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Environmental Conflicts in Port Cities

SUMMARY The aim of the article is to introduce a framework for difficult port – city relations and competing interests of port, local communities and the environment. The main cause for port-generated environmental conflicts lays in the impact of ports on urban and marine system. Five types of port-generated environmental conflicts have been identified and described: conflicts for conservation of biodiversity, conflicts over coastal defence, conflict over port-generated risks and hazards, conflicts over land-use change, conflicts over access.

KEYWORDS

ENVIRONMENTAL CONFLICT,
PORT CITY,
URBAN SOCIOLOGY,
TYPOLOGY, LAND-USE

Introduction

The aim of the article is to provide a synthesis of main findings from the contemporary research field on port cities in order to present common types of environmental conflicts on urban space constraints for port infrastructure and waterfront development. Apart from the fact that there are different types of port cities, dependent on its port size, city size, population dynamics

and location, the main question remains: how ports impact on their cities and what value they can create to support their growth and attractiveness.

Since about the 1980s, the relationship between ports and their surrounding regions have changed dramatically – at least in Europe and in the modern industrialised countries. In former times it was evident that port needs a city around it to provide labour force, off-shore services, maritime institutions, to tell more, port city needed the port as an accelerator for economic growth, welfare and attractiveness. Nowadays, Brian Steward Hoyle (1998) and Césaire Ducruet (2011) claim that this kind of interdependence does not work anymore, moreover it has just turned into its opposite. To fulfil a trend of smart and sustainable growth, municipal authorities try to push out maritime transport and logistics outside cities, in order to change degraded post-port space into waterfronts. While waterfronts have been seen as areas of high value to generate private and public revenue, previously they were source of trouble, staying abandoned and degraded. Conducive to meet global competitiveness, port business and port operators have reached the limits of spatial extension and pressured municipality, becoming to be seen as trouble-makers for municipal governance, urban growth, local communities and the environment.

The case of environmental conflicts and the competition for land as a scarce urban resource in port cities cannot be seen as marginal. According to United Nations Environmental Programme (UNEP, 2005), the 40 percent of the world's population lives within 100 km of the sea, and three-quarters of all large cities are located in coastal areas. In the European Union, Eurostat (2009) informs that nearly half of the population of the EU countries, with a sea border, is located in coastal regions, defined as a standard statistical region, which have at least half of their population within 50 km of coast (Mega, 2016, p. 8). In other words, cities located near the sea, along a river bank or in a delta, all together with their metropolitan areas, tend to be the densest populated areas, with great impact on global economy, including positive factors such as economic growth and negative such as environmental conflicts. In this respect, port cities appear to be an original ground on which to study the economic, social and environmental factors affecting globalisation.

Definition(s) of Port City

The difficulty in understanding the meaning of port city lies in changing traditional relation of the port and the city, including both abandoning historical port areas inside dense urban centres and sprawling port zones outside cities. The common way of defining port city is to perceive it as a territorial social system, where port facility and prosperity, together with maritime activities and institutions have a significant influence on the local economy, in such a way that the city growth depends on them (see: Forno, 1985; Woźniak, 1991). The definition focuses on economic impact on port understood as “passage point” for goods and passengers, together with increasing container traffic, that engage local workforce, promotes subcontracted services and provides tax revenues. In similar vein, port city has been defined in literature as gateway city, which captures a substantial share of total regional and international trade volumes, serves the meaningful function for travels and provides these goods and services to a more distant hinterland (Burghardt, 1971). Continuing, the port city has been perceived as growth pole, that provide comparative advantage to the local economy where it is located, resulting in self-agglomeration and hub-effect (Fujita, 1999). The port city is also recognised in the frame of growth machine (Logan, Molotch, 1987) that posits the mutual empowerment of maritime and land-based elites led

by the growth imperative, that have strong influence on urban development policy and land use policy (Jaffee, 2015).

Nevertheless, the above port – city relations must be perceived in a sustainable development perspective that include the full board of stakeholders for urban development and spatial planning, not only economic ones. Recently, the benefits of port and city proximity have been changed in a way that traditional and symbolic advantages became expensive and disadvantageous for city-port image. The cause of it may be found in: traffic congestion, pollution, lack of urban space due to containerisation, weakening spatial attractiveness of port cities due to degraded and abandoned port areas, little involvement of port authorities in the creation of the port city image for tourists, local community and business, blocking the local development in non-maritime sectors of economy, increasing social and environmental costs of the fallen shipping companies, which did not withstand global competition.

Taking into consideration the above mentioned factors, the definition of port city cannot be reduced to simplification, enhancing always positive interaction of the port and the city. The port city considered only from the transportation, growth and capital point of view is lacking the important social, cultural and environmental aspects. These are crucial factors that condition the environmental conflict and its resolution process.

The key to understand the port city is to look at it also from social perspective, where, instead of strict rules and economic regularities, we can recognise port city in terms of heterotopias and utopias (Foucault, 1997), socially and culturally constructed space (Lefebvre, 1991; Castells, 1979), where interest of capital holders' regime needs to be negotiated with social groups and organisations that claim their right to decide about their neighbourhood or city (Stone, 1989). Including the contemporary processes of suburbanisation, metropolisation, conurbanisation, gentrification, depopulation, glocalisation, the port city is not always a compact settlement unit, that is individualised, isolated from the environment and formed around the visible centre (Sassen, 1994; Castells, 2009). Especially in case of port cities, they tend to become port regions, cities with revitalised waterfronts, historical port cities for touristic purposes, global port cities, unit of maritime cluster, outports, hub-port cities etc. (Ducruet, 2011). What is more, the environmental aspect of port city makes us perceive it as complex coupled human-natural system in which people are interacting with their biophysical environment, competing for the best places to live and play the role of dominant agents (Alberti, 2008).

What makes the difference between the port cities and the inland cities is certainly port infrastructure with its manifest and latent functions. In other words, port city is different from other cities, even rarely heard in literature railway cities or airport cities, in its spatial, economic, cultural, mental and environmental imprint on the city. Spatial, because it is the port that gives the port city its characteristic form, even after port functions have disappeared. Economic, because the port allows the city to be open towards the global trade, tourism and entrepreneurship (Merk, 2014, p. 280). Cultural, because the port city's image reflects historical continuity of political regimes, system of norms and values, cultural patterns that constructed urban space. Mental, because the port city has had long associations with memories and meanings of its residents and significant others (e.g. poets, storytellers, painters, bards). Environmental, because the port city and proximity to sea construct specific circumstances, artificially made by its citizens, that impacts them mutually in daily interactions and social practices.

The question for the definition of the port city remains open, neither definition is “correct” or “the best”, nevertheless they can be more or less useful for various kinds of purposes, like environmental conflict resolutions. Overall, the port city can be displayed as dense or sprawl urban space inhabited permanently by urban community that has been living in a changing natural, material, social and cultural environment with mutual impact of the sea, that has provided important needs and opportunities to produce material goods, services and values and reproduce capability for work and living; whose developmental trajectory is determined by different interest coalitions connected in various ways and intensity with port facility, maritime institutions, maritime organisations, social practices, maritime traditions and the environment.

Typologies of Port Cities

The claim that typologies of port cities are differentiated is a truism. Port cities differ from each other by: port size and its location in relation to the open sea waters or city centre, its significance in global shipping industry or container market and domestic, both local and national economy. Nevertheless, the initial typology of port cities usually is presented in the historical linear form of its certain stages evolution. The evolutionary model of port city was developed by Brian Steward Hoyle (1998), according to whom we can distinguish six stages: primitive city port (1st stage; ancient/medieval to 19th century), expanding city port (2nd stage; 19th – early 20th century), modern industrial city port (3rd stage; mid 20th century), retreat from the waterfront (4th stage; 1960s – 1980s), redevelopment of waterfront (5th stage; 1970s – 1990s) and renewal of port – city links (6th stage; 1980s – 2000+). To sum it up, ancient and medieval inner-city ports developed into expanding and industrialised ports. Modern industrial ports have had to expand into new urban spaces, which are limited in dense city centres, what pushes port infrastructure outside into the suburbs. The introduction of new technologies and containers in the mid-20th century required ever larger areas, completely separating the ports and cities. The former port areas close to the city then became redundant and grew derelict, until regraded and abandoned port areas become high value waterfronts to generate private and public revenue. Waterfronts become a show-piece attracting capital holders and tourist, that demand extension of port services and re-opening to the city. In that manner under the globalisation and intermodalism, the port and the city association renewed and triggered further cooperation (Wonneberger, 2014, p. 13).

Despite of evolutionary approach, port cities may hugely differentiate regarding population size, port function and interdependence of the port and the city relations. Ducruet and Lee (2006) developed a typology of nine different port cities: coastal town, outport, hub (where port is external to the city), urban port, city – port, gateway (where both city and port are strongly integrated and interdependent), general city, maritime city, port metropolis (where port is absorbed into city as the one of many sectors of urban economy).

Nevertheless, if it comes to environmental conflicts in port cities, the most relevant is a typology based on their growth policies and development challenges. The situation of port cities is constantly changing. On the one hand, the port is an important accelerator for growth, on the other hand, the port with its infrastructure and burdens become a ball and chain for the city and its inhabitants. However, this is not the only relationship, because at the same time, the port itself can be a growth pole when simultaneously the city is shrinking, and vice versa. When the first type of port city has both population and port growth, it is facing space constraints, congestion, under-capacity of the port, with the need for

infrastructure investments and relocation of port sites. This subsequently opens up the possibility of transforming port land into waterfronts for luxury business and housing developers. The port cities of the second type, growing cities with declining port industry, typically convert to urban waterfronts but at the same time, they face a big wave of unemployment with abandoned and degraded port city spaces. In contrast, the cities under depopulation or suburbanisation processes with port growing have a different concern, which is to find a space for port cargo outside the metropolis that can trigger a NIMBY's syndrome. Finally, in the port cities where both ports and cities are in decline, the policy is focused on economic transformation in searching for new sources of growth, for example exchanging maritime and port city history into heritage-based tourist product, new housing and leisure areas or green-city image (Merk, 2013).

It is important to highlight, that waterfronts or heavy port industrial investments should not be concerned as the universal *panacea* for all types of city-ports' development strategies. Simply, not all port cities have the potential and attractiveness to develop successful waterfronts, because success is defined by how well it can divert high-earning residents and capital holders away from other urban waterfronts. Again, not every port city can or should stake its economic development or transformation on the growth of its maritime cluster, because there can only be a few leading global maritime hubs or clusters in the world (Ducruet, Lee, 2006). Moreover, the green and smart port city path may also be sunk investment because it demands the big expenses on port-water, industrial and household waste recycling, forcing low earning inhabitants to use green, expensive energy for heating, vehicles, transport etc.

Background of Port-generated Environmental Conflicts

As it was stated above, ports can be considered as major hubs of economic activity, major trouble-makers for city growth or major sources of pollutions and hazards for environment. The air pollution and health impacts from port operations are derived from the diesel engines, that power ships, trucks, trains, and cargo-handling equipment. Many port facilities are localised next to environmentally sensitive estuaries and low-income residential neighbourhoods. The health effects of air pollution from ports may include all sorts of respiratory diseases, including lung cancer, bronchitis, asthma and allergies, that are result of local smog, contamination of nearby waters, introduction of destructive invasive species, severe truck and rail traffic congestion, chemical storage and handling, liquid discharges from ships, ship and port facility painting and paint stripping. A variety of other negative environmental consequences commonly result in: loss of habitat for local endangered species, noise and light pollution, contamination of soil from leaking storage tanks and pipelines, solid and hazardous waste generation, soil runoffs and erosion causing natural floods and ship traffic caused inundations. The environmental injustice occurs next to port terminals, where low-income and endangered with social-exclusion communities live in exposure at higher rate of illnesses and diminished quality of life, by comparison with residents of middle-class suburbs and affluent gated-communities (Bailey et al., 2004). In those deliberately-forgotten communities the probability of environmental justice concerns are potentially low, that correspond with low political costs for municipal authorities, which place them at no-win situation (see: Lake, 1996; Pellow, 2004). Under condition of unequal distribution of risks and hazards, environmental conflicts in port cities are not only conflicts over access to scarce resources, but also conflicts over claim to have right to sustainable, clean,

free from hazards and nuisances neighbourhood. In other words, the struggle of residential community around protection of their locality and livelihood due to ecological reasons, is a conflict to maintain social control over familiar urban space of housing estate.

Ports are also not mitigating its aesthetic impacts on land-use planning for future waterfront and luxury housing functions, such as high-profile cranes, gantries, warehouses or dry docks that can greatly impair and degrade the community's view of the harbour. With better or worse effects, they can only be adapted to the urban space, to make them more friendly to the eye of capital holders or they can be reframed in social consciousness as maritime monuments of the past city history. The ports also absorb (in times of growth) and return (in times of crisis) hundreds of adjacent hectares of their facilities, causing direct and indirect displacement of residents, community resources and businesses. These land holdings deprive residents in access to beaches and aesthetic bay vistas, while also locking away land that could be used for future green space parks, sport facilities, new public spaces, community centres, residential areas, retails and commercial centres. The abandoned port-lands are also causing budgetary burdens for municipal authorities that have to repurchase and revitalise degraded post-port facility and make it attractive for tourist, useful for inhabitants and profitable for investors.

Another important factor influencing the environmental conflicts in port cities is the ownership structure of port. Speaking about the port as one integral entity or group of interest is an simplification. The vast range of research studies illustrated the port's ownership structure as spread over many smaller entities, that do not necessarily need to create a coalition of interests in the form of mutually supporting cluster (Lam, Ng, Fu, 2013). When the port's ownership structure is diversified among many stakeholders the collaboration become more difficult and take the form of aggressive competition over scarce resources, that provide competitive advantage and more efficient utilisation of port's infrastructure and handling capacity. In other words, together with increasing traffic congestion and transshipment, the operation costs decrease, but environmental burden and nuisance to city emerge and grow. At the same time, the responsibility for port-caused inconveniences blurs on many entities, making it harder to detect a major trouble-maker. When the guilt is dispersed, the market competition tends to result in cross-assigning responsibilities among port competitors.

The last but not least important factor, influencing the environmental conflicts in port cities are problems with navigational access and traffic congestion that contribute more widespread congestion affecting city as well as port access. The need for increased depths of access channels, to accommodate larger vessels, requires dredging that can be a subject of public disagreement for its disposal localisation that may affect ecological stability of coastal ecosystems. The increasing both traffic congestion and size of deep sea vessels have negative impact on levees, embankments and quaysides that often protect coastal housing estates and residential communities against breaches and floods.

Port-generated Environmental Conflicts

The definition of environmental conflict is broad, multidimensional and strongly dependent on a research field. Contextual factors include the quantity and vulnerability of environmental resources, the balance of political power, patterns of public interaction, grievance of capital holders, quality of collective identities with an environmental scare resource and the structure of economic relations among groups of interest and their ability to form a coalition.

The major theoretical division distinguishes two types: violent and non-violent reflection of troubled relations between groups of interest (Percival, Homer-Dixon, 2001, pp. 14–15). For the purpose of the article, the further explanation will focus on non-violent ones. The environmental conflict disputes can be classified as upstream, midstream and downstream. Upstream environmental conflicts are about implementation of governmental policy at the national level concerning environmental, health and safety policy. Midstream environmental conflict involves granting environmental permit or privilege to one group of interest or coalition of these groups by forcing, permitting access or reducing access to scarce environmental resource of other groups of interest. Downstream environmental conflict are public disputes on locally unwanted land use caused by NIMBY's syndrome (see also: Emerson, Nabatchi, O'Leary, Stephens, 2003, p. 4). In summary, the environmental conflict is a situation of struggle between defenders and offenders of environmental scarcity, in terms of degradation, depletion or unequal distribution of a resource, resulting from population growth, high consumption needs, capital holders' need to capture investment's resource and residential community's stress of losing social control over their neighbourhood (see also: Stepanova, Bruckmeier, 2013)¹.

The range of port-generated environmental conflicts is also broad, but it is possible to frame it at least into five categories: conflicts for conservation of biodiversity, conflicts over coastal defence, conflict over port-generated risks and hazards, conflicts over land-use change, conflicts over access.

1. Conflicts for conservation of biodiversity are connected with port functions that cause threat to native habitats and species. Not only large port cities are gateways for shipping and logistics, but also for invasive species, hazardous chemicals and oil spills. World-wide environmental organisations, together with local activists demand full and unlimited liability throughout the chain of responsibilities, including the vessel's owners, managers, operators, charterers of the cargo, port and terminal operators. Port cities are often located in strict neighbourhood to stringently protected maritime habitats, bringing not only aesthetic and recreational benefits, but also sources of income for local fishermen and shell fishermen. The extensive traffic and harbour activities increase pollution, limit restricted areas for fishing or spacing fishing nets, worsen standards of tonnage and quality of fish, mussel, faunal species or seaweed exploitation. Another sub-type of biodiversity-induced conflicts are related to struggle of interest between long-term supplies chains of renewable marine resources, fisheries sustainability demands and uncontrolled fishing.

2. Conflicts over coastal defence result from a fact, that frequently, apart from shipping industry, port cities are popular tourist destinations and important bearding areas. The competitiveness between port cities for tourist is connected with accessibility to the beaches with best water quality and attractive waterfronts. To tell more, the harbour and remaining adjoining lands are managed by private and public incumbent stakeholders, leaving little scope for new business to emerge. The rest of the shoreline is restricted for wild beaches, seawalls, dunes and breeding areas for different species. The shoreline space is complimented with closed wealthy residential settlements, private marinas

¹ In Polish literature the problem of environmental conflict was analysed by Jarosław Badera (2010), Robert Bartłomiejski (2015, 2016), Adam Biela (1991), Karolina Dmochowska-Dudek (2008, 2011), Maria Bednarek-Szczepańska and Karolina Dmochowska-Dudek (2015), Piotr Frączek (2011), Piotr Gliński (2001), Karolina Królikowska (2007), Piotr Matczak (1996; 2004), Elżbieta Michałowska (2008), Władysław Misiak and Zbigniew Łucki (2012), Marek Nowak (2004), Janusz Radziejowski (2003, 2011), Julita Runc (1998, 2000), Piotr Stankiewicz (2007), Marta Śliwińska (2004).

and beaches. Any attempt to make land-use transition into residential, commercial, environmental or tourist use, encourage different groups of interest to involve into struggle for scarce space resource.

3. Conflict over port-generated risks and hazards is connected with a fact, that a port facility causes potential exposure to: nuisance dust, flammable, poisonous, toxic cargoes or containers, engine exhaust emission and noises, intense all-night lightning, intense movement of heavy wheeled vehicles, contaminated soil from leaking storage tanks, maritime traffic-caused floods and inundations etc. Not only neighbouring residential communities, but also developers try to push out from the city all port functions to take over post-harbour areas to change them into luxury business, housing-estates and residential waterfronts. The competition for capital investors, especially between cities with declining port functions, is high, so neighbourhood of such locations is an important factor. Too much proximity to fully living port infrastructure is not a good bargaining chip. The port-generated risk and hazards are disturbing to nearby communities and local ecosystem, so every effort to spread port facility or change its function, is exposed to environmental dispute.

4. Conflicts over land-use change concentrate on earlier mentioned scarce vacant shoreline localisations and city's need to redevelop waterfronts with residential, retail, entertainment and recreational uses. At the same time, ports are seeking opportunities to expand from shoreline areas for loading to contemporary large scale post-industrial zones. In the time of globalisation, ports must continuously adapt to changing economic trends and technologies in order to remain competitive. A port's ability to compete in the global economy depends significantly on its landside capabilities. The same applies to the cities, that exist in a competitive market, continually rivalling with other cities for capital holders looking for investment chances, new residents including creative class and tourists. In order to realise common port city's strategy of development to become green, tourist attractive and smart city, the intensively operating port infrastructure in dense city centre is an obstacle. To summarise, waterfront property is attractive to both ports and gentrifying cities, so the competition over use of waterfronts is inevitable.

5. Conflicts over access have different dimensions, but often they involve resident action groups protesting on unwanted or cumbersome neighbourhood of port facility. The developing port demands multi-modal transport access including container truck and train traffic disturbing surrounding residential neighbourhoods. Furthermore, ports consume large hectares for loading, offloading and storage cargo becoming write large closed industrial zones, that effectively limit access for the rest of the population to beaches and bays. There are also offshore port-generated limitations for recreational boating, diving and fishing zones, that lower profitability and attractiveness of local marinas and small businesses. The private properties around shoreline are also troublesome, because they additionally restrict access to beaches and green recreational areas. In scope of local communities, the shoreline complex of beaches, dunes, forests, secluded corners is a public resource, owned by the public and to be protected for the public good. In this sense, conflicts over access are conflicts to maintain social control over public resources and goods. It means that residential communities and small local businesses should have the right to co-decision in urban matters, especially if they concern any change in use or access limitations.

Conclusion

The above typology of port-generated environmental conflict is primarily descriptive in order to portray their dimensions and construct a broad framework, which captures variety of stakeholders' interests, motivations and complaints. Moreover, as a typology, it consists of ideal types of conflicts, that are condemned to simplifications, compromises and imperfections. For this reason, it should not be expected to find such ideal types in pristine form in the social reality. However, port-generated environmental conflicts are often synthesis of more than one type, including environmental impacts of port, locally unwanted use of space, denied access to public goods, property conflicts and exclusionary decision-making. Finally, the typology is not lay claim to be the only way in description of environmental conflicts in port cities. It is worth to mention Domenico Amato's (1999) concept of port city conflict. He points to three broad areas of potential port-generated conflicts:

daily friction (including noise, pollution, traffic congestion, limited mobility of cargo, and visual impacts of port operations); use of spaces (including extension of the port footprint, access to the water and the waterfront redevelopment), and institutional relations (including the exclusion of cities in port development decision-making, legislative action granting ports priority over cities, and the predominance of external interests in port management) (Santasieri, 2012, p. 282).

The above presented typology is only an alternative framework for port-generated environmental conflicts. Due to article limitations it is impossible to present comprehensive description of all important aspects of port-generated environmental conflicts. The aim of the article was to provide a synthesis of main findings in order to present common types of environmental conflicts in port cities. Nevertheless, the organizational and institutional aspects of port generated environmental conflicts in cities deserve a wider analysis, that cannot be comprehensively summarised here. In particular, it would be interesting to analyse if environmental conflicts differ in port cities due to port's size, localisation and its importance for urban development. This remains far in the realm of challenges for future research due to a gap in the literature of harbours and port-related conflict research (see: Ng et al., 2014; Pearson et al., 2016).

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KONFLIKTY EKOLOGICZNE W MIASTACH PORTOWYCH

SŁOWA KLUCZOWE

KONFLIKT EKOLOGICZNY,
 MIASTO PORTOWE,
 SOCJOLOGIA MIASTA,
 ZAGOSPODAROWANIE
 PRZESTRZENI

STRESZCZENIE Artykuł jest próbą zaprezentowania układu trudnych relacji na linii port – miasto i rywalizujących w tych stosunkach interesów portu, zbiorowości lokalnej i środowiska naturalnego. Podstawą konfliktów ekologicznych powodowanych działalnością portów jest ich oddziaływanie na system miejski i ekosystem. Wyodróżniono pięć typów konfliktów ekologicznych wywołanych obecnością portów w miastach: konflikty wokół konserwacji bioróżnorodności, konflikty o obronę linii brzegowej, konflikty wywołane zagrożeniami i ryzykiem, konflikty związane z zagospodarowaniem przestrzeni portowej, konflikty o dostęp do linii brzegowej.