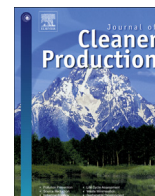


Contents lists available at [ScienceDirect](http://ScienceDirect.com)

## Journal of Cleaner Production

journal homepage: [www.elsevier.com/locate/jclepro](http://www.elsevier.com/locate/jclepro)

## Call for papers

## Call for papers for a special volume of the *Journal of Cleaner Production* on urban ecological infrastructure for healthier cities: governance, management and engineering

Feng Li <sup>a,\*</sup>, Rusong Wang <sup>a</sup>, Donald Huisingh <sup>b</sup><sup>a</sup> State Key Laboratory of Urban and Regional Ecology, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences,

18 Shuangqing Road, Beijing 100085, China

<sup>b</sup> Institute for a Secure and Sustainable Environment, University of Tennessee, Knoxville, TN, USA

The world is undergoing an unprecedented urbanization, especially in the rapidly transitioning countries such as China. During the past three decades, China's urban population increased from 18% in 1978 to 52.6% in 2012 while the city 'built-up area' doubled and residents increased by 2.5 times. The pace, depth, and magnitude of these changes, while bringing about benefits to local people and the global economy, are causing severe ecological stresses on both local human living conditions and regional life support systems. Facing ever increasing environmental challenges of urban flooding, heat island effects, haze and smoggy atmosphere (Wang et al., 2014), a new vision and new path of ecologically sound urbanization in governance, engineering and management is urgently needed.

The concept of ecological infrastructure (EI) was put forward in 1984 within UNESCO's annual report on Man and Biosphere Program. Urban ecological infrastructure (UEI) as a special type of EI can provide integrative ecological services for urban dwellers on the one hand, and does not add ecological burdens to the external system on the other hand. This is because UEI approaches, when implemented properly, can help cities' leaders to systematically and comprehensively manage all aspects of water quantity and quality, energy supply and heat dissipation, soil fertility and nutrient usage, minimize runoff, increase reuse and recycling of waste materials (Xu et al., 2012), as they enhance the ecological integrity within and around cities and reduce ecological burdens.

In order to actively contribute to the discourse of New Urbanization, the Chinese Academy of Engineering and the International Council on Ecomopolis Development jointly organized an International Ecomopolis Forum on "Urban Ecological Infrastructure for New Urbanization: Engineering and Management" that was held in Beijing on Nov. 28–30, 2013. With the presence of international researchers, engineers, policy makers and entrepreneurs, the Forum was designed to review and to systematically discuss new governance, engineering and technologies available for improved urban ecological infrastructure (UEI), which can

contribute to the development of urban ecological engineering theories, methods and tools, to provide scientific knowledge and practical approaches for the prevention and control of urban water pollution, haze, smog, heat island effects, soil pollution and losses in ecosystem services due to decreasing biodiversity and extent of habitats. Based on the brainstorming framework within the forum, this worldwide Call for Papers (CfPs) for a Special Volume of Journal of Cleaner Production was designed to focus upon the following issues:

### 1. Theme one: from civil infrastructure to ecological infrastructure: diagnoses and remedies of urban illnesses

Urban ecological degradation is sometimes characterized by the so called "five-color ecological effects" caused by imbalances of ecological coupling among Mass, Matter, Man and Milieu. Within this scheme, red refers to heat island effects, green refers to water eutrophication effects, grey refers to haze/smog effects, yellow refers to dust and sand effects and white refers to patch effects of quarry spots within or near to the suburbs.

These problems are rooted in the institutional, cultural and technical fragmentation of past and current urban developments. The evolving industrial civilization separates man from nature, economy from environment, production from consumption and recycling, city from countryside, nature exploitation from restoration, material life from spiritual life and industry from agricultural development. This type of development is based upon a reductionist philosophy, which is often mono-disciplinary and based upon isolated, narrowly focused knowledge that results in too local and limited planning and management in scope and time horizon.

The urban ecological infrastructure (UEI), a kind of public service system, can provide basic ecological services for urban production and consumption activities. It helps to ensure sustainable development of natural and social ecological processes. Here natural ecological infrastructures include: the **Kidneys** (wetlands), the **Lungs** (green spaces), the **Arteries** (corridors), the **Skin** (impervious surfaces) and **Anus** (outlets). Thus, the acronym **KLASA** is used for this metaphorical description of cities, wherein water, biomes,

\* Corresponding author. Tel.: +86 10 62849103.  
E-mail address: [lifeng@rcees.ac.cn](mailto:lifeng@rcees.ac.cn) (F. Li).

energy/air, soil and minerals issues are highlighted and focused upon. The topics to be addressed within Theme One of this Special Volume will target, but not be limited, to the following:

- Development of impact assessments and solutions for urban land use and cover changes which cause degradation of urban wetlands both in quantities and qualities;
- Development of impact assessments and solutions for urban land use and cover changes on the spatial distributions and functions of urban green spaces;
- Development of assessments and solutions for urban traffic congestion and landscape fragmentation of urban green spaces and wetlands;
- Development of assessments and solutions for the spatial distributions and complex ecological effects of urban impervious surfaces;
- Development of assessments and solutions for urban waste discharge and treatment problems.

## **2. Theme two: international experiences and lessons in urban “green-blue” ecological engineering to develop and enforce standards for restoration of natural and social ecosystem services**

There are many demands for both natural and social ecosystem services in all urban areas. The restoration of natural and social ecosystem services in urban areas needs “green-blue” ecological engineering to restore the quantities, qualities, structures, functions, and services of healthy and sustainable urban wetlands and green spaces (Li et al., 2014). The experiences and lessons of relevant researches and case studies worldwide can provide valuable insights for effective approaches for restoring and conserving urban ecosystem services. Topics of interest will target but not be limited to the following fields:

- Learning from international lessons in urban “green-blue” ecological planning, engineering and management;
- Achieving enhancement of urban ecosystem services through ecological restoration engineering of green spaces and blue spaces (wetlands);
- Enhancing urban ecosystem services through integration of ecological corridors;
- Establishing and implementing standards for restoration of natural and social ecosystem services.

## **3. Theme three: implementation of integrated urban waste management, recycling and treatment policies and facilities**

Concepts, policies and technological approaches for urban waste treatment must be transformed from traditional civil infrastructure and environmental engineering to ecological infrastructure and ecological engineering. A more effective way to manage urban wastes is all wastes should be viewed as ‘wasted resources’ and therefore, should be reduced, as much as possible at their sources. Thus all waste discharge outlets, such as chimneys, drains and garbage stations should be designed with multiple and integrated functions of prevention, minimization, reuse, recycling and end-of-life management in ways that reduce materials and energy throughput and protect the health of humans and the ecosystems upon which we are all totally interdependent (Zhou et al., 2011). Topics of interests will target, but not be limited to, the following fields:

- Innovative and smart eco-infrastructures for prevention, minimization and material cycling of urban waste streams (including municipal solid waste, wastewater and waste gases), and the technology, governance, public participation and management of such eco-infrastructures.
- Integration of multiple technologies and facilities in the field of urban waste management, e.g. integrated eco-infrastructure for managing domestic & restaurant wastes, agricultural wastes, and livestock manure.
- Better training, better management, better monitoring and better policies that could be used to enforce practices to prevent, minimize and utilize waste materials in new and effective ways to urban ecosystem cycles.

## **4. Theme four: design and modify urban impervious surfaces through ecological engineering**

Cities have large areas of impervious surfaces comprised of buildings, roads and parking lots that provide valuable functions but at the same time create negative impacts. The compound impacts of urban impervious surfaces are becoming increasingly understood to be very negative upon human health and ecosystem functioning (Zhao et al., 2012).

Therefore, there is an urgent need for the development and implementation of ecological restoration and conservation methods for ecosystem service planning, engineering and management. These elements must be designed to optimize urban surface structures, to integrate urban ecological infrastructures, to strengthen urban ecosystem services, and to improve urban ecological quality while enhancing the quality of human life.

Improvements must be made in urban surface ecology, which addresses surface runoff prevention, minimization and management (Li et al., 2014). It must also include surface soil restoration, improved, integrated, ecologically sound landscape revitalization. These approaches must be integrated with building roof/facet greening, ditch bank and bed restoration. Topics of interests will focus upon, but not be limited to, the following fields:

- Reviews and case studies of constructing & monitoring the functioning of rain gardens, i.e., green spaces and wetlands at and below the ground surface through ecological engineering.
- Reviews and case studies of constructing & monitoring the functioning of green roofs and vertical facets.
- Reviews and case studies of the benefits of replacing impervious surfaces with permeable surfaces.

## **5. Theme five: urban aorta ecology, ecological mobility and livable corridors**

Transport, the aorta of UEI is an important part of the urban socio-economic-natural complex ecosystem, which plays many important roles in supporting and guiding the development of cities. However, the development of transportation corridors causes not only positive eco-effects, but also negative ones upon humans and ecosystems. The rapid increases in ownership and usage of private cars during the recent, rapid urbanization, has caused and is causing serious transport problems, which contribute to ecosystem disruptions and increased incidences of human health problems. These are caused by and coupled with paralysis of the urban structure due to daily hours of traffic gridlock. The resultant wasted human time is in the hundreds of millions of hours per year in many cities. Additionally, the human health and ecosystem disruptions are only a few of the symptoms of totally malfunctioning

transportations systems, which must be transformed in many ways into sustainable transport concepts, approaches and systems.

In recent years, increasingly, leaders in some advanced cities have begun to pay more attention to developing eco-mobility, which is not a new way of transport, but rather a more comprehensive approach to planning and implementation of integrated transportation modes into safe, convenient, efficient, ecologically sound and humanized transport systems.

Topics of interest for this theme will target, but not be limited to, the following fields:

- Planning of urban traffic systems and assessment of transport ecology;
- Research on eco-mobility development and its ecological connotations;
- Scenario analysis of sustainable eco-mobility modes in megacities;
- Planning of slow traffic systems, including pedestrian, cycle way, etc.;
- Designation, planning, implementation and governance of urban ecological and livable corridors.

## 6. Theme six: integrative design criteria and cases of urban ecological infrastructure management

It is becoming clear that progress can be made by focusing upon the content of themes one through five of this Special Volume. However, that may not be good enough. We need to integrate all of these approaches into a holistic, integrated, living city dynamic system. This must be integrated to help plan, implement, monitor, and continue to support the transformation of urban metabolism of its wetlands such as rivers, lakes, ponds and marshes (the Kidneys).

This must be integrated with diversified and rich urban nature, parks, gardens, plants, animals, microorganisms and agro-forestry (the Lungs). But that is not enough; we must also integrate and build upon natural and unobstructed urban corridors and main avenues, which respect the Feng-shui concepts (the Arteries).

Additionally, we must help to ensure health promoting safely respirable air and livable urban surfaces, such as building roofs, riverbanks and roads (the Skin). These must be supported by ecologically sound urban waste prevention, reduction, reuse, recycling and management via discharging, buffering, reduction and regeneration outlets (the Anus).

All of this must be integrated within the context of sustainable design criteria, proper monitoring of progress, supportive governance, open and transparent education and sound management.

Topics of interests for this integrative theme will target, but not be limited to, the following fields:

- Integrative design criteria for transformation of urban ecological infrastructure to more ecologically and humanely sustainable systems;
- Integrative management cases of urban ecological infrastructure transformation;
- Methods and case studies for integration of urban ecological infrastructure and municipal infrastructure into systems that clearly support better quality of human life and are based upon healthier ecosystems and with better governance.

## 7. Theme seven: the roles of urban ecological infrastructure in industrial parks and industrial clusters

Industrial parks and industrial clusters have played a significant role in regional and national economic development. There are

1568 national and provincial industrial parks in China, producing more than 60% of the gross industrial output and 50% of the gross domestic product (GDP). However, the concentrated industrial activities in these parks and clusters have created and are creating numerous environmental problems, such as giant wastewater challenges, surging air pollution levels that are causing epidemics of respiratory and heart diseases among urban dwellers. Additionally, solid waste, heavy metal pollution, increasing noise levels and increases in crime levels are making life in many urban centers increasingly stressful at multiple levels.

The possible roles of Eco-industrial parks and industrial clusters in helping to improve urban quality of life have not been adequately addressed in inter-related studies. It is believed that, industrial parks and industrial clusters can play important roles in the building process of ecological infrastructure, since they can provide concentrated management and can foster the implementation of holistic infrastructure transformation. There are many potential benefits from properly designed, built, monitored and enforced industrial parks and industrial clusters.

Therefore, topics of interest for this theme will target, but not be limited, to the following fields:

- Present situations and trends of ecological infrastructures in industrial parks or industrial clusters and document how they are or can potentially help to improve the surrounding urban context;
- Investigate the diverse roles and approaches to the planning and management of ecological infrastructures in industrial parks or industrial clusters so that they help to improve the surrounding urban lifestyles;
- Explore and evaluate the effectiveness of diverse ecological infrastructure technologies, methods, effects, and policies in industrial parks or industrial clusters, within the context of climate change, smog and other negative urban challenges;
- Investigate and seek ways of reducing the negative environmental and ecological impacts of typical industrial parks or industrial clusters.

### Tentative schedule

- Call for papers issued during August 2014.
- Submission of 500-word, extended abstracts to Feng Li ([lifeng@rcees.ac.cn](mailto:lifeng@rcees.ac.cn)) by October 30, 2014.
- The selected authors will be invited to develop full, peer-reviewready papers by November 15, 2014.
- The selected authors will be expected to submit their 'peer-review ready' documents to Elsevier via the EES system by February 28, 2015.
- Peer review/paper revision process will be performed from March 2015 to August 30, 2015.
- Submission of the final versions of revised papers by September 30, 2015.
- Authors informed of decisions about minor changes by October 15, 2015.
- Deadline for revisions of all papers, including the introductory paper for the Special Volume submitted and in the corrected proof phase by November 30, 2015.
- Publication of this Special Volume during December 2015.

### Paper submission

Authors must select 'Healthier Cities' as the article type for this Special Volume on Urban Ecological Infrastructure for Healthier Cities: Governance, Management and Engineering" when they wish to submit their manuscript to Elsevier's EES system.

Authors are invited to submit different types of papers for potential publication in this Special Volume. Papers should be between 9000 and 11,000 words for 'comprehensive reviews' between 7000 and 8500 words for 'theoretical papers based upon empirical studies' and between 4000 and 6000 words for 'case studies.'

Papers must be written in good English. Authors with limitations in the command of written English are recommended to have their papers edited by a Native English Science Editor before the first submission because poorly written pieces can compromise the decisions during the review process. Similarly, they should have their final document edited by a Native English Science Editor before they submit it to the editorial team for the final review and for publication within the Journal of Cleaner Production.

All authors must follow the editorial guidelines provided in the instructions for authors for the Journal of Cleaner Production, which can be accessed via the website: <http://www.elsevier.com/journals/journal-of-cleaner-production/0959-6526/guide-for-authors>.

Authors should submit their manuscripts in MSWord to <http://ees.elsevier.com/jclepro/>.

By submitting a manuscript, the author(s) must certify that the contribution is original and has not been published or is not under consideration for publication elsewhere and that no part of the material breaches the copyrights of others. All articles will be first evaluated by the editors of this special volume to assure suitability with the scope of both the Special Volume and of the Journal. After the first screening, suitable papers will be submitted to a single blind, peer review process according to the standards of the Journal of Cleaner Production. The review/revision process may need to be repeated several times for many articles to ensure that all authors or author teams achieve top quality.

### Managing Guest Editors

Professor Dr. Rusong Wang, State Key Laboratory of Urban and Regional Ecology, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing 100085, China. [wangrs@rcees.ac.cn](mailto:wangrs@rcees.ac.cn).

Dr. Feng Li, State Key Laboratory of Urban and Regional Ecology, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing 100085, China. [lifeng@rcees.ac.cn](mailto:lifeng@rcees.ac.cn).

### Assistant Guest Editors

Dr. Yutao Wang, Institute of Ecology and Biodiversity, School of Life Science, Shandong University, Jinan 250100, China. [yutaowang@sdu.edu.cn](mailto:yutaowang@sdu.edu.cn).

Dr. Bin Chen, School of Environment, Beijing Normal University, Beijing 100875, China. [chenb@bnu.edu.cn](mailto:chenb@bnu.edu.cn).

Dr. Lei Zhang, School of Environment and Natural Resources, Renmin University of China, Beijing 100872, China. [lei.leizhang@gmail.com](mailto:lei.leizhang@gmail.com).

### Editor-in-chief of the Journal of Cleaner Production

Authors may also confer with the 'Editor-in-Chief' of the Journal of Cleaner Production.

Professor Dr. Donald Huisingh.

University of Tennessee.

Knoxville, TN, USA. [donaldhuisingh@comcast.net](mailto:donaldhuisingh@comcast.net).

### Acknowledgments

This research was funded by the National Natural Science Foundation of China (No. 71273254, 71033005). We thank Dr. Dan Hu, Chuanbin Zhou, Heping Huang, Yutao Wang, Bin Chen and Lei Zhang for their suggestions and help for this Special Volume.

### References

- Li, F., Wang, R.S., Zhao, D., 2014. Urban ecological infrastructure based on ecosystem services: status, problems and perspectives. *Acta Ecol. Sinica (in Chinese)* 34 (1), 190–200.
- Wang, R.S., Li, F., Han, B.L., Huang, H.P., Yin, K., 2014. Urban eco-complex and eco-space management. *Acta Ecol. Sinica (in Chinese)* 34 (1), 1–11.
- Xu, M., Weissburg, M., Newell, J.P., Crittenden, J.C., 2012. Developing a science of infrastructure ecology for sustainable urban systems. *Environ. Sci. Technol* 46, 7928–7929.
- Zhao, D., Li, F., Wang, R.S., Yang, Q.R., Ni, H.S., 2012. Effect of soil sealing on the microbial biomass, N transformation and related enzyme activities at various depths of soils in urban area of Beijing, China. *J. Soils Sediments* 12, 519–530.
- Zhou, C.B., Hu, D., Wang, R.S., Liu, J.R., 2011. Exergetic assessment of municipal solid waste management system in south Beijing. *Ecol. Model* 8, 171–176.