生态城市：一个崇高的理想和目标

——城市复合生态系统与生态城市规划原则的探索

Eco-city: A Great Ideal and Goal

——Exploring Integrated Urban Eco-system and Principles for Eco-city Planning

中国城市规划设计研究院
China Academy of Urban Planning & Design
国际合作发展部 · 国际城市规划研究室
Intl. Urban Planning Research Section, Intl. Cooperation. Dept.
汇报人：黄鹭新
Presented by: Huang Luxin
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前言
Introduction

- 科技进步、生活质量提高——探索能力增强、索取要求过大
- 掠夺式索取——污染和破坏持续增加
- 发展的快感 vs. 毁灭的阴影
- 市场化、全球化、信息化 vs.. 气候变暖、人口爆炸、能源危机
- 经济增长 vs. 环境破坏——长期存在、不断恶化
- 多方关注——加快规划的生态化步伐
- 可持续城市 & 生态城市

- Technology Development, Improved Living Conditions—Over-Exploitation and Demand
- Grappling Demand--Increased Pollution & Destruction
- Pros of Development vs. Cons of Destruction
- Marketing, Globalization & Information vs. Global Warming, Population Boom & Energy Crisis
- Economic Development vs. Environmental Destruction– Real and Worsening
- Calling Attention by Various Sectors– to Accelerate Eco-planning Development
- Sustainable Cities & Eco-cities

认识生态城市和生态城市规划
Understanding Eco-city and Eco-city Planning

- 生态城市——同样一幅美妙图画？
- 生态: 生命体与环境及其他生命体间的依存和影响关系
- 传统生态观：生态+ 城市——自然生态+社会经济
- 新的生态观：社会和经济——复杂"生命体"——复合生态系统
- 复合生态系统运行良好——真正意义上的生态城市
- 生态城市规划——着眼于解决城市复合生态系统的城市规划

- Eco-city– A Magnificent View?
- Ecology: Relationship between lives and environment
- Traditional Ecological View: Ecology + City—Natural Ecology +Social Economy
- New Ecological View: Society and Economy–Integrated "Life"– Integrated Eco-system
- A Healthy Integrated Eco-system–A Real Eco-city
- Eco-city Planning– Focusing on an Integrated Eco-system

认识生态城市和生态城市规划
Understanding Eco-city and Eco-city Planning

- 可持续城市——现实的压力和要求
- 反思工业文明问题后的被迫改良和选择
- 生态城市——崇高的理想和目标
- 体现生态文明自觉的价值观的追求

Sustainable City—Real Pressures and Demands

Improvements and Choices in response to the Side-effects of Industrialization

Eco-city—A Great Vision and Goal To Embrace the Value of Eco-civilization

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自然生态学派与社会经济学派的鸿沟
A Gap between the Ecological and the Social

- 专业背景不同
- 生态学、环境 vs. 建筑学、工程学、经济地理
- 以往综合二者的尝试——认识、表达有局限
- 关键问题：促进"生态"与"城市"的跨学科理解、交流与沟通

Different Disciplines and Perspectives:

Ecology, Environment
vs. Architecture, Engineering & Eco-geography

Prior Attempts– Limited Understanding and Communication

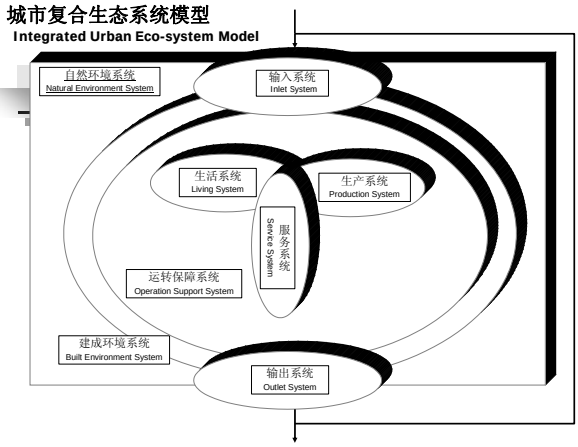
Key Issue: Understanding and Communication between the "Ecological" and the "Urban"

城市复合生态系统模型
Integrated Urban Eco-system Model

- 目前规划实践中的一些可喜尝试
- 创建简明、清晰的系统理论模型
- 重新认识城市复合生态系统
- 综合双方优点建立规划原则与策略

- Now: Positive Planning Experiments
- Creating a Simple, Clear Systems Model
- Recognizing a New Integrated Urban Eco-System
- Establishing Planning Principals and Strategies with Advantages for Both Sides

城市复合生态系统模型
Integrated Urban Eco-system Model



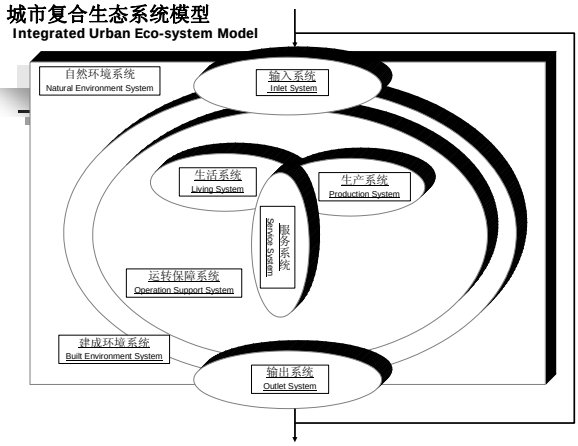
城市复合生态系统模型
Integrated Urban Eco-system Model

自然空间和物质环境，包括水文、地质、地理、气候、气象、土地资源、矿藏、植被、动物及其栖息地、天然能源、水资源、海洋、河流、湖泊、沟渠、山体、空气、原材料、自然景观等。

Refers to the Natural Space and Environment, including

- Hydrology
- Soil
- Flora/Fauna
- Geology
- Etc.

城市复合生态系统模型
Integrated Urban Eco-system Model



城市复合生态系统模型
Integrated Urban Eco-system Model

人造空间、物质环境和设施，包括耕地、人工林地、人造山体、人工湖泊和水库、公园绿地，各类建筑物、构筑物、道路街巷、机场、码头、港口、人文景观等。城市建成环境与自然环境相叠加，是城市活动的容器，承载着城市的资本、信息、人口、劳动力，以及其他物质和非物质产品。

Refers to Artificial Spaces, Environment and Facilities, Including

- Landfills
- Artificial Forests, Hills, Lakes, Dams
- Parks
- Construction
- Etc.

Combined with the Natural Environment System, the Built Environment System contains civil life, capital, information, population , manpower and other material and immaterial products.

城市复合生态系统模型
Integrated Urban Eco-system Model

包括：交通和航运网络（机动性、可达性、安全性、出行模式）、水厂及供水网络、排水网络、电厂及供电网络、信息发布及传递网络、热力厂及供热网络、燃气厂及燃气网络、污水厂及排污网络、垃圾处理厂（场）及垃圾收集网络、炼油厂及燃油供应网络、安全网络（消防、治安、防洪、防空、防疫、防恐等）, 3R原则

Includes:

- Transport
- Waterworks
- Power
- Information
- Security
- 3R principle

城市复合生态系统模型

Integrated Urban Eco-system Model

包括：社区网络、消费模式、人居建成环境、居住建筑（节能建筑、绿色建筑）、民风民俗、历史遗存、传统风貌、公园绿地、配套服务设施（小型商贸、作坊、托幼、小学、中学、诊所、垃圾清运、休闲娱乐、婚丧嫁娶），3R原则

Refers to

- Community
- Consumption
- Residences
- Culture and History
- Services
- 3R principle
- Etc.

城市复合生态系统模型

Integrated Urban Eco-system Model

包括：产业链、产业结构和分工、产业布局、农林牧副渔、工业、加工业、手工业、仓储业、建筑业、传统和特色产业、高新技术产业、原材料和能源利用、生产性消费、产业建成环境、工业建筑、配套服务设施、行业服务协作；技术创新、节能减排、循环经济、生态产业，3R原则

Includes

- Industry
- Construction
- Agriculture
- Tech innovation
- Etc.

城市复合生态系统模型

Integrated Urban Eco-system Model

包括：政府、政策、管治、体制、制度、法律、法规、规划、设计、社团、金融、保险、中介、房地产、物流、大型商贸批发、高等教育、成人教育、医疗卫生保健、民政、社保、传媒（广播、电视、因特网、报纸、杂志）、文化创意产业、服务建成环境、服务建筑

Includes

- Government, structure, policies
- Laws, regulations
- Planning, design
- Finance, insurance, real estate
- Education
- Health care, social security
- Media, creative industries,
- Etc.

城市复合生态系统模型

Integrated Urban Eco-system Model

取决于包括城市自身在内的区域政治经济人口和自然状况及其空间结构、构造和网络、区域交通运输（水陆空）和贸易网络、区域通信网络：区域政治经济人口影响力、水文、地理、气候、气象、能源（包括太阳能、风能等低碳、可再生清洁能源）、水资源、空气、动植物、土壤、原材料、建筑材料、资本、信息、劳动力、游客以及其他物质和非物质产品

Integrated model depends on the city, including its

- Regional politics/economy/role
- Population
- Spatial structures
- Climate
- Trade
- Resources, climate, weather, energy, labor
- Etc.

城市复合生态系统模型

Integrated Urban Eco-system Model

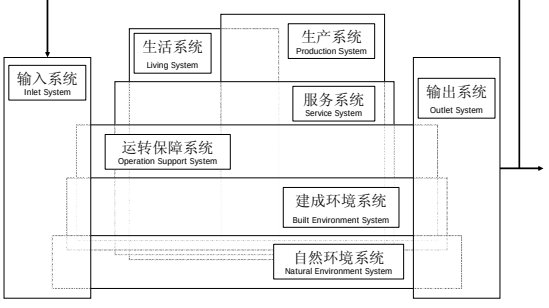
取决于包括城市自身在内的区域政治经济人口和自然状况及其空间结构、构造和网络、区域交通运输（水陆空）和贸易网络、对外通信网络：政治经济人口影响力、资本、能源、水资源、空气、动植物、土壤、原材料、信息、劳动力、游客以及其他物质和非物质产品（良性输出）；未有效利用资源和能源; 固体废物、废水、废气、废油、有毒有害化学物质（不良输出）

Inefficient use of resources and energy; Solid waste, waste water, waste gas, waste oil, toxic and harmful chemicals:

Negative Output

城市复合生态系统模型（剖面模拟）

Integrated Urban Eco-system Model（Section Simulation)



城市复合生态系统与中国城市规划
Integrated Urban Eco-system and China's Urban Planning

（1）区域协调、整体规划
（2）因地制宜、循序渐进
（3）节能高效、集约安全
（4）低炭减排、循环经济
（5）技术进步、卫生环保
（6）和谐宜居、公正公平
（7）文化传承、特色突出
（8）网络畅通、机制协调
（9）及时监控、动态调整

1. Regional Coordination, Integrated Planning
2. Respect for Local Conditions, Acting Incrementally
3. Energy-Saving and Efficiency, Compact and Safe
4. Reduce emissions, Low-carbon and Cyclic Economy
5. Technological Progress, Hygienic and Environ-friendly
6. Creating Harmonious and livable Environment, with justice and equality
7. Inheriting Culture and Enhancing Character
8. Network Expediting and Institutional Coordination
9. Timely Monitoring and Dynamic Adjustment

以往的误区与新的方向 Previous Mistakes and New Directions

	以往城市规划中的误区	生态城市规划的方向
哲学基础	功利主义、工具主义、人类中心主义	人与自然和谐相处，尊重自然价值
指导思想	为经济增长建设服务；保护与发展对立； 城市增长正面影响最大化（大建设，大手笔）	可持续发展 保护就是"发展" 城市增长的负面影响最小化（如循环经济）
价值取向	经济效益（经济成本效益） 城市规模和增长速度 因市场制宜，鼓励强者生存	资源的综合效益（有限开发集约利用：单位资源利用效率） 增长容量和可承载力 因地制宜，重视多样性（保护弱势）
思维模式	线性思维 单一问题思维	系统思维（多元价值；多目标） 整体思维
规划目标	经济建设目标为主	多元目标，体现生态立市
规划内容	重视经济和社会问题，忽视自然； 均质功能分区	融入自然系统分析和规划（包括生态保护与生态恢复） 采用生态功能分区
规划控制	技术规范控制	技术规范控制与"公共政策"引导
规划流程	静态规划（重视结果，终极决定论）	动态规划（重视实际发生过程） 重视情景分析和环境影响评价
关注重点	城市竞争能力 城市带动能力 输入	城市安全 城市与区域平衡发展（协调与补偿） 输入与输出相对平衡
保护理念	单种资源和单体资源保护	整体性保护，强调资源的生态服务功能
保障体系	以行政协调为主	要求更多的法制化和更广泛的社会参与

以往的误区与新的方向 Previous Mistakes and New Directions

	Past Planning Mistakes	Eco-Planning
Philosophical Basis	Utilitarianism, instrumentalism and anthropocentrism	Harmony between man and nature, respect for nature
guiding ideology	Conflict between conservation and development for economic growth; maximize benefit	Sustainable development; protection is "development"; minimize negative impacts
Value	Economic benefits; city scale and development speed	The overall efficiency of resources Capacity growth Att'n to local conditions and diversity
Thinking mode	Linear thinking and single-issue focus	Systems thinking (multiple values; multi-target)
Planning objectives	Concentration on economic development	Multiple goals, ecological city
Planning content	Attention to economic and social, not the natural; Functional districts	Integration of natural systems analysis and planning (including ecological protection and restoration) Ecological function area
Planning Controls	Technical specifications	Technical specifications and "Public policy"
Planning Process	Static planning (depend on the result)	Dynamic planning (depends on process); scenario analysis and environmental impact assessment
Major concerns	City competitiveness; city promoting capacity; input	Security; city and regional balance (coordination and compensation); balance between input and output
Protection	Single resource protection	Comprehensive protection, stresses resources and ecological services
Security	Depends on administrative coordination	More legal and wider community involvement

城市复合生态系统与中国城市规划
Integrated Urban Eco-system and China's Urban Planning
生态城市专项规划初步原则

- 城市性质和职能 强调生态立市：生态发展至少与经济发展目标同样重要
- 城市规模 根据资源环境和承载力确定城市增长速度和规模
  - 紧凑型城市：严格控制用地规模，集约发展强度适中
- 城市总体布局与土地利用规划 结合区域和市域的生态位进行布局 多功能综合化，避免单一功能用地 根据生态条件将分为优先发展、控制发展和生态保育区等

- The nature and functions of the city
  - Eco-development is at least as important as economic development
- City scale Growth based on natural resource conditions
  - Compact city: land use controlled, mid-level and intensive development
- City lay-out and land use planning
  - Consider the regional and city-wide ecology
  - Mixed-use for land
  - Dividing the land into three levels:
    - priority development, controlled development, and protected development

城市复合生态系统与中国城市规划
Integrated Urban Eco-system and China's Urban Planning
生态城市专项规划初步原则

- 居住区规划 总体布局结合自然条件合理控制利用风、日照、自然光等 保证功能、景观、活动场所多样性附近有足够的就业机会
  - 出行方便
  - 便于交流、充满活力、有场所感的社区环境
  - 3R原则 服务设施规划
  - 高效利用大型设施，防止重复建设
  - 商业公共设施用地多级配置
  - 各项生活性设施社区配套

- Residential District Planning Master-plan layout considering the natural conditions
  - Diversity in function, landscaping and communities
  - Employment opportunities nearby
  - Convenient travel
  - Community environment with vitality
  - 3R principles
- Service infrastructure planning
  - Efficient and non-redundant facilities and construction
  - Multi-level public commercial land use
  - Integrated community facilities for daily life

城市复合生态系统与中国城市规划
Integrated Urban Eco-system and China's Urban Planning
生态城市专项规划初步原则

- 产业规划 根据本地资源优势选择产业
  - 加强城市间的生产分工与协作，城市内应形成产业链关联密切的地域生产综合体
  - 加强生态工业园的建设，促进相关产业在生态工业园集聚，提高资源利用效率，发展循环经济 推进产业的升级和改造，减少高污染产业和高耗能产业的比重，促进生态产业发展 工业和仓储用地集约化
  - 3R原则

- Industry Planning Industry development according to local advantages
- Strengthen cooperation between cities, promoting regional multi-industry base
  - Strengthen eco-industry parks that house related industries; improve resource efficiency and recycling economy
  - Promote industry retrofit, decreasing proportion of polluting and energy-intensive industry, promote green industry
  - Intensive land use for industry and storage
  - 3R principles

城市复合生态系统与中国城市
Integrated Urban Eco-system and China's Urban Planning
生态城市专项规划初步原则
the basic principles of the Eco-city planning

- 城市对外交通规划
  - 港口机场等大型设施区域共享
  - 防止超前建设
- 城市道路交通系统规划
  - 公交、非机动车优先发展
  - 良好的步行系统
  - 结合土地利用规划减少出行需求
  - 公交+ TOD导向

- Planning outbound traffic of the city
- Regional sharing of port, airport, etc.
- Prevent advance building in advance
- Urban Traffic System Planning
  - giving priority to the development of Public transportation and non-motorized vehicles
  - Pedestrian-friendly
  - Reduce travel demand with land-use planning
  - Transit + TOD

城市复合生态系统与中国城市规划
Integrated Urban Eco-system and China's Urban Planning
生态城市专项规划基本原则
the basic principles of the Eco-city planning

- 城市绿地系统规划
  - 保证绿化覆盖率和人均绿地
  - 注重绿地生态服务功能：保护绿地自然形态，引入生态效益的自然群落，尽量采用原生及乡土植物
  - 整体布局，建设城市生态廊道和网络；强调绿地间生态联系，引入"斑块"和"廊道"概念，通过生态廊道的建设，建立绿地系统之间的生态联系
  - 保证生产防护绿地
- 景观风貌规划
  - 将"自然"引入城市

- Urban Green Space System Planning
  - Guaranteed coverage and per capita green space
  - Attention to green services
  - The overall layout of the corridor and network: green linkages.
  - Introduce the concept of "plaques" and "corridors
  - Guarantee the production greenbelt
- Scenery Planning
  - Bringing "nature" to the "town"

城市复合生态系统与中国城市规划
Integrated Urban Eco-system and China's Urban Planning
生态城市专项规划基本原则
the basic principles of the Eco-city planning

- 旧区更新与保护规划
  - 提高居民居住环境和生活条件
  - 完善公共配套、交通及市政设施建设
  - 优先满足各类公共设施用地需求
  - 保护完善城市传统风貌及地方特色街区和建筑物
- 给排水工程规划
  - 结合水源供需平衡分析，在缺水地区节约供水
  - 环状管网，平衡用水差异，保证供水安全
  - 减少硬面铺装，分流并雨水回补地下水
  - 污水处理，中水回用

Urban Renewal and Conservation Planning
- Improve residents' living environment and conditions
- Improve public support, transport and municipal infrastructure
- Prioritize public facilities
- Protect local characteristics and tradition

- Planning for drainage
  - Conserve water in dry areas
  - Reduce pavement
  - Protect rainwater supply, groundwater
  - Sewage treatment, water reuse

城市复合生态系统与中国城市规划
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生态城市专项规划基本原则
the basic principles of the Eco-city planning

- 生态环境保护规划
  - 保护自然过程
  - 注意生态饱和度
  - 划定生态控制区，建设区，恢复区（闲置废弃地的生态恢复）
  - 固体废物减量化、资源化（再利用）、无害化
  - 控制大气和噪音污染
  - 提高废水处理率，实现中水循环利用
- 能源系统规划
  - 与紧凑开发结合，集中供热
  - 于建筑设计和材料技术革新结合，推广节能技术革新
  - 强调再生能源、清洁能源的利用（太阳能、风能、地热能等）
  - 3R原则

Ecological and environmental protection planning
- Protection of natural process
- Attention to ecological carrying capacity
- Designate areas for protection, restoration
- Minimize solid waste
- Air and noise pollution control
- Improve wastewater treatment and water recycling

Energy System Planning
- Combine with compact development , central heating
- Combine with architectural design and materials innovation, promotion of energy-saving tech
- Emphasize clean/renewable energy3R principle

城市复合生态系统与中国城市规划
Integrated Urban Eco-system and China's Urban Planning
生态城市专项规划基本原则
the basic principles of the Eco-city planning

- 环境卫生设施规划
  - 促进垃圾分类回收
- 防灾工程规划
  - 利用生态防护防灾减灾
- 分期建设
  - 优先进行生态相关建设和生态恢复
  - 优先控制能源消耗与废物排放
  - 优先完善道路、基础设施工程建设
- 实施保障
  - 增加公共参与
  - 建立生态补偿机制

Sanitation facilities planning
- Waste separation and recovery

Disaster prevention planning
- Use ecological protection

Phased construction
- Prioritize green construction, restoration
- Control energy consumption and waste emissions
- Priority to improving roads, infrastructure

Application of Safeguards
- Increase public participation

谢谢！
Thanks!