



Environmentally Sustainable Urban Development in Vietnam (1)



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I. Introduction

Sustainable development consists of 3 integrated components: Economic development, social equity assurance, and environmental protection. National sustainable development should base on sustainable development of all locations (provinces, cities) and sectors (ministries, branches). This principle is illustrated in the Graph (Figure 1). In this paper we would like to focus on environmentally urban sustainable development.

Table 1. Urbanization trend in Vietnam over last 20 years and its prediction up to the year 2020

Year	1986	1990	1995	2000	2003	2010 (Predict)	2020 (Predict)
Number of urban areas	480	500	550	649	656		
Urban population (mio.)	11,87	13,77	14,94	19,47	20,87	30,4	46,0
Ratio of urban population vs. national wide, %	19,3	20,0	20,75	24,7	25,8	33,0	45,0

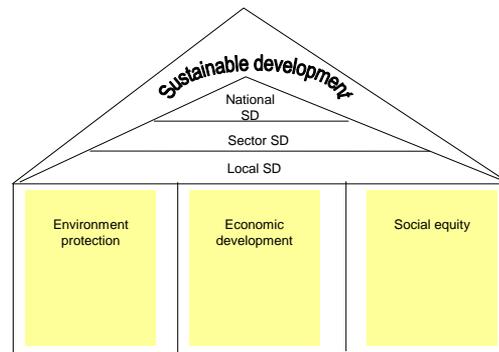


Figure 1. Scheme of sustainable development components

2. What is environmentally urban sustainable development?

Many international organizations have proposed the concept of Ecological city for specifying of environmentally sustainable urban development. In Vietnam number of urban areas have set the target of construction of a "Green – Clean and Beauty city". Based on the Eco-city concept mentioned in the WHO Conference in Liverpool in 1988 and on the concept of sustainable development in the Orientation for Sustainable Development Strategy of Vietnam, we would propose the set of main criteria of the environmentally sustainable urban development for Vietnam as follows (see Box 1).

Box 1. Set of criteria for environmentally urban sustainable development

1. The scales of urban population and socio-economic growth should be in accordance with the "environmental functions" and "loading acceptability" of the environment and resources.
2. Urban land use planning should be in conformity with functions of urban areas and with the environmental subdivision.
3. The urban activities should generate minimum of wastes including solid, liquid, gas and hazardous wastes. Wastes are recycled, reused, collected and disposed in accordance with environmental sanitary engineering.
4. To ensure that the concentration of all pollutants in the ambient environment should meet the environmental standards, and the public health was protected.
5. To ensure that the urban ecosystems were developing in a balance, including balance between the man and the fauna and flora ecosystems.
6. The urban area is with adequate engineering and social infrastructure, meeting increasing demand for a convenient life of the citizen. That includes an adequate water supply, drainage and sewerage and wastewater treatment systems, urban transportation network, solid waste collection, transportation and treatment, public health network and the public services.
7. To solve essentially the problems of urban housing, urban "slums".
8. The architecture of the constructions is designed and constructed is in compliance with the natural environment, using every natural solutions for microclimate environment improvement, economizing materials during construction and saving energy during utilization.
9. To harmonize the urban and peri-urban environment. Pollutions from urban areas do not create pressure for the peri-urban areas and vice-versa.
10. Each citizen has the environmental friendly way of life, participating in urban clean keeping, and being involved in environment protection activities.



Environmentally Sustainable Urban Development in Vietnam (2)



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3. Environment challenges for environmentally sustainable urban development

- Real urban development does not comply planning
- Development of urban engineering and social infrastructure is behind growth of population and expansion of urban areas
- Administrative urbanizing of rural units is being made without adequate consideration
- Planning for industrial development in urban areas does not meet environmental protection requirements.
- Increasing pollution of urban surface waters (See Fig. 2).
- Inundation in urban areas, especially during rainy seasons, can not be solved immediately.
- Water and sanitation coverage in urban population is still low, while water quality is still unadequate.
- Urban and industrial solid wastes are increasing in quantity and being more complex in compositions including hazards.
- Urban air pollution is more and more affecting to the public health (Fig. 3, 4).
- Growing Tourism increases loads on urban environment.

4. Proposal of management measures for environmentally sustainable urban development

- Integration of environmental protection into socio-economic development for urban areas
- Control of urban development according to the plan
- Integration of environmental protection into industrial development planning in urban areas for both new and existing industrial sites. Implementation of Decision No. 64/2003/QD-TTg of the Prime-Minister on "Plan for complete treatment of seriously environment polluting locations".
- Consideration of environmental issues in urban transport development planning
- Development of green and conservation of surface waters in urban areas.
- Setting of priority investments in urban infrastructure development.
- Unified management of urban construction and upgrading/reconstruction works.
- Planning for regional solid waste management.
- Implementation of registration, audit and control of pollution sources.
- Regular environmental monitoring and assessment.
- Environmental education and awareness raising for urban population.

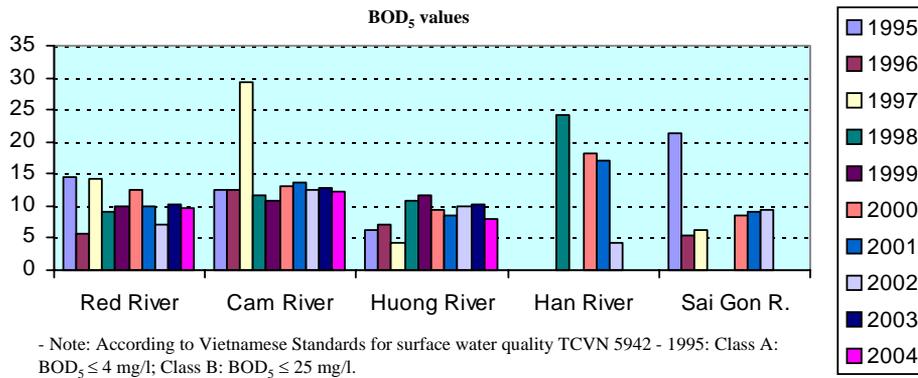


Figure 1. Evolution of BOD₅ values in monitored rivers from 1995 to 2004. (Source: Monitoring data. VEPA 1995 - 2004)

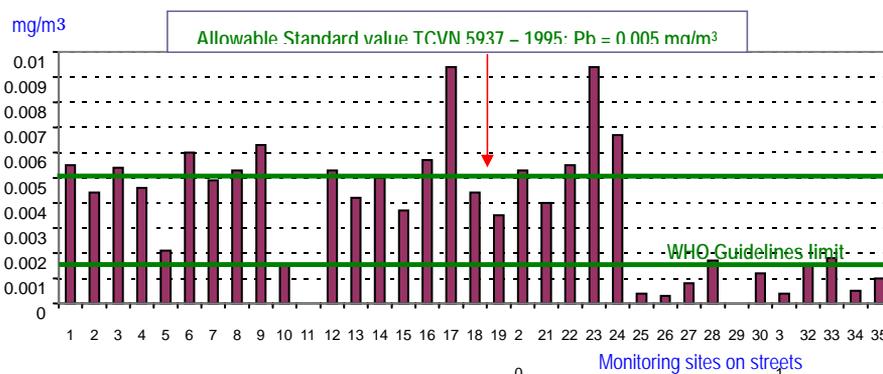


Figure 2. Concentration of Lead (Pb) (mg/m³) on 35 streets of Haiphong city in 2001. (Source: Monitoring data. VEPA 2001)

- Note: Sites from St. No. 1 to St. No. 24 were measured before July 1st 2001 when the Leadless Gasoline Regulation has come in force. Sites from St. No. 25 to St. No. 35 were measured after July 1st 2001.



Environmentally Sustainable Urban Development in Vietnam (3)



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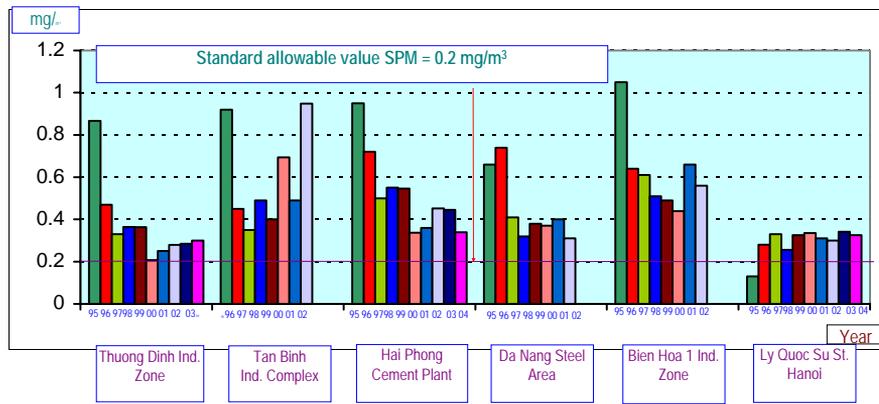


Figure 3. Evolution of average SPM values in the air (mg/m³) near industrial areas from 1995 to 2004 (Source: Monitoring data. VEPA 1995 - 2004)

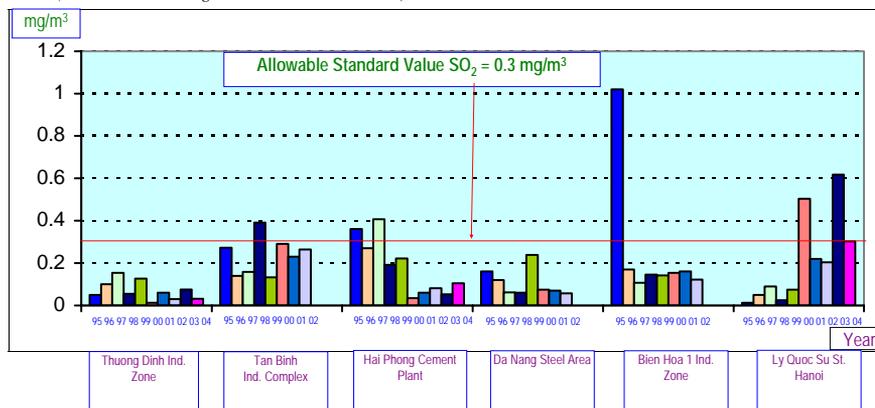


Figure 4. Evolution of average SO₂ in the air (mg/m³) near industrial areas from 1995 to 2004 (Source: Monitoring data. VEPA 1995-2004)



Figure 5. Hanoi city area. Sattelite image. 2003



Figure 6. Hanoi Master Plan for development up to 2020

4. Conclusions

The process of urbanization is intensively occurring in parallel with industrialization and modernization processes in Vietnam. Fast urbanization may create increasing pressures on resources and environment leading to degradation of the latest. Furthermore, growing ratio of urban population versus the country's population makes the sustainable urban development more important for sustainable socio-economic development strategy of Vietnam. Appropriate measures are needed for environment-sound sustainable urban development.