ENVIRONMENT POLICY AND SUSTAINABLE MANAGEMENT

45 h – 3 VNC – 6 ECTS

Contact lecturers:

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Objectives

- Knowledge:
  - By the end of this course, students should be able to understand planning environmental, environmental policy, and the environmental management system.
- Skills:
  - Recognize and articulate the role of politics in efforts to promote sustainability through public policy
  - Characterize the goals of sustainability efforts in terms of inclusive human well- being; understand the factors and assets that determine progress towards well- being; and recognize the potential for interactions, trade-offs and unintended consequences in policy efforts made for sustainability goals.
  - Identify multiple types of knowledge needed to develop sustainable solutions for particular problems.
  - Apply your skills in analyzing social-environmental systems to propose creative and practical solutions to sustainability challenges
  - Identify issues of global climate change
- Attitude:
  - Participate in discussion group
  - Build case study to apply the knowledge of Environment policy and sustainable development to the professional field.

Content of the courses:

- **Chapter 1: Introduction of environment policy**
  - Lecture 1: Introduction to the Course, Syllabus, Assignments, Grades
  - Lecture 2: The Environmental Management System
  - Lecture 3: A Complexity in Social-Environmental Systems
- **Chapter 2: Environmental policies on different fields**
  - Lecture 4: Climate changes
  - Lecture 5: Air issues
  - Lecture 6: Water issues
  - Lecture 7: Land uses changes

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- Lecture 8: Waste
- Lecture 9: Human Health

· **Chapter 3: Case studies**

- Lecture 10: Water resource management in Ho Chi Minh City
- Lecture 11: Case study in Asia region (Cambodia/Laos,...)
- Lecture 12: Case study in France/Europe

· **Chapter 4: Developing Sustainable Strategies**

- Lecture 13: Cross-Discipline Considerations
  - Issues in developing countries: sanitation and public health, changes in material resources without corresponding changes in treatment options
  - Ethical issues: links between environmental emissions and poverty
  - Sustainability traps: failed policies to address consumption (one-child, forced sterilization, etc.)
- Lecture 14: Corporate/Organizational responsibility
  - Sustainability strategy development
  - Management tools
  - Sustainable/ethical
  - Investment accounts
  - Product development and design
- Lecture 15: Policies for Sustainability
  - Sustainability in Individual Lives
  - Behavioral changes
  - Activism and group networking

Chapter 5. Urban management for Sustainability

Lecture 16. Culture and arts in sustainable development
Lecture 17. Water issues with urban development

Academic Materials

1. Iris Borowy. Defining Sustainable Development for Our Common Future: A History of the World Commission on Environment and Development (Brundtland Commission), Ed Routledge, 2014
2. Peter P. Rogers, Kazi F. Jalal, John A. Boyd. -- An Introduction to Sustainable Development, Ed Glen Education Fundation, 2008
3. Krastanova R. and Hadjitchoneva J. (eds). (2020). Changing Cities: Challenges, Predictions, Perspectives. Sofia: NBU
4. De Bercegol, R., Cave, J. and Nguyen T.H., “Informal Recycling vs municipal Waste Service in Asian cities: Opposition or Integration?”, AFD Research Papers Series, No. 2018-64, January.

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ENVIRONMENTAL POLICY

Environment policy is one of the most crucial points which decides how the environmental quality is. The international and domestic legislations provide a legal environment for organizations and individuals to work on environmental issues. The Environment Policy and Sustainable Management course provides systematic knowledge of environment related policy in Vietnam and sustainable development. This course is expected to equip students with the updated environmental policy and essential skills such as logical and critical thinking. Through lectures, seminars and group discussion, students get familiar with policy systems and policy practices. The analytical skill will be sharpened through individual assignments where students are asked to choose one environmental policy, for example, a law, a degree, etc., then make a brief summary and provide their comments for a case study for this policy.

Generally, the course covers 4 main topics which are presented by 4 chapters (i) Chapter 1. Introduction of environment policy gives students the basic information of environment legislation in Vietnam and international environment policy; (ii) Chapter 2. Environment policy on different fields provides systematic law and policy in specific environmental aspects, for instance, air, water, waste, etc.; (iii) Chapter 3. Case studies discuss variety environment policies in different countries; (iv) Chapter 4. Developing Sustainable strategy is about sustainability and tools that are developed to access sustainability.

To complete this course, students have to attend more than 90% classes and take part in group discussion and submit their individual assignment. The contribution of each component is as below:

- Attendance: 10%
  Students have to attend more than 90% classes.
- Group discussion: 10%
  Students are put in groups. Different situations are given to each group for discussion during classes.
- Individual Assignment (Mid-term exam): 30%
  Each student is asked to pick up an environment related policy or an aspect of a certain policy, do a literature review on this chosen topic and give their comments through case study analysis. All students have to submit their assignment to be able to take the final exam.
- Final exam: 50%
  This is 60 minutes-open-book exam where students have to show their synthesis and analytical skills by answering closed and opened questions.

According to EPA, Environmental management system (EMS) is a framework that helps an organization achieve its environmental goals through consistent review, evaluation, and improvement of its environmental performance. This system works on the continuous review and evaluation which enable organizations to detect the opportunity for improvement and corrective actions. There is no specific level for all organizations, the system is flexible and encourages the enhancement of organization at its own pace. Within the course, ISO

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14000:2015 Environmental management system, which is developed by the International Organization for Standardization, is introduced.

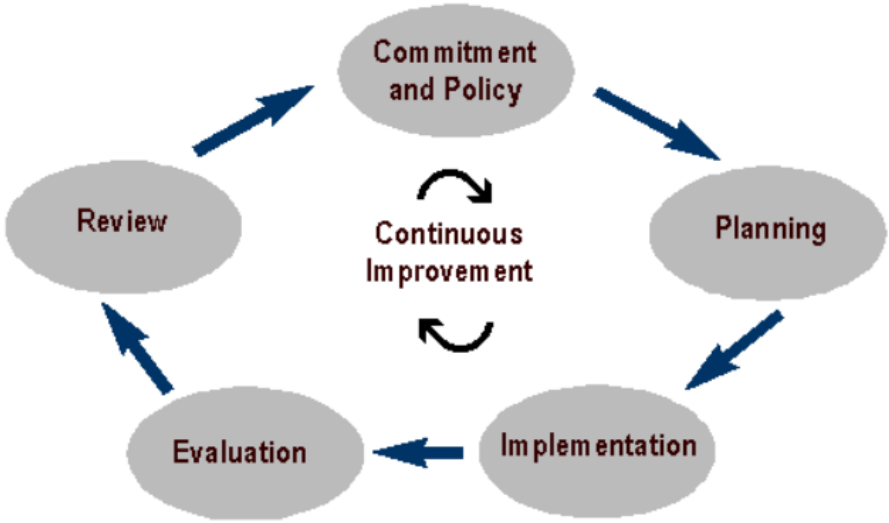

Figure 1. The continuous improvement cycles

Source: EPA, 2015

The system is designed based on the fact that all organizations leave a certain degree of impact on the environment and they desire to improve their environmental performance, fulfill the compliance obligations and obtain environmental goals (CANSO, 2013; ISO 14001:2015). Figure 1 summarizes the process of an EMS. Firstly, the organization shows their commitment to apply and maintain the EMS, normally, by top manager's commitment and ISO internal team establishment. Secondly, the environmental impacts of organization's activities are identified. At this stage, the environmental policies (both domestic and international) and customer's requirements are reviewed. The organization decides which optional regulations and requirements that they want to follow and sets out the criteria and timeline for each environmental objective. Next, the organization follows the timeline to achieve their goals. Some actions might comprise issue procedures, documentation and training, etc. Then, evaluation is the next step to assess the effectiveness of EMS. There should be one internal evaluation before the external one. In this stage, one or a group of auditors review the EMS and evidence to find non-compliance and/or opportunity for improvements. Finally, the results are reviewed by top management to make further commitment and essential changes to boost the effectiveness of EMS.

Social Environmental System (SES) is defined as tightly linked social and biophysical subsystems that mutually influence one another in a positive or negative way. It has wide applications in vulnerability and resilience research (Adger, W. N., 2005). Figure 2 shows the interaction loop where human activities, institutions and policies affect the ecosystems through resource use and land management. In return, the consequences, such as, natural hazards, invasive species, etc. impact how society operates and reaction (Bianca E. L., 2019).

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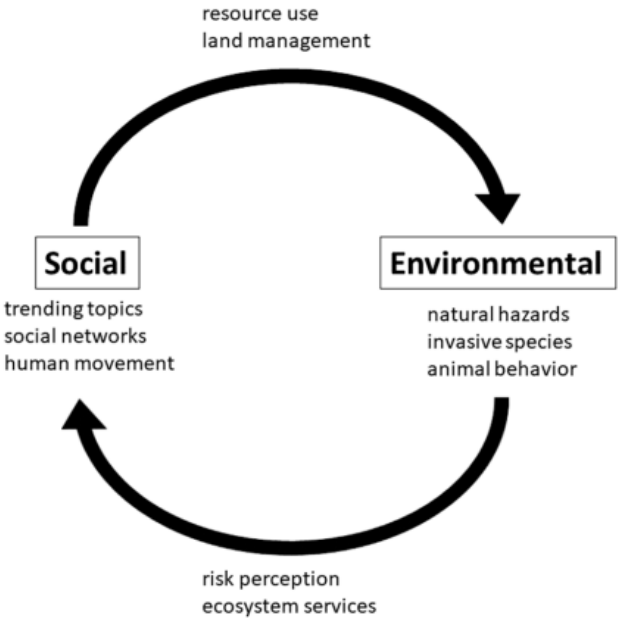

Figure 2. SES diagram

Source: Bianca E.L, et al., 2019

SES is an effective and useful framework to tackle many environmental issues which require interdisciplinary research **(**Carpenter, S.R., 2009). However, it's quite complex to choose the appropriate SES framework for a certain research topic. Graeme S.C. (2014) listed down 5 categories of SES framework: (1) hypothesis-oriented frameworks; (2) assessment-oriented frameworks; (3) action-oriented frameworks; (4) problem-oriented frameworks; and (5) theory-oriented or overarching frameworks.

POLICIES OF VIETNAM ON ENVIRONMENTAL PROTECTION

Environmental protection are practical activities to preserve the living space of people and creatures, reduce environmental pollutants, conserve natural resources, help balance the ecological system and close the cycle of materials in production and consumption.

Environmental protection is a common responsibility of all people and of all countries, regardless of the form of government, political regime and level of socio-economic development of each country.

Environmental protection is accomplished by applying a combination of different measures such as organizational - political measures, economic measures, scientific - technological measures, educational measures, and juridical measures.

Environmental protection can be carried out at different levels, including: individual, community, local, regional, national, global levels.

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Pursuant to the Constitution of the Socialist Republic of Vietnam, the National Assembly has promulgated the Law on Environmental Protection No. 72/2020/QH14. The Law on Environmental Protection contains the following basic articles:

Article 4. Principles of environmental protection

1. Environmental protection is the right, obligation and responsibility of all agencies, organizations, population communities, households and individuals.

2. Environmental protection is a central and prerequisite condition, foundation and factor for sustainable socio-economic development. Environmental protection activities must be linked with economic development, resource management and be considered and evaluated during the implementation of development activities.

3. Environmental protection is in harmony with social security, children's rights, gender equality, ensuring everyone's right to live in a healthy environment.

4. Environmental protection activities must be conducted regularly, openly and transparently; Prioritize forecasting, prevention of pollution, incidents and environmental degradation, management of environmental risks, reduction of generation and waste, increased reuse and recycling of waste to exploit the value of resources. source of waste.

5. Environmental protection must be consistent with laws, natural characteristics, culture, history, market mechanism, level of socio-economic development; promote the development of ethnic minority areas and mountainous areas.

6. Agencies, organizations, residential communities, households and individuals benefiting from the environment are obliged to make financial contributions to environmental protection activities; causing environmental pollution, incidents and degradation must pay, compensate for damage, remedy, handle and bear other responsibilities according to the provisions of law.

7. Environmental protection activities must ensure that no harm is done to national sovereignty, security and interests, associated with regional and global environmental protection.

Article 5. State policies on environmental protection

1. Create favorable conditions for agencies, organizations, residential communities, households and individuals to participate in the implementation, inspection and supervision of environmental protection activities.

2. Propaganda and education in combination with administrative, economic and other measures to strengthen the observance of the law on environmental protection, building a culture of environmental protection.

3. Pay attention to biodiversity conservation, environmental protection of natural heritage; exploit, rationally and economically use natural resources; develop clean energy and renewable energy; develop technical infrastructure for environmental protection.

4. Prioritize treatment of environmental pollution, restore degraded natural ecosystems, and focus on environmental protection of residential areas.

5. Diversify investment capital sources for environmental protection; arrange separate expenditures for environmental protection in the state budget with an increasing rate according to the state budget's ability and requirements and tasks of environmental protection; prioritizing funding sources for key environmental protection tasks.

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6. Ensuring the interests of organizations, residential communities, households and individuals that contribute to environmental protection activities; incentives and support for environmental protection activities; promote environmentally friendly products and services.

7. Strengthening scientific research, developing technology for pollution treatment, recycling and waste treatment; to prioritize the transfer and application of advanced, high-tech, environmentally-friendly technologies and best existing techniques; strengthen training of human resources on environmental protection.

8. Honor and commend agencies, organizations, residential communities, households and individuals that have made positive contributions to environmental protection activities in accordance with law.

9. Expand and strengthen international integration and cooperation, and fulfill international commitments on environmental protection.

10. Screening investment projects according to environmental criteria; apply appropriate environmental management tools for each stage of investment strategies, planning, programs and projects.

11. Integrating and promoting the circular economy and green economic models in the formulation and implementation of socio-economic development strategies, master plans, plans, programs, schemes and projects.

Article 6. Prohibited acts in environmental protection activities

1. Transporting, burying, dumping, discharging and burning solid waste and hazardous waste in contravention of technical processes and regulations of law on environmental protection.

2. Discharge of wastewater, discharge of untreated waste gas up to environmental technical regulations into the environment.

3. Dispersing and discharging into the environment noxious substances, harmful viruses capable of infecting humans, animals, microorganisms that have not been tested, animal carcasses dead due to diseases and other toxic agents for human, biological and natural health.

4. Causing noise and vibration in excess of the permitted levels according to environmental technical regulations; exhaust fumes, dust, gases with noxious odors into the air.

5. Executing investment projects or discharging wastes when the conditions are not satisfied according to the provisions of the law on environmental protection.

6. Import, temporarily import, re-export and transit waste from abroad in any form.

7. Illegally importing used vehicles, machinery and equipment for demolition and recycling.

8. Failing to carry out works, measures and activities to prevent, respond to and remedy environmental incidents in accordance with the law on environmental protection and other relevant laws.

9. Concealing, polluting the environment, obstructing, falsifying, informing or deceiving in environmental protection activities, leading to bad consequences for the environment.

10. Producing and trading in products that are harmful to human health, organisms and nature; production and use of raw materials and construction materials containing toxic elements in excess of the permitted levels according to environmental technical regulations.

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11. Producing, importing, temporarily importing, re-exporting and consuming ozone-depleting substances in accordance with the provisions of the international treaty on substances that deplete the ozone layer, of which the Socialist Republic of Vietnam Vietnam is a member.

12. Illegally destroying or encroaching on natural heritage.

13. Destroying or invading works, equipment and means in service of environmental protection activities.

14. Abusing positions and powers to do illegal regulations of the law on environmental protection.

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SUSTAINABLE DEVELOPMENT

Sustainable development is the overarching paradigm of the United Nations. The concept of sustainable development was described by the 1987 Brundtland Commission Report as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

There are four dimensions to sustainable development – society, environment, culture and economy – which are intertwined, not separate. Sustainability is a paradigm for thinking about the future in which environmental, societal and economic considerations are balanced in the pursuit of an improved quality of life. For example, a prosperous society relies on a healthy environment to provide food and resources, safe drinking water and clean air for its citizens.

One might ask, what is the difference between sustainable development and sustainability? Sustainability is often thought of as a long-term goal (i.e. a more sustainable world), while sustainable development refers to the many processes and pathways to achieve it (e.g. sustainable agriculture and forestry, sustainable production and consumption, good government, research and technology transfer, education and training, etc.).

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

The SDGs build on decades of work by countries and the UN, including the UN Department of Economic and Social Affairs

- In June 1992, at the Earth Summit in Rio de Janeiro, Brazil, more than 178 countries adopted Agenda 21, a comprehensive plan of action to build a global partnership for sustainable development to improve human lives and protect the environment.
- Member States unanimously adopted the Millennium Declaration at the Millennium Summit in September 2000 at UN Headquarters in New York. The Summit led to the elaboration of eight Millennium Development Goals (MDGs) to reduce extreme poverty by 2015.
- The Johannesburg Declaration on Sustainable Development and the Plan of Implementation, adopted at the World Summit on Sustainable Development in South Africa in 2002, reaffirmed the global community's commitments to poverty eradication and the environment, and built on Agenda 21 and the Millennium Declaration by including more emphasis on multilateral partnerships.
- At the United Nations Conference on Sustainable Development (Rio+20) in Rio de Janeiro, Brazil, in June 2012, Member States adopted the outcome document "The Future We Want" in which they decided, inter alia, to launch a process to develop a set of SDGs to build upon the MDGs and to establish the UN High-level Political Forum on Sustainable Development. The Rio +20 outcome also contained other measures for

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implementing sustainable development, including mandates for future programmes of work in development financing, small island developing states and more.

- In 2013, the General Assembly set up a 30-member Open Working Group to develop a proposal on the SDGs.
- In January 2015, the General Assembly began the negotiation process on the post-2015 development agenda. The process culminated in the subsequent adoption of the 2030 Agenda for Sustainable Development, with 17 SDGs at its core, at the UN Sustainable Development Summit in September 2015.
- 2015 was a landmark year for multilateralism and international policy shaping, with the adoption of several major agreements:
- Sendai Framework for Disaster Risk Reduction (March 2015)
- Addis Ababa Action Agenda on Financing for Development (July 2015)
- Transforming our world: the 2030 Agenda for Sustainable Development with its 17 SDGs was adopted at the UN Sustainable Development Summit in New York in September 2015.
- Paris Agreement on Climate Change (December 2015)
- Now, the annual High-level Political Forum on Sustainable Development serves as the central UN platform for the follow-up and review of the SDGs.

Today, the Division for Sustainable Development Goals (DSDG) in the United Nations Department of Economic and Social Affairs (UNDESA) provides substantive support and capacity-building for the SDGs and their related thematic issues, including water, energy, climate, oceans, urbanization, transport, science and technology, the Global Sustainable Development Report (GSDR), partnerships and Small Island Developing States. DSDG plays a key role in the evaluation of UN system wide implementation of the 2030 Agenda and on advocacy and outreach activities relating to the SDGs. In order to make the 2030 Agenda a reality, broad ownership of the SDGs must translate into a strong commitment by all stakeholders to implement the global goals. DSDG aims to help facilitate this engagement (UN Department of Global Communication, 2022).

Vietnam is one of the countries with a sustainable development orientation according to the United Nations' global sustainable development strategy with its own characteristics for a socialist-oriented market economy.

Sustainable development must simultaneously achieve the following three basic criteria (Pham Thi Thanh Binh, 2020):

Firstly, sustainable economic development is fast, safe and quality development. Economically sustainable development requires the development of an economic system in which the opportunity to access resources is facilitated and the right to use natural resources for activities. The economy is shared equally. The focus here is on creating common prosperity for all, not just focusing on bringing profits to the few, within the allowable limits of the ecosystem as well as without infringing on the rights of the people, basic human.

The economic aspect of sustainable development includes several basic contents: Firstly, gradually reducing the consumption of energy and other resources through saving technology and changing lifestyles; Second, changes in consumption demand do not harm

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biodiversity and the environment; Third, equality in access to resources, living standards, health services and education; Fourth, hunger eradication and absolute poverty reduction; Fifth, clean technology and industrial ecology (recycle, reuse, reduce waste, regenerate used energy).

An economy to be considered sustainable needs to meet the following requirements: (1) Having high GDP growth and GDP per capita. High-income developed countries still have to keep the growth rate, the poorer the low-income countries, the higher the growth rate must be. Developing countries in current conditions need GDP growth of about 5%/year to see signs of sustainable economic development. (2) GDP structure is also a criterion for assessing sustainable economic development. Only when the share of industry and services in GDP is higher than that of agriculture can growth be sustainable. (3) Economic growth must be growth with high efficiency, not accepting growth at all costs.

Second, social sustainable development is assessed by criteria such as: Human Development Index (HDI), income equality coefficient, indicators of education, health, etc. social welfare, cultural enjoyment. In addition, social sustainability is the guarantee of a harmonious social life; there is equality between social classes, gender equality; the gap between rich and poor is not too high and tends to close; The difference in life expectancy between regions is not large.

Social justice and human development, HDI is the highest criterion for social development, including: per capita income; people's intellectual level, education, health, life expectancy, level of enjoyment of culture and civilization.

Socially sustainable development focuses on equity and society always needs to create favorable conditions for the field of human development and strive to give everyone the opportunity to develop their own potential and conditions. acceptable life. Sustainable social development includes a number of main contents: Firstly, stabilizing the population, developing rural areas to reduce the pressure of migration to urban areas; Second, to reduce the negative impact of the environment on urbanization; Third, improve education, eliminate illiteracy; Fourth, protect cultural diversity; Fifth, gender equality, paying attention to gender needs and interests; Sixth, increase public participation in decision-making processes.

Third, environmentally sustainable development. The process of industrialization, modernization, development of agriculture and tourism; the process of urbanization, new rural construction,... all affect the environment and negatively affect the environment and natural conditions. Environmental sustainability is when using those natural elements, the quality of the human living environment must be ensured. It is to ensure the purity of air, water, land, geographical space and landscape. The quality of the above factors should always be respected and regularly assessed and verified according to national or international standards.

Exploit and rationally use natural resources, protect the environment and improve the quality of the living environment. Environmentally sustainable development requires us to maintain a balance between protecting the natural environment with the exploitation of natural resources for human benefit in order to maintain the level of exploitation of natural resources.

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resources at a certain limit allowing the environment to continue to support living conditions for humans and other living things on earth.

Environmentally sustainable development includes the following basic contents: Firstly, to effectively use natural resources, especially non-renewable resources; Second, development does not exceed the load-bearing threshold of the ecosystem; Third, protect biodiversity, protect the ozone layer; Fourth, control and reduce greenhouse gas emissions; Fifth, closely protect sensitive ecosystems; Sixth, to reduce emissions, overcome pollution (water, gas, soil, food), improve and restore the environment in polluted areas...

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CASE STUDY OF SUSTAINABLE DEVELOPMENT IN VIETNAM

Culture and arts as an important element in the sustainable development in Ho Chi Minh City

Large cities are always the places of the accumulation of cultural and social resources, as well as the centers of diffusion and influence, creating a magnetic force in a specific space. This view has been discussed by the Chicago School on the cultural differentiation in cities due to their own factor being "natural areas", as well as in Claude Fischer's interpretation in "The theory of subcultures on urbanism" in the United States in the early twentieth century.

Ho Chi Minh City is a central urban area in the South of Vietnam, formed in the sixteenth century when Lord Nguyen discovered a new land. Since then, the land of Gia Dinh-Saigon-Cholon and now Ho Chi Minh City are the locations associated with the history in each certain period.

When Gia Dinh capital was established, Saigon was the convergence of the Northern and Southern cultures, absorbing the cultural quintessence of mankind. In the early days, this place became a busy commercial center, bustling with foreign exchanges and a strong development of handicrafts. In Southeast Asia, Saigon was one of the first contacts with European technique. During the French colonial period, Saigon became an important administrative, economic, cultural and educational center of the French Indochina Federation, named by France as the "Pearl of the Far East" ("la perle de l'Extrême-Orient") or "a little Paris in the Far East" ("le petit Paris de l'Extrême-Orient").

In the modern and contemporary time, the Southern region was influenced by French culture and then American culture for a long time. All have made the South into a land where the cultural exchange has taken place at a very fast speed. Consequently, there is almost no pure Vietnamese cultural phenomenon here, but there are always the shadows of other cultures that have converged for more than three centuries. It can be said that, "besides the common characteristics of Vietnamese culture, the Southern culture has been added with a new feature of the cultural interference and convergence between the Northern and Southern cultures, while absorbing the quintessence of the mankind culture"[1] [1, p.48]. This characteristic makes the Southern culture both similar to and different from the Vietnamese culture in the Northern Delta and Central regions.

When studying the economy, culture and society of Ho Chi Minh City, we must give priority to the inherent geo-cultural and geo-economic position of this land.

Geographers and anthropologists such as Carl Ortwin Sauer, Joël Bonnemaison and Julian Haynes Steward of the twentieth century attach great importance to the elements of "*morphological landscape of culture*", "*multilinear cultural connectivity*" and "*the new strength of culture*", which are the strong point sof "urban subcultures".

However, we can add another very important issue when studying the potential for cultural development of Ho Chi Minh City, which is "*multi-dimensional connection in a space of a new economic-cultural movement in Southeast Asia in the 21st century, where Ho Chi Minh City is one of the major centers*". Because of those premises, we realize that with a strong rebound in

[1] Phan, X. B. (2006) (Ed). *Saigon - Ho Chi Minh City - People and culture on the way of development.* Ho Chi Minh City: Vietnam National University Publishing House.

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the fields of technology, economy, finance, and commerce, the City is proving its central and leading role not only for Vietnam but also for the ASEAN as an important focal point. However, the challenge of any technological, financial and commercial center is still the issue of ensuring its sustainable development. Therefore, the questions are raised about what sustainable development is and what its relationship is with culture and arts, and how it will be applied in relation with the characteristics of Ho Chi Minh City.

Sustainable development and Culture and Arts

Sustainable development is the process of economic development that does not significantly and irreversibly affect human life on the environment, in harmony with natural laws and laws of the economy (Kozlowski, 1994). The theory of sustainable development emphasizes the balance between three factors: economic, ecological and ethical (Reichel & Oczyp, 2011). Thus, it shows that the economic, ecological and ethical aspects raised by the theory of sustainable development are closely related to the awareness and the behavior of the community. This is also the dynamic aspect of culture that rules, norms and social norms can only become self-consciously identified and sustainably developed when expressed through cultural role-playing.

The economic growth rate of Ho Chi Minh City is always at the top of Vietnam and in the top group of Southeast Asian cities, with a growth rate of between 6% and 9% per year. Most of the fields of technology in manufacturing and processing consumer goods and foodstuffs of foreign-invested enterprises are concentrated here with the highest rate in the country (According to Ho Chi Minh City Department of Planning and Investment, there are 10,441 projects with foreign-invested capital still in operation in the City as of December 20th, 2021, with the registered capital of 49.47 billion USD, including newly granted capital and adjusted capital). However, the City's vibrant and strong economic development also poses numerous challenges in the immediate future and decades later, such as the disparity in living standards, natural environment, and morality and urban culture.

The community of young workers in Ho Chi Minh City today come from many different localities to follow the random attraction by the urban industrial, commercial and office zones, making urban cultural nuances rapidly change. The cultural interference, customs and modern lifestyle of the young working class is a new cultural complex that is gradually taking a priority position. Traditional cultural classes of old Saigon (Vietnamese, Chinese, Khmer...) now interact with groups of young, vibrant industrial and commercial residents, students, and new workers. How will modernity create new cultural nuances? What is proactivity? What will the necessity be? According to Mr. Le Minh Tan, Director of the Ho Chi Minh City Department of Labour, Invalids and Social Affairs, Ho Chi Minh City annually attracts from 75,000 to 80,000 workers from industrial zones and the equivalent number of migrant workers to the city. Together with more than 900,000 students from universities and colleges, they form a new community with diverse cultural nuances of regions, creating a new cultural and ecological landscape that needs to be recognized as a special resource. The question is of whether the new citizen force of workers and students that is formed every year in Ho Chi Minh City is now considered a resource, and to what extent its interaction with the City's cultural and social policy is.

Sustainable development from an Eco-Cultural perspective

According to the United Nations: "the Millennium Ecosystems over the past 50 years have been rapidly and dramatically changed by humans to meet the growing demand for food, fresh water, timber, fibers, and fuels to sustain life, creating economic prosperity and human society

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but at the same time degrading the Ecosystems on Earth…". This is a vast problem of nature, and human beings have self-consciously walked in each act of seeking immediate benefits in exchange for sacrificing their own living conditions and future descendants. Therefore, is it possible to limit the abuse of natural resources and minerals and find alternative ways to increase the lifespan of the natural ecological and environmental landscape, which is the only house currently available for present humans on the Earth? The answer is possible, but the main barrier is greed, selfishness and lack of mutual trust of each country, especially the big and developed countries.

However, here we only focus on another issue in "ecology", which is the "cultural reproductive system" in Ho Chi Minh City in the sustainable development of the twenty-first century. Therefore, how can we understand the "cultural reproductive system" in Ho Chi Minh City in the sustainable development of the twenty-first century? The cultural ecosystem in our opinion is "The foundation, the cultural structure formed from the past has been adopted to the present day, becoming a special resource affecting modern economic and social development." What is the structural identification of the cultural ecosystem in Ho Chi Minh City? We offer some basic connotations, including: 1. The systematic connection of the tangible and intangible cultural heritage of Ho Chi Minh City with the characteristics of a core region influenced by 3 background major cultures (Oc Eo-Phu Nam culture of the 1st century BC - VII AD in South Vietnam, Sa Huynh culture in the Central region of the 10th century BC - 2nd century AD and the Northern Dong Son culture of the 2nd century BC - 2nd century AD). 2. Interactions and consequences of Indo-Vietnamese-Chinese cultural interference along the historical length. 3. Interactions and consequences of the Vietnamese-Khmer cultural complex with the indigenous peoples of Champa and the Central Highlands. 4. Interactions and consequences of the Vietnamese and Western cultural complex in modern times. 5. Interaction and cultural complexity of contemporary young workers and the traditional culture of Ho Chi Minh City today.

Thus, a cultural-ecological structure of Ho Chi Minh City is temporarily identified according to the component structure according to cultural subjects, thereby determining the nature of content, form, aspirations, feelings and emotions, and the needs of each community for the most consistent, universal, flexible and effective policy. The goal of cultural policy or cultural organization measures is to make the legal society more flexible, feasible, and strengthen the community structure more sustainable, safer; and above all, to accumulate energy at the highest level for the overall sustainable development of society in Ho Chi Minh City in the current context of deep international integration. However, there is another aspect that is the cultural ecology of Ho Chi Minh City from the perspective of "cultural form" in the sustainable development which needs attention. In which, it is necessary to emphasize the predominant genres and forms of cultural expression of the City (in terms of history and current forecasts), in which attention should be paid to the outstanding: 1. In terms of organizational form: Corporate culture community, neighborhood community, religious community, and ethnicity as the core. 2. Judging by the dominant cultural linguistic form: Young music, applied arts, cinema. 3. In terms of level morphology: Priority is given to cultural socialization models. Looking at the structure of Culture - Arts of Ho Chi Minh City shows its diversity and vividness, in which the core value of the sustainable development of Ho Chi Minh City's culture is the form of "cultural socialization", "cultural community", which is the most appropriate trend.

On the other hand, when discussing the characteristics of Ho Chi Minh City's sustainable development culture, we think that it is "cultural altruism". We do not necessarily discuss the philosophy of French sociologist and anthropologist Marcel Mauss (1872-1950) in

his Treatise on Giving (1925), the "altruism" in the culture of Ho Chi Minh City is entirely a product derived from history, due to a reality of life from the time the land was discovered to the formation of a central urban area from an area contributed by many people. different classes, generations and ethnic groups make up. In which historical conflicts, historical disagreements, and painful losses in history can all be thoroughly resolved by Ho Chi Minh City people in the philosophy of "cultural altruism". It is an ethical behavior, unrelated to the reciprocity of Marcel Mauss's gift treatise. Altruism in the culture of Ho Chi Minh City can be considered as a nucleus of the spirit, morality, and personality of Ho Chi Minh City people. It is also the core of Southern people which is formed in the process of human development of community to survive in a new land full of challenges and changes. Therefore, today, the sustainable socio-economic construction and development in Ho Chi Minh City to be more and more modern day by day, should be attached to the most effectiveness in the issue of "Cultural Altruism" in the contemporary social community.

Sustainable development in Ho Chi Minh City from the perspective of cultural ethics.

The dictionary of Cambridge Philosophy defines "ethics" as moral to refer to the moral conventions used by a specific group or specific individuals". Richard Paul and Linda Elder in "*The Thinker's Guide to Understanding the Foundations of Moral Reason (2006)*" argue that "*most people confuse morality with behaving in accordance with social conventions, religious beliefs, the law, and do not consider morality as an independent concept*". Within the scope of this research, we provide an explanation of other aspects of ethics in sustainable development, that is, "cultural ethics" applied to the modern social context of Ho Chi Minh City in the nineteenth century. According to G. Bandzeladz, "human morality manifests itself in the ability to act voluntarily and voluntarily for the benefit of others and society"; ethics manifests in differences in culture and gender, terms of history with certain beliefs, customs, rules, and norms accepted by a community. Thus, ethics in the sustainable development of modern urban society is a cultural product. If the theory of sustainable development seeks a balance between three factors: economic, ecological and ethical (Reichel & Oczyp, 2011), then the three factors above all refer to the ethical category that embodies attitudes. The attitude of contemporary people to future generations, people's attitudes to people in the same era, and most of all, these factors are often summarized by certain conventions and laws that underpin all individuals, groups, and communities. However, the law is always only asymptotic to morality and is a formal assumption of morality, while culture is the soul core of morality. Because it is culture that is the basis for forming appropriate values and standards for morality, and at the same time, culture's self-consciousness, self-choice, and self-perversion are the resources for sustainable development.

The law of symbiosis is considered as a special factor in development in modern urban areas, especially Ho Chi Minh City, which is dependence, connection, mutual benefit or shared difficulties. It is also an ethical and cultural aspect of sustainable development. The creation of labor attraction to return to industrial parks in the City after the Covid-19 pandemic in 2022 is very different and depends on how much the investor's attitude is toward workers. Is it also an ethical and cultural issue in sustainable development? Today's workers are far from the environment and human condition of workers in the eighteenth century, when the antagonism between employers and workers could not be reconciled, leading to the political and economic crises at that time in Europe. The attraction of human resources is becoming stronger and stronger, providing a source of labor in all aspects for the development of the City, and at the same time, it also raises great challenges, in which cultural ethics is the central point. The issue of social justice, compassion and altruism needs to be solved permanently in society, especially

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in Ho Chi Minh City. Today's strikes will be far different from those of workers in the eighteenth and the nineteenth centuries, today workers come to business owners with a symbiotic and resonant mentality. They are intellectuals and have a modern political vision. Therefore, today's employer-employee behavior needs to be interacted with on the basis of cultural ethics and shared responsibility. According to the statistics of the Vietnam General Confederation of Labor, the average salary of workers in industrial zones in the city is 5.5 millionVND/month, which is very difficult for living expenses if they have to pay for housing and tuition fees, and raising their children. Cultural ethics in sustainable development needs to pay full attention to fairness, ensure the rights of workers and disadvantaged groups in the City through policies in which the Government and businesses play a decisive role.

In fact, cultural ethics in sustainable development has created a different identity in Ho Chi Minh City, which is also the continuation of the core values of a young, vibrant, selfless city, friendly and open. The spirit of friendship, mutual support, sharing and caring, as in the popular Vietnamese saying "*intact leaves cover torn leaves*", really promotes creativity and becomes a typical image recognized by the society in the recent floods and the pandemic in 2021 and 2022, when people, businesses, benefactors and artists in Ho Chi Minh City have been recognized by the whole country. In the future, entering the later years of the twenty -first century, culture and arts will continue to be strongly promoted, creating real catalyzes for the resilience of the social sustainable development in a dynamic economic city of the country.

Water issues with urban development (Case study: Major cities in Vietnam)

Water with urban form and Sustainable development

The urban space always needs to be renewed continually to suit to the era. This inevitable process has a central role to focus on developing more socio-cultural-economic-political axes. It seems that the "hot" renewed urban water space construction projects have a tendency to go against the sustainable urban environment. The Urban Dynamics project looks at land use change in urban environments in order to provide a historical perspective of water space or land use change and an assessment of the spatial patterns, correlation, trends, and impacts of that change. This project develops and refines methods for land use reconstruction, geographic analysis, modeling, prediction, and impacts assessment (USGS EROS Center, 2015).

In order to prevent an urban crisis, we need to find the most common views for society. Firstly, we should resolve the problems of conflict affecting sustainability between the parties, as between dynamic, conservative and stagnant forces. Secondly, we can support more urban water functions which are essential forre-conciliation or other anticipated solutions for sustainable urbanization as preventative goals. Projects include urban embellishment, extra functional projects design and new urban planning which must be considered in all aspects mentioned above. Whilst sustainable urbanization and sustainable urban development apply to a dynamic process towards the suitable conditions, in that in this process pays attention to environmental, economic, social and governance sustainability, each as an equal concern (Shen et al., 2011).

Sustainability, first defined over 45 years ago, is widely accepted as an important conceptual framework within which to position urban policy and development, providing the context for a considerable literature on planning, architecture and urban design (Williams et al., 2000). There are about 200 definitions for sustainable development, but the definition of sustainable development is still not clear (Keivani, R., 2009). The review of definitions of

sustainable development often presents the issues and problems that sustainable development should respond to, but the endpoints seem so broad that there is not a specific point of resolution (Saha et al., 2008).

On the other hand, a dynamic urban structure with water space is required with diverse adaptability fused with a positive development from the internal resources of urban space and autonomy. However this dynamic, while ensuring sustainable development and efficient urbanization, seems to be addressing a non-root problem, which needs a comprehensively correct answer. If it would have the "key" but roots, which are not obvious, to open all the doors, then the concept of "sustainable" could be applied smoothly in all places.

In 1972 during the United Nations Conference on the Human Environment, the concept of sustainable development was brought out in Stockholm (Mostafa et al., 2011). That sustainable development as a concept was developed alongside an acute awareness that the ecological destruction and the 1980s 'retreat from social concerns' – manifested as poverty, deprivation and urban dereliction that blight many parts of the world – are untenable (Carley et al., 1998). The underlying tension between the associated aspects of sustainability – environmental, social, economic (Barton, H. (ed.), 2000) – as well as the wide interpretation of the concept have led to a variety of urban forms being described as 'sustainable' (Jenks, M. & Dempsey, N. (eds), 2005). In 1992, the Earth Summit, in Rio De Janeiro, approved Agenda 21(LA21) in order to promote Sustainable Human Settlement Development; and in 1996 in Habitat II tried to present a statement to Localize LA21 in urban areas (Whitehead, M, 2003). In response to urban challenges, the concept of sustainable development was stated. Due to some major trends such as globalization, decentralization, and rapid population growth, cities faced some challenges (Mostafa et al., 2011).

Despite the anthropocentric focus of the definition of sustainability (Hopwood et al., 2005), surprisingly little attention has been given to the definition of social sustainability in the built environment disciplines. The problems arising out of urbanization, such as, social inequalities, slums, density and climate change...had the impact on economic, social and environmental conditions. With regards to economic, social, environmental and governance aspects, sustainable development was articulated in order to respond to urban conflicts (Malkina-Pykh, I. G, 2002). Related concepts are more readily discussed in this paper, and examined within a physical context of the Sustainable Urbanization of Vietnam cities, which has a focus on the Rivers and lakes regions in Vietnam, especially 02 cities in Hanoi and Ho Chi Minh (HCM).

Water with the urban movement

The lecture examines the underlying principles of urban sustainability and their interpretation and provides a concrete definition of urban design sustainability with particular reference to the region of the Hanoi and HCM river-lake urban environment (using 02 cities as a good example) in the context of rapid urbanization today.

This research was carried out on concrete examples of small and medium urban forms from the urban design and landscape design specific contextual study: Sustainable Urban Form Consortium (Dempsey et al., 2009), which examined the relationship between urban form and sustainability in Hanoi and HCM city, Viet Nam, at river and lake regions, over thousands of years of cultural history. Its starting point was the testing of the claim that more compact, high-density and mixed-use urban forms are environmentally sound, efficient for transport, socially beneficial and economically viable without forgetting the design and management tools for

Urban dynamics. From this standpoint, sustainable development and associated aspects were examined in specific relation to the built environment. While an overall definition of sustainability was sought for the purposes of the wider research project, this paper focuses on urban design and the urban landscape environment, including case studies of small and medium residential fabrics with cultural historical traditions, specific examples of which, are the villages along Rivers and lakes in Hanoi and HCM. This paper develops deeply the theoretical model of urban design, sustainable landscape, identity and identification, conservation and renovation-urban upgrading. It also develops how to use the potential of internal resources available for urban development in the direction of economic social benefits, expansive green space, ecological and cultural tangible–intangible values, and the traditional livelihoods of that municipality.

The broad discussions of sustainability herein pinpoint not only a definition of urban design and urban landscape sustainability but specifically highlight those aspects of social urban sustainability that are claimed to be influenced by the built environment at this scale. The research section provides such a model suggestive of, an examination of urban sustainability and related concepts within the urban context while considering actual tangible field research.

The map of Hanoi's water surface and the movement over time

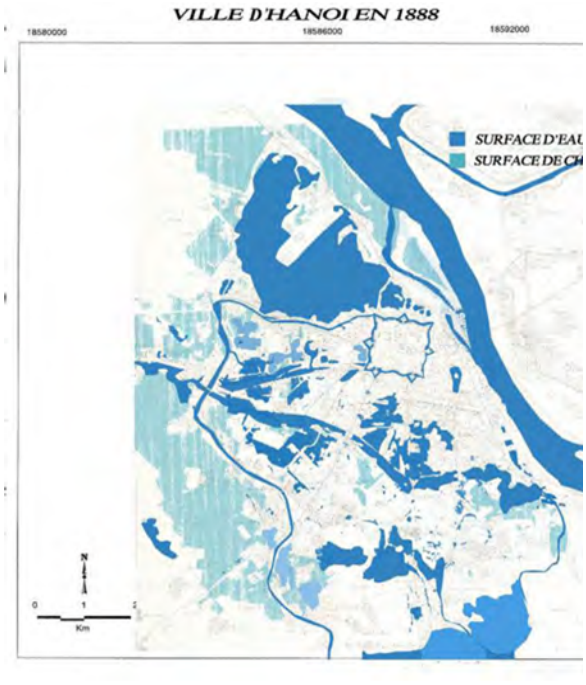

Figure 3.1: Hanoi city water network in 1988[2]. Doc: Do Xuan Son

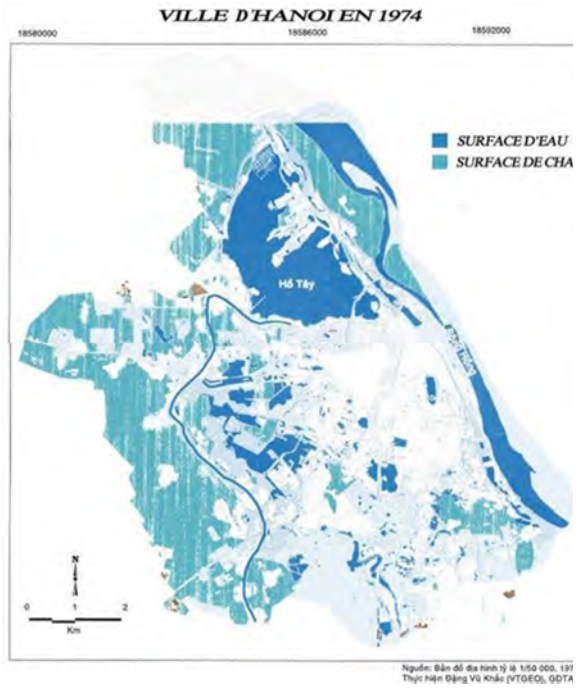

Figure 3.2: Hanoi city water network in 1974[3]. Doc: Do Xuan Son

[2] Source originale: Centre des archives d'outre-mer à Aix-en-Provence et au Centre des archives de l'Institut français d'architecture à Paris.

[3] Source originale: Georges ROSSI, PHẠM Văn Cự, Op.cit., page 47.

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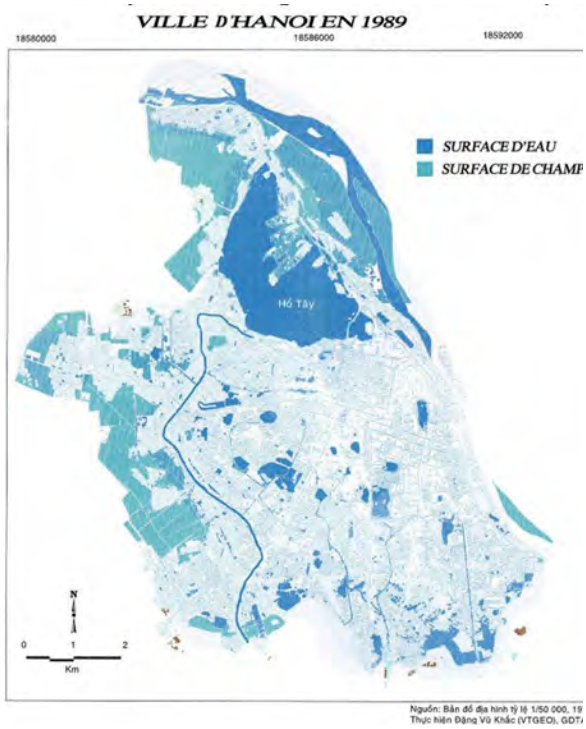

Figure 3.3: Hanoi city water network in 1989[4]. Doc: Do Xuan Son

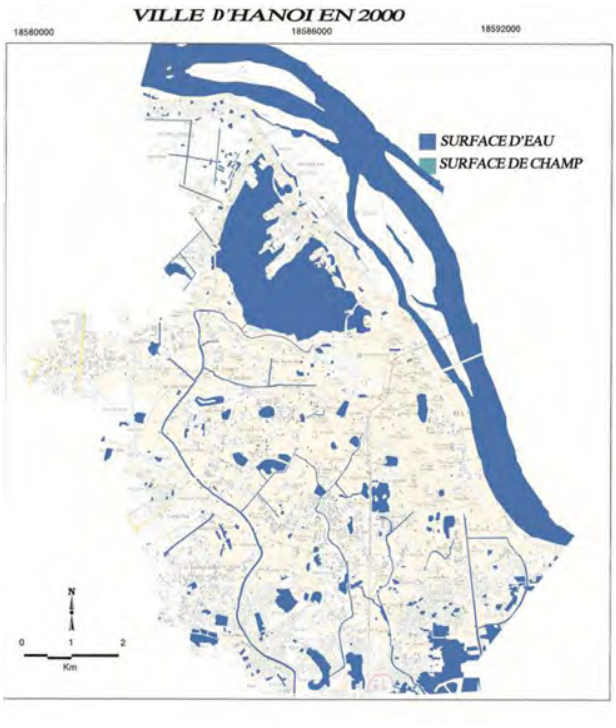

Figure 3.4: Hanoi city water network in 2000[5]. Doc: Do Xuan Son

Society, space and urban landscape, the mirror of the water surface: The close link of human beings to the watercourse has finally well evolved over the centuries. « Rivers bear the mark of a society; they are its mirror. In other words, each stage of the society corresponds to one state of the river » (Jean, B, 1993).

Water was omnipresent in the towns which corresponds to what GARNIER says «the symbolic force of water in the urban image» (Jacqueline, B-G, 1995). It is surely still true for Hanoi and HCM today, but probably much less than before. Saigon – HCM is bordered by the Sai Gon River and by the Nhieu Loc – Thi Nghe (NL - TN) canal in the North, by the Ben Nghe canal in the South. Hanoi city is mirrored by the Red River, West Lake, Tolich river and another one.

This “fragile” balance of the land, water and human give Sai Gon and Hanoi an original identity of the landscape, organically connected to human life. Man and water are inextricably linked together; the town of Saigon was effectively born from water, made of riverbanks and lakes. The Vietnamese past showed a rich symbiosis between the city and the river: we speak about the « couple city – river» or of the “couple man – river”.

As for the characteristic landscape image of the area of Hanoi as a comparative case study, HCM city is also a city of water of rivers, arroyos, marshes, lakes or ponds bustling with "quays and boats". Until today in the territory of HCM city, there are about 3,000 km of rivers and canals (Duc Minh Quan THAI NGUYEN, 2019). According to some ancient documents, the NL-TN canal was a natural geographical boundary between the inner city and the suburbs of Gia Dinh. Similar to the geographical character of the To Lich river in Hanoi, the NL – TN canal is the natural waterway crossing the central part of the city and flowing through to the following seven districts of 1, 3, 10, Phu Nhuan, Tan Binh, Binh Thanh and Go Vap with a total

[4] *Ibid*., page 47.

[5] Source originale: Service de la cartographie de Việt Nam.

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area of 36 km2, 8.7 km in length, average width of 27 m in the upstream, and 90 m in the downstream, the average depth of the canal is 5 m. Canal area is 12 km2 wide (Huu Thang TRAN, Ba Cuong NGUYEN, 2019) (Fig 3). It flows from West to East and its winding course borders the left side of the Old Gia Dinh Citadel before and of the downtown today.

Nhieu Loc is the section from Thi Nghe bridge to upstream (bounded by the Ut Tich road, district of Tan Binh), and the part from Thi Nghe to the Sai Gon river, near Bason port is called as the Thi Nghe arroyo. Along with the Sai Gon River and the Ben Nghe – Tau Hu canal, the NL – TN canal is one of the three most important natural river channels of Saigon – Gia Dinh till today (or these days).

The map of HCM's water surface and the movement over time

Figure 4.1: Saigon map of (Cochinchina) in 1878[6]

Figure 4.2: Saigon map of (Cochinchina) in 1882[7]

[6] Source *: http://gallica.bnf.fr/ark:/12148/btv1b8442413s.r=Saigon.langEN,* Bibliothèque nationale de France.

[7] Source: saigon.virtualcities.fr/Maps/Collection

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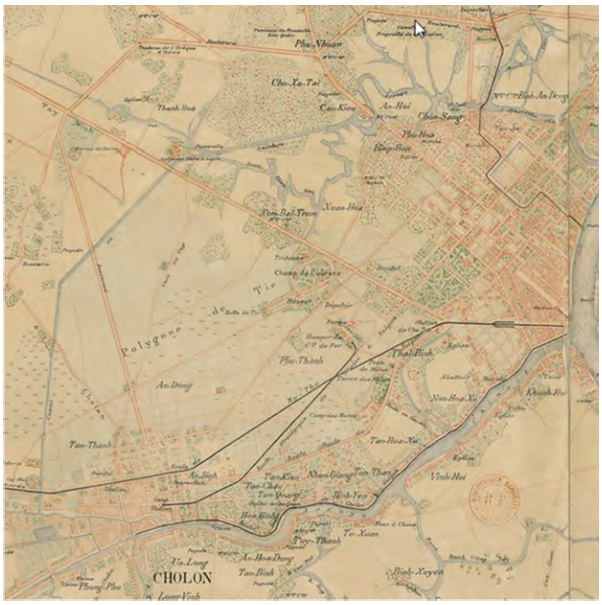

Figure 4.3: Surroundings of Saigon map in August 1895, drawn up by the land registry service. Updated by Lt. Joly [8]

Figure 4.4: Saigon map in 1923[9]

Figure 4.5: Saigon map in 1946[10]

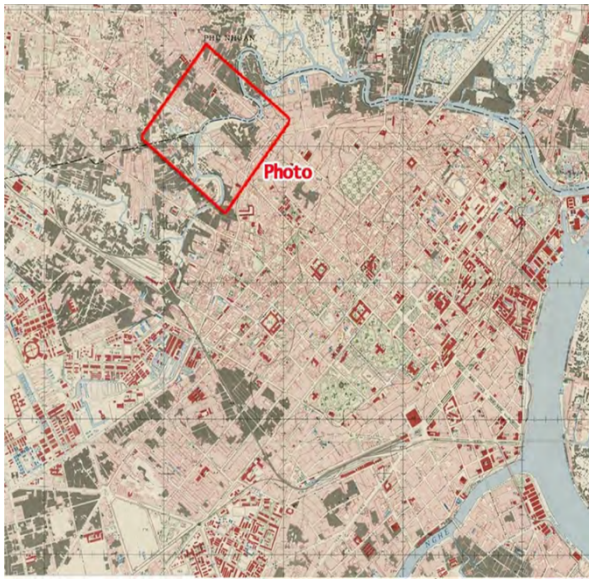

Figure 4.6: Saigon map in 1968[11]

Evolution over time of the river, its symbolic representation and problems (Xuan Son Do, David Edgar Cowan Thomas, 2017).

To understand the changes of the Red River, Tolich river (in Hanoi) and Saigon River, NL – TN canal, it is necessary to go over again the geography and the history as well as culture

[8] Source: gallica.bnf.fr/ark:/12148/btv1b530291797.r=saigon.langEN, Bibliothèque nationale de France. Auteur : France. Service du cadastre. Dessinateur. Éditeur : bureau topographique des troupes de l'Indochine.

[9] Source: *gallica.bnf.fr/ark:/12148/btv1b53065091z.r=hanoi.langEN*, Bibliothèque nationale de France. Éditeur : Service géographique de l'Indochine (Hanoï).

[10] Source*: nla.gov.au/nla.map-vn1539063*

[11] Source: *http://cdojaubert.canalblog.com/arch...5/index.html*

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of Sai Gon through the place and the relations of the river with the city. At the beginning of a feudal regime, the Citadel was controlled by a king and mandarins; the town and the trade villages on the river were only one complex.

Another important dimension that should not be ignored from this watercourse is from its main values to shape a landscape of the river with its space. This new structure of the river could help people find their childhood again, which has made this landscape as the bridge to link the past to the future. However, this landscape was a space of leisure, relaxation and meditation but it also created a cultural and historical local spiritual space, a space of research and contemplation, etc.

Facing this reality, the researchers raised some questions about the acute problems and study the following questions: "What are the landscape values of the river that still subsist today? What are the important elements to preserve and how to highlight the landscape of the water surface while these elements were and are alive, still preserving city memories, beauty, landscape, and environment? It is therefore of great importance to give back to the river all of its values today by finding answers to the questions posed by the various components of the river-side urban landscape.

The problematic concerns more precisely the current landscape problems, the renewal of the relationship and the integration of watercourses in the urban network. It is therefore important to understand not only the impacts of urbanization on the river, but also, conversely, to understand the influence of the rivers on and their contribution to the surrounding urban spaces.

There have been many civil and practical projects, namely: built two traffic lanes, reinforced both sides of the river with concrete to protect the river space, improved water sources, strengthened the eco-system, built the landscape on both sides, etc. But there is currently no specific research project focusing on heritage, landscape environment or urban morphology of the water space.

Objectives of study

The study of the urban river landscape aims to understand how the urbanization in Hanoi and HCM city has influenced the river landscape as well as the villages. From there, the researchers will look for the specific landscapes of the water space. These are landscapes of former villages and current urban villages, which define the landscape values and characteristics of the water space today. It is about the landscape identities that are highlighted, revitalized and integrated into the present life. Subsequently, it will be necessary to represent and implement this research on the plans and on the elevation of the urban landscape of the villages and river. This is in close association with the social activities on the two banks: the water surface morphology, the heritage and the traditional dwelling space with its historical and cultural values, and the urban composition of the water space. It also links to the environment, the social space, the spaces of worship and recreation activities, prosperity of the city, commercial activities and local economic sectors in relation to river traffic, etc. in favor of the Hanoi - HCM city and following some other similar cities in Vietnam.

The study took into account the different dimensions of water, its importance in the fluvial ecological landscape of the city as well as the perception of this water by the population aims to cast a light on the omission of the importance of this water, and in the future, it is necessary to set up a duty and regular supervision of the need as well as to meet for a requalification of the water space.

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The role of water space with urban areas for sustainable development

Landscape Representations with Local Culture and the Shape of cities or Villages Near the Water

Where did the habitations settle? It certainly exercised such a strong influence in this low-land part of the country, threatened by the floods that according to P. GOUROU's observations, people tended to gather on high-ground areas, which were only affected by heavy floods; we will see later that the relief reveals guidelines (river and affluent) in the dispersion of the Tonkinese villages. Still in almost every habitation, people often prefer to build religious buildings and their homes near water bodies, such as rivers, lakes, ponds or near water sources. To defend themselves against the external attacks or invasions, they had to rely solely on their own strength; hence the desire to group and surround the village with a solid bamboo fence (Pierre G., 1936).

These elements, which reflect some design conventions of construction associated with community activities, partly explain the landscape layout as a type of traditional village based on the river.

Many villages are subdivided into hamlets named “thôn” in Vietnamese language.

Regarding the form of the village territory: "The villages located in the major river beds and the coastal zone, for which the geometrical forms are applied: their territory is generally composed of a band perpendicular to the river or the shoreline. These villages of rather recent formation have either to touch the river, in the hope that a favorable displacement of its bed will ensure an extension of their territory, or touch the sea, in order to benefit from the formation of the foreshores” (Pierre G., 1936). In regards to the form of the villages, "they form bands parallel to the river and sometimes continue for several kilometers, marrying all sinuosities of fluvial bed; the sharpness of their design allows them to be distinguished at first sight from the villages of major river bed, which have the forms much more confused" (Pierre G., 1936). Houses have been built on the high ground, beside the narrow water space, and village streets along the water.

In our study related to the landscape of the water space, to analyze the landscape on a territory and to highlight it, the first important thing to do is to understand concepts and definitions of the landscape, the heritage, the planning of the territorial landscape, etc. the attention must then be focused on understanding the culture, history, social space, lifestyles, living environments of the river and its neighboring populations constituting the urban landscape. This documentary research process provides the foundation for theories, concepts and knowledge. Also, it is later the method of analysis of the "pillars" on a territory. X. BROWAEYS and P. CHATELAIN express that "landscapes, heritage, planning and environment are therefore the four pillars of an analysis of the municipal territory. To carry out this analysis, fieldwork is essential. But also to collect data, to use statistics and decrypt the map, a document whose purpose is to restore the landscape on a precise scale” (Xavier, B. Paul, C., 2011). And this is useful for a city or a rural territory as well as for the natural component of the landscape to be investigated.

Analysis of Sites Linked to the water spaces Under the Urbanization Impact

Similar to the role of the Tolich river with the Thang Long Citadel landscape of Hanoi, the role of the TN-NL canal (water space), "advantages and potentials" for the landscape of Saigon – Gia Dinh in the past and today. The history of the construction of Gia Dinh Citadel began more than 340 years ago when the palace Mayors of the Trinh Family (in the north) and the Palace Mayors of the Nguyen Family (in the south) engaged in the fight for power and territory, the enemies of the South then invaded the land of the Nguyen Mayors, at the time led by Nguyen Anh. The latter led the battles to the south, in the Kingdom of Cao Mien, and

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continued the combats until the enemies withdrew (A. Dauphin MEUNIER., 1965). In 1790, he built the wall of Gia Dinh to occupy and keep his area. Then, the Minh Mang King had demolished the Citadel and rebuilt it in 1835, and named it Sai Gon. At the time of French colonization of Gia Dinh in 1861, the French had destroyed the old Citadel of Saigon in 1859.

The Citadel of Turtle (Gia Long built it in 1790 and Minh Mang destroyed it in 1835) was called the Gia Dinh Citadel, the composition of this Citadel was the "diagram of the eight divinatory signs" according to the mixed architectural types of East-West, drawn by the Frenchman Olivier de Puymanel. The Citadel of Phoenix (Minh Mang built it in 1836 and the French destroyed it in 1859) was called Saigon Citadel; it is the smallest construction of the "diagram of the eight divinatory signs" of architectural type "Vauban".

Thus, when we must distinguish the two Citadels, we refer to their names: Citadel of the Turtle (Gia Dinh) and Citadel of the Phoenix (Saigon). Indeed, when we talk about the Citadels that are built, we refer to the general names: Citadel, Saigon Citadel Gia Dinh, or Citadel Phiên An.

The observations of the oldest map of Gia Dinh Citadel in 1795 show:

Water space with the NL – TN canal is located in the east and northeast of the Gia Dinh Citadel. With such a favorable position, the NL – TN canal with Tau Hu - Ben Nghe canal and Sai Gon river are responsible for acting as a natural wall of "water" surrounding the outer ring of the old Gia Dinh Citadel and were the green lungs and transportation for residents living in the Citadel.

The role of water spaces for the historical and cultural heritage:

The arroyo system had existed long before and had links with the life of the previous owners from the previous country. However, for the Gia Dinh Citadel, since 1674, during the widening of the borders towards the South to reach this region, the arroyo became closely related to the formation of the new region of Saigon - Gia Dinh from An Nam (Quy Don LE, (1776). This means that it has existed for over 340 years since the reign of the Nguyen dynasty in the history of Vietnam.

It was a former territory of Cao Mien, which according to historical proof was one of the most prosperous and dynamic cities of Indochina. For a long time, a significant number of Chineses came to settle there for trading purpose and building houses as well as worship buildings (temple, pagoda), maintaining the intellectual and spiritual life to remain there as long as possible. They shared with the Vietnamese and part of the Khmers, the living space on both banks of the canal. As a result, the cultural history of the NL – TN region or as Ben Nghe – Tau Hu canal exemplifies the mixing of identity of each from the three cultures.

Another testimony about the NL – TN canal, it is possible to observe three types of historical worship buildings with different architectural styles of three ethnic groups on the same arroyo: Khuong Viet Pagoda (the Buddhist school of Mahayana) with the Vietnamese culture and architecture, Nam Tong Khmer Candaransi Buddhist Pagoda (the Buddhist School of Hinayana) with the Khmer architecture, Vinh Nghiem Pagoda with the Vietnamese culture mixed with that of the Chinese and Phuoc Hai Pagoda (Ngoc Hoang Palace) with cultural traits Chinese mixed with Vietnamese culture, etc.

Geographical role, the strategic meanings in terms of military defense and historical values of the water spaces:

Like rivers of Thang Long Citadel, rivers, lakes and ponds embrace and protect the Citadel. At the time of Gia Dinh Citadel construction, our ancestors made use of the natural

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geographical features, such as its strategic location, surrounded with the complex system of canals and marshes playing the role of both defense and attack to protect the Citadel:

- In the North East: the NL – TN canal undulates at the foot of the walls (the map in 1795 clearly shows the old wall leading close to this river),

- In the South West: the Ben Nghe - Tau Hu canal (commercial district of the Chineses and Japanese),

- In the South East: is the Saigon river (otherwise called the Dong Nai river),

- In the North West: is the TN-NL canal which flows behind the large area of marshes and agricultural sector of food plantations for the Citadel.

The arroyo-and-canal network is like a natural water wall, the second military outer ring area that flows along the bottom of the Citadel and protects it.

According to the map of the Gia Dinh Citadel dated back to 1795, the transportation system and important routes of advancing and retreating for military defense are based on water lines (guard and attack positions). Road traffic is not developed yet at this time, the entrances and exits through the gates to the Citadel were only passed by means of these waterways.

Since the Emperor Nguyen Anh built the Citadel of Gia Dinh, Thi Nghe canal has become an important place of this territory, because with the Saigon river, these two rivers form a complementary angle protecting Gia Dinh Citadel. The water of the surrounding ditches was led from the arroyo and the beginning of that arroyo is chosen to build a workshop of warship repairs of the Nguyen naval army, called the Chu Su (or Ba Son) workshop.

The directing role of the water spaces in urban planning and composition:

With Thang Long -Hanoi: The spatial organizational structure of Thang Long citadel from the Ly Dynasty, then to the Tran, Le dynasties... all took the basis of the water element of rivers and lakes as the natural water surface space to organize the structure and layout of Thang Long citadel. The main structure of the Citadel, the Imperial Citadel, the Forbidden City, administrative and administrative buildings, religious and educational buildings. The elements of water surface space appearing in most of the building structures are mandatory for the protective green outer layer, providing water for agriculture and daily life, and spiritual feng shui. , water roads, fire protection, ecological landscape environment... of the water surface are also considered for the organizational structure of the house or the complex of buildings.

The special thing here is that the water surface space used to affect the system of feudal buildings in Thang Long is basically based on the natural topography to organize planning axes of buildings or clusters of buildings important process. If viewed in terms of the spatial axis of a large urban area, the Red River is the main axis for the cities and villages to develop along. The To Lich River, Nhue River and West Lake (smaller water surface space) are the spatial layout of Thang Long Citadel and the village clusters of Thang Long Citadel, small lakes, ponds, and canals looming all over Thang Long. Long is the layout of the water axis for religious and educational buildings and some civil works for well-off families.

Up to now, it has been seen that urbanization has a strong influence in big cities, especially in Hanoi and HCM City, lakes and ponds are gradually being filled, canals and canals are encroached on, shrinking or disappearing, changing flow... has also affected the amount and area of Hanoi's water surface, of course also affected the water structure of the villages and the religious and educational buildings of Thang Long. For example, the area and flow of the To Lich river in the doctoral thesis research of PhD Do Xuan Son (Do, X.S., 2016).

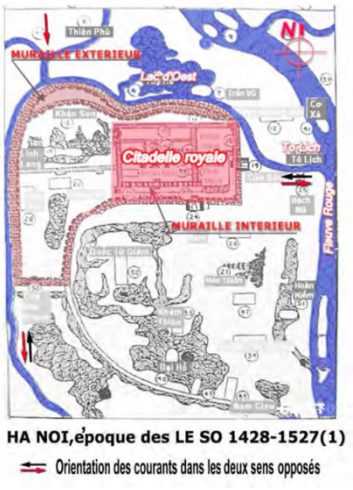

Figure 5.1: Hanoi map in 1428-1527[12]. After: Do Xuan Son

Figure 5.2: Hanoi map in 1885[13] After: Do Xuan Son

Figure 5.3: Hanoi map in 2000. After: Do Xuan Son

With Saigon: At the time of construction of Gia Dinh Citadel by Gia Long or that of Sai Gon by Minh Mang King, the builders used the configuration of a Vauban-style square influenced by the Western ideology of walls planning (because at the time there had been so many back and forth of Western traders who were in close economic and political relationship with the Vietnamese Court). Inside the Citadel, buildings were organized according to the circulation of a chessboard with the image of the inner Citadel. At its exterior, the spatial composition of the old city is prescribed by taking the Citadel as its center and in drawing the chessboard to go in all directions. To do this, the main canal and arroyo line have been used as the essential directional axis of surrounding development and widening ways of the city in different directions.

The main river Dong Nai – Sai Gon plays a decisive role in both the main and secondary orientations for the Citadel of Gia Dinh in terms of geomantic orientations for a sustainable development. In the same way, the branching arroyos of the NL – TN canal located on the left and that of Ben Nghe – Tau Hu on the right were part of spatial and directional composition of Gia Dinh – Saigon Citadel.

Directing role of the water spaces in urban planning and composition:

At the time of construction of Gia Dinh Citadel by Gia Long or that of Saigon by Minh Mang King, the builders used the configuration of a Vauban-style square influenced by the Western ideology of walls planning (because at the time there had been so many back and forth of Western traders who were in close economic and political relationship with the Vietnamese Court). Inside the Citadel, buildings were organized according to the circulation of a chessboard with the image of the inner Citadel. At its exterior, the spatial composition of the old city is prescribed by taking the Citadel as its center and in drawing the chessboard to go in all directions. To do this, the main canal and arroyo line have been used as the essential directional axis of surrounding development and widening ways of the city in different directions.

The main river Dong Nai – Sai Gon plays a decisive role in both the main and secondary orientations for the Citadel of Gia Dinh in terms of geomantic orientations for a sustainable

[12] Source: Institut de l'histoire du Vietnam.

[13] Source: Centre des archives d'outre-mer à Aix-en-Provence et au Centre des archives de l'Institut français d'architecture à Paris.

development. In the same way, the branching arroyos of the NL – TN canal located on the left and that of Ben Nghe – Tau Hu on the right were part of spatial and directional composition of Gia Dinh – Saigon Citadel.

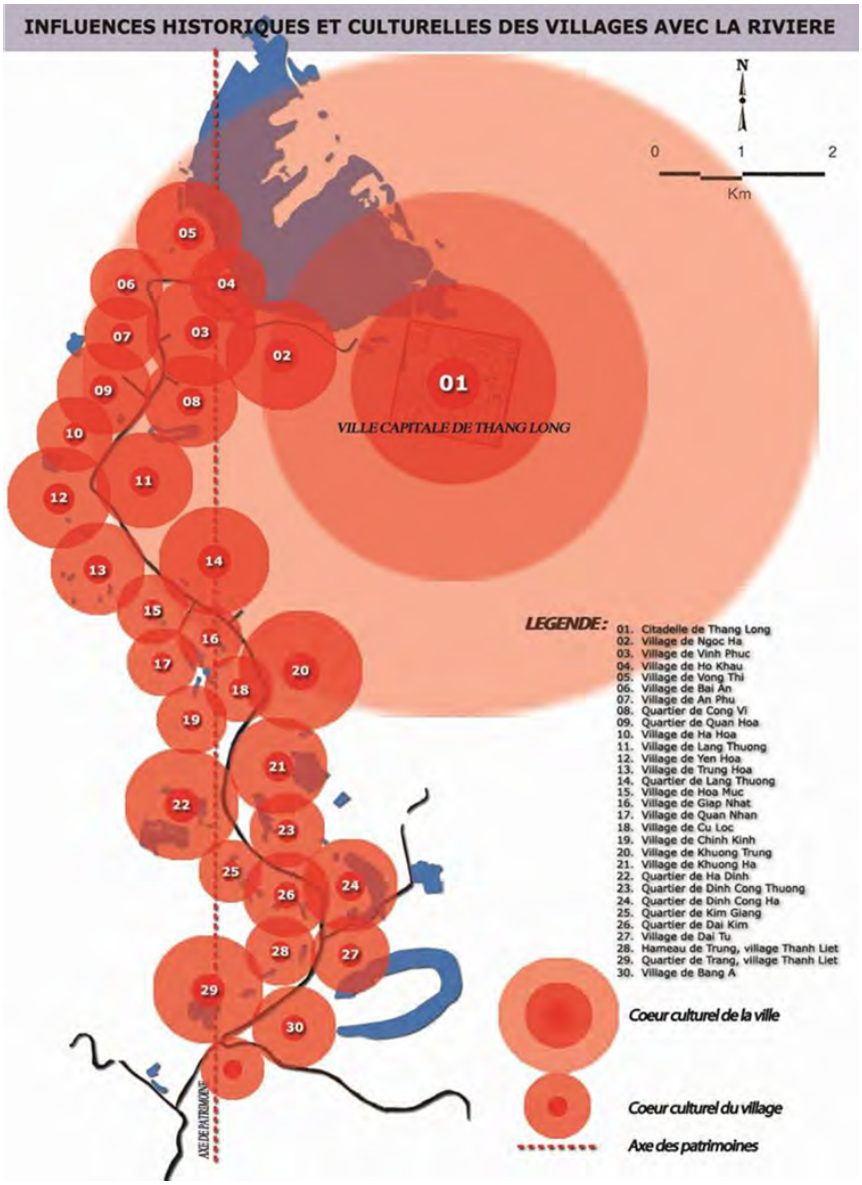

Figure 6: The historical cultural Diagram influences of more than 30 villages with the To Lich River, as well as the historical cultural values of the villages and Thang Long associated with the To Lịch. Doc: Do Xuan Son

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