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URBAN REGENERATION OF UNDERUSED INDUSTRIAL SITES IN ALBANIA

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URBAN REGENERATION OF UNDERUSED INDUSTRIAL SITES IN ALBANIA

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ABSTRACT

URBAN REGENERATION OF UNDERUSED INDUSTRIAL SITES IN ALBANIA

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Industrial heritage can be considered as a significant asset of modern civilization, mostly epitomizing living patrimony of industrialization process. However, it nowadays represents under-valuated heritage, as a consequence of massive closure of industrial sites due to political and economical changes through years.

This thesis focuses on the study and recognition of underused Albanian industrial sites, mostly constructed during the communist period, and proposes possible regeneration model based on international examples. The majority of Albanian degraded sites, due to change of regime and mass closure or harassment of industrial sites, are being seen as high priority objective from central government and municipalities. At the verge of approval of General National Plan of the Republic of Albania and most of Local General Plans for country's municipalities, it has become a primary requirement the redevelopment of these "silent" assets, which now have the opportunity to become promotors of cities development.

The study follows with descriptive analysis of international positive cases, reflecting how these internventions can be appropriately applied for Albanian cases. Consistent reuse methodologies were proposed based on three pillars: economic and urban, environmental and heritage.

Lastly, this thesis presents general conclusion for practical application of the above mentioned methodologies, as a positive approach to promote sites revitalization and promotion in national and international level.

Keywords: Industrialization in Albania; Industrial Heritage; Industrial Archaeology; Sustainable Development; Urban Regeneration.

ABSTRAKT

RIGJENERIMI URBAN I ZONAVE INDUSTRIALE TË DEGRADUARA NË SHQIPËRI

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Trashëgimia industriale mund të konsiderohet si një aset i rëndësishëm i qytetërimit modern, duke epitomizuar kryesisht pasurinë akoma të gjallë të industrializimit. Megjithatë, ajo sot përfaqëson një trashëgimi të nënvlerësuar, si pasojë e mbylljeve masive dhe degradimeve në kohë të ndryshimeve të zonave dhe objekteve industriale për arsye të ndryshimeve madhore politike e ekonomike të ndodhura në vend.

Kjo tezë fokusohet në studimin dhe njohjen e objekteve dhe zonave industriale të degraduara në Shqipëri, kryesisht atyre të ndërtuara gjatë periudhës komuniste, si dhe propozon modelet e mundshme të rigjenerimit të tyre, bazuar në shembujt pozitivë ndërkombëtarë. Rigjenerimi i pjesës më të konsiderueshme të zonave të degraduara industriale në Shqipëri; shkaktuar nga mbyllja masive e shumicës së ndërmarrjeve shtetërore, privatizimit të një pjese të tyre apo shkatërrimit përmes përvetësimit të materialeve të ndërtimit të këtyre godinave duke çuar në deri në degradimin fizik të tyre; konsiderohen si prioritet parësor nga qeveria qëndrore dhe vetë bashkitë. Pas miratimit të Planit të Përgjithshëm Kombëtar të Republikës së Shqipërisë dhe në prag të miratimit të shumicës së Planeve të Përgjithshme Vendore për të gjitha Bashkitë e vendit, shikohet si parësore rizhvillimi i këtyre asete "të heshtura", të cilat tani kanë mundësinë për të qenë promotorët e zhvillimit të qyteteve.

Studimi vijon me analizën përshkrimore të shembujve ndërkombëtarë pozitivë, duke nxjerrë në përfundime për mënyrën e ripërdorimit të zonave të degraduara dhe duke reflektuar për mënyrën më të përshtatshme të aplikimit për rastet paralele Shqiptare. Propozohen metodologji ripërdorimi të aplikueshme bazuar në tre shtylla: ekonomike e urbane, mjedisore dhe të trashëgimisë.

Së fundmi, kjo tezë paraqet konkluzionet e përgjithshme për zbatimin praktik të metodologjive të sipër-përmendura, si një qasje pozitive për të promovuar rivitalizimin dhe promovimin e këtyre zonave në nivel kombëtar dhe ndërkombëtar.

Fjalët kyçe: Industrializimi në Shqipëri; Trashëgimia Industriale; Arkeologjia Industriale; Zhvillimi i qëndrueshëm; Rigjenerimi urban.

Dedicated to my little daughter, my lovely husband and my dear family

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LIST OF ABBREVIATIONS

IA	Industrial Archaeology
IH	Industrial Heritage
IT	Indoustrial Tourism
E-FAITH	European Federation of Associations of Industrial and Technical Heritage
ERIH	European Route of Industrial Heritage
ICOMOS	International Council on Monuments and Sites
TICCIH	The International Committee for Conservation of the Industrial Heritage
UNESCO	United Nations Educational, Scientific and Cultural Organization.
ICCROM	International Centre for the Study of the Preservation and Restoration of Cultural Property
IUCN	International Union for Conservation of Nature and Natural Resources
UK	United Kingdom
WSSD	World Heritage Committee
NGO	Non-governmental organization
AHF	Albanian Heritage Foundation
MEI	Ministry of Economy and Industry
VKM	Decision of Council of Ministers of the Republic of Albania
AKPT	National Agency of Territorial Planning
AQTM	Technical Construction Central Archive
PKSH	Communist Party of Albania
PPSH	Popular Party of Albania
RPSSh	People’s Socialist Republic of Albania
NISH	State Industrial Company

CHAPTER 1

INTRODUCTION

Industrial activity in Albania started since XIX century with the construction of new warehouses where were used machineries for process and production of goods as flour, soap, pasta, leather etc. Funds and investments were applied from ex-Jugoslavia, Russia and China after the II World War until 1978, when the relations of Albania with other countries were limited. After the change of regime, at 1990, many statal industrial objects were privatized, some others were harassed or left out of work for several years. However, with time passing some of the areas that were privatized restarted industrial activity. Furthermore, central and local governments are interested in the reuse and regeneration of these sites, in order to affirm values of these part of national heritage.

1.1 Research Aim

The main aim of the present study is the recognition and study of the development of Albanian Industrial Heritage. After the communist period, many of the most important industrial sites went out of function, dismantled and neglected for a long period of time. Many of them were demolished and in their place, were constructed new private warehouses. Others went through functional transformation, in the best case for alternative industrial purposes.

The second purpose of this study is evidence, categorize and document some of the most important industrial sites in Albania, focusing in three important cases for the country: Metallurgical site in Elbasan, oil city of Kuçova and Superphosphate of Laç (located in center, south and north Albania). With the intention of comparing Albanian case studies with worldwide positive cases, various international positive examples are going to be analyzed in various perspectives: urban relation with the site, surrounding natural habitat; environmental / infrastructure / design / social and financial actions, stakeholders involved and barriers of reuse practice. The selection was made based on similiarity with Albanian case studies, regarding typology of industry, size of industrial buildings, site location and nowadays city needs. The first output is expected to be a map of the Albanian Route of Industrial Heritage, parallel to the model of ERIH – European Route of Industrial Heritage. The second output is expected to be a series of synoptic tables and maps, describing most important industrial sites in Albania, mostly constructed during the communist period. The third output is expected to be a comprehensive analysis of Albanian case studies, describing historical changes, actual situation from in-situ surveys, territorial analysis (from General National Plan and General Local Plan of each city), multicriterial analysis, environmental issues (where have been also put measures done by a certified laboratory), architectural and heritage issues.

The last purpose of this research is to propose strategies and recommendations for sustainable urban regeneration and reuse of Albanian underused industrial sites. Suggestions will focus on various aspects as improved inter-connection between city and industrial site, better are accessibility, environmental recovery dealing with pollution issues (soil, air and water) and enhancement of negative impact of this sites to the inhabitants and visitors.

1.2 Research questions

The main concepts of this study address the following issues:

i. Evidence and documentation of the most important industrial sites in Albania.
ii. Description of current condition of some of the most important industrial sites in Albania.
iii. Some key concepts of worldwide adaption and reuse examples of underused industrial sites.
iv. Possible application of international experiences into Albanian cases and drawing of an individual local reuse model.

1.3 Research novelty

The thesis illustrates in-depth analysis of most important underused Albanian industrial sites, majority of which have been constructed during the communist period and are now facing severe degradation. In analogy to importance given from Anglo-Saxon academic scholars regarding study of industrial heritage, Albanian professionals are taking the first steps towards recognition of industrial heritage and industrial archaeology. One of the few local opetaors which has been intensively involved in the matter is Trakult Center, an archeological organization which have done in-field work for identification of several industrial sites in country. However, from the architectural point of view, can be evidenced some academic publications and student projects regarding documentation and proposals for regeneration of industrial sites in Kuçova and Elbasan.

The novelty of this study stands in the provision of future regeneration strategies of Albanian underused industrial sites, viewed in urban, economic, environment and heritage perspective. Regeneration strategies are considered worldwide to be initiators of possible flagship projects, which can result in essential revitalization of neighborhoods and depressed areas, economic progress, creation of added value and give back city's potential to public profits.

Documentation of Albanian industrial sites, evidence of in-situ context and stuctures condition, can be the first steps to initiate redevelopment projects, keeping in mind new spatial transformation needed for these areas with reference to Albanian legislation. It helps to keep alive the collective memory of sites before transformation, preserve their unique values and assure further studies in this field.

The study contributes to public and student information about history of industrial development in Albania, as well as typologies of industrial buildings in the country. It also presents a detailed study of the reuse methodologies for degraded industrial sites, based on contemporary good examples and recent developments in the country. In addition, encourages inclusive cooperation between academic and governmental institutions, NGO's and local communities to formulate accurate and authentic proposals concerning protection and restoration of industrial sites. These pioneering activities are expected to provide tangible social, cultural, environmental and economical improvements.

Finally, the proposals of this thesis will be in line with principles of EU Smart Cities, illustrating the opportunities of these medium-size cities to compete with larger ones, in local and international level. This idea, lies in line with national perspective of individualizing each city and extending their potential resources compared to other cities.

CHAPTER 2

MATERIALS AND METHODS

2.1. Techniques for industrial heritage study

Industrial heritage is a valuable tangible and intangible asset whose identification involves a wide range of actors and processes. The aim is to designate industrial heritage as part of national resources; make a general plan for management, recognition and insurance of future continuance; or possible academic and scientific study. The importance of identification, recording and research is clearly defined in Nizhny Tagil Charter [2013, p. 3-4], including surveys, recording, archeological investigation, historical research, achieve of public asseptance, measures of legal protection and risk reduction.

The present thesis is based on techniques for research of industrial heritage described by Parangoni [Parangoni I., 2012], as follows:

i. Documentary research should take in analysis national and international literature, documents, written and oral materials regarding the heritage in question, as:
    - Written documents include books, periodic, magazines, brochures, encyclopedia, monograph, technical reports, and tourist guides. These materials could be found in archives, libraries, museums, phototeques, institute related to cultural heritage, trade room, topographic institutes and ministries.

- Topographic maps in large scale (relief, streets and buildings) and in small scale (urban, transport, gen-plan, cadastral maps) and architectural project of the industrial object/complex, which could be found in national or local archives, municipalities or ministries.
- Photographies, footages or pictures could be gathered from photographic and film archives, books, magazines or ex-workers.
- Oral evidences of working days, free time and social relations, use of machineries, etc.

ii. Techniques in terrain include registration of over ground structures [Parangoni I., 2012] as follows:

- Identification and site observation, which includes documentation of objects in site, aerial and in situ photography, geographic study. This technique is also mentioned by Stuart [Stuart I., 2012, p. 48-54] who considers industrial landscape to be focused on the scenery and the morpholocal study.
- Registration of all data in an archive, for identification of historic transformation of structures, measures structures and possible reuse of them.
- Registration of machineries and working processes.
- Written reports should include description of site's history, topography and location, architectonic and historic context, type of structure, techniques of construction, functions (actual and previous), description of materials and phases of construction, building's materials still existing, relation of site with surrounding structures, relation of site with city's urban plan, possible accommodation for workers, scheme of work organization, working conditions, status of legal protection (if part of protected heritage), registration date of site and other data related to these buildings. Furthermore, Martin [Martin P., 2012, p. 40-47] lists other archeological techniques of industrial heritage documentation as spread of worker's housing in relation to large industrial complexes; material culture and food

remain which give a full picture of social hierarchy. Further descriptions can analyze spatial organization of living conditions, changes through years, houses in urban or rural areas and standard of living for workers and managers.

- Documents could be organized in dossiers for each factory with graphic and written materials.

In addition to the above description, Rossnes [Rossnes G., 2012, p. 63-69] proposes the following steps to be included in the recording techniques. His idea is related to the affiliation of structures with the surrounding context, including backgroung bearing with respect to construction materials used, working methodology and social symbolism related to the site.

- Drawings which espose relationships between typologies of activity, buildings and site. This include illustrations that explain the relation between machines, working prosesses and production lines; interpretative drawings which show the relation of physical characteristics of site and its functionality; and schematic movement studies to show the process of treatment of raw materials during in production line.
- Site plan which show existing structures and sorrounign condition (site boundaries, transportation system, drainage, production lines, site structures, services).
- Evidence how production was conduct, how machineries worked together and consequences of these choices, measured drawings of work process.
- Personal interviews should be held in order to get a broader understanding of productivity flowchart and document social and historical aspects of facilities and workers.

iii. Excavation is a sensitive intervention which could be destructive. This technique is mostly used in medieval industrial remainings, rather than in modern industrial sites. It can be applied in cased of intention for site presentation to wider public or site rescue (eg. mines).

iv. Dating includes a detailed enumeration of each object in site, description of industrial compexes construction phases and further analyzes to conceptualize historical changes. In-sity observations enable in-depth understanding of original structure construction and changes that might have been accured through time. The entirety of information collected can be summarized in a table, which than translates into 3D view of the historical changes of the objects through time.

2.2. Methodology

The entirety of this thesis has been extended during two years of study, based on intensive work of Albanian underused sites analyzation and finding international successful models of reuse and regeneration.

Firstly, this study was focused on bibliographic review of industrial heritage and industrial archaeology terminology and historical developments thorugh years, mostly in Europe based on the fact that the term was initially used in Britain. Literature review consisted on relevant literature review, as books, magazines, encyclopedias, reports and presentations (online and hardcopy). Online websites were consulted in order to get relevant information regarding European and Albanian organizations operating in the field, latest academic trainings and cultural events organized, and online publications (eg. E-FAITH, ERIH, ICOMOS, TICCIH, UNESCO, English Heritage, Europa Nostra, ICOHTEC, ICCROM, European Union, and Council of Europe). Description of key concepts of industrial heritage, industrial archaeology, significance of place, importance of industrial sites reuses and positive effects of regeneration, have been contemplated pursuant to this analysis. Furthermore, an extensive analysis of fifteen positive international case studies (most of them in Europe), were taken in consideration. The selection was made because of positive outcomes viewd in each of them, similiarity with Albanian industrial building typology and application of those regeneration proposals which could be closely applicable in Albanian cases. The conclusion of these analyse have been summarized in descriptive table, demonstrating particularities of each case regarding urban relation with site, natural habitat, actions taken in environmental, infrastructure, design, social and financial perspective, stakeholders involved and possible barriers faced. With the intention to make an industrial Albanian inteneraty, parallel to ERIH (European Route of Industrial Heritage), with the desire of globalization and expansion of international correlations, was proposed the map of Albanian industrial route called ARIH.

Secondly, the study focuses on categorization of industrial heritage in Albania, based on list from the Ministry of Energy and Industry, maps from Albanology Institute found in National Library and categorization made from the only albanian book on Industrial Archaeology in country. General data were collected from Albanian institutions as Technical Central Archive, Central State Archive, Central State Archive of Film, National Library, Albanian Telegraphic Agency, Institute of Monuments of Culture, Ministry of Culture, Ministry of Energy and Industry. Oral face-to-face semi structured interviews were taken from people who have worked in various industries during the communist period, describing their experiences, work organization, social life of the time. Direct observation and in-situ research have been held for three Albanian case studies in the city of Elbasan, Kuçova and Laç. Field documentation was based on photographic recording and notes, designating their current situation. For this phase were taken in consideration a various of written documents including books regarding Industrial Archaeology, Industrial Heritage and Tourism Heritage (online and hardcopy publications from Epoka University Library and National Library of Tirana), books regarding Albanian Industry before and after year 1990 (from National Library Tirana), articles in Albanian newspapers regarding various local sites problematic as pollution and citizens living characteristics during communist period (from National Library Tirana), magazines describing projects for cities regeneration which include Albanian industrial sites (as studies of Co-Plan studio for Elbasan), cartographic maps manifesting works completed during the five-year plans of the communist period (from National Library Tirana), encyclopedic dictionaries of various Albanian cities (from National Library Tirana), annual reports presenting Albanian Industry from Ministry of Energy and Industry or Ministry of Economy and Council of Ministers (online publications), reports of Albanian Municipalities describing local industrial sites (direct contact with Municipality and online publications from website), reports from Albanian Heritage Foundation regarding Industrial Heritage in Albania (online publications), written and oral information or presentations from Institute of Monuments in Tirana, national and international laws and campaigns on industrial heritage published in journals and articles, international and national conferences, and online papers concerning Industrial Heritage and Industrial Archaeology. As result of the above-mentioned analysis, have been drawn synoptic tables and maps of most important industrial sites in Albania.

Thirdly, the thesis follows with a detailed analysis of three Albanian case studies: the Metallurgic of Elbasan, oil city of Kuçova and the Superphosphate of Laç. Each of them represet a distinctive case, not only for being located in north, middle and south Albania, but also for their particular characteristics as correlation with city, typology of structures, state of degradation etc. The analysis issincludes general historical description, their actual situation evidenced from in-situ surveys, territorial analysis (from General National Plan and General Local Plan of each city), multicriterial analysis, environmental issues (where have been also put measures done by a certified laboratory), architectural and heritage considerations and some prevailing proposals for territorial reassessment.

Lastly, this study concludes with a personalized reuse model of Albanian industrial heritage, perceived in three directions: economic and urban, environmental and heritage. Final recommendations have been drawn in order to giving general directions of industrial patrimony reuse, based on international experience and adapting on local context.

CHAPTER 3

LITERATURE REVIEW

3.1. Industrial Heritage

European industrialization process brought the end of the agricultural society and emerge of an industrial one. The aftermath of these changes lead to division of labour work, increase of productivity and standardization. As Bergeron defines [Bergeron L., 2012, p. 31], the industrialization was the triumph of human mind, of engineering genius and of knowledge and discovering of construction materials. The first pioneer countries were Britain (first since 1771), Belgium (since 1800), Germany (since 1780), France (since 1800), Italy (since 1899) and USA (since 1800); mostly in the the field of textile and metallurgy. Apparently, they seemed to possess the appropriate manufacturing technology, production materials access and cheap labour.

Taking into account the definitions of Venice Charter for the Conservation and Restoration of Monuments and Sites (1964), Industrial Heritage is part of the world cultural heritage. The concept of a historic monument embraces not only the single architectural work but also the urban or rural setting in which is found the evidence of a particular civilization, a significant development or a historic event [ICOMOS, 1695, p. 1]. Industrial heritage is the complex of architectural, technological and historical remains, representing their unique values. As defined by the Nizhny Tagil Charter for the Industrial Heritage:

these remains consist of buildings and machinery, workshops, mills and factories, mines and sites for processing and refining, warehouses and stores, places where energy is generated, transmitted and used, transport and all its infrastructure, as well as places used for social activities related to industry such as housing, religious worship or education [TICCIH, 2003, P. 1].

Industrial heritage encompasses the extraction, production and processing of all types of raw materials (mineral and organic), the working, manufacturing and marketing of those products and the supporting infrastructure, settlement, utilities, transport and communications [Council of Europe, 2013, p. 6]. Figure 1 explains in a modular table, elaborated by the author, the concept of industrial heritage as described in Nizhny Tagil Charter. It composes from tangible (movable and immovable) and intangible heritage, each of them representing varios activity, structure or site.

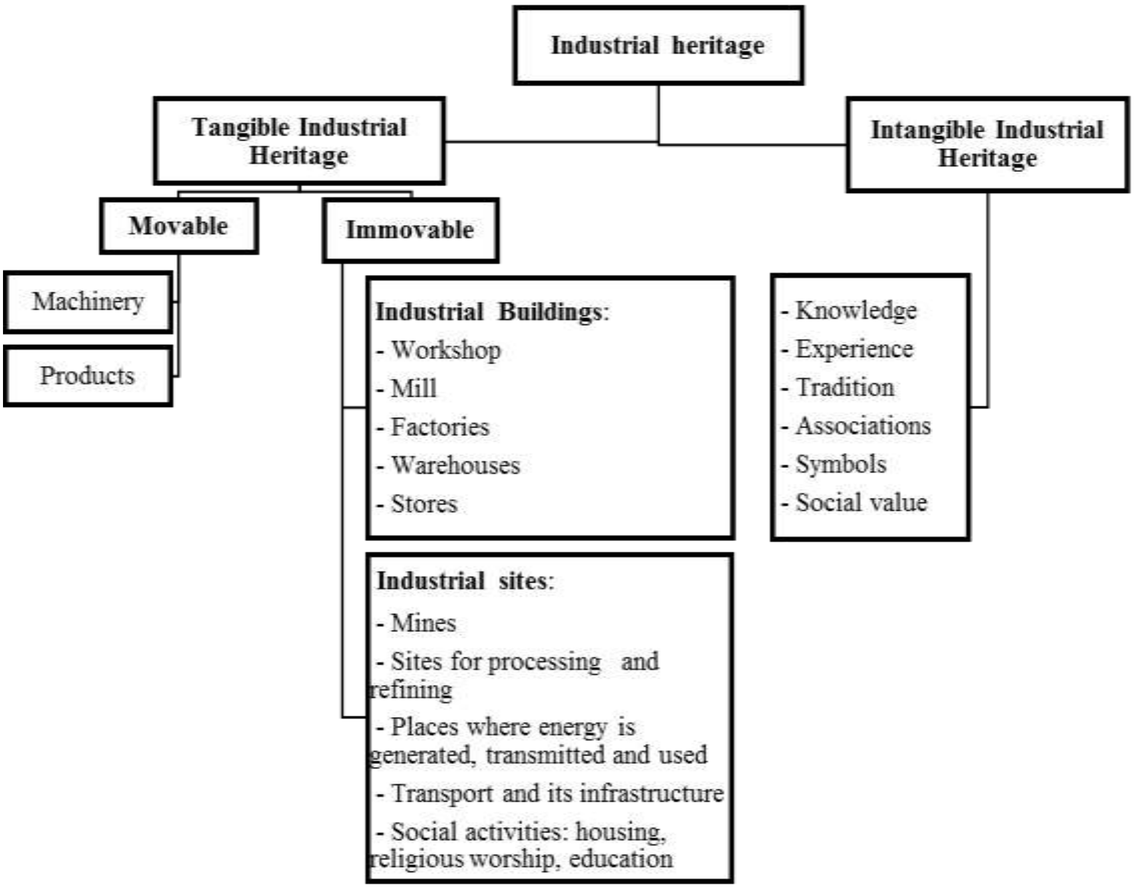


Figure 1. Defining industrial heritage by Nizhny Tagil Charter of the Industrial Heritage [elaborated by author].

Industrial patrimony is present since the prehistoric times. However, this study will focus on the Albanian industrial heritage during 1945-1990, communist regime, and their actual conditions at the democratic time. The management of industrial sites should be planned in the local, national and regional level, reflecting the changes through time in order to assure a sustainable development. This is a common problem as numerous World Heritage properties are not accounted in the management system. This is an underlying issue of many properties selected for State of Conservation reporting [ICOMOS, 2011, p. 2].

3.2. Industrial Archaeology

As described above, the term Industrial Archaeology was initially used by Professor M. Rix in 1950, England. The term was firstly used for the recognition, study and management of industrial remains of the 19th century revolution. According to the Dictionary for Archaeology, Industrial Archaeology is:

> *a sub discipline that developed in archaeology during the mid-20th century to investigate the tangible evidence of the social, economic and technological development of the industrial era* [Shaw I & Jameson R., 1999, p. 321].

As Trinder estimates [Trinder B., 2012], first "industrial archaeologist" were focused on different objectives as industrial remains (monuments, landscapes, images and artefacts) which recording and protection is high priority, industrial heritage as part of public knowledge (possible reuse for tourist attraction), and field researchers who created new academic discipline of industrial archaeology, later on supported by legislation adoptions. With the time passing, industrial archaeology took a broader sense and was related not only to industrial remains but also the intangible elements of working life. Alternative industrial archaeology term relates to:

> *a method of studying all the evidence, material and immaterial, of documents, artefacts, stratigraphy and structures, human settlements and natural and urban landscapes, created for or by industrial processes* [Fondazione Biblioteca Archivio Luigi Micheletti, 2005, p.1].

In a broader context, Shaw & Jameson [1999, p.321] and Raistrick A. [1972] define Industrial Archaeology as:

> *a thematic discipline dealing with the methods by which humankind have achieved their material civilization and modified the environment in which they live*.

Other authors [Naeverson P., Marilyn P., 1998] attach preservation of industrial patrimony with artefacts recording and records enlightening working force of the past. The latest and more complete definition of industrial archaeology was described in the Nizhny Tagil Charter for the Industrial Heritage [2003], as:

> *an interdisciplinary method of studying all the evidence, material and immaterial, of documents, artefacts, stratigraphy and structures, human settlements and natural and urban landscapes, created for or by industrial processes*.

In general, industrial archaeology deals with the identification, recording and preservation of industrial buildings and objects before they are abolished.

3.3. Industrial Landscape

Industrial landscape refers to a larger area than just a place, which embodies expressions of historical changes of industry. Various definitions of the terminology, associate industrial landscape with a cultural landscape which has been modified by human activity through time [Stuart I., 2012]. In another perspective, ss Cotte derives:

> *industrial landscapes are often categorized as 'organically evolved' landscapes* [Cotte M., 2012, p. 169].

Significant importance of landscape was definitely materialized in the European Landscape Convention, aiming advice measures of protection, management and/or landscape planning; and pursuing agreements towards sustainable development. In this context, landscape changes are accelerated by diverse transformations in agriculture, forestry, industrial and mineral production techniques, regional planning, town planning, transport, infrastructure, tourism and recreation [Council of Europe, 2000, p. 2].

Referring to Operational Guidelines for the Implementation of the World Heritage Convention [UNESCO, 2012, p. 88], cultural landscape can be chategorized by the following as: designed landscapes whih are created intentionally by humans (gardens, parks, industrial residences, commercial areas), evolved landscapes (vernacular) created as result of social, economic, administrative or religious actions (relic landscape or continuing landscape) and associate cultural landscape considered important because of distinct artistic, religious, historical, scientific, or cultural assemblies of natural elements than evidence of material culture.

Industrial heritage can be considered part of collective memory, as its characteristics form the social and cultural identity of citizens. It was formed by continuous manwork in nature aiming industrial development, from the small scale of a building to the large one of the site. In respect to the historical, cultural, social and economical values of industrial landscapes, they deserve particular care. Cossons derives that the need of preservation for the sake of history, due to the universal importanve of industrial heritage [Cossons N., 2011].

Lastly, industrial activities change the environment through time, shape the landscape and leave ecological footprint. As described by Tempel [2012], the ecological footprint of industry measures the level of resources usage, long-term environmental damages, pollution, risk from disasters and waste disposal.

3.4. World Heritage List and Values of industrial heritage

Being an inseparable member of modern cities, industrial heritage is constantly part of citizens reality. Indeed, the first step towards identification and protection of industrial heritage is the process of investigation and documentation. The procedure follows with in-situ analysis regarding state of degradation, current use of facilities and proposals forspecific measures of protection, preservation and reuse [Oglethorpe M., McDonald M., 2012; Rossnes G., 2012; Parangoni I., 2012]. Importance of the documentation process lies in the affirmation of relationship between buildings and the sorrounding landscape, the spatial organization and the production lines. Furthermore, data can be collected regarding work flow of the time, technical conditions of structures and various historical, economical and social details related with functionality of these industries.

Industrial heritage was originally defined as part of cultural heritage, since the first conservation and restoration charters. The Burra Charter describes place as a geographic area which can be:

> *for example, a memorial, a tree, an individual building or group of buildings, the location of an historical event, an urban area or town, a cultural landscape, a garden, an industrial plant, a shipwreck, a site with in situ remains, a stone arrangement, a road or travel route, a community meeting place, a site with spiritual or religious connections* [Australia ICOMOS Incorporated, 2013, Article 1, p. 2].

This charter also defines the cultural significance of a place, as:

> *Aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects.* [Australia ICOMOS Incorporated, 2013, Article 1, p. 2].

The World Heritage List was created with the intention of protection of most important industrial sites from abolition or abandonment. According to the World Heritage List [UNESCO, 2016] 36 of 1052 properties, are industrial sites. Table 1 illustrates the list of significant worldwide industrial sites, protected by UNESCO, based on World Heritage List [ICOMOS, 2016] and World Heritage Cultural List [UNESCO, 2016].

Table 1. Industrial Heritage Sites on the UNESCO World Heritage List, 2016.

Country	**Industrial Site**
Australia	2004 Royal Exhibition Building and Carlton Gardens
Austria	1997 Hallstatt-Dachstein Salzkammergut Cultural Landscape
	1998 Semmering Railway
Belgium	1998 The Four Lifts on the Canal du Centre and their Environs, La Louvière and Le Roeulx (Hainault)
	2000 The Neolithic Flint Mines at Spiennes (Mons)
	2005 Plantin-Moretus House-Workshops-Museum Complex
Bolivia	1987 City of Potosi

Brazil	1980 Historic Town of Ouro Preto
	1982 Historic Centre of the Town of Olinda
	1999 Historic Centre of the Town of Diamantina
	2001 Historic Centre of the Town of Goiás
Chile	2005 Humberstone and Santa Laura Saltpeter Works
China	2000 Mount Qincheng and the Dujiangyan Irrigation System
Cuba	2000 Archaeological Landscape of the First Coffee Plantations in the South-East of Cuba
Czech Republic	1995 Kutná Hora: Historical Town Centre with the Church of St Barbara and the Cathedral of Our Lady at Sedlec
Finland	1996 Verla Groundwood and Board Mill
France	1982 Royal Saltworks of Arc-et-Senans
	1985 Pont du Gard (Roman Aqueduct)
	1996 Canal du Midi
Germany	1992 Mines of Rammelsberg and Historic Town of Goslar
	1994 Völklingen Ironworks
	2001 Zollverein Coal Mine Industrial Complex in Essen
India	1999, 2005 Mountain Railways of India
	2004 Chhatrapati Shivaji Station (formerly Victoria Terminus)
Italy	1995 Crespi d'Adda
Mexico	1988 Historic Town of Guanajuato and Adjacent Mines
	1993 Historic Centre of Zacatecas
Netherlands	1997 Mill Network at Kinderdijk-Elshout
	1998 Ir.D.F. Woudagemaal (D.F. Wouda Steam Pumping Station)
Norway	1980 Røros
Poland	1978 Wieliczka Salt Mine
Slovakia	1993 Banska Stiavnica
Spain	1985 Old Town of Segovia and its Aqueduct
	1997 Las Médulas
Sweden	1993 Engelsberg Ironworks
	2001 Mining Area of the Great Copper Mountain in Falun
	2004 Varberg Radio Station
United Kingdom of Great Britain and Northern Ireland	1986 Ironbridge Gorge
	2000 Blaenavon Industrial Landscape
	2001 Derwent Valley Mills
	2001 New Lanark
	2001 Saltaire
	2004 Liverpool – Mercantile Maritime City

According to parameters defined by UNESCO, the criteria of site selection is based on the Outstanding Universal Value (OUV), defined as Adoption of Retrospective Statements of Outstanding Universal Value and explained in the Operational Guidelines for the Implementation of the World Heritage Convention [World

Heritage Committee, WHC-14/38.COM/8E, 2014]. This document defines Outstanding Universal Values as:

> *cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity*' [UNESCO, 2013, Article 49, p.14].

Further, it is explained that in order to be considered of having Outstanding Universal Value, the site should meet one or more of ten criteries [Operational Guidelines, 2013, Article 77]. UNESCO uses a resembling process for site selection, following criterias of authenticity, integrity, aesthetic values, unicity of cultural tradition testimoniance, technical espression of the technology of time, humand interactions with the environment, representation of significant ecological and biological evolution or resordings of biological diversity[1]. Pursuing the above-mentioned definitions, authenticity is allied to attibutes of form and design, materials, use and function, traditions, techniques and management systems, location, language and other forms of intangible heritage, spirit and feeling (important indicators of character and sense of place, for example mantaining cultural continuity), other internal and external factors [UNESCO, 2013, Article 82, p.22]. In addition, integrity is defined as:

> *a measure of the wholeness and intactness of the natural and/or cultural heritage and its attributes; for which we should assess extend to which the property* [UNESCO, 2013, Article 88, p.23].

Continuous effords are made to enrich the World Heritage List with these valuable assets. Curreny, Albania is represented only by the cultural site of Butrint and historic centers of Berat and Gjirokastra. As a matter of fact, there are substantial number of valuable industrial and cultural heritage sites in Albania, which should be evidenced and promoted at the national and international level. Hence, local specialist should commit to make this aspiration a tangible reality.

The Nizhny Tagil Charter for the Industrial Heritage has clearly adhered values of industrial heritage with: universal values because of being vital evidence of historical development, social values as result of being part of citisens' life, technological and

[1] See Appendix C.

scientific value showing the historical transformation of manufacturing and engineering, aesthetic values related with special architecture and planning desing [TICCIH, 2003, p. 1-2]. Based on various authors definitions [Dongjun Pan, 2008, p. 37; Jie G. 2009, p. 6], values of industrial heritage ca be identified as follows:

i. Technological Value – Industrial processes have been associated with technological inventions, reflecting the scientific level of the time and benefiting for future progress.
ii. Historical Value – The existence of Industrial Heritage is a reflection of historical activities, culture, technology and civilization. Industrial sites should be part of everyone belonging as they are irreplaceable and should be protected. Because of their significance, these sites epitomize the Outstanding Universal Value (*OUV*).
iii. Economic Value – Industrial sites are part of national patrimony as representing immense expenditure spent at the time of construction. On the other hand, their areas caould be functional in cases of adaption. Protection and reuse of abandoned industrial sites could notably increase their economic value, granting significant national profits.
iv. Educational Value – Abandoned industrial sites are very good proof of academic education. Their materials, technology and work processes could be useful for teaching purposes in engineering, architecture, archaeology and human sciences.
v. Psychological Value – Industrial heritage represent the common memory of the time as a symbol of the spiritual activities if the citizens of the time. They annotate the cultural identity of workers and families in local and national dimension. Industrial sites represent places of work at the time, carving local culture and injecting memories.

In addition to the above discussions, it is worthy the discaussion of industrial ruined landscapes values, generating from the variousness of a process happened through time. As Okada cites ‘industrial heritage = industrial facility + ruin’ [Osaka M., 2012, p. 153].

3.5. International Studies on Industrial Heritage and Industrial Archaeology

Studies related to Industrial Archaeology arose after concerning destructive interventions in remaining of past industries by redevelopment of cities in Britain. While vanishing tangible assets of former industrialization, local community, various groups of interests and academic entities became more and more interested in the valorization of this unique remains for their historical, economic and social values. Firstly, the discipline carried on from around 1950 in the form of practical courses. However, it was because of the professor M. Rix at the Birmingham University the introduction of the term Industrial Archaeology towards academic auditor in 1955. The initiative was shaped since 1958 with the creation of Industrial Archeological Research Committee [Martin P. E., 2009; Majewski T., Gaimster D., 2009]; followed by publication of various authors [Hudson K., 1963; 1979].

Several institutions, related to industrial archaeology and heritage, have enriched the field through time with various journals as: Industrial Archeology Review published by The Association for Industrial Archaeology (AIA), The Journal of the Society for Industrial Archaeology published from Society for Industrial Archaeology (SIA) and l'Archeologie Industrielle by CILAC in France.

Early publications from authors like Trinder [Trinder B., 1801; 1970; 1992; 1993; 2012] and Clossley [Clossley D., 1990], contributed in a wider knowledge of the discipline of industrial archaeology and encouraged actions of protection and recuperation of this patrimony. Most of publications after the '90, intended to create a broader knowledge of industrial remains as part of national heritage, informing of their state of degradation and proposing key concepts of effective regeneration.

Brownfields revitalization play important role not only in redevelopment of local area, increase of land value, but also avoids urban sprawl performing positive economical, technical, heritage, social and environmental effects [Tölle A. et al, 2009]. Successful transformation of ex-industrial sites, is an on-going process from which (though positive and negative regeneration experiences) specialist and governments can take notice of most positive procedures [Stuart B. S., 2011]. Adaptive reuse of industrial heritage comprises all-inclusive preservation strategy. As Travano impies [Travano B. G., et al., 2012], regeneration projects diversify lifestyle and produce qulitative services. Professionals weight the importance of indetification, inventorization, regular documentation, suitable funding and respect of technical standarts, as basics of successful regeneration [Yu Y., 2011].

Industrial sites can be viewed as urban ecosystems, because of production flow and dealing with wastes. As consequence, sustainable adaptive re-use of discarded sites can successfully perform in case of feasible, efficient and sustainable adaption; apply passive desing as use of recycled materials which reduce energy consumption, natural ventilation, alternative energy soruces; manage water and sewage system; use vegetation to improve climate, water purification and air quality [Slenders H.; Dols P.; Verburg R. et al., 2010, p. 143- 153]; achieve proper connection of industrial site with urban district and the city itself [Kostarczy A., 1993], responsible use of fundings and in overall, efficient projects which would reduce ecological footprint [Kirovová L.; Digmundová A., 2014].

In order to achieve an affordable redevelopment, a range of assessments can be applied in order to analyse costs of remediation, the market value related to investment risk and sustainability evaluation based on local and national priorities [Schädler S.; Morio M.; Bartke S.; Finkel M., 2012, p. 88-100]. Recent research emphasizes the endouraging role of public society in private investet regeneration projects, using some models of financiation as Public-Private Partnership, Land Value Finance (capture the incremented value of land after regeneration), Development Funds (low interet funds) and Impact Investment Funds [Medda F.R.; Caschili S.; Modelewska M., 2012]. Proper governmental policies and aboundant land availability may serve as attractive inducement for private investments, looking brownfields as profitable oppornitities [Dixon T., 2006].

3.8 International Institutions

During the beginning of the use of the industrial archaeology concept, due to focus on industrial landmark preservation (eg. Euston Arch and railway system) the English government launched Industrial Monuments Survey which lead to creation of National Record of Industrial Monuments [Light J. D., 2011]. Over the same period was created the Bristol Industrial Archaeological Society (BIAS) advocating the preservation of industrial monuments [Bushanan R.A., 1972]. At this base, in 1973 was later created the Association for Industrial Archaeology (AIA). Other countries held their heritage recording and inventories by the following bodies: Historic American Engineering Record [1969] in the US, Cellule du Patrimoine Industriel [1964] in France which begun the General Inventory at 1986 and Central Office of National Antiquities in Sweden.

Since the industrial heritage movement is now part of an international awareness, many EU governmental bodies and NGOs have been part of this cognizance movement. E-FAITH (The European Federation of Associations of Industrial and Technical Heritage) was founded to promote collaboration between institutions and volunteers to investigate and protect and support industrial and technical heritage. The meeting in 2009 in Calais of France, concluded with the proposal for deeper collaboration of EU countries in the field of industrial heritage. As consequence, the year 2015 was proposed as the European Industrial and Technical Heritage Year, under the auspices of E-FAITH. This year was correspondent to the 40th anniversary of European Architectural Heritage Year, set on 1975. The Memorandum of this campaign, drawn in 2012, highlighted the awareness of public, local authorities and other entities for cooperation to save the technical and industrial heritage of Europe, representing their authentic historical, scientific, cultural values. The Parliamentary Assembly of the Council of Europe, in 2013 published a report regarding the legacy of the Europe’s Age of Industry to safeguard for future generations [Council of Europe, 2013, Report 13134. p.1].

Various conferences, meetings and workshops dedicated their time towards the industrial archaeology subject. Since 2006, The South East European Heritage

Network has organized meetings in different countries of the Balkan region with the intention of encouraging sustainable development of local industrial heritage, as the meeting in Rijeka, Croatia (April 2010) and then in Tirana (July 2011). Under the care of European Commission and Council of Europe are held the European Heritage Days (EHD), with the motto: “Europe, a common heritage” [European Industrial and Technical Heritage Year, 2015]. For this event were organized visits to various sites and museums widening public awareness. This event was firstly sponsored by the French Ministry of Culture in 1984, with La Journée Portes Ouvertes; and in the next year the project was proclaimed as international. Nowadays, almost 50 countries are part of this stimulating initiative.

Interesting is the active role of the group "Cheminées d'usine - Factory Chimneys" towards industrial heritage, in particular emphasizing the values of those sites with factory chimneys. In this context, was organized Camin'Europa 2015 with the theme “The Factory Chimneys of our European Countries and Regions: a shared industrial culture", with the idea of making activities on industrial sites and an exhibition called “Factory Chimeys - Living Memories”.

Thematic documentation about European Industrial Heritage legislation are available on online websites of international organizations as UNESCO (World Heritage Sites), TICCIH (The International Committee for the Conservation of the Industrial Heritage), and ICOMOS (International Council of Monuments and Sites). Good examples and guidance are published from EU Association of Historic Towns and Regions (EAHTR), InHerit partners (Heritage Interpretation for Adult Learning) etc. aiming good cooperation through EU agencies for different projects regarding heritage.

3.7 Albanian Studies on Industrial Heritage

From the academic point of view and according to dicsussions with proffesionits and colleagues, the more appropriate way to refer to industrial sites in Albania constructed until the 1990 is with the taxonomy Industrial Heritage. Due to the late time of construction of Albanian indusrial sites, we cannot discuss about Industrial Archaeology except for Industrial Heritage.

Albanian studies published during the communist regime mostly described industrial sites constructed at the time. Banja and Toçi [Banja H., Toçi V., 1979] described the importance of transformation of Albanian economy from agrarian to industrial, the process of industrial development through five-year plans and the positive impact on people's welfare. Many books and conference brochures were published to describe the worker's wage levels and to make propaganda on the state industrial prosperity. To some of the most important industrial branches, as the metallurgical, mechanical, and the production of oil; were dedicated specific editions as Steels of the Metallurgical Combine Steel of the Party (1987), Mechanical industry in front of major tasks for the production of machinery (1981) and Security techniques in the oil industry (1982). Maps of industrialization processes in different types of industries, designed from the Albanological Institute, were important information sources which describe the industrial objects constructed during the communist regime, categorized by five-year plans.

The fall of regime, as described above, was associated with devastating processes for industrial sites. Many of them were destroyed, some others were privatized and some illegally occupied. After many years of information darkness, Albanian government, media and other entities are focused on making a change in this sector and giving the opportunity of rebirth of the abandoned industrial sites. The Albanian archaeologist and historian, Ilir Paragoni, was one of the first specialists to launch the initiative of conservation and managing the cultural heritage in country [Parandoni I., 2012, 2015]. He also was the founder of the Centre for Albanian Cultural Heritage (TRACULT Centre) promoting national heritage. The Albanian Heritage Foundation (AHF) is a NGO working to promote, evaluate and protect Albanian historic environment. In 2005 was created the initiative for an online database to keep record of national archeological sites, called FoAP project.

Varios publications conducted from Faculty of Architecture, Polytechnic of Bari, and Epoka University [Menghini A. B., Calace F., 2015] have broaden studies of

Albanian industrial sites. Their focus was mostly on documentation and regeneration progects of ex-TEC site in Fier, Metallurgical Complex in Elbasan and Textile factory in Berat, keeping in consideration the ideas of a smart city. World Wide Fund for Nature, an international NGO, has continuously worked on proposals for strategical reuse of local industrial sites, especially in Fier and Berat [Menghini A. B., Pashako F., 2014].

3.8 Albanian Institutions

During the last decades, due to rapid economical development, proper use of deteriorated industrial sites has become an urgent issue in Albania. With the intention of public awareness increase, universities have continuously organized conferences and projects. Marin Barleti University Albania and Polytechnic of Bari Italy, Department ICAR organized in February 2014 the conference Industrial Archaeology in Albania – restoration, sustainable and integrated development, with the aim to proclaim the importance of creative ideas on reassessment of Albanian industrial areas gaining opinions from specialists, intellectuals and students.

An outstanding presentation and first of its kind was the international contemporary exhibition Informal Mind (2014) conducted in the premises of the Metallurgic of Elbasan, cured by M.A.M. Foundation and supported by the Ministry of Culture and Municipality of Elbasan. 22 international artist presented their art works in the ruins of one of the object of the Metallurgic as the representation of the industrial energy of the period of dictatorship; with the intention to reawaken interest to a “dead site” through contemporary art. Lately, the Italian photograph Antonio Fantasia made an exhibition called Night of a regime (2016), with photos and videos (by E. Gjatolli and A. Fantasia) of the abandoned industrial sites which used to be the symbols of the totalitarian regime. Today they epitomize the challenges of the Albanian institutions and society to deal with this heritage of the past and find the best way to make a good coexistence of the past, present and future wishes. In the context of Year of Industrial heritage, the Ministry of Culture organized the meeting “Industrial Heritage in Albania – cultural potential” (2015).

As one can understand, Albania is at the first steps in confront the industrial heritage. Unlike cultural and historical heritage, industrial heritage is still not cited in the "Law on Cultural Heritage" of 2003, still active. However, in the Manual of Management of Local Assets, from URAID 2009, sites of ex-industrial factories are described as surplus, which can maximize governmental incomes [USAID, 2009, p. 41]. In the report of the National Plan for the implementation of Stabilization and Association 2012-2015, by the Council of Ministers, was proposed the development of extraction and processing industries and non-food industries by giving priority to concerned enterprises [Council of Ministers, 2012, p. 115]; and the implementation of the objectives of the Strategy of Development of Mining Industry [Council of Ministers, 2012, p. 534]. Furthermore, the Chamber of Industry and Economy is engaged with the proposals regarding the progress of industry and trade; and collaborates with the following entities Department of Policies to support competitiveness of economy, the Ministry of Energetics and Industry and the Ministry of Economic Development, Tourism, Trade and Enterprise, National Agency of Environment and Ministry of Environment. Peports published regarding the industrial areas of Shkodra [TEULEDA, 2008], Durres, and Elbasan discussed managing plans of respective industrial sites.

3.9 Key concepts on importance of Industrial Heritage protection and redevelopment

Industrial heritage is part of inhabitant's lives and embody a deep sense of connectivity with the surrounding environment and experiences in time. The interesting conjuction of the past and the present reflects cultural diversity and advocate careful use to welcome future generations.

As Morin argues [Morin B., 2012], values of maintaining historic structures lay on enhancement of regional identity, further economic development, neighborhood stability and sustainability (tax mechanism and policies to favor conservation), promotion of non-profit, public projects and for-profit projects. The protection of industrial heritage should pass through adaptive re-use or conservation process. Through the reuse of industrial remains is encouraged sustainable operation and economic income. On the other hand, conservation is the process which offers a sense of appreciation from current and future generation towards the former ones.

Key guidances concerning industrial heritage protection, described at the Nizhny Tagil Charter [2013, p. 4][2], relate to the importance of industrial patrimony as integral part of cultural heritage. Protection of these sites should encounter legal restrictions, nature of heritage, environmental issues, political and economical overview, special characteristics of site and fabric authenticity. In case of possible severe degradation, government should quickly intervene with the intention of significant elements protection. The overall process could consider technical consultation, local communiny and associations participation, tax motivation and grants.

In order to have an adequate knowledge of heritage intervention, the Burra Charter [ICOMOS, 2013] explains that significance of a place is related to aesthetic, historical, scientific, social and spirtitual values. Cultural significance is connected with each element of the site. Furthermore, the Charter gives a detailed description of concepts as conservation, manteinance, preservation, restoration, reconstruction, adaption, use, compatible use, settings and related place[3].

3.10 Brownfields regeneration positive effects

In the interest of numerating positive effects of brownfields, it is important to have a prevailing understanding of the terminology. According to the Glossary of Brownfield Terms:

> *Brownfield is an industrial or commercial property that remains abandoned or underutilized in part because of environmental contamination or the fear of such contamination* [Environmental Law Institute, 1999].

However, the broader concept widely accepted by the EU, is the one cited by CABERNET which define brownfields:

[2] see Appendix A
[3] see Appendix B

as sites that have been affected by the former uses of the site and surrounding land; are derelict and underused; may have real or perceived contamination problems; are mainly in developed urban areas; and require intervention to bring them back to beneficial use [CLARINET, 2003].

Furthermore, Planning and Policy Statement 3 refer to brownfields as:

Previously-developed land is that which is or was occupied by a permanent structure, including the curtilage of the developed land and any associated fixed surface infrastructure' [PPS 3, 2010, p. 26].

Dixon [Dixon, 2000, p. 3] evidences the process of brownfields redevelopment gives everone the possibility of gaining from the resulting improvements. Residents benefit from improved well being effects, but also the rehabilitation of before-used land will not need to develop more open space. Potential businessmans but also local inhabitants benefit from new businesses, industries, and roads opening in the area. Creation of new jobs (from the remeditation phase to the reuse one), improve of working skills and revitalization of economy are some direct positive visible effect of the process. Lastly, local government can play a key role in brownfield redevelopment, increasing liability of clean-up costs, gaining taxes and having better control of city's properties.

National Round Table on Environment and Economy (2003) relate benefits of brownfields regeneration with:

i. Economic benefits due to creation and retention of employment opportunities, increase citie's competitiveness, increase tax base and opportunities for betterment of clean-up technologies
ii. Social benefits due to improve life quality of communities, minimize threats to resident's health and higher access to economical housing
iii. Environmental benefits because of urban sprawl reduction, enhancement of environmental quality and reduction of polluted emissions.

Siegel [Siegel L., 2001] explains various metrics to which brownfield redevelopment projects require public investment considering involvement of local community in planning, protection of public health, generation of local jobs and business, provision of needed services or housing for the community, expansion of open space or otherwise improve the local quality of life, generation of additional tax revenues for local agencies, retain of existing community and its cultural base and provision of any of the above in a particularly blighted area. Other positive effects Onther from brownfield regeneration are discussed by De Sousa, due to provision of extra greenery for the city, through parks, gree paths, trails, playgrounds and open spaces [De Sousa Ch., 2003]. Benefits of transforming brownfields to greenfields can be identified with the creation of eco-friendy spaces, involvement of public community, increase of public spaces and recreational areas, use of these areas as samples for future redevelopment models and as educational illustrations, purification of environement, improvement of neighborhood image and preservation of historical heritage.

From the urban and economic point of view, regeneration of brownfields can create more compact urban layer, increase properties value because of improvement of general neighborhood conditions and emerge economies of agglomeration by increasing the density of population and activities [Paccagnan V.; Turvani M., 2007] sharing lower costs for transportation and engineering infrastructure. In addition to these, the authors explain the impacts on land value dippending on clean-up costs. The market value of the brownfield depeands directly in the level of clean-up expected and required by law, the obligations of stakeholders and the forthcoming use of site. Consequently, private costs of redevelopment are provided higher than the true ones, due to perception of high clean up costs. Jenkins et al. (2006) identify the benefits of clean-up costs and reuse of brownfields as improvement of health and ecosystem possible greenery and agglomeration effects. Indirect affects could be encouragement of property transactions due to symmetric information. This will cause the highest and best value of land use and increase of productivity.

Lastly, brownfields redevelopment can possibly result in lower crime and violence rate. However, on the other side, this can create the so-called gentrification [Essoka & Jonathan, 2010; Fisher, 2011; Banzhaf and McCormick, 2007]. By providing better services and cleaner environment, real estate prices go higher and local inhabitants may not be able to live any more in neighborhood. The replaicement of locals with new househods feeds the gentrification. Even if they stay, time is needed for them to adapt with new local character.

3.11 Significance of place

Industrial heritage is integral part of city's community and play an important role in the spiritual linkages between present and past. Being part of citizen's life, industrial heritage sites keep alive the city's memory. The process of site regeneration, should pass firstly through knowledge of history, location and spirit of place. Collection of memories, perceptions and feeling designate the significance of a specific place.

Industrialization in Albania happened in a relatively short time and these intense changes encompassed almost 3 milion people for about fourty years. Before the 1945, Albania was mostly an agrarian country and investment were mostly invested by foreing companies. However, with the beginning of the communist regime started a diligent period of industrialization which was simulated mostly by Chinese and Russian investments [Parangoni I., 2012; Valentina D., 2007]. Unfortunately, due to political issues, with the passing of years Albania became a 'close' country, reaching at a point of disrupting contacts with other countries and claiming to produce everything in country. As result, the country degraded in poverty and the end of the regime, in 1990, marked a new beginning. The year's aftermath followed with the degradation of the enormous number of industrial sites, privatization/occupation/ fragmentation of some buildings and reutilization as economic units. Another unsatisfactory phenomenon appeared with the construction of new industrial buildings alongside important country roads, which permanently changed the landscape view.

As can be seen, industrial heritage sites in Albania are symbols of industrialization. Some people may adhere their values to sense of pride and good memories, while some with poverty, decadence and fatigue work. Furthermore, during communist period, in Albania were constructed various cities in function of new industrial sites. Hence, spatial organization of cities and industrial sites have had direct impact in citizen's life. Landscape configuration can be directly linked with collective identity.

Discret analysis and planning should take in consideration smooth integration of urban change, in order to provide new identity that could be widely accepted by the community.

Industrial heritage embodie a strong sense of unicity, becoming the basis of collective identity and being used as a tool of societal homogenization [Bonekamper G., 2009]. Collective frameworks *are the instruments used by the collective memory to reconstruct an image of the past which is in accord with the predominant thoughts of the society* [Halbwachs & Coser, 1992, p. 40]. In this content, the industrial site epitomizes various meanings of local residents and exploits the character of the place.

Theoretical discussions for the meaning of place can be found since in literature of the ancient Rome. However, the creation of modern cities has emerged debates comparing the terms of place and space. It could be emphasized that place creation is directly connected with environmental changes. As Pred notices place being is inseparable with physical world transformation [Pred, 1986, p.22]. The concept of place in archaeology and geography is mostly related to immovable space measured by appareance. Looking through a more active theory, place applies in various scales representing human actions [Vis B. N., 2009, p. 79]. As Pred affirms, place conceptualization is essentially connected with an area or locality [Pred, 1986, p. 5]. Giddens associates the term of place as a combination of locale and location, as it is not only a set of social interactions but also what continuously happens in the physical environment and it's contribute on historical context. Agnew makes a useful explanation of the above-mentioned terms, quoting:

> '*<u>locale</u>, the settings in which social relations are constituted; <u>location</u>, the geographical area encompassing the settings for social interaction as defined by social and economic processes operating at a wider scale; and <u>sense of place</u>, the local "structure of feeling". <u>Place</u>, therefore, refers to discrete if 'elastic' areas in which settings for the constitution of social relations are located and with which people can identify.*' [Agnew, 1987 & 2015, p. 28].

Scholar literature, refer to the sense of place as the spirit of place (*genius loci*), a term used by the Romans as the '*protective spirit of a place*' and noted nowadays in the theory of Norberg-Schulz (1980), implicating genius loci with a sense of place-making. Furthermore, Yi-Fu Tuan (1974) has accompassed this concept with the term topophilia, as '*the effective vond between people and place or setting'* [Tuan, 1974, p. 4]. From the geographical point of view, sense of place is expressed as:

> '*One's perception of the essential character of a place in which one resides or has resided, stemming from a personal response to the environment. Sense of place usually refers to perceptions of a neighborhood or city, but can also describe feelings about a larger region, state, or country*' [GIS Dictionary, 1999].

Through years, many authors have continued the discussion of sense of place, spirit of place [Steele, 1981; Cullen, 1961; Jammer, 1954; Conzen, 1966; Sharp, 1969; Tuan 1974, 1977; Lovercraft, 1984; Augé, 1992, 2008; Smith, 1992; Carter et. al., 1993; Casey, 1977; Jane, 2001; Thrift 2003; Barners, 2004; Westphal, 2007; Holt, 2009] genius loci [Norberg-Schulz, 1979], place identity [Rogaly B. et al., 2009] and placelessness [Relph E., 1976].

The American landscape studier Jackson associates the sense of place with a spiritual atmosphere, describing as follows:

> *Sense of place… in classical time means not so much the place itself as the guardian divinity of that place. ... In the eighteenth century, the Latin phrase was usually translated as 'the genius of a place', meaning its influence. ... We now use the current version to describe the atmosphere to a place, the quality of its environment. Nevertheless, we recognize that certain localities have an attraction which gives us a certain indefinable sense of well-being and which we want to return to, time and again* [Jackson J. B., 1994, p. 157–158].

In case of site conservation, Jiven & Larkhan evidence the importance of genius loci and the character of a place. Also, *the caracteristics that make any place of special interest and worthy of conservation should be examined* (Jiven & Larkhan, 2003, p.74). Russ et al. (2015) describes the sense of place including *place attachment* (emotional bonds between people and places) and *place meaning* (the symbolic meaning that people describe a place). It changes through time based on personal experiences and delineate further interacts with the surrounding environment. To understand the sense of place in urban context, it would be more beneficial to analyze the city's evolution due to various factors. Sense of place in cities, illustrate the combination of culture, history, environment, politics and economics [Adams et. al., 2016, p. 28].

Industrial heritage sites are important cultural symbols which can play vital role in cultural life of citizens. Their reutilization can establish a new tourist destination and influence the enhancement of this economical branch. It's their age, rarity and aesthetic characteristics which define the spirit of a place. Regeneration or reuse of industrial heritage sites should conserve the collective memory and sense of identity. The concept of collective memory was elaborated during the 19th century and developed more by Halbwachs (1992). As Cighi describes:

> '*collective memory is relevant to Crude Place (public memory can be enshrined in 82 monuments which may become physical landmarks even when their original meaning fades away), Constructed Place (because these representations influence how people thing and feel about the place) and Commodified Place (because these representations are generally informed by a national agenda)*' [Cighi C. I., 2008, p. 81-82].

Place identity is defined as '*a set of ideas that exist about an area known by a certain name*' (Huigen and Meijering, 2005, p.19). The sense of place is coincives with the meaning of events happened in the past which add value to the place significance and sense of place. Furthermore, Cighi determines place indentity as:

> a '*social construct, based on characteristics of the place and largely based on the past, but debatable, because it is attributed within and characterized by context (spatial and socio-cultural: norms, values, socio-economic factors)*'. Therefore, the sense of place is '*…. more*

relevant when it is strongly linked to a sense of identity for the observer' [Cighi C. I., 2008, p. 78-104].

At the end, it is necessary to evidence some general conservation policies aiming the protection of significance. As Lardner [Lardner H., 2012, p. 133-134] explains, tipical policies are followed by the subsequent taskes:

i. Maintenance (type of task, frequency of their requirement and the responsabilities)
ii. Conservation works (repair, restoration, reconstruction)
iii. Use (types of suitable uses or new uses)
iv. Code and standards compliance (guidance to meet authority requirements)
v. Statutory requirements (decision-making process and legal conformity)
vi. Risk preparedness (strategy to deal with risks from natural events or site security)
vii. Managing change (opportunities and constrains to make changes)
viii. Subdivisions or land consolidation (careful in land required for developing projects)
ix. Interpretation (the nature of heritage significance, interpret strategy of development)
x. Protocols (code of practice as archeological ones).

3.12 International Methodologies of Industrial Heritage Reuse

The recognition and preservation of industrial heritage in Europe passed to the necessity of promoting those sites. Hence, approaches for reuse of IH lead to various models which outcome was generally economic and social prosperity. Many European countries faced continually the problems of declined industrial ares, polluted sites, and new industries constusted in areas with no connection to the old industrial sites, low public awareness for the importance of this assets and unemployment. The redevelopment of underused industrial sites brout the necessity of better planning and legal policies, which consequently raised the citizen's living quality.

Reccomendations from ICOMOS and TICCIH regarding the protection and conservation of industrial heritage structures, sites, areas and landscapes, include [ICOMOS, 2011 p. 4-5]:

i. Adaption and implementation of proper policies, legal and administrative measures which express the correlation between the industrial heritage, industrial production and economy (i.e. intellectual property),
ii. Integrated inventories and lists of structures, sites, areas, landscapes their setting and associated objects, documents, drawings and archives or intangible heritage should be developed and used as part of these effective management and conservation policies and protection measures to ensure the mantainance of their significance, integrity and authenticity.
iii. In the case of active industrial structures or sites of heritage significance, it must be provided adequate conditions for their physical and economic sustainability. Their specific technical characteristics need to be respected while implementing contemporary regulations.
iv. As functional integrity is important to the significance of industrial heritage structures and sites, protection measures should be applied. Their heritage value may be accumulated or reduced if significant components are removed or destroyed.

Futher important principle presented in the 'The Dublin Principles' include [ICOMOS, 2011, p. 5-6]:

i. Adaptive use can be the most frequent and sustainable way of ensuring the conservation of industrial heritage sites or structures. New uses should respect significant material, components and patterns of circulation and activity. Specialist skills are necessary to ensure that the heritage significance is taken into account. Building codes, risk mitigation requirements, environmental or industrial regulations, and other standards should be implemented.
ii. Wherever possible, physical interventions should be reversible, and respect the age value and significant traces or marks. Changes should be documented.

iii. In case of prospective redundancy, decommissioning, and/or adaptation of industrial heritage sites or structures, the processes should be recorded. Their material form as well as their functioning and location as part of the industrial processes should be exhaustively documented. Oral and/or written stories of people connected with work processes should also be collected.

According to Fragner, adaptive reuse is a tool to pressure threatened values and presented as a sustainable development strategy [Fragner B., 2012, p. 110]. The protection and revitalization of industrial remains have direct influence in the surrounding environment.

Protection program methodology, as described by Cherry [Cherry M., 2012], include identification and description of the whole industry; data gathering in detail; examinations and reports; selection of what to protect; make consultations and suggestions on protection. In this context, Lin proposes the following steps of conservation process [Lin H., 2012]: historical survey of local inhabitants; long term trainings to community; evidence natural character of the area; readin of the industrial and cultural landscape and definition of industrial cultural heritage.

As Morin explains [Morin B., 2012], funding mechanisms used in Europe for brownfield regeneration are low-interest loans, grant aids, tax incentives (ex. reduction of taxes in case of rehabilitation of distressed areas), and donations (ex. Trade property rights for tax considerations and finance adaptive re-use programs). As Rypkema discusses [Rypkema D., 2009, p. 121-122], policies that can emerge to achieve economic development strategies are as follows:

i. Import substitution (create local market that cannot be purchased elsewhere),
ii. Modernization for comfort and safety without putting in danger the historic asset,
iii. Use heritage buildings as places of art and cultural events,
iv. Heritage buildings are usually intended to be transformed into new profitable environments,

v. The reuse of historic sites is a win-win game for all cities, and if each one offers different avtivities they can all benefit from the adaption process,
vi. Development of historic sites can be used as a strategy all over the world,
vii. Small and large projects of revitalization of historic areas can be implemented in accordance with public interest and possibilities,
viii. Conservation and revitalization projects can be implemented not only in economic growth but also in declining periods, providing jobs and local incomes,
ix. Heritage revitalization is a cumulative strategy impacting not only the local community but all the city,
x. Emerge of NGOs can be a significant part of the revitalization engine, as they can be effective in the cooperation between civli society and policy makers,
xi. Heritage conservation is a good way for modernization without loosing the local sense and particularity,
xii. Economic profits directly dipend with uniqueness, diversity and identity; elemets that can be found in protected heritage sites.

Reccomendations from the regional policy imply as follows [Directorate-General for Internal Policies, 2013, p. 47]:

i. European level: Industrial policy at European level should support international competitiveness and growth. In parallel, Cohesion policy should assist cities and regions to find pathways to industrial development and regeneration.
ii. Member state level: National industrial policies need to ensure resilience in the face of further potential crises by enabling cities and regions to develop diversified economic structures, notably through horizontal policy measures. This is especially important in Convergence countries, where Cohesion policy co-funds national industrial and economic development policies.
iii. Local and regional level: Strategies for cities and regions, especially those with a historic legacy of old industries, need to promote diversified

development, without over-fragmenting policy goals and investment. A narrow focus on individual industries (or one or two clusters) risks nourishing the declining areas of tomorrow. Cohesion policy programme strategies should reflect the need to build resilience against crisis.

Lastly, an interesting concept is the energy benefits in re-cycling buildings, lately discussed by Watson [Watson M., 2012, p. 136-141]. The performance of adapted buildings should be improved in order to attain energetical profits. Best practices that coud be mentioned are Tower Mills in Stawick, Scotland and Finlayson Mill, Finland.

3.12.1 Case studies selection

Case studies of industrial heritage reuse were chosen according to various topics:

i. Most successful international examples of industrial heritage reuse
ii. Building typologies similiar to the Albanian cases, taken in consideration in this study
iii. Regeneration actions similiar to proposed reuse of Albanian industrial sites, according to General Local Plans of relevant cities.

As result, were chosen 15 case studies, mostly located in Europe and some others located in China as many of Albanian insustrial complexes were constructed by Chinese investments.

Figure 2. Case studies selected [*elaborated by author*]

Table 2. International case studies selected.

No	Case study	Location	Previous use	Current use
1	Emscher Park	Ruhr, Germany	Coal mines; steel production; chemical, electrical, mechanical and engineering industries	Museum of industry, spaces for art and exhibition, park, visiting itineraries of ex-transport facilities and worker's dwellings; mix use, residential, education, creative industries
2	Waterfront of Barcelona	Barcelona, Spain	Urban waterfront industry	Sport facilities (Olympic Games), public spaces, art places, educational, service and retail industries, public and private housing,
3	Ironbridge Gorge Museum	UK	Metallurgy and mining industries	Museum, reuse of small manufactures,
4	Museum of Man and Industry at Creusot Montceau	Paris, France	Production of munitions and locomotives	Ecomuseums + local community
5	Montemartini Power station	Roma, Italy	ex-power station	Museum
6	Gamlestadens Fabriker Regeneratıon	Göteborg, Sweden	Heavy industries	Knowledge enterprises (conferences, summits, self-promoting events)
7	Dora Park	Turin, Italy	mechanic and metallurgy industries	Recreation park for cultural, sport, education and commercial activities
8	Vitkovice Ironworks	Ostrava in Czech Republic	Metallurgy and coal mining	Academic (congress center, university laboratories), museum, galleries, leisure, and cultural activities
9	Manchester	Manchester, UK	Heavy industry, coal mines, power station, and railway	Sport facilities; leisure areas; education laboratories; residential and commercial
10	Universal Studio	Osaka, Japan	Metal, transport and ship-building industries	New train station (which has altered old and new routes), green areas, commercial facilities, center for audio-visual businesses, high-tech industries, housing, hotels and cultural facilities
11	Gasometers	Vienna, Austria	Gas tanks	Mix use residential and cultural ares, including social housing, concert hall, shopping center and dormitories for students.
12	Bethlehem Steel Plant	USA	Heavy industry	Mix use for industrial, recreation, entertainment (National Museum of Industrial History and casino) and residential purposes
13	Shanghai	Shanhai, China	Metallurgy, chemical, mechanical, petroleum and electrical production	Commercial (resturants, bars and art studios), residential and recreative
14	Qinhuai District, Nanjing	China	Mechanica; industries	Creative industrial center and residential
15	Calan	Romania	Steel, metallurgy, mining, chemical, erngy production	Business park

Table 3. Description of case studies.

Case study	Urban	Natural	Environmental remadiation (waters, air, soil, waste)	Infrastructure (mobility)	Design	Social actions	Financial actions	Stakeholders	Positive actions	Barrier
Emscher Park	Industrial buildings transformed into museums, sport facilities, multifunctional center; old railtrack into footpath and artworks,	Protection of natural greenery	Collection and treatment of rain waters from old canals and drop into river (water recycle). Improve of old industrial channels	Construction of bridges and linking footpaths; ling of road network with bicycle paths; creation of parking lots.	Reuse of original waste materials to experience old lifestyle (as iron and red bricks)	Increase social liability	Local workplaces, sustainable enterprices, flexible economies and flexible management. IBA coordinated 100 projects	Local authorities cooperating with 17 municipalities, private companies, local community	Mantainance of old structures and transform for new uses by diversifying services (explotation of every building potential). Integration of industrial heritage with post-industrial facilities and park. Design of regional tour route.	
Waterfront of Barcelona	Mix land use, unification of urban area, reduction of density by 20%, create a range of housing variables, increase of quality in public space, brownfield	Preservation of landscape and include them in development projects	Recovery of seashore, sewage and easte plant, restoration of river and natural habitat	Investments in infrastructure. Pedestrian paths through the public center.	New high-rise buildings combined with regenerated ones. Symbiosis of classic and modern desing	Community-base programs, program for peoples living in slum, new public spaces	Use of public funds for regeneration of damaged old buildings, tax incentives or grants to refurbish properties,	Public authorities, private investors, universities	good capacity to manage flagship projects has been used as instruments of urban regeneration	very high redevelopment cost

	reuse; preservation of heritage and include in development projects						proper training to face social problems, community involvement			
Ironbridge Gorge Museum	Combination of open air museums with residential units, which are part of visiting tours. Offer creative learning programmes	Regeneration and protection of natural landscape (greenery and rivew)	Mangement of rivers, land stabilization	Limitation of trafic, more pedestrial paths, new car parking but very limited	Conserve and restore heritage buildings, use solar pannels, new street furnitures	Strengthen local community still living there,	Investments by trust, UK and EU funding	local authorities, private companies, national agencies, local communy, voluntaires	Protection of industrial and cultural heritage; Improve and conserve values of the place; Attraction of worldwide visitors	Safeguard local community's economy; intervention should not diminish the values of the heritage; floods, erosion
Museum of Man and Industry at Creusot Montceau	Complex of museal activities intersect with community's everyday life					Local community live in the area and maintain the museums	Investments by local government and later on by private bodies	Puclic authorities, private investors, local indusries, community involvement, voluntaires, specialists	Inclusion of local communitry, benefiting from the income of tourism	
Montemartini ex Power Station	Museum and exhibition space		Purification of air and reuse of old systems	Better access to the site. Part of urban regeneration program of whole neighborhood	Façade recovery and internal combination of steel structures with marble scultpures	Change identity		Public authorities	Emphasize unique heritage values; Reflect industrial development and technology	

Gamlestadens Fabrıker	Reuse industrial heritage buildings for media, commerce, houses and industry; Provide better access,			Improve area access	Combination of mix use and creative landscape	Improve social image of the site, improve safety. Community involvement in planning process	Private investment	Regional planning authority, developers, architects and community (mostly private funded)	Improve working and living conditions; Regeneration of heritage buildings, creation of comptetitive and dynamic areas	
Dora Park	Reuse of old chimneys, warehouses, coolind towers, still pillars and transformation onto a park for cultural, sports, educational and economic activities	Preservation and purification of Dora river. Integration of natural landscape with new uses. New green spaces	Water purification, self production of lighting for the park. Phyto-remediation of soil	Improve transport and access, better connection with city. New pedestrian paths throught the site	Combination of old structures with modern materials	Change of neighborhood identity, organization of traditional events; new public spaces	Free rent for organization of activities	Local governance, inhabitants, private investors, specialist, universities and NGOs	Accurate incorporation of previous and new uses, good stakeholder's cooperation, public information and inclusion, emphasize of heritage importance and values of these assets	High redevelopment costs, prive ownership, provide safe structures
Vitkovice Ironworks	Preservation of protected objects and sity's skyline, use of structures for university campus, businesses, housing and cultural purposes		Dismantling and cleaning of metal structures, stop of chemicals leaking, stop migration of pollutant to water streams	Street extension, better access	Steampunk design (combination of industrial machineries and aesthetics)	Give the area another vision and identity	founded by EU, Czech Republic, Vitkovice a.s. corporation and Lower Vitkovice Area Association	Local governance and private investors	Regeneration of industrial heritage and capitalization of assets.	not clear ownership, high environmental pollution level

Manchester	Accelerated development zones; Flexible planning, Renovation was part of whole city regeneration plan	Urban greening : open spaces, parks, reservio rs, pocket parks, green roofs and green walls	Air and air recycling, capture of carbon, flood protection, waste purification	Traffic reduction measures; New pedestrian and bicycle paths	Reuse of old buildings for new use, rather than destructio n (as happenne d in 1960-1970); Interesting design of houses; Luxury lofts	Foundings for new housing program; Encourage comminit y to use facilities; New working positions; Innovative businesses	Grants for public-private partnership, joint-ventures (mostly public funded)	Local government, state agencies, private investors, community involvement	Close cooperation between public and private sector, decentralizat ion of jurisdiction to city regions, intensificatio n of leadership skills; improve place quality; knowledge base industries	not clear definition of public/priv ate land, gaps in urban planning regulation, fear for investments , high clearing costs, high rents; polarization between north suburbs and city center
Universal Studio, Osaka	Application of land readjustment instrument,		Contaminatio n clean-up of brownfield (excavation and removal; in-situ cleanup)	Improvem ent of transport and urban infrastruct ure	Brand reclamatio n	Increased values of neighborh oods	Reuse sites by applying flagship projects and attracting fundings; use of real estate market as a positive opportunity; Subsidies for urban revitalizatio n and new businesses	State, city's council, private investments, community involvement (mostly public funded)	Good public-sector coordination for masterplan design, long vision regeneration programs founded by government and private sector,	

Gasometers	Reuse of old structures for residential, commercial and cultural use by adapting the existing areas, construction of a new modern building, use the inner space and creation of perimetral coutyards.		Clean-up of bronwfields;	New public transport, extension of existing lines	Recover old facades and reuse inner spaces, use of existing spaces as residential units, new tall constructi on linked with old structure	Create new neighborh ood identity	Mostly public investment; funds for preservation of heritage	Public authorities and private developers	Sustainable use of historical buildings by using accurate design. The preservation and reuse program have welcomed new functions and evident the former function.	high redevelopm ent costs
Bethlehem Steel Plant	Facilitation of procedures by direct public access of land and several regulations regarding environment and planning.		Soil excavation and transportation to landfill	Improvem ent of public infractruct ure and access	Reuse of old industrial buildings for museum and cultural activities; Constructi on of new commerci al and residential units	Good cooperatio n of cooperatio n of communit y; Improved public spaces	Brownfield redevelopm ent from developers by using financial incentives,	Commonwe alth of Pennsylvani a, Northampto n Country, US Department of Commerce (grants), private entities	Efficient cooperation of government with developers for clean-up of contaminate d lands (most companies does not prefer the involvement of third-party liabilities, which charge about 20% of developer’s profit, to fund the	High pollution of the area

									predicted remeditation costs),	
Shanghai	Reuse for commercial, residential, recreative spaces and indusrial parks	Regenerate riverside and protect natural landscape	Clean-up of bronwfields;	Improve mobility and access	New landmark	Increase industrial remain values	Give areas by low rent to designers which created a new artistic neighborhood;	State, private investment, community involvement	Government icluded into planning for transformation into industrial parks;	lack of fundings, limited possibilities for reuse and achievement of technical standards
Qinhuai District, Nanjing	Housing layout was changed to increase building intensity by adding stores to the existing buildings and costruct new high residential buildings.	Add vegetation. Create waterfront landscape		Construction of metro station and bus line. Adjust existing parking lots and road network	Subdivision of large space for dwellings. Proper adaption of residential units in respect of entrances, circulation, daylight and morphological characteristics	New squares and communityr facilities; increased value of place	tax reductions, special fundings and favorable policies (renovation without paying taxes or rents)	Private investor, local governmnet, community, artists	Make livable industrial buildings.	High rent, high renovation costs
Victoria metallurgical complex, Calan	Transformation into an industrial park, business incubator, conference halls, offices and green areas		Decontamination of land: in-situ oxidation (air injection) and soil vapor extraction	Improve urban infrastructure, better connection with city	Destruction of old structures and construction of new ones		EU fundings	Local government, proffesionals	Sustainable development of local economy	

3.12.2 Reuse of Industrial Heritage sites for Toursim

Nowadays, many successful practices of industrial tourism can be found worldwide. Best practices may include the IT in the city of Wolfsburg, Germany (in particular the Volkswagen company site), the city of Köln, Germany (varios type of industries), the Pays de la Liore in Paris, France (particulary Nantes and St. Nazaire), the city of Torino, Italy (mostly known by Fiat car industry) and the city of Rotterdam, Netherlads (port and industrial sites). In the following chapter will be described one of the most successful practice in the models of industrial tourism, the Ruhr valley, in Germany.

Case study: Emscher Park in Ruhr, Germany

Ruhr region is located in the western part of Germany, considered one of the largest urban areas in Germany. The district is rich of hidrological sources and known as the industrial valley. The early industrialization became at the 18th century with the textile and heavy industry. By 1850 in the region operated 300 coal mines, from which coal was exported worldwide [Directorate-General for Internal Policies, 2013, p. 58]. The Ruhr area was the industrial region of coal mines, steel production, chemical, electrical, mechanical and engineering industries. With about 3500 worker's dwellings, the urban organization was based on labor division.

During the mid of 20th century, the industrial era was followed by closure of many factories. About thirty years later, the government started discussion on management and regeneration of the area (*Fig. 3*). In this context, in 1989, was founded the Agency for the Ruhr Basin called "International Building Exhibition" (IBA). The regeneration process was driven by the idea of industrial heritage tourism, aiming '*economic boost, creating new jobs, revitalizing depressed areas, building new community, generate vibrant atmosphere, prompt innovation and creativity*' [Preite M., 2012, p. 107]. The Ruhr region is now the place of 'High-tech instead of blast furnaces, collieries as new venues for cultural events, party district instead of workers' pub [Colzolaio F., 2012, p. 14].

Figure 3. Smelting plant Westfalenhutte [Keil A.; Wetternau B., 2013, p. 39]

Figure 4. Emcher Park [Source: Google Earth, 2016]

The task intended to preserve and find new uses for the old industrial sites. Many old industrial structures (made of steel and concrete) and pipelines were turned into touristic attraction. On the other hand, various monuments were inventoried and converted into museums. Three types of industrial tourism attractions were created:

- Ex workhouses transformed into museums of industrial history or into spaces of art and exhibitions,
- Transformation of ex-transport facilities into visiting iteneraries,
- Ex worker’s and employer’s dwellings used as part of touristic visits.

The district was also transformed in mixed use zones (i.e. Weststadt), residential quarters (i.e. Grugacaree), green belts (Krupp-Gürtel), educational functions (i.e. Grüne Mitte university neighborhood), creative industrial areas with mixed use (i.e. Scheidt’sche Hallen, Zeche Bonifacius and KU 28), sport facilities (the sports landscape in the Ruhr Metropolis).

One of the most representative areas, is the Emcher Park which was turned into a river park (*Fig. 4, 5, 6*). The project consisted on brownfield redevelopment, conservation of industrial heritage, revitalization of landscape by connecting isolated areas, re-shaping zones and providing green corridors, paths and public spaces. In general, the urban regeneration of the district provides the harmonization of space with structures and does not focus on the renewal of one or several buildings.

Another interesting industrial archor point is the Zollverein mine complex which has become a regional landmark. It was reused for exhinitions, artistic and sport activities, and museums (*Fig. 7, 8*). Public awareness became to increase regarding the knowledge, acceptance and importance of the remins of the industrial era. In 1999 was created the tourism network of industrial heritage in area called "Ruhr Industrial Heritage Route". In 2010 the area was honored as "European Capital of Culture". The tourism re-development resulted in an investment of €2.5 billion, founded 80% from public sector (1982 – 1999). The creation of Ruhr Tourism began in 1998, until 2009, owned by the RVR, combining tourism marketing with comprehensive events [Directorate-General for Internal Policies, 2013, p. 59].

Figure 5. Project Landschaftspark Duisburg Nord by Latz + Partner, Emscher Park, Ruhr, Germany [*photo by Latz M.*][4]

Figure 6. Play points in old industrial structures, Emscher Park, Ruhr, Germany [*photo by Latz M.*][5]

[4] Latz + Partner., 'Project Landschaftspark Duisburg Nord'. Online: http://www.landezine.com/index.php/2011/08/post-industrial-landscape-architecture/ (last visited on 10 August 2016).

[5] Latz + Partner., 'Project Landschaftspark Duisburg Nord'. Online: http://www.landezine.com/index.php/2011/08/post-industrial-landscape-architecture/23-play-points-mollerbunker/ (last visited on 10 August 2016).

Figure 7. The Eiffel Tower of the Ruhr, part of The Zollverein Coal Mine in Essen, Germany [*Chandler J., 2008*][6]

Figure 8. The Zollverein Coal Mine, Essen, Germany [*phtot by* J*ochen T.*][7]

In general, heritage in Ruhr was used as a mean for landscape recovery and economic vitality. Industrial heritage Tourism was not only used as an economic tool but also an instrument to express the history of industry [Ebert W., 2012]. The Ruhr industrial tourism model has shown to be successful. Much of that success come from intensive and ongoing market research, market linked branding policies, excellent web sites[8], the combination of industrial heritage with creative activities (sport, theatres, shopping, events, parks) and a strong “can-do” mentality [Directorate-General for Internal Policies, 2013, p. 60]. In the context of globalization and economic competition, the Ruhr motion has been ‘think globally and act regionally’ [Keil A., Wetternau B., 2013, p. 95], in the sense of regional policies and actions to attain further sustainable economic development of the area.

Industrial tourism is a relatively new approach to management of industrial heritage sites. One of the latest definition of industrial tourism, is cited in Feng R.X. et. al book, as:

[6] Chandler J., ‘Zollverein Industial Complex’. Online: http://people.umass.edu/latour/Germany/jchandler/ (last visited on 10 August 2016).
[7] Jochen T., ‘Zollverein yesterday and today. Specials and Events’. Online: http://www.zollverein.de/info/kunst-und-kultur (last visited on 25 August 2016).
[8] Refer to http://www.ruhr-tourismus.de/

a type of tourism which involves visits to operational companies and industrial heritage; it offers visitors an experience with regard to products, production processes, applications, and historical backgrounds' [Feng R.X., et al., 2012, p. 1].

Through time the definition of industrial tourism has evolved from the idea of selling a factory at the best price, to the visitings in operating and non-operating industrial sites [Frew E. A., 2000; Marcon et al., 2000]. In his study, Frew [Frew E. A., 2000, p. 200] suggests that industrial tourism attraction have experienced an increasing demand and they could be visited by offering various tours, but managers *should consider the age, education backgroung and experience of the virisors*. As shown in the image below (*Fig. 9*), Soyez explains the model for categorizing industrial tourism products [Soyez D., 2016, p. 58]. As the arrow shows the elements which have market the industrial landscape through time, in the horizontal axis are posed the cultural heritage and the market. Meanwhile, in the vertical axis, the arrow goes from the location to the destination. Hence, industrial heritage routes and historical and industrial equipment / industrial relics, industrial museums combine locations with cultural heritage. Visits in producing plants are a combination of location and market, while drand parks are examples of coordination market and destination. At the end, industrial adventure landscapes and total landscape museums are examples of destination in the cultural heritage.

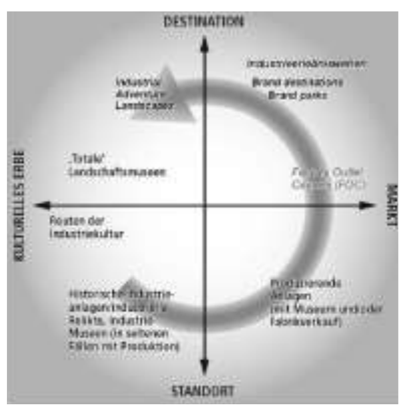


Figure 9. Two-dimensional model for categorizing industrial tourism products [*Soyez, 2013 (with approval of the author)*]

The benefits of industrial tourism are economic growth (more employment from local community, more income from tickets and souvernir sales, regional economical profits if the industrial heritage sites are part of a large itinerary of city's touristic attractions), increase of tourist supply, ensurrement better marketing of product, increase of factory's reputation (operation licensing in case the company is still working), increase the image of the place and the competitiveness of the city (industrial sites will not been seen as profitless and depressing areas), provision of direct contanct with the clients and increasement of attractiveness for new workers and better the working mood of the existing ones. The potencials that IT exploits are unicity and image, hence a sense of identity. On the other hand, various disadvantages of industrial tourism, can make the companies/state doubtful on the application of this methos, as: delay of production process and encroachment of confidenciality (if company is still operating), overusage of the assets (this could bring more damages to industrial heritage objects on risk) and the seasonal typology of tourism. However, some of this factor could be counter-beneficiaries in case of good managing shcemes and visualization of long time benefits.

An operative industrial tourism scheme could work very well in a PPP cooperation (public-private partnership). Generative role in this cooperation play residents, as their perception of the place is transposed in the image they transmit in the national and international level. As described by Bramwell and Lane [Bramwell B.; Lane B., 2000] the benefits of collaboration in tourism planning include: involvement of various stakeholders may introduce diversity and improvement of previous situation. Furthermore, it may increase the acceptane level, resulting in effective implementation. In addition, benefits consist on involvement of government for tourist regeneration producing profitable knowledge, innovation and policy-making decisions. Furthermoe, individuals included in the process tend to imptove negotiation skills, be more productive and be more likely to implement the projects. The process may increase the awareness of sustainable development, sensitive local changes, further communal profits and assure more effictiveness use of products.

On the other hand, possible uncertainties may raise as a result of lack of experience in large schale of cooperation incolving a wide range of stakeholders, lack of experience in planning and management of industrial touristic sites, lack of will in collaboration at all levels, non consideration of residential needs and, in general, local proffit for the purpose of national interest (as result, public interest may not be properly protected), lack of clarity in future management policies and prosperity, long time reuired during the process and difficulties in implementation process.

Finally, there are many positive practices to take as an example of industrial tourism schemes. From the factory visit, landscape park, provision of online informations, art activities, aranges of combined tours and other interactive activities. But, most important is to implement the appropriate policy that fits to the best interest of local and national community.

3.12.3 Reuse of Industrial Heritage of waterfronts

Case study: Regeneration of waterfront, Barcelona, Spain

Barcelona is located in the north-east part of Spain, with direct access to Mediterranean Sea. During the ’80, Barcelona experienced significant changes because of transformation from industrial to service and tourism facilities. Highlighting coastal line, remarkable beaches and maritime world, Barcelona has attracted tourist and investors from all over the world. The starting point of these transformations comes from 1986, when Barcelona got the opportunity to held Olympic Games in 1992. The developments for six years transformed city’s view and urban structure representing a modern, aspirated and competitive city. The development plan was seen as a long-term instrument to create an improved city offering mix-use neighborhoods, better infrastructure, renewed public spaces and revitalized waterfront area.

During the 1920, Barcelona was facing rapid growth and industrialization was integral part of this development. Due to rapid urbanization and reduction of control by city planning, until 1970 Barcelona suffered housing shortage and inflation. The city degraded terribly and the port was moved from the old location to Zona Franca, newly created with more facilities and expansion possibilities. The deterioration of the historic part located at the waterfront, called Ciutat Vella, lead to massive population movement from 1960 until 1980. The area could not offer any better environmental conditions, housing structures were very dense and in bad conditions and there was lack of services. Hence, the city council decided to regenerate urban structure of the eastern part of waterfront by bringing down one part of it.

During 1980, after political changes, the city's urban policy was focused more on soft interventions. The rehabilitation of waterfront, proposed by two projects as Moll de la Fusta and PERI of Barceloneta, was part of the overall development project of Ciutat Vella. The aim was to provide better living conditions, provide more working opportunities and promote the city into national level by giving more access to the sea. The project Moll de la Fusta intended to revitalize the area between the waterfront and the historic city, by proposing new services and redeveloping port facilities. Hence, were constructed logistic port facilities, maritime school, institutes etc. In order to give more access to the sea, old warehouses between Barceloneta and Ciutat Vella were demolished and was created new water sport club and other similar activities [Socrates, N., 2011, p. 7]. On the other hand, the district of PERI in Barceloneta was specially designed by a regeneration plan. The idea was to provide better buildings landscape to waterfront view and recover the overall squares.

After Barcelona winning the bid for 1992 Olympic Games, in 1987 was published the project of "New Centrality Areas". The idea of this plan was to create a polycentric city structure of 12 energizing points, which will emerge activities and revitalize the area. Part of the program was the transformation of industrial site of degraded waterfront into the home of Olympic Games. This strong marketing strategy was used to promote Barcelona in national and international level.

As the port facilities were moved away near the city center, the old port was the base of light and heavy industrial activities. In the mid of 1980, the city council approved the regeneration of this area by constructing new district of Nova Icaria and the location of Olympic Village [Socrates, N., 2011, p. 7]. The uniqueness of this plan was the intention to combine the past and the future in one area. The overall structure of the district should be as constructed by the plan of 1895, but buildings could be regenerated or redesigned by architects in contemporary language. The transport change structure proposed the conversion of Moll de la Fausta, one of the most occupied routes, into a promenade [Desfor G., et al, 2011, p. 83]; segregation of traffic by promoting public transport. The city has used one of its most potential elements to make possible urban renewal: the sea. The role of water is very important to increase life quality and emphasize local identity. As many other cities, Barcelona has combined the waterfront project with renewed public space. This creates uniqueness of place and makes possible intense competition in national level.

According to Barcelona Field Studies Centre S.L. the urban regeneration model included:

- construction of new buildings for international events which could be used not only at the time of the event but also for the city everyday events;
- interventions were made according to demands of community;
- building density was lowered by 20 %;
- public buildings were carefully studies for where to be placed because they should regenerate the area without duplicating functions;
- ex-industrial heritage is transformed into public buildings for libraries, schools, cultural centers etc.;
- mix-use functions include not only services but also industries, private and public housing, and other leisure and scholastic or scientific facilities;
- creation of open spaces which will bring to social mixing;
- flexible planning which encourages innovative design;
- renovation of buildings at poor condition into new high standard ones;
- tax incentives for renovated properties;
- use of school facilities until late evening for public use.

Another important project focus, was the brownfield sites located in the second row, called the Poblenou district. The area is the location of high-technological enterprises and innovative centers (business incubator, start-ups, community center, library, university). The proximity to the sea is a privilege that offers good redevelopment opportunities. The redevelopment of waterfront implied the use of some small scale urban strategies, called “acupuncture”, which were later implemented in other modern coastal cities. This instrument provides small scale interventions in order to integrate long term developments. Important intervention was the project 22@BCN (the Metropolitan Master Plan for the refurbishment of the industrial areas of Poblenou***)***, in 2000 (*Fig. 10, 11*), with the intent of revitalization of industrial zone of Poblenou district. The first important step was the catalogation and legal protection of many industrial buildings of this area. Later on, in 2010 was created a touristic guide to visit and promote the industrial heritage assets of this district.


Figure 10. Poblenou old industrial building
[*https://commons.wikimedia.org/wiki/File:Poblenou_old_industrial_building.jpg*]

Figure 11. Traditional landscape of Poblenou Neighborhood
[*http://www.oirealtor.com/blog/en/present/poblenou-neighbourhood-recovers-its-industrial-heritage/*]

On the other hand, part of old factories was given to private developers to re-use as apartments, offices and hotels. Low price lofts were good possibilities to promote the values of ex-industrial areas and turned to attain good economic profit. Furthermore, the Visitor’s Guide of 22@Barcelona District is a good model of touristic promotion.

From the economic point of view, the urban redevelopment of Barcelona’s waterfront is based on change from deteriorated industrial sites to service and knowledge based facilities. The city has always been the center of attraction for famous architects like Le Corbusier, Antonio Gaudi and many other artists; pointing out Catalan identity with their works and projects. The redevelopment project has posed Barcelona in competitive position at international level as port-industrial renewed city. Policies followed for this process have generated economic profits by attracting important investments and integrating them in original urban policies; being a good example to be followed by other similar cities. Architectural effects of distinctive design combined with flagship events have been the basis to make city’s marketing, attracting public and private investments. New private sector attitude partly leads urban regeneration creating the idea of an ambitious city with great consensus between institutions and public-private sectors. The “Barcelona model” is an expression of this commercial, economic and professional approach gaining advantages in competition between cities [Desfor G., Laidley J., Stevens Q., Schubert D., 2011, p. 85]. The following picture *(Fig. 12)* illustrate a view from Google Earth in 2001 vs. 2016, displaying urban transformation during two decades.

Figure 12. Poblenou [*Source: Google Earth, 2001 vs. 2016*]

3.12.4 Reuse of Industrial Heritage sites for Museums

The adoption of industrial heritage for museums was one of the fist approaches since the discipline arised. Chellenges delt with the reuse of these assets or sites when they may be still in use. In some cases, in practice was realized by making exhibitions in a part of the building, so just a small 'show' without full involvement of the public with the monument. By time, many interesting exaples have shown to be successful and widely accepted.

The first example is the Ironbridge Gorge Museum, which involves the reuse of a bridge still in use and wined the first place at the Museum of the Year Awards in 1977. Following, very good examples of ecomuseums include the Museum of Man and Industry at Creusot Montceau. The concept was presented by Riviere and Vairne [Riviere G., Vairne H., 1970] aiming to *combine tangible objects, sites, and built structures with the traditions, practices, and customs associated with intangible or "living heritage"* [Heritage Saskatchewan and Museums Association of Saskatchewan, 2015, p. 7]. These museums represent two diffent management cases: Ironbridge is invested by a trust and the main interest is the attraction of worldwide visitors; on the other hand, the initiative of Creusot Montceau consists on inclusion of local community which participate in the creation of museums and live in these comples benefiting from the incomes of tourism.

Negri divides museums in the one of influence and of renewal. The concept of museums of influence was firstly presented by Hudron [Hudron K., 1987], which he considered to be innovative and have had a direct impact on other museums [Oliver V. B., 1996, p. 188]. On the other hand, museums of renewal involve the reuse of abandoned industrial areas by museums. A short list of the above described include [Negri M., 2012]:

<u>Museums of influence</u>:

- Ironbridge Gorge Museum, UK.
- Brunel's SS Great Britain in Bristol, UK.
- Ecomusee de la Communaute Le Creusot Montceau, Paris, France.

- Museum of Industry and Work of the Micheletti Foundation in Brescia, Italy.
- DASA, Dortmund, Germany.
- Textile and Industry Museum (TIM) in Augsburg, Germany.
- Volklinger Ironworks, Germany.
- Herring Museum, Iceland.

Museum of renewal:

- Museum of Science and Industry (MOSI), UK.
- Industrial townscape in Finlayson, Finland.
- Museum of Science and Technology of Catalonia, Spain.
- Original Siemens Museum, Munich.
- SantralIstanbul old electric power station transformed into Energy Museum, Turkey.
- Salt Mill and worker's colony in Saltaire in Bradford, UK –first conversion in art gallery, then more funds came and helped for repairmen.
- Perth or Stanley Mills in Scotland converted in museum by a successful cooperation of private sector and public fundings.
- Clot del Moro cement museum, Spain. The 20th century the Portland cement factory in Barcelona was abandoned in 1975. After 30 years, it was re-opened as museum to exhibit cement productions.

Case study: Ironbridge Gorge Museum, UK

The Ironbridge Museum Trust was established in 1967, operating in 35 historic sites from which 10 are museums. It was the place where the metallurgical and mining activity has started, in the 17th century. The trust has played an important role in the revival of site and owns some of the most important remains. Many of the factories have been restored and part of the museum's itinerary include the information of public for the history of industrialization of the area, peoples who have worked and lived there and their life stories, and exhibitions of working tools and facilities. Furthermore, the trust has helped in the reopening of many small manufactures in the old factories.

Ironbridge Gorge has been listed as a World Heritage Site since 1986, composed by various remains of Britain's Industrial Revolution in 18th century. The communities that live today (of about 4000 inhabitants) have been integral part of the management plan, establishing policies to generate profits for local residents. Furthermore, its aim was to conserve and improve the outstanding universal value of the place, to provide sustainable tourism and to increase public awareness of values of cultural and industrial heritage (simulate active learning). As described in the Irobridge Gorge World Heritage Site Management Plan, key issues that form the basis of Management Plan include preservation of special character of the WHS, access and visitor management, land instability, management of the river and banks, WHS management structuresm, information management, planning and policy framework, research into the history and management of the WHS [Ironbridge Gorge Museum Trust, section 4, p. 2].

The land is owned by many local owners and other major organizations like Ironbridge Gorge Museum Trust, Ironbridge heritage Foundation etc. (Fig. 12, 13). The management agencies involved local authorities, private companies, national agencies and local communities; realized through individual, EU and UK funding. The successful model of open-air museums, as described by Blockley, is popular because of '*aim to recreate an entire way of life, using relocated buildings and collections as stage sets for their costumed interpreters*' [Blockley M., 1999, p. 149].


Figure 13. The Iron Bridge & Tollhouse [*Ironbridge online site*]

Figure 14. Ironbridge, UK [*Source: Google Earth, 2016*]

Case study: Museum of Man and Industry at Creusot Montceau, Paris, France

The concept was inititated by Varine H. and Riviere G for the development of ecomuseums. The area has been one of the most important industrial zones in the 18th century, known for the production of munitions and locomotives. The town of Le Creusot and its neighbor Muntceaoi-les-Mines, decided to combine with fourteen other adjacent communes and form the Urban Community of Le Creusot-Montceau-les-Mines as a typology of Historical Museum [Jeannot-Vignes B., 1976, p. 163]. The site has spread structures, but the most important ones are two ecomuseums and the local communities, with a total of about 150000 inhabitants [Smith M. K., 2003, p. 97]. The inspiring moto of de Varine "*instead of being there for the objects, museums should be there for people*" [De Varine H., 1976, p. 131], was applied in a new version of museums which:

> *would be non-discriminatory, demodratic and relevant information center and public meeting place, in which all members of a certain social community could participate and in which they could feel represented* [Harbertsma M.; van Stipriaan A.; van Ulzen P.; 2011, p. 135].

The result was a complexity of museal activities with community's everyday life, taking in consideration in first place the interest of local residents (in confront of globalization effects). People could feel more confident of their historical assets and be active in the everyday's activities and embrace a strong sense of community (Fig. 15-17).


Figure 15. Factory Creusot, 1881 No. 60 [Photography of *Ch. Lallement, Montreuil*]

Figure 16. Factories, Le Creusot [Source: *Google Earth, 2016*]

Figure 17. Production sites in Le Creusot [Soruce: http://ecomusee-creusot-montceau.fr/spip.php?rubrique68]

Case study: Montemartini Power Station, Roma Ostiense, Italy

The ex-Thermo Electrical Station Giovanni Montemartini is located in the oldest industrialized area of Rome. Constucted in 1912 it was the first public power station in city, using some of the most modern machineries of the time. It was functional since 1963, when part of the implant started to decade and for the ongoing twenty years it was not in working conditions. During 1980, the Municipal Water and Electricity Company organized partial restauration of the area and old machineries, transforming into a museum. Later on, in 1997 was opened an exchibition of roman sculptures, temporary transferred from the Capitolini Museum which was being restructured[9]. The success of the exhibition ended up in announcement of this museum as house for permanent art exposition. Actually, the museum offers an interesting itinerary, passing throught art sculptures and old power station machineries and work tools. Internal structure of buildings and machineries of the old central station are intentionally left visible (*Fig. 18-19*).

The regeneration project has emphasized the unique values of heritage, reflecting the industrial past and technological developmnets of country. Becomes so the shipyard of Roman Industrial Archaeology, this industrial forum is recognized as cultural heritage

[9] For more information refer to the online site of Montemartini Cental: http://www.centralemontemartini.org/

[Fiore A. D., 2011, p. 11]. The following (*Fig. 20*) is illustrated urban change of the Montemartini site, during two decades.

Figure 18. Montemartini Central, 1924 *(Online: http://archeologiaindustriale.net/wp-content/uploads/2014/01/Centrale-Montemartini-1.jpg)*

Figure 19. Machineries hall, Montemartini Central *(Lalupa/Wikimedia, Online: http://www.atlasobscura.com/places/centrale-montemartini)*

Figure 20. Montemartini Central *(*Source*: Google Earth, 2001 vs. 2016)*

Montemartini Museum is a successful case of great synthesis between antic, industrial and modern age. The project itself in part of urban requalification of the oldest industrial area of Rome (including the Slaughterhouse, the Gasometer, port facilities, the former Mira Lanza and the old General Markets) also with arrangement of university buildings and construction of Science City [Indusrial archeology online site].

3.12.5 Reuse of Industrial Heritage sites as Creative Areas

Case study: Gamlestadens Fabriker Regeneratıon, Göteborg, Sweden

Göteborg is one of the most important city in Sweden, located on western coast. The city has rich hydrological network as Göta Älv River passes through the city and pours directly to the Nordic Sea. Since the 17^{th} century, when it was founded, Göteborg has served as trading center for Nordic area. The economy of 18^{th}-19th century was leaded by East India Company coming to a significant industrial zone [EAHTR, 2007, p. 44]. The city is well known for being present international companies as Volvo, Astra Zeneca, Saab Ericsson Space, Hasselblad [European 8, 2006, p. 25] etc. Following the footsteps of nowadays development, Göteborg is transforming heavy industries into knowledge enterprises as conferences, summits and self-promoting events. Shifting process towards logistic and knowledge economy has brought to life many revitalization projects, one of which is the upgrade of ex-industrial site located in the northern part of the city. There are located some of the most important and oldest industrial buildings as ex-textile factories, power plant and workshops [EAHTR, 2007, p. 50]; with a total industrial area of 62000 sq m. Developers are faced with some difficulties as the change of building use and the positioning of site in an important zone. The solution should involve an adequate study of quality, its large dimensions and the integral participation of tenants.

The regeneration project of Gamlestaden site, also called Nya Lödöse, implies the change of ex-industrial fabrics. The site is located in the old city, as during the 17^{th} century the citizens moved west to the coast to the new city. In 1729, the Swedish East India Company constructed a sugar factory, which is now considered the Göteborg's oldest industrial building [EAHTR, 2007, p. 50]. About one century later, the building was used as a cotton mill by Rosenlunds factory of textiles [EAHTR, 2007, p. 50]. Through years, Gamlestaden Fabriker were specialized in spinning-mill products, cotton weaves and fishing nets [Radhuset Arkitekter AB & the City of Gothenburg, 2011, p. 33]. They extended their production until 1960, at the textile crisis. At this time, the restructure of textile industry lead to the bankruptcy and closure of the company, up to its sale during 1980.

Gamlestaden area is part of the old industrial city site, which is being transformed into culture, educational, leisure and media center. The river Säveån divides the site in two parts [Europan 8, 2006, p. 25]. Land ownership is by town and partly by private landowners, Swedish insurance company SPP acquired the site in 1990 [EAHTR, 2007, p. 50]. The regeneration project involved preservation and repair of old industrial buildings, propose new use for them, provide better access to the area. This strategy should improve social image and bring dynamic working and living life. One of the most visionary proposals, as to include a media center, turned out to be very successful.

Renovation plan of the Gamlestaden area is part of the strategic development plan of Göteborg city. The project came as a result of close collaboration of different stakeholders like regional planning authority, developers, architects and new tenants. The uniqueness of the regeneration process is that private sector funded almost all project costs.

The developer's approach was to find new mix-use for buildings, the repair of old ones, improve the access to the zone and provide better landscape, green areas. Most of existing buildings were out of function for a long time, being in poor state and in need of immediate repairmen. The plan needed to assure economic, social and environmental sustainability. The idea was to create new meeting places, provide better access to the river and other zone connections, make better use of public transport and promote cultural and social local values. By this approach local authority aims to make this area more livable and vital, not only for residents but also well known in national and regional level (Fig. 21-24).

Figure 21. Gamlestaden Fabriker *[ARKEOLOGISK FÖRUNDERSÖKNING. Göteborg 218, Nya Lödöse, Gamlestadens Fabriker. p.1, 2014*]
Figure 22. Gamlestadens Resecentrum - the future transport centre *[Platzer Fastigheter, year-end report. p.2., 1 January-31 December 2014*]

Figure 23. Gamlestaden Fabriker *(*Source*: Google Earth, 2001 vs. 2016)*
Figure 24. Gamlestaden apartment houses *(*Senior Member Architects AB, Online: http://www5.goteborg.se/prod/fastighetskontoret/etjanst/planobygg.nsf/vyFiler/BN11-0489/$File/GAJD_GF_3.jpg?OpenElement/*)*

The first proposal included the idea of using most of old buildings with new offices. After taking in consideration all stakeholder’s ideas and making calculations of the high cost of demolition of current buildings, they come to the awareness of the huge significance of industrial heritage. Cultural, historical and economical values could be a good starting point to approve the reconstruction of these buildings and reuse some of them for industrial purposes, media, commercial and mix use building houses. Special attention was given to the detailed chronological analysis of old historical buildings, highlighting their remarkable values. According to this was decided which of them should be redeveloped or refurbished, in order to bring to light place identity.

Göteborg is a growing city with clear picture of future developments in terms of strengthening its unique heritage as industrial assets and natural environment. The plan of regeneration of Gamlestaden Fabriker attracted many industries. Around 70 companies have moved to the area, 14 ex-industrial buildings were brought to use and about 1200 new jobs were created [EAHTR, 2007, p. 51]. Hence, the site was nicer and vital, a widely preferable are to live and work in.

One of the most difficult issues was the careful regeneration of old industrial buildings. Their sensitive design and respect of each unique character have result to success. Place identity was the key point to generate sustainable activities and mobility. Furthermore, the combination of various proposals from specialists and tenants have been well implemented in project.

This project could be used as a good example for other similar cases all over the world. Some important lessons from this process could be kept in mind for future projects.

i. First of all, city's government and its citizens should have a clear vision of necessary interventions, which will increase availability of private funding.

ii. Secondly, the collaboration of stakeholders like local authorities, private developers, specialist and inhabitants have result to be very successful in terms of providing a comprehensive project, funding budget and updated marketing strategies. Furthermore, the involvement of tenants could increase the sense of commitment for the area resulting in better behavior in relation to the surrounding environment.

iii. Thirdly, chronological ranking of old industrial buildings can give a better understanding of the importance of historical and industrial built heritage, thus, highlightening and promoting remarkable forgotten values.

iv. Fourthly, the interaction between new development, distinguished design and good marketing strategies lead to broad valorization and recognition of the area.

v. Lastly, the idea to create a more sustainable environment by proposing mix-use buildings turned out to be successful by offering vital city life and creating a positive image of the area.

3.12.6 Reuse of Industrial Heritage sites for Cultural Activities

Many worldwide successful examples have experienced the reuse of industrial heritage sites for cultural activities. One of the most well-known examples is the revitalization project of the Ruhr valley in Germany, transformed to Emcher Park. The site was one of the most important of coal and steel industrial ones in country. The process brough in investments from private companies, governmental entities and EU fundings. Principles that driven the adaptive re-use were: restrictions on utilization of underused industrial sites for industrial purposes, insurance of sustainable techniques for life extension of this heritage and eco-friendy utilization of the structures.

Case study: Dora Park, Turin, Italy

Located in north Italy, Turin was industrialized since the 18th century, but the peak reached at the end of 19th and beginning of 20th century. Fiat factories, operating for metal proseccion and production of mechanical parts which were used in Fiat automobiles, promted the extension of other industrial activities in the sorroundings. Le Michelin was another important mechanical complex for production of tires. The National Officine Company Savigliano constructed and repaired railway equipments and, later on, manufactured electrical machineries. Giovanni Paracchi compex used to produce floor carpets, in a full textile process. After 1980, all these industrial factories went out of function.

Since 1995, city council made plans forreuse of these brownfields. The urban requalification program of 1998, was focused on an area of about 40 ha composed of four major sites: Michelin, Vitali, Ingest and Valdocco. The project objective was the revitalization of the area highlighting natural landscape and changing neighborhood's identity. The action pillars include riverside integration, transformation of existing site and better connection with the other parts of the city.

From the architectural point of view, the right use of materials and desing have created interesting interventions of industrial structures (Fig. 25-29). Water purification and reuse is part of ecologycal system because it is used to produce electricity for lighting the park through photovoltaic panels. Purification of contaminated soil was performed through phyto-remediation techniques. The procedure includes: on-site riddling of the excavated soil; soil characterisation and remediation tests; removal of the bio-available portion of the metals; mixing soil with compost and spreading; two years of in situ pilot remediation testing; high-density planting of poplar clones; plantation management with on-site production of chips from biomass [Rampi C., 2006, p. 31].

Figure 25. Old site at Dora Park, Turin [Council of Tourin, *Online:* http://www.comune.torino.it/comitatoparcodora/bm~doc/parco-dora_percorsi_.pdf].

Figure 26. Dora Park, Turin [Photo by Michele d'Ottavio, *Online: http://archivemood.photoshelter.com/image/I0000SITIa66sFfI*].

Figure 27. Passages, Dora Park [Photo by Mattia Boero, *Online: http://www.landezine.com/index.php/2014/04/parco-dora-latz-partner-landscape_architecture/03_1_vitali-parco-dora-by-latz-und-partner/*].

Figure 28. Holy Face Church, Dora Park [Photo by Michele d'Ottavio, *Online: http://archivemood.photoshelter.com/image/I00005SmkQmAumdM*].

Figure 29. Michelin tower, Dora Park, Turin [Pfarre Lighting Desing, *Online: http://www.landezine.com/index.php/2014/04/parco-dora-latz-partner-landscape_architecture/03_5_vitali-parco-dora-by-latz-und-partner/*].

Figure 30. Street art, Dora Park, Turin [Photo by Bobby Sands, Online: https://it.wikipedia.org/wiki/Parco_Dora#/media/File:Murales_Parco_Dora.JPG].

The following picture (*Fig. 31*) showns transformation of Dora Park in a period of fifteen years.

Figure 31. Dora Park, Turin [Source: *Google Earth, 2004 vs. 2016*].

The transformation of Dora Park included the following elements[10]:

i. The chimney transformed into a bell tower near the ‘Santo Volto’ church. It is a very high circular structure made of red bricks.

ii. Raiways were used to bring scrap into the east side of the park. Today few part of them are still present.

iii. Factories of this site used to produce and process steel sheets. In the area used to work three big enterprices: The Michelin, Fiat and Savigliano.

iv. The cooling towers preserved in the park were used in factories which used cool water in their production process. The most important one is the coolong tower of ex - Michelin tire facoty, which is a round concrete structure of about 30m height and will be part of public use. It is proposed and intern passage through the top, esploring the construction of the object, using the existing scales and constructing a new perimetric footbridge [Materazzi G., 2014, p. 60].

[10] For more information refer to Dora Park online site: http://www.comune.torino.it/comitatoparcodora/parco/

v. The stripping roof was part of the warehouses where raw material was stripped, the ingot was purified from mold and than poured into forms.

vi. Part of filtration system of air purification pipes are preserved and can be visible at the shed roof.

vii. The preserved 30 m high steel pillars are part of the remainings from the old industrial building where scrap was transported by tracks and poured into furnaces to make ingots.

viii. Very few remainings of the old farmsteads are still visible at the north of the park. Constructed in the 13^{th} century, they were mostly destroyed during the Wold War I.

ix. The ex-causeway, constructed about 1970, was demolished in 2005 because of new railway construction.

x. The old Amedeo IX Bridge, constructed in 1910, is now a pedestrian bridge and connects the northern part of the park with the town.

xi. Dora River was preserved and purified. Its path has changed through years, because of natural erosions but also as result of man-hand changes.

xii. The forest is important part of the project, as the site was probably a large forest before industrialization.

xiii. The cultivated fields of sericulture and trees are protected as particular agricultural elements.

xiv. The rose gardens were designed by Peter Latz, a landscape architect, crating an outstanding natural landscape.

xv. The environmental park accommodates about 60 new enterprices, mostly focusing in Cleantech (technologies that reduce negative impact in environment and make sustainable use of resources and energy).

xvi. The ‘Holy Face’ church, designed by Mario Botta, is an interesting desing of seven high towers linked by a multiuse underground hall.

xvii. The new bridge of V-shape was constructed in 2011, over Dora River.

xviii. New high-rise residential towers were constructed with the intention of providing as much as possible green spaces in the sorrouding area.

xix. The new walkway is an elevated passage crossing the east-west part of the park, passing over terrace houses, ex electrical units and near the 'Holy Face' church.

xx. The monument of the skater

xxi. The skating monument was designed by two volumes: the first vertical one represents a door visualizing the passage between the city and skate world; the second is the horizontal volume attached to the upper one representing its shadow.

Although ending up with a vital post-industrial neighborhood, with distinctive reuse of derelict plants, the process passed through some difficulties related to high redevelopment costs, obstacles because of private ownerships in the area and application of proper safety procedures for derelict buildings.

The most important key elements of successful urban, environment and economic regeneration lie in the accurate incorporation of existing culture and new developments; involvement of various stakeholders (inhabitants, private investors, specialist, universities and NGOs) and coordination with strong governance; high public investments in regeneration procedure; public informing of the ongoing process, organization of traditional events in order to give the area a new identity; advocate usage of abandoned areas to make more publicly acceptable; emphasize the importance and values of heritage assets by adding new public and cultural spaces, green areas and reusing derelict builings; improvement of transport and access means. Being one of the most important and representative industrial heritage reuse project of these days, characterized by effective urban and environmental transformations, Dora Park was rewarded with 'The International Architecture Award 2012'.

Case study: Vitkovice Ironworks, Ostrava in Czech Republic

Ostrava is one of the most important cities in Czech Republic, known as the center of academic, museum, galleries, leisure and cultural activities. The discovery of coal in the 18th century initiated ironworks establishment, coal mining and major city's development. The large industrial complex was considered as the 'steel heart' of the country, called the Vitkovice Ironworks. The area is compound of blast furnaces, coal mine, chemical plant, railway line, coking plant and power plant. The site was closed in 1998 due to economical changes and consecutive industrial closures. Throught time the zone was deteriorated and the structures turned into ruins. Although Vitkovice complex was declared a Cultural Monument in 2000 and National Cultural Monument in 2002; only in 2008 was approved the project for its adoption and the entrance in the list of European Heritage Monuments. The recovery project included preservation of protected objects, use of structures for university campus, businesses, housing and cultural purposes. Total revitalization costs of about 37 million euros, mostly authored by Josef Pleskot, were founded by the European Union, Czech Republic, Vitkovice a.s. corporation and Lower Vitkovice Area Association [Statutory City of Ostrava – Officila Website]. The Vitkovice Ironworks is now part of ERIH.

The regeneration project included: conversion of old gas holder into congress center, ex-power station into education and university center (the World of Technology), blast furnace into sightseeing tower, extention of streets and construction of a new building (Big World of Technology) accommodating lecture, laboratories and exhibition spaces (*Fig. 32-33*). On the other side, the process was also associated with some significant obstacles regarding property rights (ownership may not be clear as they change often, or is not clear) and environmental pollution levels [Klempa et.al. 2015].


Figure 32. Ostrava Regeneration [*Online: http://www.lucernagallery.com/en/josef-pleskot/josef-pleskot*].

Figure 33. Ostrava Regeneration [*Online: http://www.erih.net/i-want-to-go-there/site/show/lower-area-of-vitkovice/?tx_erihsites_erihmap%5BgetVars%5D%5Bthemeroute%5D=33&tx_erihsites_erihmap%5BgetVars%5D%5Bcontroller%5D=Sites&cHash=908478097de770bd069b242040b0344a*].

Figure 34. Ostrava Industrial Site Skyline [*Online: http://www.dolnivitkovice.cz/bolt-tower-maly-okruh*].

The singularity of the long continual industrial complex has become a symbol of the city's skyline (*Fig. 34*). It embodies a successful combination of old monuments with revitalized buildings and prevents further degradation. "It shows that industrial sites can be utilized for the benefits of the public and the city as a space for culture, education and leisure. Use this space to the development of culture and education has proved benefits in many ways [Perinkova M. et al., 2015, p. 203]. Lastly, is demonstrated Vitkovice Ironworks site transformations during the last decade (*Fig. 35*).

Figure 35. Vitkovice, Ironworks [Source: *Google Earth, 2006 vs. 2016*].

Case study: Manchester, United Kingdom

From 19th century, Manchester was known as the center of cotton trade, manufacturing, warehousing and commercial activities (banking and transport). In 1930 the city suffered sudden decline in textile because of shift from manufacturing to recent industrial production processes. During the crisis in 1971-1997, evident reduction of employment and population was worrisome. Nowadays, Manchester is the third metropolitan area in UK. The region can be considered an engine of economic growth, as it generates 50 % of northeast total economic output [Dixon T., Otsuka N. and Abe H., 2010, p. 58]. The vision of city's regeneration, is making Manchester one of the most important cities in the world, by 2025. Meanwhile, Manchester has been a city in recession, for some decades. Specialist explain this with low confidence in business, increase of input costs, decline in investments, decline of sales and of real estate market; decrease of liquidity, confidence and tax incentives.

Manchester is a manufacturing and textile industrial city, with valuable possibilitie for economic prosperity. Manchester's model of urban regeneration in the last years was mostly based on public-private partnership and joint-ventures (*Fig. 36*). The process was driven following the UK policy for brownfield regeneration. According to Dixon [Dixon *et.al*, 2010] the UK approach was focused in:

- Foundings for new housing program,
- Grants for public-private partnership, accelerated development zones (ADZs).
- Flexible planning system, close cooperation between public and private sector, decentralization of jurisdiction to city regions, and intensification of leadership skills.

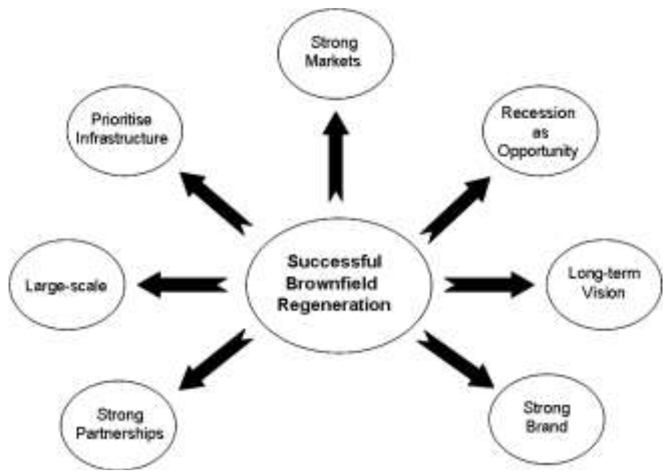


Figure 36. Critical Success Factors in Hardcore Brownfield Regeneration [Dixon T., Otsuka N. and Abe H., 2010, p. 12].

According to Regional Economic Strategy (NWDA, 2006), successful regeneration policy is based in some critical factors which create sustainable growth as connection with regions by developing transport infrastructure, appropriate land use, develop housing offer to facilitate growth, sustainable growth, appropriate use and supply of energy and public/private investments [Dixon T., Otsuka N. and Abe H., 2010, p. 59].

The brownfiled regeneration policy in UK was a determinant factor to prevent urban sprawl, reduction of migration and city's compactness. From 2008 the government decided that 80% of new homes in England should be built on re-used sites. Failures in real estate markets encouraged developers to undervalue economic benefits from redevelopment impact; overvalue costs or exclude benefits of improved neighborhoods and environment. Apart from planning regulation practices, brownfields regeneration was supported by application of Environmental Protection Act and clean-ups by voluntaries.

In general, Manchester’s regeneration models include:

- Rapid tracking procedures in planning system,
- Partnership models between local government, governmental agencies, private sector and community representatives,
- Creation of some self-governing bodies to promote private-public partnership.

High redevelopment funds were used for conversion of underused factories into living units, shps, bars and cinemas; train station into museum, cultural quarters were revitalized, new landmark buildings were constructed. Interesting desing and luxury lofts have created a new trend at the waterside area. Alternative to destruction of derelict buildings in 1960-1970s, adaptive reuse turned out to be a successful model.

Parallel to positive initiatives of brownfield redevelopment, various barriers are common to emerge. Ownership problems include not clear definition of public/private land, lack of property title and properties fragmentation. Sometimes, legal regulation or gaps in urban planning, as innapropriate land use defined for the area, or environmental protection definitions may repulse possible interventions. Furthermore, brownfields face low demand, weak market and lack of vision, which are followed by fear for investments inducted by possible hidden costs and clearing works. On the other hand, landowners may increase the ambition for participation quota, benefiting from rise of investment demand. Apart from legal obstacles, properties may comprise futher barriers because of historical status of the site, lack of proper infrastructure, high risk from possible contamination etc.

Investments in green and blue infrastructure combines natural environment and greenery with urban spaces. It consists of [AGMA, Natural England, TEP, 2008, p. 1]:

- open spaces (*parks, woodlands, informal open spaces, nature reserves, lakes, historic sites and natural elements of built conservation areas, civic spaces and plazas, and accessible countryside*)

- linkages (*river corridors and canals, pathways, cycle routes and greenways*)
- networks of "urban green" (*the collective resource of private gardens, pocket parks, street trees, verges and green roofs*).

Environmental actions consisted on flood management, recycle of air and water, keep of carbon in soil, waste cleanup, greenery planting, management and mantainment of wildlife (*Fig. 37-39*).


Figure 37. Building designed by Ian Simpron Architects *[Photo by Creative Heritage Consultants Ltd, Online:* http://creative-heritage.net/*]*

Figure 38. Mediacity, Manchester *[Online: http://itsacitything.com/united-kingdom/manchester/media-city-uk-phase-2]*

Figure 39. Sportcity, Manchester *[Source: Google Earth, 2000 vs. 2016]*

A very positive example in Manchester city, is Sportcity which was an area of heavy industry, coal mines, power station, and railway. Now it represents the location of

English Institute of Sport, the Stadium and the Velodrome. The development process included: physical transformation into sport facility and leisure area, further facilities offered after Olympic Games of 2002, relocation of businesses, community encourage to use facilities, close collaboration between stakeholders, public-private investments, measures for traffic reduction, linkage of this development with whole city's regeneration plan.

As Dixon describes [Dixon et.al., 2010], factors of success for this regeneration include: assurance of long term demand of housing (creating strong real estate market), provision of anchor schemes to which may adhere for future developments (inclusive vision), good public-private partnership, ensure individuality of product (strong brand of products), linkage of anchor activities in coherence and provision of better infrastructure for community (improved social fabric). Possible future practices may include improvement of tax-relief and incentives understanding, reform of empty rates and consider ADZs (Accelerated Development Zones – which is a variant of increment financing schemes TIF) and deeper involvement of public sector in the time of lack of liquidity (it is difficult for banks to give leases on brownfields). Phased approach to brownfield regeneration are in deep described in the following figure (*Fig 40*).

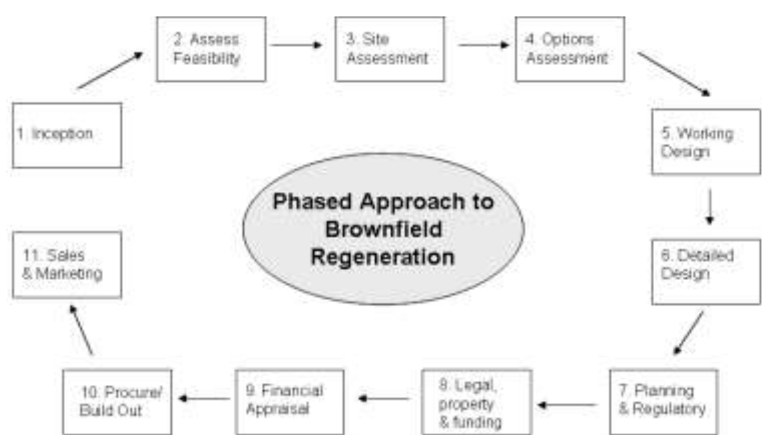


Figure 40. Preparation, Options, Design and Delivery (PODD), adapted: LDA, 2009 [Dixon T., Otsuka N. and Abe H., 2010, p. 133].

Case study: Osaka, Japan

Japan is one of the most industrialized countries in the world, but also one of the countries with the highest land use intensity. The oil crisis in 1970 and industrial manufacturing led to an economic bubble. By the 1980 the country entered in recession. Consequently, real estate prices (property’s price is calculated as a combination of land and building price) went down and the reuse of contaminated sites was very difficult. After more than three decades, signs of recovery became more evident. Urban Renaissance Special Law (2002) contributed in the revitalization of urban areas by promoting private investments. To support these initiatives, the government offered financial support in form of tax relief, grant assistance and fast track planning procedures. Furthermore, the approval of National Land Sustainable Plan in 2005, stimulated the promotion and development of brownfileds as imporntat assets in country. Land use planning model in Japan was focused in economic growth, land readjustment and extensive infrastructure projects; giving low attention to community involvement. The result of low coordination between different levels of planning and environmental policies was rapid urbanization and land fragmentation. It seems that the system is weaker than in Europe because urbanization is foreseen by masterplans, which propose development control in various areas. Different from UK, which promoted brownfield regeneration in order to save vast land and reuse the already developed ones, in Japan there is still high request for new high-quality houses.

Osaka is considered one of the most important cities in Japan, known as a manufacturing and textile industrial city (the Manchester of the Orient). It embodies a complex territory of seaside and mountain. After 1970, because of failure to diversify industrial processes and lack of planning directives, Osaka was transformed into a smoky city. After a long period of stagnation, in 2003 was drafted the ‘Revitalization Program of Osaka City’, which integrated policies in economic, tourism and urban terms. The plan also defined urban areas redevelopment direction and the division of these areas in regions, cities and districts.

The revitalization program was supported by the Incentive Program which included subsidies for urban revitalization, promotion of key industries and establishment of new industries. Also, the city's government partially subsidizes in case of new buisinesses establishement which provide extra space for research and development facilities. Also, the government encourages the new branch openings in Osaka city from important companies, by subsidising rent for some initial months.

An interesting example of this good practice is the Universal Studio Japan, located at the west side of waterfront. It previously was an industrial area used from large-scale factories of metal, transport and ship-building industries. The de-industrialization process produced vacant and derelict land, so the need for urban redevelopment was crutial. Nowadays, Universal Studios is the place of new train station (which has altered old and new routes), green areas, commercial facilities, center for audio-visual businesses, high-tech industries, housing, hotels and cultural facilities. The regeneration process involved partial foundings from city's council, clean-up of brownfields and transport improvement. Factors of success include good public-sector coordination for masterplan design, long vision regeneration programs founded by government and private sector, reuse sites by applying flagship projects and attracting fundings, application of land readjustment instrument, improvement of transport and urban infrastructure and use of real estate market as a positive opportunity. The following picture (*Fig. 41*) illustrates urban transformation of Universal Studios district, in a range of ten years.

Figure 41. Universal Studios, Osaka *[Source: Google Earth, 2006 vs. 2016]*

The research done by professors Dixon, Otsuka and Abe (2010), make an interesting comparison of Manchester and Osaka regeneration progress. Both Osaka and Manchester have regenerated urban areas applying by large-scale and long-term urban programs, based on partnership models as joint ventures or public-private partnerships. However, brownfield regeneration is still not in the desired levels. According to the authors, main barriers of brownfield regeneration in Manchester are lack of infrastructure, legal regulatory, lack of knowledge of incentives and contamination. Meanwhile, Osaka is facing barriers in fragmented ownership, development control regulations, reaching agreement with landowners, lack of financial incentives and contamination.

In conclusion, reuse of these sites need to reflect better involvement of public sector, flexible policies, more banks confidence to give loans and increase liquidity, application of proper tax incentives, consideration of new investment models, differentiation of policies based on various city's assets, provision of eco-friendly standards, better service quality by low cost and support of clean-up procedures.

3.12.7 Reuse of Industrial Heritage sites for Mix use

Case study: Gasometer Simmering, Vienna, Austria

Gasometer town is a successful reuse model of a simmering industrial area into residential one. Located in Vienna, once the largest gastowers in Europe, the site is composed of four gasometers went out of function since 1985. The abandonement and degradation through time left alive the cilyndric brick walls and roof structures. The regeneration project provided a new multifunctional district; focusing mostly on reuse for social houses (accommodating about 400 inhabitants), but also offices, commercial units, cinema and a concert hall (capacity of 4000 visitors). Although the site was under protection since 1981, the revitalization competition was announced in 1995 and implementation finished in 2001.

i. A gasometer, designed by Jean Nouvel, is reused as residential, commercial and office units.
ii. B gasometer, designed by Coop Himmelb(l)au, is reused for residential, commercial and underground audition unit.
iii. C gasometer, designed by Manfred Wedhorn, is reused for residential, commercial and office.
iv. D gasometer, designed by Wilhelm Holzbauer, is reused for residential and offices.

As Kin [Kin W., 2004, p.21] describes, each of the buildings offer different unique solutions: inner glass façade and open atrium for natural lighting at Gasometer A, new tall construction linked with Gasometer B, inner round courtyard with planted segmented terraces at Gasometer C and Y-shape design inscribed the round exinting plan at Gasometer D (Fig. 42, 44).

From the architectural point of view, it is interesting the balanced combination of the original remained structure and the new openings. Original facades, being part of local protected heritage, were not compromised. The site was transformed in a new city's landmark with impressive industrial renewed structures (Fig. 43).

From the economical point of view, the reuse of these structures as multi porpose spaces is costous, but more sustainable than the high consequences of demolition. Furthermore, urban renewal had very positive effect in increase of living quality and place values. Financial solution was provided after resolve of property ownership issues and close cooperation between state and private investments.

Improved accessibily in the area was accomplished by provision of new public transport and partially extension of the existing one, through construction of an unfinished part of highway and extension of metro route.

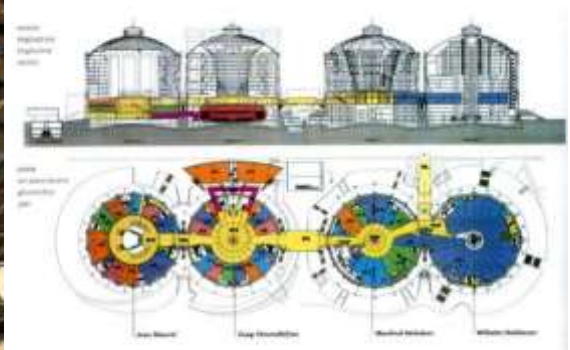


Figure 42. Gasometer Town in Vienna [*Online: https://s-media-cache-ak0.pinimg.com/736x/a4/ec/16/a4ec16c32b25b9adac85e325235fc37e.jpg*].

Figure 43. Gasometer Town plan and senction [*Online: http://www.zn903.com/cecspoon/lwbt/Case_Studies/Gasometer_City/pic01_plan.jpg*].

Figure 44. Gasometers *[Source: Google Earth, 2003 vs. 2016]*

Case study: Bethlehem Steel Plant, USA

Bethlehem Steel Plant has been working since 1863 unitl 1995 when it stopped working. In 2003, it was sold to Tecumseh Redevelopment and in 2004 to Lehigh Valley Industrial Park.

The site was redeveloped as mix use for industrial, recreation, entertainment and residential purposes. The process was calculated to generate 6000 new jobs, $70 million/taxes with $1.5 billion of investments. Redevelopment costs were covered by Commonwealth of Pennsylvania with $7.5 million, Northampton Country with $13 million, US Department of Commerce with $2 million in form of grants and various private entities [11]. The community played a supportive role in this process. Redevelopment project included the division in two areas Bethlehem Works (now National Museum of Industrial History; casino, residential, retail and entertainment) and Bethlehem Commerce Center (for commercial and industrial use). The redevelopment process included the destruction of diverse buildings, remediaion of contaminated groundwater from solvents and hydrocarbons, removal of historical underground utilities and other provisions required for construction of new facilities (Fig. 46-46).

Figure 45. Bethlehem Steel Mill [*Online: http://perceptivetravel.com/blog/2011/10/28/the-rusty-past-is-in-yo-face-at-steelstacks/*].

[11] Western Pennsylvania Brownfieldcenter, ‘Bethlehem Steel Plant’. Online http://www.cmu.edu/steinbrenner/brownfields/Case%20Studies/pdf/bethlehem%20steel%20case%20study.pdf (lastly visited on 10 June 2016).

Figure 46. Bethlehem Steel Mill regeneration [SWA Group, O*nline: http://scenariojournal.com/strategy/sands-bethworks-reinventing-a-bethlehem-steel-mill/*].

The following picture (*Fig. 45*) illustrates Bethlehem Steelworks site transformation during twenty-four years.

Figure 47. Bethlehem Steelworks *[Source: Google Earth, 1992 vs. 2016]*

Case study: Regeneration of industrial sites in Netherlands

The regeneration of brownfields in Netherland focus mostly on distressed sites still in use (most of them suffer from high crime rate) and old infrastructures (which function in most of cases is not changed). Meanwhile, the brownfields in UK does not necessarily include the contaminated ones, but also vacant land or still usable land. Accoriding to Wernstedt, Meyer, & Alberini (2006) public policies in regeneration process include attraction of developers to brownfields by using financial incentives, efficient cooperation of government with developers for clean-up of contaminated lands (most companies does not prefer the involvement of third-party liabilities, which charge about

20% of developers profit, to fund the predicted remeditation costs), investments in public infractructure and public spaces, facilitation of procedures by direct public access of land and several regulations regarding environment and planning. Financial incentives, in Netherland and UK, are treated as gap funding which cover the redevelopment costs and are included in investments for public infrastructures (*Fig. 48, 49*). Most of regeneration program grants are accorded to municipalities. In this case, municipalities gain the land to destruct the degradated structures, realize the remeditation of contaminated land, provide the accurate infrastructure and offer the land to potential investors.

Figure 48. Kraanspoor office constructed over old crane track [*Online:* https://www.brakelatmos.com/nl/en/reference/77_Kraanspoor-Amsterdam].

Figure 49. Converted factory into greenhouse and offices [*Online: https://www.dezeen.com/2016/10/28/glasshouses-joolz-offices-warehouse-conversion-architecture-space-encounters-plants-amsterdam-netherlands/*].

In general, city's masterplans should epitomize national policies. As Ploegmakers and Beckers (2012) list, common goals in city's general plans are attraction and retention of firms, intensification of land use, better quality of public spaces and buildings, creation of new jobs, sustainable development, change of industrial composistion and environmental protection. Usually, taking in consideration that various goals may be in contradict with each other, compromise is done. A simpe example is the goal of better life quality provision, which is in contradict with land intensification needs and consequently may not generate new jobs or increase of land value.

According to PBL (2009) each site could be regenerated according to four categories of characteristics:

i. Characteristics of site itself - size of area, type of firms, age of site, and amount of land allocated for public spaces and share of large firms on the site. High share of public spaces provides more intensification of use. It is expected that sites with higher proportion of large firms would be regenerated more often.
ii. Accessibility – good accessibility by road, rail and water have positive affect on regeneration plans (ex. sites visible from motorways). Good accessibility improves the possibility of firm location to that site.
iii. Location characteristics – location of site towards urban area.
iv. Regional characteristics – differences of market condition by regions.
v. Additional variables – number of enterprises on site, number of workers/ha, type of industrial site (more preferred are mixed ones), proximity to bus stop, type of municipality where the site is located (small municipalities have less economic resources than the large ones).

Ploegmakers and Beckers study (2012) point out some interesting results:

i. The probability of regeneration depends on the age of industrial site. Although the old ones are more probable to be regenerated, low property value of old sites reduce the possibility of regeneration.
ii. More possible sites for regeneration are the mixed ones, or those located in metropolitan areas or those with not high shares of powerful enterprices.
iii. Private investments in deteriorated sites with fractured ownership are less possible to happen, if not public intervention will happen.
iv. Industrial sites which have high number of dwellings but offer low urban uses, are not preferable to regenerate.
v. The positive aftermath of regeneration projects is increase of employment and number of enterprises, enhancement of property values and land use intensification.

Case study: Regeneration of industrial heritage in Shanghai

Until the 19th century, most of industrial activities in Shanghai consist of cotton spinning and artisanal. After 1949, of Republic of China foundation, industrial production was enlarged in metallurgy, chemical, mechanical, petroleum and electrical production. The flux of visitors and investors in China lead to new businesses with western influence. Several residential neighborhoods for workers were built, in which were held various community workshops. Changes of industrial organization and community re-location had direct impact in urban pattern. By the end of 20th century, many industries turned down and relocated on the outskirts of cities, resulting in disused industrial sites and vacant land. Their preservation and reuse was a cause of maintenance of cultural and historic values.

Inventory of industrial heritage in Shanghai was a latercomer process; resulting, however, by 2009 with a list of 22 industrial heritage buildings. After 2010, Shanghai Cultural Relics Management Committee standardized the process and supported the computerization of documentation. Some constrains during the process implicate lack of funding, limited possibilities of industrial buildings reuse and achievement of technical standards.

Most of industrial heritage objects in Shanghai were reused as commercial (resturants, bars and art studios), residential and recreative spaces. The units were mostly rented by designers because of low rent and spacious environments. Consequently, was created a new trend of artistic neighborhood and new landmarks (ex. Suzhou River Warehouses). This development encouraged local government to take part in planning process, and, in some cases, transformation into industry parks (*Fig. 50*).

Figure 50. Sihang Warehouse converted into Anti-Japanese War Monument [*Online:* https://www.isaarchitecture.com/En/News.aspx?ClassId=80].

The following picture (Fig. 51) illustrates spatial transformation of industrial district of Shanghai, during the last decade.

Figure 51. Shanghai *[Source: Google Earth, 2000 vs. 2016]*

Yi-Fan YU (2011) gives some future directions regarding the preservation and reuse of Shanghai Industrial Heritage. Difficulties in identification and inventories of industrial sites can overcome by a well-defined strategy. Lack of standartized documentation, adequate funding, adhere of technical standards and neglect of industrial remains values are obstacle factors for successful regeneration. Also, specialist need to broaden their focus from building preservation to site and landscape preservation. A good approach could be careful analyze of zone structures and appropriate land use proposals. In continuance, adequate drafting of legal framework, regarding redevelopment of underused/contaminated industrial sites, is a crutial element. Clean-up procedures, soil evaluation and rehabilitation are good strategies to start, prior to redevelopment. Furthermore, private-public partnership, involving all stakeholders, might encourage innovative ideas, effective use of resources and integrate community needs. Lastly, industrial heritage adaptive reuse achieves good opportunities for redevelopment based on preservation comprehensive strategies.

3.12.8 Reuse of Industrial Heritage sites for Industrial Activities

Case study: Regeneration of Nanjing for creative industries, China

Nanjing was the capital city of China for a long time and today represents one of the most important cultural, economic and industrial cities in coutry. The industrialization of city begun during 1800, with the creation of urban infrastructure and than spread out in handicrafts, light industry and evern heavy industrial factories. City of Nanjing represents a city with many important heritage assets which have been adapted in different ways. The most important projects are the re-use of Chenguang machinery factory, utilization of waterfront, revitalization of Chongqing steel plant, renovation project for creation of Nanjing Creative Industrial Park.

Qinhuai District is located in the southeast area of the city, holding the famous "Nanjing Chenguang 1865 Science - Technology and Creativity Industrial Park", which covers an area of 210 km2 and includes 24 industrial heritage buildings [Shuxin G., 2014]. The redevelopment process started noveviously at 2007, with the renovation of facades and reuse of inner spaces of industrial protected buildings. The driving principles focused on categorization of existing buildings according to morphological characteristics and renovation of them in group; as the materials of facades renovated followed the group colors. Particular architectural elements were preserved, highlighting building's potential. An interesting example si the "Zigzag roof" factory, constructed in brick and concrete, with big windows of glass and steel (*Fig. 52, 53*).

The area is surrounded by two main roads, providing three entrances in the park by two metro stations and a bus station. Social, health and educational services have been added to meet the requirements of the area. Balananced design was applied to increase building intensity of the site by adapting the existing factories for commercial, social and residential use and construct new high-rise structures. The area was divided into five zones: Creative research and Development; Business; Science and technology Exhibition; Art creation and Leisure zone, as illustrated in Fig. 24 [Shuxin G., 2014]. The core transformation processes in the area have produced the “Finder Art District”, compound of Traditional Exhibition Hall, Modern Exhibition Hall, Artist Workshop (art studios) and Service Area. The buildings were perfect to be transformed into art spaces and artist lofts, promoting creative industries of desing, media and fashion.

Figure 52. Nanjing machine manufacturing [*Online: http://life.longhoo.net/2013-07/03/content_10757579.htm*].

Figure 53. Technology and Creativity Industrial Park, Qinhuai District, Nanjing [*Online: http://blog.163.com/tangjinhua3440@126/blog/static/84770922200984105440l3/*].

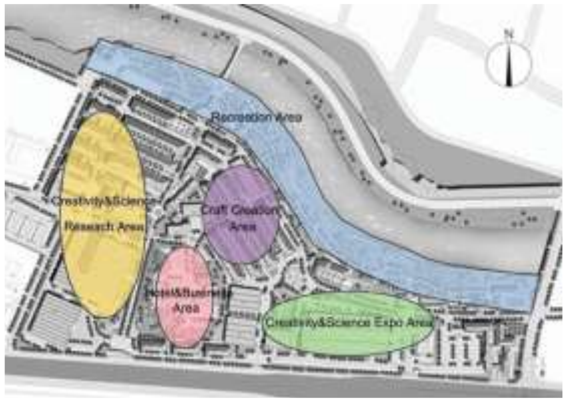


Figure 54. The Division of the Industry Center, Qinhuai District, Nanjing [*Source: Wei Zhang. Online: http://www.diva-portal.org/smash/get/diva2:829381/FULLTEXT01.pdf*].

Figure 55. Qinhuai District, Nanjing [*Source: Google Earth, 2016*].

Fig. 55 illustrates spatial view of nowadays Qinhuai District, Nanjing. Nanjing creative industrial center is an innovative model of industrial heritage redevelopment, promoting better values of the place by using creative production. It is interesting that the change of the area was firstly promoted by private developers and artist, promoting cluster creative businesses. With time, the government's attention was attracted and a set of economical and political policies were posed to facilitate urban, cultural and financial redevelopment of the area. Involvement of varios actors as the government, artists, private businesses and residents played a positive role in this project. The main challenges posed during this regeneration project were full involvement of local inhabitants in the process in order to get a full cooperation and comprehension. Furthermore, heritage renovation and mantainace projects are very expensive and challenging, facing the need to balance common interest of different stakeholders. On the other hand, more and older residential historical houses are being replaced by new ones, shriking residents' number and increasing gentrification because of high price and new typology of houses.

Concluding from the above examples, as illustrated in Fig. 56, the following strategy of intervention can occur:

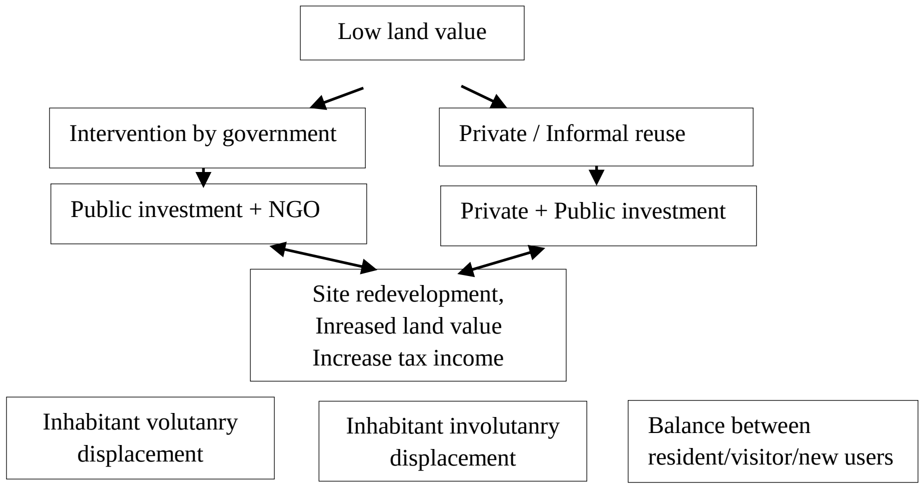


Figure 56. Strategies of intervention for heritage reuse [*elaborated by the author*].

In general, tax reductions, special fundings and favorable policies, like renovation and mantainance of industrial heritage buildings without paying taxes or rents [Chen J. et.al, 2015], turned out to be a successful market-drive prototype.

Case study: Călan, Romania

Călan is located in the cental-western part of Romania, holding one of the most important sites of steel, metallurgy, mining, chemical and energy production in coutry. The 'Victoria' complex, for production of iron, steel and coke; was constructed after the World War II and starting operation in 1871, as part of central planning during the communist regime (*Fig. 57*). In the two furnaces, foundaries and mechanical workshops were produced pitch, coal, ore profit, ore homogenized, coke, limestone, liquid iron, clay, pig, old cast, coke briquettes, coke fluidized, semicoke, granulated slag, ingots, machined parts and finished products [Archive online site 'Combinatul Siderrurgic Victoria Calan'].

About 5000 people of the surrounding communes worked in a polluted plant, which degraded gradually (*Fig. 58*). The privatization of plant and fragmentation into eleven small companies, in 1998, did not help the survival, so for many years the zone was named as one of the most disadvantaged in country. Even the privatization from

Cilindrul Calan Trading Company, in 2003, ended almost in bankrupt and degradation of structures. Scrap fenomena resulted in violation and dismantle of objects, sell of scrap iron and desolation of the complex. On the other hand, inhabitants faced considerable problems regarding local migration, unemployment and pollution. Employment in industry of the surrounding area dropped by almost 50% resulting in daily migration and immigration. Furthermore, the industrial area is much polluted with heavy metals, hydrocarbures and other dangerous substances, affecting the quality of environment and life of citizens.

After the entrance of Romania in EU, 2007, country's sensitivity towards brownfields increased and new goals were posed. The site was nominated as historic monument since 1870, including the works, the guesthouse and the worker's club. Nowadays intention of the government is the transformation of Calan industrial site into a business park. The initiative is in accordance with Priority Axis 4.2 of 'Regional Operational Program', which submits the following interventions proposed to support local and regional businesses:

> *Sustainable development of business support services of local and regional importance; Rehabilitation of polluted industrial sites and preparation for new use (funding for this action was re-allocated to other priorities in 2010, due to lack of capacity for large projects);* and *Supporting micro-enterprises* [Priority Axis 4.2, 'Regional Operational Program', 2007-2013].

The municipality of Calan has provided online information on the plots and offices in auction at the industrial site. Within an area of 41 ha [NBIS, 'Calan Industrial Park, Hunedoara'], the site was designed as industrial park and business center, hoding headquarters of park, business incubator, conference halls, offices and pleanty of green areas. Alternative intention was better inter-regional connection through improve of urban and industrial infrastructure. The rehabilitation project was prepared by cooperation of proffesionals and specialists of the field; while financing issues are covered by EU fundings. In a study produced by IPP (2012) summarizes EU funds for rehabilitation of the industrial site on the former Călan industrial platform and its preparation for new activities, as 10.03 mill EUR (although the full cost estimation was 20 mill EUR); where beneficiares are 99% companies and 1% local authorities [IPP, 2012, p. 37]. The project was organized to be implemented in two phases: firstly, would be the decontamination of polluted land and demolishment of buildings and secondly would be the preparation of site and construction of new service buildings, road infrastructure and utilities network [Ecomunicate online site].

Călan industrial site rehabilitation was first done by ISPE in 2012, a project called by KVB Economic Branch Cluj Napoca, Administrative Territorial Unit Călan City. Main clean-up and decontamination methods were in-situ oxidation (air injection) and soil vapor extraction (SVE) [ISPE, 2012]. In 2015 the administrative unit of Calan re-announced a public tender for soil-decontamination work, local area network, works for complete or part construction and civil engineering work; and lift installation work [Public tenders online site]. By now, online articles and inhabitant's photos (Fig 59) show that much of the site is purified and the administrative building is already constructed.

Figure 57. Calan furnaces, Romania [*Photo by Demény Gábriel. Online:* https://www.panoramio.com/photo/42909030].

Figure 58. Calan furnaces, Romania [*Photo by Demény Gábriel. Online: https://www.panoramio.com/photo/42908990*].

Figure 59. Calan Industrial Park, Romania [*Photo by Constantin Ştefãnescu, 2016. Online: https://www.facebook.com/constantin.stefanescu.12/posts/812339375563158*].

Figure 60. Calan Industrial Park, Romania [*Source: Google Earth, 2011 vs. 2016*].

Figure 60 illustrates urban transformation of Calan Industrial Park, during the last decade. On the left side, could be easily seen deteriorated structures and on the right site has concluded the process of demolishment and adaption for new usage.

3.12.9 Enhancement of Industrial Heritage through trans-border cooperation

Interconnection of industrial heritage sites, throught Europe, is conceptualized as a continuing chain, taking from one city to another, creating toruristic routes and experiencing the distinctive values of this patrimony. ERIH (European Route of Industrial Heritage) was established in 1999 with the idea to create a new touristic brand incorporating industrial heritage. The route would include discovery and recall of these monuments which witness the technology, culture, history and identity of localities. This idea would also encourage the protection and recuperation of forgotten this forgotten patrimony, which symbolize the changes of time. ERIH was supported by EU fundings, making promotions through online platform and yearly conferences. Since 2018 is declated the European Year of Cultural Herigage, many interesting activities will be organized to celebrate common legacy of Europe[12]. The following picture (*Fig. 61*) illustrates the ERIH network through Europe.

Figure 61. Iron and steel anchor points, ERIH [*Source: http://www.erih.net/about-erih/route-system/anchor-points/*].

[12] For more information check the online site: http://www.erih.net.

3.12.10 Models of Industrial Heritage Reuse

Revitalization of industrial heritage engages interventions at various prospects. Many researchers, archaeologist, asrchitecs and specialist have ultimately discussed on accurate possibilities of this heritage reuse. However, there is no clear model to be implemented, as each case is unique and needs to be analyzed in different aspects. Each potential intervention involves conceptual, technical, cost-effective indicators and a series of values to be preserved. The chosen design should respect the significance and authenticity of the patrimony and the character of place. On the other hand, the after-implementation life of heritage is another aspect of attention. In general, the most common measures of built heritage treatment imply maintenance (mainly conservation), preservation, restoration, rehabilitation, adaptive re-use, reconstruction.

In the relevant literature, the above-mentioned definitions have been explaind as follows[13]:

i. Maintenance is fundamental to conservation. Maintenance should be undertaken where fabric is of cultural significance and its maintenance is necessary to retain that cultural significance [Australia ICOMOS, 2013, p. 6].

ii. Conservation is considered the management of a building to prevent its decay, destruction, misuse, or neglect; may include the recording of the history of the building and conservation measures applied [Harris M. C., 2006, p. 147].

iii. Preservation is the process of applying measures to maintain and sustain the existing materials, integrity, and form of a building, including its structure and building artifacts [Harris M. C., 2006, p. 147]. Preservation is appropriate where the existing fabric or its condition constitutes evidence of cultural significance, or where insufficient evidence is available to allow other conservation processes to be carried out [Australia ICOMOS, 2013, p. 6].

[13] Also refer to LeBlanc F. online site, part 'Heritage conservation terminology' http://ip51.icomos.org/~fleblanc/documents/terminology/doc_terminology_e.html (Online, accessed on 10.01.2017).

iv. Restoration is the accurate re-establishment of the form and details of a building, its artifacts, and the site on which it is located, usually as it appeared at a particular time; may require the removal of later work or the reconstruction of earlier work which had been removed [Harris M. C., 2006, p. 149]. Restoration is appropriate only if there is sufficient evidence of an earlier state of the fabric [Australia ICOMOS, 2013, p. 7].

v. Rehabilitation is the returning of a building to a useful state by repair, alteration, and modification [Harris M. C., 2006, p. 149].

vi. Adaptive re-use – is a process that changes a disused or ineffective item into a new item that can be used for a different purpose [Australian Government, 2013, p. 7]. Adaptation is acceptable only where the adaptation has minimal impact on the cultural significance of the place. Adaptation should involve minimal change to significant fabric, achieved only after considering alternatives [Australia ICOMOS, 2013, p. 7].

vii. Reconstruction is the reproduction by new construction following the exact form and details of a no longer existing building or artifact as it once appeared [Harris M. C., 2006, p. 149]. Reconstruction is appropriate only where a place is incomplete through damage or alteration, and only where there is sufficient evidence to reproduce an earlier state of the fabric. In some cases, reconstruction may also be appropriate as part of a use or practice that retains the cultural significance of the place. Reconstruction should be identifiable on close inspection or through additional interpretation [Australia ICOMOS, 2013, p. 7].

For more details, one can also refer to American Standards of 'The Code of Federal Regulation' for interventions into a heritage under treatment relying on significance of place, current condition of site and structures, documentation available and method of intervention[14].

[14] see Appendix D.

Rizzo and Mignosa [Rizzo I., Mignosa A., 2013, p. 315-316] give a more succinctly viewpoint for possible interventions in historical and archeological sites as: laissez – faire (leave the site in as-found state), preservation or conservation (keep safe from harm), preventative conservation (retarding deterioration), mantainance (periodic actions), stabilization (end the deterioration of structures, control of erosion and drainage), restoration (return the previos appearance), rehabilitation (modify to adapt for new purpose), reconstruction (rebuild using original materials or not), relocation (move to another place), replication (make a copy at a different site) and new additions (enlarge the exisiting buildings).

Summarizing, reuse of industrial heritage can pass through the following models:

i. No intervention - which mostly ends in heritage degradation.

ii. Conservative intervention

iii. Interventions in façade – wall insulation, change of windows

iv. Interventions in interior:

- Add vertical space divisions
- Add horizontal space divisions
- Create inner couts
- Construct new roof
- Passive design as natural ventilation (ventilated halls can increase aesthetics of interior), natural lighting (reorganize interior functions to make possible natural lighting when needed), alternative energy sourses (geothermal energy, photovoltaic panel) and water reutilization (for internal and external purposes).

v. Interventions in interior and exterior of buildings and urban renewal (could even provide a self-sustainable ecosystem):

- Improvement of infrastructure (accessibility, water supply and reuse, electricity, heating and cooling systems, drainage)
- Ecological measures (soil, water, air purification)

- Vivid and save public spaces
- Landscape protection (combination of heritage buildings with surrounding environment, sustainable development)

vi. Destruction of old remains and construction of new facilities – this is usually applied in cases of urban renewal, when existing structures are in very bad condition and the process passes through destruction of old buildings and site cleaning.

Decisions on the most appropriate intervention method is a difficult and comprehensive process. Strategies applied can contribute in the decrease of urban stress, imrove the environment, encourage local and international companies to invest in the field, promote sustainable use of buildings, provide energy efficiency etc.

Possible reuse model for revitalization of Albanian industrial heritage are showed in the following table (Tab 5) and graphically expressed in Figure 63. However, in depth analysis of each site, will provide more adequate, as will be shown in the last chapter of this thesis.

Table 5. Albanian indusrial case studies, possible regeneration interventions.

Case study	**Typology proposed by LGP**	**Regeneration interventions**	**Urban possible interventions**	**Environmental remadiation (waters, air, soil, waste)**	**Financial actions**	**Stakeholders**
Elbasan	In liquidation and privatization; construction of one landfill	Total interventions	Mix land use, unification of urban area, increase of quality in public space	Purification of soil, water and air from heavy metals, improve of old industrial channels, reduction of industrial pollution	Use public funds, EU investments and private investors	Local authorities, private companies, local community, universities
Kuçova	Ex TEC site – transformation into commercial, cultural and services center, Ex UMN – transformation into center of processing industry and center of logistics and storage, Ex UPN – transformation into entertainment, recreative sport and residential site	Total interventions,	Increase residential density, better integration of these areas into the city	Recovery riverside, deal with floading, purification of brownfields	Use public funds, EU investments and private investors	Local authorities, private companies, local community, universities

Laç	Given with concession to private company for rehabilitation of Superphosphate warehouse	Total interventions, destruction of some old an non important structures	Improve connection with city	Brownfield remediation	Use EU grants and private investments	Local authorities, private companies, local community,

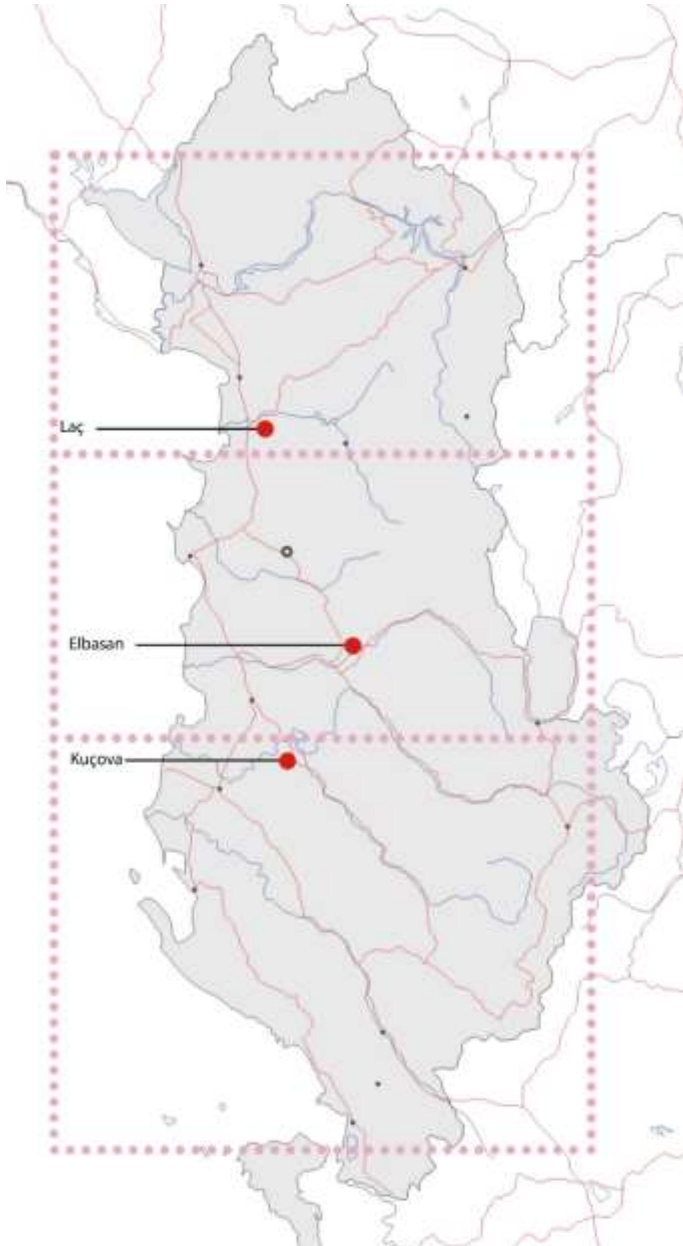


Figure 63. Albanian case studies selection [*Elaborated by the author*].

CHAPTER 4

INDUSTRIAL HERITAGE IN ALBANIA

4.1 Categorization of Industrial Heritage

Different countries apply various codes of industrial heritage categorization. Based on *HAER Classification System*, *Standard Industrial Classification* (SIC), *United Kingdom Standard Industrial Classification of Economic Activities (UKSIC)*, *Global Industry Classification Standard* (GICS), *Industry Classification Benchmark* (ICB), *International Standard Industrial Classification of All Economic Activities* (ISIC) and *AHF (Albanian Heritage Foundation)*, the following is the classification of the industrial activities in Albania that with be taken in consideration for this study:

I. Energy:

   a. Industry of oil and natural gas

   b. Industry of coal

   c. Industry of electric production (hydropower, lamps manufacturing)

II. Heavy Industry:

   a. Metallurgical Industry

   b. Mechanical Industry

   c. Chemical and Plastic Industry (pharmaceuticals, paints, PVC factories, pesticides, washing powder)

III. Wood, paper and construction materials Industry:

a. Processing of wood and paper

b. Construction materials (cement, roof tiles, bricks, tiles, eternit, prefabricated)

IV. Light and food industry:

a. Textile-Confectionaries (cotton, wool, silk)

b. Craft or Glass Ceramic (carpet, rugs, art, pottery, glass, porcelain)

c. Production of leather and footwear

d. Plastic and Rubber

e. Agro Industry (flour, oil, drink)

V. Mining (miming, quarry, salt works)

VI. Transport and Telecommunications (railway, automobile bridges with iron and stone construction, automobile and railway tunnels, port, canals)

VII. Industrial Landscape

VIII. Water (artificial reservoirs, sewage system for drinking water, sewage system)

IX. Housing and architecture (cities built for industrial workers, warehouses, storehouse)

X. Services and Leisure Industry (offices, banks, warehouses, cinema, parks)

XI. Defense Industry (weapons, explosives, bunkers)

4.2. Industrialization in Albania

The history and evolution of the industry and the Albanian is constantly linked to the historical, political and social of the entire nation. The first investments in the sector were made by the second half of the 19th century to the fall of the communist regime (1991), they were almost always related to political alliances with foreign states.

In the 20s the first concessions were issued in favour of foreign companies (French, Austrian and Italian), which invested in mining and energy, creating settlements of Patos-Marinza, Selenica and Petrolia [Science Academy of R.P.S, 1976, p. 55-67]. In general, industrialization investments by Italian, French, Austrian and English companies were focused in mining and extraction (raw materials, coal, petroleum, copper, silver, gold), electricity, wood processing and production, textiles (leather, carpets, clothing, shoes), food processing (rice, candy, pasta, tobacco, oil, bread, soap etc.) and production of construction materials (bricks, cement). As result, were constructed various industrial sites and Albania started to adapt with these new developments. In the time were even created labor associations, as “Puna” (“Labor”) in Kuçova, which was an active representative of local employees.

The communist state was being formed just after the Second World War, creating immediately a closure to the Western alliances and lead towards the east. Due to the fact that most of buildings were damages because of WWI and WWII, the country was facing deep poverty. The first cooperation was done with the neighbour country of ex-Yugoslavia, but soon faded because of fear from assimilation.

Plannig strategies of the time, were originally organized in one-year plans, as the ones in 1946, 1947 and 1948. This was the time of alliance with ex-Yugoslavia, followed by construction of various factories and transport facilities (bridges). Important investments to be noticed were: the initiation of the first railway in country from Durres to Peqin (originally initiated by the Italians and left unfinished by World War II) and extension of hydropower in Selita (Tirana).

The period 1949-'61 was marked by the pact with the Soviet Union. The Russian geopolitical interests were conciliated with the need of progress of Albania. The relationship was based also in mutual trade exchange: Soviet Union imported mineral products (chromium and copper) and some agricultural products (tobacco, fruit and citrus fruits) from Albania. On the other hand, it exported capital goods such as equipment for the industry and especially wheat and agricultural fertilizers. Moreover, ex-BRSS was offering loans with minimum interest rates that followed were condones at all. The cooperation affects also the state planning and management of resources and investment, in fact in Albania as in Russia were adopted the five-year plans.

The 1st plan (1951-55): had as challenge the industrialization of an economy based almost on agriculture and to create scientific and technical skills of the workforce. Also, it aimed to guarantee valuable technical - scientific support, which was offered thanks to the cooperation with the Soviet Union. In fact, in those years a lot of Soviet specialists worked in Albania, transmitting their knowledge in factories. Investments were addressed to light and construction industry and electricity sector (as TEC in Tirana). New plants of light industry were constructed all over the country as the “Stalin” textile combine in Tirana, the “Misto Mame” wood processing mill in Tirana and “Nako Spiru” in Elbasan, the “Lenin” cement factory in Vlora, the “Partizani” mechanical plant in Tirana, some state rubber enterprises, brick factories and food factories (as cotton, oil, sausage, tobacco).

The 2nd plan (1956-60): pointed to the collectivization of agriculture through the creation of new agricultural cooperatives, at the beginning one in every village, later were merged for an extension of four hectares. Farmers are often forced to join. Under the slogan “land belongs to the tiller”, many land owners were expropriated and distributed to poor and landlessness villagers. On the other hand, extraction industry carried on contributing exportations of nickel, chrome, coal and oil. Factories for conservation and processing of fruits and vegetables or other food factories were constructed even in small ones. Upon all, can be pointed the Glass factory in Korça, “Ali Kelmendi” food combine and Porcelain Factory in Tirana, Brick factory in Vlora and Shkodra, "Ernest Telmani” combine for conservation of fish and fruits in Vlora, Oil processing factory (U.P.N) and Center of Oil Processing (Q.P.N) in Kuçova, iron-nickel and coal mines in Pogradec, Kukes and Perrenjas, copper mining in Rreshen, etc.

The 3rd plan (1961-65): was marked by the rupture with Russia in 1961, due to the declaration of Albania in favour of anti-revisionism together with China, so it was time for new alliance. In this period, they were realized some establishments such as those planned for the leather and shoes in Gjirokastra and Korca, for wood in Tirana and Durres and other small plants. Taking in consideration that most of investments were made in industrial sector, heavy industry became very expensive and unsustainable. Although local economy was guided to the modernization of other economic sectors, heavy industry remained one of the most important adsorptive investment. Often happened that economic growth figures were fictitious, because of compelling propaganda and needs of the workers to receive higher rewards in case of greater productivity. Further investments were also done in light and food industry (as shoe and knitwear factory in Korça and Shkodra), construction materials production, mechanical mills as in Kavaja, wood combine in Laç, construction of new naval shipyard in Durres, cooper mine and processing in Kukes, Puka and Miredita; sulphur acid factory in Laç, Hydropower "Frederick Engels" in Milot, paper processing factory in Lushnja, wires factory in Shkodra, "Dinamo" Mechanical plant in Tirana, State Industrial Enterprise of salt in Narta (Vlora), etc.

With the 4th plan (1966-70): were inaugurated many important works in continuation with Chinese alliance. Although the Chinese aid amounted to only 10% of investments Albanians, so very low compared with the Russian one. The most distinguished sites of the time were “Mao Ce Dun” textile combine in Berat, the initiation of “Steel of Party” metallurgical complex, the factory of artistic production in Berat, the mechanical factory in Peshkopia, the electromechanical factory and radio-tv factory in Durres, brick state industrial enterprise and the plastic one in Durres, cement factory in Elbasan, refining plant in Fier, Rrogozhina-Fier railway, porcelain and glass factory in Kavaja, food and mechanical factories in Korça and Shkodra, superphosphate factory in Laç, etc. The railway transport witnessed deep changes with the introduction of new system introduced by Czechoslovakian engineers.

The 5th plan (1970-75): aimed exclusively at large metallurgical complex in Elbasan. In an area of about 60 ha, the also known as the heart of black industry involved 520 small and large factories. The party’s tasks through this plan, included the self-reliance doctrine to strengthen economic independence and workforce level (more than 50 % of workforce was by party members); improve quantity and quality of industrial production but also increase of agricultural production. Industrial factories continued to be constructed, mostly for food and light industry (as in Tirana, Berat, Durres, Gjirokastra, Korça, Përmet), chemical (Durres, Fier), mechanical (Gjirokastra, Lushnja, Shkodra, Vlora, Tirana), New tractor plant “Enver Hoxha” Tirana. At the end of this period, in 1978 occurred a rupture also with China and began the period of isolation and autarky.

Sixth five-year plan 1976-1980 coincided with the last period of alliance with China and increment of self-sufficiency aspiration. As consequence, the party’s aim was to advance the industrial and agricultural production, the defense potential and to invest more in technical studies. Most of construction works were focused on defense (tunnels, bridges and bunkers), chemical and food industry (Fier, Tirana) [Parangoni I., 2012, p. 51-100].

Seventh five-year plan 1981-1985 was focused on self-sufficiency, use of intern stocks (existing manufacturing capacities) and fallout of political and economic relations with any other countries [Institute of Marxist-Leninist Studies, 1986, p. 59]. Very few industrial factories were constructed during this period, as the tobacco factory and new battery implant in Berat, oil factory in Lezha and Shkodra, and completion of Fier-Vlora railway.

Eighth five-year plan 1986-1990 coincides with the end the degradation and fall of communist regime. The economic situation continued to be in decline as most of heavy industries turned out to be unprofitable and the standard of living very low. During this period was aimed the reopening of relations with other countries (as Greece, Germany, France, Netherlands, Sweden, Canada etc.); import of new technology to modernize local production (although was felt the lack of qualified specialists) and balancing of export with import rate [Valentina D., 2007, p. 307].

Despite the impressive industrial growth, the central planning compressed the economic freedom through the controlling the strategic sectors by public enterprises. The extreme self-sufficiency of the last years had worn down the economy and with it the patience of citizens (-40% of production between 1988 and 1992) and the consequent collapse of

Communism (1991). In the following picture (Fig. 62) is demonstrated the propaganda of voluntary work during the Chinese alliance, under the principle ‘Long live the friendship of China and Albania’.

Figure 62. Propaganda poster: Chinese-Albanian partnership voluntary work [Chinadaily.com.cn, 2009].

As a result of the enthusiasm for defeating the regime, the country is facing uncontrollable economic variables and subject to new reactions. It follows the creation of a transitional economy (from the controlled to a free one) that still marks the country, where an informal economy takes root quickly. This is the moment in which begins the process of industrial disposal. In a climate of collective euphoria where the prospect and the future was represented by the finally friend West, factories and cooperatives were abandoned and robbed.

After the 1992 elections, won by the Democratic Party, it embarks on a policy of privatization of public property [15] and state-owned enterprises. The phenomenon involves the entire system of small industries to medium and small craft businesses.

[15] All private companies were privatized and the quotas were divided between workers. An emblematic case is the privatization of various shops. The quotas and property was passed to the contracts without considering that they are often on private property or buildings belonging to private owner before the communist regime.

Even the agricultural cooperatives did not escape this reform that brought to bankruptcy and closure.

As result of such reforms, the Albanian economy seems to take off. The foreign press attributes Albania the highest growth of gross domestic product compared to other countries of the East (1993-’95 GDP growth average 9% a year, while inflation comes down from 85–7.8 %). Soon it will prove a simulated growth and injected development, supplied by foreign aid and remittances from emigrants. While the industrial production stagnated, exports are cancelled and imports consist of customer discretionary (automobiles, televisions, etc.). Most of investors were interested in construction of new houses and trade-units, rather than dealing with other old structures.

Meanwhile, results latent the closure and decommissioning of industrial facilities. The phenomenon will reach a second peak in 1997, the year of economic and social collapse of the country. The creation of a bogus financial system based on pyramid schemes, with excessive rates and suitable money laundering, had sedated Albania for a few years. The collapse of this system has led to disarray (destruction of public and private property) with a fall in GDP of 8% and an increase of inflation to 50%.

The years 2009-2010 created another slowdown of the economy, because of oversaturation with new buildings combined with global financial crisis. Subsequent years indicated slow economic growth which, however, is expected to change in the period 2016-2019, undergoing throughmacro-economic restructuring under the supervision of the International Monetary Fund and World Bank. According to FDA, reforms should be implemented by increasing financial development, clarifying property right over land, improve law rules, make judiciary reform and increasing labors utilization, by reducing unemployment and stabilizing population migration [International Monetary Fund, 2016, p. 7].

The modern condition of industrial plants is forthcoming abandonment. The phenomenon of the scrap has progressively degraded industrial heritage as well as representing a social case. In fact, there are 32000 individual and informal collectors in Albania of which 12520 are gypsy [Data collected by Eper Center, IFC, BE, ARA], which have as their only source of income collection of recycled material (ferrous and not). The consequence of uncontrolled phenomenon of scrap at industrial sites has led to significant structural damage to buildings which are likely to collapse. In addition, many ancillary and service buildings, which were made entirely of metal, were totally dismantled. Of them it remains only the imprint and archival documentation.

The progressive loss and the continued damage of the abandoned industry leads to the necessity of knowing the industrialization process of Albania, as a first step for the development of this heritage and starting point for the promotion of policies and reuse.

Combining the needs for economic escalation and stabilization of inner migration, the government is promoting several provisions as the approval of General Local Plans for all Albanian cities, General National Plan and several Integrated Inter-Sectorial Plans. The essential goal is of these territorial plans it a careful use of the territory, preserving its natural values and solving some emergency problems in as land ownership. Furthermore, each ministry has launched their strategic policies for the medium period, until 2030. In this context, Ministry of Energy and Industry has launched the document of “Strategic policy of non-food industry 2016-2025” [Ministry of Energy and Industry, 2016], aiming the revitalization of forgotten or underused industrial sites.

A concluding table of the industrialization history in Albania, is conceptualized as follows (Fig 63):

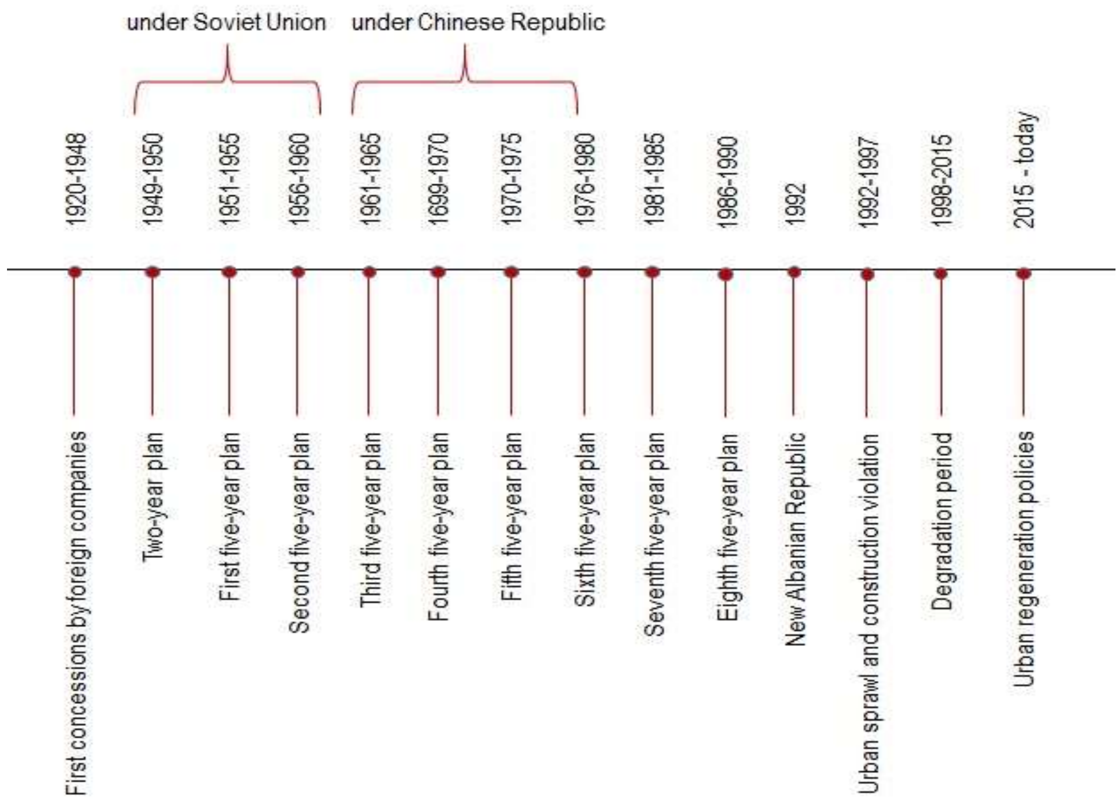


Figure 63. History of industrialization in Albania *[Elaborated by the author]*.

4.3. Synoptic table and maps

The following, are presented a list of industrial sites constructed during industrialization in Albania, since 1914, and a set of maps explaining the distribution of this industries all over the country. The basic information used to configure the tables and maps (*Fig. 65-73*) came from the consultation of various maps at the National Library of Albania [Saqellari Ll., 1979], maps published in written documents as book [Parangoni I., 2010; 2011; 2012], written reports [Ministry of Culture, 2015] and enciclopedies [Daci F., 2006; Ago Sh., 2005; Dokle, N., 1999; Shehu N., 2005; Plaku Z., 2012; Municipality of Elbasan, 2003]. Futher maps are shown in Appendix G.

Table 4. Industrial sites in Albania of the highest interest [Elaborated by author].

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership (public/private)	Grade of degradation	Pollution	Context (urban/suburban/ rural)
	Berat	Textile Combine "Mao Ce Dun"	Light and Industry	1966-1970	Textile implant	Partially in use	Public and private (privatized in small parts)	The public objects are in bad condition. The privatized have been restorated.	No	suburban
	Elbasan	Metallurgical combine "The Steal of Party"	Heavy	1966-1970	Metallurgical complex (520 buildings)	Partially in use	Public and private	The public objects are in bad condition. The privatized have been restorated.	Yes	rural
	Fier	TEC	Energy	1966	Thermal Powe Plant	No	Public (METE)	Good	Yes	suburban
	Kuçova	Mechanical Oil Plant (UMN)	Heavy	1934	Were produced the bitumen barrels, the motors V2-300, piston and probes	No	Public	Bad	No	urban
	Kuçova	Thermal Power Plant (TEC)	Energy	1935	The energy was produced of 2500 kw/hour, supplying also the city of Berat and Skrapar. TEC had also been used for production of vapor used at the enterprise of Oil Production.	No	Public and private	Very bad	No	urban
	Laç	Superphosphate factory	Heavy	1966-1970	It was the first and the only one in Albania	Partially	Public and Private	Very bad	Yes	rural
	Poliçan	Mechanical factory	Heavy		Were manufactured armaments	No	Public. Today used as cantonment	Very bad	No	rural
	Tirana	Textile combine "Stalin"	Light and Food	1951-1955	Construction started by ex-BRSS investment and then passed by Chinese	No	Public and private. (Used for municipal units, commercial and informal homeless	Very bad	No	suburban

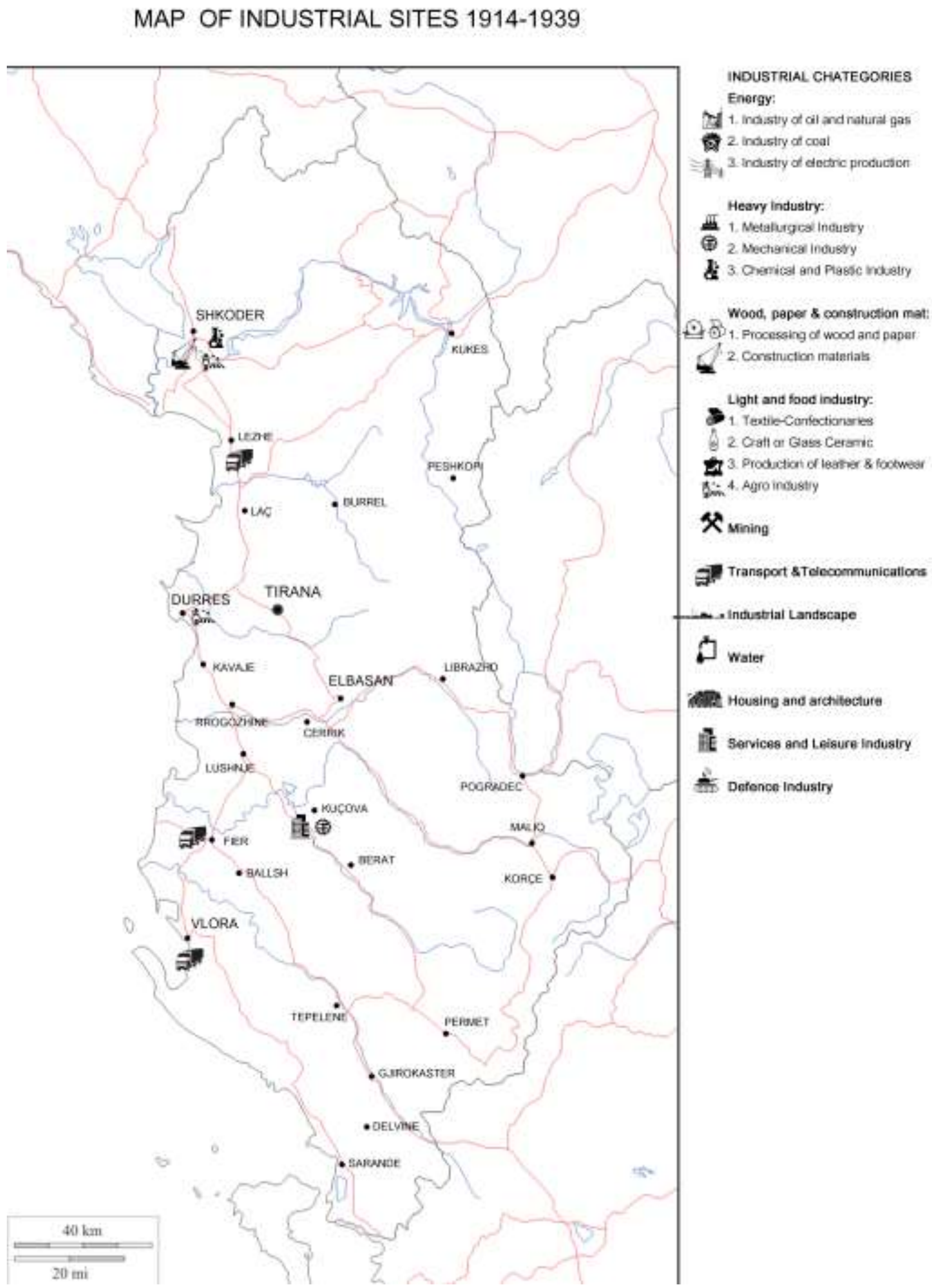


Figure 64. Map of industrial sites in Albania, 1914-1939 [Elaborated by the author]

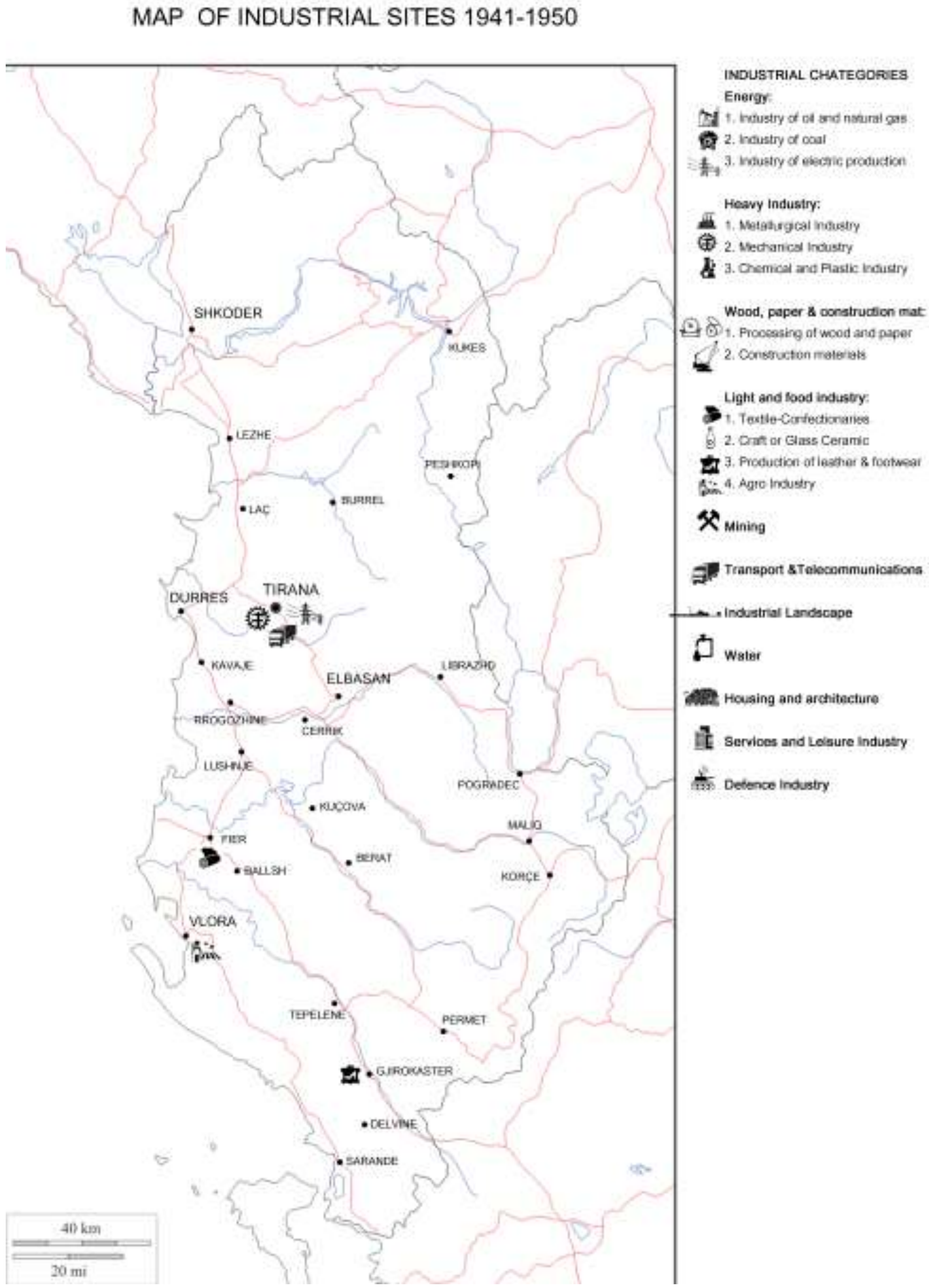


__Figure 65.__ Map of industrial sites in Albania, 1941-1950 [Elaborated by the author]

MAP OF INDUSTRIAL SITES 1951-1955 (1st Five-years Plan)

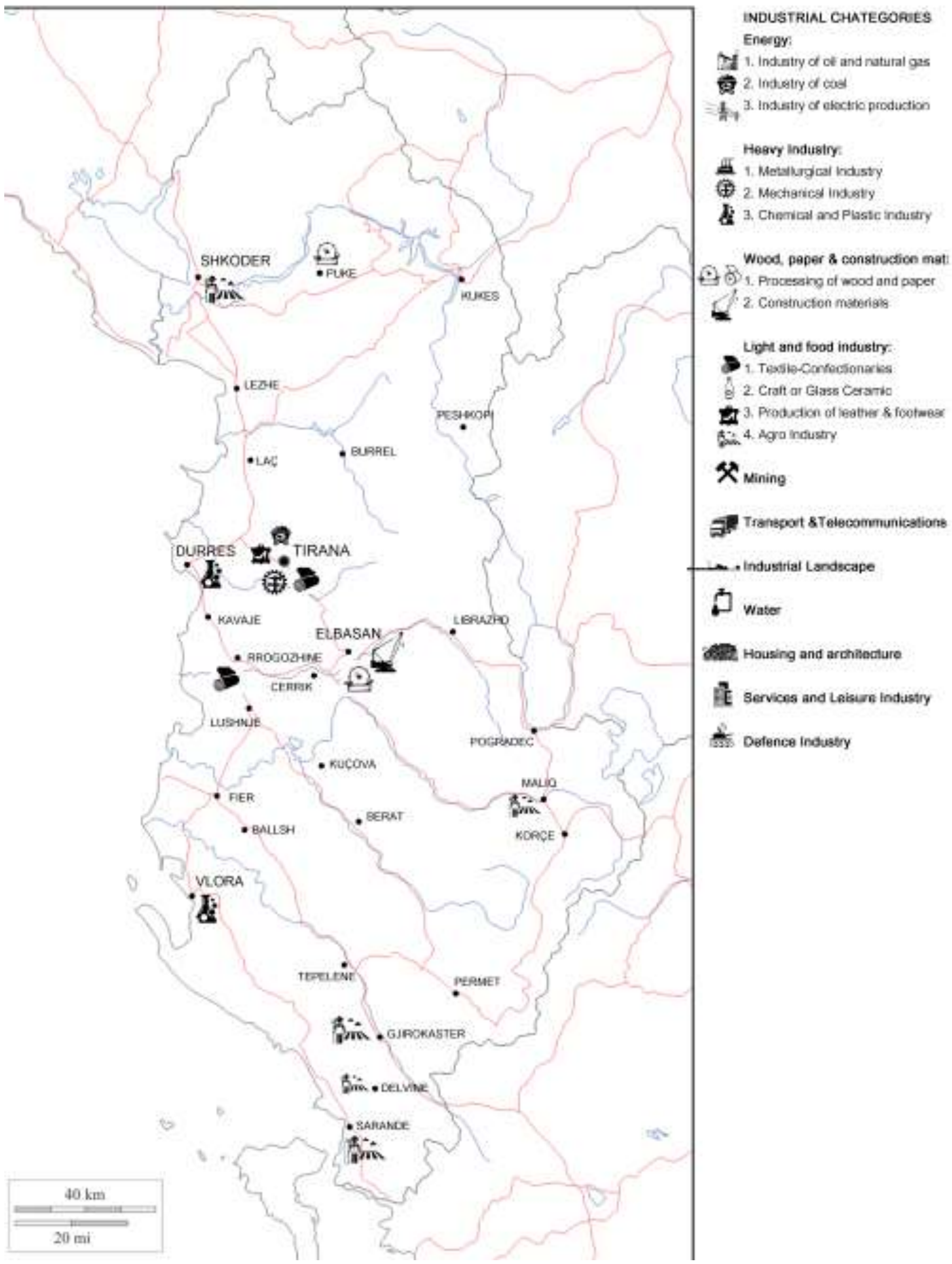


Figure 66. Map of industrial sites in Albania, 1951-1955 [Elaborated by the author]

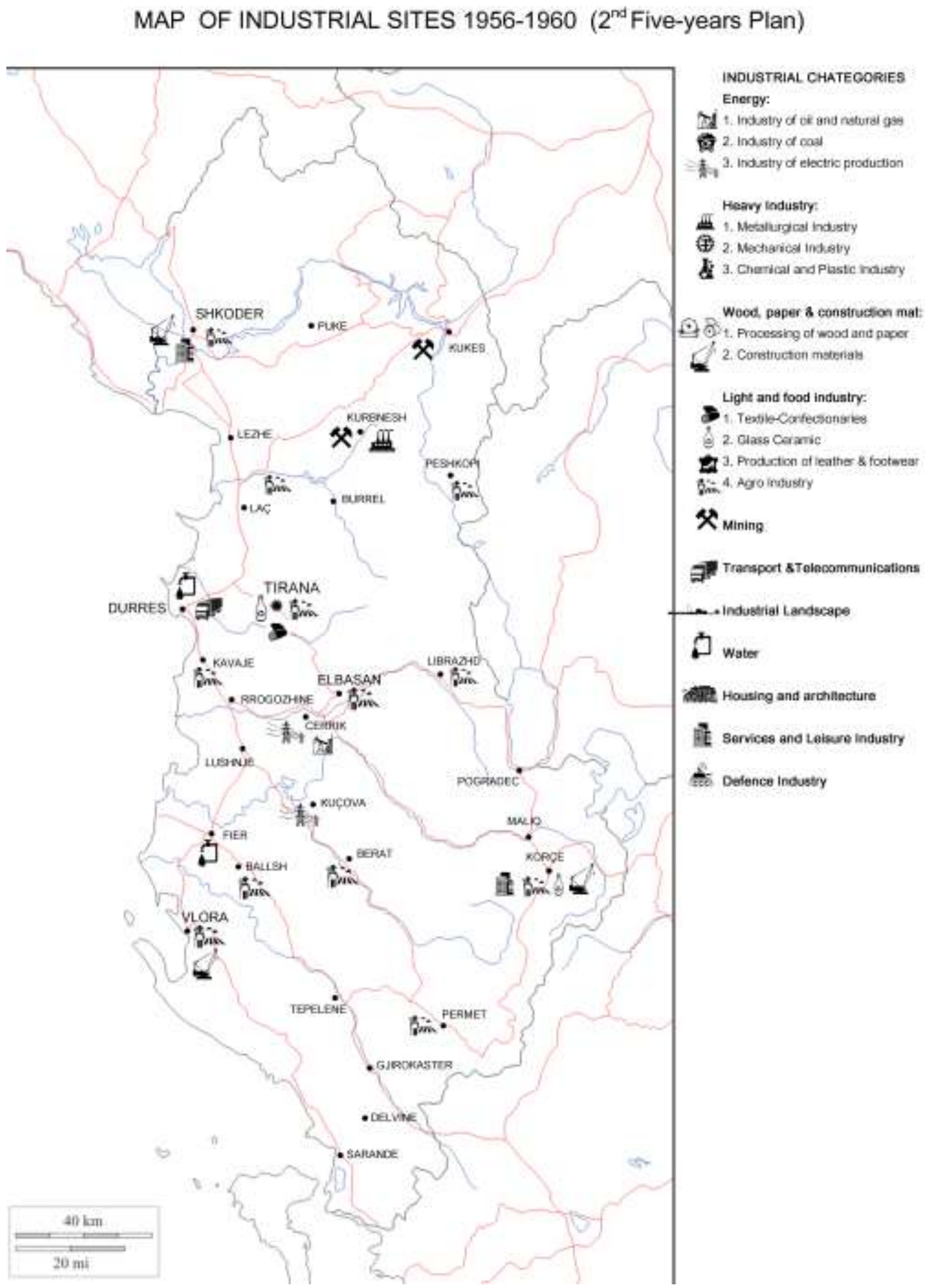


Figure 67. Map of industrial sites in Albania, 1955-1960 [Elaborated by the author]

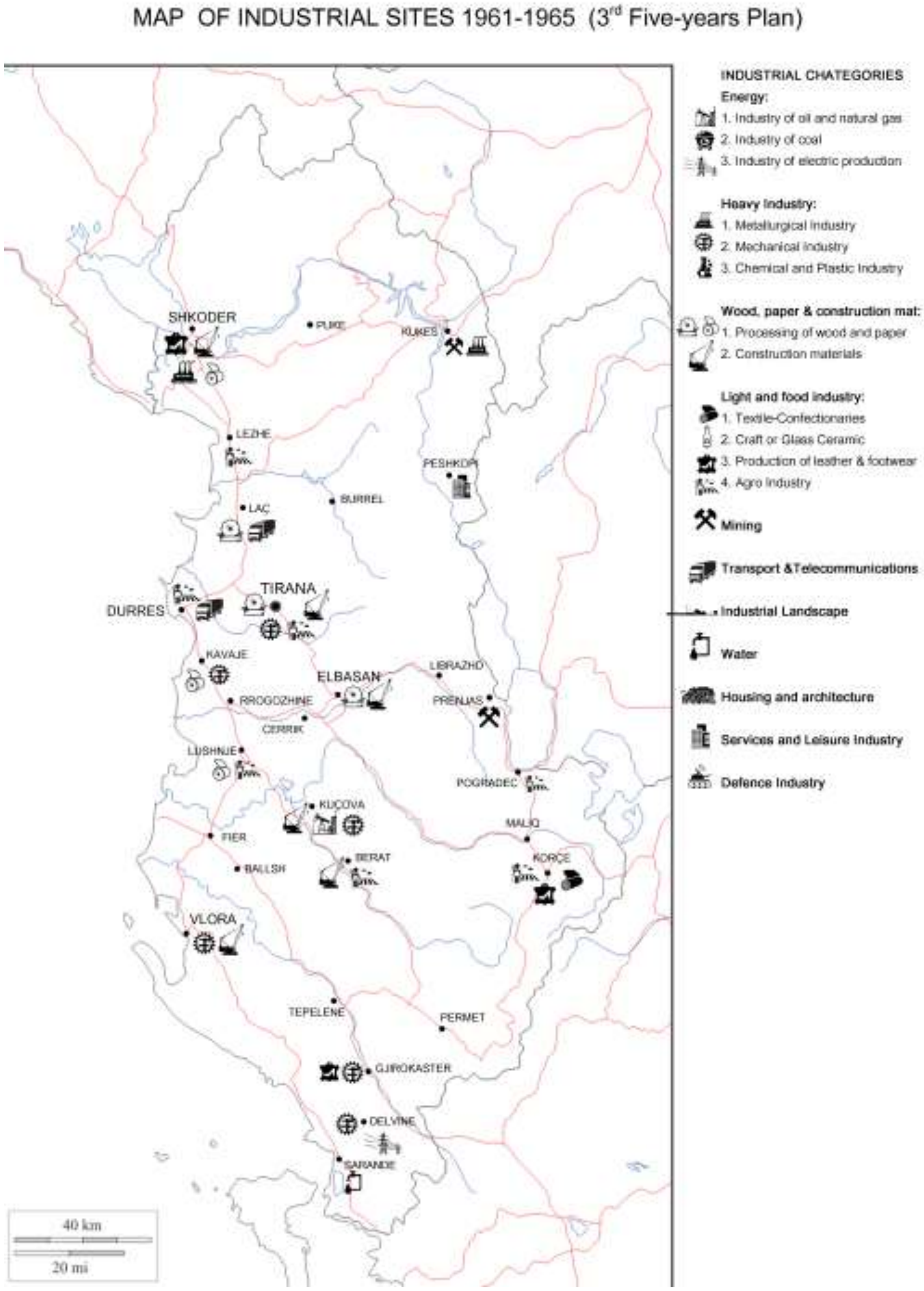


Figure 68. Map of industrial sites in Albania, 1961-1965 [Elaborated by the author]

MAP OF INDUSTRIAL SITES 1966-1970 (4th Five-years Plan)

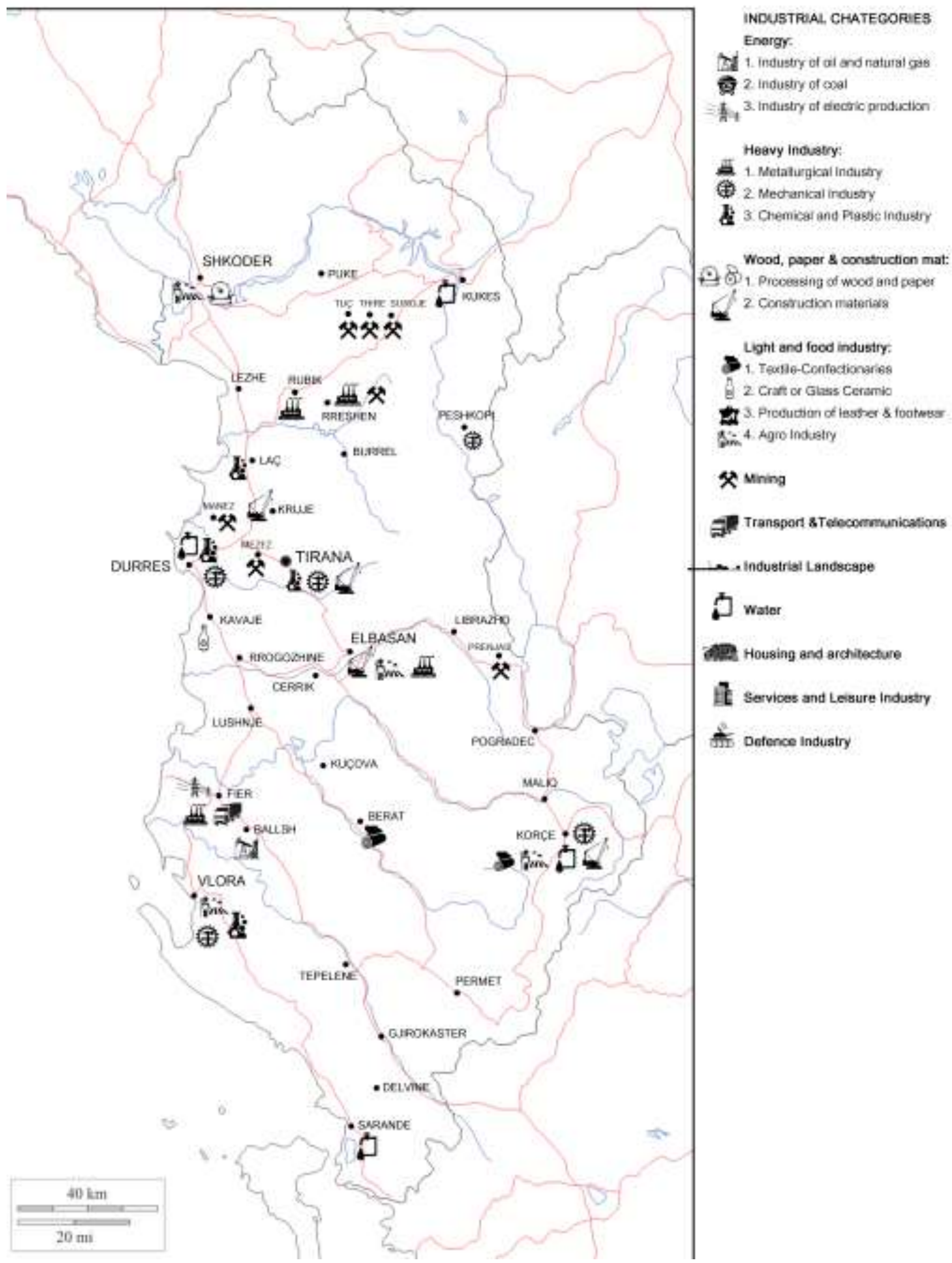


Figure 69. Map of industrial sites in Albania, 1965-1970 [Elaborated by the author]

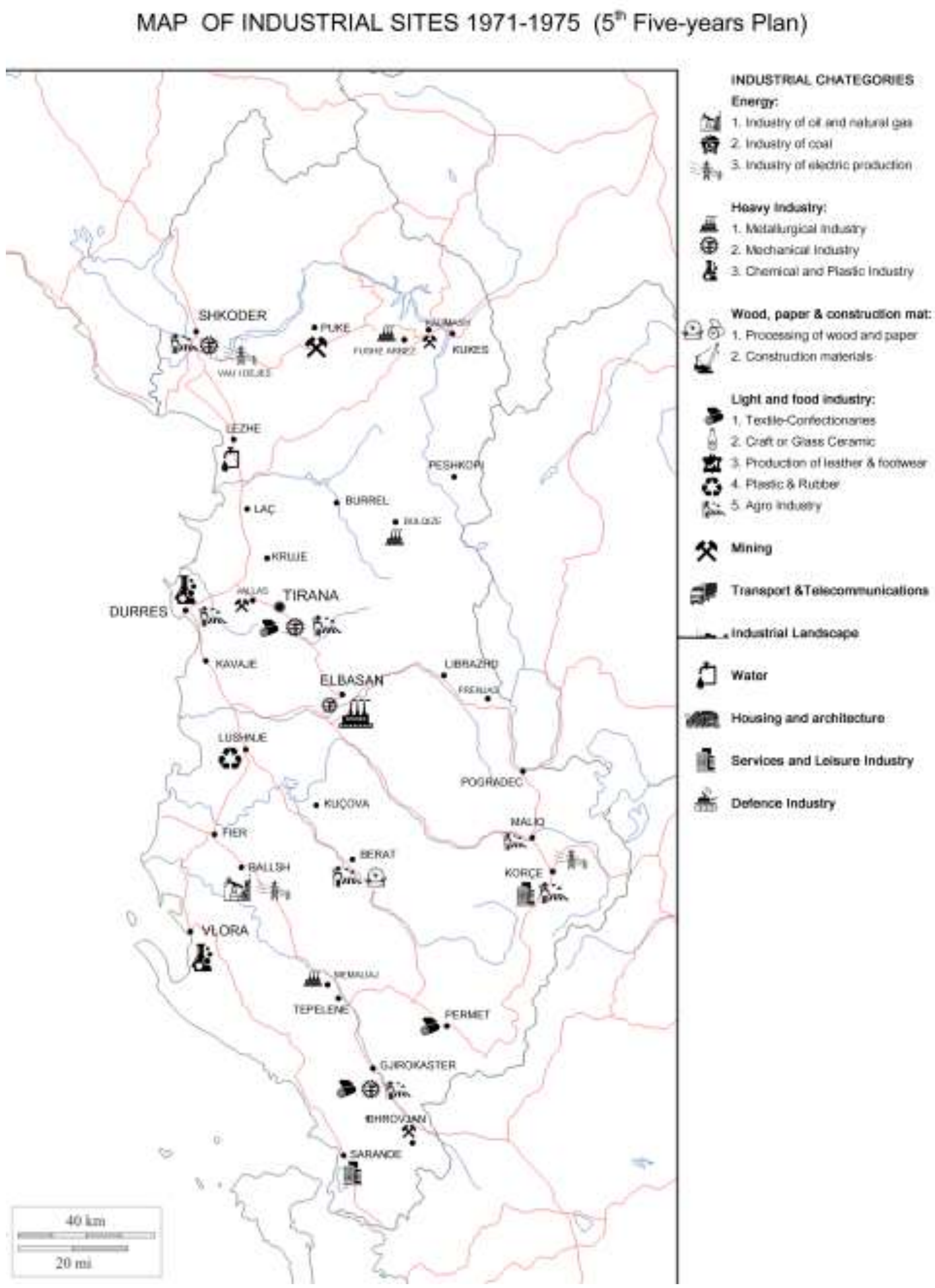


Figure 70. Map of industrial sites in Albania, 1971-1975 [Elaborated by the author]

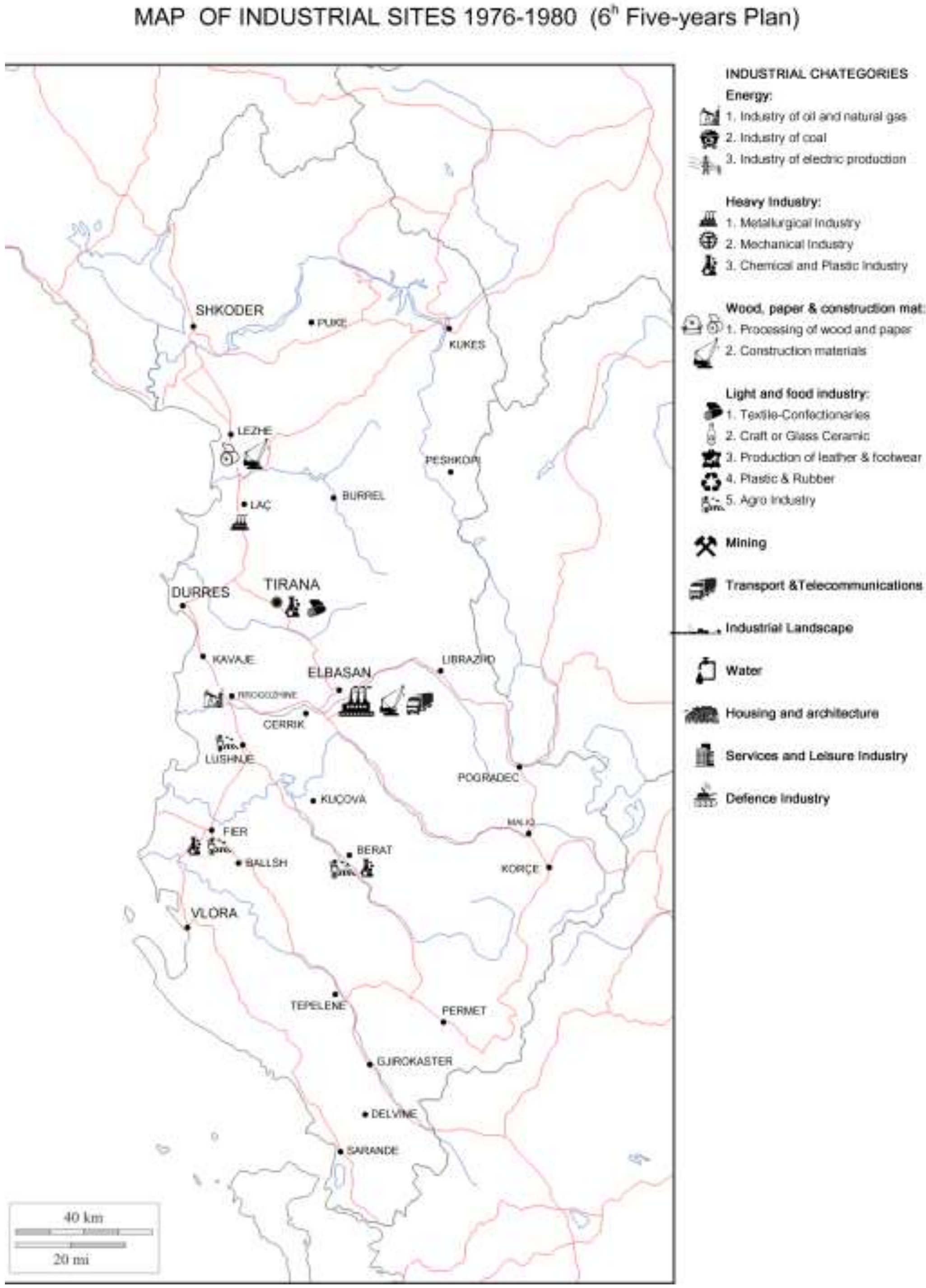


Figure 71. Map of industrial sites in Albania, 1976-1980 [Elaborated by the author]

MAP OF INDUSTRIAL SITES 1981-1985 (7th Five-years Plan)

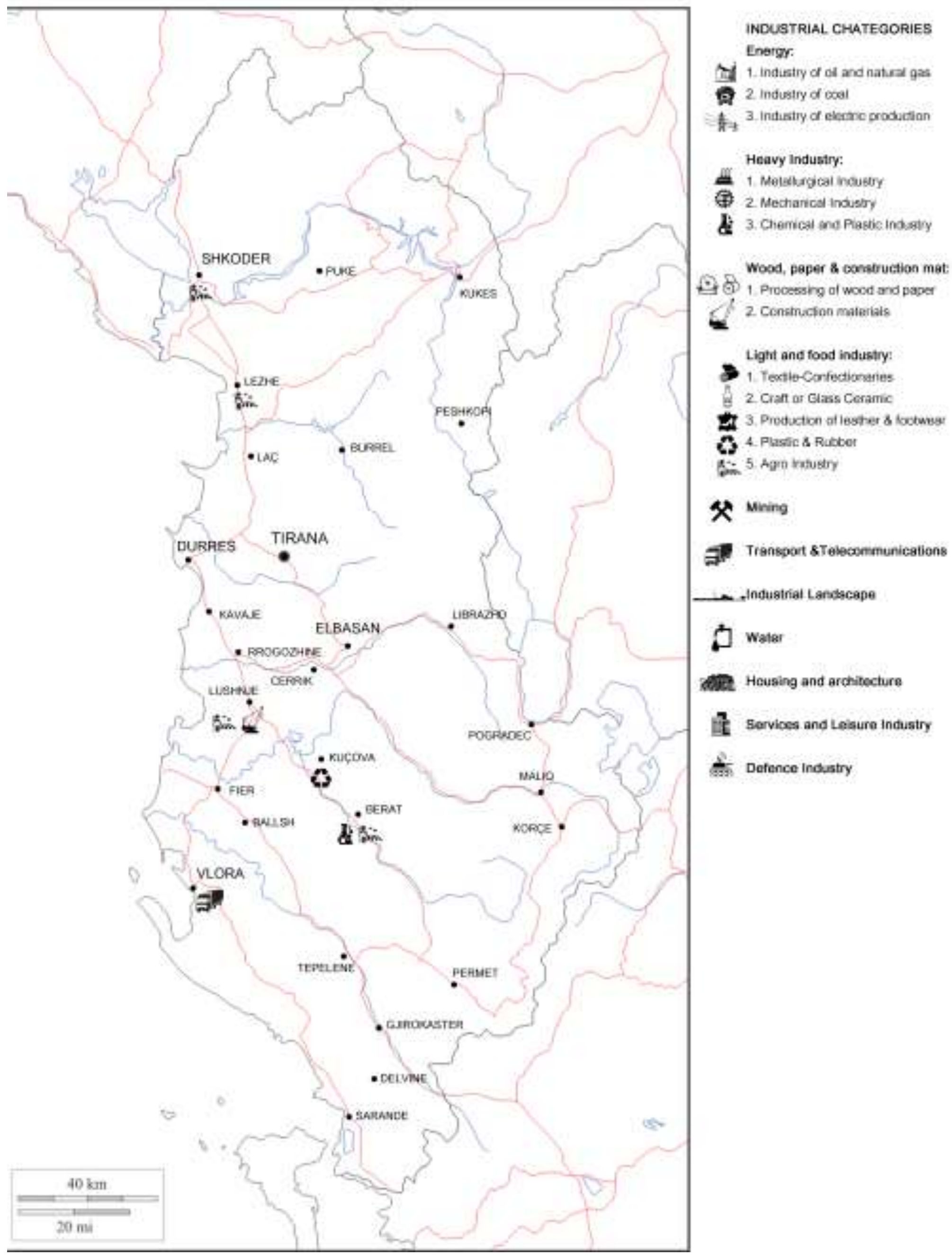


Figure 72. Map of industrial sites in Albania, 1981-1985 [Elaborated by the author]

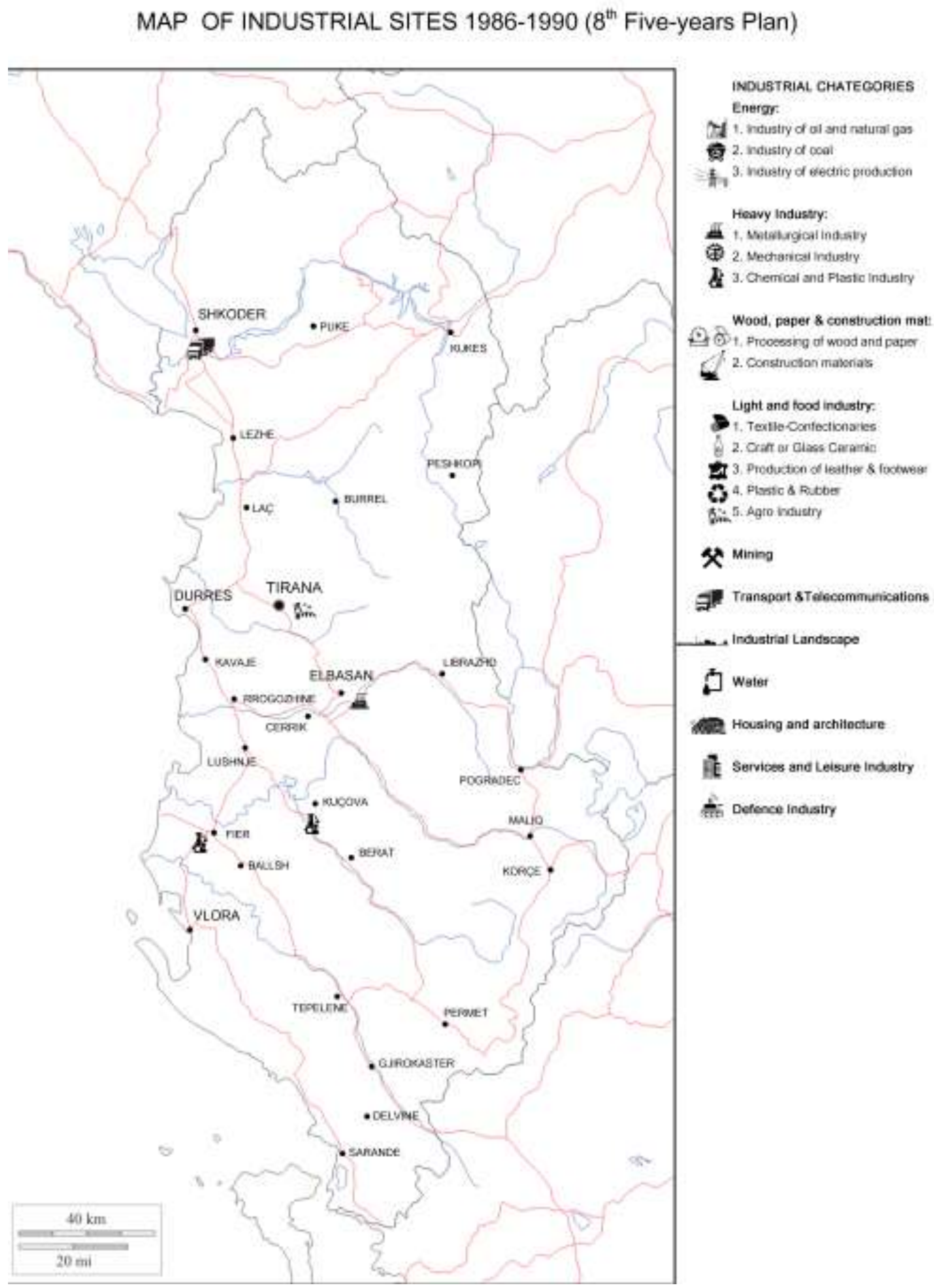


Figure 73. Map of industrial sites in Albania, 1985-1990 [Elaborated by the author]

The following map (*Fig. 74*) presents a proposal, made by the author, for Albanian Route of Industrial Heritage (ARIH), taking as reference the European Route of Industrial Heritage (ERIH). It represents an integrated heritage intenerary, intending the exploration of unexplored interesting sites. Although many of this sites are currentyl in critical condition, this map may serve as starting point for government/investors/foreign donors to invest in renovation of this areas.

Figure 74. Albanian Route of Industrial Heritage - ARIH [Proposal by the author].

4.4. Case study 1: “Steel of Party” – Metallurgical Complex of Elbasan

Elbasan, is one of the most important cities of Albania. It is located in the centre of the national territory and is an important crossroads, for national and international transport connection. It is situated 50 km from Tirana. Its strategic location was appreciated since antiquities, in fact it was an important station of the famous Roman Egnatia road, which connected Rome with Constantinople.

The city has an important history as commercial centre since the Roman and through the Ottoman period. Based on this tradition, during the '20-'30 in Elbasan a significant craft production was developed and also the first industrialization steps were done with the installation of the industries of alcohool, tobaccos and cigarettes, oil and soap. After the Second World War, the city had important progress in the economy and urban development. A lot of new industries was established as food and construction factories, and an important investment was done in the so called "black metallurgy", that transformed forever the character and economy of the city [Akademia e Shkencave, 2009, p. 585-588].

The decision for the construction of the metallurgical complex of Elbasan was part of an important propaganda agenda. The communist government after the rupture with the USSR, needed to show and confirm the power of the new ally, the Republic of China. Therefore, inspired from the visit of Chinese leader Çu En Lai in 1964, during the Fifth Congress of the Party of Labor of Albania, the communist leader (Enver Hoxha) promote the erection of the metallurgical complex of Elbasan as the most important industrial complex throughout the country, part of the fourth 5-years plan (1966-1970) [Halili Nj., 2012, p. 39], as illustrated in Fig. 75. He stated that the giant of Albanian industry would change the fate of the country through a fast and prosperous economic growth, thanks to the financial and technical support of the Chinese friendship. So, he affirmed that would represent for the Albanians the “second liberation” of country after that one of the Second World War [Institute of Marxist-Leninist Studies, 1981, p. 337-357].

The "Metalurgjiku" was conceived in the Fourth Five-Year Plan (1966-1970) promoted through Chinese partnership and was completed during the period 1971-'79. It construction is strongly related with the jubilee of the liberation of the country (1969). It was an important date for the Party and its propaganda that with international aid of the Republic of China invested in 30 very important projects. The great aim of the fourth and fifth plan was to bring the Metallurgic Complex to a capacity of process of 800 thousand tons of iron-nickel ore a year and production of 250 thousand tons of steel, sheet metal of various dimensions, water, oil, gas conduit tubes, iron-nickel and cast iron for the foundries. This huge complex will be not only self-sufficient but it will serve all the industry of the country [Klosi M., 1969, p. 21-22].

To cope with the huge production aforementioned were constructed 520 buildings, including plants, factories and an important transport network inside with railway, cable car and of course streets. This huge industrial complex transformed the entire landscape of Elbasan city. It was located on the west of the centre city, limited to the north by the national road that links with Tirana and Durres, to the south by the river Shkumbini and to the west by productive farmland typical of this plain.

For the realization of the complex were moved 2.5 million m^3 of ground, were used 830 thousand m^3 of concrete and 146 thousand m^3 of metal precast elements, which shaped the Albanian giant of Metallurgy (*Fig. 76*). The complex had a strong impact on the transformation of the landscape and skyline of the city, the 2 big furnaces were flanked by high cooling towers and even more high chimneys that have become symbols of the hated and loved the city (*Fig. 77*).

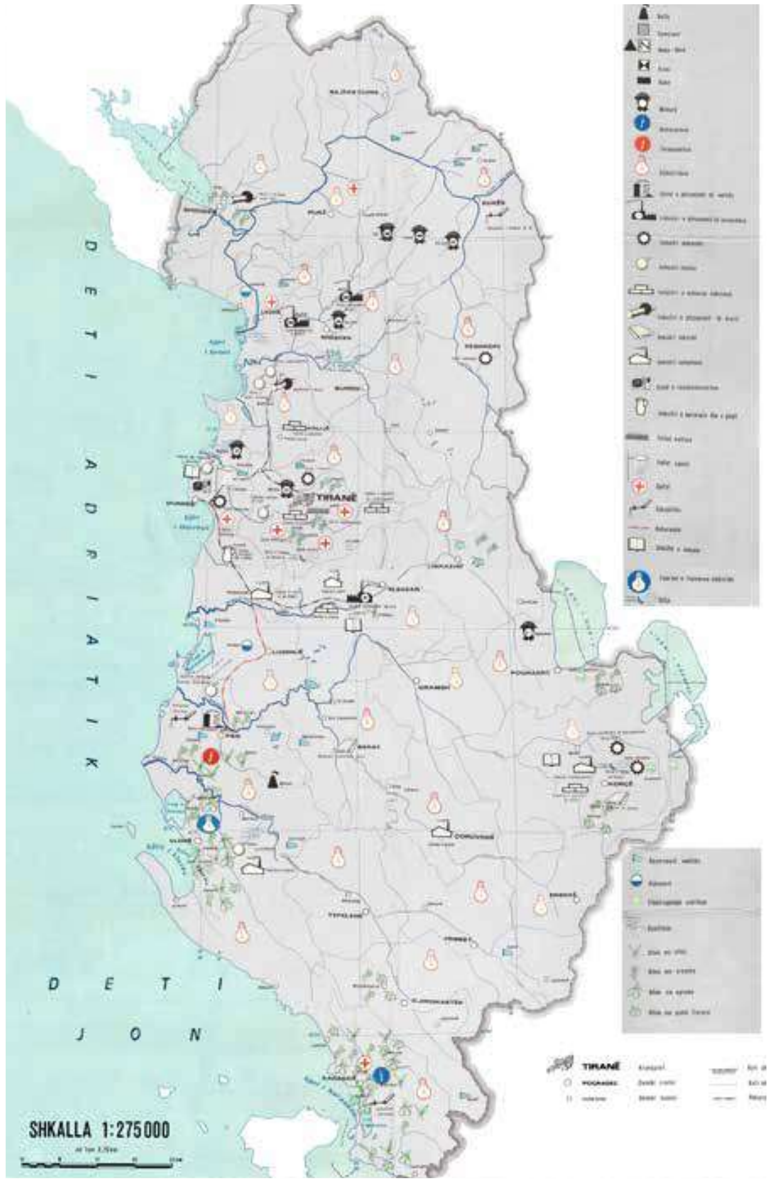


Figure 75. Fourth Five-Year Plan (1966-1970) promoted through Chinese partnership [Saqellari, Ll. RPS e Shqipërisë. Material Hartografik: Vepra kryesore të përfunduara në planin e katërt v-vjeçar 1966-1970. Vendi albh.3. b.5].

Figure 76. Isuf Sulovari, "The giant of metallurgy" [National Art Gallery of Tirana].

Figure 77. Actual condition of the Metallurgic complex [photo by author].

5.2 Survey on the actual conditions of the Metallurgical Complex in Elbasan

Dealing with EU and local governmental policies to rebuild the abandoned industrial sites in Albania, it is necessary to evaluate properly the most important ones. This study aims to analyze in deep the Metallurgical Complex, once considered as the “engine” of the economic development of the Elbasan city. The paper should include the record of actual situation, analysis of the industrial site and proposals for strategies of regeneration and adaption of the complex. This study makes possible a clearer introduction to national and international level of the values and potentialities of Albanian industrial assets with the vision of future sustainable development of local industries.

As the Metallurgical Complex of Elbasan emerged with the intention of creating large centers of production, the site represents memorable social, historical and engineering values. The industrial complex was seen as the pride of Albanian and Chinese specialist which worked together to construct about 520 objects and ultimate industrial lines.

The communist regime persisted in the industrialization process to create as called “the socialist society” and fill the gaps of the past by adding industrial domestic production. The construction and operation of Metallurgical complex included the work of 12000 of people, under state directives for the promotion of working class in the industrialization process. The “movement 1+2”, which implied the commitment of one qualified worker undertakes to qualify two others with no economic profit, was one of the various stimulations of the party to promote hard and qualified work. The ideology represented in the construction and working time of the Metallurgical complex of Elbasan reflected the socialist attitude. The new socialist worker was considered hard worker, disciplined, high performance and decent citizen, showing no personal material interest. Albanians felt proud of producing for the first-time local industrial elements with high standard, meeting the domestic production requirements.

The 460 km^2 of industrial territor comprises an area of about 300.000 m^2 industrial buildings, about 20.000 m^2 capanons and 36 km rail track which is connected to national railway. The following maps illustrate the most important factories located in the Metallurgical Complex of Elbasan (*Fig. 78*).

Figure 78. Actual condition of the Metallurgic complex [photo by author].

A schematic view of factories utilization could give a better view of actual situation (*Fig. 79, 80*). The following are described main industrial factories in terms of functional use before ’90 and nowadays. Factories that changed their function after ’90 (*Fig. 81-90*):

- **Sponge Factory** - operates since 1997 in one of the objects of metallurgical complex, by private company “Expansion”.
- **The electrical substation** - is still in function supporting the city of Elbasan. Part of the objects of this site are privatized for production of granite, gas and SO_2 (Starflex Granitis Koll, ELBAGAZ, Budogas and Production SO_2).

Privatized Factories that did not changed their function after ’90:

- **Medium Foliation Factory** – privatized by Kürüm Holding Group Albania. The factories assure now the production of lime, steel, oxygen and scrap processing. Furthermore, in 2013 Kürüm International privatized four hydroelectric power plants in Albania with 400 kw/h capacity to meet the demands of production in the industrial site of Elbasan. In 2014 the company produced 303000 tons of re-bars and 443000 tons of billets [Kürüm Holding, 2014, p. 27]. The objects taken by the company seemed to be restored and the site were contoured by high concrete walls (*Fig. 86*).

- **Ferro-Chrome Factory** - was privatized by AlbChrome. It actually produces ferro-chrome (mixture of iron and chrome with some composition of carbon). The plant is compound of two furnaces, both in function, producing high-carbon Ferro-Chrome[16]. The actual production capacity of 33000 tons is totally exported in European and other industrial countries. The first one was rehabilitated and put on work in 2013 by BALFIN Group.
- **Refractory materials Factory** - was privatized from 1996 by "Refraktare Sh.A." Company, producing bricks.
- **Coke Plant selection and Metal Plant selection** – under the decision of Council of Ministers Nr. 378, date 12.8.1999, these sites were described as the change of owner wright from public properties to private owner.
- **Cement Factory** – privatized by Seament Holding in 2001, named today as ECF (Elbasan Cement Factory). It is located in the ex-Lime Factory, using the carrier to produce limestone and cement. The decision was made by the Albanian Assembly with the proposal of the Council of Ministers, by the law nr 8805, date 17.5.2001.
- **Mechanical Factory** – was privatized in 1996 from 439 shareholders with the name of Mechanical Factory sh.a. Nowadays there are still produced mechanical equipment.

Abandoned factories:

- **Remount Factory** – the factories are out of function and seriously degraded (*Fig. 81*). The warehouses are constructed with red brick walls and metal truss cover. Most of objects are one – two floors with high height. From the photos, can be seen their degraded condition, with ruined walls and bare structure of concrete beams and metal king truss roof. Windows of abandoned warehouse have shattered glass in all facades and in some cases, there was left no more than the naked object's structure.
- **The Wire Factory** - was also degraded and not in working conditions.

[16] Information from online page of ALBCHROME. Found at http://albchrome.al/ferro-chrome.html

- **Transport system** of 36 km long rail track which was connected with the national railway is nowadays out of function. From the skyline of the photo we can see the furnaces and coke factories, mostly out of function. Minor local private businessmen have used some of the small objects as warehouses for depositing cement sacks, but clearly have not done any investment for the overall conditions.
- **The Furnaces -** located in the southern part of the site, are highly damaged and also out of function (*Fig. 84*). Most of brick walls have been decayed and only concrete structural elements apparently are not damaged.

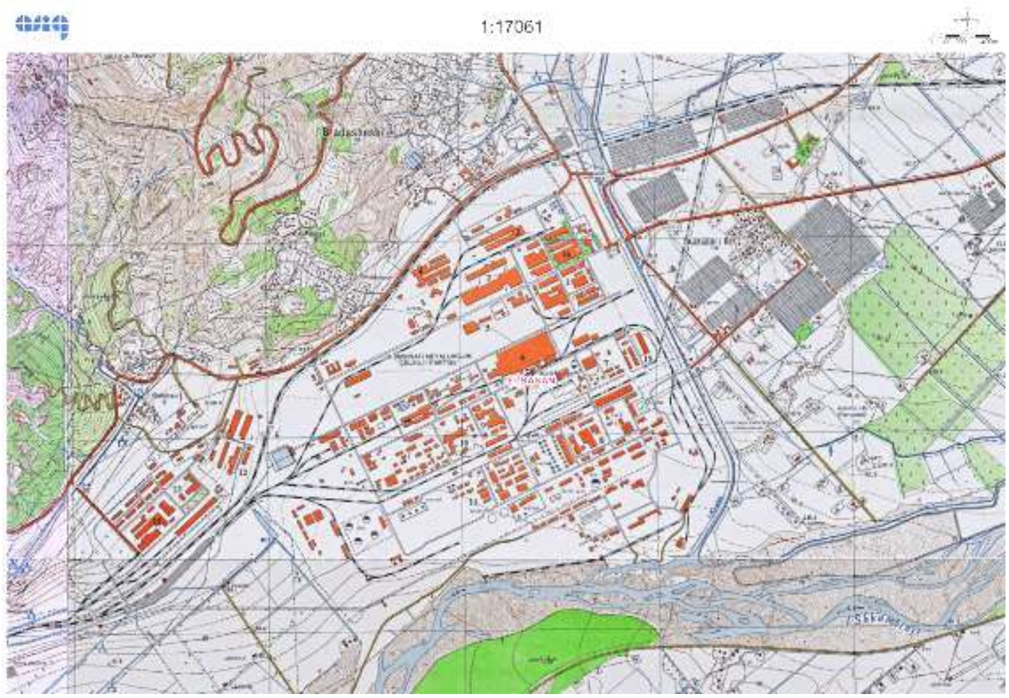


Figure 79. Map of the metallyrgical complex Elbasan [http://geoportal.asig.gov.al/Map.aspx?lang=AL].

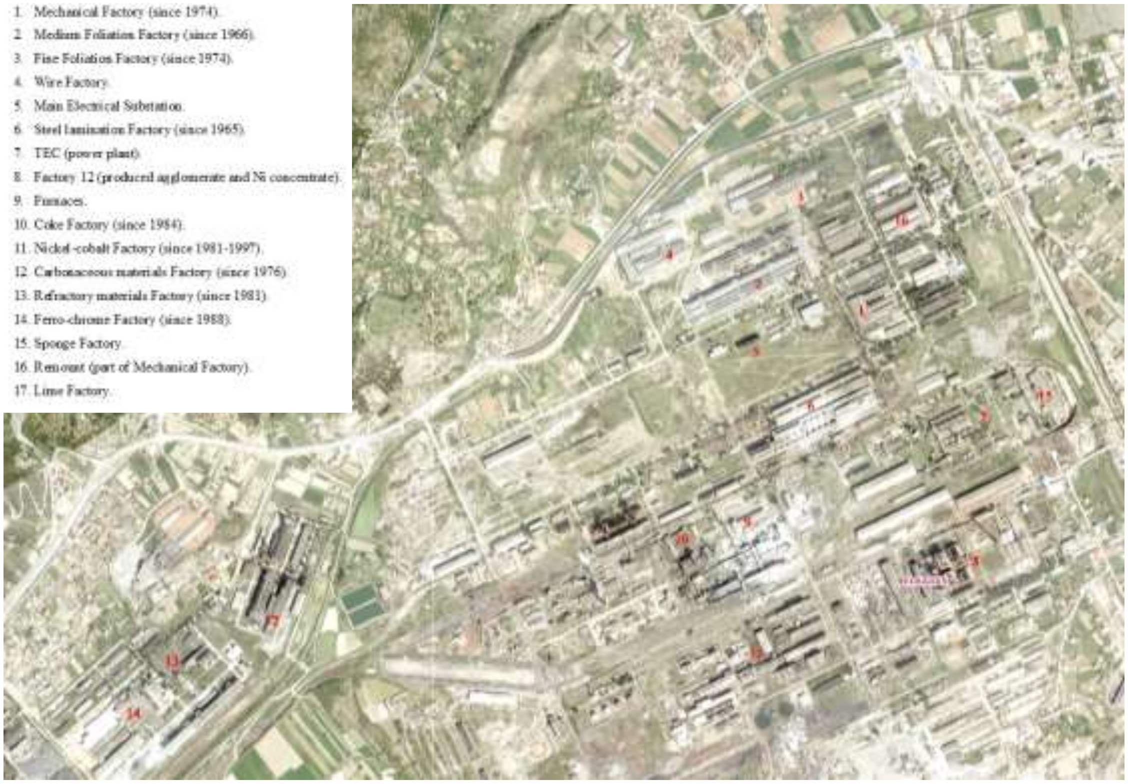


Figure 80. Map of the itenerary of trip inspection at the Metallurgical Complex Elbasan [elaborated by author].

Figure 81. Objects of the Remount Factory [photo by author].
Figure 82. Mechanical factory, Metallurgical Complex Elbasan [photo by author].


Figure 83. Metallurgical Complex Elbasan [photo by author].
Figure 84. Furnaces, Metallurgical Complex Elbasan [photo by author].


Figure 85. Metallurgical Complex Elbasan [photo by author].
Figure 86. Metallurgical Complex Elbasan [photo by author].


Figure 87. Metallurgical Complex Elbasan [photo by author].

Figure 88. Metallurgical Complex Elbasan [photo by author].


Figure 89. Metallurgical Complex Elbasan [photo by author].

Figure 90. Metallurgical Complex Elbasan [photo by author].

4.5.2 Territorial analysis

General National Plan (GNP) considers Elbasan as a primary urban center, through which pass various significant roads as the VIII Corridor, National Highway Tirana-Elbasan, State Road Elbasan-Rrogozhina and the one to Librazhd. It is part of the central axis of the transport corridor Tirana-Elbasan-Berat-Gjirokastra. GNP has given some directions in respect to five territorial systems, most of them focusing on better cities interconnection, stimulation of local production and processing capacity, increase of agricultural productivity, improve of natural environment and increase of green spaces. In general, Elbasan is seen as an important regional pole, with the potentials to become a national logistic hub and an interconnection point between other cities of central axis as Korça and Berati but also the Durres-Tirana pole (*Fig. 91, 92*). The goal is that regional development poles become the *epicenter of multifunctional development* [Decision of Council of Ministers no. 881, 2016, p. 187].

Figure 91. Map of urban system and spatial interconnection [elaborated by the author; source: General National Plan, 2016, p. 158].

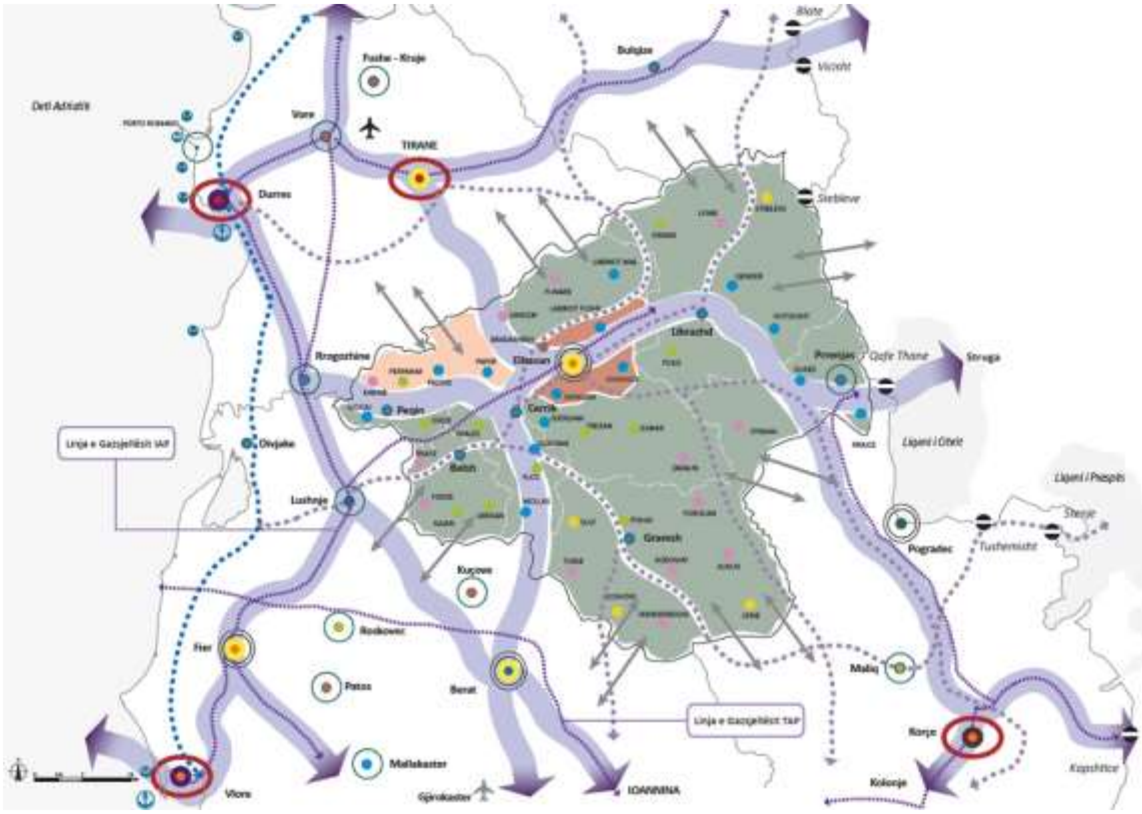


Figure 92. Regional development pole Elbasan Complex Elbasan-Librazhd [General National Plan, 2016, p. 168].

Strategical projects proposed for Elbasan pole relate to use of natural potentials and diversificate fluxes of energies, creating possibilities to realize photovoltaic parks, reactivation of railway lines, revitalization of ancient routes and touristic paths, support of elite tourism in order to exploit the country’s treasured nature.

Through years, the Metallurgical complex of Elbasan comprised a serious industrial asset to be faced. National Government has given the opportunity to regenerate the degraded sites by the process of privatization and usage for a long period of time. Due to the massive extension, the privatization has segmented the entire entity and leaving out of function the most deteriorated factories. The site has been in jurisdiction of Central Government and Ministry; hence the Municipality of Elbasan have had no competences in imposing local will for site changes.

The General Local Plan of Elbasan (GLP), was approved by Decision no. 1 of National Council of Territory, date 29.12.2016. This plan was assisted by the USAID Project for Planning and Central Governement (PLGP) and Co-PLAN, Institute for Development and Habitat. GLP proposes several objectes, which have been translated into specific projects to be implemented. As describes this plan, “Objective 1” the sustainable economic development (*Fig. 93*). This objective could be implemented by projecting the following programs:

- Increase of businesses presence in the metallurgical area by supporting with the necessary infrastructure (project for land/water cleaning from heavy industrial pollution and rehabilitation in order to offer appropriate standard for new economic objects construction).
- Revitalization of former industrial areas by presence of new private entrepreneurship. This process could be facilitated by the negotiation of Municipality, in order to ensure proper use of public land (project for cleaning of industrial site from heavy contamination).

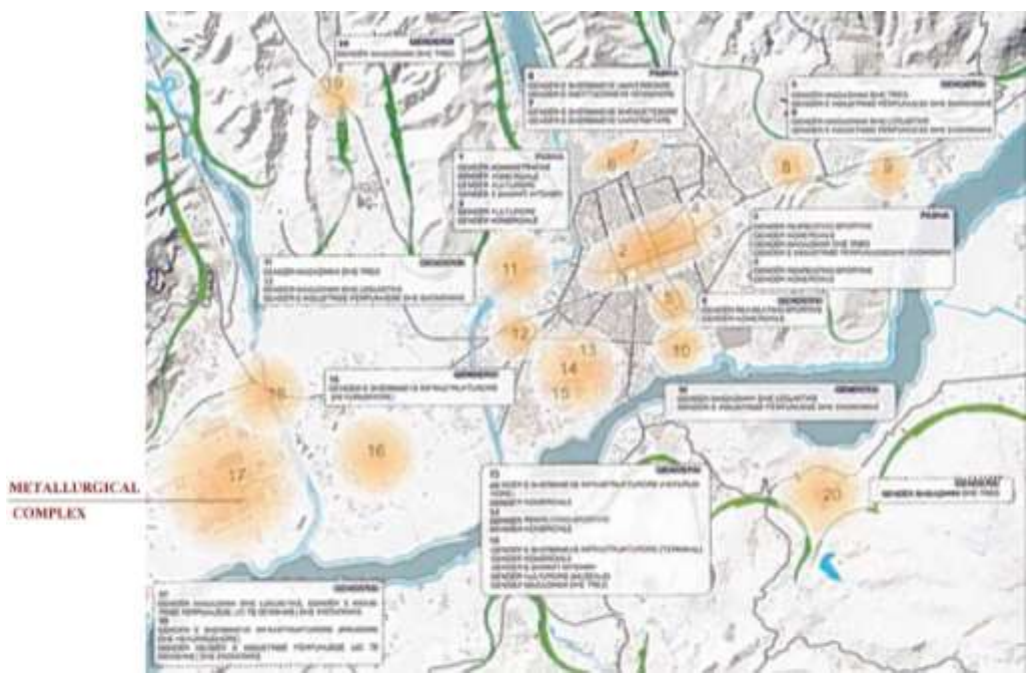


Figure 93. Metallurgical Complex Elbasan [Territorial Stategy of General Local Plan of Elbasan, 2016, p 149].

Detailed feasibility study will be necessary to determine the best possible alternatives for rehabilitation and regeneration of degraded industrial sites, in short and medium term. Interested actors can cooperate with local government and community, foreign donators, Ministry of Urban Development and Ministry of Economic Development, Tourism, Trade and Entrepreneurship.

4.5.2 Multicriterial analysis

Multicriterial analysis is the process of identification and selection of best alternatives, based on various parameters and final expectactions. This decision-making tool assembles all possible information, alternatives and preferences, which all formulate the multi-objective problems which are then addressed into different decision variables.

The multi-criteria analysis, originally concepted as Electre-method developed by Benayoun in 1966, has been used by various French and English authors (e.g., Buffet, Roy, Van Loon, Marks and Cohon, Nijkamp, Van Delft).

This model is widely used to deal with planning issues, providing deep understanding of variables and the weight of their value in the decision-making process. Due to contraversary issues on present planning and policy-making, physical planning is conditioned by decisions which balance social vs. market interest, public interest and national/regional/local planning. It is a good platform to have a full perception and make the more efficient decision, based also on compromise, optimization and satisfying. Adequate decision-making, by using multiple criteria analysis, optimizes choises and offers '*information on the nature of conflicts so as to make the trade-offs in a complex choice situation more transparent to a decision-maker or policy* agency' [Peter Nijkamp P., van Delft A., 1997].

The structure used for the multiple criteria analysis in this report, develops in the following order: definition of problematics, definition of alternatives, definition of criterias (variables), analysis of alternatives, determination of most important alternatives and conclusion drawing (*Fig. 94*).

1. PROBLEM DEFINITION
2. DEFINITION ALTERNATIVES
3. DEFINITION VARIABLES
4. ALTERNATIVES ANALYSIS
5. DETERMIANTION OF ALTERNATIVES
6. CONCLUSION DRAWING

Figure 94. Multiple criteria analysis structure [elaborated by the author].

The parameters used for the multiple criteria analysis of the Metallyrgic Complex of Elbasan are:

- Structures and functional recovery: revitalization through rehabilitation of degraded structures, creation of green services and other functions
- Regeneration of the surrounding area of the Metallurgic complex
- Environmental issues
- Mobility issues
- Accessibility
- Infrastructures

In the following, is made an analysis of the most important development criterias dictated by the Genral National Plan put alongside with the strategical objectives of the General Local Plan of Elbasan. As can be seen, the LGP has translated the directions of NGP into five trategical objectives. Each of them is composed of strategical projects, which will be implemented in a range of period until 2030 (*Fig. 95*, *96*).

For each of the objectives of Local General Plan, is made the SWOT analysis, aiming to find the role of the industrial area in each of these objectives (*Fig. 97*).

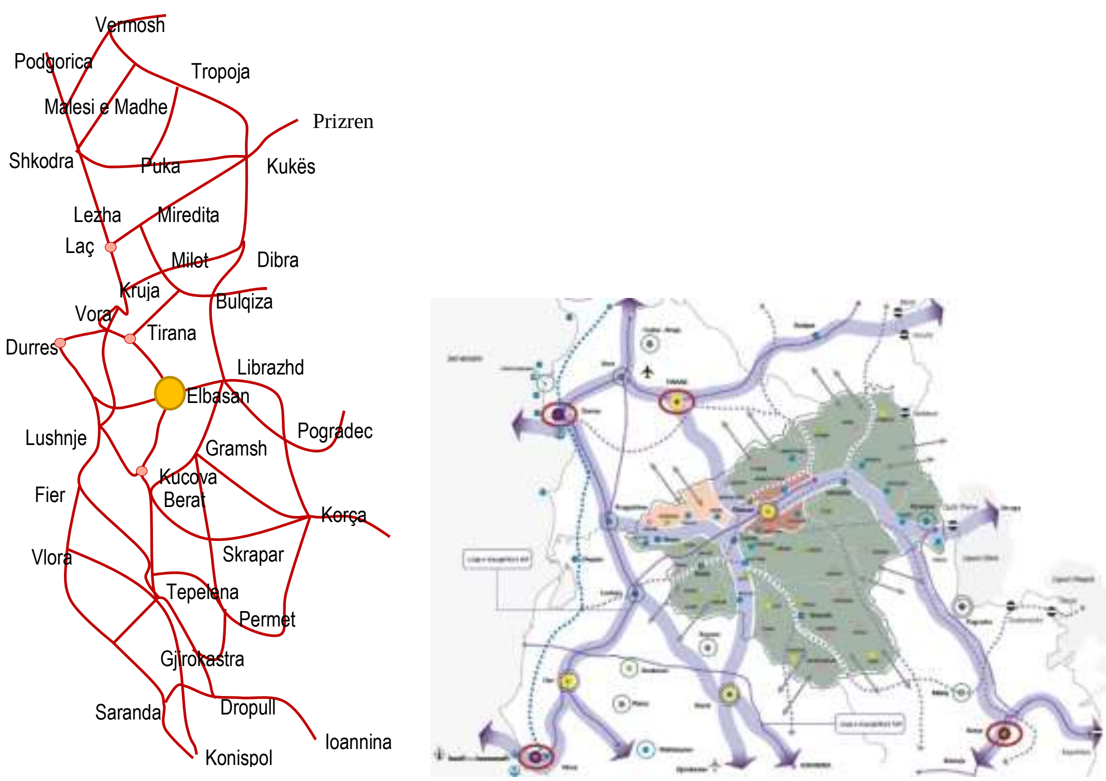


Figure 95. National vs. Local evaluation [*first map elaborated by the author*, *second map from Regional development pole Elbasan Complex Elbasan-Librazhd; General National Plan*, *2016*, *p. 168*].

NATIONAL GENERAL PLAN

- ECONOMY
- ENERGY (diversification of fluxes of energies, possible photovoltaic parks)
- TOURISM (use of natural potentials, revitalization of touristic paths, elite tourism)
- TRANSPORT (use of natural potentials, revitalization of touristic paths, elite tourism)
- AGRICULTURE

LOCAL GENERAL PLAN

O.S. 1 Economic development

- New private entrepreneurship
- Possible installation of photovoltaic park
- Intensification of urbanization in actual urbanized centers
- Support of local economies through financial instruments

O. S. 2 Protection of nature

- Rehabilitation and integrated management of river Shkumbin
- Improvement of water infrastructure
- Management of forests and pastures
- Management of urban wastes
- Mitigation of environmental effects from industrial activity
- Drafting and application of sectorial plan of tourism
- Revitalization of touristic assets

O. S. 3 Improvement of transport infrastructure

- Consolidation of connection of important urban centers with the city of Elbasan
- Consolidation of new ring road, better roads in city
- Better access and interconnection with periphery units
- Better public transport; multimodal station
- Green mobility (bicycle, pedestrian and recreative paths)

O. S. 4 Stimulation of agriculture and livestock sector

- Rehabilitation and maintenance of drainage network
- Projects for protection of agriculture land
- Stimulation of structures in function of agriculture

O. S. 5 Mitigation of social inequalities

Figure 96. Analysis of National and Local Plan of Elbasan, main parameters and strategical objectives [elaborated by the author].

SWOT ANALYSIS

O.S. 1 Economic development

Strengths

- Employment growth (focus on tourism and services)
- Strengthen of local economy

Weakness

- Not good site use (public/private)
- Not full connection with other neighbor cities (Kuçova)

Opportunities

- Interconnection with various cities
- Development empowered by national strategies

Threatens

- Creation of new polluting area
- Fast bankruptcy of small enterprises

O.S. 2 Protection of nature

Strengths

- Integration of historical, natural and agricultural tourism

Weakness

- High presence of polluting elements

Opportunities

- Use natural assets to lure tourists and locals, and develop various activities

Threatens

- Natural disasters due to climate change, erosion, landslides and flooding from rivers

O.S. 3 Imptovement of transport infrastructure

Strengths

- Support economic development

Weakness

- Lack of full connection Elbasan-Kuçova
- Low accessibility from center to periphery
- Not good support infrastructure agriculture

Opportunities

- New multimodal station
- Improvement of urban and interurban transport
- Faster interconnection

Threatens

- Creation of new polluting area
- Fast bankruptcy of small enterprises

O.S. 4 Stimulation of agriculture and livestock-secor

Strengths

- Increase of local productivity
- Increase of local employment

Weakness

- Conflict between agricultural and industrial use

Opportunities

- Consolidation of agriculture sector

Threatens

- Lack of preservation of productive land

Figure 97. SWOT analysis [elaborated by the author].

4.5.4 Environmental issues

Hot spots in the city of Elbasan, are mostly considered the areas of heavy industrial production: Metallurgic Complex, Enterprise of industry-mining supply in Balez, and Explosives Plant in Mjekes.

During the last decades, constant denunciations from the media (televisions, print and online media) have exposed and highlighted the high level of contamination produced by the Metallurgical Complex from the working industries. Results from the research made the Ministry of Environment in 2014 on the pollution level in the industrial site, show the alarming pollution levels, which are several times more than the normative set by BE. An interesting study was made in 2003, about the air, water, soil and plant and animal production quality [Tola Y., 2003, p. 26]. Data were collected by the industrial toxicology laboratory in Elbasan. One of the most important parameters to take into account is the Soot/SO_2, which in Elbasan is about 2-3; very high in comparison to European normative from which Soot/SO_2 ratio should be 1 [Tola Y., 2003, p. 50]. It is interesting to see that, according to analysis done from the laboratory, the concentration of metallic elements in water is within allowed standards, as result of the closure of most of factories. As a result, chrome and nickel are the most concerning elements in site. Especially soils which contain nickel need immediate rehabilitation, also because it is considered carcinogen. Agricultural lands are mostly contaminated by heavy metals like Zn, Cr and Cd, with a radius of 5 km from the metallurgical complex. These metals have high presence of carbon and iron oxide [Sallaku et al., 2003, p. 66]. This study also has analyzed inhabitants near the metallurgical area. Almost 2000 people unable to work because of industrial contamination through years; from which, in most cases, pneumatic disorders have been identified. Dust released directly in air containing iron-nickel are the most dangerous ones. From the conclusion made by a study in 2009, pollution from heavy metal as Pb, Ni and Cr is higher on air than in soil [A. Mazreku, A. Tashko, N. Civici, 2009, p. 471-478].

A new landfill for the municipality has been constructed in Paper, about 5 km from the city center, approved by the Decision no. 1 of National Council of Territory, date 27.10.2015. It is expected to function fully in 2017, providing relevant technical conditions, while will be constructed also an incineration plant. According to Document of General Local Plan of Elbasan Municipality (approved with Decision no 1 of KKT, date 29.12.2016), the municipality produces around 117 tons of wastes per day, 14 % of which are industrial wastes [Municipality of Elbasan, 2016, p. 271]. Their monitoring and clear evidence is not fully possible.

- Soil contamination from industrial discharge

According to GLP of Elbasan, based on the data obtained from the Albanian Geological Service, according to heavy industrial activity, there are some landfiels of industrial waste as: the riverbank of Shkumbin, TEC dump, damp of Plant 12 wastes (in Paper), the ferrous chromium slag deposition zone and the Fe-Ni slag damp (located in the south of the metallurgic complex, designed to deposit wastes for about 50 years). It is belived that the pollution radius of this industrial activity is about 30 km [Municipality of Elbasan, 2016, p. 275], affecting both residential areas and agricultural land. According to in field analysis made by CEMSA, 2013, main pollutant in the Metallurgical Complex of Elbasan were heavy metals and hazardous chemicals [CEMSA, 2013], considering with high impact on air, water and soil.

Pursuant to Law no. 10431, date 09.06.2011 “For Environmental Protection”; Law no. 10463, date 22.09.2011 “On Integrated Management of Heavy Wastes in the Albanian Republic” (amended); National Plan of Waste Management approved by VKM no. 175, date 19.01.2011; and National Strategy of Waste Management, Elbasan is part of Area of Waste 7 (togather with the cities if Cerrik, Belsh, Peqin, Gramsh, Librazhd and Perrenjas). Based also on General National Plan, Elbasan should draft the regional plan of waste management, with the intention to realize rehabilitation of existing landfields, construction of new regional landfield and the landfield for inerts and hazardous wastes. Furthermore, National Plan of Waste Management 2010-2025 proposes a fisibility study and finding proper financial support for construction of an implant for conversion of waste in energy.

General Local Plan of Elbasan, 2016, proposes the following measures to be taken, regarding the treatment of hotspots [Municipality of Elbasan, 2016, p. 452]:

i. Rehabilitation of old landfield
ii. Drafting the plan for landfield of deposit and treatment of hazardous wastes, which are planned to be collected from rehabilitation of metallurgical complex.
iii. Construction of station for transfer of industrial wastes, until it is definitely decided their final landfield.
iv. Taking measures to prevent further environmental pollution during rehabilitation process.

For the purpose of this study, with the request of the author were made some environmental analysis regarding soil, water and air pollution. The analyses have been conducted by Environment Monitor Center (EMC), a licenced laboratory located in Tirana, Albania. The tests were made in the deteriorated areas of the Metallurgical Complex of Elbasan on 15 March 2017. The analysis description of test parameters and analyses recults are prescribed in the following figure (*Table 7*).

Table 5. Soil test analysis, Metallurgical Complex, Elbasan [Analysis made by Environmental Monitoring Center, 2017].

TEST REPORT

Nr.1422 Date: 15/03/2017

Sample ID:	**Soil Sample**
Sample field name	**Soil sample near Metallurgical Complex, Elbasan** **41°05’26’’V** **20°0’52’’L**
Log Number	**001**
Sampled by:	**Environmental Monitoring Center**
Sampling date:	**28/02/2017**
Receiving date:	**28/02/2017**

Analyses date:	**29/02/2017**
Place of Origin:	**Kucove/Berat**
Sample description	**400g soil sample**
Container description	**Viale glass**
Transmission Code:	**001**

Analitical Results of the Sample

Analised Parameter	Test Method	Unit of Measure	Value
Lead(Pb)	**ISO 11047:1998**	**mg/kg**	**2.2**
Cadmium(Cd)	**ISO 11047:1998**	**mg/kg**	**<2**
pH	**pH-meter**		**8.1**

According to Directive 86 / 278 /EEC [Council Directive, 1986], Annex 1 A, limit of values for concentration of heavy metals in soil (mg/kg of dry matter) are: cadmium 1-3, copper 50-140, nickel 30-75, lead 50-300, zinc 150-300, mercury 1-1.5. Although there is no directive in force for Albania, the results of the test show values within EU parameters.

- Waters

The hotspot of metallurgical complex is classified of activity no 2, according to the classification of EPRTR considering the type of activity and emissions, and consequently should be subject of water, soil and air pollution analysis.

Due to the fact that wastewaters were discharged in pypes which end at Shkumbini river, also confimed by the Albanian Geological Service [Council Directive, 1986], it is worrying the quality of water wells drawn from the families located along the river stream of Shkumbin.

The water tests conducted by Environment Monitor Center (EMC), on 15 March 2017, in the deteriorated areas of the Metallurgical Complex of Elbasan, are prescribed in the following figures (*Table 6, 7*). Test were made by taking samples from well water and surface waters of Shkumbin River, near Metallurgical Complex of Elbasan.

Table 6. Sample – well water, Metallurgical Complex, Elbasan [Analysis made by Environmental Monitoring Center, 2017].

TEST REPORT

Nr.1701 Date: 15/03/2017

Sample ID:	Well water
Sample field name	Sub terrain water sample 44°17’25’’L 45°49’10’’V
Log Number	002
Sampled by:	Environmental Monitoring Center
Sampling date:	28/02/2017
Receiving date:	28/02/2017
Analyses date:	29/02/2017
Place of Origin:	Elbasan
Sample description	1.5L liquid sample
Transmission Code:	001

Analytical Results of the Sample

Analyzed Parameter	Method	Unit of Measure	Value	Detection
ph*	Multi 340i/ISO 10523:2012Water quality, determination	--	7.35	0.01
Pending material	Filtering (filter<0.45 μm Whatman	mg/L	<2	0.1
BOD	S SH EN15586 Water quality	mg/L	2	1

According to the Decision of the Council of Ministers no. 177, date 31.03.2005 “For permissible liquid discharge rates and zoning criteria for receiving water environments”, standart rates are: pH = 6 – 9, pending material = 50 mg/l, BoDs = 50 mg/l.

Table 7. Surface water sample, stream of Shkumbini reaver near the Metallurgical Complex, Elbasan [Analysis made by Environmental Monitoring Center, 2017].

TEST REPORT

Nr. 1700 Date: 15/03/2017

Sample ID:	River Water
Sample field name	Superficial water sample of Kush (Shkumbin river branch) 41°87’50’’L

	45°50’00’’V
Log Number	**001**
Sampled by:	**Environmental Monitoring Center**
Sampling date:	**28/02/2017**
Receiving date:	**28/02/2017**
Analyses date:	**29/02/2017**
Place of Origin:	**Elbasan**
Sample description	**1.5L liquid sample**
Transmission Code:	**001**

Analytical Results of the Sample

Analyzed Parameter	Method	Unit of Measure	Value	Detection
ph*	**Multi 340i/ISO 10523:2012Water quality, determination**	**--**	**7.89**	**0.01**
Pending material	**Filtering (filter<0.45 µm Whatman**	**mg/L**	**11.3**	**0.1**
BOD	**S SH EN15586 Water quality**	**mg/L**	**6**	**1**

Referring to the values of the components measured at allowed norm values, the measured values for the well water samples (*Table 6*) are within the allowed norms, and are even at a smaller value compared to the norms allowed by the Decision no. 177.

According to the Decision of the Council of Ministers no. 177, date 31.03.2005 “For permissible liquid discharge rates and zoning criteria for receiving water environments”, standart rates are: pH = 6 – 9, suspended matter = 50 mg/l, BoDs = 50 mg/l.

By comparing the values of the components measured (*Table 7*) with the values of the norms allowed under Decision no. 177, dated 31.02.2005 "On permissible liquid discharge rates and the criteria for zoning of receiving water environments", we can say that the measured values are within allowed norms.

- Air

According to the KLSH report [High State Control, 2008], 2008, the level of dust capture has been significantly improved. The investments made at the “Kurum” steel plant, the cement factory and the Ferro-Chromite plant have resulted in an acceptable rate of dust emission (less than 50 mg/m3). The air tests (total gas concentration) conducted by Environment Monitor Center (EMC), on 15 March 2017, in the deteriorated areas of the Metallurgical Complex of Elbasan, are prescribed in the following figure (*Table 8, 9*). The samples were taken to analyse the total concentration of granular material in suspension (LNP) in the air and the total concentration of gases.

According to Decision no. 435, dated 12.09.2002 "On approval of air discharge rates in the Republic of Albania", LNP rate for "Industrial production and use of metals", the normative for LPN is 100 mg/m³. According to this, the measured value of 0.014 mg/m³, is within the allowed norms (*Table 8*).

Table 8. Total concentration of granular material in suspension (LNP) in the air, Elbasan [Analysis made by Environmental Monitoring Center, 2017].

Report Results
Levitating particle mass in air (LNP)

Report Nr.	**890**
Customer:	**Boriana Golgota**
Measurement Station.	**Metalurgical Elbasan, Moving across the site**
Date of measurement	**28/02/2017**
Measurement method	**DS CEN/TS 16450:2013**
Measuring Tool	**MicroDust Pro Casella**

According to Decision no. 435, dated 12.09.2002 "On approval of air discharge rates in the Republic of Albania", standard rates are: CO = 1000 mg/m³, NO_2 = 400 mg/m³, SO_2 = 400 mg/m³, O_2 = 21% (for H_2S – there is not standard). Referring to the abovementioned decision, the values of the gaseous components that are within the allowed norms (*Table 9*).

Table 9. Total concentration of gases, Elbasan [Analysis made by Environmental Monitoring Center, 2017].

Nr.	**Place of measurement**	**Time of measurement**			**Result**	
		Start	**End**	**Duration**	**LNP mes mg/m³**	**LNP mes mg/m³**
1	**Moving across the site**	**11.30**	**12.30**	**60 min**	**0.014**	**0.536**

5.2 Architecture and heritage

Being inspired from the social memory as the complex epitomizes not only the work of local citizens, but also their everyday life and social identity created by the city itself. Although renovation of industrial sites may or may not recall the ideology of the time, it has been part of citizen's for about half century and could not be overlooked. The regeneration process should recall stakeholders, with the final objective of creating authentic assets which could generate spirituar and economic profit for citizens and tourists.

4.4.6 Proposals and Strategies for Territorial Reassessment of the Metallurgical Complex in Elbasan

Albania, having the status of Candidate County in EU, has to make noticeable steps and show progress in implementation of key reforms. Preservation and promotion of local cultural heritage is one of the most important worldwide directives. Elbasan, with other important Albanian cities as Tirana, Shkodra, Korça, Kuçova, Fier and Durres, could be part of international route ERIH (European Route of Industrial Heritage). Taking in consideration the major role of the Metallurgic Complex in the city of Elbasan an in country, the complex could be regenerated in some perspectives as sustainable territorial and urban development, creating eco-friendly facilities.

Different thesis could propose the reuse of the site for industrial purpose, promoting sustainable new production and continuation of ex-industrial working processes.
As the actual industrial area has been for a long time considered highly polluted, it could be very interesting to transform the site in a green park, promoting ecological cleaning. Moreover, as the city of Elbasan is located 45 km from the capital city Tirana and 82 km from the Adriatic Sea, can offer decentralization of tourism from the seaside by promoting local agriculture production. Regulatory planning could provide better involvement of the industrial complex by transforming the industrial site in an agricultural one, as located only 5 km far from the city center.

Elbasan is part of the most ancient cities of county, summarizing itself 100 historical and cultural sites, 80 natural monuments, a wide range of natural assets [Tourist Information Office Çelesi, 2010, p. 27]. Hence, from the architectural point of view, introduction of creative industries could generate profit for local, national and international traders. Being located almost one hour far from Tirana, the complex could easily upload pressure from the capital city and attract creative tourists and artists. Inspiring from some of the most successful examples like Ruhr in Germany or Barcelona in Spain, the industrial complex could be the house of start-ups for new artists, cultural centers, art galleries, experimental centers etc. Hereby, industrial heritage of the city could be visited in a large scale and enjoyed by the public absorbing the spirit of the time in a modern perspective. First of its kind, trying to promote the Metallurgic Compex, was the event named “Informal Mind”. In 2014, about 22 artists presented their works inspired by the local space and the inhabitants. This activity, the first of its kind, opens the path of future transformation of the industrial complex in a new perspective, taking in consideration creative industries and laboratories.

4.5. Case study 2: Industrialization of the city of Kuçova

Foreign investments in industrial sector in Albania have roots since the end of 19th century, mostly evident during the 1920s from English, French and Italian associations. Their interest was focused on extraction of raw materials, use of forests for wood production and processing, production of textiles, leather and carpets, processing of agricultural products (as fabrics of flour, rice, pasta, candy, soap, tobacco, alcohol) and production of construction materials (brick, cement).

It was thought that Kuçova’s inhabitants have sold crude oil to surrounding tribe of central Albania during the 1700-1800. However, the first official discovery of oil fields in this area was announced in 1918, after the 1st World War. Municipality of Kuçova describes that a geologist engineer from the Austrian camp, located in the periphery of the city where now is the cemetery, found the mixture of stream water with petrol

[Coordination & Development Department Kuçova, 2003]. Menwhile, in the city of Vlora, the Italian Military Marine discovered by chance petrol while the drilling of a deep well for water. During the regime of King Zog I (1928-1939) and the so called Italian proletariat (1939-1946), energetic and extractive industry was established due to Italian investments in country.

The oilfield is located in the South-Central region of Albania, and it's discover was developed with the drilling of 1,722 wells in 5 major poles (Kozare, Gege, Ferme, Arreza and Kuçova- Sector [Kosova et al., 2015, p. 22]. The oilfield lies on surface of approximately 14 km^2, covered by alluvial sediments. The depth of the reservoirs has a range variable from the surface down to 1500m [Xhixha et al., 2015 p. 5]. In 1935, Kuçova was the most important working center in country which was run by Italian oil company AIPA (Azienda Italiana Petroli Albania) with about 1600 workers for oil extraction and auxiliary sectors [The Institute of Marxist-Leninist Studies, 1982, p. 31]. AIPA was later on absorbed by AGIP (General Italian Oil Company) founded in 1926. According to Deloitte, 2012, the reservoir type in Kuçova, which was discovered in 1928, was mess-clastics of a surface in total 1500 m^2; oil gravity was 13-16º API and Sulphur content 4 % [Deloitte, 2012, p. 1]. In 1936 AIPA built the first pipeline in Albania, of about 74 km from Kuçova to Vlora [Parangoni I., 2015, p. 15]. The company was fully working in country, with about 1 million workers in different oil sites (*Fig. 98*) and a production of 150.000 tones/year, about 15 times higher than the average oil production amount in Italia, at the time [QAgip, 2014, p. 17]. After 1939 the Italians got in oil-drill concession of all foreign companies in Albania and used the pipeline from Kuçova oilfield and Vlora port to export crude petrol to refineries in Italia [Barolli B., 2015, p. 247]. The production of oil in 1941 was 148 thousand tons [Ago Sh., 2005].

At this time, working force in Kuçova was organized in the "Puna" association to protect their interest. The association presented a petition to the parliament regarding improve of working conditions, reduce of work-day to 8-hours and social insurance. As this and subsequent request was repeatedly denied, strikes became common reactions of the working force at the time. Later on, these organizations took form of political movements influenced by communist ideologies.

Figure 98. Albania-campo di Devoli [QAgip, 2014, p.15].

According to Deloitte, 2012, Geological reserves in existing oil fields in Kuçova are 80.3 million tons and the recoverable one is 12 million tons [Deloitte, 2012, p. 22]. Also, as Deloitte explains, the petroleum agreements in the production phase for Kuçova is given to Bankers Petroleum Ltd., under the license of Sherwood International Petroleum Ltd since September 2007. Other alliances regarding economic investments of Albania refer to ex-Yugoslavia (during 1944-1948), ex- Soviet Union (during 1948-1961) and Republic of China (during 1961-1978).

In 1945, after the proclamation of the communist regime, property ownership was changed from private to public under the so called Agrarian Reform. Capital investments changed the economy of country from agricultural to industrial. As described by economists Banja and Toçi [Banja H., Toçi V.,1978] the character of industrialization in Albania had the following characteristics:

i. Harmonized development of industry and agriculture
ii. Priority development of heavy industry
iii. Fast industrial development
iv. Development of industry so that guaranteed industrial and economic independence, based on its own powers (the so-called self-reliance principle).
v. Balanced development of heavy and light industry (in Albania light industry was developed after strengthening of heavy industry).

In general, during the communist regime were prepared two-year plans (like 1949-1950) and five-year plans. The 1st plan (1951-1955) aimed the industrialization of country with the technical support of the ex-Soviet Union. The 2nd plan (1956-1960) applied the agrarian reform which intended the collectivization of agriculture. The 3rd plan (1961-1965) was associated by the rupture of alliance with ex-BRSS and new one with China. It was the time of construction of some light industrial plants in the country. The 4th plan (1966-1970) created a solid base for the industrialization of the country under Chinese investments. The 5th plan (1970-1975) dealt mostly with the construction of the metallurgic complex of Elbasan. The 6th (1976-1980), 7th (1981-1985) and 8th (1986-1990) plans were mostly focus on the construction of chemical and food industries and defensive works (as bunkers and tunnels) as a result of the total isolation of country and the rupture of official relations with other foreign countries.

The city of Kuçova was named "Stalin city" in 1951 after the commander of ex-Soviet Union, Josif Stalin. In his honor was also placed a statue in the middle of the city. The name was subsequently changed after 1990, with the embrace of democratic regime. During the communist regime, various studies and projects were held to discover underground oil and gas deposits in Albania, mostly from Soviet's and Chinese, as the Yugoslavian's wanted to direct Albanian economy into light industry and extraction of raw materials [Barolli B., 2015, p. 254]. As known, Kuçova was one of the most important enriched fields which had the right investments. As for example, from 1962-1965 were invested in energy (built of some hydro-electrical power plants), metallurgy, textile mills [Lalaj et al., 2008, p. 185] and in 1978 was put into operation the plant of deep oil-processing ['New Albania' Magazine Editorial Board, 1984, p.142]. At the time, wells pumped around 600000 m^3 natural gas, in all country [Zickel R., Iwaskiw W. R., 1992, p.143]. However, in the report from the implementation of 6th Five Year Plan, the Prime Minister of Albania considered the industry of oil and gas extraction as nonproductive and with failure to meet the plan targets [O'Donnell, J. S., 1999, p. 173].

Attempts for the electrification of Albanian cities and villages started since the regime of Zog I with the help of Italian plans for the electrification of most important cities in country and the efforts of emigrants sending money to their families to support the construction of a hydropower (in the villages of Korça). These initiatives were followed by the plans for construction of many hydropower in Albania, taking advantage of the rich hydric net, as the one in Selita (1952), in Ulza (1958), in Vau i Dejes (1971) and Fierza (1978). The electrification was a necessary and supportive step to continue with the industrialization of country. The process of electrification of Albania was proclaimed as completed in 1970, during the implementation of the forth 5-years plan, set in the decision of the Plenum of Party in 1967 [The Institute of Marxist-Leninist, 1982, p. 455]. Another important issue of this plan was the development of the mechanical industry, as a key to solve many problems of working process. In 1951, with the decision of the Albanian government, were constructed 11 economic enterprises [Atelier 4, 2016, p. 6], such as the oil processing factory, oil refinery plant, institute of studies for oil and gas etc (Fig. 99-102).

Figure 99. Adem Reka Communist metal lifter (Etching on linoleum) [Pandi Mele, 'Visual Arts in the Peoples Republic of Albania'. Naim Frasheri publishing house, Tirana, 1969. p. 66].

Figure 100. Industrial panorama [Vladimir Jani, 'Visual Arts in the Peoples Republic of Albania'. Naim Frasheri publishing house, Tirana, 1969, p. 85].
Figure 101. Oil painting "Light Heights" by P. Kokushta, 1981 [Ermir Hoxha, 'Art in Albania 1945-1990'. PhD thesis, University of Tirana, Faculty of History and Philology, 2014, p. 163].
Figure 102. Oil painting "Oilmans" by A. Shami, 1974 [Ermir Hoxha, 'Art in Albania 1945-1990'. PhD thesis, University of Tirana, Faculty of History and Philology, 2014, p. 164].

The following (*Fig. 103*) is the reproduction of the organization of the industrial and non-industrial scheme in the communist regime, from the prime directory to the relevant departments.

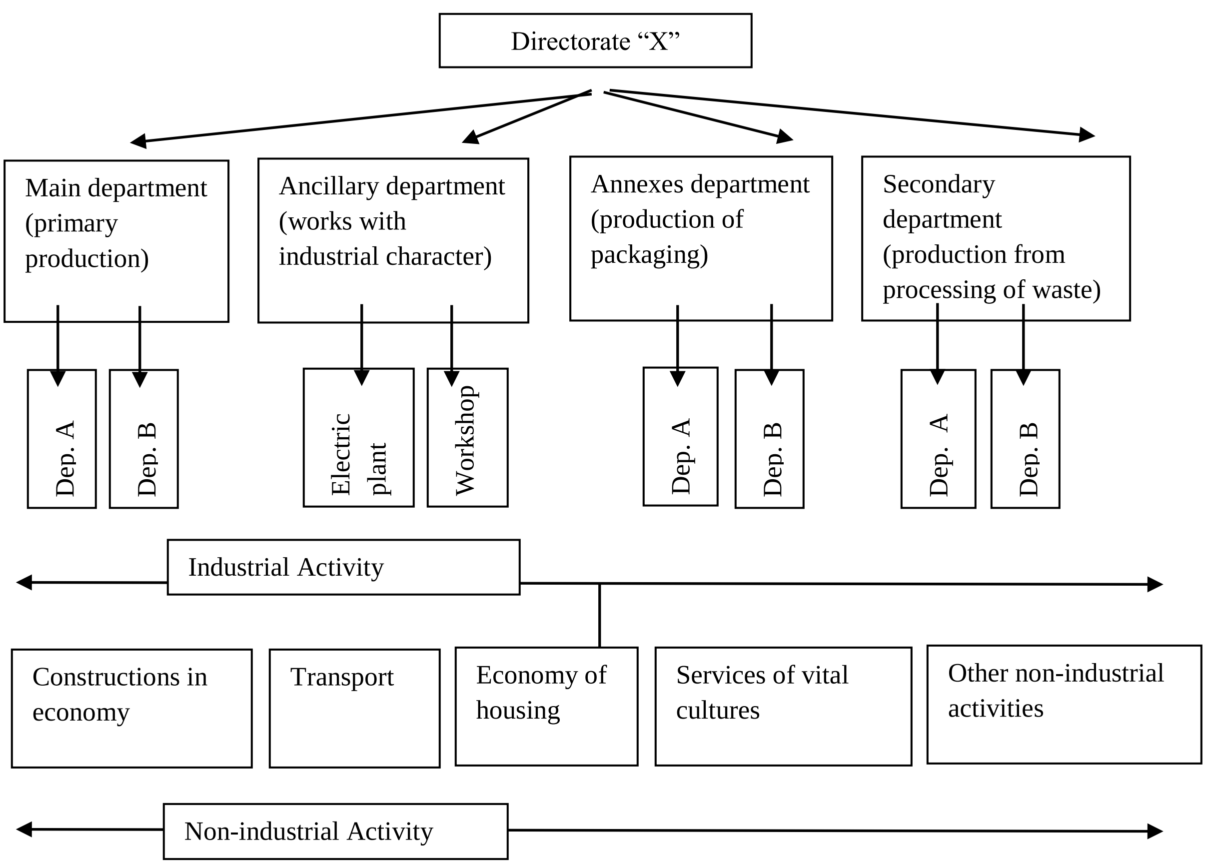


Figure 103. Scheme of industrial enterprises activity [*Gaxhga, Th., Buxhuku, N., Mele. V., 'Statistics of Industrial Enterprises. For professional high schools'. School book publishing house, 1983. P.7*].

4.5.1 Survey on the actual conditions of some industrial sites in Kuçova

The history of Kuçova city, although it has been revealed to be an old town, started with the construction of the oil refinery, followed by the mechanic and thermal station plants, which gradually constructed a new city focused on the production and processing of oil and its byproducts (*Fig. 104*). In this chapter will be evidenced and recorded the actual situation of some of industrial sites in the city of Kuçova (*Fig. 105*).

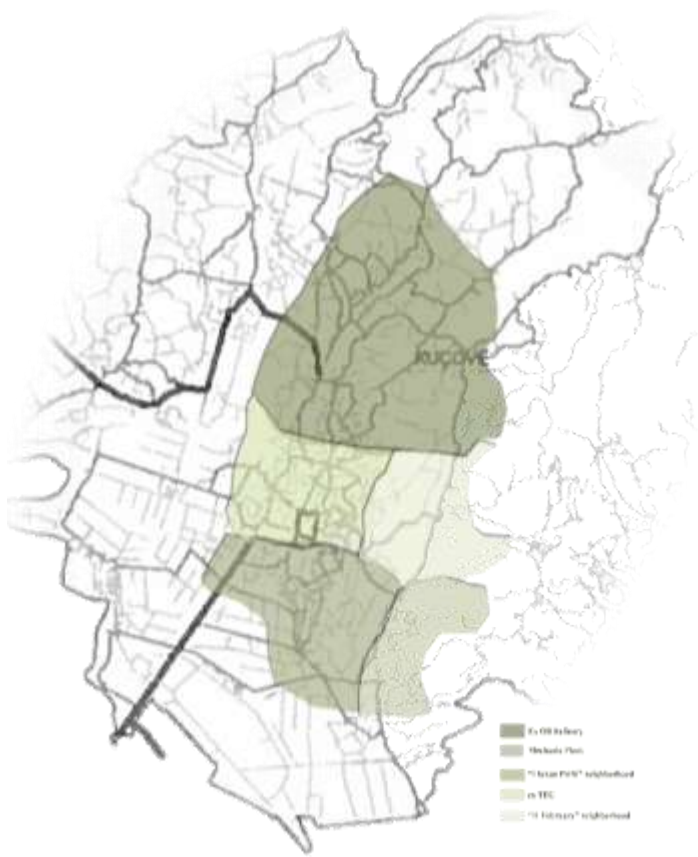


Figure 104. Map of Kuçova city structure developmet [elaborated by the author].

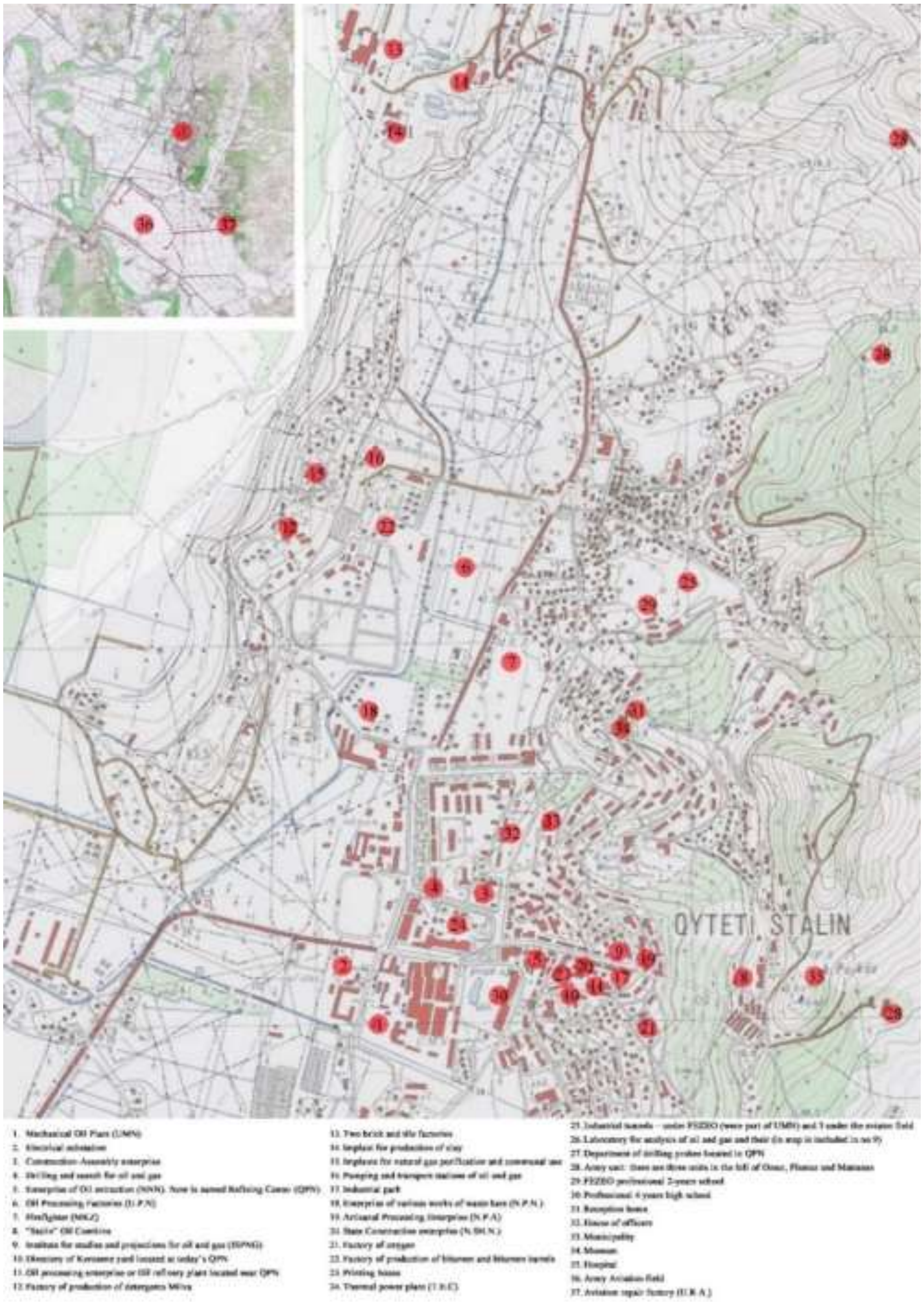


Figure 105. List of industrial objects in Kuçova [elaborated by the author].

The following list of the industrial sites in Kuçova was collected by the Encyclopedia of Kuçova, the Development Policy Document of the Territory of Kuçova, and oral confessions of oil engineer Albert Salca.

i. Mechanical Oil Plant (UMN) – it was firstly constructed as a small enterprise in 1934 by AIPA Company, in an area of about 111000 m^2 (*Fig. 111, 112, 121, 122*). Many products have been launched through years as the bitumen barrels, the motors V2-300, piston and probes. Some machineries at the Mechanical Plant were imported and for some time were not put into work, for example the milling for conical gears, as makes evidence The Ministry of Industry and Mining, 1973 [Ministry of Industry and Mining, 1973, p. 26]. However, it praises good work in the process of mechanization of production. The walls of the factories were constructed with red bricks and metal truss cover. They are mostly one floor areas (except offices with two floors) with a height of about 9 m. Some of the warehouses are in good condition and many of them have also the working machineries as they were from the working process. Some others are in a worse condition, although covered by metal truss and aluminum panels, as they have some parts of the structured fallen and shattered glasses. What is more impressive is the very well structuring of the site, with divided roads with a line of trees in the middle; the drainage system that could be viewed outside the buildings and the well-lit spaces with many windows which create very good sunny working environments. Nowadays it is out of function, but in good conditions and a very important logistic site in the district. The warehouses are still equipped with the machineries but are not being used.

The site was organized by the following warehouses:

- Pit with crude oil (asphalten)
- Industrial school (Petroleum High School “Myrteza Kepi”)

- Mechanical warehouse – where were produced petroleum vehicles, Wolff or swinger of 3, 5 and 9 tons. They were used for extraction of oil in 300-2000 m depth
- Turnery – where were produced bolts and various parts for machines
- Smithy – to forge and stamp materials for swingers and oil adapters, and different parts of the oil probes
- Foundry – where were poured parts of wulffs, adapters and oil extraction probes
- The probe square – where probes were mounted and prepared to drill wells
- Repair of electric motors – from 1.5-75 kw
- Storehouses – there were electric saws for cutting iron bars

ii. Electrical substation – working up to 11000 kW and is still in use.

iii. Construction-Assembly enterprise (for production of oil tankers and pipelines). First oil tankers were transported from Italy had a volume of 5-10 m^3. Nowadays they vary from 100-2000 m^3 and are produced by construction-assembly enterprise [Ago Sh., 2005]. There have been assembled oil reservoirs of carrying capacity 3-10 ton and metallic towers of 20-40 ton. The site includes the offices of the enterprise, turneries and woodworking saws (*Fig. 115*).

iv. Drilling and search for oil and gas (1953-2000),

v. Enterprise of Oil extraction (NNN). Constructed since 1928 for exploitation of oil fields by AIPA. Through years the production grew in good rates: in 1929 was produced 750 tons of oil and in 1934 around 9240 tons [Ago Sh., 2005]. The depth of oil wells is around 250 – 4800 ml. Now it is a branch of AL-Petrol and named Refining Center (QPN), producing 60ton oil per day. In the communist period, about half of working force of the city was employed in this enterprise. So far analysis claim that only 30 % of the oil reserves have been used until now (during around 80 years), so the extraction and processing industry will go on for many other years.

vi. Oil Processing Factories (U.P.N) or Refining Plant (*Fig. 106, 107, 108, 109*) – was constructed around 1955 -1960, where the oil was treated in atmospheric columns (later was called as “11 Shkurti”). There were produced 8 types of assortments such as oil, gas, valvoline, tar and grease. The site was composed by these facilities:

- Factory that produced barrels for bitumen
- Department of oil-gas distillation
- Department of bitumen
- Department of oil-grease
- Department for the manufacture of poppers
- Chimneys (cooling towers).

Today the site is out of work as all the factories are destroyed, except some brick chimneys. Also, there is a small Russian refinery which produces 50 to/day oil. The land was rehabilitated by an Austrian company for about three years and now the Municipality of Kuçova is aiming to transform into a residential area.

vii. Firefighter (MKZ) – used to have 6 large vehicles over 8 tons, but today are working only three of them.

viii. “Stalin” Oil Combine – created in 1948 and located at the ex-offices of AIPA. Unfortunately, in 1960 this combine was transferred in Mariza, Patos. In this site was located the administration for the branches of research in geology, drilling and production of oil; from where were directed work in the refining plant. Today the object has been transformed and used as high school

ix. Institute for studies and projections for oil and gas (ISPNG). It was created in 1965 and had around 480 staff members. The institute was later on transferred in Fier, in 1971. On March 2016, the Albanian Ministry of Energy and Industry proposed the reestablishment of the Institute of Oil and Gas at the verge of TAP project.

x. Directory of Kerosene yard located at today’s QPN (created in 1945) and Directory of research and production,

xi. Oil processing enterprise or Oil refinery plant (1940-1993), located near QPN.

xii. Factory of production of detergents Milva (constructed in 1984). This fabric had 250 workers specialized for all working processes. The production was firstly announced in 1986 [Ago Sh., 2005] and with time it produced not only qualitative detergent but also respective packaging and labels (*Fig. 120*).

xiii. Two brick and tile factories - As result of evidence of clay in Devoll river, in 1961 started the production of bricks in Kuçova. The oldest factory was reconstructed in 1970 and had 300 workers and producing around 11 million of tiles [Ago Sh., 2005]. Later on, it was privatized. The other factory was constructed by Petra and Jorgo Skendo near the older one. There were produced 3 types of bricks and 2 types of roof tiles. Today are out of function.

xiv. Implant for production of clay (used as washing fluid for drilling), stone fractioning (in map no 14/1) and using for drilling (for giving viscosity to the liquid detergent). These factories were in function until year 1996.

xv. Implants for natural gas purification and communal use,

xvi. Pumping and transport stations of oil and gas,

xvii. Industrial park for cars that transported oil, which is today property of AlPetrol and functions as part of QPN (there are about 30 vehicles in use),

xviii. Enterprise of various works of waste bars (N.P.N.) – since around 1973. It had around 10 chimneys but some of them are destroyed nowadays. Their height was from 17 to 80 m according to destination.

xix. Artisanal Processing Enterprise (N.P.A). Today is privatized and transformed as furniture production warehouse.

xx. State Construction enterprise (N.SH. N.), today is administered by the Exploration and Drilling Enterprise.

xxi. Factory of oxygen – was firstly constructed by AIPA Company in 1934 and closed at the first years of communist regime decay. The cooling tower of the factory was 7 m high and there have worked 15 people.

xxii. Factory of production of bitumen and bitumen barrels.

xxiii. Printing house.

xxiv. Thermal power plant (T.E.C.). Italian AIPA Company started the construction of TEC in 1935. In 1936 was constructed the first chimney and was placed a generator that produced energy firstly for the chairpersons of AIPA [Ago Sh., 2005]. The highest one is 80 m tall and is called the "the Tower of the city". With time, the energy was produced of 2500 kw/hour, supplying also the city of Kuçova, Berat and Skrapar. TEC had also been used for production of vapor used at the enterprise of Oil Production. The site was organized by these objects (*Fig. 106,107, 111-115*):

- The main building with turbines (large electric engines that produced energy)
- Cooling tower
- 2 Chimneys for extraction of fumes (height more than 44 m)
- Control rooms which commanded the flow of energy
- Construction-assembly of oil reservoirs

With a total surface area of about 30000 m^2 it is nowadays mostly not in use and the structures are badly deteriorated. Only the tower of reinforced concrete and the one constructed with brick, are in good conditions. One part of the warehouse is being used as car parking while the rest of the buildings are mostly destroyed. They represent high warehouses of about 12 m, with gable roof created by reinforced concrete beams of T form. Walls were constructed by red bricks coated with plaster. The facades have large windows which have positive impact during the working process. At the front wall of one of the warehouses could be seen the remaining of the communist slogan "With the party in the head, our forces with revolutionary ardor".

xxv. Industrial tunnels – there are four industrial tunnels where have been working around 500 workers. They are located under FEZEO (were part of UMN) and 3 under the aviator field. In these tunnels were made the same working processes as were done over ground in UMN. The ones under FEZEO were have been operational since 1990. Nowadays, only two of them are partly being used by the firefighters.

xxvi. Laboratory for analysis of oil and gas and their quality – was constructed by AIPA in 1930 and later on was called "Distileria Nr. 1", where were processed and produced oil by-products [Ago Sh., 2005]. Is located in ISPNG. The petroleum of Kuçova was exported in Bari, Italy and Rijeka, ex-Yugoslavia. (in map is included in no 9).

xxvii. Department of drilling probes located in QPN (two Albanian probes are produced with the name "Tomorri" 50 and "Naftetari 200 m").

xxviii. Army unit: there are three units in the hill of Omur, Flamur and Matranas. They owned artillery from 12-57 mm to anti-air (ballast bombardier).

xxix. FEZEO (1950-1980) - professional 2-years school that supplied the oil industry with turner, machinist, milling machine operator (frezator), production operator, kipist (of the mechanical units).

xxx. Professional 4 years high school (called the Oil Technicon)– with branches as welder, electric, repairmen etc. and the Oil Training School located at UMN.

xxxi. Reception home constructed from the Italians during the concession of oil from AIPA Company and is an object in protection.

xxxii. House of officers constructed from the Italians.

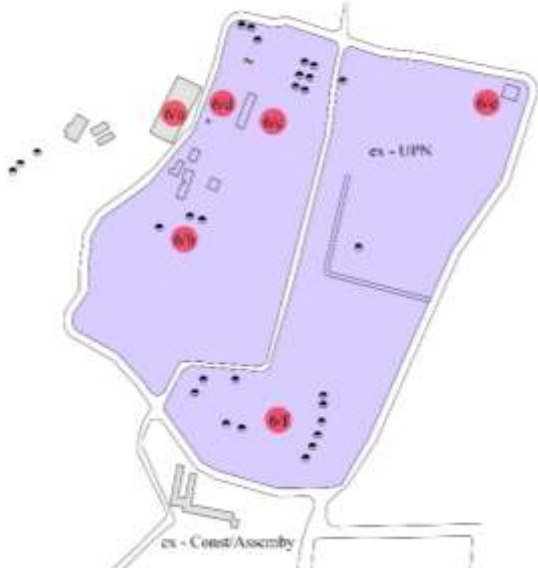
xxxiii. Municipality.

xxxiv. Museum.

xxxv. Hospital with 24 hours completed service.

xxxvi. Army Aviation field constructed by the Italians (is located 2.5 km away from Kuçova city center and 2.5 km away from Ura Vajgurore city center) called "23 Peza".

xxxvii. Aviation repair factory (U.R.A.) was constructed by Italians in 1968 and is located in a site of around 13 ha.



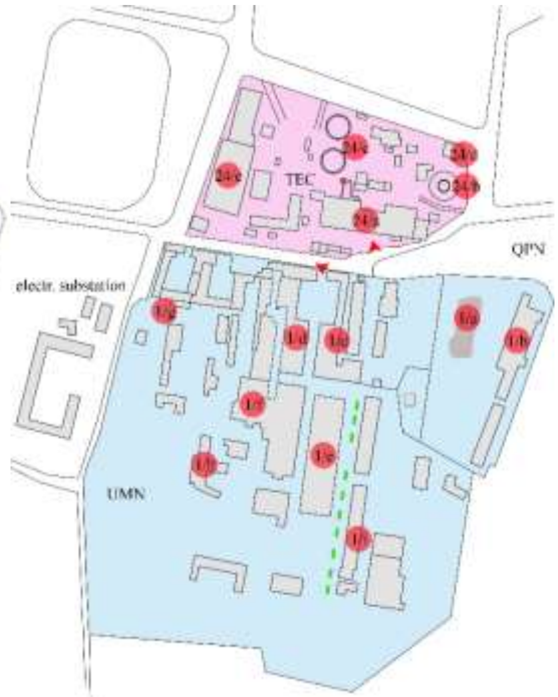


Figure 106. Ex-UPN site, Kuçova [elaborated by the author].

Figure 107. TEC and UMN site, Kuçova [elaborated by the author].

Kuçova, also having high opportunities on economic regeneration, offers environmental problematics because of pollution of soil, water and air. Industrial remains are discharged in septic pits, nitrogen is overused in crops causing pollution of underground waters and rivers. Oil and gas industrial infrastructure in itself generate grate pollution. Most of pollution comes from oil wells, decantation oil plants, pumping stations, pipelines of oil and gas transportation and oil processing plants [Beqiraj et al., 2013, p. 204-205]. Not only is this risk high in the production and processing sites, but also in the inhabited area of the city and the surroundings. The citizens actually use natural gas for heating, which is taken by tubes directly from the source of gas production. Although having very low cost, it is highly unsecure and with direct life consequences.


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Figure 108. Industrial landscape from the entrance road in Kuçova [elaborated by the author].
Figure 109. Diesel crane which can be found mainly in the oil exploitation field, else called as Wolff for oil extraction [elaborated by the author].
Figure 110. Ex-factory of Construction and assembling metal oil tanks 3-110 ton [elaborated by the author].
Figure 111. Figure 112. Figure 113. Figure 114. Figure 115. TEC, Kuçova [elaborated by the author].
Figure 116. Figure 117. UMN, Kuçova [elaborated by the author].
Figure 118. Figure 119. Ex-Refining Plant, Kuçova [elaborated by the author].
Figure 120. Ex-detergent factory Milva, Kuçova [elaborated by the author].

4.5.2 Territorial analysis

Kuçova municipality is located in central Albania and is part of Berat region (according to Genera National Plan of Republic of Albania). The city very good connection with as the historical city of Berat (the museum city is part of UNESCO heritage and has the Tomorr Mountain which is a very important touristic attraction) and Fier and Lushnje as agricultural ones. The proximity with Berat, about 10 min by car, could be seen partially as a disadvantage as most of tourist flow is directed to Berat but also it can be seen as a good possibility to attract tourist and businessmen in Kuçova (*Fig. 121*).

Although being an old settlement, Kuçova burst after the oil exploration and especially during the communist regime with the large amount of investments in the city. The known regulative plans for Kuçova are the one of 1963 and 1976, which have mostly influenced the organization of city’s structure until nowadays. The plan of 1976 made also a division of the city in zones, predicting a compact structure and good territorial division of industrial areas and the inhabited ones (*Fig. 122*).

After about 37 years, in 2013 was drafted the General Local Plan of the Municipality of Kuçova according to Law 10119, date 2009 (*Fig. 123*). After territorial changes of 2015 in whole country, this plan is not in force any more. However, many of its considerations and proposals state to a middle period of 10 years and have been taken in consideration by the General Local Plan of Kuçova, made by the Municipality of

Kuçova with the technical support of the project PLGP of the United States Agency for International Development and Co-PLAN (approved by VKM nr. 2, date 29.12.2016).


Figure 121. Map of locating Kuçova in relation to other cities as Berat, Lushnje, Fier [Map by Google and elaborated by the author].

Figure 122. Regulative planning of Kuçova, 1976 [General Local Plan of Kuçova, 2016, p.36].

Figure 123. Land use proposed in PPV 2012 [General Local Plan of Kuçova, 2016, p.37].

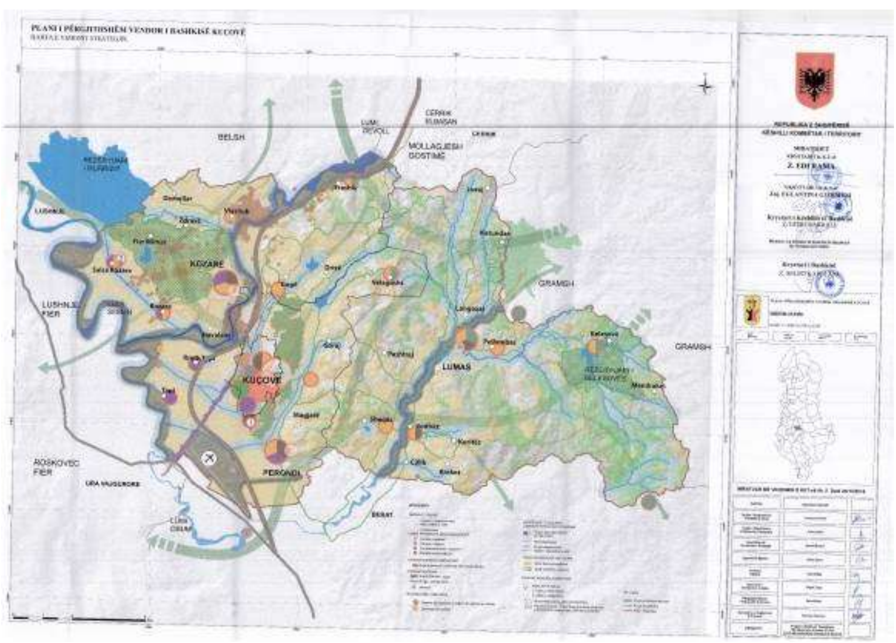


Figure 124. Map of Strategical Vision, Municipality of Kuçova [General Local Plan of Kuçova, 2016].

With the moto: Albania, a liason Balkan Center, the General National Plan (Albania 2030), approved by VKM no. 1, date 14.12.2016, hierarchization of urban centers in order to focus investments properly and efficiently (*Fig. 124*). GNP categorizes the urban centers in six categories: metropols, primary centers, secondary centers, tertiary centers, local and specialized centers, localities. Kuçova is ranked as secondary center and is part of Central Axis Tirana-Elbasan-Berat-Gjirokastra, which will strengthen links between cities and better integrate with other European corridors (*Fig. 125*).

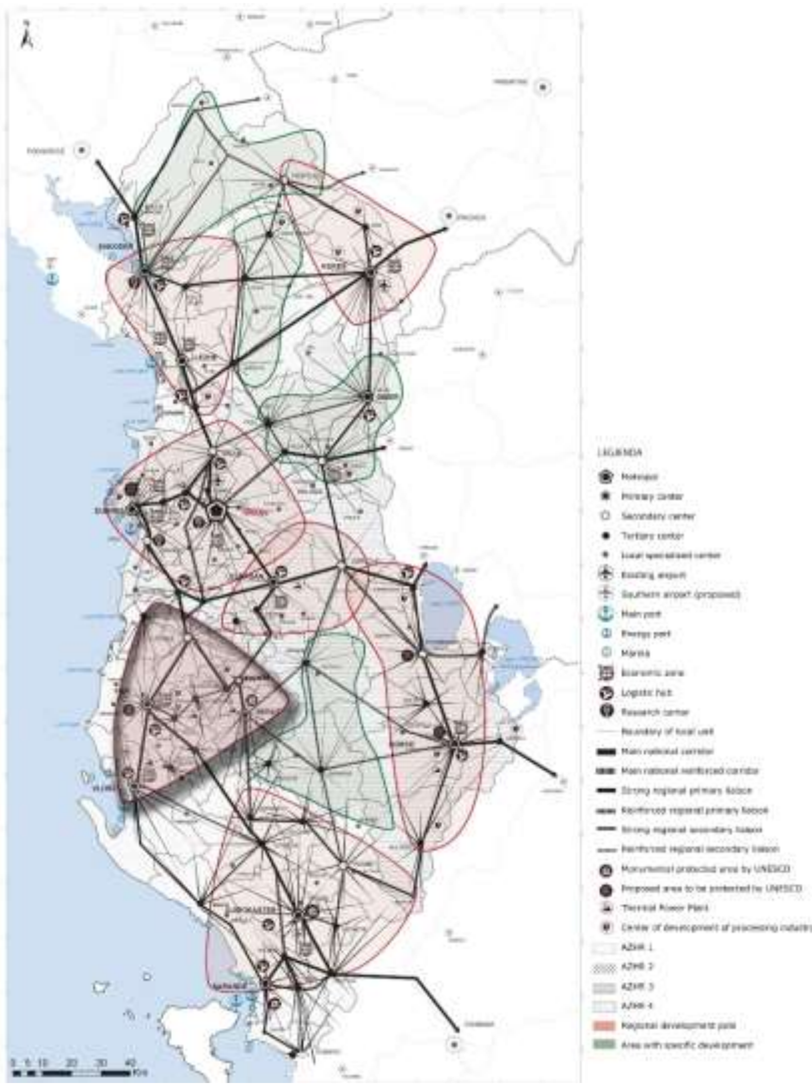


Figure 125. Map of urban system and spatial interconnection [elaborated by the author; source: General National Plan, 2016, p. 158].

In order to support national territorial regionalism, GNP organizes 7 poles of regional development in national level (including some economical similar cities) and 4 development zones. Kuçova can be considered as specialized center of the regional pole Vlora–Fier–Berat (*Fig. 126*). In the large perspective, this city can benefit from participation in projects like the realization of gaz line Albania – Kroatia, founded by IAP, and the gas line of TAP etc. Strategic interventions include construction of the missing part of national road passing through Belsh, wich will connect Tirana with Elbasan, Berat, Saranda and Tepelena, being part of the Cental South Axis. Kuçova is proposed to increase local economy in industry, agricultural and touristic direction. In this context, are proposed the creation of varios bicycle and pedestrial iteneraries in function of tourists and residents. Transformations of urban layout should focus in the intensification of city center inhabitation and obstruction of urban sprawl. Creation of natural belts along the riverside and treatment of soil/water would be followed with the development of agricultural farming and promote local products in market.

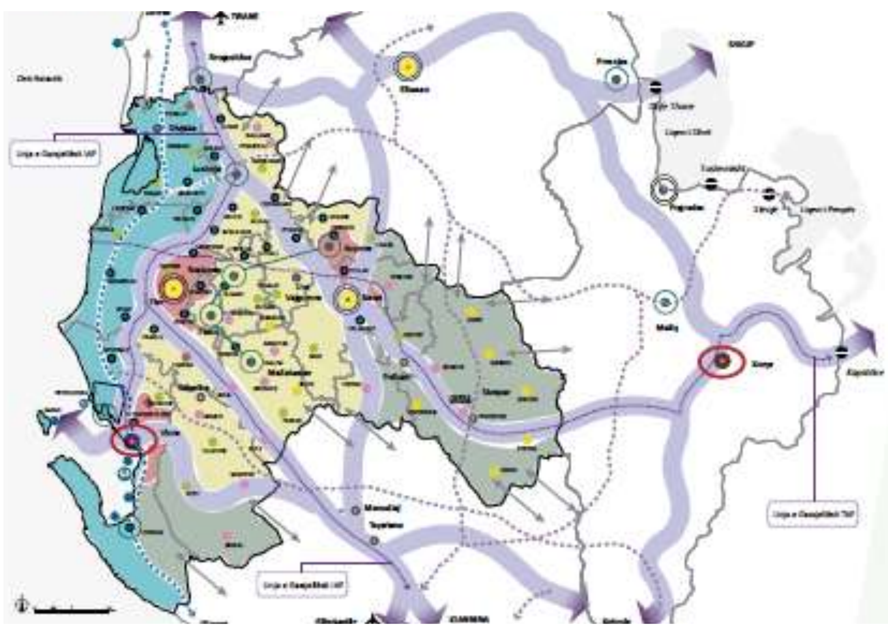


Figure 126. Map of regional development pole Vlora-Fier-Berat [General National Plan, 2016, p. 170].

The Strategic Plan for Economic Development of the Municipality of Kuçova (2008-2015, drafted by the Municipality), provides an action plan for the medium-term economic development of the city. According to Development Policy Document of the Territory of Kuçova, 2016, some important project with great impact in the territory would be: the identification of properties in need of reconstruction and their record in a general database, design of the project of the ring road in the city which should near the UPN, an action plan for removal of technological waste from the territory of UMN (funds from the Municipality, FZHR and foreign actors), work plan for the improvement of the oilfields area (for which is needed technical and technological renovation due to severe amortization of oil industry, new technologies and processes for increase of use of existing reserves of oil resources), finding funds for the completion of the road Kuçova-Elbasan which is a high priority requirement and quantitative growth of oil production [Municipality of Kucova, 2016, p. 109].

As the laws and regulations about territorial planning in Albania are being more complete and strict, the industrial areas are predicted to have a buffer zone of 50 m and a protective distance of 200 m (VKM no 671, date 2015). This include industrial objects, production and transition and distribution of electricity, unless otherwise stipulated in the special legislation.

The document of General Local Plan of the Territory of Kuçova, approved with decision of Council of Ministers nr. 2, date 29.11.2016, proposes several steps with the intention of rehabilitation and regeneration of ex-industrial sites of TEC, UPN and UMN, for residential and recreation purposes (*Fig. 127*). The structures are highly degraded, with clear evidence of land and soil contamination because of nature of former activities. These sites are considered important assets for the city, which reuse will revive a sleepy capital. The project of their regeneration should integrate the soil, air and waters purification, greenery planting and appropriate adaption for new uses. Although being located nearby the city center, these sites are not functionally connected with the city. This action package is expected to bring positive effects in the reducement of pollution, increase of green surface, improve of air quality and creation of new attraction points in city. Indeed, a large study of contaminated areas will be needed, which may have a greater extend than the above-mentioned areas. Good environment and appropriate services are necessary steps for development of cultural, historical and natural tourism in the region for the upcoming years. The regeneration strategy could envisage investment partnership like PPP, FZHR, IPA and alternative donors. Currently, some steps forward have been made for the application of funds from EU, with the intention of project implementation in 2017-2020.

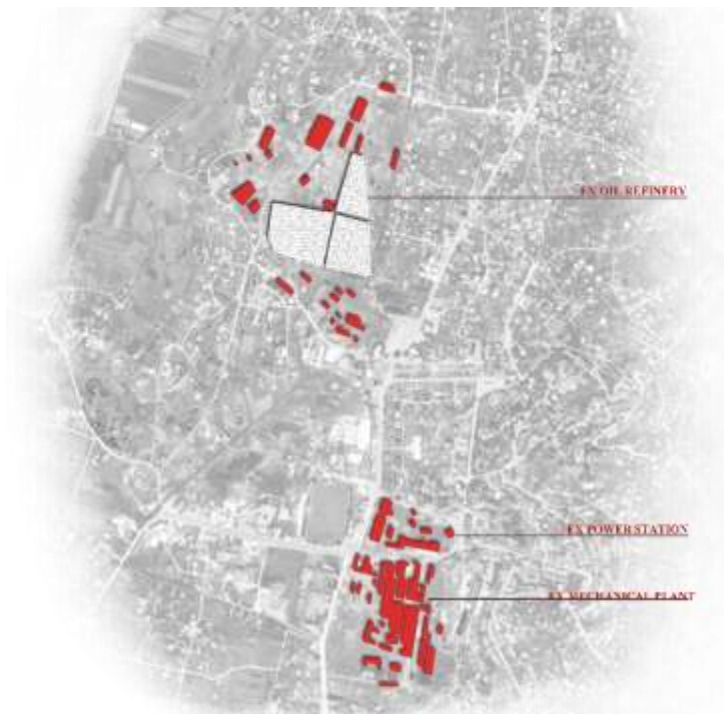


Figure 127. Map of important degraded industrial sites in Kuçova [elaborated by the author].

In this context, the UMN is proposed to be developed as a manufacturing industrial center, logistic center and storage and the provision of appropriate infrastructure for industrial structures (the specific development of the area will be proposed in the future by the design of Detailed Local Plan). Meanwhile the ex-UPN site (currently owned by the municipality) is proposed as an energizing pole with residential, cultural and commercial use. What has been left from the old machineries in petroleum wells, are proposed to be transformed into attractive objects and a new Museum of Petroleum is proposed to be constructed. The city of Kuçova is widely identified as the city of petroleum and this museum would be the most significative expression of industrial petroleum activity through years. Furthermore, according to a study fianced by the Czetch Republic, which included the environmental analysis of the area, the revitalization and transformation into an inhabited area is proposed to include a waste incineration plant. Furthermore, the area of ex-TEC is foreseen as commercial, cultural and service area, currently owned by the Ministry of Energy and Industry. The sites will be better connected by the new road proposed to pass through the city entrance and ex-UPN, leading to the park of Kozare. In addition to all, it is proposed the revival of current aviation field, located at the entrance of city, for tourist purpose and construction of a new aviation museum (*Fig. 128*).

All the above-mentioned project, are in line with the proposals of the General National Plan, for infrastructure improvement and construction of central southern axis, drafting the plan for integrated urban waster management, construction of new professional schools (in particular – regional petroleum professional school), etc.

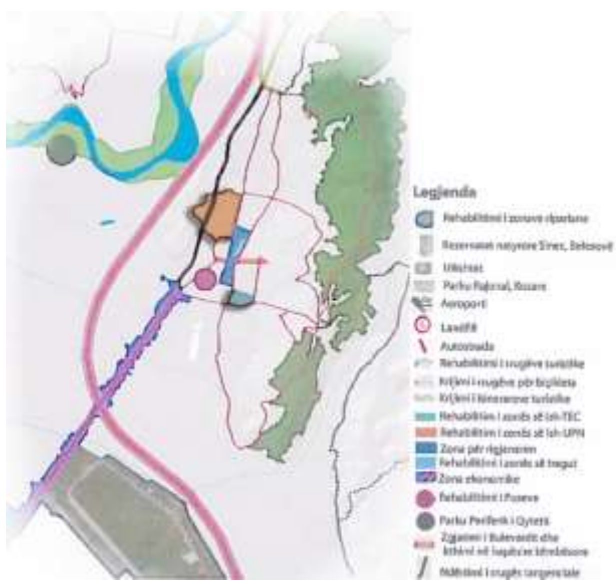


Figure 128. Strategical interventions proposed in the Municipality of Kuçova [General Local Plan, Municipality of Kuçova (2016), p. 298].

4.6.4 Multicriterial analysis

In the following, is made an analysis of the most important development criterias dictated by the Genral National Plan put alongside with the strategical objectives of the General Local Plan of Kuçova. As can be seen, the LGP has translated the directions of NGP into five trategical objectives. Each of them is composed of strategical projects, which will be implemented in a range of period until 2030 (*Fig. 129-130*).

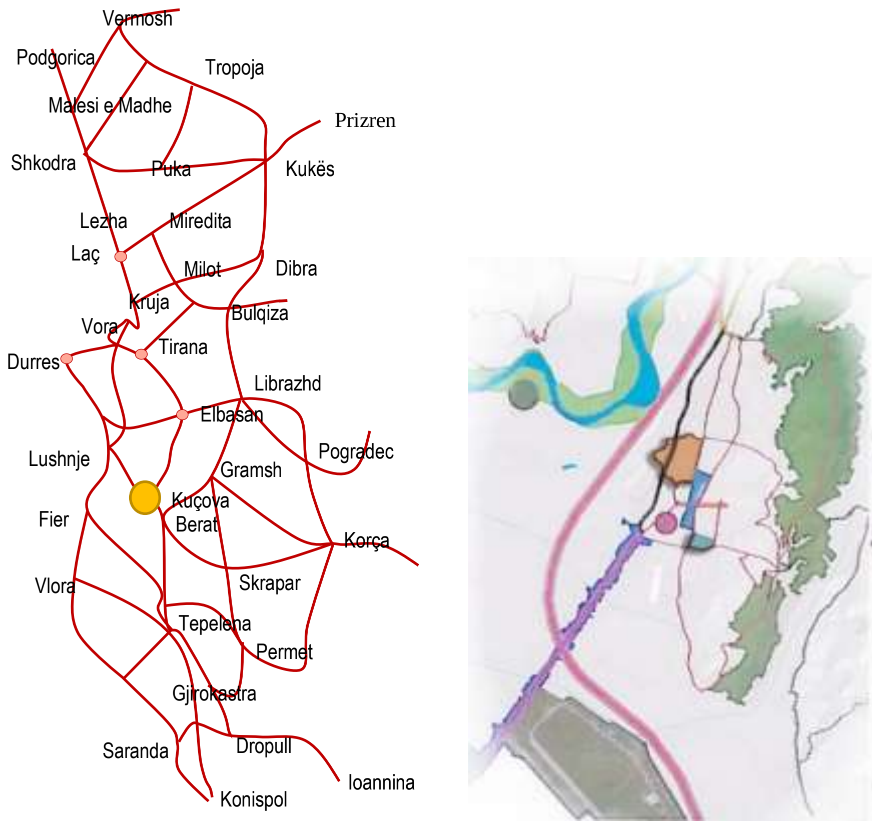


Figure 129. National vs. Local evaluation [first map elaborated by the author, second map from General Local Plan, Municipality of Kuçova (2016), p. 298].

For each of the objectives of Local General Plan, is made the SWOT analysis, aiming to find the role of the industrial area in each of these objectives (*Fig. 131*).

NATIONAL GENERAL PLAN

- INDUSTRY
- AGRICULTURE
- ECONOMY
- TRANSPORT
- TOURISM

LOCAL GENERAL PLAN

O.S. 1 Economic-social sustainable development by diversification urban economy and specializing rural economy

- Stimulation of requalification and increase of performance of industrial areas (ex UMN regeneration)
- Increase of performance of economic sectors (collection point for agriculture products, new agro-industrial procession center)
- Promotion of expansion and densification for areas with potential urbanization
- Simulation of small business

O.S. 2 Improvement of transport and interconnection infrastructure

- Improvement of municipal integration with others
- Integration of municipality with green itineraries
- Improvement of cities interconnection and rural units with each other
- Better local road networking
- Improvement water supply infrastructure
- Improvement of public transport

O.S. 3 Sustainable management of water systems, valorizing agricultural land and strong natural elements, in function of natural and cultural tourism

- Rehabilitation and regeneration of ex-industrial areas with the intention of reutilize as residential and recreative areas.
- Integrated management of urban wastes, including strategies for differential waste collection, transportation and waste composting
- Recreative park at the Kozare hills
- Rehabilitation of areas around rivers
- Study of water and soil pollution in the oil fields
- Reduction of negative effect of emissions in industrial areas
- Improvement of city image

O.S. 4 Stimulation of sustainable communities

O.S. 5 Rehabilitation of city’s squares

O.S. 6 Social/cultural, sportive development

O.S. 7 Sustainable development of free spaces in city

O.S. 8 Professional study

O.S. 9 Fulfill the material needs of institutions

Figure 130. Analysis of National and Local Plan of Kuçova, main parameters and strategical objectives [elaborated by the author].

O.S. 1 **Economic-social sustainable development by diversification urban economy and specializing rural economy**

Strengths

- Economic diversity
- Development of full industrial potential
- Absorption of labor force
- Improvement of exchange and trading network of agricultural products

Weakness

- Presence of petrol wells in agricultural land
- Contaminated land

Opportunities

- Development empowered by national strategies
- Possibility to use oil wells more efficiently

Threatens

- Tendency of employment outside the municipality
- Problems because of over-use of petroleum resources

O.S. 2 **Improvement of transport and interconnection infrastructure**

Strengths

- Good location for trading exchange

Weakness

- Lack of full connection Elbasan-Kuçova
- Low accessibility from center through peripheral zones
- Not good support infrastructure agriculture

Opportunities

- Good interconnection with other centers
- Road acupunctures will lower traffic problems
- New of mountain trails and integration with existing ones
- Revitalization of life in villages

Threatens

- Increase city's pollution
- Increase problematic points of access

O.S. 3 **Sustainable management of water systems, valorizing agricultural land and strong natural elements, in function of natural and cultural tourism**

Strengths

- Emphasis of cultural/ historical identity
- Advantages of being in the center of the pole

Weakness

- Not good management of wastes

Opportunities

- Identification of industrial heritage, cultural assets, natural routes

Threatens

- Pollution because of waste disposal

Figure 131. SWOT analysis [elaborated by the author]

4.5.4 Environmental issues

One of the most sensititve problems, is the lack of clear division from agriculture and industrial land. To avoid constant environmental conflict, measures should be taken to forest the areas of extractive industry and oil wells which are out of function, and to create green buffering belts.

For the purpose of this study, with the request of the author were made some environmental analysis regarding soil, water and air pollution. The analyses have been conducted by Environment Monitor Center (EMC), a licenced laboratory located in Tirana, Albania. The tests were made in the deteriorated areas of Kuçova TEC (Power Plant), on 15 March 2017.

- Soil contamination from industrial discharge

The analysis description of test parameters and analyses recults are prescribed in the following figure (*Table 10*).

Table 10. Soil test analysis, TEC Kuçova [Analysis made by Environmental Monitoring Center, 2017].

TEST REPORT

Nr.1424 Date: 15/03/2017

Sample ID:	Soil Sample
Sample field name	Soil sample near TEC, Kucove 44°08’24’’V; 45°17’25’’L
Log Number	001
Sampled by:	Environmental Monitoring Center
Sampling date:	06/03/2017
Receiving date:	06/03/2017
Analyses date:	07/03/2017
Place of Origin:	Kucove/Berat
Sample description	400g soil sample
Container description	Viale glass
Transmission Code:	001

Analytical Results of the Sample

Analyzed Parameter	Test Method	Unit of Measure	Value
Lead(Pb)	ISO 11047:1998	mg/kg	<2
Cadmium(Cd)	ISO 11047:1998	mg/kg	<2
pH	pH-meter		7.75

According to Directive 86 / 278 /EEC [Council Directive, 1986], Annex 1 A, limit of values for concentration of heavy metals in soil (mg/kg of dry matter) are: cadmium 1-3, copper 50-140, nickel 30-75, lead 50-300, zinc 150-300, mercury 1-1.5. Although there is no directive in force for Albania, the results of the test show values within EU parameters.

- Waters

The water tests conducted by Environment Monitor Center (EMC), on 15 March 2017, in the deteriorated areas of the Kuçova TEC (Power Plant), are prescribed in the following figures (*Table 11, 12*). Test were made by taking samples from well water and surface waters of Osum River, near TEC Kuçova.

Table 11. Sample – well water, Osum River, near TEC Kuçova [Analysis made by Environmental Monitoring Center, 2017].

TEST REPORT

Nr.1705 Date: 15/03/2017

Sample ID:	**Well water**
Sample field name	**TEC/Sub terrain water sample 40°82’05’’L; 45°17’24’’V**
Log Number	**002**
Sampled by:	**Environmental Monitoring Center**
Sampling date:	**06/03/2017**
Receiving date:	**06/03/2017**
Analyses date:	**07/03/2017**
Place of Origin:	**Kucove**
Sample description	**1.5L liquid sample**
Transmission Code:	**001**

Analytical Results of the Sample

Analyzed Parameter	Method	Unit of Measure	Value	Detection
ph*	**Multi 340i/ISO 10523:2012Water quality, determination of pH**	**--**	**7.23**	**0.01**
Pending material	**Filtering (filter<0.45 µm Whatman**	**mg/L**	**3.1**	**0.1**
BOD	**S SH EN15586 Water quality**	**mg/L**	**<1**	**1**

*Accredited proof according SSH ISO/IEC 17025:2006

According to the Decision of the Council of Ministers no. 177, date 31.03.2005 “For permissible liquid discharge rates and zoning criteria for receiving water environments”, standard rates are: pH = 6 – 9, pending material = 50 mg/l, BoDs = 50 mg/l. Also referring to the same decision, Annex 3, "Permissible values for discharged waters from several industrial sectors in the receiving water environment", point 2, Power Generation 2.1, Power Plants, the measured well water values (*Table 11*) are within the allowed norms.

Table 12. Surface water sample, Osum River, near TEC Kuçova [Analysis made by Environmental Monitoring Center, 2017].

TEST REPORT
Nr. 1704 Date: 15/03/2017

Sample ID:	**River Water**
Sample field name	**Superficial water sample of Osumi River 44°07'22''L; 45°18'73''V**
Log Number	**001**
Sampled by:	**Environmental Monitoring Center**
Sampling date:	**06/03/2017**
Receiving date:	**06/03/2017**
Analyses date:	**07/03/2017**
Place of Origin:	**Kucove**
Sample description	**1.5L liquid sample**
Transmission Code:	**001**

Analitical Results of the Sample

Analised Parameter	Method	Unit of Measure	Value	Detection
ph*	**Multi 340i/ISO 10523:2012Water quality, determination of pH**	**--**	**7.68**	**0.01**
Pending material	**Filtering (filter<0.45 µm Whatman**	**mg/L**	**15.3**	**0.1**
BOD	**S SH EN15586 Waterquality**	**mg/L**	**6**	**1**

*Acredited proof according SSH ISO/IEC 17025:2006

According to the Decision of the Council of Ministers no. 177, date 31.03.2005 "For permissible liquid discharge rates and zoning criteria for receiving water environments", standard rates are: pH = 6 – 9, suspended matter = 50 mg/l, BoDs = 50 mg/l.

Also referring to the same decision, Annex 3, "Permissible values for discharged waters from several industrial sectors in the receiving water environment", point 2, Power Generation 2.1, Power Plants, the measured well water values (*Table 12*) are within the allowed norms.

- Air

According to Decision no. 435, dated 12.09.2002 "On approval of air discharge rates in the Republic of Albania", point 1: "Energy and fuel production industry", standard rates are: CO = 1000 mg/m³, NO2 = 400 mg/m³, SO2 = 400 mg/m³, O2 = 21% (for H2S – there is not standard). Referring to the abovementioned decision, the values of the gaseous components that are within the allowed norms (*Table 13*, *14*).

Table 13. Total concentration of granular material in suspension (LNP) in the air, TEC Kuçova [Analysis made by Environmental Monitoring Center, 2017].

Report Results

Gas total concentration

Report Nr.	**518**
Customer:	**Boriana Golgota**
Measurement Station.	**TEC, Kucove 44°08’24’’V; 45°17’25’’L**
Date of measurement	**06/03/2017**
Measurement method	**S SH EN 45544:2:2015**
Measuring Tool	**ALTAIR SX MSA**

Nr.	**Time of measurement**			**Result**				
	Start	**End**	**Duration**	**CO* ppm**	**NO2* ppm**	**H2S* ppm**	**SO2 ppm**	**O2* %**
1	**09.30**	**10.30**	**60 min**	**<0.1**	**<0.1**	**<0.1**	**0.1**	**20.8**

Tirane, date 15/03/2017

According to Decision no. 435, dated 12.09.2002 "On approval of air discharge rates in the Republic of Albania", point 1: "Energy and fuel production industry", LNP rate for "Industrial production and use of metals", the normative for LPN is 100 mg/m³. According to this, the measured value of 0.007 mg/m³, is within the allowed norms (*Table 14*).

Table 14. Total concentration of gases, TEC Kuçova [Analysis made by Environmental Monitoring Center, 2017].

Report Results

Levitating particle mass in air (LNP)

Report Nr.	**892**
Customer:	**Boriana Golgota**
Measurement Station.	**TEC, Kucove, Moving across the site**
Date of measurement	**06/03/2017**
Measurement method	**DS CEN/TS 16450:2013**
Measuring Tool	**MicroDust Pro Casella**

Nr.	Place of measurement	Time of measurement			Result	
		Start	End	Duration	LNP mes mg/m^3	LNP mes mg/m^3
1	**Moving across the site**	**09.30**	**10.30**	**60 min**	**0.007**	**0.331**

Tirane, date 15/03/2017

- Bonification

In the period 2008-2012 was developed the project "Implementation of New Environmental Technology in Oil industry, Kucove Region, Albania", managed by the Ministry of Industry and the Czetch Republic. The project goal was environmental regeneration of ex-refinery field (ex-UPN) from heavy contaminants as bitumen, asphalt, acides, coke and lubrificants. Accoriding to GEOtest Company:

> *the company which implemented this project, the project implementation has followed standard procedure of disposal of old ecological loads (OELs) in the Czech Republic, taking account of legislative and procedura restrictions in the Republic of Albania* [GEOTEST, 2012].

Furthermore, the services provided include: Site Screening; Geological and hydrogeological survey; Contamination survey (detailed mapping); Geophysical survey; Risk Assessment; Pre – remediation survey; Feasibility Study; Re-vegetation of the premises of the former refinery; Project design of the remediation works; Training of local experts; Public awareness raising campaign [GEOTEST, 2012].

However, the initiative to construct a solid waste incineration plant, stands in discordance with the proposal of site regeneration for residential purposes, because of the close location. Alternative sites and technologies for waste inceneration should be taken in consideration, in order to reach the relevant directives under EU legislation. Moreover, part of strategical objectives of the General Local Plan, is reduction of negative effects of waste emissions in industrial areas.

According to the National Strategy for Itegrated Management of Wastes, the municipality should draft the plan for management and recycling of easy recyclable wastes, but also for electronic, industrial and inert wastes. In addition, it is recommended to recycle 75-80% of organic, paper, plastic and glass wastes that are generated in municipality, by 2018 [Municipality of Kucova, 2016, p. 250]. Currently, hazardous wastes are being recycled by private companies. Menawhile the actual landfill is located in Tapi village, near the Devolli River. It is currently being discussed the cooperation between the municipalities of Kuçova, Ura Vajgurore and Berat, for the construction of a new regional landfill in the outskirts of Ura Vajgurore. However, it still needs further detailed studies.

5.2 Architecture and heritage

From the analysis of industrial site organization, as viewed in the case of Kuçova, some general concepts of urban organization can be drawn, as follows:

- The site can be divided in some general areas as the entrance with the yard, the administrative areas and the objects where is done the industrial process. From the main entrance, there is generally a main road which makes flow distribution according to various functions. All internal roads are controlled and oriented by the movement sense or working processes organization.
- The main entrance is mostly located in the center of frontal façade, where is the guardhouse. In many sites, there are divided entrances for workers, for administrate and for goods according to technological process.
- The offices, administration, canteen, premises for workers' relaxation, first aid, water supply and electricity cabins are located near the entrance or the central square, with direct access to the main road.
- The site organization follows the technological process. The production site is composed by the storehouses of raw material and the warehouses where the industrial processes are held. The location of objects follows the manufacturing process of industrial product. Storehouses for raw material or for prepared

product are located near the entrance/exit and need sufficient movement conditions.

- The organization of industrial site follows also the criterion of implementation the rules of technical safety and labor protection and safety in site, according to relevant laws.

The breadth of the remained industrial sites in Kuçova form a complex of valuable heritage, which should be properly evaluated for the remarkable historical, architectural, cultural, economical and social values. For more than half a century these areas were the working places and the economical provision of many local families, which turn the thought to the idea of “the spirit of the place” or “genius loci”. Rossi interprets the sense of place as closely related to the memory, saying:

> ‘*The city is the locus of the collective memory. …… Locus can be considered as the principle of urban artifacts*’ [Rossi A., 1982, p. 130].

Locus is related to its people and objects; hence it represents the image of the city. The complexity of urban artifacts could be understood through knowledge of locus, architecture and history. The collective memory takes place in space transformations, by directing the city’s structure. The individuality of urban layout can be pointed out by understading ‘*the value of the city, seen as the collective memory, as the relationship of the collective to its place*’ [Rossi A., 1982, p. 131].

Recalling to attention the connection of place, people and memory, it is very interesting to see how some ideology of the time have shaped societies and countries. Focusing on the Albanian case, the communist ideology, in the postwar years until 1990, has directly affected the spatial and architectural organization of places. An interesting example is the remains of a communist slogan, found at the inner wall of the ex-TEC in Kuçova, Albania, stating ‘*me partinë në krye…me forcat tona…me hov revolucionar*’ meaning ‘*with the party in charge…with our forces…with revolutionary burst*' (*Fig. 132*).

Figure 132. Photo of the inner wall at the ex-TEC, Kuçova [*elaborated by the author*]

4.6.7 Proposals for Territorial Reassessment

Preservation, promotion and reuse of industrial heritage are some of the objectives of the government of Albania, following the European directives. The city of Kuçova, as one of the most important industrial ones in country, could be integral part of the European Route of Industrial Heritage (ERIH) as many other similar sites all over the country as in Elbasan, Fier, Lushnja, Shkodra, Tirana, Durrës, Korça and Kukës.

Some general ideas are being proposed by the Development Policy Document of the Territory of Kuçova, based on governmental strategies. However, these documents are restricted by many other factors as the concessional contract that the government has signed with private companies or legal privatization of facilities after the years 1990.

Taking in consideration the proximity and competitiveness with Berat, the city of Kuçova should offer some good facilities to attract tourists and businessman. The city's regeneration in general should implement the renovation of poor neighborhoods, the construction of new high standard residential areas, the renovation of underused industrial sites and a good promotion marketing. Besides visiting Berat, tourist could visit a possible museum of industry, historical monuments and new recreative activities in Kuçova. Also, the proximity to Fier and Lushnja, offers good possibility to make agricultural trade exchange. The proposals of new road to connect Kuçova with Elbasan (city with historical values and economic activities) and other important linkages with other Albanian cities, combined with the general attempt to provide development policies for most of cities in country will give a hand to local growth and change the idea that it is and ending destination. Kuçova is only 2.5 hours away from the capital city, Tirana, and about 2 hours away from the port of Durres. Hence, apart from the industrial aspect, the city's regeneration should also take in consideration creative tourism and the promotion of local agricultural products of the surrounding lands. Furthermore, an important economic factor of generation could be the promotion from General National Plan of natural/agricultural/touristic itineraries, which interconnect rural settlements with natural ones and give possibility of development of various type of tourism.

In total, the industrial sites of Kuçova are proposed to be reused for several purposes as: residential and recreative, cultural and leisure areas (by creating new inhabited areas with all accurate facilities and give and to illegal constructions and impalpable land use transformations) and, on the other hand, industrial parks that could energize the working abilities of the city and the surrounding area. This revitalization should be sustainable and eco-friendly in order to create a more livable city and showing visitors the spirit of time in modern perspective. Some transformation could also take in consideration the social memory and propose new functions that also reinstate the distinctive elements of zone, as a museum of oil and gas. Furthermore, the regeneration of the area will need environmental measurements as land and water irrigation, phytodepuration etc.

4.6. Case study 3: Industrialization of the city of Laç

4.6.1 Industrialization history of Laç

With the intention to spread industrial activities throughout the country, Laç was chosen by the Labor Party to become an industrial city. The logic adhered to the motive of Laç being located near the port of Durres (the most important in country) and the one of Shengjin; facilitating the import of some raw material, industrial machineries and products export. On the other hand, Laç is about one hour far from the capital city, Tirana, and lies along the main transportation axis in country (the so called Blue Corridor). Furthermore, the city had good opportunities of extracting and processing various products, from raw materials of copper and chrome, to building materials, lumber and agricultural ones. Many of these products could be directly used by surrounding industrial sites as the Wires Factory in Shkodra (about one hour far), as agriculture chemicals and wood in construction process.

The Superphosphate factory was the first one of its kind in the area, constructed in the period 1966-1970 (during the fourth 5-years plan). The construction was facilitated by the realization of the railway Laç-Vlora, during 1961-1965. In the same time, the Wood Factory of Laç was working very hard, ranking the second in country after the Wood Combine in Elbasan, the production was 25.5 % of sawn timber in country [Laçi S., 2008, p. 265]. Later on, 1970-1975, followed the construction of other light and food industry factories, as the one of flour, sunflower oil, grains, cotton etc. In the following years, the Superphosphate complex grew in quantity of production and number of factories. The most important ones were constructed by the Chinese investments, which inserted their production technology.

In the following map (*Fig. 133*), are shown some of the industrial sites constructed in the city of Laç:

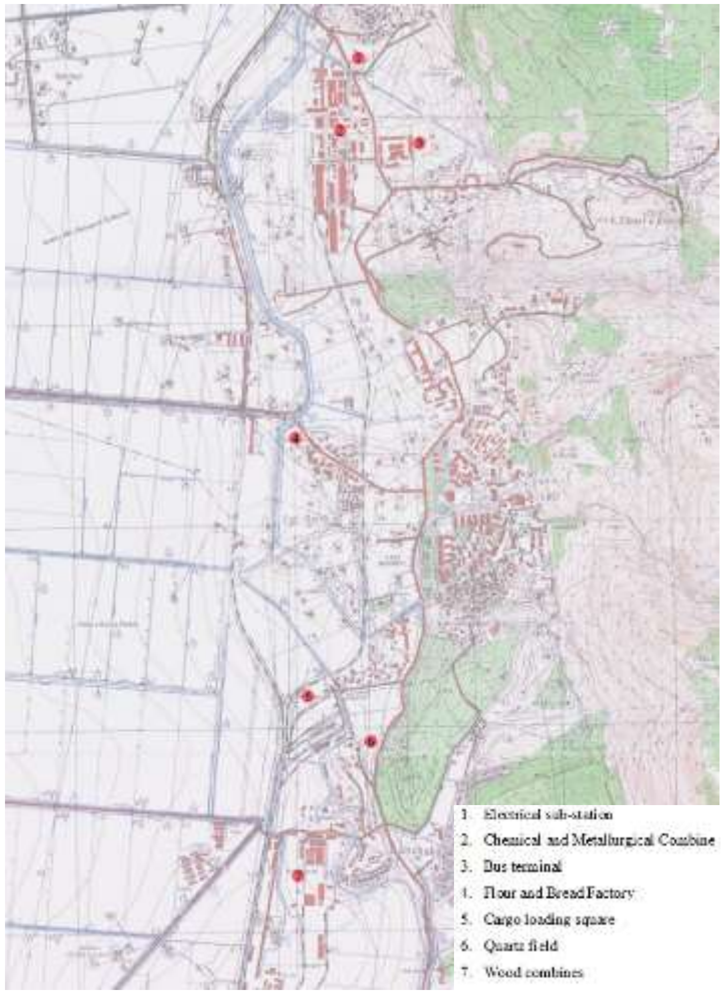


Figure 133. Industrial sites located in the city of Laç [elaborated by the author].

The industrial character of the city and the achievements in the superphosphate combine, were widely propagated in the communist regime. They represented, in a way, the pride of countries' industrial increase. In this context, apart from articles related in conferences or brochures produced, it is interesting a short film shoot in the Superphosphate of Laç named "Laçi, the industrial city", produced by Film Studio "New Albania", 1976. Economical maps of the fourth 5-years plan, during the communist regime, mark Laçi as industrial city, with some agricultural orientation (Fig. 134).

Figure 134. Economical map of Albania [source: Enterprice of Sports and Teaching Tools “Hamdi Shijaku” (1969) Albania, Economic Map. National Library of Albania, AlbH II/7].

The Laç Superphosphate Factory has been for almost 35 years, since 1966 until 2001 when it was closed because of lack of efficiency and ability to face competition (high price of production was the most determining factor). On the other hand, a study made by USAID points out the continuous problems of deterioration due to lack of funding for maintenance and replacement of consumed equipment [USAID, 1993, p. 2]. In the first years of the regime conversion (after 1991), the factory was facing poor conditions in general and overused equipment. Furthermore, the produced material was not easily traded because of low feasibility. According to USAID (1993) the estimated cost of restoration of the superphosphate factory was about US $3.1 million (assuming that US $1 = 100 Lekë).

The Superphosphate complex was a composition of some factories. The main ones were the Sulfuric Acid Factory No. 1, the Sulfuric Acid Factory No. 3, the Powder Superphosphate Mill No. 1, the Superphosphate Mill No. 2, the Granulation Factory and the Nitric Acid Factory. The investments and activity of chemical factory until 1990, is described in the following table:

Table 15. Investments and chemical industry activity until 1990 [source: Ministry of Energy and Industry, 'General overview of non-food industry', p. 3].

Factory name	**Type of activity**	**Investment (million/year)**	**No of employees**
Superphosphate complex in Laç: • Sulfuric Acid Factory No. 1 • Sulfuric Acid Factory No. 3 • Powder Superphosphate Mill No. 1 • Superphosphate Mill No. 2 • Granulation Factory • Nitric Acid Factory	• Sulfurique Acid 40000 tons / year • Sulfurique Acid 60000 tons / year • Superphosphate Powder 110000 tons / year • Superphosphate Powder 100000 tons / year • Granulated superphosphate 60000 ton / year • Nitrique Acid cc 20 tons / day	519.6	Before year 1990: 600 employees Actually: 0 employees

Changes in the regime and beginning of a democratic one, was accompanied with new processes. Many industrial sites ended up in decadence or deterioration. The results of the study made by USAID, December 1993, pointed out the not feasible operation of Laç factory. Some of the reasons include the obsolescence of equipment and plant facilities; the huge economical costs needed to restore the technology, factories and the surrounding environment; the high cost of production and further costs for import of phosphate rock because of high cost of local product.

As result of the above descripted factors and severe structural damages through years, because of vandal invasions, the superphosphate complex stopped working. In the context of policies for the development of non-food industrial sector, the Ministry of Energy and Industry has published some enterprises which are projected to be sold or liquidated. According to this, the Laç Superphosphate Factory sh.a. is in liquidation, which in 2014 has taken in administration assets of ex – "Superphosphate Laç" enterprise in liquidation [Ministry of Energy and Industry, 'Enterprises in liquidation'].

4.6.2 Survey of actual conditions of Laç Superphosphate plant

The superphosphate plant was widely known as the metallurgical complex, due to the fact that of copper and phosphate production. After 1991, the authority of the plant was divided into two: the metallurgical complex and the superphosphate complex. The factories operated with Chinese technology, at the time invested by Republic of China. The codes of the working departments were named 201, 202, and 203 etc., belonging to different warehouses and sorted by the technological process.

The information for the following list of the industrial complex in the Laç Superphosphate was collected a chemical engineer, ex-Head of Department in TEC Laç. Including an area of about 1700 km^2, the superphosphate factory is composed by the following map (*Fig. 135*).

Due to the technological process, the factories are organized vertically and the passage direction of the processed material is top down. The raw material, un-processed superphosphate powder, came in the plant by the railway line and deposited in the warehouse no. 201. During the processing, raw material passed several times in the crusher and the mill; so, it was granulated up to 0.5 mm. The procedure started at the Crusher 201 and carried on in the Mill 201/A. The elevator carrier transported the product to the upper floor of factory 202. The material, in powder form, was mixed with diluted sulfuric acid H_2SO_4 and obtained a fluid mass which passed in the baking room. After drying, the product passes for the fourth time in the crusher, obtaining the final product. Following, the final product is carried in the storehouse no. 203, which was about 200 m long. The transportation was realized by gantry bridges, which carried the product of superphosphate in powder form from the beginning of the warehouse, raising 5 m high and throwing at the end, so that air could get out from the material. The final product was partially sold as bulk in train carriages, some was packaged in begs and stored in warehouse no. 204 and then transported by trucks. At the warehouse no.204 the material was dried and granulated again, before being packaged. Each working process was checked by making the product analysis and was preserved by the police department. For a more detailed description, the following picture expresses the operating scheme of the Laç Phosphate Complex. The following diagram illustrates the operating scheme at Laç Phosphate Complex (*Fig. 136*).

Figure 135. Map of Superphosphate complex, Laç [elaborated by the author].

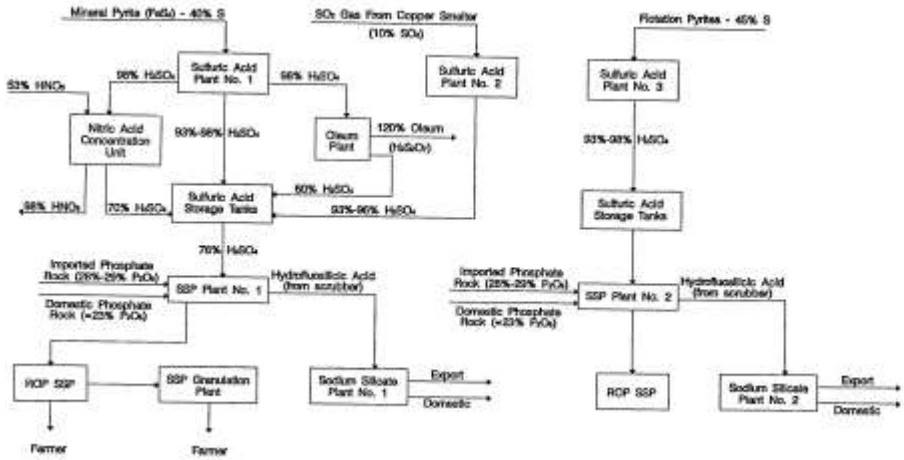


Figure 136. Laç Phosphate Complex Operating Scheme [source USAID, 1993, p. 170].

The urban organization of the warehouses, were based on the architectural principles of the time, where the administrative offices are located in the center of the site while at the entrance is the raw product and at the end is the release of the final product. Buildings were constructed without windows, but opened because of the powerful aspiration needed during the technological processes (*Fig. 137, 138*). The fans were centrally controlled by the Department of air pumps. The working code was rigorously followed, as workers were obliged to wear uniforms (boots and gloves). Each morning, before starting the job, workers used to take about half a liter of milk, as an antidote. The work day was organized in three shifts, but there was only a day of a week.

Figure 137. Laç Superphosphate Complex, September 2016 [photos by the author]

Figure 138. Laç Phosphate Complex during communist period [source https://www.flickr.com/photos/44425842@N00/8320907045].

4.6.3 Discussions and proposals for territorial reassessment

The superphosphate complex was located north of the urban areas. Economically viewed, promotion of Laç as an important industrial city of the north Albania, was a good choice. The area was vitalized because of new working places created, transformation from agricultural profile to an industrial one, increase of population number and life quality in general. On the other side, there were evidenced various problems in social and environment aspect. Most of new inhabitants, transferred from other cities, were persons politically sentenced. As result, new working class was somehow viewed as 'problematic', but this was balanced with qualified specialist in head positions and staff trainings during work. Further discussions include, as mentioned by Laçi [Laçi S., 2008], the construction of the industrial site in unstable terrains; transfer of poisonous gases in urban areas resulting in severe air, land and water contamination, health problems, extinction of local vegetation; minimization of agriculture land and degradation of local environment.

According to General National Plan, Laç is foreseen to serve as a logistic hub, in service of Shkodra and Lezha as primary centers for roads, highway and port mobility. Furthermore, Laç is located about 20 minutes away from the port of Shengjin and near of the important economic pole Shkoder-Lezha (*Fig. 139*). The municipality is considered part of national paths as the Green Corridor, Coastal Corridor and National Road. The area is suitable for intensive animal farming, food processing industry but also industry of construction materials, wood and metals processing which have been operating from a long time now.

Figure 139. Map of interconnection between economic motors [elaborated by the author; source: General National Plan, 2016, p. 158].

Decision of National Territorial Council no. 6, date 08.02.2017, has approved the General Local Plan of Kurbin Municipality, whose center is Laç city. Taking into account the proposals of GNP for increase of green areas, adjustment of watercourses and the high level of local pollution, one of the most important project of action plans is creation of green corridor “Laç-Patok”, interconnecting mountain and coastal areas, archeological and cultural paths with natural ones. This green corridor would facilitate sustainable mobility and provide pedestrian, bicycle and other alternative paths (connection of railway and bicycle paths), focusing on intensification of national and international tourism. Part of this project is the requalification of ex-Superphosphate factory and transformation into a thematic park dedicated to Renewable Energy Sources (*Fig. 140*). Some of the existing structures, which are in good condition, can be reused for this park, meanwhile limitation of access can lower the risk of contamination from toxic materials. In sequence, will take place the forestation of the quarry nearby, and link with the proposed green path. In general, it is foreseen development of local economy, as result of increased activities in local villages and arrangement of agro tourism, bed &

breakfast etc. In order to implement the project in short-terms, interested actors (as inhabitants, the Municipality and associations) can cooperate with the central government, local and international donors in order to get funds and propose good applicable proposals.

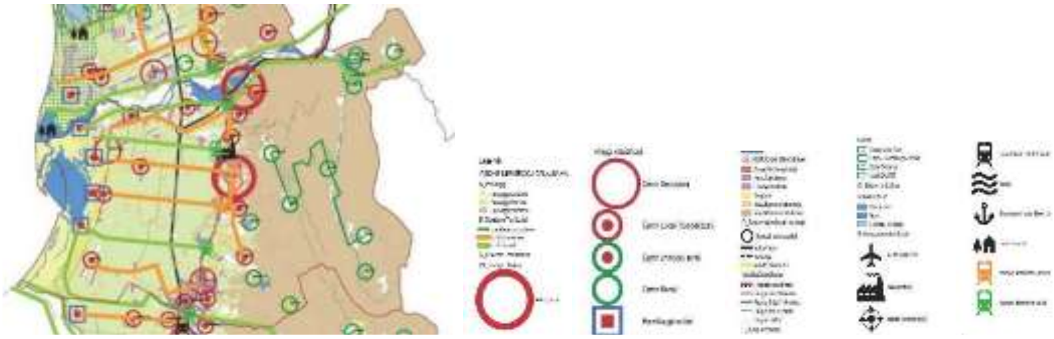


Figure 140. Map of strategicl vision [elaborated by the author; source: Report of General Local Plan of Kurbin Municipality, 2016, p. 21].

4.6.4 Multicriterial analysis

In the following, is made an analysis of the most important development criterias dictated by the Genral National Plan put alongside with the strategical objectives of the General Local Plan of Laç. As can be seen, the LGP has translated the directions of NGP into five trategical objectives. Each of them is composed of strategical projects, which will be implemented in a range of period until 2030 (*Fig. 141*, *142*).

Figure 141. National vs. Local evaluation, Kuçova [first map elaborated by the author, second map from Report of General Local Plan of Kurbin Municipality, 2016, p. 21].

For each of the objectives of Local General Plan, is made the SWOT analysis, aiming to find the role of the industrial area in each of these objectives (*Fig. 143*).

NATIONAL GENERAL PLAN

- AGRICULTURE
- TOURISM
- ECONOMY
- INDUSTRY (Construction materials, wood and metal processing)
- ENERGY

LOCAL GENERAL PLAN

O.S. 1 Agricultural production

- Rehabilitation of irrigation system, and drainage system
- Biological system of treatment of black waters
- Increase of efficiency of pumping stations
- Creation of agro-food center with short-chain
- Area of local trade (near area of production)

O.S. 2 Environmental tourism

- Natural tourism of Cabaku island, Patoku lagoon, Shkpeti lake,
- Touristic route of old Kurbin
- Development of area of Saint Ndou church
- Mountain tourism in Trodhna and coastal tourism near Adriatic
- Bicycle route Laç-Patok
- Recovery of railway system
- New ways of energy production (ex metallurgic site – into a thematic park for renewable energy resources)

O.S. 3 Urban center

- Development of production areas
- Requalification of center of Laç city
- Development of services in the area of Fusha Kuqes

- Protection and enlargement of territory biodiversity
- Reduction of urban settlements impact on natural protected areas
- Reduction of river water pollution
- Improvement of systems of solid waste management
- Mitigation of impact from current industrial construction and quarry
- Management of ecological territorial network
- Protection of water resources
- Add of hydro power stations
- Sports tourism
- Promotion of local agricultural companies
- Reuse of degraded agricultural lands
- Promotion of zoo technical activities
- Recuperation of historic villages for touristic reasons

Figure 142. Analysis of National and Local Plan of Kurbin, main parameters and strategical objectives [elaborated by the author].

SWOT ANALYSIS

O.S. 1 **Agricultural production**

Strengths

- Increase of local employment
- Improve of irrigation system
- Promotion of local agricultural economy
- Priority for the absorption of funds due to the strategic position

Weakness

- Presence of contaminated land
- Low connectivity between center and periphery

Opportunities

- Integrated management of agricultural system

Threatens

- Inequality of services offered from center to periphery

O.S. 2 **Environmental tourism**

Strengths

- Knowledge of agricultural, cultural, natural and landscape assets
- Increase connection through coastal and mountain areas

Weakness

- Natural corridors not connected
- Low citizen awareness in environment protection

Opportunities

- Increase of local economy
- Sustainable movement
- Increase of local agritourist farm

Threatens

- Lack of possibilities of financial investment
- Difficulties in managing projects

O.S. 3 **Urban center**

Strengths

- Diversification of services
- Active urban center

Weakness

- Low citizen awareness in tax payment and protection of architectural heritage

Opportunities

- Recuperation and reuse of degraded villages

Threatens

- Continuation of impact on natural areas

Figure 143. Analysis of National and Local Plan of Kurbin, main parameters and strategical objectives [elaborated by the author].

4.6.7 Environmental issues

As mentioned in the Analysis of Territory of Kurbin Municipality (part of Kurbin PPV, 2016), the area inherits a large quantity of pesticides and technological wastes (which have never been treated). According to the official data, there are still about 121 tons pf chemicals, from which about 63-ton sulfur, 38-ton sulfazole, 11-tons bordolese paste, 6-tons copper axycloride, 2-ton zinc oxide and 1.2-ton copper sulphate [Kurbin Municipality General Local Plan, 2016, p. 124].

For the purpose of this study, with the request of the author were made some environmental analysis regarding soil, water and air pollution. The analyses have been conducted by Environment Monitor Center (EMC), a licenced laboratory located in Tirana, Albania. The tests were made in the deteriorated areas of Laç Superphosphate, on 15 March 2017.

- Soil contamination from industrial discharge

The analysis description of test parameters and analyses results are prescribed in the following figure (*Table 16*).

Table 16. Soil test analysis, Laç Superphosphate [Analysis made by Environmental Monitoring Center, 2017].

TEST REPORT

Nr.1423 Date: 15/03/2017

Sample ID:	**Soil Sample**
Sample field name	**Soil sample nearLac Superphosphate 43°92’24’’V; 46°11’96’’L**
Log Number	**001**
Sampled by:	**Environmental Monitoring Center**
Sampling date:	**22/02/2017**
Receiving date:	**22/02/2017**
Analyses date:	**23/02/2017**
Place of Origin:	**Lac/ Kruje**
Sample description	**400g soil sample**
Container description	**Viale glass**
Transmission Code:	**001**

Analitical Results of the Sample

Analised Parameter	Test Method	Unit of Measure	Value
Lead(Pb)	**ISO 11047:1998**	**mg/kg**	**<2**
Cadmium(Cd)	**ISO 11047:1998**	**mg/kg**	**<2**
pH	**pH-meter**		**7.82**

According to Directive 86 / 278 /EEC [Council Directive, 1986], Annex 1 A, limit of values for concentration of heavy metals in soil (mg/kg of dry matter) are: cadmium 1-3, copper 50-140, nickel 30-75, lead 50-300, zinc 150-300, mercury 1-1.5. Although there is no directive in force for Albania, the results of the test show values within EU parameters.

- Waters

The water tests conducted by Environment Monitor Center (EMC), on 15 March 2017, in the deteriorated areas of the Kuçova TEC (Power Plant), are prescribed in the following figures (*Table 17, 18*). Test were made by taking samples from well water and surface waters of Mat River, near Laç Superphosphate.

According to the Decision of the Council of Ministers no. 177, date 31.03.2005 “For permissible liquid discharge rates and zoning criteria for receiving water environments”, standard rates are: pH = 6 – 9, pending material = 50 mg/l, BoDs = 50 mg/l. Also referring to the same decision, Annex 3, "Permissible values for discharged waters from several industrial sectors in the receiving water environment", point 10.3 and 10.4, the measured well water values (*Table 17*) are within the allowed norms.

Table 17. Sample – well water, Mat River, near Laç Superphosphate [Analysis made by Environmental Monitoring Center, 2017].

TEST REPORT

Nr.1703 Date: 15/03/2017

Sample ID:	Well water
Sample field name	**Sub terrain water sample 43°92’43’’L; 46°11’48’’V**
Log Number	**002**
Sampled by:	**Environmental Monitoring Center**
Sampling date:	**22/02/2017**

Receiving date:	**22/02/2017**
Analyses date:	**23/02/2017**
Place of Origin:	**Lac**
Sample description	**1.5L liquid sample**
Transmission Code:	**001**

Analitical Results of the Sample

Analised Parameter	Method	Unit of Measure	Value	Detection
ph*	**Multi 340i/ISO 10523:2012Water quality, determination of pH**	**--**	**7.30**	**0.01**
Pending material	**Filtering (filter<0.45 µm Whatman**	**mg/L**	**3.5**	**0.1**
BOD	**S SH EN15586 Waterquality**	**mg/L**	**<1**	**1**

*Acredited proof according SSH ISO/IEC 17025:2006

According to the Decision of the Council of Ministers no. 177, date 31.03.2005 “For permissible liquid discharge rates and zoning criteria for receiving water environments”, standard rates are: pH = 6 – 9, suspended matter = 50 mg/l, BoDs = 50 mg/l.

Table 18. Surface water sample, Mat River, near Laç Superphosphate [Analysis made by Environmental Monitoring Center, 2017].

<u>TEST REPORT</u>
Nr. 1702 Date: 15/03/2017

Sample ID:	**River Water**
Sample field name	**Superficial water sample of Mat River 43°92’05’’L 46°12’28’’V**
Log Number	**001**
Sampled by:	**Environmental Monitoring Center**
Sampling date:	**22/02/2017**
Receiving date:	**22/02/2017**
Analyses date:	**23/02/2017**
Place of Origin:	**Lac**
Sample description	**1.5L liquid sample**
Transmission Code:	**001**

Analitical Results of the Sample

Analised Parameter	Method	Unit of Measure	Value	Detection
ph*	**Multi 340i/ISO 10523:2012Water quality, determination of pH**	**--**	**8.36**	**0.01**
Pending material	**Filtering (filter<0.45 µm Whatman**	**mg/L**	**6.8**	**0.1**
BOD	**S SH EN15586 Waterquality**	**mg/L**	**8**	**1**

*Acredited proof according SSH ISO/IEC 17025:2006

Also referring to the same decision, Annex 3, "Permissible values for discharged waters from several industrial sectors in the receiving water environment", point 10.3 and 10.4, the measured well water values (*Table 18*) are within the allowed norms.

- Air

According to Decision no. 435, dated 12.09.2002 "On approval of air discharge rates in the Republic of Albania", point 1: "Energy and fuel production industry", there are no specific rates for the superphosphate industry (its production). The measured parameters are shown in the following figures (*Table 19*, *20*).

Table 19. Total concentration of granular material in suspension (LNP) in the air, Laç Superphosphate [Analysis made by Environmental Monitoring Center, 2017].

Report Results
Gas total concentration

Report Nr.	**517**
Customer:	**Boriana Golgota**
Measurement Station.	**Lac Superphosphate 41°51’23’’V; 46°11’96’’L**
Date of measurement	**22/02/2017**
Measurement method	**S SH EN 45544:2:2015**
Measuring Tool	**ALTAIR SX MSA**

Nr.	**Time of measurement**			**Result**				
	Start	**End**	**Duration**	**CO* ppm**	**NO2* ppm**	**H2S* ppm**	**SO2 ppm**	**O2* %**
1	**09.30**	**10.30**	**60 min**	**<0.1**	**<0.1**	**<0.1**	**0.1**	**20.8**

Tirane, date 15/03/2017

Table 20. Total total concentration of granular material in suspension (LNP) in the air, Laç Superphosphate [Analysis made by Environmental Monitoring Center, 2017].

Report Results
Levitating particle mass in air (LNP)

Report Nr.	**891**
Customer:	**Boriana Golgota**
Measurement Station.	**Lac Superphosphate, Moving across the site**
Date of measurement	**22/02/2017**
Measurement method	**DS CEN/TS 16450:2013**
Measuring Tool	**MicroDust Pro Casella**

Nr.	Place of measurement	Time of measurement			Result	
		Start	End	Duration	LNP mes mg/m^3	LNP mes mg/m^3
1	Moving across the site	09.30	10.30	60 min	0.002	0.036

Tirane, date 15/03/2017

5.2 Architecture and heritage

Taking in consideration national politics for regeneration of superphosphate complex in Laç and its reuse as industrial site, is important to impose some restrictions in order to improve the conditions of the surrounding environment. Furthermore, the vast urban connectivity from industrial area to the urbanized ones could be supplied with sport facilities and green areas. Green belts are crucial elements to block the passage of contaminated air to residential areas. On the other hand, renovation of industrial activities is expected to encourage working abilities. Finally, transformations should also include some parts of the previous memory. Of course, this will need further studies and accurate urban and architectural transformations.

4.6.7 Proposals for Territorial Reassessment

Preservation, promotion and reuse of industrial heritage are some of the objectives of the government of Albania, following the European directives. The city of Laç, as one of the most important industrial ones in country, could be integral part of the European Route of Industrial Heritage (ERIH) as many other similar sites all over the country as in Elbasan, Fier, Lushnja, Shkodra, Tirana, Durrës, Korça and Kukës.

CHAPTER 5

CONCLUSION

5.1 Reuse Methodolody of Industrial Heritage in Albania

Following the strategies of territorial analysis of the case study cities, it is possible to develop regeneration strategy that could take into account three pillars of intervention:

i. Economic and urban development - focusing on territorial management, viewed in local and territorial perspective. This will increase the inhabitants and tourist attraction.
ii. Pollution – focusing on environment conditions and improvement opportunities.
iii. Heritage – focusing on valorization and protection of industrial heritage, enhancement of the architectural, historical and artistic values of underused buildings and revival of local identity.

The better we recognize the key issues of these intervention strategies, the better we can implement them in short and medium terms. From this perspective, the objectives that araise, should be ferasible as possible to achieve the desired goal.

i. Valorization of industrial archaeology routes.
    - Create Albanian Industrial Archeological Route, a make integral part of European Route of Industrial Heritage.

ii. Valorization and regeneration of dismantled industrial sites and buildings. These sites represent important part of country history. They are also unfunctional and misused part of the city's territories, whose reuse is crutial.

- Most of Albanian abandoned industrial sites, like in Laç, are out of function. Hence, reuse projects should involve adequate protection measures for existing structures before reuse.
- In cases of mix areas, like in Elbasan and Kuçova, where we can find a mix situation of some structures in use and others degraded, a detailed feasibility study could determine the best way of reuse for these areas. However, national and local strategy, can be used as guidelines for further future steps.

iii. Arrangement of mobility routes for better access in these areas.

- It is important to provide adequate mobility structure to ensure good site accessibility, especially in the case of Elbasan where the industrial zone is located in the outskirt of the city.
- Integration of all types of transport: public and private, with tourist sites.

The ongoing table (*Table 21*) illustrates the overall regeneration model, proposed from this thesis. The table describes the current situation of underused industrial sites in Elbasan, Kuçova and Laç; General Local Plan and General National Plan provisions and possible regeneration model proposed by the author.

Table 21. Albanian indusrial case studies, regeneration model.

	ELBASAN			KUÇOVA			LAÇ		
	Actuality	**GLP**	**Proposal**	**Actuality**	**GLP**	**Proposal**	**Actuality**	**GLP**	**Proposal**
ECONOMIC & URBAN DEVELOPMENT	Some active industries. Most of structures are vacant.	Encourage private entrepreneurship and business to revitalize with their activity the former industrial / economic areas of Elbasan in cooperation with the municipality as the main negotiator to regenerate the public space through the land management instrument.	- Diversification of economy: combination of light industry + industry and economy activities (industrial and logistic parks, business incubators) + recreative/artistic functions. See example of Shanghai and Victoria metallurgical Complex in Calan. - Stakeholders: Local government, state agencies, private investors, universities and local community. - Tax reductions, special funding and favorable policies: renovation without paying taxes or rents (egg. Qinhuai District, Nanjing).	Most of ex-industrial sites are out of function.	Diversification urban economy – requalification of industrial areas.	- Economic beneficiary from brownfields regeneration, because of tourist attraction. Use of incentives like free rent for activities organization (egg. Dora Park, Italy). - Stakeholders: Local government, state agencies, private investors, universities and local community.	Great natural assets, but not connected.	Integrated developm ent of agricultur e and tourism, revitalizati on of industrial brownfiel ds.	Protection of natural greenery. Good capacity to manage flagship projects, as instruments of urban regeneration
				Ex-UMN is in not medium conditions (machineries are in place). Ex-UPN is vast area. Environmental regeneration of Ex-UPN from heavy contaminants was developed by private company. Ex-TEC is in	Rehabilitation and regeneration of ex-industrial areas with the intention of reutilize as residential/recreat ive/sportive/green space (ex-UPN); recreative/comme rcial/service areas (ex-TEC), and processing industry/logistic and storage center (ex-UMN). Construction of a new professional	Improve working and living conditions; Regeneration of heritage buildings (ex-TEC), creation of competitive and dynamic areas (egg. Montemartini Power Station). Government can give founding for new housing program in the regenerated area of ex-UPN or tax reduction and favorable policies			

				very bad condition (except from cooling tower).	regional oil school.	(egg. Manchester, Gasometers in Austria and Qinhuai District, Nanjing). The area of ex-UMN can be regenerated and used in favor of a new professional regional school, and specializing courses.			
	Ex-metallurgical complex is connected with one public transport line with the city.	Transport - Better access and interconnection with periphery units.	Better connection with the site, from the city of Elbasan and other cities (propose light transport, bicycle/pedestrian paths + green belt with the main road).	The most important industrial sites are located at the entrance of the city and near the city center.	Transport improvement – improvement of public transport, better interconnection. Construction of new bus terminal.	Linking footpaths, bicycle paths, new parking lots. New bus lines for better access (egg. Manchester, Shanghai, USA).			
ENVIRONMENT	Contradictory data regarding pollution in the area.	Mitigation of environmental effects from industrial activity; Support the necessary infrastructure for the concentration of industrial businesses in the metallurgical area.	In-depth environmental analysis of the whole area of Metallurgic. Proper bonification of site. See examples of Emscher Park in Germany, Vitkovice Ironworks in Czech Republic, Universal Studio in Osaka, Bethlehem Steel Plant in USA and Victoria Metallurgical Complex in Romania.	Hazardous wastes are being recycled by private companies.	2008-2012 Project of environmental regeneration of ex-refinery field (ex-UPN) from heavy contaminants and reuse as recreative area.	Treatment of hazardous wastes (egg. Manchester and Shanghai.	Ex-Superphosphate Complex is out of function. Most of objects are physically degraded.	Energy production: ex-Superphosphate site to be transformed into a thematic park for renewable energy resources.	Regeneration of industrial heritage and capitalization of assets (egg. Vitkovice Ironworks). Reuse as business incubator and area for research (egg. medicinal). Funding by central and local governance and private investors.
	Agricultural land is near the industrial one.	Protection of agricultural lands from industrial	Regeneration and protection of natural landscape. See examples of	The area is vast.	Feasibility report from Czech Republic proposes	Not advisable to combine residential with incineration plant.	Contradictory data regarding pollution in	Soil and water rehabilitation of ex-	Phyto-remediation of soil (egg. Dora Park, Italy). Or

		impact.	Ironbridge Gorge Museum in UK, Waterfront of Barcelona, Manchester city and Dora Park in Italy.		Construction of a solid waste incineration plant – near ex-UPN.		the area.	industrial sites from industrial pollution.	Decontamination of land: in-situ oxidation (air injection) and soil vapor extraction (egg. Victoria metallurgical complex, Romania)
	New landfield is being constructed in Paper. Hazardous wastes are not treated.	GLP - Rehabilitation of old landfill and completion of new landfield construction; Plan for new hazardous wastes landfield.	Treatment of hazardous wastes. See examples in Manchester and Shanghai.	The area of ex-UPN is vast.	GNP propose plan for recycling easy recyclable wastes, electronic, industrial and inert wastes. GLP proposes new regional landfield for Kuçova, Ura Vajgurore and Berat or use the vast area of ex-Combine of Textile Industry.	Waste landfill should take in consideration natural relief and atmosphere characteristics. Purification of air and reuse of old systems of ex Power Station (egg. Montemartini ex Power Station, Italy)	There is only one public site of urban waste disposal, not in good condition. No treatment of wastes is being done. Another private site makes treatment of hospital wastes.	Constructi on of new industrial landfill, for disposal after their treatment.	Complete process of waste collection, transportation and treatment (egg. Manchester and Shanghai).
				Bare hills.	GLP proposes reforestation and buffering measures to avoid conflicts of extracting industry and agricultural land (3 sites of oil wells located in agricultural land), and mitigation of deforestation	Reforestation of hills may reduce air pollution and create a landscape itinerary.			

HERITAGE	Most of abandoned objects are in not good condition.	Industrial objects form industrial landscape – could be used for touristic heritage.	- Propose design elements which transmit symbiosis of old and modern design (egg. Reuse of original materials like in Emscher Park). Exploit building's potential. - Combination of old structures with modern materials (egg. Dora Park and Gasometers). - Brand reclamation/ new city landmark (egg. Universal Studio in Osaka or Shanghai case). - Reuse of brownfields increase social liability. Community involvement. Improvement of site image.	The military state airport is in function. According to Albanian Air Code, no construction permit will be given within the area without the permission of Civil Aviation Authority.	GLP proposes construction of a War Museum, near the military airport.	Use industrial identity of city as touristic attraction. New public spaces. Improve social life.	Existing routes are not in good condition.	Touristic routes through mountains .	Preservation of landscape and inclusion in development projects. Regeneration and protection of natural landscape - greenery and review (Egg. Ironbrigde George Museum).
				There are some abandoned diesel wells at the ex-Oil Refinery site.	GLP proposes rehabilitation of oil pump jack, remained through the city, and use them as branding objects.	- New city landmark - New neighborhood identity, with increased value.			
				Out of function.	Rehabilitation of ex-TEC area and reuse as public and recreative area.	Emphasize unique heritage values; Reflect industrial development and technology.			

5.2 Economic and urban development

Economic and urban development of Albanian cities, is directly connected with national and international policies.

The provisions of General Local Plan of Elbasan focus on:

- Encouragement of private entrepreneurship and new business opening withinformer industrial / economic areas of Elbasan in cooperation with the municipality as the main negotiator to regenerate the public space through the land management instrument.
- Better access and interconnection of city center with peripheric / industrial areas.

Due to the fact that ex-Metallurgical Complex is partially privatized, there are actually some industries working there. On the other hand, what is left in public ownership is in bed condition and vacant. Also, there is a public transport line from the city, which passess near the complex.

Taking into account international experiences, my proposals are as follows:

- Diversification of economy: combination of light industry + industry and economy activities (industrial and logistic parks, business incubators) + recreative/artistic functions. See example of Shanghai and Victoria metallurgical Complex in Calan.
- Stakeholders: Local government, state agencies, private investors, universities and local community.
- Tax reductions, special funding and favorable policies: renovation without paying taxes or rents (egg. Qinhuai District, Nanjing).
- Better connection with the site, from the city of Elbasan and other cities (propose light transport, bicycle/pedestrian paths + green belt with the main road).

The provisions of General Local Plan of Kuçova focus on:

- Diversification urban economy – requalification of industrial areas.
- Rehabilitation and regeneration of ex-industrial areas with the intention of reutilize as residential/ recreative/ sportive/ green space (ex-UPN); recreative/commercial/service areas (ex-TEC), and processing industry/logistic and storage center (ex-UMN).
- Construction of a new professional regional oil school.
- Transport improvement: improvement of public transport, better interconnection. Construction of new bus terminal.

Nowadays, most of ex-industrial sites are out of function. Ex-UMN is in not medium conditions (machineries are in place). Ex-UPN is vast area. Environmental regeneration of Ex-UPN from heavy contaminants was developed by private company. Ex-TEC is in very bad condition (except from cooling tower). The most important industrial sites are located at the entrance of the city and near the city center.

My proposals for Kuçova sites, are as follows:

- Economic beneficiary from brownfields regeneration, because of tourist attraction. Use of incentives like free rent for activities organization (egg. Dora Park, Italy).
- Stakeholders: Local government, state agencies, private investors, universities and local community.
- Improve working and living conditions; Regeneration of heritage buildings (ex-TEC), creation of competitive and dynamic areas (egg. Montemartini Power Station).
- Government can give founding for new housing program in the regenerated area of ex-UPN or tax reduction and favorable policies (egg. Manchester, Gasometers in Austria and Qinhuai District, Nanjing). The area of ex-UMN can be regenerated and used in favor of a new professional regional school, and specializing courses.

- Linking footpaths, bicycle paths, new parking lots.
- New bus lines for better access (egg. Manchester, Shanghai, USA).

The provisions of General Local Plan of Laç focus on integrated development of agriculture and tourism and revitalization of industrial brownfields. Laç has great natural assets, but most of them remain un-connected. Altough GLP proposes the transformation of ex-Superphosphate into a thematic park for renewable energy resources, my proposal would be its adaption into business incubator and area for research (egg. medicinal).

5.3 Environmental issues

A. Environmental laws and strategies in Albania

Protection against industrial pollution is based on Albanian Legislation, regarding environmental protection, as follows:

- Law no. 10448, date 14.07.2011 "On Environmental Permits",
- Draft law "On the control of risks from major accidents caused by hazardous substances",
- Decision no. 865, date 10.12.2014 "On the reduction and stabilization of fluorinated greenhouse gas emissions,
- Decision "On Security Reports and Emergency Plans under the Law on Risk Control from Major Accidents Caused by Hazardous Substances",
- Decision "On the format of notices required by the law on the control of risks from major industrial accidents caused by hazardous substances",
- Convention on the Transboundary Effects of Industrial Accidents.

Further protection environmental measurements, regarding wastes, are included in the:

- National Plan for Waste Management (2010-2025)
- Intersectorial strategy of environment (2015-2020)
- Law no. 10 431, date 09.06.2011 "On the Protection of the Environment"

- Law No. 156, dated 10/10/2003, on some amendments to Law No. 10463, dated 22/09/2011 "On integrated waste management"
- Decision No.579 dated 03.09.2014 "On an addition to the Decision No. 99, dated 18.02.2005 of the Council of Ministers, on the approval of the Albanian Classification Catalog of Waste"
- Decision No.127 dated 11.02.2015 "On the requirements for the use in agriculture of sludge of polluted water"
- Decision No.687 of 29.07.2015 "On the approval for the maintenance, updating and publication of waste statistics"
- Decision No.575 dated 24.06.2015 "On the approval of requests for inert waste management"
- Decision No. 387 dated 06.05.2015 "On the adoption of rules for the control of PCB disposal, disposal or disposal of equipment containing PCBs and / or disposal of PCB waste used"
- Decision No.371 dated 11.06.2014 "On the adoption of rules for the submission of hazardous wastes and their delivery document"
- Decision No.229 dated 23.04.2014 "On the adoption of rules for the transfer of non-hazardous waste and the information to be included in the transfer document"
- Decision No.418 dated 25.06.2014 "On the differentiated collection of waste at source"
- Decision No. 608 dated 17.09.2014 "On the necessary measures for collection and treatment of BIO waste as well as criteria and deadlines for their reduction"
- Decision No.641, dated 01.10.2014 "On the adoption of rules for the export of waste and the transit of non-hazardous waste and inert waste"
- Decision No. 52, dated 05/02/2014, on some amendments to Decision No. 117, dated 13/02/2013 of the Council of Ministers "On the criteria that determine when certain types of scrap metal cease to be waste"

- Decision No.117, dated 13/02/21013 "On the criteria on the basis of which certain types of scrap metal cease to be waste"
- Decision No. 178, dated 06/03/2012 "On the incineration of waste"
- Decision No. 99, dated 18/02/2005 "On the approval of the Albanian Classification Catalog"
- Decision No. 175, dated 19/01/2011 "On the adoption of the national waste management strategy and the national waste management plan"
- Decision No. 452, dated 11/07/2012 "On waste landfills"
- Decision No. 798, dated 29/09/2010, approving the regulation "On the management of hospital waste"
- Decision No.866, dated 04/12/2012 "On Batteries, Accumulators and Their Waste"
- Decision No. 705, dated 10/10/2012 "On the management of vehicle waste at the end of life"
- Decision No. 957, dated 19/12/2012 "On waste electrical and electronic equipment"
- Decision No. 177, dated 06/03/2012 "On their packaging and wastes"
- Decision No.765, dated 07/11/2012 "On the adoption of rules for differentiated collection and treatment of used oils"
- Instruction No. 1738, dated 12.03.2015 "On the study-design criteria for the rehabilitation of solid urban waste landfills, and the construction of landfills or solid urban waste treatment plants"

According to Law no. 10431 “on Environmental Protection” (2011), article 5, are defined the following concepts [Law no. 10431, 2011, article 5]:

- "Pollution" means the direct or indirect introduction, as a result of human activity, of substances, vibrations, radiation, unpleasant odors, heat or noise in the air, water or soil, to the extent that it may be harmful to the quality of the environment or human health, which could lead to damage of material property or worse and interfere with the services of other uses of the legal environment.

- “Hazardous wastes” is a substance or group of substances which are toxic, persistent and tend to be naturally biologically accumulated, as well as other substances or groups of substances that present similar hazards.
- "Discharge" is the direct or indirect release of substances, vibrations, radiation, unpleasant odors, heat or noise from separate sources or widespread in the air, water or soil as a result of human activity.

Ministry of Environment is the main actor in the coordination of treatment of derelict land. The Ministry will coordinate the management plans with the National Environment Agencies, relevant Municipalities, Prefectures, but also with private companies for construction of recycling plants for hazardous waste. Albania has planned to be active in international experience exchange for qualitative cleaning, through networks of UNEP, the Office of the Basel Convention and the European Environment Agency.

According to National Plan of Waste Management, funds for rehabilitation of derelict land will be provided partially by the Environmental Found (national strategical fund for wastes), Municipalities Funds, private capital (PPP agreement), possible national bonds, international funds (as participation in IPA program, or structural grants from ERDF and CF) or loans from an international financial institution. Although EU laws envisage coverage of waste management costs by producers or waste holders, it is impossible to cover necessary investments.

B. Environmental laws and strategies in EU

Soil contamination and degradation is considered an important issue and primary concern of European Environment Agency[17]. EU policies regarding environmental protection comprises various aspects as climate change, sustainable development, waste

[17] European Commission, ‘The EU Environmental Implementation Review Country Report – GREECE’, Brussels, SWD (2017) 41 final. (2017)

management, air pollution, water protection and management, protection of nature and biodiversity, soil protection, noise protection, civil protection and cooperation with other countries.

Environment protection legislation, is composed on various directives, most important of which are[18]:

- Directive 2008/50/EC on ambient air quality and cleaner air.
- The Thematic Strategy for Soil Protection consists of a Communication from the Commission to the other European Institutions (COM (2006) 231).
- Soil Thematic Strategy (COM (2012) 46).
- Soil Thematic Strategy (COM (2006) 231).
- Seventh Environment Action Programme, 2014-2020.
- Directive 2011/92/EU — assessment of the effects of certain public and private projects on the environment.
- Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).
- Council Decision 2006/507/EC of 14 October 2004 concerning the conclusion, on behalf of the European Community, of the Stockholm Convention on Persistent Organic Pollutants.
- Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste.
- Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006.

[18] European Commission official website. Online: http://eur-lex.europa.eu/summary/chapter/environment.html?root_default=SUM_1_CODED=20

- Communication of the Commission to the Council and the European Parliament: A policy framework for climate and energy in the period from 2020 to 2030 [COM (2014) 15 final/2 of 28.1].
- Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe.
- Directive (EU) 2015/2193 on limiting emissions of certain pollutants into the air from medium combustion plants.
- Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).
- Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A Blueprint to Safeguard Europe's Water Resources [COM (2012)673].
- Towards a Thematic Strategy on Soil Protection (COM (2002)179).
- Council Directive 2013/51/Euratom of 22 October 2013 laying down requirements for the protection of the health of the general public with regard to radioactive substances in water intended for human consumption.
- Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise.
- Decision 98/685/EC concerning the conclusion of the Convention on the Transboundary Effects of Industrial Accidents.
- Directive 2008/98/EC Waste Framework Directive.
- Directive (EU) 2015/2193 on medium combustion plants (MCP).
- Directive 2010/75/EU on industrial emissions (IED).
- The Sewage sludge EU directive (Directive on the protection of the environment, and in particular of the soil when sewage sludge is used in agriculture – 86/278/EEC).

- EU (2006), Regulation (EC) No 166/2006 of the European Parliament and of the Council of 18 January 2006 concerning the establishment of a European pollutant Release and Transfer Register and amending Council Directives 91/689/EEA and 96/61/EC.
- Directive 2004/35/CE on environmental liability with regard to the prevention and remediation of environmental damage (ELD directive).
- Directive 2000/76/EC on the incineration of waste.
- 7th Environment Action Plan (EAP) (Decision 1386/2013/EU).
- Roadmap to Resource Efficient Europe (COM (2011) 571).
- Circular Economy Action Plan (COM (2015) 614).

However, there is no EU legislation dealing directly with brownfileds but few countries have posed their remediation as part of national strategies. As JRC underlines, high number of brownfileds in EU is considered an unresolved problem, which redevelopments is considered very important [Stolte et al., 2016, p. 97]. However, several steps were made to support the brownfield redevelopment, as was stated in the Memorandum of European Council COM (2011) 612 and COM (2011) 614 [European Commission, 2012, p. 46].

The European Soil Data Centre (ESDAC)[19] is an online website provides updated information on datas, documents, maps and projects related to soil in Europe. It was created in 2012, to actualize the requirements of European Environment Agency and European Commission.

On November 2013 was launched the project Preventing and Remediating degradation of soils in Europe through Land Care (RECARE). The project is foreseen to end in 2018, aiming:

[19] European Soil Data Center (ESDAC). Online: https://esdac.jrc.ec.europa.eu/

to develop effective prevention, remediation and restoration measures using an innovative transdisciplinary approach, actively integrating and advancing knowledge of stakeholders and scientists in 17 Case Studies, covering a range of soil threats in different bio-physical and socio-economic environments across Europe [Joint Research Centre, European Soil Data Centre (ESDAC), online].

ERDF is the European Regional Development Fund, created in 2006 from EU to correct the region's imbalances, by strengthening social and economic integrity [COUNCIL Regulation, No 1083/2006]. It is a good opportunity to provide funds for soil decontamination, protection of land and ecosystem. Thematic Strategy for Soil Protection, COM (2012) 46 2012, proposes rehabilitation of brownfields or reduction of negative effects by using adequate techniques. Available environmental grants can be issued only if the principle the "polluter pays" is endured. According to this, Community guidelines on state aid for environmental protection: Aid for the remediation of contaminated sites, states:

Where the polluter is clearly identified, that person must finance the remediation in accordance with the 'polluter pays' principle, and no State aid may be granted. In this context, 'polluter' refers to the person liable under the law applicable in each Member State, without prejudice to the adoption of Community rules in the matter. Where the polluter is not identified or cannot be made to bear the costs, the person responsible for the work may receive aid [OJ C 82, 2008, article 3.1.10, p. 22].

EU is being running the Operational Programme on Competitiveness, Enterpreneurship and Innovation (2014-2020) financing use of innovative technologies for environment treatment and protection [European Commission official site, 'Operational Programme on Competitiveness, Enterpreneurship and Innovation 2014-2020]. LIFE Programme 2014–2020 [European Commission, Regulation 1293/2013], based on the Environment and Climate Action and Regulation No 614/2007, provides funding to support soil threats in EU. Horizon 2014-2020 is another funding instrument, which can provide EU funds through project which intent environmental protection.

Many examples can be taken from various under-developing project, founded by the above-mentioned alternatives. It is with interest to observe the ongoing project of Community Research and Development Information Service: Brownfield Decontamination in Southern Europe, Preparing PCP to R+D for efficient, cost effective and innovative solutions for brownfields decontamination; which proposes alternative land remediation in Bilbao, Trieste and Seixal, using adequate technologies and partnership. The project has created a list of possible remediation technologies, as:

> *in situ treatment (enhanced bioremediation, monitored natural attenuation, and phytoremediation), in situ physical/chemical treatment (air sparging, bioslurping, chemical oxidation, direction wells, dual phase extraction, thermal treatment, hydrofracturing enhancements, in-well air stripping, passive/reactive treatment walls)* [CORDIS, 'BRODISE Report Summary'].

In addition, is has been presented the complete decontamination figure (*Fig. 159*):

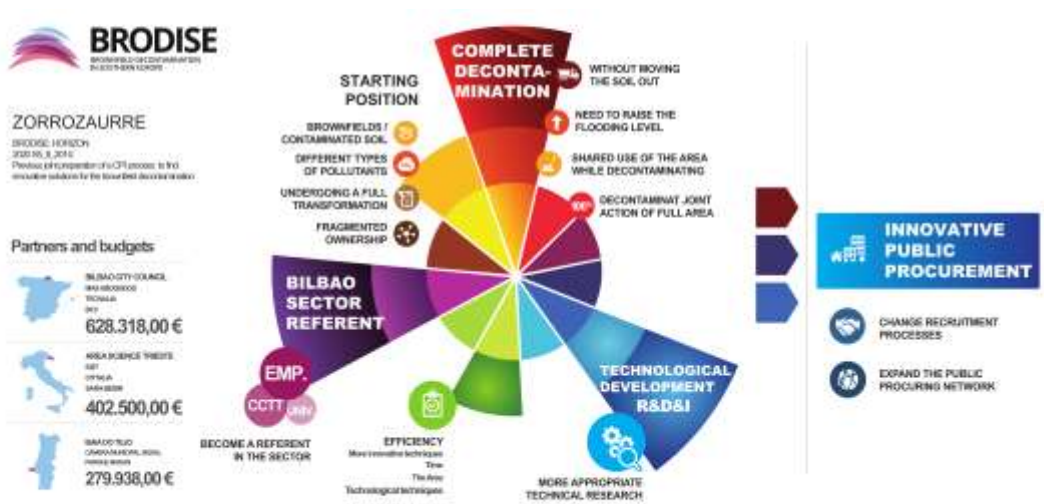


Figure 144. Infografia, Periodic Reporting for period 2 -BRODISE [Online: http://cordis.europa.eu/result/rcn/193688_en.html]

C. Problematic discussion and possible solutions

Environmental actions proposed by Elbasan GLP, include:

- mitigation of environmental effects from industrial activity;
- support the necessary infrastructure for the concentration of industrial businesses in the metallurgical area;
- protection of agricultural lands from industrial impact;
- rehabilitation of old landfill and completion of new landfield construction;
- plan for new hazardous wastes landfield.

Due to the fact that contradictory data have been published, on the level of area contamination, it is recommended that in-depth environmental analysis could be held in the whole site and its sorroundings. For proper bonification of site could refer to positive examples of Emscher Park in Germany, Vitkovice Ironworks in Czech Republic, Universal Studio in Osaka, Bethlehem Steel Plant in USA and Victoria Metallurgical Complex in Romania. Many good examples as Ironbridge Gorge Museum in UK, Waterfront of Barcelona, Manchester city and Dora Park in Italy can guide the regeneration and protection of natural landscape. And last, treatment of hazardous wastes were successfully made in Manchester and Shanghai.

Environmental actions proposed by Kuçova GLP, include:

- Project of environmental regeneration of ex-refinery field (ex-UPN) from heavy contaminants and reuse as recreative area, 2008-2012.
- Feasibility report from Czech Republic proposes Construction of a solid waste incineration plant – near ex-UPN.
- GNP propose plan for recycling easy recyclable wastes, electronic, industrial and inert wastes. GLP proposes new regional landfield for Kuçova, Ura Vajgurore and Berat or use the vast area of ex-Combine of Textile Industry.
- GLP proposes reforestation and buffering measures to avoid conflicts of extracting industry and agricultural land (3 sites of oil wells located in agricultural land), and mitigation of deforestation.

Hazardous wastes in Kuçova are being recycled by a private company. However, positive experiences can be taken out from treatment of hazardous wastes in Manchester and Shanghai. Furthermore, it is not advisable to combine residential with incineration plant (in contrary with what the feasibility study proposes). Waste landfill should take in consideration natural relief and atmosphere characteristics. Purification of air and reuse of old systems of ex Power Station could take the example of Montemartini ex Power Station, Italy. Lastly, reforestation of hills may reduce air pollution and create a landscape itinerary.

The ex- Superphosphate site in Laç is proposd by GLP to be transformed into a thematic park for renewable energy resources. Currently the area is abandoned and most of objects are physically degradeted. GLP proposes soil and water rehabilitation of this site from industrial pollution and construction of new industrial landfill, for disposal after their treatment. There is only one public site of urban waste disposal in Laç, which is not in good condition and another private site makes treatment of hospital wastes.

Although there are contradictory data measured in the site, regeneration of ex-Superphosphate could learn from different methodologies as: Phyto-remediation of soil (egg. Dora Park, Italy) or decontamination of land: in-situ oxidation (air injection) and soil vapor extraction (egg. Victoria metallurgical complex, Romania).

5.4 Heritage issues

Heritage redevelopment should point out and conserve the distinctiveness of a place and utilize unique characteristics (as authenticity and integrity, which are main criteria for selecting a site in the nowadays World Heritage List) to create a new feasible asset. As expressed in the following diagram (*Fig. 160*), this process should combine the society and local heritage into a positive practice where heritage is not seen only as a part of memory but also a developable resource.

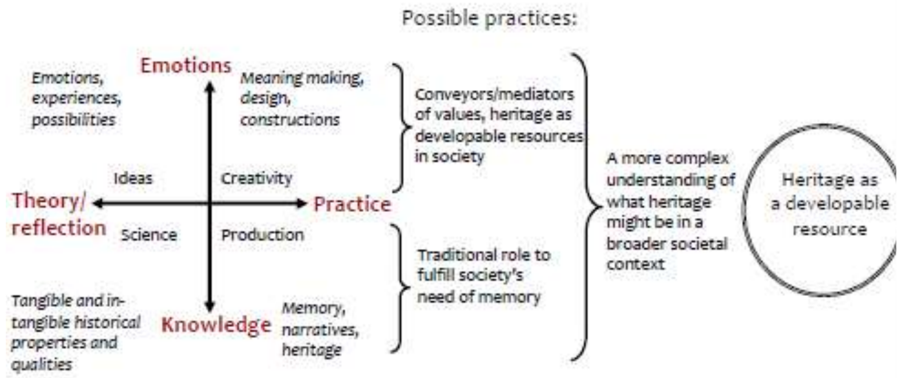


Figure 145. The integration of society into its heritage and the heritage into its societal context [*Lagerqvist B., 2011, p. 25*]

In 1990, Recommendations on the Protection and Conservation of the Industrial, Technical and Civil Engineering Heritage in Europe [Council of Europe, 1990, Recommendation No. R (90) 20] gave some advice on measures for the identification, survey and scientific analysis; protection and conservation; public awareness and cooperation/intervention promotion of technical, industrial and civil engineering heritage.

Bergenon [Bergeron L., 2012] suggests that preliminary steps for rescuing industrial heritage retain in keeping alive the memory of industrial heritage through future generations, and integrating this heritage with everyday life including various services and generate employment. In order to be a successful model, the regeneration project should meet the expectactions of local's perceptions about how a place should be. Furthermore, apart from new elements inserted, the specialists should imply the local's/worker's ability to represent the space, as they are the real promoters of therenewed place. Specialist (Mikkonen, Nemeth, Ferre, 2012), explain the importance of tutoring, practical trainings, school teaching, university trainings and even on-line classes for education of locals and youths on best practices of industrial heritage reuse and management.

Good experiences from Britain explain the importance of legal protection and describe the following practices to be catalistic [Falconer K., 2012, p. 99]:

- The value of volunteer expertise (English Heritage, Council for British Archaeology)
- Use of advisory panel (experts, official agencies)
- Assessment of significance must be kept up to date
- Good contextual framework (prioritization of scarce resources)
- Sites of interest enter in official planning database
- Compilation of overview of historic resources (selection of outstanding sites)
- Public opinion.

Elbasan GLP proposes use of industrial landscape for touristic heritage. Although most of public industrial objects, in ex-Metallurgical site, are abandoned me proposals are:

- Design elements which transmit symbiosis of old and modern design (egg. Reuse of original materials like in Emscher Park). Exploit building's potential.
- Combination of old structures with modern materials (egg. Dora Park and Gasometers).
- Brand reclamation/ new city landmark (egg. Universal Studio in Osaka or Shanghai case).
- Reuse of brownfields increase social liability. Community involvement. Improvement of site image.

GLP of Kuçova proposes construction of a War Museum, near the military airport; rehabilitation of oil pump jack, remained through the city, and use them as branding objects and rehabilitation of ex-TEC area and reuse as public and recreative area. Currently, the military state airport is in function. According to Albanian Air Code, no construction permit will be given within the area without the permission of Civil Aviation Authority. Furthermore, at the ex-Oil Refinery site can be found some old abandoned oil pump jack and some brick towers.

It is important to understand that these sites embody symbolic meanings and historic values. Smart decisions could be made to reuse these areas for attraction of tourism, emphasize unique values of heritage, reflect industrial development and technology of the time, create new public spaces and improve social life of sitizens. It would create new city landmark, new neighborhood identity and increased land vale.

At the end, GLP of Laç proposes new toruristic routes through the mountain to the city. However, the previsions do not include proposals for reuse of brownfield, other than its transformation into an energy production site. It would be interesting to preservation of landscape by including it with redevelopmen of the brownfield and take advantage of what is left from the site.

5.5 Final Reccomendations

Industrial patrimony is present almost in every city of Albania. Some of them, mostly the large metallurgical and mechanical complexes, embody important industrial movement of the time. Although, their construction had played a significant role in city's texture through time, the rapid urbanization and extension of living areas was accompanied by underused industrial sites. During most than dwo decades of free trade, various cities transformations have completely neglected brownfields. At the verge of approval of General National Plan and General Local Plans, it has been pointed out the importance of recuperation of these "sitent assets". Their integration in urban, economic, social, cultural and environmental aspect will generate great beneficiaries for locals and county in general.

This thesis was based on the analysis of three case studies: Elbasan, Kuçova and Laç, as the most representative industrial cities in Albania. All three have a large number of industries spread out through the city, but the largest ones refer to metallurgy (Elbasan), chemical (Laç), energy and mechanical (Kuçova). These samples converge in some common elements, but also comprise other distinctive ones.

General conclusions for the regeneration and redevelopment of brownfiels in Albania, have been drawn taking in consideration several caracterizing elements, which can be individualized as follows:

i. Type of industry: all three case studies represent heavy industry and energy sites.

ii. Type of site organization: industrial complexes in Albania were based on the architecture of the time, constructed in separate units according to particular process. Services and offices are mostly located center of site; near the entrance the deposit of raw product, the technological process structures in the middle and at the end the deposit of final product. Important part of analysis of free/occupied space. The most open spaces within the industrial site, the easier will be for redevelopment projects to include recreative elements as greenery, or internal transport itineraries.

iii. Type of construction: structures of the technological line are high spacious buildings (10-30m tall), while the administrative and service ones are usually constructed in 2-3 stories. Chimneys form cilindrical spaces, with a max height of 120 m. It is important to differentiate structures according to their location in site, dimensions, relationship with internal roads and sorrounding spaces. Separate units can be easily transformed into various typologies, rather than units in block.

iv. Size of complex: taking in consideration the classification done by Novosák [Novosák, J., et. al., 2013, p. 39], the size of the industrial complex can be devided in small (<5 ha), medium (5-10 ha) and large (> 10 ha).

v. Location: the metallurgical and chemical complex in Elbasan and Laç are located far from city center. The industrial sites in Kuçova are located near the center and in the entrace of the city. The larger is the complex, the more difficult will be the regeneration in terms of time and costs.

vi. Accessibility: Position of site in the city structure, can affect directly accessibility. Transportation accessibility in Kuçova is in good condition, as the industrial sites are near the center. In Elbasan, there is one bus line to the ex-Metallurgical site; but is is easity accessed because of location near national axis and in the entrance of city. The ex-Superphospate site in Laç, although located alongside city road, is very distant from city's urban development and does not offer alternative transport ways rather by car.

vii. Actual condition: the metallurgical complex of Elbasan is partially privatized, while the other structured are in not good condition and out of function. The ex-Superphospate of Laç is totally abandoned and although most of structures are devastated, chimneys and some large structures are in good condition. The objects in ex-TEC Kuçova are almost ruined and only the cooling chimney is in good condition. The ex-UPN (oil processing plant) in Kuçova does not exist anymore, except from some chimneys and oil pump jacks. The ex-UMN (mechanical oil plant) site in Kuçova is in good condition and most of mechanical equipments are still inside the buildings.

viii. Environmental threats: contamination level of brownfields in Albania, is a very sensitive issue. The general perception is that these sites are highly contaminated and in very bad condition. Some land remediation has been done in ex-UPN Kuçova, but the situation reported by the GLP seems to note the importance of clean-up processes. However, measures taken from private companies, show not worryning levels of contamination. Thus, further specialized analysis, made by various laboratories, could evidence a more certain situation.

ix. Ownership: generally, most of industrial sites are owned by Albanian state. However, due to inability of management and mantainance, some of them have been privatized or given with concession. The larger the number of owners, the more difficult will be the regeneration procedures.

x. Vision of city, from GLP/GNP: Elbasan is seen as important regional pole (possible multifunctional city) with potentials to become a national logistic hub and an interconnection point between other cities of central axis as Korça and Berati but also the Durres-Tirana pole. Kuçova is considered as specialized center of the regional pole Vlora–Fier–Berat, by focusing local economy in industry, agriculture and tourism. Laç is predicted to serve as logistic hub, with good possibilities of specialization in agriculture (animal farming, agro-tourism) and industry (food processing, construction materials, wood and metal processing).

xi. City needs: Apart from provisions of General Local Plans, each of these cities experience evidential lack of services variability. Taking in consideration nowadays economical and social condition in Albania, it seems more convinient to focus national and international investments in light industry, services, tourism, energy and few in heavy industry. This hypothesis is also supported by the consideration of the General National Plan. However, it is evident the need for more interactive services as business incubators, spaces for art and exhibition, sport facilities, proffesional schools, knowledge enterprises, leisure areas and residential neighborhoods (new identity, increased value).

xii. Complexity of functions: Due to the large dimension of industrial sites, it is important to provide a mix of functions, which do not create monofuctional areas. These uses should be adequate for various time of day, so that regenerated areas will be accessed and used at their full capacity.

xiii. City gains: Reuse of brownfields is beneficiary tool for city's local economy. Increasing social liability, improving site image and crating new identity of these underused areas; increases site rate, emphasizing unique heritage values. Furthermore, there can be direct positive effects like economic growth, more epmloyment opportunities, mobility increase, higher demand for housing, increase tousism rate, provision of new services. On the other side, negative effects like more pollution, noise, traffic and energy consumption can be balanced by sustainable environmental polycies (renewable energy, reuse, certifications).

xiv. Type of investments: most of international regeneration case studies have combined various financial actions as local government, general government, national agencies, private companies, NGOs and international fundings. Fundings have been absorbed in the form of joint ventures or PPP (egg. IBA Germany). Two main strategies are mostly used: attract money, make project and implement in place; or apply flagship projects wich attract more fundings because of positive effect (egg. Osaka). Many incentives have been used by governments in these regeneration processes as:

- subsidies for urban revitalization and opening of new businesses in the area (Osaka);
- low rent to those who live or work in the regenerated area (Shanghai);
- free rent for organization of activities (Italy);
- tax reductions, special fundings and favorable policies as renovation without paying taxes or rents (Nanjing, Barcelona).

Taking in consideration international case studies, analyzed in the third chapter, most of heavy/energy/mechanical industrial areas were transformed into spaces for art, culture, education, sport, leisure, museums, residential or crative industries. Very few of them were proposed for business parks and logistic services. It seems that large and spacious industial buildings designate the prefect typology structures for conversion in facilities connected with human entertainment or education. Each of the Albanian case studies could take advantage of international experience, and give cities what they actually lack: more recreative areas that can be used by citizes, better living neighborhoods and creative/economic services for workers.

REFERENCES

Abeshi P., Canaj E. & Godo D., 'Projects and priority areas of the Ministry of Environment'. Published by Association "Environment and Health" at the National Conference "Industrial Pollution and bioorganic agriculture", Elbasan (2003).

Accademy of Science of RPSSH, 'Albanian Encyclopedic Dictiorary', Tirana (1985).

Accademy of Science of Albania, 'Albanian Encyclopedic Dictiorary, Tirana (2009).

Accademy of Science of R.P.S, 'Historia e Shqiperise 4', Tirana (1976).

Adams J. D., Greenwood D. A., Thomashow M., Russ A., 'Sense of place'. Published at 'Essays in Urban Environmental Education', Cornell University Press (2016).

AGMA, Natural England, TEP, 'Towards a Green Infrastructure Framework for Greater Manchester', Summary report (2008).

Agnew J.A., 'Place and Politics (Routlegde Library Editions: Political Geopgraphy): The Geographical Mediation of State and Society'. Volume 1 of Routledge Library Editions: Political Geography, Routledge. First published 1987 (2015).

Albanian Construction Portal, 'Industrial Areas in Albania, until September 2015 ready the first center', (2014). http://acp.al/news/212/Zonat-industriale-ne-Shqiperi,-deri-ne-shtator-2015-gati-qendra-e-pare/ (last viewed on 17 November 2015).

Albchrome, 'Metallurgy', Published online from AlbCHROME. http://albchrome.al/metallurgy.html (last visited on 15 October 2015).

Albrecht, H., 'What does the Industrial Revolution signify?'. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Aliaj B., Lulo K., Myftiu G., 'Tirana, Challenges of urban development', SEDA & Co-Plan (2003).

Ago Sh., 'Kuçova Enciklopedia', Argeta-LMG, Tirana (2005).

A. Mazreku, A. Tashko, N. Civici (2009) Environmental Impact of Metallurgy on the Soils and the Air of Elbasani City, Albania. J. Int. Environmental Application & Science, vol 6 (4).

Angelo M., 'Industrial Archaeology in Albania: architecture and landscape' (2015).

Atelier 4, 'Analysis and depth evaluation of existing social-economical, environmental and spatial situation in the territory of the Municipality of Kuçova'. Report.

Archive online site 'Combinatul Siderrurgic Victoria Calan' (Online http://archive.is/HKfK5#selection-513.0-515.120, accessed on 12.01.2017).

Arapi T., 'Insurance techniques in the petolium industry (for drilling and exploitation of oil and gas wells)', University of Tirana, Faculty of Geology-Mining (1982).

Australia ICOMOS Incorporated, 'The Burra Charter 1999' (1999).

Australia ICOMOS Incorporated, 'The Burra Charter 2013' (2013).

Australian Government, Department of the Environment and Heritage, 'Adaptive Reuse. Preserving iur past, building our future' (2004).

Baku P., 'Encyclopedic Dictionary', BACCHIUS, Tirana (2002).

Bajo A. Y., Bozdo P., Gulo S., 'Economy, organization and planning of oil industry', University of Tirana, Faculty of Geology-Mining, vol III (1982).

Banja H., Toçi V., 'Achievement and perspectives of industry in RPS of Albania'. "8 Nentori" publishing house (1978).

Banja H., 'Socialist industrialization and its perspectives in the IVth five-year', Publishing house "8 November" (1989).

Barolli B., 'An overview of the Albanian History: With Main Emphasis on Economy' (2015). Online http://dspace.lib.niigata-u.ac.jp/dspace/bitstream/10191/947/1/18_0202.pdf (accessed on 18.2.2016).

Baycan T. & Girard A. F., 'Heritage in socio-economic development: Direct and indirect impacts', ICOMOS 17th General Assembly, 2011-11-27/ 2011-12-02, Paris, France (2011). http://openarchive.icomos.org/1299/1/IV-2-Article9_Baycan_Girard.pdf (last viewed on 10 November 2015).

Banzhaf H. S., McCormick E., 'Moving beyond Clean Up: Identifying the Crucibles of Environmental Gentrification. NCEE WP Series n. 07-02. (2007).

Beccu M., Calace F., Martines G., Menghini A. B. & Ruggiero F., ‘Industrial Heritage in Albania: Architecture and Landscape. A new resource for Fier’, 2nd ICAUD, Albania, 8-10 May 2014 (2014).

Beqiraj, I., Hoxha, L., Topi, D., Seiti, B., ‘Oil industry on the eve of the 100th anniversary of the formation of the Albanian state and environmental risks to water network’, Scientific bulletin, ‘Ismail Qemali’ University Vlora, ISSN 2310-6719, No 1, Vol 2 (2013).

Bergeron, L.., ‘The heritage of the industrial society’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Berens C., ‘Redeveloping Industrial Sites: A Guide for Architects, Planners, and Developers’, John Wiley & Sons (2010).

Bevapi K., ‘Elbasani – Encyclopedia’, Sejko, Elbasan (2003).

Blockley M., ‘Preservation, restoration and presentation of the industrial heritage: a case study of the Ironbridge Gorge’. Published in ‘Managing Historic Sites and Buildings: Reconciling Presentation and Preservation’. Routledge, Oxon, UK (1999).

BLOGOi Realtor, ‘Poblenou Neighbourhood recovers its industrial heritage’. Online: http://www.oirealtor.com/blog/en/present/poblenou-neighbourhood-recovers-its-industrial-heritage/ (last visited on 5 August 2015).

Bonekämper G., ‘The social and spatial frameworks of heritage – What is new in the Faro Convention?’, Published in ‘Heritage and beyond’, Council of Europe Publishing (2009).

Borchert, J. G., ‘Economic Development and Population Distribution in Albania’, Published in Geoforum, Vol. 6, Pergamon Press Ltd. Printed in Great Britain (1975).

Bramwell B., Lane B., ‘Tourism Collaboration and Partnerships. ASPECTS OF TOURISM 2 Series Editors: Chris Cooper, University of Queensland, Australia and Michael Hall, University of Otago, New Zealand (2000).

Calace F., Menghini A. B. and Pashako F., ‘Dismissione industrial e paesaggi d’Italia tra memoria e transformazione: report from WWF Riutilizziamo l’Italia’, (2014) http://awsassets.wwfit.panda.org/downloads/report_wwf_2015_2_09.pdf (last visited on 17 November 2015).

Calzolaio F., ‘Industrial Heritage in the context of the other cultural heritages’, Parliamentary Assembly Council of Europe Sub-committee on Culture, Diversity and Heritage (AS/Cult/CDH), Maribor (21 September 2012). http://www.slideshare.net/francescocalzolaio/ih54-industrial-patrimony-networks-21sept12-maribor (last visited on 10 November 2015).

Cartier, C., Smith, P and Chaplain, C., ‘Identification of the Industrial Heritage: Objectives and methods’. Published at: ‘Architectural heritage: inventory and documentation methods in Europe’, by Council of Europe, Heritage, No. 28. Council of Europe Press (1993).

Casanelles, E., ‘TICCIH Charter for Industrial Heritage’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

CEMSA, ‘Hotspots monitoriang as part of National Integrated Environmental Monitoring System (IEMS)’. Annez 9, CEMSA Project. EuropeAid/128449/C/SER/AL – IPA 2008 (2013).

Chandler J., ‘Zollverein Industial Complex’. Online: http://people.umass.edu/latour/Germany/jchandler/ (last visited on 10 August 2016).

Chen J. et. al, ‘Adaptive reuse of industrial heritage for cultural purposes in three Chinese mega-cities: Bejing, Shanghai and Chongqing’. Published at RICS COBRA AUBEA, Syndey, Australia (2015).

CHERPLAN, ‘Sustainable Tourism as driving force for Cultural Heritage sites development’ (2013).

Cherry, M., ‘The criteria for the statutory protection of industrial structures in England’. Published at: ‘Architectural heritage: inventory and documentation methods in Europe’, by Council of Europe, Heritage, No. 28. Council of Europe Press (1993).

China daily (2009) Online: http://www.chinadaily.com.cn/hellochina/albaniaambassador2009/2009-08/24/content_8609254.htm (last visited on 15 November 2016).

Cighi C. I., "Senses of Place", Masters Theses (2008).

Cizler J., ‘The role of creative and civil initiatives in transforming post-industrial landscapes: a case of study of industrial heritage re-use in the Czech Republic’, Architecture and Civil Engineering Vol. 12, No 3 (2014).

CLARINET, ‘Brownfields and Redevelopment of Urban Areas’. CLARINET Project Report, CABERNET development of the CLARINET definition. Austria (2003).

Colzolaio F., ‘Industrial Heritage in the context of the other cultural heritages’, Parliamentary Assembly Council of Europe Sub-committee on Culture, Diversity and Heritage (AS/Cult/CDH), Meribor (2012).

Coordination & Development Department Kuçova, ‘Kuçova Municipal profile’, Report (2003).

Co-PLAN, ‘Strategy of development of the city of Elbasan’ (2006).

Communities and Local Government, ‘Planning Polucy Statement 3 (PPS3): Housing. London, UK (2010).

CORDIS, ‘BRODISE Report Summary’. Online: http://cordis.europa.eu/result/rcn/193688_en.html (last visited on 1 September 2017).

Cossons N., ‘People and Places: Industrial landscapes, liability or asset?’, ICOMOS 17th General Assembly, 2011-11-27/ 2011-12-02, Paris, France (2011). http://openarchive.icomos.org/1294/1/IV-2-Article5_Cossons.pdf (last viewed on 10 November 2015).

Cossons, N., ‘Why preserve the industrial heritage?’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Cotte, M., ‘World Heritage, concepts and criteria’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Council Directive, ‘On the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture’, OJEC, No L 181/6 (1986).

Council of Europe, ‘European Landscape Convention’, Florence, p. 2 (2000).

Council of Europe, Parliamentary Assembly, ‘Industrial heritage in Europe’, Doc. 13134 Report (2013). Online http://assembly.coe.int/nw/xml/XRef/Xref-XML2HTML-EN.asp?fileid=19493&lang=en (last visited on 1 December 2015).

Council of Europe, ‘Recommendation No. R (90) 20, On the Protection and Conservation of the Industrial, Technical and Civil Engineering Heritage in Europe’, 443rd meeting of the Ministers’ Deputies (1990).

Council of Ministers, ‘National Plan for the implementation of Stabilization and Association 2012-2015’, Report (June 2012).

Council Regulation (EC) No 1083/2006, ‘Laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund and repealing Regulation’. (EC) No 1260/1999 (2006).

Crandall W., Rowe A. and Parnell J. A., ‘New Frontiers in Management Research: The Case for Industrial Archeology’. Published at The Coastal Business Journal Volume 2, Number 1 (2003). http://www.mtu.edu/social-sciences/graduate/archaeology/Parnell-Industrial%20Archeology.pdf (last visited on 10 November 2015).

Czierpka J., Oerters K. and Thorade N., ‘Regions, Industries, and Heritage: Perspectives on Economy, Society, and Culture in Modern Western Europe’. Palgrave Macmillan, UK (2015).

Daci F. M., ‘Encyclopedy of Dibra’. AlbGraf, vol 1 (2006).

Data collected by Eper Center, IFC, BE, ARA, vd. Online: http://www.riciklimi.al/ (last visited on 20 August 2017).

De Sousa Ch., ‘Turning brownfields into green space in the City of Toronto’. Landscape and Urban Planning 62, p. 181 (2003).

De Varine H., ‘The Museum in the Fourth Dimension’. Published at ICOM conference ‘The foles of the museum in a decentralization cultural policy’, Umea, Sweeden (1976).

Decision of Council of Ministers no. 881, date 14.12.2016, ‘General National Plan of the Republic of Albania’ (2016).

Defense Language Institute, ‘Albanian Geography and History’ (1971).

Deloitte, ‘Extractive Industries Transparency Initiative in Albania’, Report for the year 2012 (2012).

Department of Economic and Social Affairs, United Nations, ‘International Standard Industrial Classification of All Economic Activities’, Statistical papers. Series M No.4/Rev4 (2008).

Department of Sustainability, Environment, Water, Population and Communities, Australian Government, ‘Understanding world heritage: what is outstanding universal value?’ (2012). https://www.environment.gov.au/system/files/resources/70d3290e-be32-

4efa-93da-594948f5df9e/files/outstanding-values-factsheet.pdf (last visited on 9 November 2015).

Dokle N., ‘Kukes, Enciclopedic view’. Koha (1999).

Dongjun Pan (2008: 37) discussed by Jie G., ‘The Protection and Renewal of Industrial Heritage from a Landscape Architect’s perspective’, Master Thesis, Blekinge Institute of Technology, Sweden, p. 6 (2009).

Douet J., ‘Industrial Heritage Re-Tooled: The Ticcih Guide to Industrial Heritage Conservation’, Left Coast Press (2013).

Directorate-General for Internal Policies, Policy Department B: Structural and Cohesion Policies Regional Development ‘Regional Strategies for Industrial Areas’. Brussels, European Union (2013).

Dixon T., ‘Integrating sustainability into brownfield regeneration: rhetoric or reality? An analysis of the UK development industry’. Journal of Property Research, vol 23, no 3 (2006).

Dixon, T., Otsuka, N. and Abe, H., ‘Cities in recession: urban regeneration in Manchester (England) and Osaka (Japan) and the case of 'Hardcore' brownfield sites’. Project Report. Oxford Brookes University, Oxford (2010).

EAHTR, ‘Investing in Heritage. A guide to successful urban regeneration’ (2007).

Ebert, W., ‘Industrial heritage tourism’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation, ed. James Couet.Carnegie Publishing Ltd, Lancaster UK (2012).

Ecomunicate online site, ‘PAPI Calan helps reintegrate the industrial site into local econmy’, (2011). Online: http://www.ecomunitate.ro/en/PAPI_Calan_contribuie_la_reintroducerea_sitului_industrial_din_oras_%C3%AEn_circuitul_economic(23872).html (last visited on 13 January 2017).

Enterprice of Sports and Teaching Tools “Hamdi Shijaku” Albania, Economic Map. National Library of Albania, AlbH II/7 (1969).

Environmetal Law Institute, ‘Glossary of Brownfileds Terms’ (1999). Online: http://www.eli.org/brownfields-program/glossary (last visited on 17 October 2016).

Essoka, Jonathan D., 'The Gentrifying Effects of Brownfields Redevelopment'. The Western Journal of Black Studies. Volume 34. Issue 3 (2010).

Europan 8, 'Book of sites. European Urbanity and Strategic Projects' (2006).

European Commission official site, 'Operational Programme on Competitiveness, Enterpreneurship and Innovation (2014-2020)'. Online: http://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/greece/2014gr16m2op001 (last visited on 15 June 2017).

European Commission, Regulation 1293/2013 (2013).

European Industrial and Technical Heritage Year 2015, 'Open Heritage Days'. http://www.industrialheritage2015.eu/OpenHeritageDays_what (last visited on 13 November 2015).

Factory Creusot, 1881 No. 60. Photography of Ch. Lallement, Montreuil. Online http://www.ecomusee-creusot-montceau.fr/spip.php?article163 (lastly visited on 20 August 2016).

Falconer, K., 'Legal Protection'. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Falser M., 'Global Strategy Studies. Industrial Heritage Analysis', UNESCO World Heritage Centre Asia-Pacific Region Minja Yang (2001). http://whc.unesco.org/archive/ind-study01.pdf (last viewed on 10 October 2015).

Feng R.X., Otgaar A., Berger, C. and van den Berg, P.L., 'Industrial Tourism: Opportunities for City and Enterprice', ASHGATE Publishing Ltd., England (2012).

Film Studio "New Albania", 'Laçi, the industrial city', (1976) https://kurbini.info/2016/04/03/qyteti-i-lacit/ (last visited on 5 September 2016).

Fiore A. D., 'La centrale termoelettrica Giovanni Montemartini' (Online: http://www.aragon.es/estaticos/GobiernoAragon/Departamentos/EducacionCulturaDeporte/Documentos/docs/Areas/Jornadas/Jornadas_Patrimonio_Industrial/03%20La%20Centrale%20Termoelettrica%20Giovanni%20Montemartini.pdf, accessed on 28.12.2016).

Fisher B. H., 'Brownfields redevelopment and gentrification: A socio-economic evaluation of the EPA Brownfields Pilot Program', Graduate Thesis and Dissertation at Iowa State University. Paper 12021 (2011)

Fondazione Biblioteca Archivio Luigi Micheletti, 'The TICCIH charter for the identification and protection of the industrial heritage 2003', p.1 (2005). http://www.fondazionemicheletti.eu/contents/documentazione/archivio/Altronovecento/Arc.Altronovecento.09.14.pdf (last viewed on 17 November 2015).

Forster W., 'Housing in Vienna. Innovative, Social and Ecological'. Vienna (2008).

Fragner B., 'Adaptive re-use'. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Frew E. A., 'Industrial tourism: a conceptual and empirical analysis'. PhD thesis thesis, Victoria University (2000).

Fullani N., Shehu R., 'The main directions of development of the industry in creating an optimal structure in the popular economy', paper at National Conference of Social Studies (1969).

Gazhga Th., 'Industrial Statistics. For Economic Training School', Publishing house of Schoolar Book (1967).

Gazhga Th., Buxhuku N., Mele V., 'Statistics of industrial enterprises', for professional high schools, Publishing house of Schoolar Book (1983).

GEOTEST, "Implementation of New Environmental Technology in Oil industry, Kucove Region, Albania" (2012). Online: http://www.geotest.cz/en/references/kucove-albania/ (last visited on 10 October 2017).

Gegprifti Ll., 'Mechanical industry before major tasks for the production in a wide range of machinery and equipment', Discussion in the 8th Congress of PPSH, Publishing house "8 November" (1981).

GIS Dictionary, 'Sense of place' (1999). Online: http://support.esri.com/other-resources/gis-dictionary/term/sense%20of%20place (last visited on 25 October 2016).

Gravagnuolo A. et.al, 'Smart & Fab: enhancing resilience in postindustrial urban environments'. Paper presented at Fab10, Barcelona, 2-8 July (2014).

Guxho G., 'Industrial Teknology 1. Spinning Mill', Botime Vllamasi (2011).

Halili Nj., 'Geopolitics of Albania after the relationships with China (1961-1978)', Global Challenge, May 2012, nr 1 (2012).

Halbwachs M., Coser A. L., ‘On Collective Memory’, Heritage of Sociology Series, University of Chicago Press (1992).

Harbertsma M., van Stipriaan A., van Ulzen P., ‘The Heritage Theatre: Globalization and Cultural Heritage’, Cambridge Schoolars Publishing, Newcastle, UK (2011).

Harris M. C., ‘Dictionary of Architecture and Construction’, Fourth Edition, McGraw-Hill Companies Inc. (2006).

Hazenik R., ‘Uzina “Victoria” Calan (1870-1970)’, Monografia (Online https://www.scribd.com/document/139241099/Uzina-Victoria-C%C4%83lan, accessed on 12.01.2017).

Heritage Saskatchewan and Museums Association of Saskatchewan, ‘Ecomuseum Concept. A Saskatchewan Perspective on “Museums without Walls”’ (2015).

High State Control, ‘Report "On control of elbasan environmental situation"’ (2008).

Hillier B. & Hanson J., ‘The Social Logic of Space’, Cambridge University Press, Cambridge (1984).

Hollander J., Kirkwood N., Gold J., ‘Principles of Brownfield Regeneration: Cleanup, Desing, and Reuse of Derelict Land’, Island Press (2010).

Hughes, S., ‘Thematic Heritage Studies’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Huigen P., Meijering L., ‘Making Places: A Story of De Venen’, G. J. Ashworth and B. Graham (eds.) Sense of Place: Senses of Time, Aldershot: Ashgate (2005).

ICOMOS, ‘Joint ICOMOS-TICCIH Principles for the Conservation of Industrial Heritage Sites, Structures, Areas and Landscapes’, «The Dublin Principles», XVII Assemblee Generale, Paris (2011).

ICOMOS, ‘Guidance on Heritage Impact Assessments for Cultural World Heritage Properties’ (2011). http://www.icomos.org/world_heritage/HIA_20110201.pdf (last visited on 10 November 2015).

ICOMOS, Industrial Heritage Sites on the UNESCO World Heritage List (2016) ‘http://www.icomos.org/18thapril/2006/whsites.htm (last visited on 2 August 2016).

ICOMOS, ‘International Charter for the conservation and restoration of monuments and sites. The Venice Charter 1964’, Article 1. (1965).

Indusrial archeology online site, ‘The Montemartini Power Plant in Rome Ostiense’ (Online: http://archeologiaindustriale.net/1546_la-centrale-montemartini-a-roma-ostiense/?print=print, accessed on 27.12.2016).

Institute of Marxist-Leninist Studies, ‘History of the Labor Party of Albania’. Tirana (1981).

Institute of Marxist-Leninist Studies at the Central Committee of the Party of Labour of Albania, ‘History of the Party Labor of Albania’, second edition. “8 Nentori” publishing house (1982).

Institute of Marxist-Leninist Studies at the Central Committee of the PPSH, ‘Main documents of the Party of Labor of Albania’, Tirana (1986).

Institute of Metallurgical Studies and Designs, ‘Steels of Metallurgical Combine “Steel of Party”’, Publishing house “8 November (1987).

International Monetary Fund, ‘Albania. Selected Issues’, Washington, D.C. (2016).

IPP ‘Systemic problems of the Structural Fund management’s failure in Romania’. Policynews, 4th edition, 2012, (Online: http://www.nuigalway.ie/cdlp/documents/ipp_monitoring_report_on_structural_funds_use_in_romania_2012_ed.pdf, accessed on 07.01. 2017).

ISPE ‘Environmental rehabilitation and introduction into circuit of contaminated sites following the activity in oil and gas field’, 2012 (Online: http://www.petroleumclub.ro/downloads/seminarmediu/2012/Mihai_Chendrea-ISPE.pdf, accessed on 13.01.2017).

Ironbridge Gorge Museum Trust, ‘Irobridge Gorge World Heritage Site Management Plan’, section 4. Online http://www.telford.gov.uk/downloads/download/544/ironbridge_world_heritage_site_management_plan (last visited 22 August 2016). (last visited 22 August 2016).

Jackson J. B., ‘A Sense of Place, a Sense of Time’, Yale University Press (1994).

Jeannot-Vignes B., ‘Collecting material for an ethnographical exhibition’, Published by UNESCO in Museum, Vol. XXVIII, No. 3 (1976).

Jie G., 'The Protection and Renewal of Industrial Heritage from a Landscape Architect's Perspective', Master Thesis. European Spatial Planning and Regional Development Blekinge Institute of Technology Sweden (2009).

Jiven G., Larkham P. J., 'Sense of Place, Authenticity and Character: A Commentary'. Journal of Urban Design, Vol. 8, No. 1, p. 67–81 (2003).

Jochen T., 'Zollverein yesterday and today. Specials and Events'. Online: http://www.zollverein.de/info/kunst-und-kultur (last visited on 25 August 2016).

Jokilehto J., 'World Heritage: Defining the outstanding universal value', Technical Report. Hendrik Bäßler Verlag, Berlin, 111p. Monuments & Sites (2001), Vol. XVI (2008).

Jokilehto J., 'World Heritage: Defining the outstanding universal value', City & Time 2 (2): 1 (2006). Online: http://www.ceci-br.org/novo/revista/docs2006/CT-2006-45.pdf (last visited on 19 November 2015).

Joint Research Centre, European Soil Data Centre (ESDAC), 'RECARE: Preventing and Remediating degradation of soils in Europe through Land Care'. Online: https://esdac.jrc.ec.europa.eu/projects/recare (last visited on 15 September 2017).

Keil A.; Wetternau B., 'Metropolis Ruhr. A regional Study of the New Ruhr'. Edited by Regionalverband Ruhr (2013).

Kirovová L.; Digmundová A., 'Implementing an Ecosystem Approach to the Adaptive Reuse of Industrial Sites'. Published at WIT Transactions on The Built Environment, Volume 142 (2014).

Klosi M., '25 years of construction work in socialist Albania', Naim Frasheri, Tirana (1969).

Kosova R..; Shehu V.; Naço A.; Xhafaj E.; Stana A.; Ymeri A., 'Monte Carlo simulation from estimating geological oil reserves. A case study from Kuçova oilfield in Albania'. Muzeul Olteniei Craiova. Oltenia. Studii şi comunicări. Ştiinţele Naturii. Tom. 31, No. 2/2015 (2015).

Kostarczy A., 'From a survey of the historical monument to the investigation of built environment. Heritage inventory and documentation of urban and rural structures in the region of East Pomerania in Poland'. Published at Published at: 'Architectural heritage: inventory and documentation methods in Europe', by Council of Europe, Cultural Heritage, No. 28. Council of Europe Press (1993).

Knox Paul L., ‘Cities and Design’. Routledge (2011).

Kurbin Municipality General Local Plan, ‘Analysis and in-depth evaluation of the territory of Kurbin Municipality’ (2016).

Kürüm Holding, ‘Annual Report’ (2014).

Laç Superphosphate. Online: https://www.flickr.com/photos/44425842@N00/8320907045 (last visited on 20 September 2016).

Laçi S., ‘Kurbini në rrjedhën e industrializimit arritje, dështime, mundësi’, Kumtesë mbajtur në Konferencën Shkencore Ndërkombëtare "Metamorfoza e qyteteve dhe zonave industriale në hapësirën shqiptare që prej vitit 1945", Vol 4 (2008).

Lalaj A., Ostermann Ch. F. and Gage R., “Albania is not Cuba.” Sino-Albanian Summits and the Sino-Soviet Split’. Cold War International History Project Bulletin, Issue 16 (Fall 2007/Winter 2008).

Lagerqvist B., ‘Industrial heritage and heritage practices’. Department of Conservation, niversity of Gothenburg, Bhopal (2011).

Lardner H., ‘Conservation plans’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Latz + Partner, ‘Project Landschaftspark Duisburg Nord’. Online: http://www.landezine.com/index.php/2011/08/post-industrial-landscape-architecture/23-play-points-mollerbunker/ (last visited on 10 August 2016).

LeBlanc F., online site, ‘Heritage conservation terminology’ Online: http://ip51.icomos.org/~fleblanc/documents/terminology/doc_terminology_e.html (last visited on 10.01.2017).

Lee W., ‘Revitalization of industrial buildings in San Po Kong’. (Thesis). University of Hong Kong, Pokfulam, Hong Kong SAR (2004). https://hub.hku.hk/bitstream/10722/26006/1/FullText.pdf?accept=1 (last visited on 07 January 2017).

Light J. D., ‘Industrial Archaeology. Encyclopedia of Life Support Systems’ (2011). http://www.eolss.net/sample-chapters/c04/e6-21-01-11.pdf (last visited on 10 November 2015).

Lin H., ‘Conservation and community consciousness’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Majewski T.; Gaimster D. (eds.), ‘International Handbook of Historical Archaeology’, Springer Science+Business Media, LLC, USA (2009).

Martin P. E., ‘Industrial Archaeology. Published at T. Majewski, D. Gaimster’ (eds.), International Handbook of Historical Archaeology (2009). http://www.mtu.edu/social-sciences/graduate/archaeology/martin2009.pdf (last visited on 10 November 2015).

Martin P., ‘Industrial archaeology’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Materazzi G.,’Metodologie per ta riqualificazione e la valorizzazione delle aree industriali dismesse’. PhD thesis. Sapienza University, Rome (2014).

Mazreku A., Tashko A., Civici N., ‘Environmental Impact of Metallurgy on the Soils and the Air of Elbasani City, Albania’. J. Int. Environmental Application & Science, vol 6 (4) (2009).

Medda F.R.; Caschili S.; Modelewska M., ‘Financial mechanisms for Historic City Core Regeneration and Brownfield Redevelopment in The Economics of Uniqueness: Investing in Historic City Cores and Cultural Heritage Assets for Sustainable Development. Eds. Licciardi, G. & Amirtahmasebi, R. Washington D.C: World Bank (2012).

Mema F., ‘Privatization in Albania, achievements, shortcomings, the future’, Toena (1997).

Morin B., ‘Financial and fiscal intentives’ Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation, ed. James Couet.Carnegie Publishing Ltd, Lancaster UK (2012).

Migone J., ‘Heritage at risk surveys’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Ministry of Culture, ‘Industrial Heritage in Albania – cultural potential’ (2015). http://www.kultura.gov.al/files/news_files/Program__trashegimia_industriale__2015_FINAL.pdf (last visited on 19 November 2015).

Ministry of Energy and Industry, ‘Information on Former Industrial Buildings Prone to Opportunities from Investors in Industry Field’.

http://www.energjia.gov.al/files/userfiles/Industria/Promovim_mundesie_investimi_(anglisht)INFORMATION_ON_FORMER_INDUSTRIAL_BUILDINGS_PRONE_TO_OPPORTUNITIES_FROM_INVESTORS_IN_INDUSTRY_FIELD.pdf (last visited on 2 December 2015).

Ministry of Energy and Industry, ‘Enterprises in liquidation’ http://www.energjia.gov.al/al/strategjike/industria-jo-ushqimore/ndermarrjet-ne-likujdim (last visited on 25 June 2016).

Ministry of Energy and Industry, ‘Strategic policy of non-food industry 2016-2025’, Online: http://www.energjia.gov.al/al/baza-ligjore/industrial.

Ministry of Industry and Mining, ‘National Active of Mechanical Industry’ (1973).

Morin B., ‘Financial and fiscal incentives’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Municipality of Elbasan, ‘Document of General Local Plan of Elbasan Municipality’ (2016).

Municipality of Elbasan, ‘Elbasan Deserves even more: Strategic development plan of the city 2010-2020’ (2011).

Municipality of Elbasan, ‘Elbasan-Enciclopedy’ (2003).

Municipality of Kuçova with the technical support of the project PLGP of the United States Agency for International Development and Co-PLAN, ‘Development Policy Document of the Territory of Kuçova’ (2016).

NBIS, ‘Calan Industrial Park, Hunedoara’. Official site. (Online http://www.snia.ro/InfoPages/Parks.aspx?, accessed on 11.01.2017).

Neaverson P.; Palmer M., ‘Industrial Archaeology: Principles and Practices’, Routledge. (1998).

Negri M., ‘Industrial museums’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Netherlands Environmental Assessment Agency (PBL), ‘Future Business areas: Enlargement to renovate’. The Hague/Bilthoven (2009).

‘New Albania’ Magazine Editorial Board, ‘Albania. General Information’. ‘8 Nentori’.

Nijkamp P., Rietveld P., Voogd H., ‘Multicriteria Evaluation in Physical Planning’. Volume 185 of Contributions to Economic Analysis. Elsevier (2013).

Novosák J.; Hájek O.; Nekolová J.; Bednář P., “Spatial Pattern of Brownfields and Characteristics of Redeveloped Sites in the Ostrava Metropolitan Area (Czech Republic)”, Moravian Geographical Reports, Vol. 21, No. 2 (2013).

O’Donnell J. S., ‘A coming of age Albania under Enver Hoxha’. East European Monographs, Boulder. Columbia University Press, New York (1999).

Oglethorpe M.; McDonald M., ‘Recording and Documentation’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

OJ C 82, 1.4.2008 (2008).

Okada M., ‘Industrial ruins’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Oliver V. B., ‘Fashion and costume in American popular culture’. Greenwood Press, London, UK (1996).

Otagaar A. H. J., Van Den Berg L., Feng R. X. ‘Industrial Tourism: Opportunities for City and Enterprise’, EURICUR series, Routledge (2016).

Paccagnan V.; Turvani M., ‘The reuse of urban brownfields in Europe: a law and economics analysis’ 3rd SIDE Conference, 9-10 November 2007, Milan (2007).

Parangoni I., ‘Assessment of Industrial Heritage in Albania’, Albanian Heritage Foundation, Tirana (2011).

Parangoni I., ‘Assessment of Industrial Heritage in Cental Albania’, Albanian Heritage Foundation, Tirana (2010).

Parangoni I., ‘Between glory and fall. Albania and the industrial experience’. Centre for Albanian Cultural Heritage (2015).

Parangoni I., ‘Industrial Heritage: an assessment of the industrial heritage in Albania’, Albanian Heritage Foundation, Tirana (2012).

Perinkova M., Kolarcikova L., Twarda M., ‘Reuse of huge industrial areas’. European Scientific Journal March 2015 /Special/ edition (2015).

Peter N., A.van Delft, ‘Multi-Criteria Analysis and Regional Decision-Making’. Volume 8 of Studies in Applied Regional Science (1997).

Plaku Z., ‘Berati Enciclopedy’. Jolanda (2012).

Ploegmakers, H., Beckers, P., ‘Evaluating regeneration policies for rundown industrial sites in the Netherlands’. PBL Working Paper 8 (2012).

Polytecnic of Bari, ‘DAll'esplorazione alle strategie territoriali’, DICAR - Corso di Laurea in Architettura a.a. 2014/2015, vol 1 & 2 (2015).

Production sites in Le Creusot. Online http://ecomusee-creusot-montceau.fr/spip.php?rubrique68 (lastly visited on 20 August 2016).

Pred A. R., ‘Place, Practice and Structure: social and spatial transformation in southern Sweeden: 1750-1850’. Polity Press, Cambridge (1986).

Preite M., ‘Urban regeneration and planning’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Prime Ministry of the Popular Republic of Albania, ‘The provisions of categorization and wage tables of employees of the mining industry, geology, handicrafts, construction, transport, trade-assembly, and economy-communal and workers of typography and pharmaceutical products’, Approved by Decision of Council of Ministers No. 462-169. (1958).

Publishing House “8 November”, ‘With the people, between friends’. The electronic version of the book is created by http://www.enverhoxha.ru (1983), (last visited on 20 May 2016).

Publishing House “8 November”, Tirana (1984).

Public tenders online site, ‘Romania-Calan: Soil-decontamination work’ (Online: https://www.publictenders.net/node/3048569, accessed on 13.01.2017).

QAgip, ‘Storia dell’Agip (1936-1948)’. Collection of 10 stories related with volumes of “Diario della seconda guerra mondiale” 1 e 2, AA. VV, Il Giornale - DeAgostini. Agip S.p.A. (2014).

Radhuset Arkitekter AB & the City of Gothenburg, ‘Programme Rivercity Gothenburg. Introduction International Workshop’ (2011).

Rampi C., ‘Land remediation planning for the future Dora Park, Italy’. Published at ‘Profiles of business excellence’, Golder Associates, Annual Report. p. 31 (2006).

Raistrick A., ‘Industrial Archaeology: an historical survey’, London, Eyre Methuen (1972).

Regional Operational Program, 2007-2013. (Online http://regio-adrcentru.ro/prezentare-axe-por-2014-2020/, accessed on 09.01.2017).

Rizzo I., Mignosa A., ‘Handbook on the Economics of Cultural Heritage’. Edward Elgar Publishing (2013).

Rossi A., ‘The Architecture of the City’. New York: MIT Press (1982).

Rossnes G., ‘Process recording’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Desfor G., Laidley J., Stevens Q., Schubert D., ‘Transforming urban waterfronts’, Routledge (2011).

Rudolff B., ‘“Intangible” and “tangible” heritage’. PhD thesis at University of Mainz (2006).

Rukaj M., ‘Elbasan the polluted city’, Osservatorio balcani e caucaso (2012). http://www.balcanicaucaso.org/eng/Regions-and-countries/Albania/Elbasan-the-polluted-city-124037 (last visited on 20 November 2015).

Russ A., Peters S.J., Krasny M.E., Stedman R.C., ‘Development of ecological place meaning in New York City’, Journal of environmental education, 46(2), (2015).

Rypkema D., ‘Economics and the built cultural heritage’. Published in the book ‘Heritage and Beyond’, Council of Europe (2009).

Sallaku F.; Sulce S.; Kristo I.; Shallari S., ‘Pollution analysis of the elements Cd, Cr, and Zn as well as their forms of pollution in the industrial zone of Elbasan’, Association “Environment and Health”, National Conference “Industrial Pollution and bioorganic agriculture”, Elbasan (2003).

Saqellari, Ll., The main works completed in the second six-year plan1956-1960, Enterprise of cultural, sports and sports facilities “Hamid Shijaku”, Tirana, 1979.

Saqellari, Ll., The main works completed on the 1-year plan 1947, 1948; 2 years 1949-1950 and the first five years 1951-1955, Enterprise of cultural, sports and sports facilities “Hamid Shijaku”, Tirana, 1979.

Saqellari, Ll., The main works completed in the third six-year plan1961-1965, Enterprise of cultural, sports and sports facilities “Hamid Shijaku”, Tirana, 1979.

Saqellari, Ll., The main works completed in the fourth four-year plan1966-1970, Enterprise of cultural, sports and sports facilities “Hamid Shijaku”, Tirana, 1979.

Saqellari, Ll., The main works completed in the fifth five-year plan1971-1975, Enterprise of cultural, sports and sports facilities “Hamid Shijaku”, Tirana, 1979.

Schädler S.; Morio M.; Bartke S.; Finkel M., ‘Integrated planning and spatial evaluation of megasite remediation and reuse options’. Journal of Contaminant Hydrology, 127 (2012).

Science Academy of R.P.S, ‘Hystory of Albania [Storia dell'Albania]’, 4, Tirana, II (1976)

Shaqe E., ‘Introduction in industrial implants’, http://www.slideshare.net/erletshaqe1/hyrje-ne-impiante-industriale (last viewed on 11 June 2016).

Shahu A., ‘Parime e kritere të industrializimit socialist’. Kumtesë mbajtur në Konferencën Shkencore Ndërkombëtare ‘Metamorfoza e qyteteve dhe zonave industriale në hapësirën shqiptare që prej vitit 1945’, Vol 4 (2008).

Shaw I. and Jameson R., ‘A dictionary of Archeology’, Blackwell Publishers Ltd (1999).

Shnytzer A., ‘Stalinist Economic Strategy in Pranctice. The case of Albania”, Oxford University Press (1982).

Shehu N. Xh., ‘Enciclopedy of Tepelena’. Morava (2005).

Shuxin G., ‘The creation of a new neighbourhood community in a former industrial heritage area by mixing and matching’, Master Thesis, Blekinge Institute of Technology (2014).

Slenders H.; Dols P.; Verburg R. et al., 'Sustainable remediation panel: Sustainable synergies for the subsurface: Combining groundwater energy with remediation.' Remediation (2010).

Smith B. S., 'Industrial Preservation as a key to urban regeneration: Some examples over forty years and many countries', ICOMOS 17th General Assembly, 2011-11-27/ 2011-12-02, Paris, France (2011). http://openarchive.icomos.org/1288/1/IV-1-Article7_Smith.pdf (last viewed on 10 November 2015).

Smith M. K., 'Issues in Cultural Tourism Studies'. Routledge Taynor & Francis Group, London, UK (2003).

Smith P., 'Choosing what to preserve'. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Smith S. B., 'INDUSTRIAL PRESERVATION AS A KEY TO URBAN REGENERATION. Some examples over forty fears and many countries'. ICOMOS, Theme 4, Session 1, Paris (2011).

Socrates, N. 'In Relation to Port and Harbor Areas, What Are the Key Factors and Guiding Principles for Major Waterfront Development?', TU Delft – AR2A010 – Architectural History Thesis (2011).

Soyez D., 'Industrial culture as built heritage and living presence: selection and interpretation strategies of geographically with a view to Wolfsburg'. Published in: Information on the modern city history (IMS) , Vol. 1 (2016).

Stalinov K., 'The Post-Socialist City: Urban Form and Space Transformations in Central and Eastern Europe after Socialism', Springer Science & Business Media (2007).

Statutory City of Ostrava – Official Website. Online: https://www.ostrava.cz/en/podnikatel-investor/investment-opportunities/brownfields-1/the-lower-vitkovice-area (lastly visited on 8 September 2016).

Stott P., 'Industrial Heritage and the World Heritage Convention'. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Stuart I., 'Identifying industrial landscapes'. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Stuart B. S., 'Industrial preservation as a key to urban regeneration. Some Examples Over Forty Years and Many Countries'. ICOMOS, Theme 4, Session 1, Paris. (2011).

Tavano B. G., et al. 'New trajectories in urban regeneration processes: Cultural capital as source of human and social capital accumulation – Evidence from the case of Tohu in Montreal'. J. Cities (2012).

Tempel N., 'Post-industrial landscapes'. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

TEULEDA, 'Feasibility study for the development of the industrial area of Shkodra' (2008)http://www.teuleda.org.al/uploads/file/Feasibility%20Study%20for%20the%20development%20of%20industrial%20area%20of%20Shkodra.pdf (last visited on 15 November 2015).

The Iron Bridge & Tollhouse. Online http://www.ironbridge.org.uk/our-attractions/the-iron-bridge-and-tollhouse/ (lastly visited on 10 August 2016).

TICCIH, 'Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation', Carnegie Publishing Ltd, Lancaster (2012).

TICCIH, 'The International Conservation for the Industrial Heritage', Series 2 (2012). http://ticcih.org/wp-content/uploads/2013/10/Taipei2012SelectedPapersv9.pdf (last visited on 10 November 2015).

TICCIH, 'The Nizhny Tagil Charter for the Industrial Heritage' (2003).

Tola Y., 'Normative of air, soil, water, plant and animal production quality in agro-ecosystem', Association "Environment and Health", National Conference "Industrial Pollution and bioorganic agriculture", Elbasan (2003).

Tola Y., 'The impact of industrial pollution on the health of living beings in the area of Elbasan', Association "Environment and Health", National Conference "Industrial Pollution and bioorganic agriculture", Elbasan (2003).

Tölle A. et al, 'Report about concepts and tools for brownfield redevelopment activities', Central Europe Project 1CE084P4 COBRAMAN, Bydgoszcz, Poland (2009).

Tourist Information Office, 'Your tourist-practical guide to Elbasan', Çelesi (2010).

Travano B. G., et al., ‘New trajectories in urban regeneration processes: Cultural capital as source of human and social capital accumulation – Evidence from the case of Tohu in Montreal’. J. Cities (2012).

Trinder B., ‘Industrial archaeology: a discipline?’. Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation (2012).

Tuan Yi-fu, ‘Topophilis: A study of Environmetal Perceptions, Attitudes, and Values’, Columbia University Press (2013).

Turvani M., Paccagnan V., Tonin S., ‘Population preferences towards risk and alternative reuse policies for derelict and contaminated sites: Results from a survey of the Italian public’ (2006). Online: https://www.kent.ac.uk/scarr/events/beijingpapers/Turvanippr.pdf (last visited on 20 October 2016).

UNESCO, ‘Operational Guidelines for the Implementation of the World Heritage Convention’ (2012).

UNESCO, ‘Operational Guidelines for the Implementation of the World Heritage Convention’ (2013).

UNESCO, ‘World Heritage List’, (2016). http://whc.unesco.org/en/list/ (last visited on 10 September 2016).

UNESCO, ‘World Heritage Cultural List’, (2016). http://whc.unesco.org/en/syndication (last visited on 2 August 2016).

UNDP, ‘Promoting Regional Development through the Millennium Development Goals’ (2003).

UNEP, ‘UNEP Balkans Post-Conflict Environmental Assessment Albania’, Analytical Results of UNEP Field Samples from Industrial Hot Spots (2013).

University of Tirana, Faculty of History and Filology, ‘Albanological Studies’, vol IV. Articles were part of International Scientific Conference “Metamorphosis of cities and industrial areas in Albanian range since year 1945”. Geer (2008).

USAID, ‘Manual of Management of Local Assets’ (2009).

USAID, ‘Technical and Economic Evaluation of the Laç Single Superphosphate Factory in Albania’, Alabama, USA (1993).

Valentina D., “History of Albania 1912-2000”, Kristalina-KH, Tiranë (2007).

Vis B. N., ‘Built Environments, Constructed Societies: Interventing SpatialAnalysis’. Sidestone Press (2009).

VKM nr. 118, datë 18.3.2000, “Për miratimin e kontratës për dhënien me koncesion, të formës "ROO", të Uzinës së Superfosfatit në Laç, ndërmjet Ministrisë së Ekonomisë Publike dhe Privatizimit dhe shoqërisë "Evertrade, S.a." (2000).

Western Pennsylvania Brownfieldcenter, ‘Bethlehem Steel Plant’. Online http://www.cmu.edu/steinbrenner/brownfields/Case%20Studies/pdf/bethlehem%20steel%20case%20study.pdf (last visited on 15 January 2016).

Wikimedia, ‘Poblenou old industrial building’. Online: https://commons.wikimedia.org/wiki/File:Poblenou_old_industrial_building.jpg (last visited on 5 August 2015).

World Heritage Committee, ‘Convention concerning the protection of the World Cultural and Natural Heritage’, WHC-14/38.COM/8E (2014).

Xhixha G., Baldoncini M., Callegari I., Colonna T., Hasani F., Mantovani F., ShalaF., Strati V., Xhixha M. ‘A Century of oil and gas exploration in Albania: assessment of Naturally Occurring Radioactive Materials (NORMs)’. Chemosphere, vol 139, p. 30-39 (2015).

Xie P. F., ‘Industrial Heritage Tourism’, Channel View Publications (2015).

YU Y., ‘Industrial Heritage in Shanghai - Past, Current Status and Future Direction’. Scientific Symposium, ICOMOS General Assemblies. (2011).

Zickel R.; Iwaskiw W. R., ‘Albania a country study’, Federal Research Division Library of Congress (1992).

Watson M., ‘Adaptive re-use and embodied energy’ Published at Industrial Heritage Re-tooled: The TICCIH guide to Industrial Heritage Conservation, ed. James Couet.Carnegie Publishing Ltd, Lancaster UK (2012).

Wernstedt K.; Meyer P.B.; Alberini A., ‘Attracting private investment to contaminated properties: the value of public interventions’. Journal of Policy Analysis and Management; Vol. 25, Issue 2 (2006).

Western Pennsylvania Brownfieldcenter, 'Bethlehem Steel Plant'. Online http://www.cmu.edu/steinbrenner/brownfields/Case%20Studies/pdf/bethlehem%20steel%20case%20study.pdf (lastly visited on 10 June 2016).

APPENDIX A

The Nizhny Tagil Charter for Industrial Heritage

The International Committee for the Conservation of the Industrial Heritage (TICCIH)

17 July, 2003

1. Definition of industrial heritage

Industrial heritage consists of the remains of industrial culture which are of historical, technological, social, architectural or scientific value. These remains consist of buildings and machinery, workshops, mills and factories, mines and sites for processing and refining, warehouses and stores, places where energy is generated, transmitted and used, transport and all its infrastructure, as well as places used for social activities related to industry such as housing, religious worship or education.

Industrial archaeology is an interdisciplinary method of studying all the evidence, material and immaterial, of documents, artefacts, stratigraphy and structures, human settlements and natural and urban landscapes[2], created for or by industrial processes. It makes use of those methods of investigation that are most suitable to increase understanding of the industrial past and present.

The historical period of principal interest extends forward from the beginning of the Industrial Revolution in the second half of the eighteenth century up to and including the present day, while also examining its earlier pre-industrial and proto-industrial roots. In addition, it draws on the study of work and working techniques encompassed by the history of technology.

2. Values of industrial heritage

i. The industrial heritage is the evidence of activities which had and continue to have profound historical consequences. The motives for protecting the industrial heritage are based on the universal value of this evidence, rather than on the singularity of unique sites.

ii. The industrial heritage is of social value as part of the record of the lives of ordinary men and women, and as such it provides an important sense of identity. It is of technological and scientific value in the history of manufacturing, engineering, construction, and it may have considerable aesthetic value for the quality of its architecture, design or planning.

iii. These values are intrinsic to the site itself, its fabric, components, machinery and setting, in the industrial landscape, in written documentation, and also in the intangible records of industry contained in human memories and customs.

iv. Rarity, in terms of the survival of particular processes, site typologies or landscapes, adds particular value and should be carefully assessed. Early or pioneering examples are of especial value.

3. The importance of identification, recording and research

i. Every territory should identify, record and protect the industrial remains that it wants to preserve for future generations.

ii. Surveys of areas and of different industrial typologies should identify the extent of the industrial heritage. Using this information, inventories should be created of all the sites that have been identified. They should be devised to be easily searchable and should be freely accessible to the public. Computerisation and on-line access are valuable objectives.

iii. Recording is a fundamental part of the study of industrial heritage. A full record of the physical features and condition of a site should be made and placed in a public archive before any interventions are made. Much information can be gained if recording is carried out before a process or site has ceased operation. Records should include descriptions, drawings, photographs and video film of moving objects, with references to supporting documentation. Peoples' memories are a unique and irreplaceable resource which should also be recorded when they are available.

iv. Archaeological investigation of historic industrial sites is a fundamental technique for their study. It should be carried out to the same high standards as that of sites from other historical or cultural periods.

v. Programmes of historical research are needed to support policies for the protection of the industrial heritage. Because of the interdependency of many industrial activities, international studies can help identify sites and types of sites of world importance.

vi. The criteria for assessing industrial buildings should be defined and published so as to achieve general public acceptance of rational and consistent standards. On the basis of appropriate research, these criteria should be used to identify the most important surviving landscapes, settlements, sites, typologies, buildings, structures, machines and processes.

vii. Those sites and structures that are identified as important should be protected by legal measures that are sufficiently strong to ensure the conservation of their significance. The World Heritage List of UNESCO should give due recognition to the tremendous impact that industrialisation has had on human culture.

viii. The value of significant sites should be defined and guidelines for future interventions established. Any legal, administrative and financial measures that are necessary to maintain their value should be put in place.

ix. Sites that are at risk should be identified so that appropriate measures can be taken to reduce that risk and facilitate suitable schemes for repairing or re-using them.

x. International co-operation is a particularly appropriate approach to the conservation of the industrial heritage through co-ordinated initiatives and sharing resources. Compatible criteria should be developed to compile international inventories and databases.

4. Legal protection

I. The industrial heritage should be seen as an integral part of the cultural heritage in general. Nevertheless, its legal protection should take into account the special nature of the industrial heritage. It should be capable of protecting plant and machinery, below-ground elements, standing structures, complexes and ensembles of buildings, and industrial landscapes. Areas of industrial waste should be considered for their potential archaeological as well as ecological value.

II. Programmes for the conservation of the industrial heritage should be integrated into policies for economic development and into regional and national planning.

III. The most important sites should be fully protected and no interventions allowed that compromise their historical integrity or the authenticity of their fabric. Sympathetic adaptation and re-use may be an appropriate and a cost-effective way of ensuring the survival of industrial buildings, and should be encouraged by appropriate legal controls, technical advice, tax incentives and grants.

IV. Industrial communities which are threatened by rapid structural change should be supported by central and local government authorities. Potential threats to the industrial heritage from such changes should be anticipated and plans prepared to avoid the need for emergency actions.

V. Procedures should be established for responding quickly to the closure of important industrial sites to prevent the removal or destruction of significant elements. The competent authorities should have statutory powers to intervene when necessary to protect important threatened sites.

VI. Government should have specialist advisory bodies that can give independent advice on questions relating to the protection and conservation of industrial heritage, and their opinions should be sought on all important cases.

VII. Every effort should be made to ensure the consultation and participation of local communities in the protection and conservation of their local industrial heritage.

VIII. Associations and societies of volunteers have an important role in identifying sites, promoting public participation in industrial conservation and disseminating information and research, and as such are indispensable actors in the theatre of industrial heritage.

5. Maintenance and conservation

I. Conservation of the industrial heritage depends on preserving functional integrity, and interventions to an industrial site should therefore aim to maintain this as far as possible. The value and authenticity of an industrial site may be greatly reduced if machinery or components are removed, or if subsidiary elements which form part of a whole site are destroyed.

II. The conservation of industrial sites requires a thorough knowledge of the purpose or purposes to which they were put, and of the various industrial processes which may have taken place there. These may have changed over time, but all former uses should be examined and assessed.

III. Preservation in situ should always be given priority consideration. Dismantling and relocating a building or structure are only acceptable when the destruction of the site is required by overwhelming economic or social needs.

IV. The adaptation of an industrial site to a new use to ensure its conservation is usually acceptable except in the case of sites of especial historical significance. New uses should respect the significant material and maintain original patterns of circulation and activity, and should be compatible as much as possible with the original or principal use. An area that interprets the former use is recommended.

V. Continuing to adapt and use industrial buildings avoids wasting energy and contributes to sustainable development. Industrial heritage can have an important role in the economic regeneration of decayed or declining areas. The continuity that re-use implies may provide psychological stability for communities facing the sudden end a long-standing source of employment.

VI. Interventions should be reversible and have a minimal impact. Any unavoidable changes should be documented and significant elements that are removed should be recorded and stored safely. Many industrial processes confer a patina that is integral to the integrity and interest of the site.

VII. Reconstruction, or returning to a previous known state, should be considered an exceptional intervention and one which is only appropriate if it benefits the integrity of the whole site, or in the case of the destruction of a major site by violence.

VIII. The human skills involved in many old or obsolete industrial processes are a critically important resource whose loss may be irreplaceable. They need to be carefully recorded and transmitted to younger generations.

IX. Preservation of documentary records, company archives, building plans, as well as sample specimens of industrial products should be encouraged.

6. Education and training

I. Specialist professional training in the methodological, theoretical and historical aspects of industrial heritage should be taught at technical and university levels.

II. Specific educational material about the industrial past and its heritage should be produced by and for students at primary and secondary level.

APPENDIX B

The Burra Charter

The Australia ICOMOS Charter for Places of Cultural Significance, 2013.

Preamble

Considering the International Charter for the Conservation and Restoration of Monuments and

Sites (Venice 1964), and the Resolutions of the 5th General Assembly of the International Council on Monuments and Sites (ICOMOS) (Moscow 1978), the Burra Charter was adopted by Australia ICOMOS (the Australian National Committee of ICOMOS) on 19 August 1979 at Burra, South Australia. Revisions were adopted on 23 February 1981, 23 April 1988, 26 November 1999 and 31 October 2013.
The Burra Charter provides guidance for the conservation and management of places of cultural significance (cultural heritage places), and is based on the knowledge and experience of Australia ICOMOS members.
Conservation is an integral part of the management of places of cultural significance and is an ongoing responsibility.

Who is the Charter for?

The Charter sets a standard of practice for those who provide advice, make decisions about, or undertake works to places of cultural significance, including owners, managers and custodians.

Using the Charter
The Charter should be read as a whole. Many articles are interdependent.
The Charter consists of:
- Definitions Article 1
- Conservation Principles Articles 2–13
- Conservation Processes Articles 14–25
- Conservation Practices Articles 26–34
- The Burra Charter Process flow chart.

The key concepts are included in the Conservation Principles section and these are further developed in the Conservation Processes and Conservation Practice sections. The flow chart explains the Burra Charter Process (Article 6) and is an integral part of the Charter. Explanatory Notes also form part of the Charter.

The Charter is self-contained, but aspects of its use and application are further explained, in a series of Australia ICOMOS Practice Notes, in *The Illustrated Burra Charter*, and in other guiding documents available from the Australia ICOMOS web site: australia.icomos.org.

What places does the Charter apply to?

The Charter can be applied to all types of places of cultural significance including natural, Indigenous and historic places with cultural values.

The standards of other organisations may also be relevant. These include the *Australian Natural Heritage Charter*, *Ask First: a guide to respecting Indigenous heritage places and values* and *Significance 2.0: a guide to assessing the significance of collections*.

National and international charters and other doctrine may be relevant. See australia.icomos.org.

Why conserve?

Places of cultural significance enrich people's lives, often providing a deep and inspirational sense of connection to community and landscape, to the past and to lived experiences. They are historical records, that are important expressions of Australian identity and experience. Places of cultural significance reflects the diversity of our communities, telling us about who we are and the past that has formed us and the Australian landscape. They are irreplaceable and precious.

These places of cultural significance must be conserved for present and future generations in accordance with the principle of inter-generational equity.

The Burra Charter advocates a cautious approach to change: do as much as necessary to care for the place and to make it useable, but otherwise change it as little as possible so that its cultural significance is retained.

Articles.	**Explanatory Notes**
Article 1. Definitions	
For the purposes of this Charter: 1.1 *Place* means a geographically defined area. It may include elements, objects, spaces and views. Place may have tangible and intangible dimensions.	Place has a broad scope and includes natural and cultural features. Place can be large or small: for example, a memorial, a tree, an individual building or group of buildings, the location of an historical event, an urban area or town, a cultural landscape, a garden, an industrial plant, a shipwreck, a site with in situ remains, a stone arrangement, a road or travel route, a community meeting place, a site with spiritual or religious connections.
1.2 *Cultural significance* means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the *place* itself, its *fabric*, *setting*, *use*, *associations*, *meanings*, records, *related places* and *related objects*. Places may have a range of values	The term cultural significance is synonymous with cultural heritage significance and cultural heritage value. Cultural significance may change over time and with use. Understanding of cultural significance may change as a result of new

for different individuals or groups.	information.
1.3 *Fabric* means all the physical material of the *place* including elements, fixtures, contents and objects.	Fabric includes building interiors and sub-surface remains, as well as excavated material. Natural elements of a place may also constitute fabric. For example, the rocks that signify a Dreaming place. Fabric may define spaces and views and these may be part of the significance of the place.
1.4 *Conservation* means all the processes of looking after a *place* so as to retain its *cultural significance*.	See also Article 14.
1.5 *Maintenance* means the continuous protective care of a *place*, and its *setting*. Maintenance is to be distinguished from repair which involves *restoration* or *reconstruction*.	Examples of protective care include: • maintenance — regular inspection and cleaning of a place, e.g. mowing and pruning in a garden; • repair involving restoration — returning dislodged or relocated fabric to its original location e.g. loose roof gutters on a building or displaced rock in a stone bora ring; • repair involving reconstruction — replacing decayed fabric with new fabric. It is recognised that all places and their elements change over time at varying rates.
1.6 *Preservation* means maintaining a *place* in its existing state and retarding deterioration.	
1.7 *Restoration* means returning a *place* to a known earlier state by removing accretions or by reassembling existing elements without the introduction of new material.	
1.8 *Reconstruction* means returning a *place* to a known earlier state and is distinguished from *restoration* by the introduction of new material.	New material may include recycled material salvaged from other places. This should not be to the detriment of any place of cultural significance.
1.9 *Adaptation* means changing a *place* to suit the existing *use* or a proposed use.	
1.10 *Use* means the functions of a *place*, including the activities and traditional and customary practices that may occur at the place or are dependent on the place.	Use includes for example cultural practices commonly associated with Indigenous peoples such as ceremonies, hunting and fishing, and fulfillment of traditional obligations. Exercising a right of access may be a use.
1.11 *Compatible use* means a *use* which respects the *cultural significance* of a *place*. Such a use involves no, or minimal, impact on cultural significance.	
1.12 *Setting* means the immediate and extended environment of a *place* that is part of or contributes to its *cultural significance* and distinctive character.	Setting may include: structures, spaces, land, water and sky; the visual setting including views to and from the place, and along a cultural route; and other sensory aspects of the setting such as smells and sounds. Setting may also include historical and contemporary relationships, such as use and activities, social and spiritual practices, and relationships with other places, both tangible and intangible.
1.13 *Related place* means a *place* that contributes to the *cultural significance* of another place.	
1.14 *Related object* means an object that contributes to the *cultural significance* of a *place* but is not at the place.	Objects at a place are encompassed by the definition of place, and may or may not contribute to its cultural significance.
1.15 *Associations* mean the connections that exist between people and a *place*.	Associations may include social or spiritual values and cultural responsibilities for a place.

1.16 *Meanings* denote what a *place* signifies, indicates, evokes or expresses to people. 1.17 *Interpretation* means all the ways of presenting the *cultural significance* of a *place*.	Meanings generally relate to intangible dimensions such as symbolic qualities and memories. Interpretation may be a combination of the treatment of the fabric (e.g. maintenance**,** restoration, reconstruction); the use of and activities at the place; and the use of introduced explanatory material.
Conservation Principles Article 2. Conservation and management 2.1 *Places* of *cultural significance* should be conserved. 2.2 The aim of *conservation* is to retain the *cultural significance* of a *place*. 2.3 *Conservation* is an integral part of good management of *places* of *cultural significance*. 2.4 *Places* of *cultural significance* should be safeguarded and not put at risk or left in a vulnerable state.	
Article 3. Cautious approach 3.1 *Conservation* is based on a respect for the existing *fabric*, *use*, *associations* and *meanings*. It requires a cautious approach of changing as much as necessary but as little as possible. 3.2 Changes to a *place* should not distort the physical or other evidence it provides, nor be based on conjecture.	The traces of additions, alterations and earlier treatments to the fabric of a place are evidence of its history and uses which may be part of its significance. Conservation action should assist and not impede their understanding.
Article 4. Knowledge, skills and techniques 4.1 *Conservation* should make use of all the knowledge, skills and disciplines which can contribute to the study and care of the *place*. 4.2 Traditional techniques and materials are preferred for the *conservation* of significant *fabric*. In some circumstances, modern techniques and materials which offer substantial conservation benefits may be appropriate.	The use of modern materials and techniques must be supported by firm scientific evidence or by a body of experience.
Article 5. Values 5.1 *Conservation* of a *place* should identify and take into consideration all aspects of cultural and natural significance without unwarranted emphasis	Conservation of places with natural significance is explained in the Australian Natural Heritage Charter. This Charter defines natural significance to mean the importance of ecosystems, biodiversity and geodiversity for their existence value or for

on any one value at the expense of others. 5.2 Relative degrees of *cultural significance* may lead to different *conservation* actions at a place.	present or future generations, in terms of their scientific, social, aesthetic and life----support value. In some cultures, natural and cultural values are indivisible. A cautious approach is needed, as understanding of cultural significance may change. This article should not be used to justify actions which do not retain cultural significance.
Article 6. Burra Charter Process 6.1 The *cultural significance* of a *place* and other issues affecting its future are best understood by a sequence of collecting and analysing information before making decisions. Understanding cultural significance comes first, then development of policy and finally management of the place in accordance with the policy. This is the Burra Charter Process. 6.2 Policy for managing a *place* must be based on an understanding of its *cultural significance*. 6.3 Policy development should also include consideration of other factors affecting the future of a *place* such as the owner's needs, resources, external constraints and its physical condition. 6.4 In developing an effective policy, different ways to retain *cultural significance* and address other factors may need to be explored. 6.5 Changes in circumstances, or new information or perspectives, may require reiteration of part or all of the Burra Charter Process.	The Burra Charter Process, or sequence of investigations, decisions and actions, is illustrated below and in more detail in the accompanying flow chart which forms part of the Charter. Options considered may include a range ofuses and changes (e.g. adaptation) to a place.
Article 7. Use 7.1 Where the *use* of a *place* is of *cultural significance* it should be retained. 7.2 A *place* should have a *compatible use*.	The policy should identify a use or combination of uses or constraints on uses that retain the cultural significance of the place. New use of a place should involve minimal change to significant fabric and use; should respect associations and meanings; and where appropriate should provide for continuation of activities and practices which contribute to the cultural significance of the place.
Article 8. Setting *Conservation* requires the retention of an appropriate *setting*. This includes retention of the visual and sensory setting, as well as the retention of spiritual and other cultural relationships that contribute to the *cultural significance* of the	Setting is explained in Article 1.12.

place. New construction, demolition, intrusions or other changes which would adversely affect the setting or relationships are not appropriate.	
Article 9. Location 9.1 The physical location of a *place* is part of its *cultural significance***.** A building, work or other element of a place should remain in its historical location. Relocation is generally unacceptable unless this is the sole practical means of ensuring its survival. 9.2 Some buildings, works or other elements of *places* were designed to be readily removable or already have a history of relocation. Provided such buildings, works or other elements do not have significant links with their present location, removal may be appropriate. 9.3 If any building, work or other element is moved, it should be moved to an appropriate location and given an appropriate *use*. Such action should not be to the detriment of any *place* of *cultural significance*.	
Article 10. Contents Contents, fixtures and objects which contribute to the *cultural significance* of a *place* should be retained at that place. Their removal is unacceptable unless it is: the sole means of ensuring their security and *preservation*; on a temporary basis for treatment or exhibition; for cultural reasons; for health and safety; or to protect the place. Such contents, fixtures and objects should be returned where circumstances permit and it is culturally appropriate.	For example, the repatriation (returning) of an object or element to a place may be important to Indigenous cultures, and may be essential to the retention of its cultural significance. Article 28 covers the circumstances where significant fabric might be disturbed, for example, during archaeological excavation. Article 33 deals with significant fabric that has been removed from a place.
Article 11. Related places and objects The contribution which *related places* and *related objects* make to the *cultural significance* of the *place* should be retained.	
Article 12. Participation *Conservation*, *interpretation* and management of a *place* should provide for the participation of people for whom the place has significant *associations* and *meanings*, or who have social, spiritual or other cultural responsibilities for the place.	

Article 13. Co-existence of cultural values Co-existence of cultural values should always be recognised, respected and encouraged. This is especially important in cases where they conflict.	For some places, conflicting cultural values may affect policy development and management decisions. In Article 13, the term cultural values refer to those beliefs which are important to a cultural group, including but not limited to political, religious, spiritual and moral beliefs. This is broader than values associated with cultural significance.
Conservation Processes Article 14. Conservation processes *Conservation* may, according to circumstance, include the processes of: retention or reintroduction of a *use*; retention of *associations* and *meanings*; *maintenance, preservation*, *restoration*, *reconstruction*, *adaptation* and *interpretation*; and will commonly include a combination of more than one of these. Conservation may also include retention of the contribution that *related places* and *related objects* make to the *cultural significance* of a *place*.	Conservation normally seeks to slow deterioration unless the significance of the place dictates otherwise. There may be circumstances where no action is required to achieve conservation.
Article 15. Change 15.1 Change may be necessary to retain *cultural significance*, but is undesirable where it reduces cultural significance. The amount of change to a *place* and its *use* should be guided by the *cultural significance* of the place and its appropriate *interpretation*. 15.2 Changes which reduce *cultural significance* should be reversible, and be reversed when circumstances permit. 15.3 Demolition of significant *fabric* of a *place* is generally not acceptable. However, in some cases minor demolition may be appropriate as part of *conservation*. Removed significant fabric should be reinstated when circumstances permit. 15.4 The contributions of all aspects of *cultural significance* of a *place* should be respected. If a place includes *fabric*, *uses*, *associations* or *meanings* of different periods, or different aspects of cultural significance, emphasising or interpreting one period or aspect at the expense of another can only be justified when what is left out, removed or diminished is of slight cultural significance and that which is emphasised or interpreted is of much	When change is being considered, including for a temporary use, a range of options should be explored to seek the option which minimises any reduction to its cultural significance. It may be appropriate to change a place where this reflects a change in cultural meanings or practices at the place, but the significance of the place should always be respected. Reversible changes should be considered temporary. Non----reversible change should only be used as a last resort and should not prevent future conservation action.

greater cultural significance.	
Article 16. Maintenance *Maintenance* is fundamental to *conservation.* Maintenance should be undertaken where *fabric* is of *cultural significance* and its maintenance is necessary to retain that *cultural significance*.	Maintaining a place may be important to the fulfilment of traditional laws and customs in some Indigenous communities and other cultural groups.
Article 17. Preservation *Preservation* is appropriate where the existing *fabric* or its condition constitutes evidence of *cultural significance,* or where insufficient evidence is available to allow other *conservation* processes to be carried out.	Preservation protects fabric without obscuring evidence of its construction and use. The process should always be applied: • where the evidence of the fabric is of such significance that it should not be altered; or • where insufficient investigation has been carried out to permit policy decisions to be taken in accord with Articles 26 to 28. New work (e.g. stabilisation) may be carried out in association with preservation when its purpose is the physical protection of the fabric and when it is consistent with Article 22.
Article 18. Restoration and reconstruction *Restoration* and *reconstruction* should reveal culturally significant aspects of the *place*.	
Article 19. Restoration *Restoration* is appropriate only if there is sufficient evidence of an earlier state of the *fabric*.	
Article 20. Reconstruction 20.1 *Reconstruction* is appropriate only where a *place* is incomplete through damage or alteration, and only where there is sufficient evidence to reproduce an earlier state of the *fabric*. In some cases, reconstruction may also be appropriate as part of a *use* or practice that retains the *cultural significance* of the place. 20.2 *Reconstruction* should be identifiable on close inspection or through additional *interpretation*.	Places with social or spiritual value may warrant reconstruction, even though very little may remain (e.g. only building footings or tree stumps following fire, flood or storm). The requirement for sufficient evidence to reproduce an earlier state still applies.
Article 21. Adaptation 21.1 *Adaptation* is acceptable only where the adaptation has minimal impact on the *cultural significance* of the *place*. 21.2 *Adaptation* should involve minimal change to significant *fabric*, achieved only after considering	Adaptation may involve additions to the place, the introduction of new services, or a new use, or changes to safeguard the place. Adaptation of a place for a new use is often referred to as ‘adaptive re-use’ and should be consistent with Article 7.2.

alternatives.	
Article 22. New work 22.1 New work such as additions or other changes to the *place* may be acceptable where it respects and does not distort or obscure the *cultural significance* of the place, or detract from its *interpretation* and appreciation. 22.2 New work should be readily identifiable as such, but must respect and have minimal impact on the *cultural significance* of the *place*.	New work should respect the significance of a place through consideration of its siting, bulk, form, scale, character, colour, texture and material. Imitation should generally be avoided. New work should be consistent with Articles 3, 5, 8, 15, 21 and 22.1.
Article 23. Retaining or reintroducing use Retaining, modifying or reintroducing a significant *use* may be appropriate and preferred forms of *conservation*.	These may require changes to significant fabric but they should be minimised. In some cases, continuing a significant use, activity or practice may involve substantial new work.
Article 24. Retaining associations and meanings 24.1 Significant *associations* between people and a *place* should be respected, retained and not obscured. Opportunities for the *interpretation*, commemoration and celebration of these associations should be investigated and implemented. 24.2 Significant *meanings*, including spiritual values, of a *place* should be respected. Opportunities for the continuation or revival of these meanings should be investigated and implemented.	For many places associations will be linked to aspects of use, including activities and practices. Some associations and meanings may not be apparent and will require research.
Article 25. Interpretation The *cultural significance* of many *places* is not readily apparent, and should be explained by *interpretation*. Interpretation should enhance understanding and engagement, and be culturally appropriate.	In some circumstances, any form of interpretation may be culturally inappropriate.
Conservation Practice Article 26. Applying the Burra Charter Process 26.1 Work on a *place* should be preceded by studies to understand the place which should include analysis of physical, documentary, oral and other evidence, drawing on appropriate	The results of studies should be kept up to date,

knowledge, skills and disciplines. 26.2 Written statements of *cultural significance* and policy for the *place* should be prepared, justified and accompanied by supporting evidence. The statements of significance and policy should be incorporated into a management plan for the place. 26.3 Groups and individuals with *associations* with the *place* as well as those involved in its management should be provided with opportunities to contribute to and participate in identifying and understanding the *cultural significance* of the place. Where appropriate they should also have opportunities to participate n its *conservation* and management. 26.4 Statements of *cultural significance* and policy for the *place* should be periodically reviewed, and actions and their consequences monitored to ensure continuing appropriateness and effectiveness.	regularly reviewed and revised as necessary. Policy should address all relevant issues, e.g. use, interpretation, management and change. A management plan is a useful document for recording the Burra Charter Process, i.e. the steps in planning for and managing a place of cultural significance (Article 6.1 and flow chart). Such plans are often called conservation management plans and sometimes have other names. The management plan may deal with other matters related to the management of the place. Monitor actions taken in case there are also unintended consequences
Article 27. Managing change 27.1 The impact of proposed changes, including incremental changes, on the *cultural significance* of a *place* should be assessed with reference to the statement of significance and the policy for managing the place. It may be necessary to modify proposed changes to better retain cultural significance. 27.2 Existing *fabric*, *use*, *associations* and *meanings* should be adequately recorded before and after any changes are made to the *place*.	
Article 28. Disturbance of fabric 28.1 Disturbance of significant *fabric* for study, or to obtain evidence, should be minimised. Study of a *place* by any disturbance of the fabric, including archaeological excavation, should only be undertaken to provide data essential for decisions on the *conservation* of the place, or to obtain important evidence about to be lost or made inaccessible. 28.2 Investigation of a *place* which requires disturbance of the *fabric*, apart from that necessary to make decisions, may be appropriate provided that it is consistent with the policy for the place. Such investigation should be based on important research questions which have potential to	

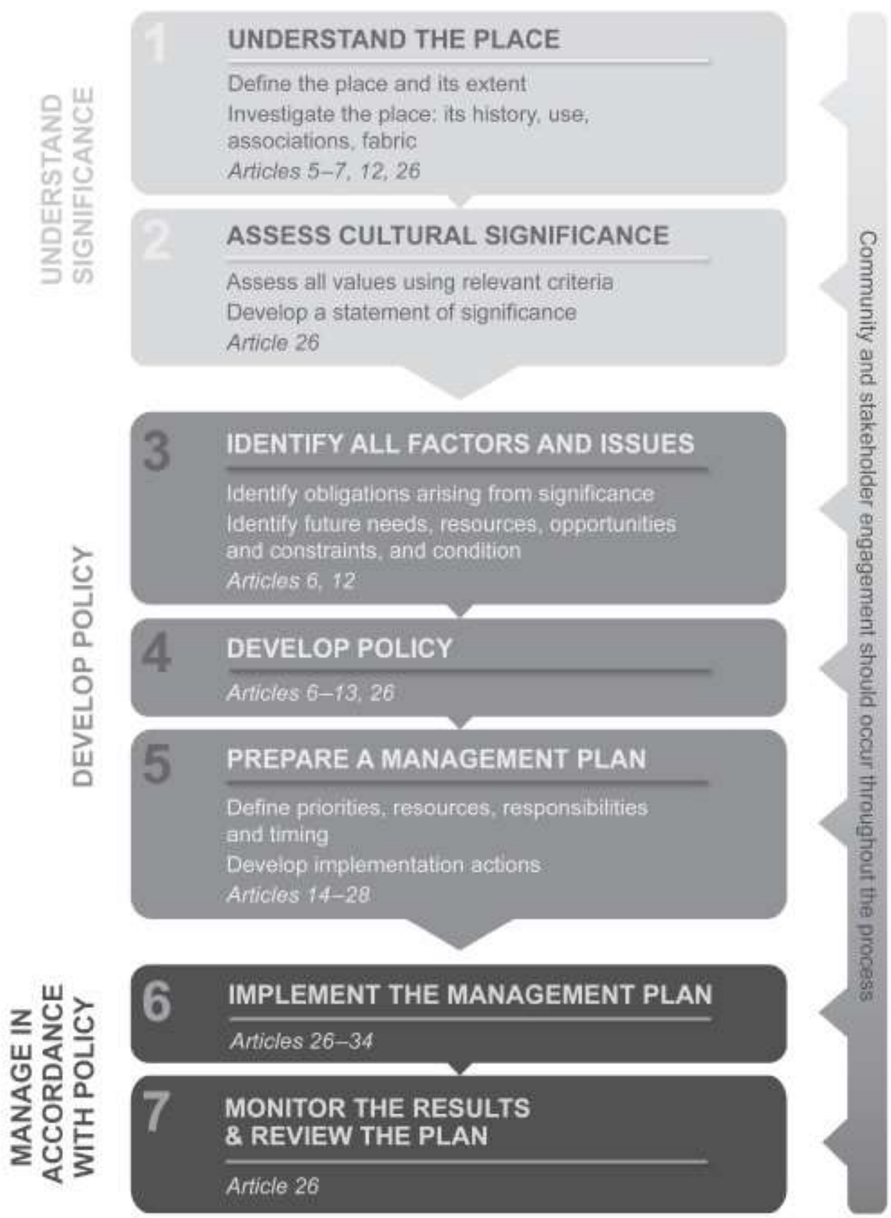
substantially add to knowledge, which cannot be answered in other ways and which minimises disturbance of significant fabric.	
Article 29. Responsibility The organisations and individuals responsible for management and decisions should be named and specific responsibility taken for each decision.	
Article 30. Direction, supervision and implementation Competent direction and supervision should be maintained at all stages, and any changes should be implemented by people with appropriate knowledge and skills.	
Article 31. Keeping a log New evidence may come to light while implementing policy or a plan for a *place*. Other factors may arise and require new decisions. A log of new evidence and additional decisions should be kept.	New decisions should respect and have minimal impact on the cultural significance of the place.
Article 32. Records 32.1 The records associated with the *conservation* of a *place* should be placed in a permanent archive and made publicly available, subject to requirements of security and privacy, and where this is culturally appropriate. 32.2 Records about the history of a *place* should be protected and made publicly available, subject to requirements of security and privacy, and where this is culturally appropriate.	
Article 33. Removed fabric Significant *fabric* which has been removed from a *place* including contents, fixtures and objects, should be catalogued, and protected in accordance with its *cultural significance*. Where possible and culturally appropriate, removed significant fabric including contents, fixtures and objects, should be kept at the place.	
Article 34. Resources Adequate resources should be provided for *conservation*.	The best conservation often involves the least work and can be inexpensive.

The Burra Charter Process

Steps in planning for and managing a place of cultural significance

The Burra Charter should be read as a whole.

Key articles relevant to each step are shown in the boxes. Article 6 summarises the Burra Charter Process.



APPENDIX C

Operational Guidelines

Operational Guidelines for the Implementation of the World Heritage Convention', UNESCO, 2013, Article 77, p. 20:

The Committee considers a property as having Outstanding Universal Value (see paragraphs 49-53) if the property meets one or more of the following criteria. Nominated properties shall therefore:

i. represent a masterpiece of human creative genius;
ii. exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design;
iii. bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;
iv. be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;
v. be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;
vi. be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria);

vii. contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;

viii. be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features;

ix. be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;

x. contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of Outstanding Universal Value from the point of view of science or conservation.

APPENDIX D

Code of Federal Regulations

Code of Federal Regulation cites[20]:

(a) Preservation.

(1) A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.

(2) The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.

(3) Each property will be recognized as a physical record of its time, place and use. Work needed to stabilize, consolidate and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection and properly documented for future research.

(4) Changes to a property that have acquired historic significance in their own right will be retained and preserved.

(5) Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved.

(6) The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited

[20] Administrative Committee of the Federal Register, 'Code of Federal Regulations; Title 36 -Parks, forests, and public property chapter i-national park service, department of the interior', Part 68 -The secretary of the interior's standards for the treatment of historic properties'. https://www.law.cornell.edu/cfr/text/1/2.1 (Online, accessed on 05.01.2017).

replacement of a distinctive feature, the new material will match the old in composition, design, color and texture.

(7) Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

(8) <u>Archeological resources</u> will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

(b) Rehabilitation.

(1) A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces and spatial relationships.

(2) The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.

(3) Each property will be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.

(4) Changes to a property that have acquired historic significance in their own right will be retained and preserved.

(5) Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved.

(6) Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

(7) Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

(8) <u>Archeological resources</u> will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

(9) New additions, exterior alterations or related new construction will not destroy historic materials, features and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

(10) New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

(c) Restoration.

(1) A property will be used as it was historically or be given a new use that interprets the property and its restoration period.

(2) Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces and spatial relationships that characterize the period will not be undertaken.

(3) Each property will be recognized as a physical record of its time, place and use. Work needed to stabilize, consolidate and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection and properly documented for future research.

(4) Materials, features, spaces and finishes that characterize other historical periods will be documented prior to their alteration or removal.

(5) Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.

(6) Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials.

(7) Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.

(8) Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

(9) Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

(10) Designs that were never executed historically will not be constructed.

(d) Reconstruction.

(1) Reconstruction will be used to depict vanished or non-surviving portions of a property when documentary and physical evidence is available to permit accurate reconstruction with minimal conjecture and such reconstruction is essential to the public understanding of the property.

(2) Reconstruction of a landscape, building, structure or object in its historic location will be preceded by a thorough archeological investigation to identify and evaluate those features and artifacts that are essential to an accurate reconstruction. If such resources must be disturbed, mitigation measures will be undertaken.

(3) Reconstruction will include measures to preserve any remaining historic materials, features, and spatial relationships.

(4) Reconstruction will be based on the accurate duplication of historic features and elements substantiated by documentary or physical evidence rather than on conjectural designs or the availability of different features from other historic properties. A reconstructed property will re-create the appearance of the non-surviving historic property in materials, design, color and texture.

(5) A reconstruction will be clearly identified as a contemporary re-creation.

(6) Designs that were never executed historically will not be constructed.

APPENDIX E

Categorization of Industrial Heritage from various codes in different countries

According to *HAER Classification System*, Appendix 6.1, the Industrial Structures are divided in the following categories[21]:

I. Extractive Industries (e.g. Ore- or Gold-mining)
II. Bulk Products Industries (e.g. Primary Metal Industries)
III. Manufacturing Industries (e.g. Machine Manufacture)
IV. Utilities (e.g. Water Supply, Electricity)
V. Power Sources and Prime Movers (e.g. Water wheels, Steam turbines)
VI. Transportation (e.g. Railroads, Cannels, Harbor)
VII. Communication (e.g. Radio, Telephone)
VIII. Bridges, Trestles, Aqueducts 8. Building Technology (Roof systems, Fenestration)
IX. Specialized Structures / Objects (e.g. Dams, Tunnels, Hydraulic works)

Standard Industrial Classification (SIC), defined by USA in 1937, is a system that classifies industries by the following categories:

I. Agriculture, Forestry and Fishing
II. Mining
III. Construction
IV. Not used
V. Manufacturing
VI. Transportation, Communications, Electric, Gas and Sanitary service
VII. Wholesale Trade
VIII. Retail Trade
IX. Finance, Insurance and Real Estate
X. Services
XI. Public Administration
XII. No classifiable

United Kingdom Standard Industrial Classification of Economic Activities (UKSIC), is a SIC interpreted in UK for the economic activity according to industrial changes in country. The main sections of this classification are:

I. Agriculture, Forestry and Fishing
II. Mining and quarrying
III. Manufacturing
IV. Electricity, Gas, Steam and air conditioning

[21] Falser M., 'Industrial Heritage Analysis. Report: Internship at the UNESCO World Heritage Center', p.13 (2001).

V. Water supply, sewerage, waste management and remediation activities
VI. Construction
VII. Wholesale and retail trade; repair of motor vehicles and motorcycles
VIII. Transport and storage
IX. Accommodation and food service activities
X. Information and communication
XI. Financial and insurance activities
XII. Real estate activities
XIII. Professional, scientific and technical activities
XIV. Administrative and support service activities
XV. Public administration and defense; compulsory social security
XVI. Education
XVII. Human health and social work activities
XVIII. Arts, entertainment and recreation
XIX. Other service activities
XX. Activities of households as employers, undifferentiated goods and service producing activities of households for own use
XXI. Activities of extraterritorial organizations and bodies

Global Industry Classification Standard (GICS), refined by MSCI and S&P in 1999, is mostly used by finance communities and classifies the industries in the following list:

I. Energy
II. Materials
III. Industrial (Capital goods, Commercial & Professional Services, Transportation)
IV. Consumer Discretionary (Automobiles & Components, Consumer Durables & Apparel, Consumer Services, Media, Retailing)
V. Consumer Staples (Food & Staples Retailing, Food, Beverage & Tobacco, Household & Personal Products)
VI. Health Care (Health Care Equipment & Services, Pharmaceuticals, Biotechnology & Life Sciences)
VII. Financial (Banks, Diversified Financials, Insurance, Real Estate)
VIII. Information Technology (Software & Services, Technology Hardware & Equipment, Semiconductors & Semiconductor Equipment)
IX. Telecommunication Services
X. Utilities

Industry Classification Benchmark (ICB) is defined by Jones D and FTSE in 2005 is used to divide the market into categories and subcategories as following:

I. Oil & Gas
II. Basic Materials (Chemicals, Basic Resources)
III. Industrials (Construction & Materials, Industrial Goods & Services)
IV. Consumer Goods (Automobiles & Parts, Food & Beverage, Personal & Household Goods)
V. Health Care
VI. Consumer Retail (Retail, Media, Travel & Leisure)
VII. Telecommunications
VIII. Utilities
IX. Financials (Banks, Insurance, Real Estate, Financial Services)

X. Technology

International Standard Industrial Classification of All Economic Activities (ISIC) is the latest standard used globally for the classification of economic data, published by the United Nations. Following are the sections[22]:

I. Agriculture, forestry and fishing
II. Mining and quarrying
III. Manufacturing
IV. Electricity, gas, steam and air conditioning supply
V. Water supply; sewerage, waste management and remediation activities
VI. Construction
VII. Wholesale and retail trade; repair of motor vehicles and motorcycles
VIII. Transportation and storage
IX. Accommodation and food service activities
X. Information and communication
XI. Financial and insurance activities
XII. Real estate activities
XIII. Professional, scientific and technical activities
XIV. Administrative and support service activities
XV. Public administration and defense; compulsory social security
XVI. Education
XVII. Human health and social work activities
XVIII. Arts, entertainment and recreation
XIX. Other service activities
XX. Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use
XXI. Activities of extraterritorial organizations and bodies

According to the report from AHF, one categorization of industrial heritage in Albania could be separated in the following categories[23]:

I. Mining
II. Textile
III. Energies Application of power
IV. Transport and communication
V. Manufacturing and processing
VI. Iron & steel
VII. Industrial landscape
VIII. Water
IX. Housing and architecture
X. Service & Leisure Industry

[22] Department of Economic and Social Affairs, United Nations, 'International Standard Industrial Classification of All Economic Activities', Statistical papers. Series M No.4/Rev4. p. 43 (2008).
[23] Parangoni I., 'Assessment of Industrial Heritage in Central Albania', Report sponsored by Albanian Heritage Foundation. p. 8 (2010).

APPENDIX F

Laboratory analysis of Albanian Industrial sites

Environmental analysis was conducted by Environmental Monitoring System, a certified laboratory located in Tirana, Albania. Ongoing are illustrated test conducted in the Metallurgical site of Elbasan.

QMM

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NIPT:	
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Aktiviteti:	

RAPORT I PROVAVE /TEST REPORT
Nr. 1701 Datë: 15/03/2017

Identifikimi i Mostrës/Sample ID:	Uje pusi
Emërtimi i mostrës në terren /Sample field name	Moster uje nentokesore 44°17'25" L 45°49'10 V
Numri i mostrës së sjellë (hyrje)/Login number:	002
Mostruar nga/Sampled by:	Qendra e Monitorimit te Mjedisit
Data e mostrimit/Sampling date:	28/02/2017
Data e depozitimit/Receiving date:	28/02/2017
Data e analizes/ Analisy date	29/02/2017
Vendi i orgjinës/Place of origin:	Elbasan
Përshkrimi i mostrës/Sample description	1.5 L moster e lenget
Kodi i analizuesit/Transmission Code:	001

Rezultatet e pasqyruara në këtë fletë analize i referohen vetëm mostrës. Ky raport analitik nuk mund të kopjohet, qoftë edhe pjesërisht, pa autorizimin me shkrim të QMM.
The results contained in this Technical Report refer only to the sample. This Technical Report can not be copied, even partially, without written permission of EMC.

Page 1 of 2

Qendra e Monitorimit te Mjedisit

Rezultati Analitik i mostrës/Analical Results of the Sample

Parametri analizuar	Metoda	Njësia matëse	Vlera	Detektimi
pH*	Multi 340i/ISO 10523:2012 Water quality, determination of ph	--	7.35	0.01
Lendet pezull	Filtrim (filter <0.45 µm Whatman)	mg/L	<2	0.1
BOD_5	S SH EN15586 Waterquality respirometri	mg/L	2	1

Prova te akredituara sipas SSH ISO/IEC 17025:2006

Fundi i raportit

Drejtues i laboratorit QMM

Elvis XHAFERRI

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Porositesi:	Borjana Golgota
NIPT:	
Adresa:	
Aktiviteti:	

RAPORT I PROVAVE /TEST REPORT
Nr. 1700 Datë: 15/03/2017

Identifikimi i Mostrës/Sample ID:	Uje lumi
Emërtimi i mostrës në terren /Sample field name	Moster uje siperfaqesore te rrjedhes Kush(rrjedhe lumit Shkumbin) 41°87'50" L 45°50'00" V
Numri i mostrës së sjellë *(hyrje)*/Login number:	001
Mostruar nga/Sampled by:	Qendra e Monitorimit te Mjedisit
Data e mostrimit/Sampling date:	28/02/2017
Data e depozitimit/Receiving date:	28/02/2017
Data e analizes/ Analisy date	29/02/2017
Vendi i orgjinës/Place of origin:	Elbasan
Përshkrimi i mostrës/Sample description	1.5 L moster e lenget
Kodi i analizuesit/Transmission Code:	001

QMM
Qendra e Monitorimit te Mjedisit

Rezultati Analitik i mostrës/Analical Results of the Sample

Parametri analizuar	Metoda	Njësia matëse	Vlera	Detektimi
pH*	Multi 340i/ISO 10523:2012 Water quality, determination of ph	--	7.89	0.01
Lendet pezull	Filtrim (filter <0.45 µm Whatman)	mg/L	11.3	0.1
BOD_5	S SH EN15586 Waterquality respirometri	mg/L	6	1

**Prova te akredituara sipas SSH ISO/IEC 17025:2006*

Fundi i raportit

Dreitues i laboratorit QMM

Elvis XHAFERRI

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Porositesi/ Purchaser:	Borjana Golgota
Adresa/Adress:	
Nipti/VAT nr:	

RAPORT I PROVAVE /TEST REPORT
Nr.1422 Datë: 15/03/2017

Identifikimi i Mostrës/Sample ID:	Moster dheu/Soil sample
Emërtimi i mostrës në terren /Sample field name	Moster dheu prane metalurgjikut Elbasan X:41°5'26" V Y:20°0'52" L
Numri i mostrës së sjellë *(hyrje)*/Login number:	001
Mostruar nga/Sampled by:	Qendra e Monitorimit te Mjedisit
Data e mostrimit/Sampling date:	28/02/2017
Data e depozitimit/Receiving date:	28/02/2017
Data e analizes/ Analisy date	29/02/2017
Vendi i orgjinës/Place of origin:	Elbasan
Përshkrimi i mostrës/Sample description	400 g moster dheu/ 400 g soil sample
Pershkrimi i amballazhit/Container description	Viale qelqi/ Viale glass
Kodi i analizuesit/Transmission Code:	001

Faqe 1 nga 2

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Qendra e Monitorimit te Mjedisit

Rezultati Analitik i Mostrës/Analytical Results of the Sample

Parametri analizuar/ Analyzed parameter	Metoda/ Test method	Njësia matëse/ Unit measure	Vlera/ Value
Plumb (Pb)	ISO 11047:1998	mg/kg	2.2
Kadmium (Cd)	ISO 11047:1998	mg/kg	< 2
pH	pH-meter		8.1

Drejtues i laboratorit QMM

Elvis XHAFERRI

Faqe 2 nga 2

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RAPORTI I REZULTATEVE

Përqendrimi total të lëndës së grimcuar në suspension (LNP) në ajër

Raporti Nr.	890
Klienti:	Borjana Golgota
Vendi i matjes (Stacioni):	Metalurgjiku/Elbasan Ne levizje neper kantier
Data e matjes:	28/02/2017
Metoda e matjes:	DS CEN/TS 16450:2013
Aparati matës:	MicroDust Pro Casella

Nr.	Vendi i matjes	Koha e matjes (data, ora)			Rezultati	
		Fillimi	Mbarimi	Kohëzgjatja	LNP mes mg/m^3	LNP max mg/m^3
1	Ne levizje neper kantier	11.30	12.30	60 min	0.014	0.536

Tiranë, datë 15/03/2017

Përgjegjësi i laboratorit
Elvis Xhaferri

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RAPORTI I REZULTATEVE
Përqendrimi total i gazeve

Raporti Nr.	516
Klienti:	Borjana Golgota
Vendi i matjes (Stacioni):	Metalurgjiku/Elbasan X:41°5'23" V Y:20°1'6" L
Data e matjes:	28/02/2017
Metoda e matjes:	S SH EN 45544: 2:2015
Aparati matës:	ALTAIR 5X MSA

Nr.	Koha e matjes			Rezultati				
	Fillimi	Mbarimi	Kohëzgjatja	CO * ppm	NO_2* ppm	H_2S * ppm	SO_2 ppm	O_2 * %
1	11.30	12.30	60 min	< 0.1	< 0.1	< 0.1	0.1	20.8

Tiranë, datë 15/03/2017

Përgjegjësi i laboratorit
Elvis Xhaferri

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Porositesi:	Borjana Golgota
NIPT:	
Adresa:	
Aktiviteti:	

RAPORT I PROVAVE /TEST REPORT

Nr. 1705 Datë: 15/03/2017

Identifikimi i Mostrës/Sample ID:	Uje pusi
Emërtimi i mostrës në terren /Sample field name	TEC/Moster uje nentokesore X:40°82'05" L Y:45°17'24" V
Numri i mostrës së sjellë *(hyrje)*/Login number:	002
Mostruar nga/Sampled by:	Qendra e Monitorimit te Mjedisit
Data e mostrimit/Sampling date:	06/03/2017
Data e depozitimit/Receiving date:	06/03/2017
Data e analizes/ Analisy date	07/03/2017
Vendi i orgjinës/Place of origin:	Kucove
Përshkrimi i mostrës/Sample description	1.5 L moster e lenget
Kodi i analizuesit/Transmission Code:	001

Rezultatet e pasqyruara në këtë fletë analizë i referohen vetëm mostrës. Ky raport analitik nuk mund të kopjohet, qoftë edhe pjesërisht, pa autorizimin me shkrim të QMM.
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Page 1 of 2

Qendra e Monitorimit te Mjedisit

<u>Rezultati Analitik i mostrës/Analical Results of the Sample</u>

Parametri analizuar	Metoda	Njësia matëse	Vlera	Detektimi
pH*	Multi 340i/ISO 10523:2012 Water quality, determination of ph	--	7.23	0.01
Lendet pezull	Filtrim (filter <0.45 µm Whatman)	mg/L	3.1	0.1
BOD_5	S SH EN15586 Waterquality respirometri	mg/L	<1	1

Prova te akredituara sipas SSH ISO/IEC 17025:2006

Fundi i raportit

<u>Drejtues i laboratorit QMM</u>

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Aktiviteti:	

RAPORT I PROVAVE /TEST REPORT

Nr. 1704 Datë: 15/03/2017

Identifikimi i Mostrës/Sample ID:	**Uje lumi**
Emërtimi i mostrës në terren /Sample field name	**Moster uje siperfaqesore (rrjedhe lumit Osum)** **X: 44°07'22" L** **Y: 45°18'73" V**
Numri i mostrës së sjellë *(hyrje)*/Login number:	**001**
Mostruar nga/Sampled by:	**Qendra e Monitorimit te Mjedisit**
Data e mostrimit/Sampling date:	**06/03/2017**
Data e depozitimit/Receiving date:	**06/03/2017**
Data e analizes/ Analisy date	**07/03/2017**
Vendi i orgjinës/Place of origin:	**Kucove**
Përshkrimi i mostrës/Sample description	**1.5 L moster e lenget**
Kodi i analizuesit/Transmission Code:	**001**

QMM
Qendra e Monitorimit te Mjedisit

Rezultati Analitik i mostrës/Analical Results of the Sample

Parametri analizuar	Metoda	Njësia matëse	Vlera	Detektimi
pH*	Multi 340i/ISO 10523:2012 Water quality, determination of ph	--	7.68	0.01
Lendet pezull	Filtrim (filter <0.45 µm Whatman)	mg/L	15.3	0.1
BOD_5	S SH EN15586 Waterquality respirometri	mg/L	6	1

**Prova te akredituara sipas SSH ISO/IEC 17025:2006*

Fundi i raportit

Dreitues i laboratorit QMM

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Porositesi/ Purchaser:	Boriana Golgota
Adresa/Adress:	
Nipti/VAT nr:	

RAPORT I PROVAVE /TEST REPORT
Nr.1424 Datë: 15/03/2017

Identifikimi i Mostrës/Sample ID:	Moster dheu/Soil sample
Emërtimi i mostrës në terren /Sample field name	Moster dheu prane TEC, Kucove X:44°08'24" V Y:45°17'25" L
Numri i mostrës së sjellë *(hyrje)*/Login number:	001
Mostruar nga/Sampled by:	Qendra e Monitorimit te Mjedisit
Data e mostrimit/Sampling date:	06/03/2017
Data e depozitimit/Receiving date:	06/03/2017
Data e analizes/ Analisy date	07/03/2017
Vendi i orgjinës/Place of origin:	Kucove/Berat
Përshkrimi i mostrës/Sample description	400 g moster dheu/ 400 g soil sample
Pershkrimi i amballazhit/Container description	Viale qelqi/ Viale glass
Kodi i analizuesit/Transmission Code:	001

QMM
Qendra e Monitorimit te Mjedisit

Rezultati Analitik i Mostrës/Analytical Results of the Sample

Parametri analizuar/ Analyzed parameter	Metoda/ Test method	Njësia matëse/ Unit measure	Vlera/ Value
Plumb (Pb)	ISO 11047:1998	mg/kg	< 2
Kadmium (Cd)	ISO 11047:1998	mg/kg	< 2
pH	pH-meter		7.75

Drejtues i laboratorit QMM

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RAPORTI I REZULTATEVE
Përqendrimi total i gazeve

Raporti Nr.	518
Klienti:	Borjana Golgota
Vendi i matjes (Stacioni):	TEC, Kucove X:44°08'24" V Y:45°17'25" L
Data e matjes:	06/03/2017
Metoda e matjes:	S SH EN 45544: 2:2015
Aparati matës:	ALTAIR 5X MSA

Nr.	Koha e matjes			Rezultati				
	Fillimi	Mbarimi	Kohëzgjatja	CO * ppm	NO_2 * ppm	H_2S * ppm	SO_2 ppm	O_2 * %
1	09.30	10.30	60 min	< 0.1	< 0.1	< 0.1	0.1	20.8

Tiranë, datë 15/03/2017

Përgjegjësi i laboratorit
Elvis Xhaferri

Faqe 1 nga 1

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RAPORTI I REZULTATEVE
Përqendrimi total të lëndës së grimcuar në suspension (LNP) në ajër

Raporti Nr.	892
Klienti:	Borjana Golgota
Vendi i matjes (Stacioni):	TEC, Kucove Ne levizje neper kantier
Data e matjes:	06/03/2017
Metoda e matjes:	DS CEN/TS 16450:2013
Aparati matës:	MicroDust Pro Casella

Nr.	Vendi i matjes	Koha e matjes (data, ora)			Rezultati	
		Fillimi	Mbarimi	Kohëzgjatja	LNP mes mg/m^3	LNP max mg/m^3
1	Ne levizje neper kantier	09.30	10.30	60 min	0.007	0.331

Tiranë, datë 15/03/2017

Përgjegjësi i laboratorit
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Aktiviteti:	

RAPORT I PROVAVE /TEST REPORT
Nr. 1703 Datë: 15/03/2017

Identifikimi i Mostrës/Sample ID:	**Uje pusi**
Emërtimi i mostrës në terren /Sample field name	**Moster uje nentokesore X:43°92'43"L Y:46°11'48"V**
Numri i mostrës së sjellë *(hyrje)*/Login number:	**002**
Mostruar nga/Sampled by:	**Qendra e Monitorimit te Mjedisit**
Data e mostrimit/Sampling date:	**22/02/2017**
Data e depozitimit/Receiving date:	**22/02/2017**
Data e analizes/ Analisy date	**23/02/2017**
Vendi i orgjinës/Place of origin:	**Lac**
Përshkrimi i mostrës/Sample description	**1.5 L moster e lenget**
Kodi i analizuesit/Transmission Code:	**001**

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Rezultati Analitik i mostrës/Analical Results of the Sample

Parametri analizuar	Metoda	Njësia matëse	Vlera	Detektimi
pH*	Multi 340i/ISO 10523:2012 Water quality, determination of ph	--	7.30	0.01
Lendet pezull	Filtrim (filter <0.45 µm Whatman)	mg/L	3.5	0.1
BOD_5	S SH EN15586 Waterquality respirometri	mg/L	<1	1

**Prova te akredituara sipas SSH ISO/IEC 17025:2006*

Fundi i raportit

Drejtues i laboratorit QMM

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NIPT:	
Adresa:	
Aktiviteti:	

RAPORT I PROVAVE /TEST REPORT

Nr. 1702 Datë: 15/03/2017

Identifikimi i Mostrës/Sample ID:	**Uje lumi**
Emërtimi i mostrës në terren /Sample field name	**Moster uje siperfaqesore (rrjedhe lumit Mat) X:43°92'05"L Y:46°12'28"V**
Numri i mostrës së sjellë *(hyrje)*/Login number:	**001**
Mostruar nga/Sampled by:	**Qendra e Monitorimit te Mjedisit**
Data e mostrimit/Sampling date:	**22/02/2017**
Data e depozitimit/Receiving date:	**22/02/2017**
Data e analizes/ Analisy date	**23/02/2017**
Vendi i orgjinës/Place of origin:	**Lac**
Përshkrimi i mostrës/Sample description	**1.5 L moster e lenget**
Kodi i analizuesit/Transmission Code:	**001**

QMM
Qendra e Monitorimit te Mjedisit

Rezultati Analitik i mostrës/Analical Results of the Sample

Parametri analizuar	Metoda	Njësia matëse	Vlera	Detektimi
pH*	Multi 340i/ISO 10523:2012 Water quality, determination of ph	--	8.36	0.01
Lendet pezull	Filtrim (filter <0.45 µm Whatman)	mg/L	6.8	0.1
BOD_5	S SH EN15586 Waterquality respirometri	mg/L	8	1

*Prova te akredituara sipas SSH ISO/IEC 17025:2006

Fundi i raportit

Drejtues i laboratorit QMM

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RAPORT I PROVAVE /TEST REPORT
Nr.1423 Datë: 15/03/2017

Identifikimi i Mostrës/Sample ID:	Moster dheu/Soil sample
Emërtimi i mostrës në terren /Sample field name	Moster dheu prane superfosfati Lac X:43°92'24" V Y:46°11'96" L
Numri i mostrës së sjellë *(hyrje)*/Login number:	001
Mostruar nga/Sampled by:	Qendra e Monitorimit te Mjedisit
Data e mostrimit/Sampling date:	22/02/2017
Data e depozitimit/Receiving date:	22/02/2017
Data e analizes/ Analisy date	23/02/2017
Vendi i orgjinës/Place of origin:	Lac/Kruje
Përshkrimi i mostrës/Sample description	400 g moster dheu/ 400 g soil sample
Pershkrimi i amballazhit/Container description	Viale qelqi/ Viale glass
Kodi i analizuesit/Transmission Code:	001

Qendra e Monitorimit te Mjedisit

Rezultati Analitik i Mostrës/Analytical Results of the Sample

Parametri analizuar/ Analyzed parameter	Metoda/ Test method	Njësia matëse/ Unit measure	Vlera/ Value
Plumb (Pb)	ISO 11047:1998	mg/kg	< 2
Kadmium (Cd)	ISO 11047:1998	mg/kg	< 2
pH	pH-meter		7.82

Drejtues i laboratorit QMM

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RAPORTI I REZULTATEVE
Përqendrimi total i gazeve

Raporti Nr.	517
Klienti:	Borjana Golgota
Vendi i matjes (Stacioni):	Superfosfati /Lac X:41° 51' 23" V Y:46° 11' 96" L
Data e matjes:	22/02/2017
Metoda e matjes:	S SH EN 45544: 2:2015
Aparati matës:	ALTAIR 5X MSA

Nr.	Koha e matjes			Rezultati				
	Fillimi	Mbarimi	Kohëzgjatja	CO * ppm	NO_2 * ppm	H_2S * ppm	SO_2 ppm	O_2 * %
1	09.30	10.30	60 min	< 0.1	< 0.1	< 0.1	0.1	20.8

Tiranë, datë 15/03/2017

Përgjegjësi i laboratorit
Elvis Xhaferri

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RAPORTI I REZULTATEVE
Përqendrimi total të lëndës së grimcuar në suspension (LNP) në ajër

Raporti Nr.	891
Klienti:	Borjana Golgota
Vendi i matjes (Stacioni):	Superfosfati Lac Ne levizje neper kantier
Data e matjes:	22/02/2017
Metoda e matjes:	DS CEN/TS 16450:2013
Aparati matës:	MicroDust Pro Casella

Nr.	Vendi i matjes	Koha e matjes (data, ora)			Rezultati	
		Fillimi	Mbarimi	Kohëzgjatja	LNP mes mg/m^3	LNP max mg/m^3
1	Ne levizje neper kantier	09.30	10.30	60 min	0.002	0.036

Tiranë, datë 15/03/2017

Përgjegjësi i laboratorit
Elvis Xhaferri

APPENDIX G

Industrial sites in Albania of the medium and lowest interest

This table was elaborated by the author, as part of this thesis research.

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
	Ballsh	Oil Factory	Light and Food	1947-1955				
	Ballsh	Plant for conservation and processing of fruits and vegetables	Light and Food	1956-1960				
	Ballsh	Grape processing factory	Light and Food	1956-1960				
	Ballsh	Oil refinery plant	Energy	1956-1960				
	Ballsh	Factory of conservation and processing of fruits and vegetables	Light and Food	1956-1960				
	Ballsh	Grape processing factory	Light and Food	1956-1960				
	Ballsh	Factory for the production of olive oil	Light and Food	1961-1965				
	Ballsh	Natural gas in Cakran	Energy	1961-1965				
	Ballsh	The plant of deep oil processing in construction	Heavy	1971-1975				
	Berat	Kuçi Bridge	Transport and telecommunications					
	Berat	Ura Vajgurore Bridge	Transport and telecommunications					
	Berat	Flour and Bread factory	Light and food	1980	Also used later to produce sweets	Yes	Private	Good

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
	Berat	Dairy processing plant	Light and food	1971-1975	Was producing milk, cheese, butter	Yes	Private	
	Berat	Pasta factory	Light and food					
	Berat	Tire state industrial enterprise	Heavy					
	Berat	Winery factory	Light and food	1961-1965	Were produced wines and Kabernet, Merlot	Yes	Private (since 1993)	Good
	Berat	Sunflower oil	Light and food	1956-1960	Have produced sunflower oil	Yes (produces tomato sauce)	Private	Good
	Berat	Oil mill	Light and food	1914-1939				
	Berat	State warehouse	Housing and architecture	1914-1939	Have served as military facilities and then as state archive. Composed of 9 capanons.	No	State	Very bed
	Berat	Tobacco factory	Light and food	1981-1985	Constructed by red bricks	Yes (used as storehouse)	Private after 1995	Good
	Berat	Old Battery implant	Heavy					
	Berat	New battery implant	Heavy	1981-1985	Were used Italian and Chinese technology	Yes	Private (since 1997)	
	Berat	Artistic production	Light and food	1966-1970	Skilled workers have produced designed objects which were mostly exported	Yes	Private	Good
	Berat	Brick factory	Wood, paper and construction materials	1961-1965				
	Berat	Wood processing factory	Wood, paper and construction materials	1971-1975				
	Berat	Factory for conservation and processing of fruit and vegetables	Light and food	1956-1960				
	Berat	Grape processing factory	Light and food	1961-1965				
	Berat	Agricultural enterprise of figs	Light and food	1961-1965				

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
	Berat	Cans Factory	Light and food					
	Berat	Quarries in Ura Vajgurore	Mining					
	Berat	Oil refinery	Light and food	1914-1939		Yes (used as officine)	Private (since 1997)	
	Bulqiza	Chromium enrichment Factory	Heavy	1971-1975				
	Cërrik	Oil refinery	Energy					
	Cërrik	Hydro-central of Banja	Energy					
	Delvina	Oil factory	Light and Food	1947-1955				
	Delvina	Refrigerator in Stjar	Light and Food	1961-1965				
	Delvina	"Stalin" Hydropower	Energy	1961-1965				
	Dibër	Uzina mekanike (Peshkopi)	Heavy	1966-1970				
	Dibër	SMT	Heavy					
	Dibër	Factory for conservation and processing of fruit and vegetables	Light and food	1956-1960				
	Durrës	Cigarette state industrial Enterprise "Telat Noga" (NISH Cigare)	Light and food	1914-1939		No. Abandoned in 1990. Actually, used for residential	Private	Restored
	Durrës	Tobacco fermentation	Light and food	1947-1955	Tobacco was dried	No	Private (after 1990)	Reconstructed
	Durrës	Flour factory	Light and food		Destroyed and constructed new residential building	No	Private	Good
	Durrës	Bread factory	Light and food	1971-1975	Partially private bread factory and partially residential	Yes partially	Private	Reconstructed. Good
	Durrës	Old train station	Transport and telecommunications		Today used for Directory of Railway	No	Public	Restored. Good
	Durrës	Printing house "10 Korriku"	Wood, paper and construction materials		Today private printing house	Yes	Private	

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
	Durrës	Electromechanical factory (UEM)	Heavy	1966-1970	Were made spools, regulated transformers. Today is used by the Directory of KESH	No	Public	
	Durrës	Radio-Tv factory (URT)	Heavy	1966-1970	Were produced Tv, radio. Today is privatized and used for fason unit, car repair and residential building	No	Private	
	Durrës	Enterprise for clothing production (NPV)	Light and food		Produced clothing. Today used s private fason	Yes	Private	
	Durrës	Brick state industrial enterprice (NISH Tulla)	Wood, paper and construction materials	1966-1970	Privatized since 1992 by “Dyrrahium Tulla” and still used as brick factory. In 2000 started the production of bricks with wholes. The production process starts from the granulation of soil, drying, baking and packaging. In furnaces is used Hoffman technology.	Yes	Private	Good
	Durrës	Sweets factory in Spitalla	Light and food		Produced cakes.	No	Private	Amortized (very bed)
	Durrës	Pasta factory	Light and food		Today private used by “Teuta” shpk	Yes	Private	Reconstructed (very good)
	Durrës	Milk factory (NGP Q)	Light and food		Today partially used for metallic constructions and partially is not in use	No	Private	Bad
	Durrës	Glass factory	Light and food		Today used as clothing factory. Privatized since 1992 by “SIAC” and the rest for production of duralumin profiles	No	Private	Good
	Durrës	Carpentry	Wood, paper and construction materials		Used for production of furniture. Today is used as residential and partially for confection manufacturing by private company “Ambra” since 1995.	No	Private	
	Durrës	Parking for busses	Transport and		Today used as storehouses	No	Private	Very bad

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
		and agricultural vehicles	telecommunications		and bus parking. Privatized since 1995			
	Durrës	Poultry farm	Light and food		Privatized and used as storehouse	No	Private	Bad
	Durrës	Animal sheds	Light and food		Privatized and used as storehouse and service repair	No	Private	Bad
	Durrës	Chemical plant in Porto Romano	Heavy	1971-1975	Were used to produce chemicals for laundry and agriculture; superphosphate and ammonium nitrate. Height of most structures were 12 m. Today partially used as industrial park and partially as gas supply unit.	No	Private	Very bad. Most of structures are unused and highly degraded. Part of it was an escalade that was used as technological pipeline distributor.
	Durrës	Pumping station	Water	1966-1970	As the city of Durres is under the sea level, the infrastructural network takes the rain water from the city and discharges in the sea. Today are 4 pumps in use	YES	Public	Good
	Durrës	Port and naval shipyard	Water	1961-1965	Were repaired navigation vessels. Today still in use as naval shipyard.	Yes	Public	Very good
	Durrës	Fuel deposits	Transport and telecommunications		Today is partially used for fuel deposits and at a part was constructed the ferry terminal	Yes	Public and private	Very good
	Durrës	Refrigerator enterprise	Light and food	1961-1965	Used as grocery storage. Today is partially used as private storehouse and partially for residential.	No	Private	
	Durrës	Meat combine		1961-1965		No	Private	
	Durrës	Bonification enterprise			Today used as private units (furniture production, commercial premises, professional training center) and Food Control Agency (restored by EU)	No	Private and Public	Good
	Durrës	Regional workshop			Since 1987, used to	Yes	Private	Very good

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
					produce metal profiles. Today privatized and still has the same function. Height of structure 21 m.			
	Durrës	4-years and 2-years mechanical school	Services		Today used as general high school	No	Public	Good
	Durrës	Regional workshop of mechanical vehicles (ORMN)	Heavy		Used for production and repairmen of mechanical vehicles. The unit in work were department of welding, mechanical, painting and assembling. Today used as private units for aluminum production, repairmen of vehicles, storehouse, wood unit, the National Reference Laboratory of the Agricultural University Tirana, Logistic Sector Durres of the Albanian Electro-Power Corporation	No	Private and Public	Good
	Durrës	Enterprise for construction vehicles (NNN)	Heavy		Used for maintaining construction vehicles. Today used as private units	No	Private	Good
	Durrës	Agriculture Mechanical Factory (UMB)	Heavy	1966-1970	Used to produce agricultural vehicles as plow, tractor and combine. Privatized since 1994. Today used as private trading and service unit. Partially used as health center.	No	Private and public	Good
	Durrës	State industrial chemical enterprise (NISH Kimike)	Heavy		Was the chemical laboratory where were done chemical tests and were produced chemical fertilizers herbicides. Today is used for production of medicines, partially for production of	No	Private	

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
					recycled paper "Edipack".			
	Durrës	State industrial rubber enterprise (NISH Goma)	Heavy	1951-1955	Were produced rubber products as balls, tires and different tools. In 1974 were built new factories at this complex, where were working about 3000 employees. Today is privatized by and partially used for production of metallic constructions ("Gjini" shpk), partially as "Korça" furniture unit and partially not in use.	No	Private	Bad
	Durrës	State industrial plastic enterprise	Heavy	1966-1970	Were produced buckets, basins, combs, slippers, flowers and kitchen utensils in plastic. Today used as wood manufacture, tailoring, production of plastic bags and storehouse for vehicle parts. The object of ex-plastic is 2-4 floors, 12 m high.	No	Private	Good
	Durrës	State Construction Enterprise (NSHN)	Wood, paper and construction materials		Today privatized and used as production units: furniture production "Buna", sugar and rice packaging "Ferra & Co", production and trading of metal profiles "IVAA", silos forstorage and distribution of cement, concrete manufacturing "Adriatic Beton"	No	Private	Good
	Durrës	Tile factory	Wood, paper and construction materials		Today used as trade magazine for vegetables	No	Private	Good
	Durrës	Wine factory	Light and food	1961-1965	Today is the private wine cantina "Skëndërbe"	Yes	Private	Very good
	Durrës	Agricultural food	Light and food		Today used partially as			

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
		factory (FUB)			factory for production of concrete and partially from “AIBA” poultry farm			
	Durrës	Alcohol factory “Skëndërbe”	Light and food	1951-1956	Was three floors high building. Today private high school “Albanian College”	No	Private	Transformed. Very good
	Durrës	Train station	Transport and telecommunications	1956-1960	The railway workshop for carriages and locomotives was built in 1961-1965	Yes	Public	Bad
	Durrës	Radio-television factory	Heavy	1966-1970	Abandoned in 1990. Was constructed a new residential building	No	Private	Transformed. Good
	Durrës	Water supply object	Water	1965-1960		Yes	Public	Good
	Durrës	Coal mine in Manez	Mining	1966-1970				
	Elbasan	Brick factory in Balldren	Wood, paper and construction materials	1951-1955	There has been used production technology Hoffman			
	Elbasan	Wood combine “Nako Spiru”	Wood, paper and construction materials	1951-1955	There have worked nearly 1000 employees in 3 shifts. The complex is composed by 9 factories.			
	Elbasan	Bread factory	Light and food					
	Elbasan Elbasan	NN and NPA	Heavy					
	Elbasan	Mechanical Officine	Heavy					
	Elbasan	NN	Wood, paper and construction materials					
	Elbasan	Cans factory	Light and food					
	Elbasan	PAM						
	Elbasan	Refrigerator	Light and food					
	Elbasan	SMT	Heavy					
	Elbasan	NNK						

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
	Elbasan	Brick Factory	Wood, paper and construction materials	1961-1965	Was used the Hoffman technology.	Yes (Reconstructed)	Private	
	Elbasan	Flour Factory	Light and food					
	Elbasan	Cement factory	Wood, paper and construction materials	1966-1970	Is composed by two movable horizontal ovens for baking the clinker and two implants. In 1975 was built a new a new furnace and 2 smaller mills. Oil was used as combustible fuel. Basic material was clay from Balldren. After 1990 got out of function.	Yes	In 1997 was partially privatized by the Lebanese firm “Seament” and partially Albanian.	
	Elbasan	Tobacco Factory	Light and food	1956-1960	The complex is composed by 3 red brick buildings, 3-4 floors high.	Yes	Privatized	
	Elbasan	Storage and processing food factory	Light and food	1956-1960	Storage and processing of food and beverage. The factory is composed by a central building with 2 floors and a central corpus of 4 floors.	Yes	Privatized	
	Fier	Refining plant	Energy	1966-1970	Firstly, was used Italian technology and then Chinese	Yes	Partially private, partially public	Bad. In risk of degradation
	Fier	Oil pumping station	Energy					
	Fier	Design Institute of Oil and Gas	Service					
	Fier	Brick factory	Wood, paper and construction materials					
	Fier	Cotton factory	Light and Food	1949-1950	For stripping the cotton	Yes	Private	Very good
	Fier	Enterprise of agricultural building (NNB)	Light and food					

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
	Fier	Bread factory	Light and food	Communist period		Yes (partially)	Private	Good
	Fier	Wine factory	Light and food	Communist period		Yes	Private	Good
	Fier	Sauce factory	Light and food	Communist period		Yes (partially)	Private	Bad
	Fier	Oil and margarines factory	Light and food	1976-1980		Yes (partially)	Private	Good
	Fier	Pottery	Light and food	Communist period		Yes	Private	Good
	Fier	Collection enterprise	Light and food					
	Fier	Goods Park	Transport and telecommunications					
	Fier	Conveyances station (SMT)	Heavy					
	Fier	Nitrogen plant	Energy	1965				
	Fier	Water supply of nitrogen plant	Water	1966-1970				
	Fier	Urea production plant	Heavy	1971-1975				
	Fier	Railways Rrogozhina-Fier	Transport and telecommunications	1966-1970		Yes	Public	Good
	Fier	Bridge of Mbrostar	Transport and telecommunications	Between World War I and II		No	Public	Very bad
	Fier	Agricultural mechanical plant (UMB)	Heavy	Communist period		Yes	Private	Very good
	Gjirokastra	Electrical substation	Energy					
	Gjirokastra	Shoe factory	Light and Food	1961-1965				
	Gjirokastra	Conveyances station (SMT)	Heavy	1947-1955				
	Gjirokastra	Agricultural enterprise “Muzo Asqeri”	Light and Food		Directs and organizes the work on agricultural farms: for example, to buy the seeds, check the productivity.			
	Gjirokastra	Construction	Wood, paper and					

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
		enterprise	construction materials					
	Gjirokastra	Tobacco factory	Light and food	1947-1955				
	Gjirokastra	Vehicles production enterprise (NPA)	Heavy					
	Gjirokastra	Agricultural mechanical plant (UMB)	Heavy		Manufactured and repaired agricultural tools			
	Gjirokastra	Leather factory	Light and food	1947				
	Gjirokastra	Metal factory	Heavy	1962				
	Gjirokastra	Knitwear factory	Light and food	1973				
	Gjirokastra	Factory of spin columns	Wood, paper and construction materials	1971-1975				
	Gjirokastra	Flour Factory	Light and food	1971-1975				
	Gjirokastra	Higher Pedagogical Institute	Service	1971-1975				
	Gjirokastra	Carpentry	Wood, paper and construction materials					
	Himara	Oil factory	Light and food	1947-1955				
	Kavaja	Pottery workshop	Light and food					
	Kavaja	Paper factory	Light and food	1961-1965				
	Kavaja	State Construction Enterprise (NSHN)	Wood, paper and construction materials					
	Kavaja	Peqin-Kavaje irrigation canal	Water					
	Kavaja	Wool-working factory	Light and food					
	Kavaja	Porcelain and glass factory	Light and food	1966-1970				
	Kavaja	Nails and bolts factory	Heavy	1961-1965				
	Kavaja	Oil and Cans factory	Light and food					
	Kavaja	Plant for conservation and processing of fruits and vegetables	Light and food	1956-1960				
	Kavaja	Artistic Enterprise	Light and food					

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
	Kavaja	Karpen salty	Mining					
	Këlcyra	Grape processing factory	Light and food	1946-1960				
	Korça	Brick factory	Wood, paper and construction materials	1965-1960				
	Korça	Porcelain factory - crockery	Light and food					
	Korça	Glass factory	Light and food	1956-1960				
	Korça	Leather factory	Light and food					
	Korça	Refrigerator	Light and food					
	Korça	Conveyances station (SMT)	Heavy					
	Korça	Electrical Sub-station	Energy					
	Korça	Construction Materials	Wood, paper and construction materials					
	Korça	Nickel iron factory	Heavy					
	Korça	Flour factory	Light and food	1961-1965				
	Korça	Bread factory	Light and food	1971-1975				
	Korça	Grape processing factory	Light and Food	1961-1965				
	Korça	Plant conservation and processing of fruits and vegetables	Light and Food	1956-1960				
	Korça	Pasta factory	Light and Food	1966-1970				
	Korça	Shoe factory	Light and Food	1961-1965				
	Korça	Spinning factory and dyeing unit	Light and Food	1961-1965				

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
	Korça	Knitwear combine	Light and Food	1961-1965				
	Korça	Factory for production of sutures	Light and Food	1966-1970				
	Korça	Factory of production of instruments “Petro Papi”	Wood, paper and construction materials	1966-1970				
	Korça	Mechanical factory	Heavy	1966-1970				
	Korça	Irrigation in the field of Korça	Water	1966-1970				
	Korça	Factory for cleaning sand	Wood, paper and construction materials	1966-1970				
	Korça	Movie house “Andon Zako Çajupi”	Service	1956-1960				
	Korça	Higher Pedagogical Institute	Service	1971-1975				
	Kruja	Cement factory	Wood, paper and construction materials	1966-1970				
	Kuçova	Construction-Assembly enterprise	Wood, paper and construction materials	-	Were produced of oil tankers and pipelines			
	Kuçova	Drilling and search for oil and gas	Energy	1953			Working until year 2000	
	Kuçova	Enterprise of Oil extraction (NNN).	Energy	1928	Exploitation of oil fields	Yes	Private (branch of AL-Petrol)	

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
	Kuçova	Oil Processing Factories (U.P.N)	Energy	1956-1960	Have been produced around 8 assortments as: oil, gasoline, valvoline, bitumen, grease. Part of it were Factory of production of bitumen and bitumen barrels.	No		Destroyed, except from brick towers
	Kuçova	Electrical sub-station	Energy		1000 kw/hour	Yes		
	Kuçova	"Stalin" Oil Combine	Energy	1948		No (At 1960 was transferred in Mariza, Patos.		
	Kuçova	Institute for studies and projections for oil and gas (ISPNG)	Service	1965	Part of it is now used as Laboratory for Analysis of Oil and Gas and their quality (since 1930),	No (At 1971 was transferred in Fier.		
	Kuçova	Center of Oil processing (QPN)	Energy	1956-1960	Part of this are Oil refinery plant, Department of drilling probes, Directory of Kerosene yard (created in 1945), Directory of research and production, Industrial park for cars that transported oil, State Construction enterprise (N.SH. N.)	Yes	Private (branch of AL-Petrol)	
	Kuçova	Factory of production of detergents Milva	Heavy	1984		No		
	Kuçova	Two brick and tile factories	Wood, paper and construction materials	1970	Were produced 3 types of bricks and 2 types of tiles. Near was the Implant for production of clay	No (since 1996)		
	Kuçova	Implants for natural gas purification and communal use	Energy					

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
	Kuçova	Pumping and transport statins of oil and gas	Energy			Yes	Private	
	Kuçova	Enterprise of various works of waste bars (N.P.N.)	Wood, paper and construction materials	1973	It had around 10 chimneys	No	Public and private informal houses constructed in the site	Most of it destroyed nowadays
	Kuçova	Enterprise of production of various articles (N.P.A)	Light and Food			Yes (Function changed for furniture production)	Private	
	Kuçova	Factory of oxygen	Energy	1934		No (after 1992)		
	Kuçova	FEZEO	Service		2-years school that supplied the oil industry with turner, machinist, milling machine operator (frezator), production operator, kipist (of the mechanical units)	No		
	Kuçova	Professional 4 years high school	Service	1950	Branches as welder, electric, repairmen	No (after 1980)		
	Kuçova	Industrial tunnels	Heavy		Under the FEZEO and under the aviator field			
	Kuçova	Army unit	Defense		Three army units in the hills of Omur, Flamur and Matranas			
	Kuçova	Army Aviation field	Transport and Telecommunications			Yes	Public	
	Kuçova	Aviation repair factory (U.R.A.)	Heavy	1968		Yes	Public	
	Kuçova	Reception home	Housing and architecture	Around 1930				
	Kuçova	House of officers	Housing and architecture					
	Kuçova	Printing house	Wood, paper and construction materials					
	Kukës	Seismic station	Service					

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
	Kukës	Electro pomp	Water					
	Kukës	SMT	Transport and telecommunications					
	Kukës	Cooper smelter factory	Heavy	1961-1965				
	Kukës	Ferro-nickel mine in Kalimash	Mining	1956-1960				
	Kukës	Copper mine in Gjergjan	Mining	1961-1965				
	Kukës	New Kukes water supply	Water	1966-1970				
	Kukës	Coal mine in Kam	Mining	1956-1960				
	Kukës	Coal mine in Kalimash	Mining	1956-1960				
	Laç	Electrical sub station	Energy					
	Laç	Bus Terminal	Transport and telecommunications					
	Laç	Flour and bread factory	Light and food	1970-1975				
	Laç	Food processing factory	Light and food	1975-1985	For producing sause, fruit compote etc.			
	Laç	Factory of sunflower oil	Light and food	1970-1975				
	Laç	Factory of rice peeling	Light and food	1970-1975				
	Laç	Factory of corn un-embryo	Light and food	1970-1975	Capacity 1000 ton per year			
	Laç	Factory of grain drying	Light and food	1970-1975				
	Laç	Factory of production paper and cellulose	Wood, paper and construction materials	1959-1990				
	Laç	Loading square	Transport and telecommunications					
	Laç	Quartz field	Wood, paper and construction materials	1975-1985				
	Laç	Wood combine	Wood, paper and construction materials	1961-1965		Yes (partially)	Private	Good

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
	Laç	Cooper smelt factory	Heavy	1976-1980		No	Public (METE)	Bad
	Laç	Superphosphate factory	Heavy	1966-1970	The first and the only one in Albania	No	Public (METE)	Bad
	Laç	Sulphur acid factory	Heavy	1961-1965				
	Laç	Laç-Vlora railway	Transport and telecommunications	1961-1965		Yes	Public	Good
	Laç	Grape processing factory in Milot	Light and Industry	1956-1960	Production of wine and raki. Capacity of 700 tons per year			
	Laç	Hydropower "Frederick Engels" in Milot	Energy	1961-1965				
	Lezha	State industrial enterprise for production of bricks	Wood, paper and construction materials	Communist period		Yes	Private	Very good
	Lezha	Fish factory	Light and food	1961-1965		Yes	Private	Good
	Lezha	Oil factory	Light and food	1981-1985		Yes (partially)	Private	Bad
	Lezha	Sauce factory	Light and food	1961-1965		Yes (partially)	Private	Good
	Lezha	Railway station	Transport and telecommunications					
	Lezha	Paper factory	Wood, paper and construction materials	1976-1980		Yes	Private	Bad
	Lezha	Flour factory	Light and food					
	Lezha	Conveyances station (SMT)	Heavy					
	Lezha	Pumping station in Mata coast	Water	1961-1965				
	Lezha	Pumping station in Kakariq	Water	1966-1970				
	Lezha	New water supply of the paper factory	Water	1971-1975				
	Librazhd	Grape processing factory	Light and Food	1956-1960				
	Lushnje	Agricultural enterprise Plow “29 Nëntori”	Light and Food					
	Lushnje	Conveyances station (SMT)	Transport and telecommunications					

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
	Lushnje	Electrical substation	Energy					
	Lushnje	Agricultural Research Institute	Service					
	Lushnje	Old brick factory	Wood, paper and construction materials	1956-1960		Yes	Private	
	Lushnje	New brick factory	Wood, paper and construction materials					
	Lushnje	Oil Factory	Light and Food					
	Lushnje	Wine factory	Light and Food					
	Lushnje	Grape processing factory	Light and Food	1961-1965				
	Lushnje	Flour factory	Light and food	1980		Yes	Private	Very bad
	Lushnje	Bread factory	Light and food					
	Lushnje	Refrigerator	Light and food					
	Lushnje	Plastic factory	Heavy	1971-1975		Yes	Private	Good
	Lushnje	Paper- processing factory	Wood, paper and construction materials	1961-1965			Private	Bad
	Milot	Grape processing factory	Light and Food	1956-1960				
	Mirdita	Cooper mining in Spaç	Mining	1961-1965				
	Mirdita	Prison of Spaç	Defense					
	Përmet	Grape processing factory	Light and Food	1956-1960				
	Përmet	Knitwear factory	Light and Food	1971-1975				
	Përmet	Cultural center	Service	1961-1965				
	Pogradec	Mine in Guri i Kuq	Mining					
	Pogradec	Factory of nickel iron in Guri i Kuq	Heavy	1973				
	Pogradec	Wood combine	Wood, paper and construction materials					

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
	Pogradec	Mechanical Officine	Heavy					
	Pogradec	Flour and bread factory	Light and food					
	Pogradec	Grape processing factory	Light and Food	1961-1965				
	Pogradec	Agricultural enterprise (NB)	Light and Food					
	Pogradec	Conveyances station (SMT)	Heavy					
	Pogradec	Coal mine in Alarup	Mining	1956-1960				
	Prrenjas	Iron-nickel mine in Pishkash	Mining	1956-1960				
	Prrenjas	Bread factory	Light and food					
	Prrenjas	Bus terminal	Transport and telecommunications					
	Prrenjas	Ferro-nickel mine in Radokal	Mining	1966-1970				
	Prrenjas	Ferro-nickel mine in Bushtrica	Mining	1961-1965				
	Puka	Curing wood factory in Fushë Arrëz	Wood, paper and construction materials	1947-1955				
	Puka	Copper processing factory in Fushë Arrëz	Heavy	1971-1975				
	Puka	Copper Mining in Kabash	Mining	1961-1965				
	Puka	Copper Mining in Tuç	Mining	1966-1970				
	Puka	Copper Mining in Thirë	Mining	1966-1970				
	Puka	Copper Mining in Surojë	Mining	1966-1970				
	Puka	Mining of granulated stone in Levrushk	Mining	1971-1975				

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
	Rubik	Copper smelter in Rubik	Mining	1966-1970				
	Rrëshen	Copper Mining in Kurbnesh	Mining	1956-1960				
	Rrëshen	Copper Mining in Kaçinar	Mining	1966-1970				
	Rrëshen	Factory of copper enrichment	Heavy	1956-1960				
	Rrëshen	Copper processing plant in Reps	Heavy	1966-1970				
	Rrogozhina	Cotton processing factory	Light and food	1951-1955		Yes	Private	
	Rrogozhina	Oil Factory	Light and food	1976-1980		No	Private	Very bad
	Saranda	Fishing enterprise	Light and food					
	Saranda	Wood enterprise	Wood, paper and construction materials					
	Saranda	Mechanical workshop	Heavy					
	Saranda	Flour factory	Light and food					
	Saranda	Construction material enterprise	Wood, paper and construction materials					
	Saranda	Pumping station	Water	1961-1965				
	Saranda	Oil factory	Light and food	1951-1955				
	Saranda	Salt mining in Dhrovjan	Mining	1971-1975				
	Saranda	Saranda Water Supply	Water	1966-1970				
	Skrapar	Plant for conservation and processing of fruit and vegetables	Light and Food	1956-1960				
	Skrapar	Flour Factory	Light and Food	1966-1970				
	Shkodra	Buna Bridge	Transport and					

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
			telecommunications					
	Shkodra	Wood combine	Wood, paper and construction materials					
	Shkodra	Construction enterprise	Wood, paper and construction materials					
	Shkodra	Tailoring	Light and food					
	Shkodra	Factory of tobacco and cigarettes	Light and food	1951-1955		Yes (used as storehouse)	Private	
	Shkodra	Flour mill unit	Light and food			Yes (used as mechanical unit)	Private	
	Shkodra	Milk powder factory	Light and food			Yes (used as woodworking unit)	Private	
	Shkodra	Mechanical cable car factory	Heavy			Yes (used as mechanical unit)	Private	
	Shkodra	Forest exploitation enterprise	Wood, paper and construction materials			Yes (used as mechanical unit)	Private	
	Shkodra	Mechanical factory	Heavy			Yes (used as aluminum processing unit)	Private	
	Shkodra	Unit for update of transformators	Energy			Yes (used as tailoring unit)	Private	
	Shkodra	Sanatorium	Service			Yes (used by the Police Department)	Public	
	Shkodra	Military unit	Military			Yes (used as dwellings)	Private	
	Shkodra	Candy factory	Light and food					
	Shkodra	Tomato sauce factory	Light and food	1956-1960		Yes	Private	
	Shkodra	Sage factory	Light and food		sherebela			
	Shkodra	Canning factory	Light and food			Yes (various uses)	Private	
	Shkodra	State of Construction Enterprise (NSHN)	Wood, paper and construction materials					
	Shkodra	Wires factory	Heavy	1961-1965		Yes	Partially private and partially	

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
							public (abandoned)	
	Shkodra	Rapid intervention unit	Defence					
	Shkodra	Bus park	Transport and telecommunications					
	Shkodra	Industrial school	Service					
	Shkodra	Zoo technical Institute	Service					
	Shkodra	Higher Pedagogical Institute	Service	1956-1960				
	Shkodra	Former mechanical enterprise	Heavy					
	Shkodra	Wine factory	Light and food			No	Private	Very bad
	Shkodra	Electrical substation	Energy					
	Shkodra	Factory of conservation and processing of fruit and vegetables	Light and food	1956-1960				
	Shkodra	Refrigerator	Light and food	1961-1965				
	Shkodra	Brick factory	Wood, paper and construction materials	1956-1960			Private	Very bad
	Shkodra	Factory of jars	Light and food					
	Shkodra	Conveyances station (SMT)	Heavy	1947-1955				
	Shkodra	Cement factory	Wood, paper and construction materials	1914-1939			Private	
	Shkodra	Meat-processing factory	Light and food	1914-1939			Private	
	Shkodra	Soap factory “Pogu”	Light and food	1914-1939		No (used for dwellings)	Private	Good
	Shkodra	Flour factory	Light and food	1971-195			Private	
	Shkodra	Show and leather processing factory	Light and food	1961-1965			Private	Very bad
	Shkodra	Oil factory	Light and food	1981-1985			Private	Very bad
	Shkodra	Fiber tablets factory	Wood, paper and construction materials	1966-1970				
	Shkodra	Paper processing	Wood, paper and	1961-1965				Very bad

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
		factory	construction materials					
	Shkodra	Centrifuged columns factory	Heavy	1971-1975				
	Shkodra	Powdered milk factory	Light and food	1966-1970		Yes	Private	Good
	Shkodra	Railway Lezha-Shkodra	Transport and telecommunications					
	Shkodra	Railway Shkodra-Hani i Hotit	Transport and telecommunications					
	Tepelena	Coal enrichment plant in Memaliaj	Energy	1971-1975				
	Tepelena	Cultural house	Service	1961-1965				
	Tirana	Glass factory	Light and food	1956-1960	Constructed by red bricks			Very bad
	Tirana	Silicate brick factory	Wood, paper and construction materials	1966-1970	Was used Chinese technology borrowed from Germans	Yes		Good
	Tirana	Wood combine “Misto Mame”	Wood, paper and construction materials	1951-1955				
	Tirana	Station of vehicles of construction(SMT)	Transport and telecommunication	1947-1955				
	Tirana	Enterprise of vehicles of construction (NNN)	Heavy					
	Tirana	Bus park	Transport and telecommunication					
	Tirana	Flour and bred factory	Light and food	1971-1975				
	Tirana	Goods Park	Transport and telecommunication					
	Tirana	Mechanical factory “Enver”	Heavy	1948	Today used partially for police unit. Another part is turned down and transformed in neighborhood park	No	Public	Restored and changed of destination
	Tirana	Food combine “Ali Kelemendi”	Light and food	1956-1960	Abandoned in 1991.	Yes	Private	Good
	Tirana	Enterprise of pharmaceutical	Heavy	1947-1955				

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
		products						
	Tirana	Typographical enterprise "11 Shkurti"	Wood, paper and construction materials					
	Tirana	Electromechanical municipal enterprise	Heavy					
	Tirana	Old tractor plant “Enver Hoxha”	Heavy	1966-1970	Privatized after 2000	Yes	Private	
	Tirana	New tractor plant “Enver Hoxha”	Heavy	1971-1975				
	Tirana	Nuclear institute	Service					
	Tirana	Seismic institute	Service					
	Tirana	Crop veterinary institute (IKV)	Service					
	Tirana	Porcelain factory	Light and food	1956-1960 (old object) 1986-1990 (new object)			Public and private	
	Tirana	Tirana-Durres Railway	Transport and telecommunications	1948	Being transformed into residential area	No	Public	Destroyed
	Tirana	Film studio “Shqiperia e Re”	Service					
	Tirana	Antibiotic factory	Heavy	1976-1980		Yes	Private	Good
	Tirana	Construction enterprise	Wood, paper and construction materials					
	Tirana	Construction site "Rruga-Ura"	Wood, paper and construction materials					
	Tirana	Combine of construction materials	Wood, paper and construction materials					
	Tirana	Electrical sub-station	Energy					
	Tirana	Enterprise of High Voltage Lines	Energy					
	Tirana	Refrigerator enterprise	Light and food	1961-1965				
	Tirana	Warehouses	Housing and Architecture					

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
	Tirana	Chemical products enterprise	Heavy					
	Tirana	Factory "Dajti"						
	Tirana	Enterprise of various products (NPN)	Light and food					
	Tirana	Shoe factory	Light and food	1947-1955				
	Tirana	“Tirana” Factory						
	Tirana	Mechanical factory “Partizani”	Heavy	1951-1955	Privatized in 1966		Private	
	Tirana	Medical Research Institute	Service					
	Tirana	Brick factory	Wood, paper and construction materials					
	Tirana	Combine of construction materials "Josif Pashko"	Wood, paper and construction materials					
	Tirana	Agricultural enterprise “17 Nentori”	Light and food					
	Tirana	Factory of carbon brushes	Heavy					
	Tirana	Coal stone	Energy					
	Tirana	Prefabricated site						
	Tirana	Coal fined power plant (TEC)	Energy	1951-1955	Part of Textile combine complex “Stalin”	No	Pubic (METE)	Very bed
	Tirana	Mechanical plant "Dinamo"	Heavy	1961-1965	Has been used for the manufacture of tools for the mining.		Partially public and partially private	
	Tirana	Artistic Enterprise "Migjeni"	Light and food	1976-1980	The artistic group of this factory did often win singing and dancing contest yearly organized in May (attended all artistic groups of enterprises in Tirana).	Yes. Function changed. From 2011 “Eurodrin” enterprise produces carpets and rugs	Private	Good
	Tirana	Velvet factory	Light and food	1956-1960				
	Tirana	Factory of woolen	Light and food	1971-1975				

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
		cloth						
	Tirana	Factory of woolen textile	Light and food	1951-1955				
	Tirana	Marble factory	Wood, paper and construction materials	1961-1965				
	Tirana	Factory of wood splinter slabs	Wood, paper and construction materials	1961-1965				
	Tirana	Factory for the production of metal pillars	Heavy	1971-1975				
	Tirana	Factory for the production of centrifugation columns	Heavy	1966-1970				
	Tirana	Cement factory	Wood, paper and construction materials	1961-1965				
	Tirana	Meat processing combine	Light and Food	1961-1965				
	Tirana	Oil paints factory	Light and food	1966-1970				
	Tirana	Olive oil factory in Ndroq	Light and Food	1956-1960				
	Tirana	Factory of coal briquetting in Selita	Energy	1961-1965				
	Tirana	Higher Pedagogical Institute "A. Xhuvani "	Service	1947-1955				
	Tirana	University of Tirana	Service	1956-1960				
	Tirana	Epidemiological Hospital	Service	1966-1970				
	Tirana	Oncology Hospital	Service	1966-1970				
	Tirana	Infectious Hospital	Service	1966-1970				
	Tirana	Coal mine in Krraba	Mining					
	Tirana	Coal mine in Mushqeta	Mining					
	Tirana	Coal mine in Valias	Mining					
	Tirana	Coal mine in Priska	Mining					
	Tirana	Coal mine in Mëzez	Mining					
	Tirana	Hydropower	Water					

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
		"Lenin"						
	Vlora	Thermal power plant (TEC)	Energy					
	Vlora	Cement factory “Lenin”	Wood, paper and construction materials	1951-1965		No	Public (METE)	Very bad
	Vlora	Mechanical factory	Heavy			Yes	Private	Good
	Vlora	Refrigerator	Light and food	1961-1965		No	Unknown	Very bad
	Vlora	Rice dressing factory	Wood, paper and construction materials	1949-1950		No	Public	Destroyed
	Vlora	Combine for conservation of fish and fruits "Ernest Telmani"	Light and Food	1956-1960		No	Unknown	Very bad
	Vlora	Artistic enterprise	Light and Food			No	Unknown	Very bad
	Vlora	Trade Enterprise for Sale and Purchase (NTSH)	Light and Food		Trade bicycles and other articles	Yes	Private	Good
	Vlora	Trade Enterprise of Mixed items (NTAP)	Light and Food			Yes	Private	Good
	Vlora	Construction Enterprise "Pearls Rexhepi"	Wood, paper and construction materials					
	Vlora	State Agricultural Enterprise	Light and Food					
	Vlora	Alcohol factory	Light and Food			Yes	Private	Good
	Vlora	State Industrial Enterprise of salt in Narta	Mining	1961-1965		Yes	Private	Good
	Vlora	Factory of extractanan	Heavy	1951-1955		No	Public	Very bad
	Vlora	Factory of bitumen in Selenica	Energy	end of XIX century		Yes	Private	Good
	Vlora	Bricks factory	Wood, paper and construction materials	1956-1960		Yes (partially)	Private	Bad
	Vlora	Factory of soda production	Heavy	1966-1970		No	Public (METE)	Very bad
	Vlora	PVC production	Heavy	1971-1975		No	Public	Very bad

Map	City	Name of object	Type of industry	Year of construction	Description of activity	Functional or not	Ownership	Grade of degradation
		factory					(METE)	
	Vlora	Bulbs factory	Energy	1966-1970		No	Unknown	Very bad
	Vlora	Flour factory	Light and food	1966-1970		Yes	Private	Good
	Vlora	Port of Vlora	Transport and telecommunication					
	Vlora	Tobacco processing factory	Light and food					
	Vlora	Wood enterprise	Wood, paper and construction materials					
	Vlora	Factory for tiles and eternity vent	Wood, paper and construction materials	1961-1965				
	Vlora	Food complex	Light and food	1956-1960		Yes	Private	Good
	Vlora	SMT	Heavy	1947-1950		Yes	Private	Good
	Vlora	Fier-Vlora railway	Transport and telecommunications	1981-1985		Yes	Public	Good
	Vlora	Mifol Bridge in Vjosa River	Transport and telecommunication	World War I-II		Yes	Public	Very good (Reconstructed)

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EDUCATION

Degree	**Institution**	**Year of Graduation**
MP	Polis University	2011-2013
MSc	Polytecnic University of Tirana	2005-2010
High School	Rilindja, Durres	2001-2005

WORK EXPERIENCE

Year	**Place**	**Enrollment**
2016- Present	Municipality of Tirana, Territorial Development	Architect, Specialist
2015-2016	Albanian University, Faculty of Applied Sciences	Lecturer
2015 - Present	ADPK Studio, in collaboration with GAIA	Architect, Urbanist
2011-2015	Aleksander Moisiu University, Durres	Lecturer
2011-2012	DANOS shpk, Tirana	Assistant Evaluator
2011	Klement Kolaneci studio, Tirana	Assistant Architect
2007-2008	ARK-TEK sh.p.k., Durres	Assistant Architect

FOREIGN LANGUAGES

Fluent English and Italian.

PUBLICATIONS

TYPE	PUBLICATION
Journal	B. VRUSHO, "Reuse of Industrial Built Heritage for Residential: Case Study ex Tabaco Warehouse in Shkozet, Durres, Albania"; International Journal of Science, Technology and Management, Volume 04, Special Issue 01, March 2015, page 1250-1262 (ISSN 2394-1537). Impact factor 2.012 (http://www.idiif.com/indexed_journal.php). Online: http://www.ijstm.com/images/short_pdf/1427301428_865.pdf B. VRUSHO, A. GOLGOTA, F. NEPRAVISHTA, "Proposal for a Cultural and Congress Center in Shkodra, Albania", Journal of Multidisciplinary Engineering Science and Technology (JMEST), Vol 3, Issue 2, February – 2016, page 4110-4114, ISSN 3159-0040. Online: http://www.jmest.org/wp-content/uploads/JMESTN42351411.pdf B. VRUSHO, "Space syntax analysis in the Albanian dwellings", Journal of SCientific REsearch and Information Technology (SCIRES-IT), Vol 6, Issue 1 (2016), CASPUR-CIBER Publishing, Italy, page 95-104. e-ISSN 2239-4303. DOI: http://dx.doi.org/10.2423/i22394303v6n1p95. Index: Emerging Soures Citation Index (http://ip-science.thomsonreuters.com/cgi-bin/jrnlst/jlresults.cgi?PC=EX&Full=SCIRES-IT-SCIENTIFIC%20RESEARCH%20AND%20INFORMATION%20TECHNOLOGY) Online: http://caspur-ciberpublishing.it/index.php/scires-it/article/view/12013/0
Conference	B. VRUSHO, F. PASHAKO, "The history and actual condition of industrial heritage in Albania: the problems and opportunity of the metallurgical complex of Elbasan", a paper presented at BigStuff 2015, held in Lewarde, France, 3-4 September 2015, organized by Big Stuff, online: http://bigstuff.omeka.net/items/show/13. ISSN 2207-2845. Online: http://bigstuff.omeka.net/big-stuff-2015 B. VRUSHO, "Reuse of Industrial Built Heritage for Residential: Case Study ex Tabaco Warehouse in Shkozet, Durres, Albania"; a paper presented at International Conference on Recent Trends in Engineering Science and Management, held in New Dehli, India 15 March 2015, organized by Jawaharlal Nehru University, page 3630-3642. ISBN: 978-81-931039-2-0. Online: http://data.conferenceworld.in/ICRTESM/P3587-3682.pdf B. VRUSHO, F. PASHAKO, "Urban Preservation of Durrës city, case study: "Liria" square", 3rd International Balkans Conference on Challenges of Civil Engineering, 3-BCCCE, 19-21 May 2016, Tirana, Albania, faqe 409-418, Organized by Epoka University, UPT and Politecnico di Bari: Dipartimento di Scienze dell'Ingegneria Civile e dell'Architettura, ISBN: 978-9928-135-18-6. Online: http://dspace.epoka.edu.al/bitstream/handle/1/1587/HIS-409-418.pdf?sequence=1 B. VRUSHO, "History of albanian industrial transformations during communist period and nowadays challenges of industrial sites in the city of Kuçova", a paper presented at 3º CONGRESSO INTERNACIONAL SOBRE PATRIMÓNIO INDUSTRIAL, Lisboa, Spain, 17 – 19 June 2016, organized by Universidade Lusíada de Lisboa, p. 32. Online: http://www.lis.ulusiada.pt/Portals/eLusiada/DocsExternos/eventos/Doc/3_cipi_resumos.pdf B. VRUSHO, F. PASHAKO, "Adaptive Reuse of Underused Industrial Sites, Case Study: The Superphosphate of Laç". Publication in 5th INTBAU International Annual Event, "Putting tradition into practice: heritage, place and design", 5-7 July 2017, Milan, Italy. Online: https://www.intbauitalia.org/meeting2017
Publication in books or	B. VRUSHO, F. PASHAKO, "Adaptive Reuse of Underused Industrial Sites, Case Study: The Superphosphate of Laç", pp. 1097-1112. Publication in the book "Putting

bouletin	Tradition into Practice: Heritage, Place and Design", Editor: Prof. Giuseppe Amaruso. 2017. DOI: 10.1007/978-3-319-57937-5. ISBN: 9783319579368, 9783319579375 (online). Online: http://www.springer.com/gp/book/9783319579368 B. VRUSHO, "The Laç Superphosphate factory", TICCIH Bulletin No. 74, 4th quarter 2016, pp. 10. ISSN: 1605-6647. Online: http://ticcih.org/wp-content/uploads/2016/11/ticcih74V2pag1and2ONLY.pdf

HOBBIES

Dancing and swimming.