eco-city was indefinitely postponed in 2008, however, and among local government officials and planners is currently considered a failed project. This suspension is attributed to several political and economic reasons. First, Dongtan eco-city was the signature political project of previous Shanghai mayor Chen Liangyu, who was arrested and jailed for corruption in 2008. Although there is no direct evidence that Dongtan’s suspension is a result of Chen’s corruption, it is generally believed that Dongtan eco-city lost political priority both locally and nationally with his waning political influence (Brenhouse, 2010). Second, the project site selection and market-positioning of the project have been criticized (Qiu, 2011; Wu, 2012). Planned on a conservation wetland to host exclusively high-end residential property, Dongtan was perceived as both harmful to the ecologically sensitive Yangtze estuary and incapable of supplying necessary job opportunities and economic activities for a economically self-sufficient eco-city. Also the location of the island, about 60 kilometers away from downtown Shanghai with no land transportation options before 2010, is argued to have discouraged investors. Third, the financial plan for Dongtan eco-city was judged to be infeasible. As Wu (2012) notes, Dongtan’s master plan was very much a “brainstorming exercise” without realistic consideration of financial feasibility. Nevertheless, there have been rampant rumors in international planning communities since the summer of 2011 that SIIC will resume the project.

Inspired by Dongtan, in 2006 the Shanghai Municipal Government and Chongming County government issued the *Chongming Three Island Master Plan*, covering the rest of Chongming County outside Dongtan eco-city. This was a locally-driven independent plan based on Arup’s proposal, focusing on smaller-scale environmental improvements and aiming to develop Chongming Island and two small surrounding islands (Changxing and Hensha) into “eco-islands”. Land on all three islands is zoned into several functional regions, including ecological system demonstration areas, leisure and tourism, sport and vacation, a garden city, education and innovation, forest, theme park, conference center and offices, and a shipbuilding industry special

area (Shanghai Municipal Government, 2006). This was further developed into *Chongming Eco-island Development Outline 2010-2020* in January 2010, featuring eco-tourism, technological-intensive organic agriculture, and long-term development plans for green industries (Shanghai Development and Reform Commission, 2010). This has catalyzed the completion of several tourist farms, vocation homes, forest and wetland parks, a conference center with a five-star hotel, and trail routes.<sup>iv</sup> In 2009 and 2010, parts of some agricultural villages at the eastern end of the island were relocated to create space for modern high-rise housing, currently under construction.

Both the Dongtan and Chongming projects connect green urbanism with sustainable ecological cycles, aligning them with China's "Circular Economy" eco-reform – a centrally-driven campaign aiming at developing state-of-the-art energy efficient technologies, promoting environmental industries, and achieving close-looped circulation of energy and scarce resources in all industries, in building design, and in rapidly developing cities. Dongtan and Chongming are thus framed as development models for other Chinese cities, but also circulate beyond China. London originally pledged to base its proposed Thames Gateway Eco-region Project on Dongtan. Arup still continuously cites Dongtan as best practice sustainable urbanism within international interurban policy networks and professional communities, signing green development contracts with several Chinese cities on the basis of the Dongtan proposal (Fox, 2010; May, 2010). Although the location of Dongtan and Chongming in ecologically sensitive area was controversial, their design also became referred to as a model for the currently active high-profile Sino-Singaporean Tianjin eco-city and nearby Binhai Tourism Area.<sup>v</sup>

### **Eco-cities with “Chinese characteristics”**

On the ground, Dongtan/Chongming inevitably differ from Arup's proposed eco-city plan; planned constructions are rarely materialized. Beyond this, however, the distinctive Chinese context in which Dongtan/Chongming are developed has shaped practices that variegate from those normalized as the eco-city vision of European and North American scholars and planners. To tease out these aspects of “actually existing sustainability”, we investigate the social construction of these projects in light of the place-specific context of the Shanghai region,

examining distinctive aspects of how they were conceived, planned and executed. We focus on four such aspects: Dongtan's green development rationale; the trajectory of Chinese urbanization; the geographical imaginary associated with being an island; and the goal of creating a cosmopolitan community.

*Ecology or economy? Dongtan's green development rationale*

“It is no gimmick. It is being led at the highest levels of the Chinese government. They are very committed to developing a new paradigm of *economic development*.”  
(Peter Head, Arup director in charge of Dongtan eco-city, quoted in Kane, 2005.  
Authors' emphasis)

The original rationale for building Dongtan seemed to coincide with eco-city proponents' visions of cities that balance growth with sustainability. In *Focus Magazine* (December 2008) Roger Wood, Associate Director at Arup, described Dongtan as a new approach to cope with China's rapid urbanization and urban resource utilization: “rather than just design a city in the same way we'd done it before, we can focus on how to minimize the use of resources to show that there is a different way” (Taylor, 2008: 45). Adopting novel green technologies, planning codes, waste management, public transportation and energy saving methods, Dongtan's urban design would exemplify an integrated-urbanism approach, decreasing the average ecological footprint and implementing a closed urban energy circulation system with zero carbon emissions. For Arup, developing such a holistic approach would make Dongtan's urban design a prominent innovation in urban sustainability.

Notwithstanding Arup's vision, the regional political goal for Dongtan aligned more closely with traditional economic development. Except for conserving wetlands for migratory birds, in areas already placed under protection by the Ramsar Convention, the Dongtan project paid little attention to Chongming Island's ecology. There also was only limited attention to social sustainability. In 2005, the Shanghai Chongming Dongtan Investment and Development Company (SCDIDC) provided four reasons to the Chongming government for launching an eco-city project:<sup>vi</sup>

- a) To actively advance and protect the wetland ecosystem through landscape ecological engineering interventions into Dongtan's ecosystem;
- b) To create a pleasant amenity and healthy lifestyle through landscape ecological engineering, real estate development, and recreation and tourism businesses;
- c) To found natural capital- and knowledge-based industrial clusters;
- d) To establish a research and education center for ecological sciences.<sup>vii</sup>

The first two goals demonstrate a belief that eco-cities can be achieved through a “technological fix”; that novel environmental technologies enable a sustainable ecological system and more sustainable economic development. In many policy speeches after 2006, Dongtan is presented as exemplary of “Ecological Civilization”—a Chinese version of ecological modernization and sustainable development, based on the Brundtland Report but with a particular focus on scientifically constructing human settlements in harmony with nature (e.g., the 2008 First Plenary Session of the 11th Chinese People's Political Consultative Conference).<sup>viii</sup> Adopting principles of ecological modernization, the third and the fourth goals reflect the government's intention that Dongtan eco-city would create new environmental industries to supplement the island's farming- and fishery-based economy. Throughout, SCDIDC's presentation referred to Chongming's almost uncontaminated environment as “natural capital.” At conferences and meetings, many local officials argued that using this natural capital to attract foreign companies to undertake eco-construction would also help an inexperienced Chongming Government improve its financial institutional structure for handling foreign investment. Such views reveal how Dongtan was primarily envisioned as green capitalism, utilizing natural capital for sustainable economic development for both Chongming Island and Shanghai.

Some observers argue that Dongtan's use of nature as economic booster hardly realizes urban sustainability. Herbert Girardet, former consultant on the Dongtan project, describes it as a strategic project to ensure that “China will play a key role in the emergence of a world of ecological and economically sustainable human settlements” and to provide a new urban economy for the island (Girardet, 2006). May Hald (2009) suggests that China's decision to build this eco-city was largely due to its desire to be the first in green urbanism. Hodson and Marvin (2009; 2010) argue that Dongtan (like London's Thames Gateway projects and Masdar City) seeks to create gated ecological enclaves privileging the rich, securing premium spaces for transnational capital reproduction.

Local technocrats and bureaucrats offer a slightly different interpretation. As a traditional agricultural area at the fringe of metropolitan Shanghai, Chongming Island long has experienced outmigration to Shanghai, triggering a local labor shortage that left many rice fields abandoned. Strict land use regulations in China stipulate that rice fields must be reserved for farming, except when a state-permitted new development project is launched. Dongtan eco-city thus provided an opportunity to change land use, attract foreign investment to the island, and reduce out-migration. Technocrats and bureaucrats have suggested that economic development is necessary for Chongming Island's economic sustainability:

“I know sustainable development means environmental protection, but we already have a good environment. We have very good natural conditions here, but everyone wants to leave the island for [Shanghai] . . . Now, most people staying on the island are elders and children. . . we need new industries or business to come to the island. We have to attract new investments so that we can have better development, and that is the only thing that can make this island sustainable. Therefore we use the environment we have to attract eco-businesses. Building an eco-city or eco-island is our plan and hope.”<sup>ix</sup>

“Sustainable development is for a place that has already developed. For a rural area outside a big city like Chongming, it needs [economic] development before sustainable development.”<sup>x</sup>

Here, sustainability has an economic meaning, very different from the Anglophone sustainability concept of balancing population growth and environment. It is a more pragmatic concern for retaining population and seeking “development.” Looking retrospectively at the Dongtan development process, a Shanghai government consultant admitted that he believed building an eco-city was ideal because of Chongming's almost untouched natural landscape: “a huge advantage” that “no other cities at the coastal region have”—a comparative advantage that can be packaged into a distinctive “product” guaranteeing profit amid the fierce competition for urban developmental projects across China's costal regions.<sup>xi</sup> Chongming's large swath of unparcelled land, a rarity in the highly developed Shanghai region, makes it practically the only place in the region suited for building the first, and biggest, eco-city in the world. The mindset of “first” and “biggest” is itself an important feature, looked for by the Chinese government when it picks developmental projects to support.

In short, the green development rationale for Dongtan eco-city was embedded within a complex relationship between environment and economic development, specific to Chongming's desire for development that would restructure its relationship with Shanghai. Notwithstanding uncertainty about whether and how Chongming's environment could materially enhance Dongtan and Shanghai's urban competitiveness, Dongtan was seen as a form of green capitalism, with its natural capital the only resource for Chongming Island's economic development, itself necessary to realizing overall sustainability.

*Sustainable "suburbanism": solving China's urban-rural tension*

Whereas eco-city visions stress higher-density and self-sufficient settlement, some critics argue that the Dongtan eco-city does not appropriately address existing social and environmental problems faced by high-density Chinese urban areas. For example, Sigrist (2009: 13) argues that Dongtan eco-city is a model of "sustainable suburbanism", a replication of the western suburban sprawl creating edge cities on undeveloped land precipitating the decline of central cities. Arup states that Dongtan eco-city would not be a dormitory or satellite town of Shanghai, but the island's geographical proximity to and economic dependence on Shanghai undermine Arup's ambition of self-sufficiency. Indeed, interviews with local bureaucrats and sustainability scholars suggest that construction of a new suburban town settlement was the original intention behind the Dongtan project.

In its recent history, China has deliberately built small to medium towns in agricultural regions near major cities. Since embarking on socialist central planning in the 1950s, China has intentionally tried to avoid "over-urbanization" and the "mega-cities" found in many Third-World countries. To achieve "industrialization without urbanization," the central planning regime set up Township and Village Enterprises (TVEs) in agricultural regions to retain rural labor and prevent massive rural-urban migration. Zhu et al. (2009: 215) refer to the effects of such policy as "*in situ* urbanization," in which "rural settlements and populations become urban or quasi-urban population without any significant geographical relocation of their residents". Initially, TVEs were only permitted to process agricultural products or directly related services.

This restriction was lifted in 1978, when they were encouraged to participate in whatever economic activities were deemed profitable. This accounted for TVEs' increasing success through the 1990s, when their share of national industrial output approached 42% (very close to that of urban State-owned Enterprises), employing more than 130 million rural workers (about 35% of the rural labor force) (China Statistical Yearbook, 1995, cited in Zhao and Wong, 2002). One result of *in situ* urbanization and the economic policy of TVEs has been termed the "incomplete urbanization" of Chinese cities in terms of their spatial distribution and sizes, with many small towns emerging around major metropolitan areas (Chan, 2010). Chongming Island is where the small towns around Shanghai City are located.

The prosperity of TVEs and associated small town development triggered significant agricultural land losses after the late 1990s, however, affecting grain production and food supply (Zhao and Wong, 2002). The government thus faced the dilemma of either deepening an agricultural crisis, or discontinuing support for TVEs at the cost of undesired migration to major cities. Shanghai municipal government and Chongming county government were seeking possible solutions to this dilemma at the time that Arup proposed building Dongtan with its high-tech green farming and local non-agricultural job opportunities. Many Shanghai local party leaders saw this as a potential solution, a model for small town development in its agricultural regions. One planner of Chongming eco-island described the decision to adopt Arup's Dongtan eco-city approach as more historical accident than intentional action:

"The Shanghai Government opened the competition for Dongtan's master plan with only one criterion in mind: Shanghai wanted to use the large undivided parcels of undeveloped land on Chongming Island to build something that either had not been seen in other cities or would be the biggest among whatever other cities have... Several international architectural companies submitted their designs for competition, with wide coverage of themes like convention centers, hotels, theme parks... After Arup first presented their idea of building an eco-city, the [Communist] Party secretary of Shanghai was convinced that an eco-city would be a good idea as it goes well with the General Secretary of the Party's political guidelines for creating a harmonious society and sustaining agricultural development."<sup>xii</sup>

In short, within the specific context of Chinese urbanization and industrialization, Dongtan's unique "suburbanism" is better understood as a strategy to achieve sustainable urbanism by

maintaining agriculture and employment opportunities at the urban fringe. In an interview, a local ecological planning expert said that he had been contacted to consult on eco-city projects mostly by local party bureaucrats from secondary or agriculture towns in central China. Whereas the world outside China came to know Dongtan as a model for green settlements in global cities, through Arup's massive publicity and Dongtan's relationship with the London Thames Gateway ecological communities project, in China it is recognized as a model for agricultural towns on the urban fringe.

### *An island imaginary*

As a development on a relatively isolated island, Dongtan/Chongming would seem to fit with western thinking about eco-cities as self-sufficient and sustainable. Thus Portney (2003) argues that many current visions of urban sustainability emphasize containing ecological footprints within a relatively small geographical area. A sustainable city would be one that functions through a close-looped circular use of natural resources, conditioning all human activities inside the city. He mobilizes the visual metaphor of a bubble placed over the city, containing all activities and their impact (Portney, 2003:18). This idea is rooted in the regional planning tradition of "bioregionalism," which suggests that rescaling communities and economies according to the ecological boundaries of a physical region will advance sustainability (Campbell, 1996).

Interviews with local bureaucrats and planners demonstrate that Chongming's island geography was a critical factor in convincing local planners that the Dongtan/Chongming projects were appropriate and realizable, gaining massive support from Chongming county's bureaucrats and Shanghai-based planning professionals.

"I think an eco-city can be built in Dongtan, but I am not sure if it is replicable. Dongtan itself is special because it has an island ecological system. While other places face both challenges of achieving self-sufficient natural resources circulation and limiting human activities in the ecosystem, Dongtan only has to deal with the latter."<sup>xiii</sup>

"I was willing to accept Shanghai municipal government's invitation to conduct the eco-island planning because Chongming is a geographically independent region

and free from Shanghai's pollution problems... So my planning could focus on getting the island economically developed, which is my expertise..."<sup>xiv</sup>

Yet islands also invoke other imaginaries. In China, they are seen as less developed due to their inaccessibility. Indeed, Chongming is one of the least populated and industrialized areas in the Shanghai metropolitan region. A one-hour long ferry, southbound to Shanghai or northbound to rural Subei, was Chongming Island's only connection with the outside world, until the Tunnel Bridge connecting Shanghai and Chongming Island opened in 2010 (see Zhou and Shen 2010). Transportation was thus an important constraint on Chongming's economic development; equipment and machinery had to be transported from Shanghai or Subei. As a Chongming bureaucrat put it:

"I can't think of a better development project than an eco-city or eco-island for Chongming. We don't have resources for developing industries on the island. But we have an unpolluted environment because we are not physically connected to Shanghai. Eco-tourism is the best way to make money out of our geographical limitation."<sup>xv</sup>

Thus the widespread support for both projects did not simply stem from their hi-tech green designs and environmentally friendly plans. Chongming Island's physical separation from Shanghai city limited both pollution contamination and the island's industrial development. As noted above, adopting an ecological development path was seen as a means to achieve economic development: legitimizing eco-city and eco-island projects, while capitalizing on the island's natural ecology.

#### *A cosmopolitan eco-city*

Notwithstanding its long history in regional planning since early twentieth century, the bioregionalist view of self-sufficient sustainability has been termed sustainable "new localism" since the 1990s in North America and West Europe. New sustainable localism asserts the efficacy of the local in practicing sustainability: "ordinary people are most likely to pay attention to the physical environment where they see and experience it, and...governance mechanisms in cities or local communities are most likely to be responsive and effective to the environmental concerns of their citizens" (Portney, 2003:16). The importance of the local is stressed within the

UN's Agenda 21 and Habitat programs, underwriting many sustainable counter-globalization urban practices prevalent on both sides of the Atlantic that seek to strengthen local communities and production systems.

The conceptualization of community in Dongtan's master plan reveals a very different story: Shanghai Municipal Government and Arup envisioned Dongtan as a cosmopolitan community. At the Planning Institute of Australia National Congress in Perth, WA, Arup's Associate Director Roger Wood framed the social sustainability aspects of Dongtan's masterplan around five goals (Wood, 2007: 7):

- a) Create inclusive, cohesive and tolerant communities that recognise traditional and modern Chinese and other cultural values;
- b) Ensure all citizens can engage with and are represented by governance systems that are accountable and that work towards the continued realization of the fullest concepts of the Eco-City;
- c) Develop a city that enables healthy and safe lifestyles through the provision of key services and facilities accessible to all and which promote health, provide suitable healthcare when required, avoid car dependence and reduce opportunities for crime;
- d) Provide jobs and cultural, leisure, community, sporting and educational facilities for all, regardless of age or ethnicity, and make everyone aware of these opportunities through world class information and communication technology;
- e) Create an internationally, regionally and locally accessible city with user friendly facilities and a sustainable mix of development and housing opportunities blended with green spaces to create vibrant communities and a real sense of place.

While the overall vision of social sustainability relies on various infrastructures and “technological fixes”, as discussed above, points a), d) and e) articulate an ambition to form a cosmopolitan and internationalized community in Dongtan. Issues of social equity, highlighted in western sustainability agendas, were not directly addressed. Instead, the emphasis is on creating an attractive residential location for domestic and international elites.<sup>xvi</sup> This became more obvious toward the end of the presentation (Wood, 2007: 18):

“Dongtan Eco-City will provide an attractive alternative place for people to live within one of the most dynamic and culturally attractive regions of China and East Asia.” (p.18)

Our interviews confirmed this cosmopolitan ambition, as part of competing with other regions in China and East Asia. Several interviewees mentioned that Shanghai Municipal Government intended to launch a project that is not only Chinese, but also aligned with Shanghai's desire to be seen as a global city. This makes it easier to understand why Dongtan plotted a Chinese eco-city envisioning "modern living", with western-style low-rise condominiums and high-tech homes, rather than traditional Chinese village life in a village with red brick walls and black-tiled roofs.

Local residents were rather positive about such a westernized urban design. A fisherman, who runs a small vendor business with local restaurants, was asked: "The government is going to build Western style houses to replace your village houses here. How do you feel about it?" Without hesitation, he replied:

"I like it! I am tired of the backward rural living in Chongming. The new houses the government are building are much more modern...and they say we will have more decent people coming in too... Finally we are going to become as modern and advanced as Shanghai City, and even better, as good as the [United States of] America!"<sup>xvii</sup>

Dongtan's cosmopolitan design, and local residents' positive reaction to westernized housing, suggest a view of (social) sustainability different from that advocated through sustainable localism. In a western context, facing deindustrialization, business relocation and competition from developing countries, sustainable localism reflects not only a political tradition of participatory governance, but also an economic strategy to regain local economic independence by disconnecting the local from the shifting spatial division of labor of globalizing capitalism<sup>xviii</sup>. In contrast, there is a developmental mindset in Chongming that longs for industrialization, values Westernization, and seeks deeper connections to more global capitalist opportunities. Dongtan eco-city seeks to create a cosmopolitan community based on the belief that it is more "sustainable" than a local agricultural community. Again, the specific local context of Chongming infuses new meanings into urban sustainability, that legitimize it in proponents' minds as a form of green capitalism.

## **Conclusion**

In both cases examined here, Dongtan eco-city and Chongming eco-island, a local version of sustainability is overlaid onto Euro-American conceptions of eco-cities, one that is constructed and conditioned on, and shaped by, local desires for economic development, the geographical imagination of an island, and the ambition to make global cities. First, the discourse of urban sustainability is manifested through two linked narratives: natural capital as the only resource enabling development of Chongming Island, and economic development as the only route towards the island's overall sustainability. Second, a local reading of Dongtan traces its origin to the Chinese socio-economic context of *in situ* urbanization. In this context, Dongtan becomes a model sustainability project for agricultural towns in China, even as it is presented as exemplifying a green urbanism for world cities outside China. Third, its island geography provides the spatial foundation for envisioning a self-sufficient sustainability project, but also promoting economic development of an isolated place. Fourth, in contrast to localized framings of sustainability, Dongtan eco-city was built upon imaginations of being an international, cosmopolitan community. These four characteristics show how economy and ecology become intertwined in the development of Dongtan eco-city and Chongming eco-island, with the ecology of the island envisioned as being incorporable into and internalized within capital accumulation as promised under discourses of green capitalism.

At the time of writing, the Dongtan eco-city project remains indefinitely suspended. Yet Chongming County Government and Shanghai Municipal Government are working on the Chongming eco-island project, projecting, among other goals, that it will become as renowned in the next decade as New York's Long Island, Canada's Prince Edward Island and South Korea's Jeju Island. It is far from clear, however, whether the economy and ecology of Chongming Island will be mutually enhancing, as green capitalism implies.

These findings are suggestive of the broader point that analysts should take into account the contextual factors that shape variegated understandings of "actually existing sustainability." Further research will seek to trace the social networks (local and international) facilitating Dongtan eco-city construction and the global circulation of its eco-city design. Although Dongtan is currently considered unsuccessful, it remains influential as a particular model of

urban sustainability, traveling through social networks and planning communities. Whereas local processes socially construct variegated eco-city and other urban sustainability practices, following eco-city policy networks can help us understand ways that urban sustainability and green capitalism articulate with one another across space and time. This will involve studying structural mechanisms facilitating institutional convergence and divergence, including relatively durable institutional geometries, inter-jurisdictional circulatory networks, and political and economic logics of path-dependency.

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Notes:

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<sup>i</sup> Our use of “variegated” draws from the emerging research paradigm of “Variegated Capitalism”, a theoretical approach that complicates the Varieties of Capitalism school of global political economy (Peck and Theodore 2007). The Varieties of Capitalism literature maintains that capitalism has multiple forms, particularly laissez-faire vs. corporatist capitalism, seeking to understand the differentiated evolution of capitalist governance in national economies. Variegated capitalism focuses on geographical differentiation across different spatial scales and places, approaching capitalism as the representation and reconstruction of conjunctural processes comprising grounded political actions, institutional reinventions, and articulations with socio-regulatory transformations. Adopting this approach, we maintain that urban sustainability practices reflect conjunctural experimentations shaped by local contestations, contradictory evolutions, and multi-scalar regulatory forces (Peck, 2010).

<sup>ii</sup> i.e., the commercialization and commodification of second nature (O'Connor, 1998).

<sup>iii</sup> Prytherch (2002) shows how even Tucson, Arizona, became an eco-entrepreneurial city.

<sup>iv</sup> See Chongming County Tourism Bureau website: <http://www.cmtravel.com.cn/webcm/>

<sup>v</sup> According to interviews with a project manager at Tianjin Municipal government-funded Tianjin Binhai Tourism Area Construction and Development Company (September 24, 2011), and a planner at the Tianjin Ecocity Construction Bureau (September 29, 2011).

<sup>vi</sup> SCDIDC was established by SIIC in collaboration with Shanghai City Government and Chongming County Government to manage the financial investment and real estate development in and around the project site.

<sup>vii</sup> Original text is in Mandarin, translated by Chang.

<sup>viii</sup> Available at: <<http://cppcc.people.com.cn/BIG5/34961/120830/120959/7158119.html>> (accessed on October 1, 2011)

<sup>ix</sup> Interview with a local government officer on August 30, 2010 in Mandarin, translated by Chang.

<sup>x</sup> Interview with a local planning expert on August 17, 2010 in Mandarin, translated by Chang.

<sup>xi</sup> Interview with a local planning expert, also a Shanghai Municipal Government Consultant, on August 17, 2010 in Mandarin, translated by Chang.

<sup>xii</sup> Interview with a local planning expert on August 17, 2010 in Mandarin, translated by Chang.

<sup>xiii</sup> Interview with a local eco-planning expert on August 21, 2010 in Mandarin, translated by Chang.

<sup>xiv</sup> Interview with a local planning expert on August 17, 2010 in Mandarin, translated by Chang.

<sup>xv</sup> Interview with a local government officer on August 30, 2010 in Mandarin, translated by Chang.

<sup>xvi</sup> Sigrist (2009) and Hald (2009) made the same observation in their research.

<sup>xvii</sup> Interview with a local resident on September 1, 2010 in Mandarin, translated by Chang.

<sup>xviii</sup> Mason and Whitehead (2011)'s recent research on "transition urbanism" demonstrates this localism perspective in urban sustainability.