Resilient landscape, resilient culture
The role of geographical place-based perspective
in sustainable adaptation of urban areas to the climate change

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Abstract

Cities are defined as the ecological phenomenon of the 21st century since urban form is becoming dominant geographical context for human settlement on Earth. At the same time climate change is defined as the emerging threat to the sustainable urban development since urban areas are among the most vulnerable sites for the climate change for their complexity and importance in the world’s socio-economic system. Due to that one of the major tasks of contemporary urban planning policy is adaptation of urban areas to the changing realms. In connection to the adaptation strategies, concept of resilience is gaining much more attention in the current planning discourse as an approach which perceives problem of climate change as the opportunity for better development. As scholars state, new aspect that concept of resilience brings to the planning is a view that social and ecological dimensions are interlinked.

This connection between social and ecological dimensions is at the same time main aspect of the current discussion on the Culture-Nature Divide and its role in sustainable development. According to the scholars, efforts toward sustainable development will not succeed if cultural values remain the same. It is stated that people need to start perceive themselves and nature as the elements of the same system. It is suggested that sense of relatedness to nature as a value shared by each culture may improve the connection between people and natural environment.

According to that, main aim of the thesis is to find an answer for the research question “What is the connection between culture and nature and its role in sustainable adaptation of urban areas to the climate change?” and through the research and analysis develop a theoretical foundation for the strategy of adaptation to the climate change which offers an opportunity for more effective urban growth based on three main pillars of sustainability: Environmental responsibility, Economic viability and Social justice as well as currently distinguished new dimension i.e. Cultural vitality.

In the thesis geographical place-based perspective is presented as an approach which draws all dimensions of reality together as the parts of one larger system. In addition, key role of the concept of place attachment as an element bridging the gap in disturbed relation between humans and environment is highlighted. Analysis part is based on the case study of sustainable post-tsunami reconstruction of city Constitución in Southern Chile which reveals that main factor triggering almost all positive outcomes of the geographical approach in planning practice is participatory design method.

Since geographical place-based perspective shows that cultural and ecological sustainability are mutually dependent, it can be assumed that strategy of sustainable adaptation of urban areas to the climate change based on this approach may lead to the resilience of urban system.

Key words: climate change, urban adaptation, sustainable urban development, resilience, culture – nature divide, cultural sustainability, place attachment, geographical place-based perspective, cultural landscape, ecological design
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Chapter I. Introduction

Impact of the climate change on urban areas

Cities are defined as the ecological phenomenon of the 21st century since urban form is becoming a dominant geographical context for human settlement on Earth (World Watch Institute 2007 in: While and Whitehead 2013). According to United Nations, it is expected that between 2009 and 2050 population of urban areas is going to increase from 3.4 billion to 6.3 billion and it is estimated that in next half century humankind is preparing to build more than it has built throughout all of recorded history (Orr 2002, While and Whitehead 2013).

At the same time, climate change is defined as an emerging threat to the sustainable development of urban areas as well as the main force of urban change (Orr 2002, Barthel-Bouchier 2012, While and Whitehead 2013). In the context of the climate change, urban areas are amongst the most vulnerable sites for their complexity and importance in the world’s socio-economic system (Hoornweg et al. 2011, While and Whitehead 2013). According to Organization for Economic Cooperation and Development, group of the cities under the highest risk of threat includes such global nodes as Greater New York City, Shanghai, Mumbai or New Orleans, but not only coastal cities that are at risk since inland urban areas suffers from flood disasters (Barthel-Bouchier 2012).

Since many scholars refers to the climate change in terms of social, economic and environmental dimensions of the city structure (Hoornweg et al. 2011, While and Whitehead 2013), there is an additional element which should be concerned independently in connection to the sustainable urban development (Barthel-Bouchier 2012). Physical structure of urban areas is characterised by cultural significance which is important for the social groups, who value it for its role in their history and in their lives (Barthel-Bouchier 2012). According to the research of Marzeion and Levermann (2014) if the current global mean temperature was sustained for the next two millennia, about 6% (40 sites) of the UNESCO sites will be affected, and 0.7% of global land area will be below mean sea level. At this warming level, 3–12 countries will experience a loss of more than half of their current land surface, 25–36 countries lose at least 10% of their territory, and 7% of the global population currently lives in regions that will be below local sea level (Marzeion and Levermann 2014). It shows that also cultural dimension of the city structure reveals vulnerability for the climate change impact.

1.1. Pillars of sustainability

As scholars suggest temporary policy of urban planning and development should not only take into account climate change impact, but include in the strategies approach of sustainable development to mitigate possible negative effects in the future (Orr 2002, IPCC 2014). As Zhang (2013) shows, nowadays also concept of sustainable development is under revision and new aspects are included into the discourse on the theory of sustainability.

The most common definition of the sustainable development derives from the document of the United Nations World Commission on Environment and Development i.e. the Brundtland report “Our
Common Future” (1987): “sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.

There are three pillars of sustainability mainly distinguished by the scholars (Zhang 2013, Pickett et al. 2014):

- Environmental responsibility – refers to ecological balance that includes an efficient use of resources.
- Economic viability – it reflects the need to achieve a balance between the costs and benefits of economic activity within the limits of the carrying capacity of the environment.
- Social equity – refers to the matters such as justice, participation, cohesion, and welfare in society; it also aims to meet the basic human needs such as food, clothing, shelter, and equal distribution of these goods.

As Zhang (2013) noticed, sustainable development has been focused initially on the problem of ecological degradation and environmental protection, but as the concept evolves, increasing emphasis is put on its connection to the social, cultural, and economic dimension.

Change in the approach to sustainability derives from the statement that the environments which people inhabit affect human development, and a healthy environment provides the necessary external conditions for sustaining the culture, but also that sustainability is the cultural issue since it is rooted in the change of attitudes and lifestyles (Darlow 1996, Diamond 1999, Wheelwright 2000 cited: Zhang 2013). Due to that culture, traditionally seen as an element of the social dimension, is nowadays perceived as a new fourth pillar of the sustainable development (Zhang 2013).

Zhang (2013) refers to the definition of cultural sustainability of The Sustainable Development Research Institute (1998 cited: Zhang 2013 p.30) which defines it as “the ability to retain cultural identity and to allow change to be guided in ways that are consistent with the cultural values of people”.

According to that, as Uzzell et al. (2002 p. 28) state “the sustainability of an urban system can be understood as the compatibility between social, economic, and cultural dynamics and environmental resources in the present and the future”.

1.2. Adaptation to the climate change as the challenge for urban planning

Considering impact of the climate change on sustainable urban development, scholars draw attention to the new forms of the climate-shaped cities (While and Whitehead 2013) as many state that adaptation to the climate change is a major task of temporary planning policy (Hoornweg et al. 2011, Fünfgeld and McEvoy 2012, Davoudi 2012). As Orr (2002) claims, further procrastination of adaptation will make subsequent action both difficult and less efficacious.

Fünfgeld and McEvoy (2012) point out that in the contrary to the concept of sustainability, which was a novel idea at the time of its introduction into the planning discourse, concept of adaptation is a well-investigated phenomenon in fields such as evolutionary biology and ecology. Authors (idem) explain that in the context of the climate change, adaptation can be understood in connection with familiar scientific terms such as vulnerability, exposure, sensitivity, adaptive capacity, and most importantly, concept of resilience.
1.2.1. Resilience as a new sustainability

Referring to Davoudi (2012), in contemporary discourse on the planning practise and climate change concept of resilience is replacing concept of sustainability. Moreover, Pickett et al. (2014) claim that resilience is a core concept for operationalizing sustainability. As Davoudi (2012) admits, despite this emerging role of the resilience concept still it is not clear what resilience means and this term is differently interpreted within strategies and documents of planning policy.

Although resilience has appeared recently in the planning discourse, it is not a new concept within science in general (Davoudi 2012). Term “resilience” comes from the Latin “resi-lire” which means “spring-back” and firstly was used in terms of stability of materials and their resistance to external shocks within physical sciences, then was incorporated into ecology field (Davoudi 2012). Distinction between engineering and ecological resilience was explained by Holling (1973 cited in: Davoudi 2012). Engineering resilience is measured by the resistance to disturbance while ecological resilience is measured by the question how much disturbance it can take and remain within critical thresholds, but both perspectives share the view of the existence of equilibrium in systems (Holling 1973, 1996 cited in: Davoudi 2012).

Resilience is understood as an ability of a system to return to pre-existing equilibrium (engineering resilience) or ability to persist and then adapt to alternative stability domains as a new equilibrium (ecological resilience) after a disturbance in form of natural disaster or social upheaval (Holling 1973, 1996, Adger 2003 cited in: Davoudi 2012). Engineering resilience is measured by the resistance to disturbance while ecological resilience is measured by the question how much disturbance it can take and remain within critical thresholds, but both perspectives share the view of the existence of equilibrium in systems (Holling 1973, 1996 cited in: Davoudi 2012).

Davoudi (2012) refers to the evolutionary perspective which broadens the engineering and ecological description of resilience and challenges the statement of the equilibrium existence. According to the author (idem) “resilience in this perspective is understood as a continually changing process; not as a being but as a becoming” i.e. is perceived as an ability of the complex socio-ecological systems to change, adapt, and transform in response to adversities (Carpenter et al. 2005 cited in: Davoudi 2012).

According to Davoudi (2012), in evolutionary resilience perspective places are not understood as neutral units of analysis, but as complex and interconnected socio-spatial systems with extensive and unpredictable feedback processes which operate at the multiple scales and timeframes. As author (idem) explains, this approach to resilience states that the time of greatest uncertainty is simultaneously the time of the highest resilience, chance for innovation and transformation i.e. it is understood as a window of opportunity. In connection to that planning in this approach is perceived as capability of innovative transformation at the times of change and inherent uncertainties (Davoudi 2012).

In connection to the role of the relation between culture and environment in sustainable adaptation to the climate change, Porter and Davoudi (2012) state that “a significant fresh aspect that resilience thinking does bring to planning is its view of the social and the ecological as intrinsically interlinked”.

Aim and research questions

Thesis has character of theoretical discussion and investigation on specific planning problem i.e. adaptation to the climate change on urban areas with an emphasis on the connection between cultural and environmental dimension in sustainable development. Research is based on the analysis
of existing concepts and theories within the fields of urban planning, environmental psychology and human geography to examine different approaches to the problem and suggest the most relevant one which can be applied in the strategy of sustainable adaptation to the climate change.

Main aim of the thesis is to develop a theoretical foundation for the strategy of adaptation to the climate change which offers an opportunity for more effective urban growth based on three main pillars of sustainability: Environmental responsibility, Economic viability and Social justice as well as currently distinguished new dimension i.e. Cultural vitality.

Research question is structured as follow: What is the connection between culture and nature and its role in sustainable adaptation of urban areas to the climate change?

Structure of thesis

Thesis structure is based on three main parts: theory review, analysis of a case study and strategy proposal.

First part is a revision of theories and concepts which examine the role of the connection between culture and nature in relation to the sustainable development, as well as its implications on the urban planning and design practice. Main concepts revised in this part are theory of Culture-Nature Divide, Environmental Connectedness Perspective, Geographical place-based perspective, and in connection to the last one, concept of Place attachment.

Next part is an analysis of case study. As an example strategy of the reconstruction of the Constitución city in Southern Chile after tsunami disaster in 2010 was examined.

Third part includes final conclusions from two preceding parts and presents the outline of the proposal of sustainable adaptation to the climate change based on the geographical place-based perspective and place attachment concept. In this part connections between planning theory and planning practice are discussed as well as possibilities, chances and barriers of developed strategy implementation are presented.

Methodology and data collection

To facilitate theory development, review of the literature was conducted to present views on the problem from different perspectives and point out these areas where further research is needed (Webster and Watson 2002). In this part research papers such as journal articles, reports and books from the field of environmental psychology, human geography and urban planning were revised.

Analysis part is based on the case study method. For the case study data was collected from the different sources to gather broad scope of the information and opinions. Information sources include newspaper articles, videos with the interview, reports, information from webpages, master plan and project descriptions to juxtapose opinions of experts and common people for stronger objectivity of analysis.
Chapter II. Theory

Culture - Nature Divide

Many researchers point out that current environmental degradation and its effects such as the climate change arose from the disturbed relationship between society and environment and due to that activities aiming for the sustainable development won’t succeed if the cultural values remain the same (White 1967, Passmore 1980 cited in: Talukder 2010, Bakari 2014). Concerning culture-nature divide in connection to sustainable development, ideas presented by Mohamed El-Kamel Bakari (2014) and Munir Hossain Talukder (2010) were juxtaposed since authors through the analyses of cultural values from the different angles reach similar conclusions about strengthening man-nature relationship and point out that these solutions could be worth to consider as the values possible to implement and transferred to the physical dimension through planning and decision making.

2.1. Sustainability and contemporary Man-Nature Divide

In connection to dependency between sustainable development and cultural values, scholar Mohamed El-Kamel Bakari (2014) explains global environmental problems as an effect of the currently dominating global culture and its impact on the environment. According to the author, main cause of the man-nature divide and global environmental problems is neo-liberal economy of Western culture which is based on the idea of the infinitive consumption and production of the goods, necessary to generate economic growth and social well-being. It creates excessive consumerism which leads to the degradation of the natural environment. Bakari (2014) states that through the globalisation environmental problems appeared on the global scale because the ideas, life style and values of the Western culture and neo-liberal ideology spread over the world and affected other cultures.

Bakari (2014) does not consider the connection between man and nature in terms of the primary dependency based on the production of food or the source of materials essential to survive by human beings. Moreover, Bakari (2014) shows that the weaker emotional relationship between Man and Nature is the stronger is dependency on the products of nature, and due to that degradation of environment is progressing. Relationship Man-Nature is understood by the author (idem) in the metaphysical meaning i.e. as the ecological awareness and consciousness which is therefore a basic foundation of the sustainable development. Bakari (2014) points out that since now this relationship is broken worldwide and people do not perceive themselves as a part of nature, efforts towards sustainability should firstly focus on the bridging the gap between people and nature. Bakari (2014) states that it is necessary above all to “develop a strong sense of relatedness and commitment to sustainability in order to implement sustainability”. According to the author (idem), this kind of relation can be developed through the holistic approach to the planning and decision making and society engagement, which would lead to the integration of ecological, social and economic dimension and which would help people to start to perceive themselves and environment as a part of the one system and realize interdependency between all these dimensions.
2.2. Self, Nature and cultural values

Importance of the relation between society and environment for the sustainable development is also explained in broader philosophical context by Munir Hossain Talukder (2010) who compared core values of two main cultures, Western and Eastern, to find common elements in order to improve global relationship with nature despite cultural differences between societies.

Referring to Talukder (2010), main characteristic of the Western society is anthropocentrism and view of the superiority of human being over the nature which author concerns as “incorrect”. Talukder (2010) presents development of the Western philosophical system from the ancient Greco-Roman tradition, which in majority perceived humans as a part of nature, through medieval philosophy and Judeo-Christian theology, based on the belief that God gave humans superior position over the nature, to the European Enlightenment period as the beginning of modern philosophical system where values such as liberty and autonomy of the individual and power of knowledge and science were the core ideas. The same as Bakari (2014), Talukder (2010) perceives Western culture and its approach to nature as the main reason of ecological problems.

Eastern tradition is characterised by Talukder (2010) through the “sacredness of nature” approach. As the examples he gives Indian tradition of living in balance with nature, and what is interesting, Talukder (2010) refers to Shah (1982 cited in: Talukder 2010) which perceives it as a result of the influence of unique physical environment on the culture since geographical location of the India is a region with the very attractive natural surrounding created by ocean, Himalayas and Ganges. Another example of Eastern cultural values is Chinese holistic approach to nature and internal relatedness between humans and environment, reflected in Confucian philosophy and Daoism tradition.

Talukder (2010) concludes that Western and Eastern culture are opposite, but at the same time they share some common values which should be treated as a linking point in disturbed relation between man and nature in the global dimension. Talukder (2010) states that improvement of the relationship between man and nature, leading to the better environment condition in current globalised but still mentally different world, can be done by focusing on the common value possible to find in both cultures. According to Talukder (2010) “identification” with nature as an element shared by each religion and philosophical tradition both from Western and Eastern culture is the common environmental value which referring to author (idem p. 2) could be used to achieve “viable relationship with nature for harmonious co-existence”.

Although the idea of “identification” with nature presented by Talukder (2010) seems to be not very clearly articulated e.g. in terms of possible ways of improving it, it could be concerned as a term equal to “sense of relatedness and commitment to sustainability [...]” stated by Bakari (2014) as the element bridging the gap between people and nature. Furthermore, other very important value appeared in both articles in the secondary plan in the term “responsibility”. Bakari (2014) refers to Neil Carter (2007 cited in: Bakari 2014) words: “liberal democracy nurtures an atomised individualistic focus on the private sphere, which makes it a poor breeding ground for the ecological consciousness and responsible citizenship needed to bring about a sustainable society”. Bakari (2014) calls for rethinking individualistic approach to the human being, what is necessary to create a common responsibility for nature to establish sustainable development. Talukder (2010) refers to Passmore (1980 cited in: Talukder 2010) who suggests that Western tradition includes enough values
for appropriate relationship with nature, such as Conservationist and Perfectionist suggesting responsibilities toward nature, but it is important to understand the idea of “superiority of man over nature” in terms of judicious “stewardship” or “management”.

2.3. Conclusions
What is the main point of conclusion of both authors is the statement that holistic approach to the nature with a view of human being as a part of environment, and collective responsibility for environment are the core values essential to improve the relationship between man and nature. Most importantly, key role of planning and decision making is highlighted as a link between social and physical dimension of the environment.

Although both papers confirm and explain importance of the stronger relation between society and environment and treat it as the foundation of the sustainable development, the overall character of both articles is held in the form of theoretical dispute and the results of the discussion have character of the “general truth”. Due to that further research was necessary to investigate what are the conditions determining stronger relationship man – nature and how it can be applied in the planning practise.

2.4. Nature and Culture Division and planning practice
Since importance of planning and decision making was pointed out by Bakari (2014) in bridging the gap in disturbed relation between society and environment and at the same time cities become more and more dependent on the green space and its multifunctional character, it is worth to revise the research of Talukder (2010) and Bakari (2014) from the point of view of other fields of science as far as “listening and giving voice to different points of view are essential to the precepts of reasoned discourse” (Sack 1997), to identify what kind of contribution urban planning can make to the cultural sphere and connection between people and nature, and why the need of participatory planning approach and collaboration between different stakeholders is crucial in this process as Bakari (2014) argues.

To find out how such general concepts as “identification”, “relatedness” and “commitment” to nature can be applied through the planning and decision making, there is a need to better understand their characteristic.

Identification refers to “the action or process of identifying someone or something or the fact of being identified” (www.oxforddictionaries.com). Identification leads to the emergence of identity (Dictionary of Human Geography 5th Edition 2009, p. 356). In the same vein, connectedness/connection refers to “a relationship in which a person or thing is linked or associated with something else” (www.oxforddictionaries.com) and relatedness refers to “belonging to the same family, group, or type; connected” (www.oxforddictionaries.com).

All three terms refers to the type of emotional bond, and in terms of the study conducted by Talukder (2010) and Bakari (2014), this bond is directed toward natural environment. Discipline which studies examine relation between individuals and their built and natural environment is environmental psychology and due to that further research was conducted within that field.
Environmental psychology

Environmental psychology according to the Dictionary of Human Geography (5th Edition, 2009 p. 203) “is an interdisciplinary and disparate field of study, enrolling researchers from psychology, geography, anthropology, sociology, planning and design, [...] examines perceptual, cognitive and embodied relationship between humans and the environment, both “natural” and “built.”

3.1. Environmental identity

Relation between humans and environment within environmental psychology field, which can be treated as an equal concept to the “identification”, “relatedness” and “commitment” to nature stated by Talukder (2010) and Bakari (2014), is defined as “environmental” or “ecological identity” and refers to “the meanings that one attributes to the self as they relate to the environment” (Stets & Biga, 2003, p. 406 cited in Hinds & Sparks 2009) and “all the different ways people construe themselves in relationship to the earth as manifested personality, values, actions, and sense of self” (Thomashow 1995, p. 3 cited in Blatt 2012).

Concept of environmental identity has the implications in the research on pro-environmental attitudes and behaviour, and is based on the statement that people identify with those entities they care about and with which they tend to be often in contact (Hinds and Sparks 2009). According to that it can be assumed that strengthening of the relation between society and environment stated by Bakari (2014) and Talukder (2010) may contribute to the improvement of the environmental conditions.

Although there is no single accepted theory on the relation between human and nature (Häkkinen et al., 2012) there is a broad scope of empirical research concerning the connection between society and nature in terms of the stronger societal awareness of ecological problems conducted within the field of environmental psychology and defined overall as Environmental Connectedness Perspective (e.g. Schultz et al. 2004, Mayer et al. 2009, Olivos P et al. 2011).

3.2. Environmental connectedness perspective

Environmental Connectedness Perspective according to Beery and Wolf-Watz (2014) “describe an affective, cognitive, and/or physical human relationship with nature by using terms such as affinity, biophilia, commitment, ecological self, identity, inclusion, relatedness, and sensitivity” and is based on the statement that frequent direct encounter with nature results in higher environmental awareness and emotional relation between people and nature. Moreover, within this perspective the Connectedness to Nature scale was operationalized as a “measure of individuals’ trait levels of feeling emotionally connected to the natural world” (Mayer and Frantz 2004 p. 503).

However, empirical research provides both the support as well as contradiction for the hypothesis of positive relations between humans connection to nature and pro-environmental behaviour (Häkkinen et al., 2012), and due to that the outcome from the Environmental Connectedness Perspective research was revised by the scholars Thomas H. Beery and Daniel Wolf-Watz (2014) to find main reason of the discrepancy between the conclusions of the studies.
3.3. Revision of the Environmental connectedness perspective

Thomas H. Beery and Daniel Wolf-Watz (2014) state that Environmental Connectedness Perspective should be revised because of the shortcomings and simplifications of this approach to the relation man – nature. They pointed out following reasons:

- Terms “nature” and “environment” have too general and unspecified meaning e.g. when it comes to the issue of location or physical characteristics influencing connection between people and nature/environment.
- Research from this perspective excludes social context from environmental dimension and separate society from environment since it does not take into consideration cultural aspect, human subjective perception, values or understandings which can influence and be influenced by the feeling of experience of and connection to nature.
- Assumptions of the research from the environmental connectedness perspective are too simplified because main conclusion of the major research results from this area is that the most important factor determining connectedness to nature is time, since the relation between humans and environment develops from the direct encounter with nature and its frequency. Due to that main hypothesis is expressed through the simple statement “the more often experience of nature is, the stronger is human connectedness to nature”.
- Researcher based on the environmental connectedness perspective measures the commitment to the pro-environmental behaviour, which referring to Beery and Wolf-Watz (2014) means “willingness” and “intentions” to engage in protection of nature instead of real actions friendly to environment.

According to Beery and Wolf-Watz (2014 p. 199), Environmental Connectedness Perspective can be corrected and improved by including Geographical place-based perspective since “the relationship between humans and their surrounding environment is regarded as a central theme of human geography [...].” To prove that, Beery and Wolf-Watz (2014) analysed Environmental Connectedness Perspective from the viewpoint of human geography field.

Authors (idem) distinguish two main strands concerning society-environment relation in human geography: “materialist/realist” approach to nature based on determinism and possibilism concepts, and “idealist/social” approach which include human context in research on environment.

Beery and Wolf-Watz (2014) point out three main perspectives in geography to relation man – nature:

1. Environmental determinism in early years of geography field, where nature was independent object determining human life and society was perceived as an outcome of environmental conditions and processes. Approaches were based on materialist/realist ontology and clear division between man and nature.
2. Possibilism as an early cultural geography, where relation between humans and nature were implied into studies in form of the statement that nature is a framework for human activity and creativity, and people influence the nature. Due to that term “cultural landscape” was coined. Approach to the nature was still material/realist since studies concerned physical aspect of the human interference into the landscape e.g. settlement pattern or physical form of production.
3. New cultural geography of 1980’ and 1990’, where immaterial aspects of culture were taken into consideration. Environment started to be perceived not only as physical form of nature but also as conceptual construction and effect of socially related perceptions. According to that, studies incorporated social context, values, norms, ideologies and beliefs in the process of the research on environment.

When it comes to the nature connectedness perspective and the main assumption that people’s behaviour is determined by the presence or lack of encounter with nature, according to Beery and Wolf-Watz (2014) it indicates that this approach belongs to the materialist/realist perspective, and due to that at the same time it presents the division between human world and environment as the two separated dimensions, which determine each other but are not elements of the same system. Beery and Wolf-Watz (2014) refer to the Proctor (2009 cited in: Beery and Wolf-Watz 2014 p. 202) statement: “Even to say that we are connected to nature/the environment itself presumes a disconnect”. According to that, Beery and Wolf-Watz (2014) conclude that there is a need to replace concept of nature with different concept linking both social and environmental dimension.

![Figure 1](source: by author according to: Beery and Wolf-Watz 2014)

**3.3.1. Place perspective**

Beery and Wolf-Watz (2014) argue that further investigation about the relation between society and environment needs to replace concept “nature”, which is according to them unspecified and generalized, with concept of “place”. Referring to the authors (idem), although concept of “place” has also contested character, most of the definitions of place consist of three main components: geographical location, material form and social context i.e. sense of place.

Moreover, according to Beery & Wolf-Watz (2014), places are not only created by people in the physical and symbolic matter, but place itself is able to influence the process of social structure creation i.e. influence community relations and local identity through its physical features. As Beery and Wolf-Watz (2014 p. 203) notice “this view includes the perspective of connectedness (or attachment), but also considers settings as potential contributors to processes of identity formation, socialization, and creations of common sense as well as standards of behaviour”.

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In the discussion on the nature-culture divide, Talukder (2010) and Bakari (2014) assumed that relation between humans and nature is the main foundation of sustainable development. As Talukder (2010) claims, relation man-nature can be improved globally through the value common for each culture i.e. identification with nature. Although, according to Sack (1997 p. 27) “all cultures work upon common human characteristics and potentialities, and being geographical is critical one”. Sack (1997) states that understanding the consequences of people’s actions lies in the perception of human as “geographical being”. In addition, as Beery and Wolf-Watz (2014) found out, discussion about connection between people and nature itself presume disconnection and due to that concept of “nature” should be replaced with geographical concept of “place”. In connection to these outcomes, theory of people’s geographical self was examined as a main foundation of geographical place-based perspective.

Robert D. Sack (1997) in his book Homo Geographicus explains “geography’s centrality to human nature” and presents human being as “homo geographicus” – geographical agent. Author (idem) explores empirical as well as moral implications of taking this perspective on the human nature developing the model of “relational framework” with the central role of place and space within this model.

Since theoretical study conducted by Sack (1997) is complex and examines geographical place-based perspective from the fields such as history, psychology, philosophy or sociology, thesis is focused on these issues which in the highest degree relate to the aim of the thesis.
4.1. Characteristic of the geographical approach

General meaning of the geographical approach is expressed through the statement of Sack (1997 p. 17) that “thinking geographically is a key component of being aware” and it is a result of two main attributes of geographic perspective.

First of all, core concepts of geography i.e. place and space draw attention to the fact that everything is embedded in a concrete real physical setting. This fact implies specificity of the second important attribute of geography: through the concept of space and place geography synthesizes together all dimensions of the reality i.e. nature (physical world), social relations, and meaning (world of ideas), which other sciences by their high degree of specialization address separately or only partially.

To explain dynamic interrelatedness between these dimensions and its implications, Sack (1997) developed a model of “relational framework” based on the idea of geographical causality with the main role of space and place as the forces, and human being as a “homo geographicus”.

4.2. Concept of Homo geographicus

According to Sack (1997), there are three main forces influencing human behaviour which establish a type of people’s self: force of nature (self as Homo naturalis), forces of society (Homo socialis), and forces of our mind/the intellectual (Homo intellectualis). Concepts drawing them and combining together, and which allow for the understanding people’s position in the physical reality are geographical concepts of “world”, “place”, and “space” and those terms imply geographical nature of human beings.

To show how this approach can affect people’s more responsible actions and decisions, model developed by Sack (1997) explains dynamic interrelatedness between nature, culture, self and geographical factors i.e. space and place.

4.3. Model of Relational Framework

Model developed by Sack (1997) consists of four main elements and dynamic interconnections between them:

- realms of nature, meaning and social relations
- perspectives through which people perceive reality: aesthetics, morality and discursive/scientific
- place and space
- self (personal identity)

Sack (1997) distinguishes also nature, meaning and social relations, and space and place as the main forces which influence people and are influenced by them. Place and space play a central role in the model, as they constitute other elements and tie them together.
4.4. Place as a force

4.4.1. Definition of place

To better understand why in case of the relation between people and nature concept of “place” should be used instead of “nature” or “environment” there is a need to explain term of “place” first.


Place is a central concept in human geography in general. It refers to the geographical locale of any size or configuration, comparable to equally generic meanings of area, region or location. However, place is often attributed with greater significance.

Place, region, area and so on all can denote a unit of space that has discrete boundaries, shared internal characteristics, and that changes over time and interacts with other similar units.

Place is distinctive concept because of special characteristics:

1. *The idea that place, to be a place, necessarily has a meaning*

Place is usually distinguished by the cultural or subjective meanings through which it is constructed and differentiated. It is subjectively sensed and experienced phenomenon,
component of human experience, without which human experience itself could not be constituted and interpreted.

Places themselves are understood as unique, meaningful material constructions that reflected and articulated cultural perceptions and habits.

2. **Place as becoming locale**

Temporal change is a constituent feature of place. Places do not remain the same. Instead, place is continually emergent. It means that place involves a transformation of some kind; for example, the transformation of a non-human element (the physical environment) by human beings into a hybrid of culture and nature (Cultural Landscape).

A different kind of transformation often spoken of is the transformation from space to place. Place is not derived from something else (as place from space); it is, rather, an always-already on-going assemblage of elements and relations. Space, one may say, is fully saturated with places.

Referring to definition of “place” from the Dictionary of Human Geography (5th Edition 2009) and key role of meaning in the concept of place, Sack (1997 p. 32) in connection to that attribute distinguishes two types of places: primary and secondary.

Secondary meaning of place refers to the distribution of certain things in space. According to Sack (1997 p. 32) “secondary places simply exist” but when they become part of the culture i.e. they get the meaning and social rules, it turns them into primary places.

Primary places are more culturally constructed and through their strong meaning they act as a force which influences, affect, and control distribution and interactions of the things in space. They strengthen people’s feeling of connection to the real physical world and as Sack (1997 p. 32) states “that is why we need them and help create them”.

4.4.2. **Culture-Nature Divide from Geographical place-based perspective**

For Sack (1997) there are two main reasons affecting people feeling of connection with the surrounding reality i.e. modernity and globalisation.

Modernity and globalisation according to Sack (1997) “uprooted” people from their ethnic and local identities and led to the tendency of homogenization of places and perspectives, what diminished key attribute of place i.e. meaning. Due to that place nowadays is perceived often as fragmented unit of space and meaning of place is reduced mainly to its functionality. According to Sack (1997) this process makes places less important what leads to the illusion of being “dissociated from geography”, and makes difficult to understand for people how their actions affect cultural and natural dimension of reality locally and globally. This statement of Sack (1997) can be compared to the term “placelessness” of Relph (1974, cited in: Dictionary of Human Geography 5th Edition, 2009 p. 542) which can be understood in following way:

If by definition place represents a ‘fusion’ of human and natural worlds that become ‘significant centers of our immediate experience’ […], then placelessness represents its
antithesis. It ‘describes both an environment without significant places and the underlying attitude which does not acknowledge significance of places’.

Placelessness it said to result from the tyranny of ‘technique’, efficiency, interchangeability, and replicability, in the design and construction of the human landscape.

Referring to the culture-nature divide, according to Sack (1997) globalisation and modernity disturbed not people’s feeling of connection to the nature or being a part of the nature as states Bakari (2014) but detached people from place i.e. diminished people’s awareness of living in the real physical setting and responsibility for their behaviour.

Due to that main reason of disturbed relation between people and nature is detachment from place (Sack 1997). Since place is understood as concept linking physical and social dimension, it can be said that people are not only detached from nature but also from cultural and social relations. If as scholars state (Talukder 2010, Bakari 2014) sustainable development is based on the dependency between environment, society and cultural values, it can be assumed that concept of place may have an important contribution to discussion on culture-nature divide and sustainable development.

4.5. Role of the concept of place in perception of culture-nature divide

Sack (1997 p. 79) points out that concept of place changes the way of understanding concept of nature since according to the author “we think of nature quite differently when it is in place than when it is not”.

Author (idem) claims that natural sciences through the need of objectivity localize nature in units of space i.e. places in secondary sense of meaning what does not imply further involvement of social dimension into the models. However, perception of the pure scientific concepts which address issue of nature through the concept of place such as garden or forest, which are named and delimited areas and due to that from secondary places become primary places, in the same vein turns general meaning of nature into the “second”\(^1\) nature, which is an element of the structure and dynamics of place together with social relations and meaning.

Sack (1997 p. 81) defines this process as “humanization of nature” through the concept of place, but he points out that at the same time concept of place “naturalizes culture” and makes it concrete since it embeds culture in physical and biological dimension of reality. Sack (1997) draws attention to the fact that concept of place explains how nature and culture affects each other what helps people to understand necessity of the stronger responsibility for their actions.

4.6. Geographical place-based perspective and environmental awareness

The most important feature of geographical place-based perspective according to Sack (1997) is synthesizing character of the concept of place for all components of the framework. Concept of place draws together nature and culture without reducing any of these components to the others. Geographical place-based perspective enables to understand that social world is not separated from the natural physical setting and that they are linked to each other at every geographical scale.

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\(^1\) “second nature” is understood by Sack (1997) in different terms than „secondary“ character of place i.e. as nature which is placed in concrete reality
Sack (1997) in his theory points out that role of geographical place-based perspective in strengthening people’s awareness of living in multidimensional reality extends the aspect of morality of people’s behaviour. According to the author majority of the ideas which concern the aspect of morality is focused on the relation only between human beings. Geographical approach through the integration of all dimensions of reality allows for realizing incomplete character of these ideas and through the concept of place draws also nature into the picture.

As Sack (1997 p. 13) points out “places constrain and enable our actions, and our actions construct and maintain places”. Geographical approach shows the dynamic interconnectedness of different dimensions, and this perspective helps to be not only aware that each decision people make about places affects both nature and culture, but also to be aware that it will cause a response from each dimension in this particular place as well as in other places, affecting people’s activity. Due to that geographical place-based perspective strengthens feeling of the responsibility for the decisions what refers to the Talukder (2010) and Bakari (2014) studies on culture-nature divide and indispensable value of responsibility for environment in terms of the sustainable development.

4.7. Conclusions

Referring to the author, including geographical place-based perspective in the view on the human position in the world enables to realise the fact that people do not live in the world of ideas and concepts, but in concrete physical setting where each action triggers concrete reaction and affects all dimensions of the reality.

Geographically aware position gives people the possibility of empirical experience of being in the world, and through demonstration of the connection between all dimensions enables people to understand how their actions are linked to the other people and nature in the different global scales and what kind of effects their actions in one place can bring in other places. According to Sack (1997, p. 1):

*Realizing that we are geographical increases the effectiveness of our action, the clarity of our awareness, and the inclusiveness and generosity of our moral concerns. It helps us see more clearly our world and our place in it. [...] If we cannot attain this awareness, we then have the worst of worlds: one in which our actions affect all of the cultural and natural systems, but one where lack of awareness prevents us from anticipating and assessing these effects.*

Review of the geographical place-based perspective theory revealed additional concept which is used by scholars in terms of the connection between culture and nature. According to the definition of concept of place from Dictionary of Human Geography (5th Edition, 2009) place “involves [...] the transformation of a non-human element (the physical environment) by human beings into a hybrid of culture and nature (Cultural Landscape)”. Also Beery and Wolf-Watz (2014) draw attention to the fact that division between nature and culture within geography field is bridged by the concept of “cultural landscape” which emphasizes the subjective experience and the meaning that people ascribe to the physical setting. Due to that concept of cultural landscape was analysed in addition to the concept of place to broaden the knowledge about geographical place-based perspective.
Cultural landscape

5.1. Definition of the concept


The cultural landscape is fashioned from natural landscape by a cultural group. Culture is the agent, the natural area the medium, the cultural landscape the result. [...]


Sauer thus stressed culture as geographical agent, although the physical environment retained a central significance as the medium with and through which humans culture act. Hence such elements as topography, soil, plants were incorporated into studies of the cultural landscape insofar as they evoked human responses and adaptations, or had been altered by human activity.

Today’s Sauer neat distinction between Nature and Culture has been largely abandoned [...]. All landscapes are at once natural and cultural.

Since concept of place and concept of landscape share the attribute of the integration of nature and culture, there is a need to find a distinction between these two terms.

First of all, according to Stewart and Strathern (2003) landscape creates “a context of perception” of people’s senses of place and community. Due to that it can be said that concept of cultural landscape plays a role of general frame for the concept of place, and thus allows to better understand specific character of particular place within the broader cultural and physical setting.

Secondly, definition of cultural landscape in Dictionary of Human Geography 5th Edition (2009) draws attention to the element of “myth” and “memory” embodied in the material landscape. Also Sack (1997 p. 173) refers to the landscape as “repository of meaning, and an element of the narrative”. Stewart and Strathern (2003 p. 11) state that concept of cultural landscape enable to analyse “the intersection of memory and history with how people see themselves in relation to their environment”. According to these definitions, it can be assumed that concept of cultural landscape characterised by reference to “memory and history” is perceived as more stable and less flexible construct than the concept of place.

5.2. Role and meaning of the cultural landscape

There are two main attributes of the cultural landscape concept: it can be treated as a mediate between local and global scale and it can create point of reference for the future development (Sack 1997, Stewart and Strathern 2003).

As Stewart and Strathern (2003) state, concept of cultural landscape allows for better understanding in a broader context how cultural values and physical setting influence each other in a particular area and thus to that it can be treated as a mediate level between local and global scale i.e. as a link between the local specificity and the global conditions of development.
Moreover, Stewart and Strathern (2003) point out that concept of cultural landscape can be treated as a foundation for other concepts such as attachment to land, conflicts over land, the use of the images of the past in the social construction of identities, and variant views of history, development and change, since it draws together social and natural dimension with a reference to the history and memory. According to the authors (idem p. 4), “it often serves as a crucial marker of continuity with the past as well as a reassurance of identity in the present and a promise for the future” what highlights the role of the cultural landscape concept in creation of stable conditions for development.

5.3. Landscape and cultural sustainability

Geographical place-based perspective through the concept of cultural landscape, which gives more stable and broader overview on the connection between culture and nature, may offer important contribution to the deeper understanding of the dependence between these two dimensions in terms of sustainable development.

Referring to Sack (1997), taking geographical place-based perspective increases people’s awareness of living in multidimensional interconnected reality what may enhance more responsible behaviour towards environment. Within his relational framework author (idem) distinguishes three main perspectives which shape people’s perception of the world i.e. aesthetic, moral and scientific. Sack (1997) as well as the other scholars i.e. Nassauer (1997) and Eaton (1997 in: Nassauer eds. 1997) state that moral and aesthetic perspectives are connected as the values leading to the sustained human care of the environment.

Main assumption of Sack (1997), Nassauer (1997) and Eaton (1997 in: Nassauer eds. 1997) is that aesthetic is a value conditioned by the culture and determines what is worth of attention and care within particular cultural system. According to Eaton (1997 in: Nassauer eds. 1997 p. 88) “aesthetic experience is marked by these elements that a community considers worthy of attention. It is community, not individuals acting in isolation, that determine what is worthy of attention and how aesthetic attention gets directed to the objects and events”. It reveals that category of aesthetic is not considered in terms of conventional “beauty” but in terms of “value” which is perceived as worthy of attention by the culture.

5.4. Dependence between cultural values and environment

Eaton (1997 in: Nassauer eds. 1997) claims that sustainability can be only achieved when ecological sustainability and aesthetic sustainability are integrated. Eaton (1997 in: Nassauer eds. 1997) as well as Sack (1997) and Nassauer (1997) agree that landscape which compels aesthetic experience evokes the sustained attention of people and due to that attractive landscape is more likely to be preserved and ecologically maintained by society. Nassauer (1997) draws attention to the fact that “people care what they own” not only in terms of holding legal title to the land but also as a sense of ownership e.g. “our street, our town”. Landscape which responses to the aesthetic of particular culture and thus is perceived as attractive, enhances stronger sense of belonging and attachment to the land within society what presumes greater human care of the landscape over the long term (Nassauer 1997).

Sack (1997), Nassauer (1997) and Eaton (1997 in: Nassauer eds. 1997) point out the mutual dependency between ecological sustainability and cultural values, which can be explained as a circular process. Eaton (1997 in: Nassauer eds. 1997) states that “aesthetic sustainability exists when cultures provide for repetition of aesthetic experience over the long span of time”. This statement
highlights the importance of stable character of the landscape as an object of aesthetic experience. Since attractive i.e. worthy of attention character of the landscape leads to the stronger human care of the landscape through its ecological maintenance, this repetition is provided. 

When it comes to the dependency between aesthetic and culture, these characteristics are more likely to be preserved in the landscape, which are attractive i.e. culturally accepted and valuable. In this way, also cultural dimension is strengthened since elements meaningful for culture are preserved in the landscape. Due to that referring to Nassauer (1997) “survival that depends on human attention might be called cultural sustainability” because these features of the landscape which are culturally accepted are more likely to be taken care of.

![Diagram](image)

Figure 4 Process of dependency between cultural and ecological sustainability (by author according to Sack (1997), Nassauer (1997), Eaton (1997 in: Nassauer eds. 1997))

Geographical place-based perspective. Summary

As Sack (1997) claims, main reasons of disturbed relation between people and nature is placelessness and detachment from place. Taking into consideration multidimensional character of place concept, detachment from place can be treated not only in terms of detachment from physical environment. It can be also understood in terms of weaker social relations, what in connection to the need of the collective responsibility for environment stated by Talukder (2010) and Bakari (2014) reveals important role of place in the process of the community creation. There is also aspect of detachment from cultural values, which are important factors in people’s approach to nature according to the scholars (White 1967, Passmore 1980 cited in: Talukder 2010, Bakari 2014).

Referring to Miani (2010) identification with place determines sentimental attachment to the landscape and cultural values of the area and enhances preservation and promotion of these values. Also as Nassauer (1997) states, sense of belonging and attachment to the land within society presumes greater human care of the landscape. It shows that relation between people and place understood by scholars as “attachment” may have important influence on the people’s attitude to the surrounding setting.

Beery and Wolf-Watz (2014) pointed out in their study that this relation is examined within environmental psychology and urban sociology field as a concept defined overall as “place attachment”. Beery and Wolf-Watz (2014) explain that this concept draws to the geographical place-based perspective and is based on the investigation of emotional relation between individual and
physical setting. Authors (idem) draw attention to the significant results of the research on the connection between place meaning and societal awareness of environment (Vaske & Kobrin 2001, Scannel & Gifford 2010). As scholars state, place attachment concept can be used in the process of public spaces planning, is relevant tool to study environmental perception and can contribute to understanding environmentally friendly behaviour (e.g., Kyle, Graefe, & Manning, 2005; Moore & Graefe, 1994; Williams & Stewart, 1998 cited in: Scannell and Gifford 2010). Due to that “place attachment” concept was analysed to find out main factors determining stronger attachment to the place.

Place attachment

6.1. Definition of the place attachment

Review of the research papers concerning issue of the place attachment indicate that it is multidimensional concept, which generally can be defined as a type of emotional relation between individuals and place. (Eisenhauer et al. 2000, Brown and Senecah 2001, Morgan 2010, Gifford and Scannell 2010, Devine and Clayton 2010, Beery and Wolf-Watz 2014)

Since nature is a physical aspect of the place, attachment can be directed toward nature when one’s self-identity is strongly connected with the specific physical setting (Scannell and Gifford 2010). According to that place attachment concept refers to the relation between society and environment investigated by Bakari (2014) and Talukder (2010) perceived through the place concept as was proposed by Beery and Wolf-Watz (2014).

Since place attachment concept is defined as multidimensional, there are two comprehensive models presenting the most important dimensions of the attachment to place, based on the literature review (Gifford and Scannell 2010) and empirical research (Wiliam and Vaske 2001).

6.2. Three-dimensional model of place attachment

Gifford and Scannell (2010) define three main dimensions of the place attachment:

- **place**, refers to the object of the connectedness: what is the attachment to, and what is the nature of this place
- **person**, indicates who is attached to the place and to what extent is the attachment based on individually and collectively held meanings
- **psychological process**, psychological ways in which individuals and groups relate to place in form of affect (emotional bonding to place), cognition (memories, beliefs, meanings, knowledge related to place), and behaviour (e.g. proximity-maintaining, reconstruction of lost places) (Häkkinen et al., 2012)
6.3. Two-dimensional model of place attachment

Second comprehensive model of the place attachment is identified in the study conducted by Williams and Vaske (2001) and indicates that place attachment consists of two aspects: place identity and place dependence.

6.4. Place identity

Concept of place identity coined by Proshansky, Fabian, and Kaminoff (1983) and investigated further by other scholars can be summarized and understood as the variety of feelings associated with specific physical setting (Catrill & Senecah, 2001). It is based on the contribution of values and emotions represented by place attributes such as place icons, place symbols and place based meanings to the one’s self-identity (Hull et al., 1994, Najafi & Kamal M. S., 2012) and due to that place identity concept reveals the significance of physical setting in the process of shaping the human sense of self (Morgan 2010).

Places with the strong identity are characterised by the tangible and recognizable image, what helps to distinguish them from the surrounding setting and encourage process of creation of social relations between their users (Hull et al., 1994, Najafi and Kamal 2012). As Hull et al. (1994) argue place identity may increase sense of community. Authors (idem) state that communities are built upon commonalities and these commonalities may be represented by the physical environment which defines or reminds people of histories common to them.

- **locality**, defined as a “territory where people meet their daily needs together”
- **local society**, which is “a comprehensive network of associations for meeting common needs and expressing common interests” e.g. local governments, community organizations
- presence of a “process of locality oriented collective actions” through which residents express their common interests in the local society

This definition refers to three-dimensional model of place attachment based on the place, person and process (Gifford and Scannell 2010) as addressed to the scale of community and their relation to the place.

**6.4.1. Place identity and urban physical structure**

Study conducted by Hull et al. (1994) in the city of Charleston (USA) after hurricane Hugo in 1989 and described in the article *Place identity: symbols of self in the urban fabric* revealed that among features destroyed and lost during the storm the most important amenities in terms of emotional value for local society were neither their own homes (13%), public buildings (6%) nor other retail structure (1%), but urban green structure such as parks, gardens, street and yard trees (30%) and historical buildings and districts of the city e.g. churches or squares (27%). Authors (idem) state that these elements are the most important and valuable for people because they provide the point of reference between past and present situation, create sense of continuity and strengthen stable character of reality.

**6.5. Place dependence**

Second dimension of the place attachment distinguished in the research of Williams and Vaske (2001) is the place dependence. It is based on the physical features of the setting such as facilities, resources and amenities which fulfil people’s needs and provides the opportunity and conditions for intended activities. When place supports achieving one’s goals it becomes important and valuable for the user what results in stronger attachment to this place (Cantrill & Senecah 2001, Brown & Raymond 2007, Scannell & Gifford 2010, Najafi & Kamal 2012).

**6.6. Placing identity**

Identity is a term based on Latin pronoun “idem” which means “the same” thus identity is something central, real and typical to someone (Hague and Jenkins 2005). According to that, within place identity concept there is a relation based on similarity and relation based on the difference with other places and social groups included (Hague and Jenkins 2005). Common values, experience and histories shared by society members set basic characteristics of identity such as authenticity, originality and singularity distinguishing one place identity from the other. Since place identity is relational i.e. is created in relation with/to other people, other places and other identities to that place, it needs to be not perceived as a passive output from social structure but treated as a dynamic process (Hague and Jenkins 2005).

Hague and Jenkis (2005) state that since place identity is a result of social relations and societies become more diverse and fragmented (e.g. relation to gender, ethnicity or lifestyle) there is a need to critically consider this concept in contemporary place-making policy.
According to the authors (idem), there are two strands to discourses on identity i.e. hegemonic/ethnos and democratic. The first concept refers to the essentialistic thinking of place identity as something that cannot be changed and is often imposed from above by the one specific group. Second concept means that citizens and society can reach agreement about common rights and responsibilities through the rational arguments.

As Hague and Jenkis (2005) explain, in contemporary diverse societies if place identity is imposed from above by hegemonic strand, conflict with those whose identity is radically different from “us” may appear in connection with repressive and exclusionary character of city spaces. To avoid these consequences, as authors (idem) state, the nature of place identity should be social and contractual and due to that place-making policy needs to be based on democratic strand i.e. participatory planning. Place identity formed through the discourse with different stakeholders and based on different actions, ideas and interpretations is likely to be polycentric i.e. there are multiple identities that may be shared or contested by ones or the others while main foundation in form of collectively worked out authenticity, originality and singularity is accepted by all social groups.

6.7. Conclusions

Concept of place attachment can be treated as a significant contribution to the geographical place-based perspective in connection to the main assumption of Sack (1997) that disturbed relation between people and nature is an effect of diminished meaning of place and placelessness phenomenon i.e. place detachment.

According to the fact that planning is about place-making (Hague and Jenkis 2005) it was important to explore possible connection between geographical place-based perspective, as well as place attachment concept, and urban planning practise. Strategy of design which can be worth to considered in connection to the place attachment and holistic approach can be Ecological design by David Orr presented in book Nature of Design (2002) since author (idem, 2002 p. 33, p. 4) states that “ecological design is the art that reconnect us to the world” and is based on “remaking the human presence in the world”.

Ecological design

David Orr in his book Nature of Design: Ecology, Culture, and Human Intention (2002) explains theoretical foundations of design strategy defined overall as Ecological design. Theory presented by Orr (2002) was chosen to outline general background of many specific strategies of adaptation to the climate change and city resilience based on the holistic approach and the multifunctional character of green infrastructure (e.g. From Resistance to Resilience 2013, Technologies for Climate Change Adaptation 2010). As author (idem p. 9) explains this design strategy “requires not just a set of generic design skills but rather the collective intelligence of a community of people applied to particular problems in a particular place over a long period of time.” It shows that ecological design can be included into geographical approach because it takes into account social, cultural and physical dimension of place in a long-time perspective.

Orr (2002) shares the view of Talukder (2010) and Bakari (2014) that in connection to sustainable development there is a need of a shift in the people’s way of understanding their responsibilities as citizens. According to that, as Orr (2002 p. 28) points out, the biggest challenge for ecological design is not “produce ecologically benign products for the consumer economy” but to create communities
which members have strong feeling of responsibility for their action as well as “who do not confuse what they have with who they are”.

As far as it is claimed that environmental problems are the effects of urbanization then, as Orr (2002 p. 10) points out, they “are a kind of design failure”. According to the author (2002), this statement allows also for the assumption that better design is a solution of environmental problems. As Orr (2002) explains, ecological design is based on the belief that people are part of larger system and the knowledge how this system works enhances the discipline of human intentions.

7.1. Definition of ecological design

Orr (2002) refers to the definition of Ecological design of Sim van der Ryn and Stewart Cowan as “any form of design that minimize(s) environmentally destructive impacts by integrating itself with living processes ... the effective adaptation to and integration with nature’s processes” (1996, cited in: Orr 2002 p. 21).

As author (Idem, 2002 p. 27) states, main aim of Ecological design is to create things that “fit gracefully over a long periods of time in a particular ecological, social, and cultural context.” This statement can be compared with contemporary need of “flexibility” in design expressed by many scholars and justified with the fact that ecological, social, and cultural context is changing nowadays very fast and character of place should be easily adaptable to these changes (Beirão and Duarte 2011). On the other hand, it can be assumed that ecological design is not based as much on flexibility as on the universality of solutions which seems to be characteristic more relevant regarding stability of the conditions (according to www.oxforddictionaries.com):

- Flexible – able to be easily modified; ready and able to change so as to adapt to different circumstances
- Universal – relating to or done by all people or things in the world or in a particular group; applicable to all cases, adjustable to or appropriate for all requirements

This assumption relates to the concept of cultural landscape and its stable character based on reference to memory and history, which is thus aesthetically accepted i.e. considered by people as worth of attention and due to that more likely to be ecologically maintained and sustained.

7.2. Place attachment and design intelligence

Orr (2002) explains that ecological design is based on “heritage of design intelligence” i.e. knowledge characteristic for the local culture. As author (2002) claims, this knowledge is provided by being situated in a place over the long span of time what creates a memory of the place and awareness of its ecological possibilities and limits. Orr (2002) defines it as long-term learning process growing from experience of place over time and on-going relation between community and ecology of particular places. Since people are, according to Orr (2002), sensuous creatures there is a need to create places which enhance development of emotional attachment to particular area to strengthen people’s awareness of ecological possibilities and limits of the place.

7.3. Design characteristic

Orr (2002) argues that although Ecological design is a broad idea, it is the most effective on a local scale because of the limited human ability to comprehend and foresee many different aspects of the
big scale actions. Orr (2002) also draws attention to the effect of decentralization according to which 
local economies prosper better by minimizing dependency on the outside economy and meeting 
local needs with local resources.

As Orr (2002) claims, in twentieth-first century to withstand such threats for local economy as global 
financial markets crisis, corporate downsizing, terrorism, interruption of resource supplies, there is 
a need to create resilient communities which would be able to utilize local and renewable energy to 
maximum, provide their own food, energy, shelter, health, recreation and financing. Despite that 
author (idem) does not directly refer to natural disaster or climate change as a risk for communities, 
his idea refers to temporary discussion on city resilience and ability to adaptation to the changing 
conditions and threats (e.g. Davoudi 2012, Picket et al. 2014).

Orr (2002) argues that resilience require social order which can be enhanced by such features as rich 
community life, neighbourliness, competence, self-reliance, human scale, and ecological durability. 
Author (idem) refers to the common characteristics of basic design principles for resilient systems of 

- Small units dispersed in space
- Redundancy
- Short linkages between modules
- Simplicity and reparability
- Diversity of components
- Self-reliance
- Decentralized control
- Large margins
- Quick feedback

Here also value of the universality in design can be highlighted as resilience of many systems can be 
based on a set of common characteristics. However, these rules need to be critically assessed.

For example, it can be discussed if dispersion of units in space is reasonable in urban planning 
practice in connection to e.g. compact city concept or urban sprawl effect. Another thing is that 
author does not explain dependency between dispersion and short linkages between modules which 
can be understood as the contradictory statement. Last thing is diversity of components and 
simplicity at the same time. Concerning this issue in connection to the design practice, as Chilean 
architect Alejandro Aravena stated: “If there is any power of design, that’s the power of synthesis. 
The more complex the problem, the more need for simplicity” (TED Talk 2014). Due to that simplicity 
may be treated in terms of simple form of the solution which is able to respond to many different 
problems at the same time.

The most important rules of ecological design approach presented by Orr (2002) create a background 
for planning and design strategies connected to the city resilience or adaptation to the climate 
change. They can be treated as a general framework for critical assessment of specific design 
strategy or planning policy in connection to the geographical place-based perspective. That has been

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2 Downsizing occurs when a company permanently reduces its workforce (according to: jobsearch.about.com)
done in the analysis of case study of the sustainable reconstruction of city Constitución in Chile, based on the holistic approach to the planning problem.

Chapter III. Case study

Aim of the analysis

There are two main aims of analysis of the case. Firstly, it is critical revision of theoretical knowledge through the reference to empirical examples. Secondly, aim is to point out the most important elements and steps of the planning process as the examples of “best practices” which could be used in similar projects.

Validity of the case study

Case study of Constitución Reconstruction was chosen as the empirical example of planning practice based on the geographical approach as according to the Alejandro Aravena’s statement: “[…] our approach was against geographical threats, have geographical answers” (TED Talk 2014). The most importantly, Constitución Reconstruction is an example of planning process based on citizen participation perceived as “unique collaboration between local residents, businesses and government. […]” (The Guardian 2015 p. 1, 6).

Project was also appreciated in international architectural competitions: Global Holcim Awards Finalist 2012 certificate for the Sustainable post-tsunami reconstruction master plan 2011/2012 and winning project of Zumtobel group award in "Urban Developments & Initiatives" category, 2014.

Background information

The port of Constitución lies at the mouth of the river Río Maule on Chile’s Pacific coast. The city’s roots go back to 1578. Number of inhabitants is about 45,000. Constitución owes its relative prosperity to forestry and cellulose production. There are also some important mines in the vicinity (Holcim 2012).

February 27, 2010, Chile was hit by a magnitude 8.8 earthquake which was followed by a gigantic tidal wave of tsunami and countless aftershocks. About two million people were directly affected by the catastrophe, which destroyed or badly damaged hundreds of thousands of homes (Holcim 2012, The Guardian 2015).

Architectural office ELEMENTAL S.A. in Santiago, with Alejandro Aravena as ELEMENTAL S.A.’s Executive Director since 2006, was commissioned to draw up a new master plan for the city Constitución in 90 days. In cooperation with different stakeholders with a key role of citizen participation, ELEMENTAL S.A. developed “a sustainable reconstruction plan” known by its Spanish acronym PRES (Holcim 2012, The Guardian 2015, TED Talk 2014).
Analysis

8.1. Planning process characteristic

8.1.1. Evolutionary resilience approach
As Alejandro Aravena argues “A tragedy is always an opportunity too” (Holcim 2012 p. 66) what refers to the concept of evolutionary resilience as a possibility for transformation into a new better state after the disturbance. Architect reminds that such a situation as a city reconstruction was new in Chilean urban design, and there were a couple of alternatives to rebuild a city (ArchiDaily 2014). Aravena states that “when you have such a situation of devastation of course you are under pressure, that is emergency to rebuild but also even if it is a cliché, there is a window of opportunity to upgrade standards of the city that without such an event is not obvious that you will be able to upgrade” (ArchiDaily 2014).

8.1.2. Participatory design
Planning process was based on the participatory design approach including local community in a way of finding the solution of the problem. This approach was motivated by the fact that, as Aravena argues, “the model of public-private partnerships with involvement a community is the way to treat social discontent, political threats, correction of inequalities [...]” (ArchiDaily 2014).

Process of the cooperation with citizens is described by Long in the article The rebuilding of Chile’s Constitución: how a ‘dead city’ was brought back to life (The Guardian 2015 p. 2): “Early in the process, ELEMENTAL S.A. built an “open house” in the city’s main square and made sure their evolving plans were on display there. Anyone could drop in, take a look and make suggestions. There were regular meetings to which the people of Constitución were invited. “I went to every one,” says Dolores Chamorro, a 78-year-old who has lived through her fair share of Chilean earth tremors. “It was fantastic, having these young architects come in to really make us think about the kind of city we wanted.” According to the issue of successful communication with citizens Aravena states that “If you use technical jargon, nobody understands you. The art is to talk simply, without denying the complexity of the problem.” (Holcim 2012 p. 65)

Planning process was also based on the cooperation in form of private-public partnership between ELEMENTAL S.A. and other institutions such as Arauco, major forestry firm in Constitución, Tironi Associates, a consulting firm and Arup, a London-based engineering and design multinational office as well as municipality, regional and national government (The Guardian 2015 p. 2).

8.2. Culture and Nature of Constitución

8.2.1. Role of the culture
Strategy of reconstruction was based on the recognition of cultural characteristic as the factors determining possible solutions of reconstruction. As Aravena explains that among three possible solutions the “first one: forbid installation on ground zero. Thirty million dollars spent mainly in land expropriation. This is exactly what’s being discussed in Japan nowadays, and if you have a disciplined population like the Japanese, this may work, but we know that in Chile, this land is going to be occupied illegally anyhow, so this alternative was unrealistic and undesirable.” (TED Talk 2014) As Aravena reminds, these people would have been very vulnerable to tsunamis. (The Guardian 2015 p. 2)
8.2.2. Local identity
Project received a title of Global Holcim Awards Finalist of Latin America 2014 since as jury justified, “strategy allowed the city to be reconstructed as closely as possible to where it had always stood: next to the sea and the river” (Holcim 2012 p. 65). As Alejandro Aravena comments “[...] the origin of the city, our identity, is not really connected to the buildings that fell, it is connected to the river, but the river cannot be accessed publicly, because its shores are privately owned (TED Talk 2015). Referring to the project description from the Holcim Award Report (Holcim 2012 p. 66) “the park has opened up the city to the river, providing public access to what the community sees as their real identity.”

Aravena explained that “large construction companies offered to throw up a few thousand apartments beyond the city limits. But that would not be sustainable. The people work in the city, and we wanted families to stay where they had their networks.” (Holcim 2012 p. 65) what refers to the voice of citizen in public discussion: “I am the history of Constitución. [...] My whole family has lived here, I raised my children here, and my children will also raise their children here. And my grandchildren and everyone else will.” (TED Talk 2014)

8.2.3. Local heritage
Green public space as a protection against natural disasters was also determined by local environment conditions, perceived as a natural heritage of Constitución (Sustainable post-tsunami reconstruction master plan 2011). Constitución is a centre of cellulose industry because conditions of natural environment in the region allow trees to grow very fast (Holcim 2012 p. 66).

Plan of the reconstruction includes also local production of wooden manufactured materials, provided by the company Arauco which is based in Constitución. Due to that aesthetic approach of the solutions refers directly to the productive development and character of landscape (Holcim 2012 p. 66) as well as since company employs many citizens of Constitución (The Guardian 2015 p. 3), it supports local economic base. This approach refers to the resilience attribute of self-reliance based on principle “meeting local needs with local resources” (Orr 2002).

What is more, natural environment provided empirical proof of the efficiency of the forest as a protection against tsunami. As Aravena explains “offshore from the city is a forested island. It suffered far less damage than Constitución itself. An investigation revealed that the waves release between 30 and 40 percent of their energy as they sweep through a forest.” (Holcim 2012 p. 66) It can be understood in terms of “design intelligence” described by Orr (2002) which is the result of a learning process based on the on-going relation between local society and ecology i.e. experience of place, and awareness of its ecological possibilities and limits.

8.3. Recognition of the needs towards the place dependence
Participatory approach revealed problems which were not linked directly to the earthquake and tsunami disaster. Members of community pointed out that the city suffered from flooding each year, what was a bigger problem than a tsunami which is likely to strike only once a generation (The Guardian 2015 p. 4). “We had no idea that flooding was such a big problem, which is precisely why you have to ask” Aravena says (The Guardian 2015 p. 4). Aside the problems of flooding, it was found out that despite that Constitución is in the middle of the forest region of the country, public space is poor and scarce (TED Talk 2014).
Another aspect which was revealed during the reconstruction process was the problem of the localisation of mill that manufactures wood pulp for packaging industry very close city centre, which emitted steam and odours (The Guardian 2015). On the other hand, plant and nearby sawmills employs near 3,000 people directly and 10,000 indirectly so relocation would result in a loss of main source of employment for Constitución (The Guardian 2015). To overcome these obstacles, company implemented solutions to reduce odours from plant, transport noise, and use the steam, which was wasted as it was pumped out into the air over the city, to heat a series of open-air swimming pools which are to be built in the sea front. (The Guardian 2015)

As Aravena states “the thing is that participatory design is not trying to ask people to validate the right answer; it starts by understanding what is the right question” (ArchiDaily 2014).

It can be argued that participatory planning approach allows for the recognition of people’s need and in connection to the place dependence concept, which assumes that function plays important role in the relation between people and place, through implementation of the solutions which fulfil people’s needs may lead to the stronger attachment to the place.

8.4. Collective place identity

Process of participatory planning of Constitución reconstruction may serve as an example of collectively worked out new place identity for destroyed area La Poza, which from privately owned residential area, destroyed during the tsunami, is to be turned into high-quality green public space protecting city against tsunami. However, residents of La Poza were attached to their place of living and working what was a reason for the conflict of interests.

As Long describe in an article for The Guardian (The Guardian 2015 p. 2) “more than 100 families had lived there, and most had lost their houses. Some wanted to rebuild in the same place. Others wanted to move, but only if they could sell their plots of land. Still others had been living in the area informally and had no plots to sell”. As Juan Ignacio Cerda from ELEMENTAL S.A. group says “any of the fishermen were reluctant to give up their plots of land because they wanted to stay by the river, where they worked and where their families had lived for generations,” Cerda says. “There were also a few richer families who had prime real estate on the river front; they too were reluctant to move.” (The Guardian 2015 p. 2-3)

As Alejandro Hormazabal, former resident of district stated he would never again live in La Poza. (The Guardian 2015 p. 6) As he commented in the article (The Guardian 2015 p. 6): “We’ve all had to give a little over the past five years,” he says. “We’ve argued and we’ve fought, but we’ve also come together as a community. It’s been a real learning process for all of us.” (The Guardian 2015 p. 6) It shows that society not only worked out collective agreement, but also was strengthened as a community.

8.5. Strategy of the reconstruction

Strategy of city reconstruction, as Aravena pointed out, was based on the geographical approach to the geographical threats (TED Talk 2014, Sustainable post-tsunami reconstruction master plan 2011). According to the Masterplan (Sustainable post-tsunami reconstruction master plan 2011), in place of destroyed area, former privately owned residential district La Poza, forest along the coast and river bank will be created as a protective barrier against tsunami threat. Role of the forest is to dissipate
energy of waves, laminate the water and prevent flooding. In addition, forest is a new green public space for the city which provides democratic access to the river.

In connection to the flooding threat, the architects proposed a retardant lagoon and lamination gap to mitigate tidal impact on rising floodwaters. (Sustainable post-tsunami reconstruction master plan 2011)

Strategy include also reconstruction of the infrastructure, housing, economic activities such as tourism and wood cluster, and new sources of energy i.e. solar energy, passive housing. (Sustainable post-tsunami reconstruction master plan 2011)

According to this holistic approach, strategy of city reconstruction can be treated as an example of geographical place-based perspective in urban planning and design.

Figure 8 Project proposal of reconstruction of Constitución (source: Sustainable post-tsunami reconstruction master plan 2011, ELEMENTAL S.A.)

Figure 9 Forest as a protective barrier against tsunami (source: Reconstruction Masterplan, ELEMENTAL S.A.)
8.6. Opinions of participants

Opinions of participants of the planning process allow for the assumption that people are satisfied of its effects. Participatory planning approach to the city reconstruction resulted not only in common agreement on the best solution of protection for the city but also positively influenced relations between citizens and their place of living. These positive outcomes are expressed in the opinion of participants about the planning process:

“The fact that it’ being internationally recognized I think it’s a reward for the people for people of Constitución”. Eugenio Tironi, Tironi Asociados (ArchiDaily 2015)

“Our community relations have improved since the earthquake,” Kimber says. “We realised we couldn’t get back on our feet without Constitución, and Constitución couldn’t get back on its feet without us.” Charles Kimber, Arauco’s director of corporate affairs (The Guardian 2015 p. 6)

[...], I think that is the biggest satisfaction for us is that it is not only a nice project, it’s becoming real. Ivan Chamorro, Arauco Forestry (ArchiDaily 2014)

8.7. Barriers and challenges

Main barriers in the process of reconstruction were conflicts between political forces on municipal and regional level what resulted in financial problems and achieving an agreement. (The Guardian 2015 p. 5) Also the big challenge was the coordination of such a broad group of stakeholders and different aspects of reconstruction at the same time. As Aravena noticed “the scarcest resource by far in cities is not money, it’s coordination.” (The Guardian 2015 p. 5)

8.8. Results

Sustainable post-tsunami reconstruction master plan (2011) of the city Constitución in Chile by ELEMENTAL S.A. group may serve as an example of the sustainable adaptation to the changing environmental conditions. This strategy takes into account four dimensions of sustainable development: social justice, economic viability, environmental responsibility and cultural values.
It may be assumed that the main factor triggering this effect was participatory planning approach which allowed for recognition and filling different needs through the one design solution.

Recognition of the connection between nature and culture resulted in the solution accepted by residents of the city and brought multiple positive effects: strengthening of the local community, support for local economic base, and complementarity with the local aesthetic and heritage.

8.9. Shortcomings and limitations

Main shortcomings and limitations of the analysis can be objectivity of the sources. Majority of the opinion include voice of the authors of the project and their collaborators who may be more willing to present their work as a successful achievement. Also, since project is in the phase of implementation, it is hard to predict its future development and final shape. However, effort was put to gather broad types of sources providing different information and opinions.

In addition, many concepts of theory on city resilience and ecological design as well as from theory of geographical place approach can be found in this example. The most important is holistic approach to the place which takes into account such factors as environmental dimension and local natural heritage, opinion of the citizens and cultural conditions of development.

Titles of Global Holcim Awards Finalist 2012 and winner of Zumtobel group award 2014 for the project also allow for the assumption that this solution can be treated in category of “best practises”.

Chapter IV. Discussion

Framework of the strategy

Framework of the strategy is at the same time summary of the most important conclusions of theory part and case study analysis. Framework has a form of theoretical foundation of the strategy of sustainable urban adaptation to the climate change, based on the geographical place-based perspective. Description of the proposal begins with the answer for the research question which states at the same time validity of the theoretical foundation of strategy.

8.10. Answer for the research question

Research question was structured as follow: What is the connection between culture and nature and its role in sustainable adaptation of urban areas to the climate change?

According to the geographical place-based perspective, culture and nature are the elements of the same larger system, mutual dependent and interconnected. Awareness of this connection enables to better understand how changes in one element, e.g. climate, affect other elements what may result in more effective adaptation to the changing conditions, as well as may allow people to realise influence of their actions on the other elements increasing people’s sense of responsibility for their actions, and thus mitigating their negative influence.

Referring to the role of the relation between culture and environment in sustainable adaptation to the climate change, as Porter and Davoudi (2012) state “a significant fresh aspect that resilience thinking does bring to planning is its view of the social and the ecological as intrinsically interlinked”.

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Due to that it can be argued that strategy of adaptation based on the connection between culture and nature may increase resilience of the urban system.

8.11. Outline of the strategy of sustainable adaptation to the climate change

Firstly, there is a need to explain contribution of geographical place-based perspective to the strategy of adaptation to the climate change.

As it is stated in the report of the Intergovernmental Panel on Climate Change (2014 p. 17):

*Adaptation and mitigation are complementary strategies for reducing and managing the risks of climate change. Substantial emissions reductions over the next few decades can reduce climate risks in the 21st century and beyond, increase prospects for effective adaptation, reduce the costs and challenges of mitigation in the longer term and contribute to climate-resilient pathways for sustainable development.*

*Comprehensive strategies in response to climate change that are consistent with sustainable development take into account the co-benefits, adverse side effects and risks that may arise from both adaptation and mitigation options.*

In connection to that, it can be assumed that geographical place-based perspective and place attachment concept may enhance both the adaptation as well as mitigation strategies that are consistent with sustainable development and lead to the resilience of the urban system.

9.1. Adaptation to the climate change in geographical place-based perspective

According to Robert Sack, author of book *Homo Geographicus* (1997) presenting human being as a geographical agent, geographical place-based perspective sets together people and nature as the elements of the same larger system. Through the development of relational framework (Figure 3) author (idem) presents interconnectedness of perspectives, forces, place, space, and human self. This framework enables people to see more clearly how they transform the world and how they are affected by this transformation at the same time. It is so because geographical place-based perspective sets in real physical setting i.e. “humanizes” through the concept of place, all scientific knowledge from the other fields of science, which rarely take into consideration social dimension in their research.

This problem is also addressed by scholars Samuli Lehtonen and Lasse Peltonen in their research paper *Risk communication and sea level rise: bridging the gap between climate science and planning practice* (2006 in: Schmidt-Thomé eds. 2006 p. 62):

*Referring to the relation between scientists and so-called “end-users”, Nowotny (2000) asks: “What are the conceptions that engineers, climate modellers, molecular biologists and others have about people – as individuals and collectives – who will utilise or be affected by the knowledge they produce?” Nowotny argues that such conceptions are usually not very well articulated.*

In connection to the ecological dimension, Sack (1997) points out that the most important role of geographical place-based perspective is transformation of the virtue character of nature into human terms through the concept of place. As author (1997) claims when nature becomes part of a place, its elements are intertwined with meaning, social relations and cultural values.
When it comes to the climate change, Sack (1997) draws attention to the fact that in this case framework can be useful to assess how changes of other elements of system affect people. Sack (1997 p. 238) states that:

\[ \text{The meaning of these changes depends on what we imagine it would be like to dwell in these altered places. Once we face this fact, then we can be more sensible about our ecological positions and recognize that change is not always bad.} \]

This statement of Sack (1997) refers to the concept of the adaptation to the climate change on urban areas and city resilience since author speaks about the changing conditions as an opportunity for the improvement and development. Taking into consideration the connection between different elements of the reality, it may be easier to understand influence of the climate and environment change on the different aspects of people’s life and act with the holistic approach to the problem.

9.2. Mitigation as an effect of geographical self

Geographical place-based perspective may allow not only for more effective adaptation, but also mitigation strategies. According to IPCC (2014 p. VIII) mitigation includes elements such as environmentally sound technologies and infrastructure, sustainable livelihoods, behaviour and lifestyle choices.

By many scholars this type of behaviour is understood as people’s sense of responsibility for their actions towards environment (Sack 1997, Nassauer 1997, Eaton 1997, Orr 2002, Talukder 2010, Bakari 2014). As Gifford and Scannell (2010) suggest, place attachment concept, because of its associations with environmental risk perception and place protective attitudes, contributes to the understanding of pro-environmental behaviour. Generally it is stated that the more people are connected with place the more they care about it (Nassauer 1997). Here cultural values play pivotal role, as it was explained in theory of cultural landscape concept (figure 4), since it is claimed that these places or landscapes are more likely to be ecologically maintained which are aesthetic i.e. culturally accepted and perceived as a worth of attention by local community.

Another aspect of geographical place-based perspective which can be considered in connection to the mitigation of the negative influence of people’s actions, is synthesizing character of the concept of place for the different dimensions of reality. Due to that geographical approach may increase societal awareness of living in the interconnected multidimensional reality and enhance more responsible behaviour towards environment.

9.3. Ecological design for the adaptation

According to IPCC (2014 p. 19):

\[ \text{Adaptation planning and implementation at all levels of governance are contingent on societal values, objectives and risk perceptions (high confidence). Recognition of diverse interests, circumstances, social-cultural contexts and expectations can benefit decision-making processes. Indigenous, local and traditional knowledge systems and practices, including indigenous peoples’ holistic view of community and environment, are a major resource for adapting to climate change, but these have not been used consistently in existing adaptation efforts. Integrating such forms of knowledge with existing practices increases the effectiveness of adaptation.} \]
As it shown, adaptation to the climate change is a very complex process. However, geographical approach gives possibility to address majority of these circumstances.

Recognition of different circumstances is pointed out as important part of the process of adaptation (IPCC 2014). It may refer to the concept of place attachment. As it was explained, place attachment is based on two main values: place identity and place dependence. Hague and Jenkins (2005) argue that in contemporary diverse societies there is a need for many place identities which are based on collectively worked out and accepted authenticity, originality and singularity to avoid conflicts and exclusionary character of places.

As case study of Constitución shows, recognition of cultural characteristic was a very important factor determining strategy of city reconstruction. Forest was chosen as the best option since it prevents illegal occupation of the area by former residents, provides democratic access to river and is compatible with the local natural heritage and aesthetic (Holcim 2012). As Nassauer (1997 p. 6) points out: “Science may give us normative criteria for new landscape patterns, culture will give us the realized design”.

Recognition of people’s need may results in higher functional quality of places and thus the stronger dependence on these places. However, as case study of Constitución showed, function affects a form. Participatory design method enabled to recognize many different needs of society which were addressed by the one simple solution i.e. forest since “the more complex the problem, the more need for simplicity” as Alejandro Aravena stated (TED Talk 2014). Referring to Orr (2002) simplicity is one of the characteristics shared by each resilient system.

IPCC report (2014) highlights the role of “indigenous, local and traditional knowledge systems and practices” what can be understood as “heritage of design intelligence” describes by Orr (2002) as a basis knowledge for ecological design. Here also case study of Constitución can be reminded since local landscape was an empirical proof for the efficiency of the protection in form of green space, because this part of shore which was covered by forest was less destroyed (Holcim 2012).

9.4. Holism of sustainability

Zhang (2013) points out that in addition to the three pillars of sustainability nowadays additional fourth pillar i.e. cultural vitality is often distinguished by the scholars.

As a starting point for the research on geographical place-based perspective was the assumption that environmental problems and its effects such as the climate change are determined by disturbed relation between culture and nature (Talukder 2010, Bakari 2014). According to that scholars argue that efforts towards sustainability should firstly focus on the bridging the gap between people and nature (idem). Results of the analysis of different concepts and theories showed that dependency between culture and nature, as between social and ecological dimension of sustainability, can be explained and better understood through the geographical place-based perspective and its holistic approach to the people and nature, perceived as a part of one system.

Since thesis considers dependence between culture and nature, it does not imply that role of economic and social dimension was omitted. As Spaling and Dekker (1996 cited in: Zhang 2013) suggest it is important to take a perspective of cultural holism since cultures are holistic systems with internal integrity; they are systems made up of subsystems: political, economic, linguistic, religious
and so on, which interact with one another so that any change in one subsystem propels a shift in the others, and thus alters the system as a whole. This statement fits into approach of geographical place-based perspective which imposes interconnectedness of many different dimensions of the reality, and due to that includes all pillars of sustainability as well as explains mutual dependency between them.

9.5. **Strategy of Attachment to Place: function and form**

Attachment to place is the key component of the framework of strategy proposal as a concept bridging the gap in disturbed relation between society and environment, which according to Talukder (2010) and Bakari (2014) is the main cause of the environmental problems. As Sack explained in his book *Homo Geographicus* (1997), people are part of the real physical setting and division between society and environment should be understood through the concept of place. Sack (1997) claims that people are detached from place and at the same time from social relation, cultural values and physical reality which are the main components of the concept of place.

Place attachment concept refers to the two main values i.e. identification with nature and responsibility which are perceived by scholars as foundation for sustainable development (Talukder 2010, Bakari 2014):

- **Value of identification with nature** – since nature is a physical aspect of the place, attachment can be directed toward nature when one’s self-identity is strongly connected with the specific physical setting (Scannell and Gifford 2010).

Attachment to place can be strengthened by urban planning and design taking into consideration two main components of place attachment i.e. place identity and place dependence. It may help to create meaningful i.e. primary places which could strengthen people’s feeling of connection to the real physical world and its social and cultural dimensions.

**9.5.1. Place dependence**

Place dependence, as it was described, is a functional dimension of place. When place fulfils people’s needs, it becomes valuable for society. As the analysis of case study of sustainable post-tsunami reconstruction of Constitución by ELEMENTAL S.A. shows, the main factor which influenced the planning process and revealed different aspects of the same problem was participatory planning approach. It allowed for recognition of different needs of citizens of Constitución and brought multiple external effects such as strengthening the relation between members of community as well as between citizens and their home town.

**9.5.2. Place identity**

As Hague and Jenkins (2005) state, design constitutes a physical manifestation of place identity. Since identity is closely tied to memory and tradition, these two elements remain important reference points in any construction of place identity. However, authors (idem) refer to Tibbalds’s (1992 cited in: Hague and Jenkins 2005) statement that it is important not to literally copy previous styles but learn from the past. Tibbald’s (1992 cited in: Hague and Jenkins 2005) statement can be understood as the “heritage of design intelligence” i.e. strategy of design based on the awareness of ecological
possibilities and limitations of place as well as importance of the aesthetic which is culturally accepted.

Hull et al. (1994) conclude that although the concept of place identity is strongly connected to subjectivity of the perception, it can be managed by sensitive urban planning and design through the implementation into the project physical elements as vernacular architecture, historic preservation, community tree plantings, community gardening, which could symbolize local values and promote place identity.

9.6. Main elements of strategy proposal

9.6.1. Scale
As far as resilience is claimed to be based on such features as self-reliance, small units, simplicity, human scale or decentralisation (Orr 2002), it can be argued that the most relevant scale for implementing strategy based on the resilience concept is local scale. Orr (2002) draws attention to the fact that human ability to comprehend and foresee many different aspects of the big scale actions is limited.

9.6.2. Role of the planner
As Lehtonen and Peltonen (2006 in: Schmidt-Thomé eds. 2006 p. 61) point out “the role of science is central in our understanding of phenomena such as climate change, other actors, however, determine the fate of such proposals”. In reference to that statement, Orr (2002) argues that professionalised knowledge is increasingly isolated from the needs of real people. This opinion is shared also by Sack (1997) which explains it by the high degree of specialisation of the particular fields of science, as well as the need of objectivity of research. Sack (1997) states that concept of place allows for embedding pure scientific concepts into reality, “humanize” them i.e. connect with the social context. As Hague and Jenkins (2005) remind, place-making is more central to the profession of planners than to most other social groups. Referring again to the question of Nowotny (2000 cited in: Lehtonen and Peltonen 2006) “Who will utilise knowledge produced by scholars?” it can be answered that it is role of the planner to be able to transfer scientist knowledge into the real world through the process of place-making.

9.6.3. Role of community
Important role of the community in the adaptation strategy is expressed by Barthel-Bouchier (2012, p. 191) through the statement: “if scientific predictions about our ecological future are correct, then this sense of social solidarity may be the most essential luxury of the unfolding twenty-first century.” As it is stated by other scholars, “community” is a key concept in sustainable development and resilience (Sack 1997, Orr 2002, Talukder 2010, Bakari 2014). In the discussion on culture – nature divide, the need if rethinking individualistic approach to the human being is perceived as necessary to create common responsibility for nature and establish foundations for sustainable development (Talukder 2010, Bakari 2014). Community may also be treated a source of a knowledge defined by Orr (2002) as “heritage of design intelligence” since it derives from the long-term relation between community and ecology of place.

9.6.4. Participatory planning approach
Since concept of place and its identity is perceived as a dynamic process and results from the relations and interactions between different social groups and physical setting, quality of place can
be achieved through the dialogue between designers, planners and groups within the community (Hague and Jenkins 2005). It allows planners to gather common values, needs and ideas of different stakeholders and think not of place identity but of place identities like design qualities as opposed to quality in the absolute (idem).

9.6.5. Main characteristic of design
Adaptation of urban areas to the changing conditions of the climate is perceived by scholars as necessary (Hoornweg et al. 2011, Fünfgeld and McEvoy 2012, Davoudi 2012). On the other hand important role of stable character of the landscape as a point of reference for future development, foundation for sense of continuity and reassurance of identity is also pointed out by researchers (Nassauer 1997, Hull IV et al. 1994). In addition to that, long-time perspective is an important attribute of planning policy (IPCC 2014).

Long-time perspective is a principle of Ecological design as according to Orr (2002 p. 27) since main aim of Ecological design is to create things that “fit gracefully over a long periods of time in a particular ecological, social, and cultural context.”

When it comes to the issue of particularity of the context stated by Orr (2002), Sack (1997) draws attention to the problem of homogenization of places and perspectives caused by modernity and globalisation, what diminished key attribute of place i.e. meaning. In the same vein, Relph (1974, cited in: Dictionary of Human Geography 5th Edition 2009) states that tyranny of ‘technique’, efficiency, interchangeability, and replicability in the design and construction of the human landscape lead to the phenomenon of placelessness. Placelessness can be compared to the concept of “secondary place” defined by Sack (1997) which refers to the place as a unit of space or place without meaning, perceived by author (idem) as main reason of detachment of people’s from places.

In connection to that the specific context and primary character of place, concept of permanence and locus of Aldo Rossi (1982) can be worth to consider following the Peter Eisenman’s introduction to the book Architecture of the City (1982) by Rossi.

As Eisenman (1982) explains, Rossi concept of permanence in based on two main permanences in the city: housing and monuments. Primary elements in the city are monuments; they are persistent and characteristic urban artifacts. They are distinguished by their nature of a place with symbolic function, and thus function related to time, as opposed to a place of conventional function, which is only related to use. Monuments are primary elements and permanences in the city and thus relates to the urban growth. They can accelerate but also retard this process. Here key role has a context taken into account by designer during the planning process.

Permanences which retard urban growth are defined by Rossi as pathological. They are parts of urban structure but not parts of urban life, because they are defined by their one original previous function and are not able to accommodate new ones as urban life evolves during the time. Pathological permanences are an effect of short-sighted or short-lived time context, products of “naive functionalism” dictated by momentary need without taking into consideration past and future of the urban structure. They are based on the context reducing urban structure to simple relationship of figure and ground without reference to social and cultural dimension, called by Eisenman (1982) “empty formalism”.

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Permanences in the city may be propelling. They are a part of urban life because they are able to synchronize with the process of urbanization. Their form is able to accommodate different functions over time. Primary monuments are based on the evolutionary time context which perceives urban structure as shaped by time. Due to that neither its original function nor momentary time context, when permanence was build, determines their ability to adapt to changing conditions and functions. As Eisenman (1982) explains “they serve to bring the past into the present, providing a past that can still be experienced”.

Eisenman (1982) points out that critique of “naive functionalism” refers to the Rossi’s concept of locus. Locus is a word derived from antique Latin and means ‘place’. Aldo Rossi defined locus as “specific but also universal relationship between a certain site and the buildings that are on it” (Eisenman 1982). Eisenman (1982) explains that locus is able to persist through many changes, particularly transformation of function. Locus is a place where ancient events took part and temporary activities still occur, and due to that “every new event contains within it a memory of the past and a potential memory of the future” (Eisenman 1982). According to that concept of locus can be understood as stable continuum of cultural values over the long time despite the changing conditions, and can be treated as the concept analogous of primary place defined by Sack (1997). It is opposite to the homogenization and replicability of the places pointed out by Sack (1997), which are based on the context reduced to empty formalism and are not able to accommodate to changing reality and become a part of the culture.

9.6.6. Design strategy

As far as adaptation to the climate change is necessary, scholars point out that in connection to the climate change uncertainty and unpredictability of the conditions are the biggest challenge for urban development and adaptation (Beirão ed. 2011, Davoudi 2012). In connection to that concept of evolutionary resilience appeared as city ability to adapt and transform to the changing conditions. Both adaptation and resilience derive from evolutionary biology and ecology field (Davoudi 2012). As Nassauer in book Placing Nature: Culture and Landscape Ecology (1997) points out, in case of design contributing to ecological quality it is important to “act with humility” and refers to Gorham’s (cited in: Nassauer eds. 1997) statement “If you don’t know, go slow” what can be understood in terms of evolutionary instead radical changes.

In connection to the evolutionary adaptation to the changing conditions, Jana Revedin (2015) gives an example of self-developing morphology of radicant plants e.g. ivy as multi-rooted and intelligently adaptive to the changing surrounding. As Revedin (2015 p. 7) explains “they can overcome inhospitable, unhealthy and even poisoned ground by rhizoming”. This analogy was used in the design strategy Radicant Design which is based on architectural design process analogous to the pattern of growth of the radicant plants. According to Revedin (2015 p. 7) “they grow in complicated, non-linear orders in the same way that our human unconscious forms our individual and collective memory.” This statement refers to the changing conditions not only in sense of the climate or environment, but also to the dynamic changes in social patterns (see: Hague and Jenkins 2005).

Another aspect of Radicant Design is scale of the planning process addressing local level. As Orr (2002) points out, Ecological design is the most effective at the local scale since it is based on “heritage of design intelligence” derived from “experience of place” and long-term learning about its possibilities and limits. According to Revedin (2015 p. 7) “radicant plants root from a singular, specific
ground and place following universal pattern of growth. [...] They are amazingly adaptive to a place and its character.” Here concept of locus by Aldo Rossi (1982) can be reminded because of the similar attributes: singular specific location and universal form which together create locus i.e. stable continuum of cultural values adaptive to the changing conditions.

Another analogy of Radicant Design with Rossi (1982) and his concept of permanence is evolutionary time context of urban structure perception as shaped by time, memory and history. As Jana Revedin (2015 p. 11) describes main foundations of Radicant Design:

*Translated to our design process, this means walking the streets and squares of a city for months and years as true planners-in-residence, experiencing them through our own and the inhabitants’ senses. Many paths may seem difficult to understand because they are the cultural bonds of the people, but a slow, profound process of urban analysis will replace imported foreign geometries and energy or traffic schemes with patterns that we organically grow from the context.*

Process of urban analysis and evolutionary time context of urban structure perception, as the elements of Radicant Design, aim to replace imported planning ideas with context-shaped patterns (Revedin 2015). This could be treated as the strategy addressing problem of homogenization and replicability of design construction which leads to the phenomenon of placelessness (Relph 1974, cited in: Dictionary of Human Geography 5th Edition 2009, Sack 1997).

In connection to the other design methods, opinion of Hague and Jenkins (2005) may be worth to consider since they refer to the landmark texts concerning strategies of the public spaces design. Authors (idem) concern ideas such as Gordon Cullen’s “townscape” and “serial vision”, Jane Jacobs’ work on cities as setting for interaction, Jan Gehl’ debate about public spaces and Christian Norberg-Schulz’s “Genius Loci”. Hague and Jenkins (2005) conclude that despite they provide valuable knowledge about physical dimension of places, applying these strategies without considering real needs and perspectives of different social groups narrows down the planning process to physical and visual aspect of place, and puts all social groups to one category of space users with singular visual aesthetic.

Due to that according Hague and Jenkins (2005) ideas and solutions concerning design of public spaces proposed by authors such as Gordon Cullen, Jane Jacobs or Jan Gehl should be treated as the elements contributing to “good design” that are open to interpretation by different stakeholders and participants of planning process to form basis within which place identity can be enhanced and built by society. Resilient system characteristic pointed out by Orr (2002 p. 114) as universal principles for resilient design together with the examples described by Hague and Jenkins (2005) may be treated as a set of guiding rules for design aiming for city resilience based on the place concept and holistic approach.
Authors (Orr 2002, Hague and Jenkins 2005) show examples as follows:

<table>
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<tr>
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<tbody>
<tr>
<td>• Strengthening a sense of place through contextual analysis</td>
<td>• Small units dispersed in space</td>
</tr>
<tr>
<td>• Mixed uses</td>
<td>• Redundancy</td>
</tr>
<tr>
<td>• High quality materials</td>
<td>• Short linkages between modules</td>
</tr>
<tr>
<td>• Security and safety issues</td>
<td>• Simplicity and re reparability</td>
</tr>
<tr>
<td>• High-standard open space and public circulation</td>
<td>• Diversity of components</td>
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<tr>
<td>• Good visual and pedestrian connection</td>
<td>• Self-reliance</td>
</tr>
<tr>
<td>• Clarity between public and private space</td>
<td>• Decentralized control</td>
</tr>
<tr>
<td>• Attention to climate and natural features</td>
<td>• Large margins</td>
</tr>
<tr>
<td>• Sustainability factors</td>
<td>• Quick feedback</td>
</tr>
</tbody>
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Table 1 Examples of design characteristics (source: Hague and Jenkins 2005, Lovins and Lehmann 1977, Lovins and Lovins 1982 in: Orr 2002)

9.7. Shortcomings and limitations of strategy

As the framework of the strategy of sustainable urban adaptation to the climate change based on the geographical place-based perspective consists of many different elements, it is necessary to point out the most important shortcomings and limitations.

First of all, main important limitation may be multidimensional character of the geographical place-based perspective. As Sack (1997) suggests, geographical approach explains the dynamics of the connections between different dimensions of the reality, and due to that enables people to be aware of their position in the world and helps to take more reasonable decisions. On the other hand, as Orr (2002) states, human’s ability to comprehend and foresee all the results of their actions is limited. Taking into consideration the relations between different dimensions of reality on the different spatial scales it can be assumed that it is not possible to predict all the external effects of people’s actions. However, it can be argued, that taking geographical place-based perspective enables at least to increase understanding of the connections and possibility of the prediction of these results.

Multidimensional character of the geographical place-based approach requires engagement of many different stakeholders into the planning process. The same necessity is pointed out by Fünfgeld and McEvoy (2012) in connection to the adaptation of urban areas to the climate change. In addition, scholars (idem) explain that planning process in such circumstances involves the need of the management of information generated on different scales. As Fünfgeld and McEvoy (2012) add, information should be transformed by different actors into adaptation options, which are socially and politically accepted despite the uncertainty and unpredictability of the future conditions. As architect Alejandro Aravena (TED Talk 2014) claims, the most important task in the planning process is coordination of different stakeholders and resources. According to these outcomes, it can be assumed that long-term perspective should be taken during the planning process. However it could
be difficult to implement in case of the problem which requires the immediate solutions e.g. natural disaster.

As Hague and Jenkins (2005) point out, in contemporary diverse societies identity of place need to be social and contractual i.e. collectively worked out to avoid conflicts and exclusionary character of places. However, it can be stated that the more diverse the society is the more difficult it is to find common shared values, histories and characteristics which would serve as a foundation of the common place identity.

Another important limitation for the framework can be size of the city and degree of the urbanization in connection to the “design intelligence” as an effect of on-going relation between society and environment. According to Orr (2002 p. 14) “the problem of ecological design has become more difficult as the human population has grown and technology has multiplied”. Since scholars as Sack (1997), Talukder (2010) or Bakari (2014) state that globalisation and urbanization disturbed the relation between people and environment, it can be claimed that awareness of ecological limitations and possibilities of the place in highly urbanized cities is limited.

The last aspect worth to consider is the concept of place attachment and its implication on people’s behaviour. As Gifford and Scannell (2010) claim the behavioural level of place attachment is founded on the desire to remain close to the particular place. However, it can be assumed that desire doesn’t imply that people actually stay in the places to which they are attached to. The attachment to place understood as behaviour may be also influenced by economic, environmental and political situation as a migration processes show. In addition, as Vaske and Kobrin (2001) state, environmentally responsible behaviour should be also strengthen by environmental education since attachment to place doesn’t directly imply ecological awareness of people.

Overall summary and assessment of the research

Impact of the climate change occurs in form of the climate-relate extremes such as droughts, floods, heat waves or cyclones and reveals vulnerability of the human systems to the climate variability (IPCC 2014). Due to that one of the major tasks of contemporary urban planning policy in connection to the climate change impact is the need of the adaptation to the changing realms, and at the same time uncertainty and unpredictability of the conditions of future development are pointed out by scholars (Orr 2002, Hoornweg et al. 2011, Fünfgeld and McEvoy 2012, Davoudi 2012). As Davoudi (2012) argues, in contemporary discourse on the planning practise and the adaptation of urban areas to the climate change concept of resilience is replacing concept of sustainability. According to Seville (2009 cited in: Shaw 2012) concept of resilience stresses the importance of the ability to seek out “the opportunities that always arise during a crisis to emerge stronger and better than before”. Although, as Davoudi (2012) states, turning a crisis into opportunity depends on the capacity to imagine alternative futures and thus, according to the author (idem, p. 304) “planning is about being prepared for innovative transformation at times of change and in the face of inherent uncertainties”.

In connection to the capacity of being prepared for the change, Fünfgeld and McEvoy (2012) point out that the process of identification of potential local and regional impacts of climate change requires to analyse climate science information within the complex interaction of other dimensions such as environmental processes, social behaviour and values attached by humans to different parts
of socio-ecological system. However, as authors (idem) state, researchers, planners and decision-makers rarely take into consideration how one system interacts with other systems beyond its boundaries.

Concerning the issue of the complex interaction between different dimensions of socio-ecological system, scholars Talukder (2010) and Bakari (2014) emphasize the role of the connection between cultural values and current environmental conditions in sustainable development. They state that environmental degradation and its effect such as the climate change arose from disturbed relation between humans and nature. Due to that, as authors (idem) argue, to improve environmental conditions globally, there is a need to bridge the gap between people and nature through the values common to every culture i.e. identification with nature as well as develop sense of collective responsibility for environment within societies.

However, as scholars Beery and Wolf-Watz (2014) point out referring to the Proctor’s (2009 cited in: Beery and Wolf-Watz 2014 p. 202) statement: “Even to say that we are connected to nature/the environment itself presumes a disconnect”. Due to that Beery and Wolf-Watz (2014) suggest to replace concept of “nature” with concept of “place” in the discourse on the culture-nature divide. As Sack (1997 p. 248) noticed “we are always somewhere, and our lives are irrevocably linked to particular places even when we are part of a global system”. Sack (1997) through the model of relational framework (figure 3) explains the role of human being as a geographical agent, and presents theory of geographical place-based perspective integrating all dimensions of reality in the concept of place. Geographical approach through the concepts of place and cultural landscape from the human geography field enables to understand the dynamic interconnectedness between culture, nature and other dimensions of reality, and dependence between cultural and ecological sustainability (Sack 1997, Nassauer 1997, Eaton 1997 in: Nassauer eds. 1997). Since Sack (1997) states that globalisation and modernity diminished key attribute of place i.e. meaning, main reason of disturbed relation between people and nature is detachment from place, what reduced people’s awareness of living in multidimensional reality. Due to that concept of place attachment as emotional relation between individuals and place (Eisenhauer et al. 2000, Brown and Senecah 2001, Morgan 2010, Gifford and Scannell 2010) was suggested as the concept bridging the gap between society and environment.

Since according to David Orr (2002 p. 33, p. 4) “art that reconnect people to the world” and aims for “remaking the human presence in the world” is the strategy of Ecological design, this theory was chosen as a general frame for design strategies based on the holistic approach to the planning problem. As Orr state (2002) Ecological design “requires not just a set of generic design skills but rather the collective intelligence of community of people, applied to particular problems in a particular place over a long period of time”. In connection to that case study of the reconstruction of Constitución city in Southern Chile revealed that the most important element in the planning practice based on the Ecological design and geographical place-based perspective is participatory planning approach, as the main factor triggering majority of the positive outcomes of the planning process.

As an outcome of theory part and analysis of case study, framework of the strategy of sustainable adaptation to the climate change based on the geographical place-based perspective include all the most important results of the research process.
Since shortcomings and limitations of the framework of strategy were articulated in preceding paragraphs, there is a need to point out the most important implications of the adaptation of urban areas to the climate change in the planning practice generally. As scholars Samuli Lehtonen and Lasse Peltonen in their research paper *Risk communication and sea level rise: bridging the gap between climate science and planning practice* (2006 in: Schmidt-Thomé eds. 2006) suggest, planning decisions must be not only socially acceptable, but also economically efficient, effective, and politically legitimate. Authors (idem) also draw attention to the difference between science and legal system, because while science is focused on the problem if something is true or not, legal system concerns it in terms of legality or illegality of actions. As Lehtonen and Peltonen (2006 in: Schmidt-Thomé eds. 2006) point out, decision about implementation of the planning proposal is taken by politicians and in connection to the problem of uncertainty of the future conditions many planners do not dispose solid scientific evidence of the future scenario. As Björnberg and Hansson (2011) add, it can be the reason for authorities to postpone decision on the adaptation. Lehtonen and Peltonen (2006 in: Schmidt-Thomé eds. 2006) suggest also that old city structures e.g. historical city centres don’t benefit from the research on the climate change adaptation as much as currently starting urban coastal development, which adaptation included in the planning process is often much cheaper. The last problem mentioned by authors (idem) address contemporary role of planning. Lehtonen and Peltonen (2006 in: Schmidt-Thomé eds. 2006) explain that according to the opinion of many planners current planning practise is very often focused on administrative functions and serving the market economy, and thus to that belief of the influence of planning on the future conditions is diminished.

9.8. **Shortcomings and limitations of research in thesis**

Considering the main limitations of the thesis, the research is in majority based on the theory development through the revision of different concepts and strategies. Since quantitative range of the research in form of the master thesis is limited to focus on the quality of the research, among different concepts and strategies the most important were chosen. These concepts and authors to which majority of the scholars refers to in their research papers, or theories which are foundations of other concepts were used in the research process in the thesis. For stronger objectivity, one concept was often examined from the point of view of different scholars. However, it can be assumed that other important authors in the specific field or valuable theories which are not very popular among other scholars were omitted in the literature review. Also scope of available time influenced the research process, which could be enriched by more expanded analysis part.

On the other hand, thesis gives the basis for the further research in this area. As can be noticed, high number of the sources varies between 2010 and 2015 which can be treated as a fresh and recent knowledge in this field. Theory developed in the thesis may serve as a foundation for critical revision or its further development. It can be tested through the implementation into the planning process to find its major barriers or benefits in the practice. It can also serve as an example how to connect concepts and ideas from particular fields of study and search for possible ways of their implementation into the planning practice, what was one of the tasks of the profession of spatial/urban planner revealed in the research process. Here the example of the project that addresses the vulnerability of New York City to coastal flooding can be mentioned. Project received the title of Global Holcim Awards Bronze for Sustainable Construction (2015) since it proposes a protective ribbon in Southern Manhattan which incorporates a range of neighbourhood functions,
fostering local commercial, recreational, and cultural activities (www.holcimfoundation.org/Projects/the-dryline).

However, project was controversially discussed since according to the Global Jury Report: "On the one hand, the jury appreciated the scheme’s bold proposition to tackle the ramifications of climate change by means of a construction that offers a surplus value to society – turning a problem into an opportunity. On the other hand, the issue was raised as to whether the project was not more reactive rather than proactive, addressing the effects of climate change instead of its root causes" (http://www.world-architects.com). Referring to that statement, theory developed in the thesis may be treated as a small step toward proactive role of urban planning since concept of place attachment is suggested as the element bridging the gap in the relation between people and environment and enhancing stronger societal awareness and sense of responsibility for their behaviour toward natural environment.
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