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Oil City of Abadan (1908-1951)
History, Valorisation and Patrimonialisation

Ville pétrolière d'Abadan (1908-1951)
Histoire, valorisation et patrimonialisation

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Abstract

Oil City of Abadan (1908-1951)

Buildings, structures, and landscapes associated with the activities of an industry in a city are like a birth certificate representing the history and identity of a city. Over time, some of these structures are damaged or lost, thus protecting, restoring and transferring these architectural spaces into new urban activity can be used to preserve the identity and history of the city for the future generation and contribute to sustainable development.

This thesis studies the history of oil industry in Iran and the oil refinery in the city of Abadan between 1908 when the first well reached to the oil in the City of Masjid-i Suleiman until 1951 which was the time of nationalization of Iran oil industry, it concerns a practice of company town, and especially the history of oil industry and also development of Abadan city, its architecture, urban design, landscape and a viewpoint over industrial heritage and related museums.

Therefore, the main approach in this research is the interpretation, valorization, and representation of the industrial heritage related to the oil industry. For this purpose, this study carries out with the consideration of Abadan city located in the southwest of Iran as a case study.

The first chapter of this thesis includes a brief history of the oil industry in Iran and the APOC oil company. The second chapter covers the formation and development of Abadan city around an oil refinery and the architectural and urbanization aspects and a view on the social aspects and the structure of the community. Chapter 3 discuss heritage and present industrial heritage practices in Iran such as oil industry museums.

The expected results of this research could be identifying and interpreting the associated values with the industrial and cultural heritage in the city and contribute protection of this urban complex. These results can be used to retain the city's identity and to conserve the values and status of the past society, they could be used by government officials and active groups concerning the heritage. Also by producing scientific papers other researchers in this field could take benefit from these results as well as they could be used for raising awareness of local community about the their heritage.

Introduction

History of oil industry in Iran started with the D'Arcy Concession that was an oil concession signed in 1901 between William Knox D'Arcy and Mozzafar al-Din, Shah of Persia. This agreement gave D'Arcy the exclusive rights to prospect for oil in Persia (now Iran).[1]

Mr. Darcy's efforts to discover oil eventually ended up on 26 May 1908. This year in the southwestern mountainous region of Iran, the exploitation group D'Arcy reached to the oil. It was in Masjd Soleiman were another city related to the oil industry was built. [2]

Anglo-Persian Oil Company (as it was then called) was founded in London. In 1911, the oil pipeline was completed from the wells of Masjid-i Suleiman to Abadan Island, 130 miles apart. Since 1912, the Abadan refinery has started its operations. APOC has designed and built two cities of Masjid-i Suleiman (near the first wells) and Abadan (at the end of the pipeline near the Persian Gulf) along with seven similar cities in the Khuzestan province of Iran were designed and built by APOC.[3]

At the end of the pipeline near the Persian Gulf and on Land between two rivers Arvand and Bahmanshir the Abadan's refinery was located. The oil was coming from the wells in Masjid-i Suleiman and passing through the refining process and then it was being pumped onto the tankers and sent around the world. Abadan was constructing in his early development phases in two separated district ; one consist spacious bungalows housing for British expatriate senior workers like a colonial company town, and second was a rapidly overcrowded 'native town' under local municipal control.[4]

The first building to be created was an iron structure lined with wood. The first bungalow followed soon after a brick building constructed in the local style and having a mat and 'chandle' roof, that

[1] Ferrier Ronald, *The History of the British Petroleum Company, vol. 1, The Developing Years, 1901-1932*, New York, Cambridge University Press, 1982.
[2] Ferrier, Op. cit. P. 88.
[3] Ehsani Kaveh, « Social Engineering and the Contradictions of Modernization in Khuzestan's Company Towns: A Look at Abadan and Masjed-Soleyman », In *IRSH* 48, Internationaal Instituut voor Sociale Geschiedenis, 2003, p. 361–399. Including the towns of Omidieh, Aqa Jari, Haftkel, Naft-e Sefid, Gachsaran, Lali, and Naft Shahr.
[4] Crinson Mark, « Abadan: planning and architecture under the Anglo-Iranian Oil Company », In *Planning Perspectives* 12, 1997, p. 341–359.

is, a roof constructed of small diameter poles placed close together and overlaid with mats (made from date palm leaves) covered with soil.[5]

The main parts of the city of Abadan in the 1920s were as follows: the refinery an ever-expanding industrial zone of tank farms, distillation units, and cracking plants. The administrative part of the company located in the south of the refinery and on the north coast of Arvand River. The bungalows (the village of Braim), which were built in the southwest of refinery, which was mainly made for English seniors. Unplanned wooden and adobe houses made by local workers in the east of refinery.[6]

When the first British oilmen had investigated Abadan in 1909 they discovered that almost all of the building resources and facilities would have to be imported, including trained artisans, sand, stone and lime, and even, to a great extent, bricks. A construction industry would have to be created, to serve the new oil industry. And in the mid-1930s Costain, the large contracting and civil engineering firm began to meet this challenge mainly by importing building materials on a large scale.[7]

In the late 1920s, the village of Braim expanded from several dispersed buildings to a set of two-story bungalows surrounded with their greenery and arrayed in street. Each building was enclosed by its own green space and several public green spaces were located along the village. Some public buildings like the Gymkhana Club as well as many gardens were also built. Buildings were designed and implemented according to the climatic conditions of the wet and warm climate area, and usually have thick brick walls and wide arcaded verandahs.[8]

On a map of 1928 the refinery was like a wide range of industrial facilities separated two residential areas, the compact city in the east, and Braim in the west, at the same time, both have served the refinery. 'The function, character, location, and materials of three of Abadan's four major built elements had been established from the beginning. The fourth element – the professionally planned layout of residential estates – was to be introduced in the 1930s'.[9]

[5] *The Naft* (Oil Journal), July 6, 1931, p. 16.
[6] Crinson, « Abadan », Op. cit.
[7] Crinson, « Abadan », Op. cit.
[8] Crinson, « Abadan », Op. cit.
[9] Crinson, « Abadan », Op. cit.

It was in Anglo-Indian dwelling type in colonial India where the origin of bungalow has come from. This kind of residence with its plantation or agro-industrial origins, it had arrived in Britain from the 1890s 'as a cultural model of living in non-urban, or ex-urban areas'.[10] In Anglophone countries it became a suburban dwelling, and then, from the last years of the nineteenth century onwards, it was re-exported 'for the managers of mines, railways, plantations, managing British capital and exporting raw material to industrial economies at the core'.[11]

Since the 1920s, when refinery and town began to develop, until the departure of AIOC from Iran in 1951, after the nationalization of the oil industry, a great boom had been achieved. In the 1940s Abadan was extended across all the land between the two rivers of Bahmanshir and Arvand Rood. The city of Abadan reached a large population of nearly 200,000 inhabitants in 1951. Although the city was nominally controlled by the municipality, it was the company that provided the necessary services and answered the growing need for educational, transportation, health, and recreational infrastructure.[12]

The architect who was in charge to design the city and architecture of Abadan large buildings was James Mollison Wilson (1887-1965). Wilson worked as a young architect for the British Empire after the First World War. Between 1913-1916 Wilson was Sir Edwin Lutyens's assistant in New Delhi. He collaborated with Harold C. Mason 1921-1935 most of the plans were Wilson's work, and in 1944 he was formally recognized as the Company architect. His works were in Iran, Iraq, and Kuwait.[13]

To better answer the housing requirements, the company launched a plan to create 4 or 5 settlements like separated villages. In the new parts of the city, the position of non-European workers was in Segoush-i-Braim and Amirabad in the north and Bawarda-i-Shemali in southern Abadan. For non-European workers, Bahar and Ferahabad were built near the Bahmanshir River and Ahmadabad and Bahmashir in the east and Jamshid in the northeast of the city. In the northwest, an extension was added to Braim for European workers. All of these areas except the Jamshid and Ahmedabad formed like the Garden Suburb. All areas except Ahmadabad were

[10] A. D. King, The Bungalow, the Production of a Global Culture, Oxford: Clarendon, 1995, p. 259–263.
[11] A. D. King, *The Bungalow, the Production of a Global Culture,* Oxford: Clarendon, 1995, p. 259–263.
[12] de Planhol X., « ABADAN ii. Modern Abadan », Encyclopaedia Iranica, I/1, pp. 53-57, visited on July 28, 2020 http://www.iranicaonline.org/articles/abadan-02-modern
[13] Crinson, « Abadan », Op. cit.

designed in different shapes and sizes by Wilson and were constructed for the municipality by Karun Engineering Company.

Literature Review

So far, some general studies have been done on the urbanization, history of city, architecture, and there are proposed plans for the post-war restoration of Iran-Iraq war (1980-1988) in Abadan. But this city needs to be studied especially in the field of recognition and valorization of cultural and industrial heritage. Identification of the values and effects of this heritage on the present society, which expresses the social, economic, political, and cultural characteristics of the city are still unknown. Therefore, there is a necessity to do more detailed and comprehensive studies in this field.

Several articles about Abadan city have been written. For example the *Abadan: Urban planning and architecture under the management of Anglo-Iranian Oil Company* by Mark Carnson. This article has investigated the origin of the new colonial architecture and urbanization and England's involvement in urbanization in the Middle East. The author examines how the city of Abadan is developed by the AIOC company. He has mentioned the ideas of urban planning, the main neighborhoods of the city as well as the main architect of the important buildings of the city.

Also, Mr. Rasmus Christian Elling[14] has written some articles by studying Abadan city. In conjunction with the collaborative historical research project 'Urban Violence in the Middle East' (SOAS, London, 2011-2012), he has studied the connection between collective violence and urban space in the city of Abadan. This focus then developed into a larger project on the urban history of Abadan.

Pirouz Hanachi[15] and Sarah Taymourtash have presented an articles *L'industrie pétrolière et la ville : Abadan (Iran)* in the book of Villages ouvriers et villes-usines à travers le monde have introduced Abadan and its company town Breim by a brief presentation.

Kaveh Ehsani, *Social Engineering and the Contradictions of Modernization in Khuzestan's Company Towns: A Look at Abadan and Masjed-Soleyman,* IRSH 48 (2003), pp. 361–399, Internationaal Institut voor Sociale Geschiedenis. Ehsani in his long article examines practices of

[14] Associate Professor, Department of Cross-Cultural and Regional Studies, University of Copenhagen.
[15] Professor, Departement of Conservation, School of Architecture, University of Tehran.

social engineering by the AIOC in urbanism and architecture of these two cities. He argue that the built space affect familial and social relationship so we need to know the characteristics of places where people live.

The researchers of the Institute of Social Studies and Research in Tehran have written an important essays that examine the urban tissue of the City of Abadan, with attention to its urban morphology and population demographics.[16]

Methodology

In the matter of resources for conducting this research, we examine a variety of documents accessible in local, state libraries besides museum and company archives. Such as Iran National Library, Iran National Archive, Oil Industry Museums, and Documentation Center in Tehran. To answer the questions, we deal with different types of written source namely books, articles, manuscripts, public and governmental papers, and private documents. Another way for gathering information is data acquisition through visual documents for example past and recent photos, maps, urban and architectural plans. To get the right information we conduct field research such as visiting and photographing. The necessary steps to achieve the goals of this research include:

- Chapter 1 : History of the oil industry in Iran.

Studying the history of the oil industry in Iran and the formation of Anglo-Persian Oil company in its different stages; From the acquisition of D'Arcy Concession, through developing years and the period between the two world wars until the nationalization of the Iranian oil industry in 1951.

- Chapter 2 : The City of Abadan

Considering the geography of the site, recognizing the period of development and construction (1908-1951), the history of Abadan city during the arrival of foreigners and the establishment of a refinery. Discussing urbanization under the management of AIOC and identifying the architectural forms and urban design practices used in the region. Morphology of the city of Abadan by the following criteria: demographic importance, urban tissue, different density indices, basic equipment, service, recreation, housing types, house occupancy models, number of rooms per

[16] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », Revue Géographique de l'Est, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

household, classification of the population by socio-professional categories, education, origin of population, and household size.

- Chapter 3 : Heritage

Presentation of main institutions and resources for study and research in heritage. Dicuss about Industrial heritage practices in Iran such as oil industry museums and comparison with existed oil museums in the world. and discussing industrial heritage and their participation in sustainable local development.

Chapter 1

History of The Oil Industry in Iran

Le résumé

Ce chapitre résume l'histoire du pétrole en Iran depuis la première concession pétrolière de D'Arcy en 1901 qui a été accordée par le roi de Perse, et le processus et les activités de l'équipe d'excation pendant sept ans qui ont conduit à la découverte du pétrole en mai 1908. La formation de l'Anglo-Persian Oil Company (APOC) en 1909 serait racontée, et la situation de l'entreprise à partir de 1912, première année de son opération dans la production pétrolière et son rôle tout au long de la Première Guerre mondiale, puis des années de développement de la société en 1920s vont être décrit. Ensuite, la participation de l'entreprise dans la Seconde Guerre mondiale en tant que fournisseur de pétrole pour les alliés sera mentionné et enfin nous décrivons les principaux événements qui ont conduit à la nationalisation de l'industrie pétrolière iranienne par le gouvernement de Mohammad Mosaddegh en 1951.

En outre, lors de la narration de l'histoire de l'industrie pétrolière iranienne, la plupart des personnalités importantes qui ont participé à des événements comme les principaux acteurs seraient mentionnés.Aussi, les relations concessionnaire entre le gouvernement iranien, APOC et le gouvernement britannique en tant que principal actionnaire de la société, concernant leurs négociations, leurs différends et leurs accords au fil des ans ont été discutés. Nous voyons qu'au cours des années, comment les Iraniens ont cherché à augmenter leur profit de l'industrie pétrolière qui dans la Concession D'Arcy c'était 16% de bénéfice net puis pendant la dynastie Pahlavi dans l'accord de 1933 il est passé à 20% et la nationalisation de 1951 comme grand pas pour avoir le contrôle du pétrole iranien même si après le coup d'État iranien de 1953, par l'accord de consortium de 1954, les compagnies occidentales possédaient 40% du pétrole iranien.

I. The Acquisition of The D'Arcy Concession 1901

A. Iranian civilization

Over the centuries on the Iranian plateau and in western central Asia, with relatively arid lands, Iranian culture has developed. The fertile valleys and basins of certain rivers created favorable conditions for human habitation, then for the growth of agriculture and the domestication of animals, which led to the appearance of villages and towns and the emergence of the Iranian civilization.[1]

The history of Iran can be divided into two main periods. The first era starts from the premier civilizations in the Iranian plateau and goes to the Islamic conquest of Persia (637-751). The second begins from this point and extends until the Iranian revolution of 1979.[2]

B. Persia in the 19th century

In the late nineteenth century, Persia was insecure at the national and provincial levels, ruled by the Qajar dynasty. And Fath-Ali Shah (1791-1834) brought the country into the war with Russia with his extra ego, hoping to regain Georgia, but without considering the country's capabilities and military capability, which led to the humiliating Turkmenchay Treaty and losing part of the territory to Russian.[3]

After Nasser al-Din Shah came to power in 1848, more attention was paid to the country's economic development. During the short term of Mirza Taghikhan 1850-1860 as Prime Minister, measures were taken in this direction.[4]

At that time, the country's economy was based on the Bazaar and its relationship with the mosque. At the beginning of the twentieth century, Persia had instability, opposition forces, lacked social and political order, and the country's economy was bankrupt. Agriculture and related activities accounted for 90 percent of the country's population. The country had a population of

[1] Yarshater Ehsan, « Iran ii. Iranian History (1) Pre-Islamic Times », In *Encyclopædia Iranica*, 2004, XIII/2, pp. 212-224 and XIII/3, p. 225. http://www.iranicaonline.org/articles/iran-ii1-pre-islamic-times.
[2] Yarshater, « Iran ii », Op. cit.
[3] Ferrier Ronald, *The History of the British Petroleum Company, vol. 1, The Developing Years, 1901-1932,* New York, Cambridge University Press, 1982, p. 16.
[4] Bakhash Shaul, *Iran: Monarchy, Bureaucracy, and Reform under the Qajars: 1858-1896,* London, 1978.

approximately 9 million people, scattered over an area of 62,850,000 square miles, and 95% of the population were illiterate.[5]

C. British interest in Persia

The first contact of Britain with Persia was during the reign of Shah Tahmasb and Queen Elizabeth in 1969 by Anthony Jenkinson as a representative of Russia Company in 1562 in Qazvin.[6] Trade between Iran and Britain continued in the 17th and early 18th centuries, the cargos were mainly in cloth and silk. After the fall of the Safavids, and despite Russia Company's efforts through the North Sea, trade between the two countries gradually disappeared.

After the establishment of a British Embassy in Tehran trade between the Persian Gulf and India was resumed. By the opening of the Suez Canal, direct trade from Britain to the South of Persia started by steamships in 1860. In 1856-7, the telegraph line between London and India passed through Persia, which was answered to the necessity of further communication after the Indian Mutiny of 1857. In the 1860s, it helped for more transmission between the Central Persian state and its provincial representatives.[7]

Britain was after the internal stability of Persia to hold its territorial integrity against Russia. This was followed by trade relations between the two countries. Sir Henry Drummond Wolff as Minister in Tehran was involved in the negotiations of Reuters' son to establish a national bank as compensation for the abrogation of the 1873 concession, which led to the establishment of the Royal Bank of Persia in London. Major Jerald Talbot's concession to monopolize the production, sale, and export of Persian tobacco, which led to objection from farmers, marketers, and the country's religious pole, was eventually canceled by the Shah followed by the first national debt to pay 500,000 of its compensation.[8]

[5] Ferrier, *The History of the British Petroleum Company*, Op. cit. 18-19.
[6] Wood A. C., *A History of the Levant Company*, oxford, 1935.
[7] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 21.
[8] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 23-24.

D. Early oil right in persia

As a result of the second concession of Reuter on 30 January 1889, The first bank incorporated as Persian Imperial Bank and Persian Bank Mining Rights Corporation had the right to extract mines, including petroleum.[9]

The corporation received a negative response to the claim for compensation, eventually, it went to liquidation in July 1901. Three other oil concessions were granted in the 19th century. An American D.W. Torrence received one in 1899, however, he resigned after a year. In June 1896, Sipahsalar Azam, an Iranian politician, and landowner took the privilege of searching for oil in Mazandaran from the Shah. The Governor-General of Gilan also had received an oil concession for drilling in the Caspian Sea in 1900. [10]

E. The D'Arcy Concession

1. A Discussion in Paris and London

At that time, oil consumption in Iran was mainly Kerosene. Russian and American oil companies were competing on the Persian Gulf market. Due to its cheapness, Russian oil was able to compete with high-quality American oil. The attention to the existence of oil in Iran gradually became more and more. Especially after the research expeditions done by Jacques de Morgan, who had come to Iran as a French archaeologist. In the years 1889-1891, he has collected an Encyclopedia of Culture, Geology, and Archeology.[11]

In the second volume, that was published between 1894 and 1905 Demorgan provided a detailed explanation of the possibility of oil in an area around Zuhab in Qasr Shirin. In his meetings with high-ranking Iranian officials, as well as Sir Henry Drummond Wolf, he stated that if the Iranian government invests in this field, it will be an advantage for the Persia.[12]

In 1898, the Iranian authorities were ready to accept the new proposals. The country's revenues and expenditures were not balanced, and the Persian government was negotiating for a loan from Russia and Britain. General Ketabchi, who was in charge of managing Iran's financial resources, took the first steps that led to D'arcy Concession. During the Paris Exhibition in 1900, he informed Sir

[9] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 25.
[10] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 26-27.
[11] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 27.
[12] de Morgan Jacques, *Mission Scientifique en Perse*, 5 vols., Paris, 1894-1905.

Henry Drummond Wolf to introduce a British capitalist interested in oil concession. A month later, Sir Henry sent a message to the Kitabgi 'Concerning the oil, I have spoken to a capitalist of the highest order, who declares himself disposed to examine the affair, and if you so desire, I shall put him in communication with you'.[13] This was William Knox D'Arcy who was introduced to Sir Henry by a Mutual Friend, Lord Orford. General Kitabgi and Sir Henry gave an exclusive credit to D'arcy Concession. Demergan's role and information were also significant. Drummond Wolf, as well as the role of Edouard who was secretary in the Reuters Concession and had informed Kitabgi of Demergan's reports.[14]

It was in January 1901 when D'arcy went to Paris, where he and Wolff met General Kitabgi for the first time. The discussions continued in London and Paris. The purpose of the negotiations was to prepare a concession to propose to the King of Persia 'to obtain from the shah of Persia a concession for the oil fields believed to exist in that country'[15]. To that end, A. L. Marriott and Cotte left Paris on 25 March and arrived in Tehran on 16 April.[16]

2. Negotiations in Tehran

Ketabgi had arrived in Tehran on April 10 and met Minister Sir Arthur Hardinge, who his support was expected. In the first meeting, Marriott pointed out to Kitabgi 'we could not expect the English Government to press the matter politically'.[17] After a few days, Kitabgi was able to meet with Prime Minister Amin al-Sultan. He agreed but had a political viewpoint. His intention was to maintain a 'Balance between Russian and British Governments'.[18] negotiations with the Persian ministers continued for three weeks. And the text of the Concession was translating by Mushir al-Dawla, the son of the foreign minister.[19]

The Kitabgi has demanded the cooperation of other ministers and courtiers as much as possible.[20] While the Prime Minister has not yet read the text of the concession, Marriot realized that ministers were procrastinating. On May 15, he asked Hardinge to speak 'energetically' with Amin al-Sultan, which he thought was postponing. 'Due to the fact that he does not know if he ought to grant this

[13] BP H12/35, Wolff to Ketabgi, 25 November 1900, quoted by Ferrier.
[14] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 29.
[15] BP H17/47, Marriott Journal, quoted by Ferrier.
[16] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 33.
[17] BP H17/47, quoted by Ferrier.
[18] Ibid
[19] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 35.
[20] PRO FO 60/640, Hardinge to Lansdowne, 12 May 1901, quoted by Ferrier.

Concession without first consulting the Russian'. Given that the British government did not cooperate on concessions, however, Hardinge interventions were very important.[21] He knew he could as Britain's top representative in Persia help to set up a British company. He spoke with Atabag Azam that the British investment in Iran would benefit the country.[22]

The draft of Concession was written more clearly by the Minister of Mines. Finally, on May 20, a copy of the proposal was presented to the Shah. He 'refused to sign unless the payment of £40,000 and £40,000 on the formation of the company, also 16 percent instead of 10 percent on net profits' Marriott set this condition to accept 16 percent 'if we were freed from the 5 percent export duty' he also authorized Ketabgi 'to promise his friends £5000 in advance of their share as Ketabgi had all the Ministers around him discussing the affair.[23] On May 22 the negotiations were halted. The issue was that the Prime Minister took the concession to the Shah yesterday and that the latter had not signed.[24] Mariot spoke to Kitabgi on May 23 and said he had provided another £5,000 for more effective action. After meeting Kitabgi with Amin al-Sultan in the evening 'with the news that he had and his formal promise that the concession would be granted'.[25] On May 24, Marriott telegraphed to D'Arcy.

Finally, on 28 May The Concession was granted by the shah. The news reached Marriott that night by Mushir al-Dawla, and Kitabji was informed by Mohandes al-Mamalik. In a meeting with Marriott and Librarian, Amin al-Sultan expressed hope that this could be good for Persia.[26]

F. The contemporary significance of the D'Arcy concession

The Persian government proceeded to D'Arcy (Article1) 'a special and exclusive privilege to search for and obtain, exploit, develop, render suitable for trade, carry away and sell natural gas, petroleum, asphalt and ozokerite throughout the whole extent of the Persian empire for a term of sixty years.' Although D'Arcy had excluded the five northern provinces.[27] According to Article 4,

[21] PRO FO 60/660, Hardinge to Lansdowne, 29 January 1902, quoted by Ferrier.
[22] PRO FO 60/731, Hardinge to Lansdowne, 30 May 1901, quoted by Ferrier.
[23] BP H17/47, quoted by Ferrier.
[24] Ibid.
[25] Ibid.
[26] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 40.
[27] Text of D'Arcy Concession in J.C Hurewitz, *The Middle East and North Africa in World Politics, a Documentary Record*, 2nd edn, New Haven and London, 1975, vol. I, pp. 483-4; Draft Concession in BP H12/35.

the Parsian government required D'Arcy to accept all possible risks. And the government will support and protect the work of the company.

II. The Funding and Finding of Oil 1901-8

A. D'Arcy on his own 1908-5

1. Introduction

D'Arcy was seeking a permanent legal basis to involve other investors and reduce his liability. In June 1901 he was proposed to form the Persian petroleum exploration Syndicate with a capital of £ 300,000 in £ 1 shares. [28]

By the end of 1902, D'arcy had not been able to form the syndicate he wanted to exploit The Concession. His efforts to involve others, such as Sir Ernest Cassel an international banker, were unsuccessful. He pointed out to Jenkin that the only way left for him was to fund a company. So 'until we find oil it will carry on the work we are now doing. When the oil is found it will be different. The company will go on its way and I shall then continue the work we are now doing.[29] In May 1903, D'Arcy consulted E. T. Hargraves, a lawyer, to form a company, and Sir Howard Elphinstone. On 21 May the first Exploitation Company was registered to have the following main provisions[30]

I. The company was to have the right, within one year, to select anywhere within the Concession area, blocks of lands not exceeding in the aggregate one square mile, the Concessionaire transferring to the Company all rights and privileges vested in him under his concession in relation to such blocks of land.

II. In consideration of the grant of these rights, the Concessionaire was to receive 350 000 shares of £1 each issued as fully paid.

III. The Company was to pay the Persian Government 16 percent of its annual net profits, and, in exercising its right under the agreement, was to conform to all requirements of the Concession, and to indemnify the Concessionaire against all liabilities in respect of any action that it might take.[31]

Wolff and Vincent Kitabgi, the son of General Kitabji, who, as his father's successor, were concerned about the proposal of the Company. They thought it would be disregarding that

[28] Lockhart L., « The Record of The Anglo Iranian Oil Co.Ltd. », unpublished Company record, 12.
[29] BP H16/2, D'Arcy to Jenkin, 15 April 1903, quoted by Ferrier.
[30] BP H12/421, Articles of Association of the First Exploitation Company Ltd, 21 May 1903, quoted by Ferrier.
[31] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 53.

obligations to the Persian government. The concern was justified because D'Arcy was not forming a concessionary company but an exploitation one.[32] Wolff accepted the formation of the first Exploitation Company. Vincent Kitabgi as the imperial Commissioner had made all the necessary arrangements in Tehran. With the assistance of his brother Paul he proved to the Persian Government that the terms of the Concession had been observed in this respect.[33]

2. Preparation in Persia

Reynolds was D'Arcy's first engineer. Who was hired for oil exploration operations in Persia. He was physically strong and mentally intelligent. He arrived in Tehran on September 10, 1901.[34] In the spring of 1901, a geographic survey was conducted by H. T. Burls, which confirmed the prospect of oil, according to de Morgan.[35] Redwoods was optimistic about Burls' reports. That 'the territory as a whole is one of rich promise'.[36]

Reynolds left Tehran to reach Qasr Shirin, where there were proved signs of oil.[37] Then he went to Baghdad and from there to Basra, where he did the first unloaded plant and machinery valued at £ 1250.[38] Reynolds got the support and approval of local tribal leaders. Aziz Khan and Muhammad Karim Khan who owned seepage in Sari-pul.[39]

The drilling was started in November 1902. It was on a small plateau in mountainous undulating country with a stream nearby and tents spread around were the site situated. When Reynolds returned to London in early April 1902, the first well was 900 feet deep. And a pipeline route from Zuhab to Muhammara had been Surveyed.[40] Beside Reynolds' work, D'arcy was thinking of sending another geologist, N. H. Dalton, to the region to provide a more accurate report. That could have the satisfaction of investors who could take shares in any company that might be formed for

[32] BP H15/117 pp. 184-5, D'Arcy to Vincent Kitabgi, 11 July 1903, quoted by Ferrier.
[33] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 53-54.
[34] BP H12/35 p. 60, 10 September 1901, quoted by Ferrier.
[35] BP H4/147, Burls to Redwood, reports of 13, 20 and 27 July 1901, pp 1-6, quoted by Ferrier.
[36] BP H17/96, Redwood, « Report on the Petroliferous Territory of Persia », 30 July 1901, p. 11, quoted by Ferrier.
[37] Ibid., pp. 69-72, Reynolds to Paul Kitabgi, 30 October 1901.
[38] BP H12/24 p. 17, Reynolds to D'Arcy, November 1901, quoted by Ferrier.
[39] BP H12/35 p. 86, Reynolds to D'Arcy, 22 March 1902, quoted by Ferrier.
[40] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 57-58.

working it.[41] Dalton with assistance from Ketabgi did a complete survey in south and west at a cost of £ 2200 and reported it on 15 May.[42]

3. Searching for finance, May 1903- july 1904

At that time, withdrawal from the concession was a significant disadvantage for D'Arcy. There weren't many options to choose from. While his business advisor Hargraves had told him that if he was looking for an investor, he would let someone else impose hard terms on him.

D'Arcy met Sir John Fisher Second Sea lord in 1902 who was an advocate of the use of fuel oil in naval vessels. Admiralty was inquiring about the possibility of oil supply for Royal Navy from Burmah Oil Company.[43] After the appearance of oil signs in Chiah Surkh in October 1903. D'Arcy applied for a loan from Admiralty through a parliamentary secretary. At that time Lord Selborne First Lord of the admiralty 1900-5 had already assigned a small fuel oil committee to advise him. The Government was not interested and D'Arcy received a negative response.[44] Hardinge and Lord Curzon Viceroy in India have expressed the same opinions about the possibility of Russian concession it would be most dangerous to British Interests in Southern Persia.[45]

D'Arcy was looking for foreign investment to keep the concession alive.[46] On December 16, he asked his friend Major General Sir Arthur Ellis about Rothchild interest. After two weeks, Sir Arthur returned to D'Arcy with an optimistic response that there is a fair prospect of success with the cooperation of Baron Rothschild.[47] Later on 2 July 1903 Rothschilds had reached an arrangement with Royal Dutch and Shell that offered them a more attraction prospect, apparently they suspended negotiations with D'Arcy.[48] D'Arcy was talking to French Rothschild and Pretyman suggested him to give Admiralty a chance to apply for aquisition through British Syndicate before offering it to foreigners.[49] D'Arcy accepted Pretyman's suggestion but no results were obtained. He then asked Lord Lansdowne and Hardinge if it could be seeking help from the Government of

[41] Ibid., p. 143, D'Arcy to Kitabgi, 27 September 1902.
[42] Ibid., Redwood to D'Arcy, 20 May 1902.
[43] PRO ADM 116/3807, Admiralty to BOC, 24 July 1903, quoted by Ferrier.
[44] Ibid., Curzon to Lansdowne, 9 December 1903.
[45] Ibid., Hardinge to Lansdowne, 24 December 1903.
[46] BP H12/80 p. 80 Coburg Hotel account, 25 November 1903, quoted by Ferrier.
[47] Lockhart, « Record », Op. cit. p. 51.
[48] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 61.
[49] Quoted in Lockhart, « Record », Op. cit. p. 50-51.

India.[50] D'Arcy was dealing with his bank who had asked The Concession itself as security for the overdraft. Also, D'Arcy was aware of the Interest of Standard Oil Company which had the thought of buying it outright.[51] In June Standard Oil did not offer definite provisions, and Rothschild responded negatively to the terms disposed by Fletcher Moulton at the end of the month. In Persia, the Glorious news for D'Arcy was oil Strike in Second well on 14 January.[52]

4. Drilling for Oil

In March 1903 the work was in charge of C.B. Rosenplaenter successor of Reynolds as Engineer at Chiah Surkh.[53] Despite his many technical difficulties, Rosenplaenter showed a great talent. The weather in the area was harsh, sometimes air temperature reached 120 degrees Fahrenheit. And because of the extreme heat in August, the progress was slow. Sometimes people like the governor of Kermanshah and Imam Jumah (prayer leader) visited the site. And they 'seemed very keen on receiving a substantial present from us, especially in the shape of some shares of our company'.[54] The sudden show of oil was auspicious for tribal peace who had conflicts between themselves, which occurred in the second well drilled at 756 feet in January 1904. Unfortunately, the oil had not a regular flow in sufficient quantity. W. B. Hollan then in charge suspended all operations on 23 June.[55] Rosenplaenter left in the middle of May.

While Rosenplaenter was working at Chiah Surkh, Reynold had returned to Persia at the end of October 1903 with the instruction of D'Arcy to select at least six promising sites in the southwest and negotiate to solicit the agreement of the landowners.[56] D'Arcy had funds enough to drill just in one place at a time. Reynold was in Shoushtar visiting seepages owned by the Seyyeds, in charge of a religious endowment. In a telegram, he indicated Masjid-i Suleiman for the first time on 31 March. 'Oil found in gypsiferous rocks. The rocks here at Mandali are saturated with oil. The property is a very valuable one'. [57]

[50] IO L/P&S/10/143, Lansdowne to Hardinge, 12 March 1904, quoted by Ferrier.
[51] Lockhart, « Record », Op. cit. p. 51.
[52] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 62.
[53] BP H12/35 p. 143, D'Arcy to Kitabgi, 27 September 1902, quoted by Ferrier.
[54] Ibid., Rosenplaenter to Jenkin, 7 November 1903.
[55] Ibid., Rosenplaenter to Jenkin, 1 September 1903.
[56] BP H17/89A, Jenkin to Reynolds, 4 December 1904, quoted by Ferrier.
[57] HP H12/27, Reynolds to Jenkin, 31 March 1904, quoted by Ferrier.

5. The Burmah Connection

In mid-1904, a new player entered the scene. The Burmah Oil Company. Burmah was founded by a group of Scotsmen led by David S. Cargill registered in Edinburgh in 1886. At the time, Admiralty was actively pursuing the development of marine engines for burning fuel oil in naval vessels.[58] In 1903 the admiralty had inquired about the Burmah Oil Company Supplying fuel oil.[59] Although the response of the Burmah was positive at that time they were 'not technically in a position to offer fuel supply in large quantity but they hoped it would be available at no distant date'.[60]

In 1903 Burmah increased its capital by £ 500,000 and sought more rights in India for oil exploitation.[61] In 1904 John T. Cargill was able to propose direct discussion with the admiralty.[62] The first negotiation took place on 15 March with satisfactorily result, Cargill, asserted it would be able to meet the admiralty's request of 50 000 tons a year. And he anticipated a largely extend for future expansion.[63] On July 20, 1904, they reached to a fuel oil supply contract with the Admiralty.

Burmah viewed its initial relationship with Persia as a guarantee of exploration failure in India. After a year the Admiralty supply contract was signed in November 1904.[64] An agreement was concluded between Burmah and D'Arcy for the formation of the Oil Concession Ltd on 5 May 1905. And D'Arcy informed his first companions about the negotiations with Burmah. But despite the early acceptance of Kitabgi who was hoping for 'great success in the future' but a week later on 6 February 1905, Vincent Kitabgi criticized the agreement with Burmah.[65] Vincent Kitabgi consulted the matter with counsel, R. Younger K.C. and J. T. Prior. Finally he accepted the 7 percent of all the benefits relevant to the share benefits according to the agreement with Burmah.[66] The agreement was completed with Burmah on 5 May 1905, as D'Arcy said 'better than I could

[58] PRO ADM 1/7594C passim, e.g. no. 20554, Admiralty to FO August 1901; ADM 1/7676 and ADM 1/7824 passim, quoted by Ferrier.
[59] Ibid., Admiralty to BOC, 1 July 1903.
[60] BP 77/49/18, BOC to Miller, 2 November 1903, quoted by Ferrier.
[61] Ibid., Redwood to Pretyman, 15 March 1904.
[62] Ibid., Cargill to Miller, 25 February 1904.
[63] Ibid., Cargill to Miller, 26 April 1904.
[64] Ibid., Admiralty to BOC, 28 October 1905.
[65] Lockhart, « Record », Op. cit. p. 58-59.
[66] BP H15/117 p. 235, Vincent Kitabgi to D'Arcy, 19 April 1905 and ibid., p. 241, Norton to Vincent Kitabgi, 15 May 1905, quoted by Ferrier.

have obtained from any other company. The Concession Syndicate Ltd was incorporated with a capital of 100,000 in £ 1 shares on 5 May 1905.[67]

B. The Concession Syndicate 1905-1909

1. Introduction

Despite financial support, D'Arcy still had concerns. Persia's political situation was ambiguous. For example, the lack of administrative organizations in the country was apparent. After a long dispute on constitutional reform, Muzaffar Al-Din Shah accepted to the demand for a Democratic assembly, Majlis on 5 August 1906, and the fundamental Law completing the constitution was passed on 7 October 1907.[68]

2. The Bakhtiari Agreement: Khans and Guards

The concession seeks to discover oil in the south-west Persia where the Bakhtiaries possessed authority over their lands. It was necessary to have their agreement for the operations.[69] Reynolds left England on 2 May 1905 it was decided once agreement had reached with the khans they would commence drilling at Masjid-i Suleiman.[70] By the request of D'Arcy, J. R. Preece who was Consul General in Isfahan for a long time, assisted in the negotiation with Khans.[71] While waiting for Preece to arrive, Reynolds in Baghdad began making plans for drillers and other logistics, such as arranging food and men at Muhammara and Ahvaz.[72]

Negotiation with the four most important Bakhtiari Khans took place on 16 and 19 October 1905. As Reynolds describes it 'In all of which Sirdar Assad Bakhtiari (1856–1917) also known as Hadji Ali Kuli Khan took the entire role as spokesmen of the Chiefs, no other chief having it seemed a word to say in his presence ... He, I should say, was masterful and has seen more of the world than most khans, and has a greater flow of language, so it may have been a pre-arranged affair that he should hold the platform'.[73]

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[67] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 72.
[68] G.R. Garthwaite, « The Bakhtiari Khans, the Government of Iran and the British 1846-1915 », In *International Journal of Middle East Studies*, 3, 1972, p. 24-44.
[69] Wilson A. T., *S. W. Persia, Letters and Diary of a Young Political Officer, 1907-1914*, London, 1942, p. 84.
[70] BP 77/49/11, Cargill to Jenkin, 31 March 1905, quoted by Ferrier.
[71] BP H16/71, D'Arcy to Nichols, 12 June 1905, quoted by Ferrier.
[72] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 75.
[73] BP H17/ 89B, Reynolds to CSL, 4 December 1905, quoted by Ferrier.

Preece proposed the khans 3 percent of all shares issued with no limit. After the insistence of Samsam al Saltana and Shahab al Saltana, Il-Khani and Il-Begi respectively, the top tribal leaders, Sardar Assad signed too. The terms agreed to on 15 November 1905 were as follows:[74]

1) The agreement was to remain in force for five years, during which period the Company had the right to search for oil, make roads, pipelines build houses, etc. All arable or irrigated land required was to be handed over by the Khans at the fair price of the day. Non-arable land was to be free.

2) The company has to pay the Khans £2000 per annum in quarterly installments, for the guards furnished by the latter. The first installment (£500) was to be paid after the signature of the agreement; in return, the khans were to assume responsibility for any robbery and any damage to the company's property in Bakhtiary territory. 'The Agent of the Company must keep cash in an Iron box so that it is further from danger'. Before the finding of oil, the Khans were to furnish two bodies of guards to protect the two places where drilling was to be done. After the finding of oil, the Khans were to furnish as many bodies of guards as would be required to protect the various spots where drilling would be carried out.

3) In the event of sufficient oil being found in Bakhtiary territory, the terms of the agreement were to remain binding as long as the D'Arcy Concession continued in force.

4) For the pipeline being constructed, the Company was to increase the guarding subsidy to £3000 per annum.

5) After the foundation of one or more companies to work on oil in the Bakhtiari country, and after oil had been passed through the pipeline, the company was to grant the Khans 3 percent of all the ordinary shares issued by such company or companies, the said shares were to be fully paid.

6) Should the employees of the Khans fail in their duties, the Company would have the right to ask for compensation for any loss.

7) On the expiration of the D'Arcy Concession, all buildings that belonged to the company were to become the property of the Khans.

3. The unsettled state of south Persia and danger to the Persian business 1907.

D'Arcy had anxiety and confined to Preece on new Year day. He was satisfied with the Bakhtiari cooperation and he hoped to continue with them until Reynolds reach oil. But he had a concern, he was aware that the finance was running short and, of course, they would have had to find more money.

[74] BP H9/107, Bakhtiari Agreement , 15 November 1905, quoted by Ferrier.

D'Arcy and Burmah directors negotiated during January and February 1907. After a long discussion, the Burmah directors agreed to guarantee £ 200,000, which at least safeguarded D'Arcy's original expenses. The final was critical if it was declined 'the concession syndicate would abandon their testing operations'.[75] Finally, on 15 July the agreement was concluded and signed two weeks later. At the General Meeting on April 26, 1907, Burmah executives praised their investment in Persia.[76]

Reynolds was complaining about the extra guarding payment, the Khans were merely concerned 'to secure the whole £ 2,500 and not to spend a penny'.[77] For example, there was an incident in the south, a bad robbery was perpetrated by a well-Known trouble maker, Ali-Murad Khan, but by the intervention of the two Khans, the property was returned. Also, the impatience was rising about the existence of oil.[78]

The first well had been drilled to 925 feet, by the start of May.[79] And the second well had reached 738 feet. There was increasing insecurity and Reynolds was pessimistic, by September he was hopeless about further drilling at Marmatain, a nearby site, and Shardin.[80] Despite the disagreement of Redwood and Dalton, in early January 1908, while the wells had reached 2172 feet and 1942 feet respectively, drilling ceased at Shardin. Also, Ali Morad Khan was still making problems for the site. Driller Haris was stoned and injured at the end of June.[81] D'Arcy spoke to Sir Charles Hardinge, then two officers Lieutenants Ranking and Arnold (later Sir) Wilson, and twenty men for the consular guard arrived.[82]

4. The Discovery of oil at Masjid-i Suleiman in May 1908.

Masjid-i Suleiman was the place of concessionary trial. In 1906 Reynolds was enthusiastic about drilling there. He pointed out the difficulty of working there. The work was not 'all beer and skittles'. Bradshaw, who was in charge of road works, once reported about the River Karun 'a raging torrent' after the rains, had entirely pulled down everything had been erected.[83]

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[75] BP 77/49/3 (2), Reynolds to CSL, 10 October 1906, quoted by Ferrier.
[76] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 82.
[77] Ibid., Lorimer to Political Resident, 6 March 1907.
[78] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 83.
[79] BP 77/49/4 (1), Reynolds to CSL, 26 February 1907; ibid., Reynolds to CSL, 30 April 1907, quoted by Ferrier.
[80] BP 77/49/4 (3), Reynolds to CSL, 22 September 1907, quoted by Ferrier.
[81] BP 77/49/4 (2), Bradshaw to Reynolds, 1 July 1907, quoted by Ferrier.
[82] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 85.
[83] BP 77/49/4 (2), Reynolds to CSL, 26 December 1906, quoted by Ferrier.

At Masjid-i Suleiman, drilling at the first well started from January 23, 1908.[84] Reynolds had received a message in January to halt the work at Shardin 'push ahead with two selected sites at Masjid-i Suleiman'.[85] At the end of February Reynolds was feeling sure that 'a definite result will be obtained one way or the other, before it becomes necessary to pay the 15th May installment to the Khans'.[86] The agreement of 1907 with Burmah was coming to an end and the money was becoming exhausted for D'Arcy.[87] Burmah was confident in optimistic geological advice that by 1500 feet in depth the existence of oil could be confirmed or not. On May 19, D'Arcy reached a further agreement with Burmah, it granted a further expenditure up to £40,000 till May 20, 1909. At the start of May, the wells had reached 933 and 563 feet respectively. Then suddenly on May 26, 1908 about 4 a.m. at a depth of 1180 feet oil was struck.[88] An estimated 297 barrels were recorded on a testing flow the next day. Reynolds reported the news to London. It was now the time for the Company to operate the Concession acquired by D'Arcy.[89]

III. The formation of the Anglo-Persian Oil Company 1909.

A. Introduction

The discovery of oil at Masjid-i Suleiman on May 26, 1908 led to the emergence of the first oil-producing area in the Middle East. In July 1909, C. M. Marling, chargé d'affaires at the Legation in Tehran was anxious stating that in the oilfield, to avoid confusion, delay and waste of money, a competent and sufficiently numerous European staff is most necessary at the present moment, when the actual and expected developments of the oil field appear likely to involve negotiations for a refinery, telephones, pipelines, etc.[90] Preec replayed to this matter that it is under consideration.[91] Official regarded oil striking in Persia as a great aggregation of British interests.[92] The presence of a British Oil Company was perceived by Thus Lorimer, a British official as a contributing toward

[84] BP 77/49/5 (1), Reynolds to CSL, Bradshaw to CSL, 3 February 1908, quoted by Ferrier.
[85] BP 77/49/5 (1), Reynolds to CSL, 18 January 1908, quoted by Ferrier.
[86] Ibid., Reynolds to CSL, 26 February 1908.
[87] Lockhart, « Record », Op. cit. p. 99.
[88] BP 77/49/5 (1), Reynolds to CSL, 26 May 1908, quoted by Ferrier.
[89] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 88.
[90] PRO FO 416/32 no. 240, FO to Preec, 30 July 1908, quoted by Ferrier.
[91] BP H14/43, Preec to FO, 2 August 1908, quoted by Ferrier.
[92] BP H14/43, Lorimer to Marling, 28 July 1908, enclosure in Mallet to D'Arcy, 12 September 1908, quoted by Ferrier.

tribal stability, improvement of the transportation system, trade expansion, and security strengthening.[93]

B. Action after the discovery of oil June-November 1908

D'Arcy was glad after discovering the oil. Burmah directors wanted more wells in the area. Sadigh al-Saltana became the Imperial Commissioner as the successor of Vincent Kitabgi. Persian officials wanted more Iranian to be employed in the regions. Sadegh al-Saltanah communicated with Preec on August 19, 1908. He had been informed of the discovery of oil on June 24. And he wanted to know more information about the next steps of oil exploitation and concession work. To be able to meet his obligations toward his government.[94]

D'Arcy met the commissioner in mid-September and satisfied him with the agreement with Burmah and the progress of operations in Persia. By the start of November third well had came in operation. Sadigh al-Saltana was asking to know the date of the formation of the Company.[95] While the Imperial Commissioner and D'Arcy were both worried that the formation of the Company should not be delayed. Sadigh al-Saltana suggesting that the Imperial Government has naturally been hoping to have derived some benefits from The Concession. By the insistence of C.W. Wallace D'Arcy wrote to Charles Greenway requesting a meeting about the oil business.[96]

Greenway had been involved in the negotiations between Burmah and Shell over the Indian oil Market in 1905-1906. So he had a practical knowledge of petroleum affairs.[97] At the end of September by Greenway's suggestion, D'Arcy wrote to Hamilton informing him of the need to form the company, even though Hamilton's reply was unsatisfactory. Wallace was pressing Burmah directors, to make a decision. In the Burmah Board Meeting on 28 October, it was said that 'oil had been found in sufficient quantity to justify the formation of the big Company'.[98] On 9 November D'Arcy met Wallace and Hamilton and they discussed the basis of forming a company.[99]

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[93] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 90.
[94] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 93.
[95] BP H12/82, Sadigh al-Saltana to Preec, 4 November 1908, quoted by Ferrier.
[96] BP H14/43, D'Arcy to Greenway, 2 September 1908, quoted by Ferrier.
[97] Ferrier, *The History of the British Petroleum Company*, Op. cit. p. 94-95.
[98] BP 77/49/18, BOC Board Minutes, 28 October 1908, quoted by Ferrier.
[99] BP H16/89, D'Arcy to Preec, 8 November 1908, quoted by Ferrier.

Wallace played an important role in the formation of the Anglo-Persian Oil Company. He was talented in negotiation and business. Also, Greenway represented loyalty for the formation of the Company.[100]

Reynolds had been asked to return to Persia. D'Arcy supported Reynolds and considered him a worthy person. 'that he is a man who will never by a stupid action imperil The Concession'.[101] Hamilton was not convinced and was misjudging Reynolds.[102] Reynolds left in November. His mission at Masjid-i Suleiman was to put down as many wells as possible to define the field for appealing potential investors.[103]

C. Negotiations between D'Arcy and Burmah.

In November the interests of the Persian Government were under discussion. They wanted a company being formed and limited to protecting the Imperial Government in obtaining 16 percent of the profits.[104] There were two important concessionary matters to be addressed. First to see if there was any objection to the proposed Company to acquire and operate the Concession and second was the applicability of royalty provision to the involvement of more than one company in concessionary activities. The legal advisor argued that the proposed company could take over all D'Arcy rights and liabilities and would be directly responsible for the royalty's profits.[105]

It was proposed that the new Company would have a capital of £3,000,000 of which £2,000,000 was in ordinary shares and the remainder in preference shares.[106] Wallace argued that a large share capital would be required 'the share capital of the working company must be at least £4,000,000'.[107]

This was agreed upon by Wallace's suggestion that D'Arcy sells all his interests in the Persian Concession and rights in Turkey in return for 170,000 Burmah ordinary shares. In this way, all the investment in the ordinary share capital of the new company could be done by the Burmah Board.[108]

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[100] Ferrier, *The History of the British Petroleum Company,* Op. cit. p. 95.
[101] Lockhart, « Record », Op. cit. p. 105-106.
[102] BP H14/43, Hamilton to D'Arcy, 1 October 1908, quoted by Ferrier.
[103] BP 77/49/12 (1), Secretaries to Reynolds, 19 November 1908, quoted by Ferrier.
[104] Ferrier, *The History of the British Petroleum Company,* Op. cit. p. 99.
[105] Lockhart, « Record », Op. cit. p. 117. Opinion of Robert Younger KC, 8 February 1909.
[106] Lockhart, « Record », Op. cit. p. 115.
[107] BP H12/112, Wallace minute, 25 January 1909, quoted by Ferrier.
[108] Ferrier, *The History of the British Petroleum Company,* Op. cit. p. 101.

D. The Agreement

For these new arrangements, D'Arcy had to satisfy his associates that their interests had been safeguarded.[109] On March 9 D'Arcy informed Adamson that he would accept the new agreement. They needed the approval of Vincent Kitabgi and Cotte. Kitabgi arrived in London on March 17. From D'Arcy's allocation, he was given 11,000 Burmah shares, and he signed his agreement on March 23. D'Arcy himself also signed on that day. Cotte had signed on March 21.[110]

E. The Issue 'A great success'

Based on the agreement the date of the formation of the Company would be on April 14. By the recommendation of Strathcona, S. M. Penney and McGeorge in Scotland and J. and A. Scrimgeour in London were chosen as brokers. The first office was in Winchester House, Old Broad Street.[111]

On March Admiralty objected to the prospectus.[112] The satisfaction of Admiralty was needed as it would be the principal customer of fuel oil for naval vessels.[113] Based on Redwood foreseen what was beneficial for Admiralty in the prospectus was that the Company will have the possession of productive oil-fields that would bring a low-cost fuel oil which would be a benefit for the British Navy.[114]

The incorporation of the Anglo-Persian Oil Company was done on April 14, 1909 with a Capital of £2,000,000. After shell, £3.5 million, and Burmah £2.5 million it was the third-largest British oil company. The directors were Lord Strathcona, chairman, C.W. Wallace, vice-chairman, Sir Hugh Barnes, John T. Cargill, W.K. D'Arcy, William Garson, C. Greenway, James Hamilton and HSH Prince Francis of Teck.[115]

600,000 cumulative 6 percent participatory preference share of £1 nominal value at par were issued on April 19 with the issue of further 600,000 5 percent first debenture stock at par on that day.[116]

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[109] Ferrier, *The History of the British Petroleum Company,* Op. cit. p. 102.
[110] Ferrier, *The History of the British Petroleum Company,* Op. cit. p. 103.
[111] Ferrier, *The History of the British Petroleum Company,* Op. cit. p. 104.
[112] BP H12/112, Wallace to Cargill, 29 March 1909, quoted by Ferrier.
[113] Ferrier, *The History of the British Petroleum Company,* Op. cit. p. 106.
[114] BP H12/112, Wallace to Adamson, 6 February 1909, quoted by Ferrier.
[115] Ferrier, *The History of the British Petroleum Company,* Op. cit. p. 107.
[116] Ferrier, *The History of the British Petroleum Company,* Op. cit. p. 107.

The public response to the issue was enthusiastic.[117] Cargill reported to the board, that this issue had been a great success.[118]

IV. Early history 1909 - 1924

It was 210 kilometres between the Field of Naphtha and the Persian Gulf, where Anglo-Persian planned to build a refinery complex to turn the flow of thick crude oil into a usable product. It had taken months to get adequate exploration equipment to the site. Then a pipeline would have to be built across the winding, mountainous route.[119]

For the construction of pipeline, their segments were imported from the United States, the workers used the barge to take them as far as possible to upriver, and then mules dragged for the rest of the way, sometimes they have faced rugged roads like steep valleys and laborers took them to their place. After a long period of two years which consisted a hard-working task the pipeline was completed on April 1911. It was 145-mile pipeline which was between a pumping station at Tembi to the Banks of Bahmanshir at Abadan. At the same time the refinery was under construction even if sometimes its work have faced delays. A Diverse workforce such as : fitters, riveters, masons, and clerks from India, carpenters from China, and semi-skilled workers from the surrounding Arab countries have participated in the creation of Abadan refinery. The first shipment of crude oil from the Abadan refinery was exported to the Royal Dutch Shell in April 1912.[120]

In 1914 the financial situation of The Company became worse, even it was producing plenty of oil but still they had not a secure market to sell it. At that time more established oil producers such as Standard Oil of India had been in the industrial oil markets of western countries for more than 25 years. Another reason was because of the chemical features of Persian oil that its sulphurous stench could not be removed, if so, it could be sold as kerosene which was one of the main outlets for oil and was using mostly for home heating.[121]

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[117] Ferrier, *The History of the British Petroleum Company,* Op. cit. p. 110.
[118] BP 77/49/18, BOC Board Minutes, 23 April 1909, quoted by Ferrier.
[119] *Our history,* online, visited on July 14, 2020, https://www.bp.com/en/global/corporate/who-we-are/our-history.html
[120] *Our history,* online, visited on July 14, 2020, https://www.bp.com/en/global/corporate/who-we-are/our-history.html
[121] *Our history,* online, visited on July 14, 2020, https://www.bp.com/en/global/corporate/who-we-are/our-history.html

In England Winston Churchill as The First Lord of the Admiralty pursued the renovation of the British navy with oil-powered vessels. There were more advantages for oil fuel rather than coal. For the same amount of power less oil was necessary and the space needed for oil was much lesser than for coal. The workplace would be cleaner and fewer workers could do refuelling more quickly, especially at sea.[122] Churchill argued oil fuel in parliament, urging his colleagues to 'look out upon the wide expanse of the oil regions of the world!' Only the British-owned Anglo-Persian Oil Company, he said, could protect British interests.[123]

In order to oil fuel, the government tried to adopt a policy like past practices for using coal, for this goal a royal commission was set up to examine the possibilities of oil as fuel. Oil fired marine and railway engines were under technical investigation and they were considering the associated problems of quality, supply, and storage of oil by sending an Admiralty commission to examine sources of oil supply in Persia. As a result, in May 1914, the British government bought 51 percent share in the Anglo-Persian Oil Company, and a monopoly concession in central and southern Persia became under the control of a purely British Company.[124]

From 1912 onward The Company was under the pressure of lacking a secure market in oil commercial competition while its main rival Royal Dutch Shell had a more established place in the oil markets. To this end, the Anglo-Persian Oil Company itself persuaded the government to take such a radical decision. Therefore supplying oil fuel for both the Royal Navy and the Indian railway would be in the contract with the government and could ask for financial assistance from the Admiralty and India Office to develop its production.[125]

V. Between The Two World Wars

During the First World War, the British government had a priority to maintain the oil flow from Iran which was Important for the Royal Navy. Therefore, to protect British oil interests, a military force called the South Persian Rifle was created which was under the direction of Sir Percy Sykes

[122] Jack Marian. « The Purchase of the British Government's Shares in the British Petroleum Company 1912-1914 », *Past & Present*, no. 39, 1968, p. 139–168.
[123] *Our history*, online, visited on July 14, 2020, https://www.bp.com/en/global/corporate/who-we-are/our-history.html
[124] Jack Marian, « The Purchase of the British Government's Shares in the British Petroleum Company 1912-1914 », *Past & Present*, no. 39, 1968, p. 139–168.
[125] Jack Marian, « The Purchase of the British Government's Shares in the British Petroleum Company 1912-1914 », *Past & Present*, no. 39, 1968, p. 139–168.

and the Iranian government officially recognized it in 1917. In 1919 the revision of the Anglo-Persian Agreement which was designed to make Iran a British protectorate led to the further complication of the relations between the Iranian government and the APOC. The responsibility to negotiate with the Iranian government was for a British Treasury official, Sydney Armitage Smith. In late 1920, an interpretation of the D'Arcy Concession to which APOC had agreed was proposed to the Iranian government by Armitage Smith with this proposal, the company offered to pay £1,000,000 in settlement of Iran's right up to the end of March 1919. Iran considered interpretation to be unfavourable to its interest but accepted the waiver and the payment. Iran claimed that its 16% royalty right under the D'Arcy Concession would be adversely affected by the proposed interpretation and the Iranian Prime Minister did not submit it to the Majlis. The APOC, however, continued to operate and expand its activities as if the Armitage-Smith Agreement were legally enforceable. In a historic meeting in January 1921, the Majlis repudiated of the 1919 Anglo-Persian Agreement, but it did not affect the company's operations.[126]

Reza Khan became Iran's prime minister two years after the 1921 Persian coup d'état, led by Zia al-Din Tabatabaee, and then in 1925, he was named as the King of Persia. By his first action, he improved the power of the central government and sought to restore the internal stability of the Country. His intention for a full authority of central government in southern Iran opposed APOC interests. The government and the Company started a new phase of negotiation which led to a growing need for a radical revision of concession terms. On the other hand, the profits of APOC in Iran was reduced because of the crash of 1929. The Iranian government canceled the D'Arcy Concession arguing that it conflicted with the country's interests and formally informed The Company of this decision. The British government objected to this unilateral cancellation and brought the dispute before the Permanent Court of International Justice at the Hague. The Iranian government argued the matter is essentially internal and in a long note dismissed the competence of the court.[127]

In London, Abdol-Hossein Teymurtash as the first Minister of the court during the Pahlavi dynasty spoke with Sir John Cadman as the APOC's chairman informing him of several new terms which the Iranian government had asked to grant APOC a new 60-year concession. That would be a

[126] Kazemi F., « Anglo-Persian Oil Company », *Encyclopaedia Iranica,* II/1, p. 61-65, visitd on July 15, 2020, http://www.iranicaonline.org/articles/anglo-persian-oil-company
[127] Elwell-Sutton, L. P. *Persian Oil: A Study in Power Politics,* 1955, repr. Westport, Conn., 1976, p. 67-82

reduction in the area of the concession, a complete cancellation of the exclusive right of transportation, APOC would give the Iranian government a substantial block of the shares, and register itself in Tehran as well as London, and to become exempt from tax by both governments.[128]

the negotiation continued in Lausanne. In August 1928 Teymurtash said of the intention of the Persian government that would like to have 25% of the Anglo-Persian Oil Company's total shares. 'If this had been a new concession, the Persian Government would have insisted not on 25% but a 50-50 basis', he said.[129] A minimum guaranteed interest of 12.5% on dividends out of the shares Plus 2s for per tonne of produced oil were also demanded he also stated that APOC should give up 50 to 60% of the existing area at the time of the ratification of the new concession, and in three years 60% of the remaining area should be reduced. Cadman assessed Teymurtash's demands unreasonable that he would examine them with the British government as his company's major shareholder.[130]

After his return to Tehran, Teymurtash managed the actions of the Persian government to get a position for further talks with the British. He asked the Shah, Prime Minister, and press to criticize D'Arcy Concession. At the time of the inauguration of the newly constructed road to the southwest and for visiting oilfields and APOC's installation he prepared a visit by the Shah, all Cabinet Ministers, along with the Majles deputies accompanied by hundreds of other civil servants, high ranking military officials and journalists. He wanted to demonstrate that Iran is in absolute control over the southwest where the APOC's operations and installations had been centered. In Ahwaz, the capital of the southwest province of Khuzestan, the shah showed his anger towards APOC and the concession by refusing to make a visit to the installations and by sending the following message to Cadman in London:

'The authorities of the company must know that neither the Iranian government nor the Iranian people agree with the D'Arcy concession. … Now, I explicitly notify the authorities of the company that they must rectify the matter and if they do not give it due attention, they will be responsible

[128] Malek Mohammad, « Oil in Iran between the Two World Wars », in Martin Vanessa (ed.), *Anglo-Iranian Relations since 1800*, 1st Edition, London, Routledge, 2005.
[129] BP H16/20, A record of the discussion held at Lausanne, quoted by Malek.
[130] Malek Mohammad, « Oil in Iran between the Two World Wars », in Martin Vanessa (ed.), *Anglo-Iranian Relations since 1800*, 1st Edition, London, Routledge, 2005.

for any action which might result. No more can Iran tolerate the enormous profits from its oil going into pockets of foreigners while at the same time being dispossessed of its oil wealth'.[131]

The British Cabinet had a meeting on November 20, 1928, where they agreed with 20% of shares for Iran. Cadman was present on that day and he was given the following principles as the basis for any further talks with Teymurtash :[132]

- Under a new prolonged concession, an extension of the contract between APOC and the British Admiralty should be guaranteed.
- The controlling position of the British government in the shares should be maintained.
- Shares to the Iranian government should be inalienable.

On 18 February 1925 Cadman arrived in Tehran. He specified British proposal to Teymurtash that APOC would agree only with 20% of the shares and they would not guarantee the interest on the shares being exempted from taxation in London. In this situation stated that in a new 60-year concession, both Iran and APOC should have the right to cancel the concession at the expiry date of the D'Arcy concession. Cadman left Tehran without agreement.[133]

In Iran, the inflation rate had risen to nearly 45% and the Shah wanted further money to continue his railway construction and renovation of the Army. In this situation when Tehran was under financial pressure APOC requested a new longer concession in return for a royalty of 4s per ton plus 10% of the net profits. Teymurtash was irreconcilable and he was opposing the idea of a new longer concession. 'The D'Arcy concession is a law … it is a sacred document … [It] resembles an old and sick father who cannot be got rid of. We have to wait until he dies', he said to Jacks.[134]

Finding the real amount that would cover all the claims relating to the royalties and tax in the past was the main concern for both sides. On these talks, Cadman writes that Teymurtash gave him 'a piece of paper showing that, according to his calculation, the amount due to the Persian Government was 3.250.000 pounds, from which he made a deduction of three-quarters of a million, putting in the bill at 2.5 million'. But Cadman was willing to pay only a 'round sum of 500.000

[131] Fateh Mostafa, *Fifty years of Iranian oil*, Tehran, Elm, 2006.
[132] Fateh Mostafa, *Fifty years of Iranian oil*, Tehran, Elm, 2006.
[133] BP H16/21, Teymurtash's draft of March 30, 1929, quoted by Malek.
[134] BP H10/174B, Report of the meeting held in Sa'd-Abad on August 30, 1931, quoted by Malek.

pounds to cover everything, tax included'.[135] He finally offered one million pounds. As he stated, APOC was agreed to pay 20% i.e. 16% as royalties plus 4% as tax for the financial year 1931 and thereafter. Teymurtash accepted and the Iranian Cabinet approved.[136]

On 29 May 1932, The draft of the agreement was prepared in Tehran. Cadman's estimation of the royalties for the year 1931 (306.872 pounds, made on 2 June 1932) was the reason which made the Shah to not sign it.[137] The royalties for 1931 were extremely unfavorable compared with 1.437.000 pounds and 1.288.312 pounds for the years 1929 and 1930 respectively. Tehran officially refused to accept its royalties. Press attacked APOC and the D'Arcy concession. Teymurtash asked APOC to increase the royalties and prepared himself to 'offer to overcome the year 1929 differences'. APOC responded that it could not see any other possible arrangement except what had been 'provided in the draft Agreement'.[138]

From August 18, 1932, The Minister of Finance became in charge of all talks with APOC which was before done by the minister of court. The Shah was wanting his government 'at all cost to force the company to reopen negotiations for a complete revision'. Then Shah cancelled the D'Arcy Concession on November 24, 1932. Iran argued its national wealth was being neglected and The Concession was originally granted by a non-constitutional government.[139]

On February 3rd, 1933, in the Security Council of the League, the Rapporteur Edvard Benes, Foreign Secretary of Czechoslovakia proposed that both Iran and APOC to negotiate a new concession, which was accepted by both parties. In April 1933 talks started in Tehran. One week passed but Taqizadeh put nothing on the table. Cadman met the Shah on April 11, while the Shah had no willing to go back to the League. Under the Shah's pressure, Taqizadeh deployed his demands a summary of which is as follows:[140]

- The area should be reduced to 15% of the area of the D'Arcy concession.
- The exclusive right of transportation should be completely canceled.
- APOC should give 20% of its total shares, free of charge, to the Iranian government.

[135] BP H10/175, Cadman to Jacks, 17 February 1932, quoted by Malek.
[136] BP H10/175, Cadman to Teymurtash, 11 January 1932, and Teymurtash to Feiz, 17 January 1932, quoted by Malek.
[137] BP H10/176, Cadman to Jacks (telegraph), 2 June 1932, quoted by Malek.
[138] BP H10/176, Jacks to Cadman, 17 July 1932 and 19 July 1932, quoted by Malek.
[139] Shwadran B., *The Middle East, Oil and the Great Powers,* 3rd ed., New York, 1973, p. 14-16.
[140] Malek Mohammad, « Oil in Iran between the Two World Wars », in Martin Vanessa, *Anglo-Iranian Relations since 1800,* 1st Edition, London, Routledge, 2005.

- A royalty of 4s (gold) per ton of the oil produced should be paid to Iran.
- Iran should enjoy the right of veto on the board.
- APOC should attempt to minimize the number of its non-Iranian employees.
- The new concession would not be longer than the rest of the D'Arcy concession (28 years).[141]

The negotiations between the Shah and Cadman continued in the palace. The Shah did not want to withdraw the cancellation announcement, and the only solution for not facing confrontation was to reach to a new concession which he wanted from APOC's officials. On April 24th and 26th, 1933, The palace hosted two meetings and he Shah granted a new 60-year concession in return for:[142]

- A minimum guaranteed payment (of 750.000 pounds annually) plus a royalty of 4s (gold) per ton of oil produced.
- 4% as tax to Iran (with a minimum guaranteed tax of 230.000 pounds annually).
- Iran's representation on the board.
- Payment of one million pounds (by APOC) as settlement of all past claims.
- Investment by APOC on Iranians so that this would minimize dependency on skilled foreign employees.
- Reduction of the area to 100.000 square miles.
- Full cancellation of the exclusive right of transportation of oil.
- 20% of the share to Iran.
- Cheaper oil for Iranians.[143]

In 1933, Majlis ratified the new 60-years concession. by this arrangement APOC reduced the area under his control to 100,000 square miles, instead of Iranian income tax it gave annual payment and guaranteed an additional minimum payment of £750,000 to the Iranian government.[144]

In 1935, The Company was renamed to Anglo-Iranian Oil Company (AIOC) following the order of Reza Shah to call the country Iran rather than Persia. In 1927, the Naft-e Šāh oil field was discovered in the western region of Kermanshah and The Company built a refinery in that area and 1934 registered the Kermanshah Petroleum Company in London as the new subsidiary. In these years the oil production of AIOC has expanded significantly. In 1933, the company produced 7,087,000 tons of oil and paid Iran £1,785,000. By 1939 AIOC oil production had increased to 11,327,000 tons, and payment to Iran to £4,300.000. In the following years, four large oil fields

[141] BP 96659, Cadman's diaries, dated April 19, April 22 and April 23, 1933, quoted by Malek.
[142] Malek Mohammad, « Oil in Iran between the Two World Wars », in Martin Vanessa, *Anglo-Iranian Relations since 1800,* 1st Edition, London, Routledge, 2005.
[143] BP 96659, Cadman's diary on both the meetings, quoted by Malek.
[144] Shwadran B., *The Middle East, Oil and the Great Powers,* 3rd ed., New York, 1973, p. 14-16.

and one gas field discovered by The Company. The storage capacity of the Abadan refinery was increased to 6,000,000 barrels by l938 and to 10,000,000 tons in 1939.[145]

In the following years, two more controversies have risen between the AIOC and the Iranian government. First the Iranian wanted the metric ton of 2,014 pounds to be used for calculating royalties while The Company was applying the British ton of 2,240 pounds. Second, the Iranian wanted to increase their employees against the number of foreign employees. even though a general plan was worked out in 1936, but still many Iranian and officials of government complaining that the AIOC was not doing enough to increase its Iranian staff, particularly at the higher levels.[146]

Due to World War II Iran profits decreased bcause of decline in oil production of The Company. In 1940 the AIOC agreed to a minimum annual payment of £4,000,000 for two years and an indemnity of £1,500,000 for 1938-39. Britain entered World War II during the autumn of 1939. After the occupation of Iran by Allied, Reza Shah abdicated the the power. To maintain the flow of oil during the war the British troops occupied southern Iran.[147] The Company had a significant role to support allied troops during the war as much as they could do. The BP heritage company Castrol supplied oils and lubrication equipment for all three British armed services. The British Air Force became a consumer of AIOC, which had recently found a way to improve aviation fuel efficiency. The Company received damages from the war, during the conflict 44 of its tankers were sunk in the open sea, 657 crew were killed, with 260 others were taken prisoner of war.[148]

VI. Nationalization of The Iranian Oil Industry

After the end of the war, foreign troops left Iran. The following years Iranians employees were claiming for better work and living conditions. In May 1945, several thousand Iranian employees of the AIOC gathered and wanted better working conditions, housing benefits, and higher wages. The British government responded by conducting a series of official missions to study existing conditions and proposing appropriate recommendations. In 1946 The Company's operations were halted by several violent strikes. By providing more accommodation and offering them additional

[145] Kazemi F., « ANGLO-PERSIAN OIL COMPANY », Encyclopaedia Iranica, II/1, p. 61-65, visitd on July 15, 2020, http://www.iranicaonline.org/articles/anglo-persian-oil-company
[146] Elwell-Sutton, L. P., *Persian Oil: A Study in Power Politics,* 1955, repr. Westport, Conn., 1976, p. 88-102
[147] Kazemi F., « ANGLO-PERSIAN OIL COMPANY », *Encyclopaedia Iranica*, II/1, p. 61-65, visitd on July 15, 2020, http://www.iranicaonline.org/articles/anglo-persian-oil-company
[148] Our history, online, visited on July 14, 2020, https://www.bp.com/en/global/corporate/who-we-are/our-history.html

payments, company officials and the Iranian government responded to the worker's demands. The Iranian government also wanted some adjustments in the 1933 agreement that AIOC should increase the Iranian technical and managerial staff and provide a more equitable distribution of profits. In 1947, Majlis was supporting the government and asking it to take appropriate measures to restore Iranian rights in the southern oil fields. On 17 July 1949, the Gass-Golshaʾyan agreement was concluded. It was increased Iran's royalty from four to six shillings per ton and made other adjustments more favourable than the terms of the 1933 concession.[149]

The fifteenth session of the Majlis was in charge of reviewing the Gass-Golshaʾyan agreement which its approval was delayed by the opposition. Then the sixteenth period of parliament got the task, the new Prime Minister, General ʿAli Razmara, reintroduced the agreement to the newly elected Majlis in 1950, where many candidates, especially the National Front nominees led by Dr. Moḥammad Moṣaddeq were against this new oil concession.[150]

While Razmara was forcing the AIOC to make a more favourable proposal, the news of the Arabian-American Oil Company's (Aramco) fifty-fifty profit-sharing agreement with Saudi Arabia made Iranian opposition to criticize AIOC arrangements. The Company was ready for new negotiation but the Majlis and but this was not communicated to the Majlis or the public at the time. Meanwhile, Mosaddeq who was the leader of opposition proceeded to draw up a bill to nationalize the oil industry, which was supported by public demonstrations in Tehran and many other urban centres. On March 7, 1951, Razmara was assassinated and within several days a bill was passed to the parliament to nationalize the oil industry. This news was followed by anti-British demonstrations in Tehran and strikes in the southern oil fields. Then, Hosein Ala was assigned to form the cabinet in which the situation was hard and his government felt down. On April 28, 1951, Mohammad Mosaddeq became The Prime Minister, very soon a nine-point law on the dispossession of the AIOC was passed to the parliament. In June 1951, the National Iranian Oil Company was created and its management established itself in Korramshahr by turning out the management of the Anglo-Iranian.[151]

[149] Kazemi F., « Anglo-Persian Oil Company », *Encyclopaedia Iranica*, II/1, p. 61-65, visitd on July 15, 2020, http://www.iranicaonline.org/articles/anglo-persian-oil-company
[150] Makki Ḥ., *Black Book. Anglo-Iranian Oil Company*, Tehran, 1981, vol. 3, part 1, p. 9-33.
[151] Makki Ḥ., *Black Book. Anglo-Iranian Oil Company*, Tehran, 1981, vol. 3, part 1, p. 217-39.

From 1909 the time of its formation until 1951, for forty-two years, the formerly Anglo-Persian, and then as Anglo-Iranian Oil Company was working on oil extraction in Iran. From 1912 until 1951, during the thirty-nine of its management, it was the most important oil producer, refiner, and exporter in the Persian Gulf area. The oil exportation from Iran had reached a total number of 338 million tons, for which The Company paid Iran £118,000,000 representing an average of about 7 shillings per ton. During this period total investment in Iran reached £21,656,252 of which £5,000,000 was provided by the British government. In return for this investment, the company's stockholders received £115,000,000 in dividends, of which £49,000,000 went to the British government apart from the sum of £175,000,000 which was paid to it as tax.[152]

Over the next months, a dispute risen between London and Tehran. In May 1951, the British argued that the Iranian nationalization law was illegal, and the provisions of the 1933 concession they formally referred the issue to the International Court of Justice. The British delegation in Tehran started negotiation for a new agreement which was ended without a result. To restrain the Iranian government from implementing its nationalization plans any further the British requested an interim measure of protection from the International Court of Justice which was approved on 5 July 1951. Iran dismissed the court's competence in the matter and notified the secretary-general of the United Nations that it had already abrogated the compulsory jurisdiction of the court as permitted under the provisions of its 19 September 1932 declaration. In August 1952, to end the dispute the British sent a high-level commission headed by the Lord Privy Seal, Richard Stokes, to Tehran. In this negotiation, they proposed an eight-point formula recognizing the principle of oil nationalization while retaining British control through the establishment of a British-run Purchasing Organization with rights to obtain large quantities of oil from southern Iran for the next twenty-five years which this proposal was rejected by the Iranian cabinet. Meanwhile, the United States government was participating in the conflict by providing some assistance to Iran as part of President Truman's Point Four aid program.[153]

The Iranian has ordered expelling AIOC employees which the British government claimed that is a vialoation of the International Court's interim measure of July 5, 1951. The British brought the matter to The United Nations Security Council on September 28, 1951. In the debat of Security

[152] Kazemi F., « Anglo-Persian Oil Company », *Encyclopaedia Iranica*, II/1, p. 61-65, visitd on July 15, 2020, http://www.iranicaonline.org/articles/anglo-persian-oil-company
[153] Ruḥani F., *History of nationalization of Iran's oil industry*, Tehran, 1973, p. 145-78

The Iranian has ordered expelling AIOC employees which the British government claimed a violation of the International Court's interim measure of July 5, 1951. The British brought the matter to The United Nations Security Council on September 28, 1951. In the debate of the Security Council on New York, Prime Minister Mosaddeq as the head of the Iranian delegation argued that the dispute was within the domestic jurisdiction of Iran involving the Iranian government and the AIOC as a private company and the Council suspended without a decision. On 9 June 1952, the International Court of Justice formally started its hearings based on its jurisdiction in the dispute. The 1933 agreement between Iran and the AIOC and Iran's 1932 declaration on the court's jurisdiction was the bases for the adversary's arguments. On 22 July 1952, the court reached a final decision by stating the lack of jurisdiction and indicated that its interim protection measures of the previous year were inoperative. In effect, the court accepted that the dispute was not between two governments and as the Iranian have argued it was between the Iranian government and a foreign company and it would subject to Iranian National Law.[154]

After the final decision of the court, by participating the United States in the dispute and the British Prime Minister Churchill and the American President Truman offered a proposal to Mosaddeq. It was a solution to resume oil operations in Iran and they wanted Iran to accept the International Court of Justice to decide on the issue of compensation for oil nationalization. In return, the British government would halt its sanctions on Iran and the United States would give a grant of $10,000,000 to Iran. But they received a negative response from the Iranian government which they wanted to determine compensation with different methods and requested AIOC to pay a royalty for the period immediately preceding nationalization. Therefore the Iranian accepted the decision of the International Court about the compensation, but the British government did not accept the rest of Iran's proposal. This situation worsened the relations between the two countries and they disconnected their diplomatic ties in October 1952. Meanwhile, the United States has unsuccessful attempts to achieve a solution. The Iranian started to produce and export oil independently, and they faced overseas threats and blockade measures by the British government. The circumstances became hard for Mosaddeq and by the coup d'état of 19 August 1953 his cabinet felt down.[155]

[154] Elwell-Sutton L. P., *Persian Oil,* p. 265-69. Ford A., *The Anglo-Iranian Oil Dispute of 1951-1952,* Berkeley, 1954, p. 51-124

[155] Ruḥani F., *History of nationalization of Iran's oil industry*, Tehran, 1973, p. 296-311.

In December 1953, the diplomatic relations between Iran and British were resumed and the flow of Iranian oil to the international market was restored by the management of an international consortium. With the final arrangements, a 25-year international Oil Consortium was incorporated in 1954 which forty-percent shares of Iranian oil were granted to the British Petroleum Company along with American and French oil companies, this agreement was to expire in 1979.[156] And on the issue of compensation of Iranian oil nationalization for the AIOC, other consortium companies agreed to pay one part of it for their shares and the rest would be a direct payment of about £25,000,000 from the Iranian government. In October 1954, the Majlis ratified the consortium agreement and oil production and exportation works got back to their normal flow. On 3 November 1955, the AIOC has officially renamed the British Petroleum Company (BP), one of the antecedents of the modern BP public limited company.[157]

[156] « Iran Tells Oil Consortium Pact Will Not Be Renewed – Companies Dispute Legal Right of Shah to End Contract in 1979 Nationalized in 1951 », *New York Times*, January 24, 1973. p. 51.
[157] Elwell-Sutton, *Persian Oil*, p. 314-28. Shwadran B., *The Middle East, Oil and the Great Powers*, 3rd ed., New York, 1973, p. 127-49.

Chapter 2

The City of Abadan

Le résumé

Dans ce chapitre, le chercheur aborde la ville d'Abadan en résumant l'histoire de la ville depuis sa situation avant de la découverte de pétrole jusqu'à la sélection de cette île du sud-ouest de l'Iran pour la création de la raffinerie d'Abadan et de la ville d'entreprise qui l'entoure. L'auteur étudie les principales idées d'urbanisme telles que la ville de l'entreprise au début du XXe siècle qui étaient pratiquées par des directeurs industriels dans des pays occidentaux tels que les États-Unis, le Royaume-Uni et la France. Il mentionne l'architecte officiel de la société qui était en charge de la majeure partie de l'urbanisme de la ville d'Abadan comme l'une des premières villes modernes d'Iran. Les caractéristiques des villes entreprises et des bâtiments importants qui ont été aménagés à Abadan seront décrites.

Dans une autre partie, la morphologie de la ville d'Abadan liée au tissu urbain serait examinée par les critères suivants: importance démographique, forme des tissu urbain, différents indices de densité, équipement de base, service, loisirs, types de logement, modèles d'occupation des maisons, nombre de pièces par ménage, classification de la population par catégories socioprofessionnelles, scolarité, origine de la population et taille du ménage.

En utilisant cette série de critères morphologiques, nous remarquons que la ville d'Abadan était divisée en plusieurs zones urbaines dans lesquelles elles étaient séparées les unes des autres. À cet égard, nous mentionnons deux grandes catégories de quartiers de la ville, l'une les villes « formelles » qui ont été conçues, construites et gérées par la société comme Braim et Bawarda, et la seconde, les villes « informelles » qui était formé spontanément par les ouvriers tels que bidonville.

I. The City of Abadan

From the 1910s until 1951 The City of Abadan was constructed by the Anglo-Iranian Oil Company it was dispersed around the Abadan oil refinery which was at the end of a pipeline coming from Masjid-i Suleiman where the oil wells situated. In the extended industrial zone of the refinery which has tank farms, distillation units, and cracking plants, the crude oil would pass through plants for all stages of refining, and then it was pumped onto the tankers and exported to the customer around the world. The refinery was 'raison d'être' of the city of Abadan. In the late 1940s, AIOC as the most significant single overseas investment of Britain was operating the largest refinery in the world.[1]

The city of Abadan and its refinery was located on an island formed by emerged alluvial material in the twelfth-thirteenth centuries in southwestern Iran and near the Persian Gulf. The island is surrounded by the Karoon river, the Bahmanshir river from the north, and Arvand; formed of the meeting of the Tigris, Euphrates, and Karoon from the south. Until the twentieth century, the island was occupied by a little group of rural people and was covered with scattered palm trees. Its ground was unsuitable for agriculture because of strong salinity.[2]

The island of Abadan had some characteristics which made it a suitable location for the construction of a refinery. The proximity to the port of Moḥam-merah (today Khorramshahr) and the possibility of transport up the Karun river to Ahvaz (the capital of Khuzestan province and is halfway to the oil fields of Masjid-i Suleiman). Also, in the southern part, the Shaṭṭ-al-Arab was wide enough for the passage of ships of 20,000 tons capacity. The ground of the island was solid and had more space for the construction of buildings without elaborate foundation work. Besides, the site was safe from inundation even by the highest tides. At the time Shaikh Kazʿal of Moḥammerah was the owner of the island and The Anglo-Persian Oil Company paid him for every square meter of land that they used.[3]

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[1] Bamberg J.H., *The History of the British Petroleum Company, Volume 2, The Anglo-Iranian Years, 1928–1954,* Cambridge: Cambridge University Press, 1994, p. 384.
[2] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[3] de Planhol X., « Abadan ii. Modern Abadan », *Encyclopaedia Iranica,* I/1, pp. 53-57, visited on July 28, 2020 http://www.iranicaonline.org/articles/abadan-02-modern

In 1910, the construction of the refinery begun and it has started to work in 1912. By the expantion of refinery more workers and staff were employed by APOC the city's dominant enterprise and the population of Abadan increased significantly. In 1943 its population was about 100,000 inhabitants for 25,000 people employed in the refinery. In 1948 the number of employees reached its maximum of 39,000. In 1952 the population was 143,000 with 31,000 direct job.[4]

From the beginning, the City of Abadan was formed in two segregated spaces which made a dual city. The company towns designed and constructed by The Company and was under its maintenance and management and the other part which was formed organically by migrants, workers, and dwellers attracted to the new city without the company's desires, we could categorize this partis in the 'formal' and the 'informal' cities. The company towns of the 'formal' were subdivided into strictly hierarchic and segregated spaces contrary to the 'informal' city which was a mixture of styles, cultures, and social groups. Over time, the characteristic of the whole city was formed by this contradiction within and between these spaces, between the formal and informal spaces, the legal and subversive, the ordered and disciplined and the chaotic and lively, rich and poor, modern and hybrid, controlled and repressed, and anarchic and spontaneous.[5]

II. Company Town

At the start of the 20th century, the Company town as a new urbanism idea was practiced in the United States, where this urban form proliferated more than elsewhere. In this way, a single company–state-owned or private was the owner, designer, and manager of a town.[6] The idea of a company town was used by APOC while from the first quarter of the nineteenth century the large capitalist firms in industrial countries especially in the US, but also in Britain, France, Germany, and even Russia had been started to provide residences and some amenities and also they were building whole towns in isolated and distant locations to house their labor force.[7]

Contrary to the historic cities which were formed gradually with diverse cultures and economic activities collected together and completed each other, company towns were founded on a much

[4] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, p. 337-385.
[5] Ehsani Kaveh, « Social Engineering and the Contradictions of Modernization in Khuzestan's Company Towns: A Look at Abadan and Masjed-Soleyman», *IRSH*, n° 48, Internationaal Instituut voor Sociale Geschiedenis, 2003, p. 361–399.
[6] John Garner, *The Model Company Town*, Amherst, MA, 1984, p. 6–7.
[7] John Garner (ed.), *The Company Town*, New York, 1992.

more singular purpose: to meet the inevitable needs of a labor force near the location of a productive firm or natural resources owned and exploited by the Company. The workers and the labor force were ‘raison d’étre’ for the construction of a company town in the first place and their role as the agents of production of surplus-value was vital in the company town. In Khuzestan, The Company started and needed to attract the labor force to the region. Europe was the origin of skilled personnel and managers, semiskilled and security staff came from India and the Caucasus, and the unskilled from neighboring regions.[8]

There were several segregated neighborhoods in the 'formal' cities of Abadan, where the residents were carefully assigned housing according to their job, status in the company, and even race, nationality, and ethnicity. This rigid and inflexible hierarchy was present everywhere, in the neighborhood, street, alley, and each employee according to his rank, work record, skill, and even ethnicity, was assigned a specific house to his family (the employees all being male). The company town of ‘Braim’, which consisted of large villas and bungalows set on green lawns was for Senior European staff where the houses were surrounded by parks and gardens and lined with English hedges and built on lots averaging 1,000 m2, and 4.5 units per hectare. The neighborhoods for the workers were row houses with high walls and tiny courtyards, built in straight lines and wall to wall, averaging 120 m2, with a density of 26 to 31 units per hectare these plans were implanted in districts such as Bahmanshir and Bahar. In between, there were areas for middle-staff such as 'Bawardeh' middle- and lower-staff neighborhoods which were combinations of these two forms in terms of architecture, design, and scale.[9]

The social relations were the reflection of this absolute spatial design of company towns and they were reinforcing and reproducing them. Besides providing accommodation for the workers and keeping them relatively satisfied, or at least dependent on wage labor, The Compay had to adapt this inexperienced labor force to the rigorous and special demands of modern industry. To accomplish these goals The Company paid attention to every detail of the urban design, from the architecture of the houses to the types of material used in their construction, in the different

[8] Ehsani Kaveh, « Social Engineering and the Contradictions of Modernization in Khuzestan's Company Towns: A Look at Abadan and Masjed-Soleyman», *IRSH*, n° 48, Internationaal Instituut voor Sociale Geschiedenis, 2003, p. 361–399.
[9] Ehsani Kaveh, « Social Engineering and the Contradictions of Modernization in Khuzestan's Company Towns: A Look at Abadan and Masjed-Soleyman », *IRSH*, n° 48, Internationaal Instituut voor Sociale Geschiedenis, 2003, p. 361–399.

designed and organized spaces of entertainment and leisure, the types of the wall surrounding the residences and their heights, the length and width of streets and alleys, the morphology of planned formal neighborhoods, and the types of kitchen and bathroom implemented in individual units.[10]

From the 1920s when it flourished as one of the main producers of oil until the Iranian oil nationalization movement which resulted in the expulsion of the AIOC from Iran in 1951 Abadan expanded significantly, it hired its workforces both directly and through sub-contractors from south-west Iran, the Persian Gulf, and India. By 1951 it had a population of 200,000 inhabitants.[11] In this year, the Anglo-Iranian Oil Company had a very substantial portion of the national industrial labor force at the time, nearly 80,000 Iranian workers, employees, and contractors were on its payroll.[12] Abadan was nominally under local municipal control but the town as a whole might be described as a company town. The AIOC was owner and manager of most parts of Abadan and the existence of other parts under autonomous local control was dependent on the Company's activities who provided educational, transport, health, and leisure facilities; even its traffic police. The AIOC had a policy that could be placed somewhere between the paternalist ideology of company towns in Britain like Bournville and the absolute power exerted in those company towns that developed following the great mineral rushes in South Africa.[13]

At the start of the 20th century, Iran was an undeveloped country with a small economy and without an important military force and the relation between The Company and Iran government was actually, concessionary as the first concession for oil exploration in 1901. There were some benefits of living in Abadan for the European workers who were employed for their high level of managerial expertise or specialist technical skills, a combination of relatively generous levels of pay, good recreational facilities, and a culturally colonial form of life attracted them to come to this city.[14]

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[10] Ehsani Kaveh, « Social Engineering and the Contradictions of Modernization in Khuzestan's Company Towns: A Look at Abadan and Masjed-Soleyman », *IRSH*, n° 48, Internationaal Instituut voor Sociale Geschiedenis, 2003, p. 361–399.
[11] International Labour Organisation, *Labour Conditions in the Oil Industry in Iran*, Geneva, International Labour Organisation, 1950, p. 5.
[12] Ferrier Ronald, « The Iranian Oil Industry », in Avery Peter, Hambly Gavin, and Charles Melville (eds.), *The Cambridge History of Iran, vol. 7, From Nadir Shah to the Islamic Republic*, Cambridge, 1991, p. 639–704, 692.
[13] Crinson Mark. « Abadan: planning and architecture under the Anglo-Iranian Oil Company », *Planning Perspectives*, Vol. 12, Issue 3, History of Art Department, University of Manchester, 1997, p. 341- 359.
[14] Crinson Mark. « Abadan: planning and architecture under the Anglo-Iranian Oil Company », *Planning Perspectives*, Vol. 12, Issue 3, History of Art Department, University of Manchester, 1997, p. 341- 359.

For its European employees, the Company was performing like a welfare state, while it has not responsibilities for its non-European employees which were a major part of the labor force and this became a regular matter for bargaining with the Iranian government. As the non-Europeans were defined by social order and centered on labor disciplines and the Company which followed by accepting the privileges of health care, education, and housing. This situation was beneficial for the Company, but the inequality of support was evident in the development of urban space and housing form in Abadan when most of the Company's resources were addressed to the construction of housing and other facilities for its senior staff. Based on the Company hierarchy, there was a division in the attribution of housing to the employees. The residences were categorized into three classes: fully-furnished villas for British staff and the few senior Iranians; partly-furnished housing for non-European junior staff; and unfurnished facilities for wage-earning labor. In the early years, most of the constructions were the housing for senior staff and labor, and often junior staff was forced to the market or the municipality to have shelter. A large number of contract laborers were living in shantytowns on the edges of the Company and municipal areas and the Company neglected them. There was also a racial separation through patterns of habitation. The Iranian government was criticizing this act of the Company which did not do sufficient investment in housing. By the end of the Second World War, 65,461 AIOC employees were in Abadan, only 2,357 of whom were British. In 1948 still, new senior staff housing was as high as half the total for both junior staff and labor together, and by 1951 only 18.5% of labor lived in Company quarters. The Company justified its policy that it aimed to produce a good general quality of housing rather than a rapid production of quantity. Some culture-specific set of values defined this ‘Quality’ here as the extreme spending on modern accessory infrastructure (electricity, sewers, roads, and, for some, air conditioning) without realistic housing solution for the stifled non-European areas.[15]

III. Architecture

The first architectural type of housing in Abadan was 'bungalow' which originally had developed as a specialized Anglo-Indian dwelling type for plantation or agro-industrial societies in colonial India. From the 1890s it came to Britain as a cultural model of living in non-urban, or ex-urban areas. In suburban dwelling in Anglophone countries, it became a regular dwelling type and in the

[15] Crinson Mark. « Abadan: planning and architecture under the Anglo-Iranian Oil Company », *Planning Perspectives*, Vol. 12, Issue 3, History of Art Department, University of Manchester, 1997, p. 341- 359.

last years of the nineteenth century onwards, it was used by the managers of mines, railways, plantations companies.[16] In Abadan, it became characteristic of its development, rather than industrial production by the refinery here the plantation model predominated. In this city, they tended to settle both the managerial technical elite and the labor-power close to the refinery, if at opposite sides of it.[17]

The chief architect who had the responsibility for town planning, as well as designing large numbers of buildings in Abadan, was James Mollison Wilson (1887–1965). From 1935 he was assisting Harold C. Mason, who had been Government Architect in Iraq from 1921 to 1935. Since 1927, Wilson had been receiving commissions from the AIOC and by the rapid development of the Company in the 1930s he was responsible for the design of individual buildings to the planning of new large residential areas especially for Abadan but also in other Company areas at Masjid-i-Suleiman, Agha Jari, Gach Saran, Kermanshah, and Bandar Mashur. In fact, Wilson designed most of the projects for the AIOC, and in 1944 he became the formal architect of the Company. Also, he provided town plans for the Iraq Petroleum Company at Arrapha, Kirkuk, and for the Kuwait Oil Company at Ahmadi.[18]

Before Wilson, the Company engineers have built Abadan's more substantial buildings and they used arcaded verandahs surrounding brick structures. The architectural design of Wilson was distinct that was in between of the Company's two best-known public architectural expressions in England: Britannic House (1920–1924), their headquarters at Finsbury Circus, London, designed by Lutyens in a witty modern neo-Roman; and the AIOC pavilion at the British Empire Exhibition, Wembley (1924). Wilson designed AIOC Offices in Tehran (1930-1) and showed that he could deal with the Persian architectural language. In other wors such as the Abadan Technical Institute and especially in his Abadan housing, Wilson worked in an abstracted or absorptive version of local styles. All grades of housing were characterized by this abstraction and whether for one or two-story bungalows, they had flat roofs, courtyards at the rear for Iranian accommodation, they were laid of brickwork, and, often, an absence of verandahs was apparent. Occasionally, Wilson

[16] King A.D., op. cit. pp. 118, 120–124.
[17] Crinson Mark. « Abadan: planning and architecture under the Anglo-Iranian Oil Company », *Planning Perspectives*, Vol. 12, Issue 3, History of Art Department, University of Manchester, 1997, p. 341- 359.
[18] Lindsey Smith C.H., *JM The Story of an Architect*, privately published, no date.

deployed other housing types such as the tower houses at Bawarda or the Dutch-style houses that faced onto its garden circles, which they were positioned at strategic points in the urban layout.[19]

By the late 1940s, all over the island and over the space between the two rivers Abadan's new estates were being laid out and constructed. They considered motorization and provided lines for Company bus transportation into the refinery. These estates were not linked in an overall scheme, indeed their placement across the island implies that Abadan has developed additively, district by district as needs and resources rose. Segoush-i-Braim was added for non-European staff, and in the east Bawarda and in the west Amirabad were located. In the north near the bank of the Bahmanshir river, Bahar and Ferahabad were constructed for non-European labor, Ahmadabad and Bahmashir were on the east of the refinery, and Jamshid was on the northeast. Then an extension of Braim was laid out for European staff on its west. Except for Jamshid and Ahmadabad, all of these neighborhoods used Garden Suburb from and all, apart from Ahmadabad (which was built by the Karun Engineering Company for the municipality), were designed by Wilson where he presented a variety of different house types, sizes, and styles.[20]

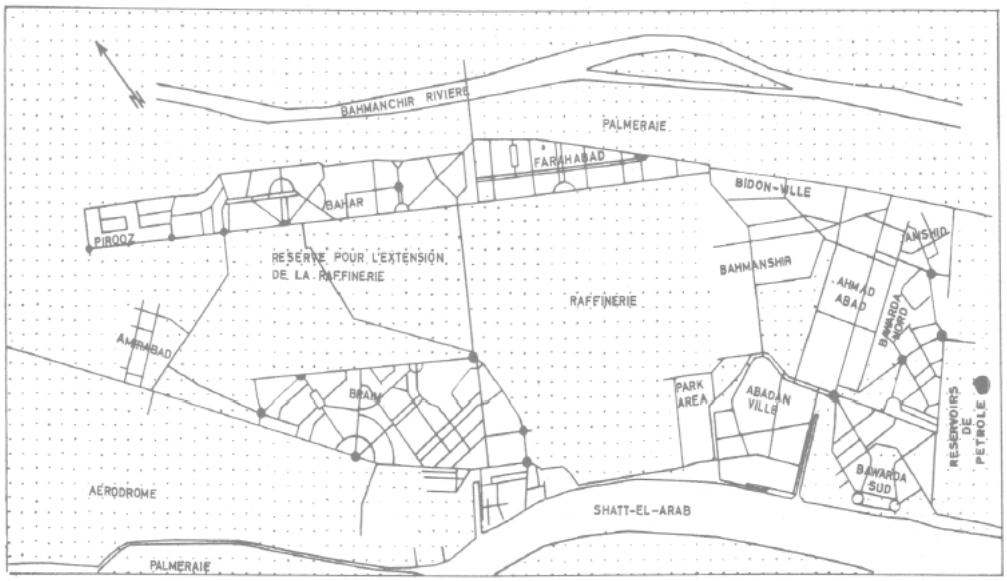

Figure 1 : Map of Abadan which represent different districts.[21]

[19] Crinson Mark. « Abadan: planning and architecture under the Anglo-Iranian Oil Company », *Planning Perspectives*, Vol. 12, Issue 3, History of Art Department, University of Manchester, 1997, p. 341- 359.
[20] Crinson Mark. « Abadan: planning and architecture under the Anglo-Iranian Oil Company », *Planning Perspectives*, Vol. 12, Issue 3, History of Art Department, University of Manchester, 1997, p. 341- 359.
[21] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », Revue Géographique de l'Est, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

In 1934 Wilson presented a design for a new housing development at Bawarda, which was situated on the east side of Bazaar. It was the first planned estate in Abadan demonstrating Wilson's and the Company's attitudes towards the whole town. Since the war, Nationalism ideas spread throughout the Middle East. It rased jealousy between Iranian and Europian staff which Company had to take measures to meet it through providing housing. Wilson in a report about Abadan pointed out these inequalities in housing which could contribute to the dangerous division between the Iranian and British employees. To meet this problem he proposed the new residential area of Bawarda which would be for both Europian and Iranian staff and manifest a racial mixing, and act as a link between these two groups of individuals.[22]

Garden City and City Beautiful ideas at New Delhi (1911–1940) designed by Lutyens were the inspiration for Bawarda. Lutyens had already been inclined to Ebenezer Howard's original Garden City idea in the Garden Suburb at Hampstead. Howard's central concepts were of new satellite towns, surrounded by rural belts, self-managed and self-governed, 'health, light, and air' were given priorities over other communal imperatives. At New Delhi where Wilson participated, he would have seen that the Garden City was used with the modern American version of the Baroque city, the City Beautiful. There was a display of ethnic and political hierarchies, long ceremonial axes focused on a viceregal acropolis framed by symmetrical buildings for the corps of civil servants; vertical (by placement on heights) and horizontal (by distance) discriminations of residence reflecting hierarchies of income, rank, and race; and all the spatial inscriptions of autocracy such as radial avenues, terminal vistas, circuses, circumferential roads linking dissecting boulevards, and so on.[23] Robert Irving has described New Delhi consisting of 'contradictory and paradoxical juxtapositions of Beaux-Arts features and garden city environs, of monumental axial boulevards lined with one-story bungalows'. New Delhi was 'a garden city punctuated by urban oases'.[24]

Wilson used the Garden City as his model and returned to one of its original ideals as an engine of social harmony. By Braim's clubby, vigorously outdoor life, and relaxed low densities he reminded

[22] Crinson Mark. « Abadan: planning and architecture under the Anglo-Iranian Oil Company », *Planning Perspectives,* Vol. 12, Issue 3, History of Art Department, University of Manchester, 1997, p. 341- 359.
[23] Crinson Mark. « Abadan: planning and architecture under the Anglo-Iranian Oil Company », *Planning Perspectives,* Vol. 12, Issue 3, History of Art Department, University of Manchester, 1997, p. 341- 359.
[24] Irving R.G., *Indian Summer: Lutyens, Baker and New Delhi,* New Haven and London: Yale, 1981, pp. 79, 88.

of Unwin and Parker's Garden City ideals.[25] As, R.K. Home has stated, 'a major conflict of philosophy existed between the garden city ideal of efficient, harmonious communal living and the segregation principles upon which colonial rule relied'.[26]

At Bawardah, what Wilson proposed and laid out was a vision of Company paternalism. The Shatt-al-Arab was to the south-west of the area, a gutter was on the north-west, oil pipelines were on the north-east, and a road and tank farm was to the south-east. In effect, they formed a kind of cordon sanitaire around Bawarda, it would help particularly, as Wilson observed, to prevent the risk of the overflowing town into the new area. In the north-east, parallel to the pipeline, a road passed through the town and refinery to Braim. From this point, Wilson built a new axis leading diagonally toward the center of the neighborhood. This junction was similar to Lutyens who had used Connaught Place to mark the transition from old to new Delhi, with a scaled-down round-point. Moreover, a new cinema (completed in 1939) was located beside the entry point of this junction and through the location of tower houses at the beginning of the new diagonal road, a gateway was created. At right-angles to this diagonal axis, the array of housing was laid out on roads running east-west, they had three initial types and surrounded with a spacious garden. There was still a differentiation between European and Iranian housing which was visible by the size of sites rather than their location. Wilson provided public gardens, playgrounds, and sports grounds in the south part of Bawarda near the Shatt-al-Arab, all were arranged symmetrically to the main axis. This garden area was enclosed by a triangular circuit of gently curving roads. The large Dutch-style houses which were allocated to senior Iranian staff fronted these circuses.[27]

In one characteristic Bawarda differentiated with New Delhi and Hampstead, which was the absence of any climactic focus in the form of monumental buildings. There were no consummating institutions close to Bawarda's Baroque gymnastics and symmetries. The reason for Bawarda's symmetries became apparent when in 1950 Wilson proposed a new Iran Club (for Iranian clerical staff) at the junction of the main diagonal and the area of gardens. Wilson got this idea, by Hampstead, from New Earswick and even perhaps Bedford Park. After the construction of

[25] Crinson Mark. « Abadan: planning and architecture under the Anglo-Iranian Oil Company », *Planning Perspectives*, Vol. 12, Issue 3, History of Art Department, University of Manchester, 1997, p. 341- 359.
[26] Home R.K., « Town planning and Garden Cities in the British colonial empire 1910–1940 », *Planning Perspectives* 5, 1990, p. 23–24.
[27] Crinson Mark. « Abadan: planning and architecture under the Anglo-Iranian Oil Company », *Planning Perspectives*, Vol. 12, Issue 3, History of Art Department, University of Manchester, 1997, p. 341- 359.

Bawarda, Wilson designed The Abadan Technical Institute in 1938 and placed it on the north-east and beyond the pipelines. The purpose of establishing this institute was to train Iranians to fill graded posts. It has a clocktower, like an artistic monument conforming to the new disciplines which would have been visible for some distance, only, Wilson did not align Institute with Bawarda's garden axis.[28]

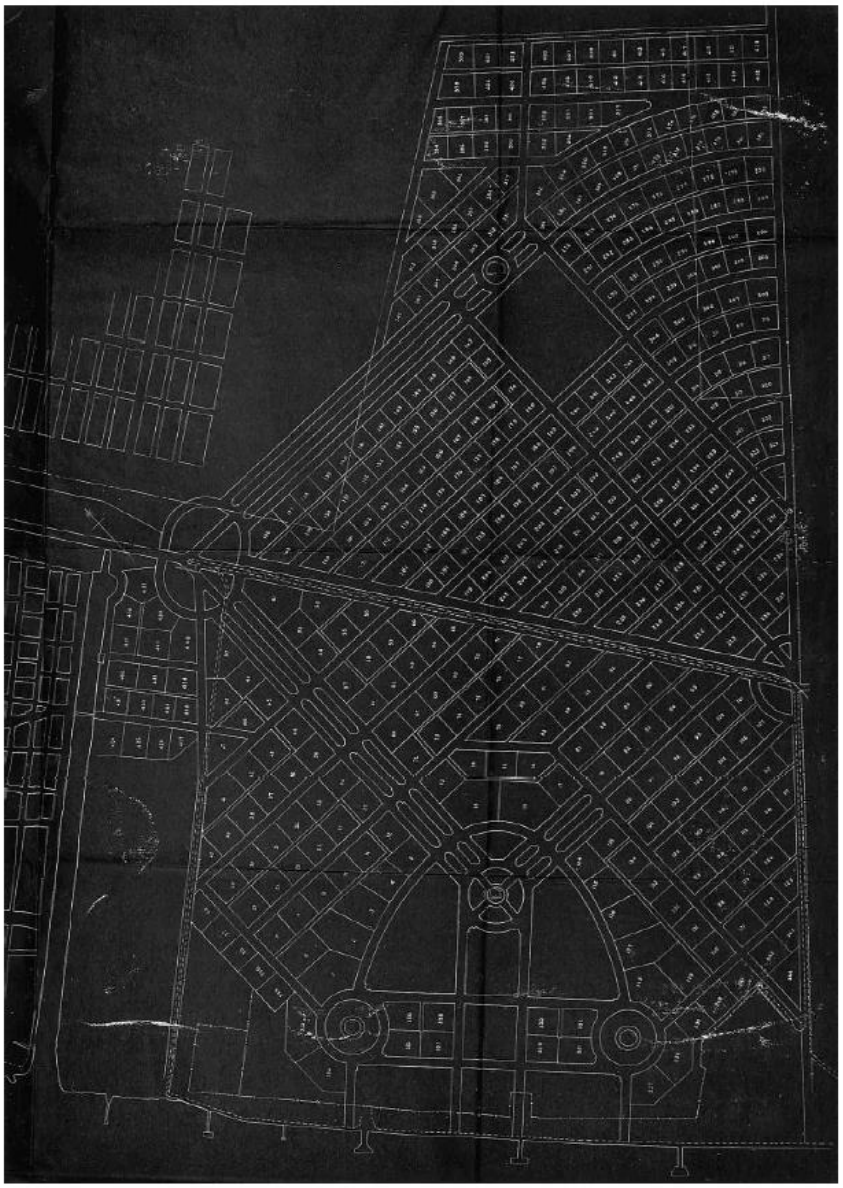

Figure 2 : Figure 6. Bawarda, Abadan. Blueprint of 1934 plan by J.M. Wilson.[29]

[28] Crinson Mark. « Abadan: planning and architecture under the Anglo-Iranian Oil Company », *Planning Perspectives*, Vol. 12, Issue 3, History of Art Department, University of Manchester, 1997, p. 341- 359.
[29] Crinson Mark. « Abadan: planning and architecture under the Anglo-Iranian Oil Company ».

Figure 3 : Abadan Technical Institute, Abadan. (Photo: Wilson Mason and Partners).[30]

IV. Urban Landscapes

In Abadan, the first building was constructed with iron and wood. Very soon they installed the first bungalow which was a brick building with local style and covered with 'chandle' roof, that was, a roof assembled of poles of small diameter placed close together and overlaid with mats (made from date palm leaves) covered with earth. The upper part of the building was the residence for senior staff, the ground floor was a general office. After a few years, this was replaced by 'No. 1 Bungalow', It was the first building constructed in a permanence way in Abadan.[31]

The refinery was spread out its tanks and structures on the side of Shatt-al-Arab. The materials for the construction were shipped from Britain. Between the refinery and the river, they located offices and other organizational building. In the southeast, the laborers lived tents and mud huts in the barrack-like 'coolie lines'. Braim with its bungalows was situated on the southwest of the refinery. In the 1920s, Braim was developed with an extendable pattern of roads including specialist bachelor barracks known as 'Slidevalve' and 'Sunshine' and built-in 1923 and large two-storeyed

[30] Crinson Mark. « Abadan: planning and architecture under the Anglo-Iranian Oil Company », Planning Perspectives, Vol. 12, Issue 3, History of Art Department, University of Manchester, 1997, p. 341- 359.
[31] *The Naft 7,* Oil Company Journal, July 1931, 16.

bungalows for the more senior officials nearer the river. To prevent the heat of the warm climate these buildings were equipped with thick walls, shutters, and wide arcaded verandahs. A set of communal buildings such as the Gymkhana Club, as well as many gardens were laid out throughout the neighborhood. For the establishment of Braim as a green neighborhood, they transported materials and employed labor for the irrigation and planting and used professional gardeners who had worked at Kew and New Delhi.[32]

Abadan was developed with planned neighborhoods and spontaneously formed quarters. The refinery was situated in the central area of the city and a considerable space originally reserved for its expansion were around it. The residential quarters were designed on the grid plan with modern feutures such as asphalt streets, a household water supply, and other conveniences. From the start the have considered diferentiaion between the quarters according to the employment level and social standing of the intended population.[33]

In a map of 1928, 'Abadan-City' as the 'informal' city was shown which was forming spontaneously on the south-east of the refinery and a newly laid-out park separated it from the older ‘coolie lines’. Some workers of the refinery and laborer working around it lived there in a high-density concentration. The ‘City’ and Braim were serving the refinery at the same time were separated by it and their contact was made via servant intermediaries. The bungalows of Braim were laid out to the west in favor of the dominant winds, and the ‘town’ was on the east. The refinery as a physical barrier was between Braim and the 'town' and acted as a curtain or cordon sanitaire between them. The accommodations were entirely separated as well as the use of buses, clubs, and cinemas. From the beginning, the function, character, location, and materials of three of Abadan’s four major built elements had been established. Bawarda the professionally planned layout of residential estates as the fourth element was to be introduced in the 1930s.[34]

Using Bungalow as the predominant building type in the European area gave a unitary character to Abadan. Anthony King, the major sociologist-historian of the bungalow, has examined the

[32] *The Naft 11,* Oil Company Journal, October 1935, 7.
[33] de Planhol X., « ABADAN ii. Modern Abadan », *Encyclopaedia Iranica, I/1,* pp. 53-57, visited on July 28, 2020 http://www.iranicaonline.org/articles/abadan-02-modern
[34] Crinson Mark. « Abadan: planning and architecture under the Anglo-Iranian Oil Company », *Planning Perspectives,* Vol. 12, Issue 3, History of Art Department, University of Manchester, 1997, p. 341- 359.

diffusion of the bungalow type as indicative of the social and spatial division of labor within colonial urban development:

> 'It was part of the built environment of a colonial political economy: the planter's bungalow, part of a system of cash-crop production operated by representatives of a particular culture in which local labor ('natives') lived in self-built huts and managers lived in an evolved culture-specific dwelling form known as a bungalow'.[35]

The city of Abadan was divided into clearly separated sectors, with surprisingly differentiated landscapes, as if the name that evokes the largest refinery in the world also covered a variety of residential complexes. These divisions are made up of pipes, waterways, vacant lots, wide avenues, or by facilities industrial plants themselves from the refinery. They tend to isolate a number of sectors : 'Abadan City' or 'Bazaar', approximately 38,000 inhabitants; Ahmadabad, 68,000 inhabitants; Karoun, Kofichée, and the district of Abol-Hassan altogether approximately 20,000 inhabitants; the houses scattered in the palm grove, including 8,000 inhabitants on the banks of the Bahmanshir, and 4000 on the eastern bank of the Shatt-el-Arab; the different groups of workers cities: Bahmanshir (built around 1935), Farahabad (1945), Bahar (1948), Pirooz (1958), Jamshid (1952) 70,000 inhabitants in total; the two sectors of North Bawarda 3,500 inhabitants, and South Bawarda 4,000 inhabitants; Park Area 3,000 inhabitants; and finally Braim 6,000 inhabitants. In addition, more or less transformed by urban contact, there were on the outskirts of the city a few villages of rural origin still having an agricultural function. The sectors were delimited each characterized by its own landscape.[36]

The 'informal' city with its native architecture, bazaars, informal residential and commercial neighborhoods, illegal shanties had also forbidden places housing brothels, drug sellers, and smugglers. Workers constructed the neighborhoods Abolhassan, Ahmadabad, and Karun next to the formal company areas such as Pirouz, Bahar, and Farahabad. 'public' spaces in the formal company town such as clubs, sports fields, stores, and amenities were accessible only by employees of the company. On the other hand, the informal Abadan city has anarchic streets and constant urban confusion and hubbub, colorful stores, streets teeming with pedestrians and people until the

[35] King A.D., *Urbanism, Colonialism, and the World Economy*, London and New York: Routledge 1990, pp. 17–20.
[36] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

small hours of the dawn. It has a lively, adventurous, exciting, untamed, and unsupervised public arena to all citizens, whether employed by the company or not. There were remarkable contradictions between the two cities: the formal city which was shaped by disciplinary powers of separation, distinction, ranking, and surveillance that kept its residents under constant control was affluent, comfortable, ordered, and steady. In contrast, The spontaneous and informal city was open, integrated, public, and at the same time, quite hectic and anarchic.[37]

The urban fabrics of Abadan City and Ahmadabad were tightened in comparison with other spacious sectors. However, the rigorously orthogonal organization of Ahmadabad is different from the more diversified network of Abadan-City. The fabric of the first evokes rapid construction led by speculation on land until then unoccupied; the designation of streets by a serial number emphasizes this character. On the other hand, in the center of the second, a sketch star structure suggests a social organization of older space and material conditions more favorable to the existence of an urban center.[38]

Among the other sectors such as Bawarda and Braim, there are long rows of adjoining detached houses (workers' housing estates) that resemble the landscape of garden cities where individual houses, isolated or united in small groups are surrounded by trees, lawns, and hedges. In either of these two latest types of urban morphology, the nodes of the lawn organization did not result in any modification of the built landscape. Besides the landscapes which usually recognized as urban, there is also the palm grove as apart of the city of Abadan. A certain number of quantitative criteria also allow to measure variations in land use. The cartographic representation of the distribution of the residential population provides a picture of the differences in densities of the population per hectare of urban land. We have about the following figures:[39]

- Braim: 33 inhabitants per hectare of urban land
- Bawarda: 60 inhabitants per hectare of urban land
- Abadan-City: 650 inhabitants per hectare of urban land

[37] Ehsani Kaveh, « Social Engineering and the Contradictions of Modernization in Khuzestan's Company Towns: A Look at Abadan and Masjed-Soleyman », *IRSH*, n° 48, Internationaal Instituut voor Sociale Geschiedenis, 2003, p. 361–399.
[38] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[39] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

- Ahmadabad: 650 inhabitants per hectare of urban land
- Karoun, Kofichée,Aboi-Hassan: 650 inhabitants per hectare of urban land

As for the average sizes of plots built for housing, they are established at the following levels:[40]

- Braim: 1,000 m2.
- Bawarda: 900 to 1,000 m2 for large housing, 500 m2 for small dwellings.
- Bahar: 120 to 130 m2 when, which is frequently the case, a small curbside garden is added to the properly built area.
- Bahmanshir: variable surfaces from 75 m2 to 200 m2 depending on types of accommodation.

With the quantified data in the sectors of Ahmadabad, Abadan-City, and the shantytown, one can nevertheless be certain that land use is more intense there than in the last sector of worker's housing estates both due to the narrower roads than the complete absence of public parks and private garden. These observations about the organization of the city express some of the urban social relations: on the one hand division of the city into sectors that communicate poorly with each other, that is to say, social relations between sectors are hampered; on the other hand over the organization and very different densities of sectors and disparities within the city. Abadan is formed in very different parts and segregated.[41]

But the differences between sectors do not stop at those, already mentioned. The only housing development model in Abadan is the extension on the surface. Yet this uniformity covers a great diversity of monumental morphology. This can be analyzed in two main components: urban equipment and the architecture of constructions. The elements that make up the urban equipment can be classified into three categories: basic equipment (traffic lanes, electrification, water supply, wastewater disposal); consumer equipment (daily and occasional shops, exceptional); culture and leisure equipment (schools, gardens children, parks, places of relaxation, cinemas, etc.). Several levels appear regarding the equipment basic. At the bottom of the scale, there are neighborhoods with: non-motorized streets, water supply by rare fountains public, lack of electricity, sewage

[40] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[41] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

disposal in the street. Part of the Ahmadabad sector, in the North-East, wastewater stagnates in holes and gutters of dirt in the middle of the road are not passable for car traffic, the fountains are more numerous but their flow is reduced, the power supply of houses, when installed, is not assured that part of the days of the week. In the other parts of the city, the streets are more or less stony, the asphalt is more or less regular, the water is usually distributed by fountains, some houses, however, have an individual power supply, wastewater drainage channels are often cemented, collectors are sometimes covered, in general electricity is supplied to housing.[42]

In the Company Towns, streets and avenues are regularly maintained and paved, each house having at least one water station. An underground sewer network evacuates wastewater, each house is normally supplied with electricity, and, is equipped with a rudimentary garbage chute. In Bawarda and Braim, there were two main changes: the housing was equipped with proper bathrooms and supplied with two electric streams, force, and light, which allows the use of the home appliances. Finally, at the top of the scale, Braim stands out for the air conditioning (either by individual devices or by the central system) while in the housing of Bawarda, and in the largest houses in the Company Towns there are just ceiling fans. Thus, in Abadan, the most common equipment was rudimentary and sophisticated; but, when passing from the shanty town to Braim, this equipment both improves so that the daily life of households was in concerns (water, lighting, circulation, drainage) and that at the same time, organized collectively at the bottom of the ladder, it tends to be individualized from the moment the diet water and sewage disposal disappear from the landscape of the street to become household equipment.[43]

The second category of urban equipment, the equipment of service, profoundly differentiates the landscape from the streets of the city: commercial alignments line, while most of the others are only bordered by the facades of buildings for residential use. But commercial alignments were mostly in Abadan-City (where all the important streets were lined with shops and where markets invaded in some places the causeway itself) and in Ahmadabad, where they occupied over a large part of their length three avenues. At all levels: daily shops (food mainly), occasional shops (haberdashery, drugstore, pharmacy,etc.), exceptional businesses (clothing, shoes, etc.), these two

[42] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[43] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

sectors appear as equipped zones in relation to the rest of the city, which is not so. More exactly there was a particular concentration of trade in the sector of Abadan-City or 'Bazar', relatively low equipment in the workers housing, in Braim and Bawarda, and finally in Ahmadabad and in the shanty town average equipment that hides some concentration in the first of the two sectors. From the point of view of consumer equipment, the Abadan-City was the ecological center of the city. The layout of shops in Ahmadabad is an additional clue of this function: the shops were particularly dense on the two avenues which extend the two main exits of the Bazaar. The place of businesses in the urban fabric of other sectors did not reflect such a tropism: although few in number, they have formed, within architectural complexes specially designed for this purpose, small groups located behind the main track's traffic. The predominance of Abadan-City with regard to retailers is doubled with a great number of artisanal equipment, it is the only sector of the city where one meets streets of craftsmen of iron, copper, or other products. Finally, Abadan-City is the administrative center with the town hall, regional ministerial departments, bank branches, etc. This sector is therefore defined as the urban core of the city, a geographically off-center core, and extending into the Ahmadabad sector.[44]

The respective places of each of the sectors were very different if we observe the third category of equipment: those relating to culture and leisure; exactly some parts of the city cannot be classified here on the same scale: two sectors had better provided than the others, but the services they offer were of different kinds. Most of the cafes and restaurants are concentrated in Abadan-City. On the other hand more than a quarter of the city's cinemas; were in Braim that the 'clubs' were the most numerous. The other districts tended towards one or other types of equipment or were virtually devoid of any means of organized collective leisure. Thus the Ahmadabad sectors it equipped with a few cafes and three cinemas located elsewhere in the older part, while Bawarda north, Bawarda South and Park Area each have a club which represents, with regard to the size of the population, a relatively important and share a cinema built at the center of gravity of the three sectors, which still benefits the inhabitants of Braim. On the other hand, the workers' housing estate only had a cinema located on their border common with the shanty town, and a club called 'Workers Club' or

[44] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

‘Club of Abadan’ installed in one of the sets of cities, in Bahmanshir. No leisure equipment could be found in the shantytown.[45]

There were few means of physical recreation in Abadan. There was hardly any public park; the project to install one between Ahmadabad and Abadan-City took a long time to not be carried out. Sports fields and swimming pools were rare, they were linked in general to clubs and sectors of Abadan-City, Ahmadabad, shanty town, and workers' housing estates except for Bahmanshir were totally devoid of them. With regard to school equipment, Ahmadabad and the shanty town were deprived, some of the children could not attend school due to lack of space in schools.[46]

The streetscape was made up of the architecture of the houses or by apparent facades, which were only the consequence of the organization of construction on the built plot. From this point of view, we can first compare the more uniforms, although not resembling each other, Workers City, Bawarda, Park Area and Braim to those more contrasting streets of Ahmadabad, Abadan-City and the shanty town, the first correspond to a series of construction on plans types, the second to buildings assembled in no pre-established order. But above all, we can distinguish in Abadan two main types of architecture of buildings for residential use: the open plan and closed plan, and two intermediate types: semi-open plan and semi-closed plan. The most complete type of open plan covers Braim and an important part of Bawarda, these are houses reproducing the model of suburban residence in Western countries. Doors and windows of the accommodation open directly onto the space surrounding consisting of the gardens and the other houses beyond gardens. On the contrary, the residential streets of Ahmadabad and Abadan-City, were lined with houses most often closed plan; the street door opens through a covered passage in an interior courtyard on which doors and windows of living rooms open. When windows face the street, they were meshed and impenetrable by the eye. The houses of the workers' cities of Bahmanshir, Bahar and Djamshid and those of Park Areas are mostly built on a plan that recalls the previous one: they are made up of buildings for actual dwelling whose plan is analogous to an open plan but preceded or followed by a courtyard surrounded by walls in which the windows of the dwelling were opened. The household is thus isolated from the street; the whole has an aspect of the closed plan, it is there, it seems, a

[45] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[46] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

more properly Persian architectural model; we call it semi-closed plan. Sometimes when the built plot has not been fenced with a brick wall, the inhabitants have surrounded it with palisades, an indication of the perceived need for isolation from neighbors and the street. It was also on the same semi-closed plan that were built the mud houses of the palm grove and those of the 'villages' of the shanty town. It was still on the same level that tends to organize shelters made of heterogeneous materials from the shanty town itself which, however, fails to ensure effective isolation of households.[47]

In the worker cities of Farahabad and Pirooz, in some parts of the Bawarda, and in the shopping streets of Ahmadabad and Abadan-City, the plan of the house is completed on a compromise between open plan and closed plan. The front facade of the house was directly on the street or avenue on which doors and windows open, while on the rear facade an enclosed courtyard was arranged, where other openings and kitchen, storage room, bread oven, shower, WC were located. As opposed to the previous plan, this plan is qualified as 'semi-open'. Differences in size correspond to these differences in standard plans: open plan houses were usually large in size, the area covered by others was usually smaller. The houses of Braim thus have from 150 to 190 m2 corresponding to 4 to 5 pieces; among the open plan houses of Bawarda some have a similar surface, others have 100 to 150 m2. Almost all houses with semi-open or semi-closed plans have less than 100 m2 of the covered area: houses of these types of Parks Area and Bawarda thus have 80 to 100 m2, workers' housing had 50 to 70 m2, corresponding to 2 to 4 rooms. In Ahmadabad and Abadan-City the area covered by the house was on average higher than the latter, but the use of this surface was very different there.[48]

If we look at the housing conditions of households in Abadan there were considerable differences between sectors that were not only quantitative but qualitative. In Ahmadabad 90% of households have less than 3 rooms, About 70% have only one room. In the workers' housing estates, almost half of the population has 1 to 2 rooms, the other half has 3 pieces. In Bawarda and Park Area 60% of households have 4 and 5 rooms and in Braim 80%. From Ahmadabad to Braim the inversion of

[47] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[48] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

proportions is remarkable.[49] In the housing conditions of the city sectors, there are thus two abrupt levels: one between Ahmadabad and the workers' cities, the other between the latter and the employees sectors and subordinate managers. Given the large size of households, the number of available parts corresponds in the worker's sectors to the area per person very small. In Ahmadabad we have the following figures (survey by I. E. R. S.):[50]

- 4% of households have less than 1 m2 per person,
- 25% from 1 to 1.5 m2,
- 26% from 1.5 to 2 m2,
- 21% from 2 to 3 m2,
- 11% from 3 to 5 m2,
- 8% from 5 to 10 m2,
- 5% more than 10 m2.

At the other end, in Braim, the number of m2 per person varies around an average of 16 m2 per person. Along with these quantitative variations in the conditions of housing there are qualitative variations; the usage models of habitations in Braim was the single family house; on the other hand, Ahmadabad, in the vast majority of cases, there was no longer identity between house and family unit. A single household usually occupies a building unit in sectors of Braim, Park Area, Bawarda and the worker's cities. As for the cases of households living in a single room encountered Braim and Bawarda, they mostly correspond to singles housed in specialized buildings where the isolation of the inhabitants was organized. On the contrary, a large number of households were living in unique rooms in Ahmadabad as well as in Abadan-City, the different rooms in closed plan houses. The cohabitation of several families in a unit at the rate of one family per room also exists in the worker's cities; but, besides being incomparably less extensive, the semi-open form of housing offers more possibilities for the isolation of households thanks to the existence of two facades and frequently from two independent accesses to the street. All the characteristics concerning urban equipment and habitat make it possible to broadly complete the drawing of the urban ecology of

[49] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[50] Institut d'Études et de Recherches Sociales de l'Université de Tehran « Moyens de Communication de Masse à Abadan », Rapport présenté à la *S. N. I. P.*, 1959, p. 109.

Abadan, a city made up of sectors each relatively uniform but very contrasted between them and isolated although attracted by a single core, off-center and located in a sector of high density.[51]

V. Socio-Professional Morphology of the Sectors

The sample survey, carried out by the Institut d'Études and Social Research, provides results in which we see that with regard to the socio-professional composition of the working population in the refinery, we can divide the urban sectors of Abadan into two main categories:[52]

1- Sectors with a predominance of manual workers, among which we can distinguish those where the unskilled workers were more numerous: Abadan-City and Ahmadabad, from those where the proportion of skilled workers was important (workers' housing estates).
2- Sectors predominantly of employees and executives among which we can distinguish mainly populated areas for employees and subordinate managers (Bawarda north and south, Park Area) of the sector where most senior executives were concentrated (Braim).

To know the professional composition of the population of each sector, the population employed in establishments other than the refinery were accounted. From this point of view, that the population of the workers City, Park Area, Bawarda and Braim were almost exclusively made up of households whose head was employed by the refinery. It should, however, be added that we still find in these sectors, particularly in those corresponding to executives and employees of the refinery, a number of representatives of liberal professions (mainly doctors) and executives of the State Administration who were housed by the big business from Abadan. The number of households with two wages (i.e. in which besides the head of household another person works) is relatively low in Abadan. The socio-professional distributions that have just been proposed were broadly valid for the workers' housing sectors, from Bawarda, Park Area and Braim.[53]

The refinery occupies nearly 55% of the total working population and 85% of the working population in the secondary sector (processing and construction activities, therefore the socio-professional composition of the shanty town, of Ahmadabad and Abadan-City globally, must be

[51] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[52] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[53] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

modified by adding representatives from tertiary categories (traders, administrative employees, etc.), company industrial workers and craftsmen, construction workers, people employed in transport and communications, and unemployed.[54]

If we also take into account the distribution of commercial and craftsmanship, their particular concentration in Abadan-City, the socio-professional compositions sectors, could be modified by adding:[55]

a) in Abadan-City, mainly tertiary populations and incidentally secondary populations (corresponding to a population of around 25,000).
b) in Ahmadabad, tertiary and secondary populations in roughly equal proportions.
c) in the shantytown neighborhoods, especially marginal population : unemployed, hawkers, casual workers in the building and other industries.

Within the general framework of this socio-professional composition in residential complexes, a more detailed analysis shows that in each sector different categories of individual activities correspond to differences in fabric and cityscape. For example, in Bawarda south we can Distinguish the 'Polish Camp', or some streets more densely populated by employees, streets occupied by middle managers and groups of houses assigned to senior executives. In Braim, of the whole sector, stands out the district of residences of managers of the refinery. In the workers' housing estates some alignments were compound and some positions particular in the alignments (houses located at the end of the rows) were occupied by larger houses which house either for men or employees. Likewise in Abadan-City and in Ahmadabad, the shopping streets stand out from the neighborhoods working-class housing, and one could still observe here and there groups of more airy and spacious houses, intended for representatives of intermediate categories (middle managers public or private establishments for example). In the shantytown finally, we see contrasts appear, here and there a large and opulent house belongs to some merchant who has made a fortune.

[54] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[55] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

However, the major fact remains the relationship between the urban sector areas, each defined by its own landscape and the characteristics socio-professional of the populations that occupy them.[56]

Aspects of the distribution that concern the profession, those relating to the level of education were still in a relationship with the former. Like everywhere else, the instruction-level increases in Abadan when one rises in the socio-professional hierarchy. Parallel differences are observed between urban areas of the city:[57]

Proportion of illiterates in Persian among the refinery staff

- executives 0%
- Employees and subordinate managers 0.4%
- Foremen 3%
- skilled workers 41.6%
- unskilled workers 50%

Proportion of illiterates in different sectors

- Ahmadabad 49.2%
- workers' housing estates 34.8%
- Bawarda - Park Area 2.9%
- Braim 0%

There is jump when passing from manual workers to office staff, and areas corresponding to first and those corresponding to the second. Moreover, the level of education of manual workers was rarely higher than primary studies, whereas in the sectors of employees it often exceeds and in the executive sectors always. Women, for their part, among working-class households remained largely illiterate, almost 90% in Ahmadabad for example, while in Bawarda and Park Area the proportion was 20% and in Braim zero. Regarding children, despite the compulsory law for education and the effort pursued in the direction of the school, a relatively large proportion of them

[56] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[57] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

remained illiterate. In Ahmadabad, the children of 18% of households were illiterate, in the workers' housing estates 6%.[58]

VI. Demographic of the populations of different sectors.

It was by the importance of the population that the sectors were differentiated; there was a considerable difference between sectors of Braim, North and South Bawarda, and Park Area on the one hand and the area of Ahmadabad; the second enclosing in one piece more than 10 times the population of the former. As for the workers' cities (70,000 inhabitants) in fact, they were subdivided into a series of sectors whose populations were close to 20,000 inhabitants or less than to this number.[59]

Thus, when we go from manual workers to executives and therefore from Ahmadabad to Braim, the diversity of origins and religions increases. 90% of workers and only 45% of managers were born in the three provinces of Khuzistan, Fars, and Isfahan, moreover, the proportion of Muslims in the population was decreasing with the socio-professional level. More precisely that the proportion of population originally from Khuzistan which was strongly Arabized (it was, in particular, the Arabic language which was used in a large part of the province) rose by nearly 42% among workers manual only 9% among executives. Of these differences of origin, we can compare the differences in the types of habitat from which it was question previously. In general, the ethnic and religious compositions were more favorable to acculturation in the sectors of employees and especially executives as well as in those of manual workers.[60]

The number of children and household size also vary by one sector to another. In the labor force, the number of children increases with qualification (and income), and on the contrary that from employees it decreases when one rises in the socio-professional hierarchy. Within the working population the rural model remained, but, in a sense, reversed. In the countryside the child (more exactly the boy) was the source and sign of wealth; urbanized peasants multiply children according to their level of income as a sign of prestige when they were no longer for them a source of

[58] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[59] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[60] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

production. Populations of employees and executives refer to another model: the child competes there with household comfort, automobile, etc., restriction and family planning were therefore practiced there and all the more rigorously that we are more acculturated, that is to say here to be higher in the professional hierarchy. the study of the distribution of families according to their number of children shows a coexist within the category of employees and subordinate managers two social groups, one of which tends to maintain the behavior of lower social group while the second adopts those of the group with higher social. This is shown by the low number of families with 3 and 4 children across Bawarda and Park Area relative to the corresponding numbers observed in the other sectors.[61]

In the whole Bawarda Park Area, the average household size was small compared to other sectors which corresponds to the number of children. Consideration all the more true in Abadan because of the labor market within families there were few sources of income other than that of the head of the household. In the households of workers, 95% were single-paid. The women rarely worked there while in Tehran the case was much more frequent, the female population of popular categories may work in the housework of a large population affluent and in textile factories. It was also uncommon for children to work, still rare that another member of the household has a job. In the employee and managerial sectors, work for women and children was more common although remaining at a level low. In this way, the differences in living standards related to the main income levels of households.[62]

VII. General Characteristics of Abadan Morphology

By recapitulation of the main criteria used in the differentiation between sectors or groups of sectors, we could make a number of general morphology of Abadan:[63]

1) The city is divided into radically isolated parts.

[61] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[62] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[63] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

2) The range of index values corresponding to the criteria of the study was different from one group of sectors to another (density, equipment, socio-professional characteristics, the proportion of illiterates, number of households with more than 2 children.
3) The sectors or groups of sectors considered from the perspective of criteria are relatively homogeneous. The most heterogeneous is that formed by North and South Bawarda and Park Area. Indeed in many ways, Park Area would lie somewhere between the workers' cities and Bawarda north and south.
4) In the case of certain indices, sectors or groups of sectors do not present any perceptible differences between them and on the other hand, they contrast more sharply with other sectors. These analogies reveal two main categories of sectors or groups of sectors: on the one hand, that which brings together the shanty town, Ahmadabad and Abadan-City among which the last two sectors, however, more frequently show similarities; on the other hand, workers' housing estates, Bawarda, Park Area and Braim.
5) If we classify sectors or groups of sectors in order to constitute scales of wealth, density, convenience, etc. (from lower professions to higher positions, from the highest density to the lowest, from less important equipment to more concentrated, etc.), in most cases hierarchies, were perceptible, the main exception is that of classification according to service equipment which is practically the reverse of the order observed on the other criteria.

VIII. Urban Organization

Observation of the entire urban organization allows a first conclusion: everything appears as if the division of the city in sectors had been systematically sought. Under this apparent behavior, there are a number of clues. So while many parts of the city have been built according to a voluntary plan, it is surprising to note that the geographical distribution of most of the groups took place in disregard of any consideration as to the direction of the dominant winds: only Braim and the band of workers' housing estates located north of the refinery are spared the fumes and odors of industrial activity, and these two sectors were separated by a huge wasteland, qualified as a reserve for the extension of the refinery. In the sectors of Braim, of North Bawarda, and South Bawarda, some of the building sets for residential use have been distributed without concern for the cost of the basic

equipment. By considerations relating to land price disparities, a large part of the land belonged to the refinery who was at the same time project manager of many residential complexes.[64]

Abadan was to a large extent an urban creation, the prime contractor for which was the refinery. Only three sectors; certainly the most important in terms of demographic size; Shantytown, Abadan-City and Ahmadabad were raised on 'free zone' and were, in general, built by individuals; the free zone was surrounded on almost all its sides by land belonging to the refinery and furthermore divided by them into two parts. The refinery not only intervened at the level of the organization of relations between parts of the city, but it had also a determining role in the development of urban landscapes of each of the sectors and their differences. On the one hand, it was the Company who has decided on the detailed and general level plans of the residential areas of Braim, North and South Bawarda, Park Area and workers' housing estates, on the other hand given its dominant role in the life of the city and the importance of its urban intervention, differences between the 'free zone' and the zones under his control were ultimately accountable. It alone brought about the birth and growth of the city whose very large part of the population directly or indirectly depends on it. In the sectors, it has built the entire population in principle included the households whose the boss is employed in the company, but even in the sectors of Ahmadabad and Abadan-City, a significant proportion of the population were in the same case: 34% in the second, 58% in the whole formed by Ahmadabad and the shanty town. The refinery ensured the basic equipment (supply water, sewage disposal, electricity, roads) of all sectors including in particular Ahmadabad, Abadan-City, and shanty town (Karoun, Kofiché, Abol Hassan) and left to individuals the care of the building, rather than setting up the full equipment in certain areas only.[65]

Social relationships had responsibility involved in circumstances which brought the refinery to make the town planning choices which have just been indicated: isolation and differentiation of sectors. Indeed, an industry highly concentrated and technical such that refinery could not find, in Iran, a society advanced enough to meet its specific needs of managerial staff (administrative and higher and middle technical staff, manual workers), priority was, therefore, to import personnel from foreign countries (Great Britain, India, for reasons relating to the nationality of the company).

[64] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[65] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

Then these executives found themselves cut off from the Iranian population who were only junior staff, and especially unskilled manual workers, by cultural differences taking into account both national characteristics and behavioral aspects related to socio-professional level. That such differences usually determine segregation or tendency to segregation at the residential level, the morphology of many cities and those of Tehran in particular show this sufficiently. In Abadan, the tendency towards division was amplified and made more radical by the specific aspects of relations between the company dominant and local society.[66]

First of all, the inexistence of any prior urban organization made the company the entire burden of construction of residential areas and required him to remain owner; that is to say; that the concerns of the company would overlap with the usual tendencies to segregation due to differences in culture; that due to the uniqueness of the project manager the construction would receive systematic solutions and that residential mobility was to be institutionally slowed down the project manager remained the owner. Abadan's company indeed had concerns that did could not be shared by the individual, isolated builders, and which can not be either by a company outside a certain type of relationship between it and the local society. The nationality of the refinery risked causing a shift of any economic tension at the local level (professional claims , for example) or national (crisis over the sharing of oil revenues for example) towards a local tension between nationalities. Residential isolation of different national groups thus appeared to be a security measure. In addition, the dominant character of the refinery in Abadan entailed a corresponding major risk: in the event of difficulty with its staff, it was almost the entire city that stood against.[67]

To counter this specific danger it was necessary, beyond the isolation of foreign minorities, to organize the fragmentation of local population into a number of social categories differentiated, to which the use of the geographical distribution of populations could serve. In this perspective, the company had the power and adequate means of intervention. Its power over the organization of urban fabric came from two facts: the appropriation of a large part of the land on the island of Abadan and the disorganization of local companies construction and public works. The second fact, in conditions of the rapid growth of Abadan, caused in the ‘free zone’ a quantitative delay of

[66] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[67] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

available housing, and therefore the collection of significant scarcity in rents at this level, as well as a qualitative delay in urban equipment. As for the appropriation of most of the island by the refinery, it determined a relative scarcity of land available for private construction and therefore an increase in the price of land and ultimate accommodation in the 'free zone'.[68]

Architectural forms and urban planning of each residential complex combined to create the morphological symbols of the place of each socio-professional category in Abadan society. In neighborhoods intended for upper and middle categories, the Garden City plan, the houses were opened to the outside world, to nature were signs of the enjoyment and freedom that participation to the managerial world assures these populations. On the contrary, the semi-closed houseworkers' cities signified the power of the refinery within the population of manual workers, and the isolation of each household in relation to the street, that is to say to the neighborhood and to the working-class community. Finally, the landscape shaped for the not protected working populations: narrow speculative frame housing estate, closed plan house corresponding to a type of family structure disappeared in Abadan, that is to say, the contradiction between the material framework and the real forms of sociability, wanted to symbolize the helplessness of the local society left to itself and developing "freely"; it was a proof of racism.[69]

By different routes, the same goal was pursued. The superabundance of individual and collective equipment isolated households by making them strangers to the organization that concerns them collectively, to the other extreme its total or almost total absence produces a state of need and primary collectivism which, far from strengthening the vitality of groups, turns the population into a mass because it was an obstacle to individual development; on the other hand, they were the urban forms which directly symbolized the isolation of households and tended to determine them. From the general morphology of the city to the architecture of the house everything was organized to determine the isolation of the sectors, the differentiation of populations, even their opposition. To the effect of segregation obtained by urban planning, means is added moreover that sought through institutions and in particular leisure institutions. So, if we cannot say that in the genesis of

[68] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[69] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est,* tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

the urban fabric of Abadan, models of the urban organization were not applied. built and tested elsewhere, it is certain that the morphology put in place corresponds precisely to a local situation.[70]

The town of Abadan was an apparently reasoned urban planning work that adequately responds to the types of relationships existing between the company, on the one hand, the local community, and the Iranian Company on the other hand. It appears as the morphological translation in the privileged focus of relations between a highly developed society, financially powerful and an economically and socially little advanced in which the first entered. However, this town planning concealed, like the social-economic relations which determined it, a certain number of contradictions that appear clearly at the level of morphology general of the city.[71]

IX. Relationship between urban sectors in Abadan

The city was divided but one and the main factor of unity was the refinery, in both work and employer, urban has made this to even isolate the parts of the city from each other. Unity and division of the city were ultimately only the postponements on the urban level of the fundamental contradiction of the great company whose conception, technique, capital, and purposes were foreigners and whose management could not be shared nor with the mass of local labor necessary for its operation, nor with the Iranian Society to which we owed, however, to make accept the exploitation of the resources of its basement. Thus the company itself united this workforce that it sought to divide by morphology and urban institutions, its management as a whole, and its urban intervention, in particular, could not be independent of the problems posed by the seeking the consent of the Iranian Society and this consideration limited the effort to segregate urban areas and led to the existence of the second great factor of unity of Abadan: the uniqueness of the center of commercial attraction.[72]

The predominance of the refinery in the labor market in Abadan has at least a significant part of the working population of each sector and to mix people from these sectors according to somewhat different from housing groups. Certainly, the residential segregations were modeled on the socio-

[70] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[71] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[72] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

professional categories. However, relationships in work were not equal. Skilled and unskilled workers on one side, administrative staff, middle and senior executives on the other side who worked every day in work teams, workshops, and offices. In addition, technical and manuals worker executives (foremen) were a constant link between professionals layers at different levels. These relationships within the company merely covered a more general fact: collaboration within the same company which creates links between social categories which although they usually manifest themselves in the form of tension, nonetheless determined the existence of a group whose factors of cohesion may in certain circumstances predominate.[73]

In Abadan different neighborhoods had their boundaries marked by guard posts, and there existed regular police stations near or at the entrance to workers' neighborhoods. The owner of all land in the formal company town was the Abadan refinery. It organized different sections of the city, as well as for created and maintained the distinctions between its different parts. It was its will to create the segregated and hierarchic landscape of the city.[74]

Abadan's formal spaces had the wide boulevards and the grid pattern which characterized it from other Iranian cities at the time. One of the differences was in the formal public space of company towns which was far away from the historical model. Contrary to the historic cities which had long and narrow winding alleys forming a network, In Abadan the front doors of the row houses open on to either short, narrow, and straight alleys that join to large streets at both ends, or directly on to large avenues. In this way, each house was separated from its neighbors and was a unit in the neighborhood, it was isolated from the intimate street life, and ultimately from the workers' society.[75]

The town planning of Abadan was a colonial contact town planning, but particular, corresponding to a specific form of contact. Abadan was not one of those administrative centers and trade as multiplied by the colonial system at the time of imperialism. There was not, as in the towns of this type, a large nucleus of administrative and business offices tackled on an ancient city which has

[73] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[74] Ehsani Kaveh, « Social Engineering and the Contradictions of Modernization in Khuzestan's Company Towns: A Look at Abadan and Masjed-Soleyman », *IRSH*, n° 48, Internationaal Instituut voor Sociale Geschiedenis, 2003, p. 361–399.
[75] Ehsani Kaveh, « Social Engineering and the Contradictions of Modernization in Khuzestan's Company Towns: A Look at Abadan and Masjed-Soleyman », *IRSH*, n° 48, Internationaal Instituut voor Sociale Geschiedenis, 2003, p. 361–399.

otherwise changed little and to which the residential sectors joined on the one hand new reserved for representatives of the colonial power, another share of shanty towns occupied by a mass of workers who find little or no industrial employment.[76]

Abadan was only industrial city, or more exactly industrial island around a huge company created from all parts by an advanced economy in an underdeveloped country that provided only two factors of production: qualified labor and the raw material, within the framework of reports of colonization, was and should remain foreign to the use of these factors. This situation implied on the part of the dominant company defined action on the political level in general and on the urban in particular. This is how promoter of the city and therefore its first-factor unity, the company was led to seek to break it up by morphology and urban institutions. Either directly in developing the overall plan of the city, and equipment and the architectural styles of some sectors, or indirectly by abandoning these two last tasks for speculators, it has shaped and differentiated the urban landscapes. However, the effort to divide the city, on the one hand, found its limit in the relations between the company and the Iranian Company, on the other hand, bringing out brilliantly the universal hold of the refinery on daily life which covers all sectors, production, residence, consumption, or leisure, ultimately resolved itself into the opposite of its assigned purpose and gave birth to the unity of the populations of the city. Since nationalization, a new phase of urban life in Abadan started, and the colonial relationships which explained the morphology and urban institutions have disappeared.[77]

[76] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », *Revue Géographique de l'Est*, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.
[77] Institut d'Etudes et Recherches sociales, Tehran, « Abadan : morphologie et fonction du tissu urbain », Revue Géographique de l'Est, tome 4, n°4, Octobre-décembre 1964, pp. 337-385.

Chapter 3

Oil Industry Heritage in Iran

Le résumé

Le troisième chapitre a discuté des activités actuelles concernant la patrimonialisation des vestiges industriel en Iran. Il présente les ressources gouvernementales et institutionnelles et The National Oil Company Archive pour la recherche sur les questions de patrimoine. nous décrivons plusieurs projets de musées du pétrole en Iran dont certains ont été construits et d'autres à être construits par la direction du Centre de documentation et des musées de l'industrie pétrolière iranienne. Le rôle et la position de l'industrie pétrolière dans les développements politiques, sociaux, économiques et technologiques du pays sont parmi les raisons de la création de musées dans ce domaine dans le but de préserver et de montrer une partie importante et influente de l'histoire de l'Iran et dessiner une vision pour la génération future.

Aujourd'hui, de nombreux pays dans le monde ont créé des musées liés au sujet et aux développements du pétrole et de l'énergie. Dans une approche comparative, l'auteur présente plusieurs exemples de musées du pétrole à travers le monde. Le concept de patrimoine industriel est relativement nouveau en Iran et ce Centre est le plus important institution qui travaille sur le patrimoine de l'industrie pétrolière qui a plus d'un siècle d'histoire en Iran.

Ensuite, les points de vue sur le tourisme lié au patrimoine et leur participation au développement local ont été étudiés à travers la littérature académique. Là où l'une des principales approches du patrimoine est que l'investissement dans les infrastructures pour le tourisme serait une source de création d'emplois dans chaque pays. Le développement du tourisme durable en tant que processus serait avantageux pour les touristes et la communauté d'accueil en même temps répond à leurs besoins et renforce son avenir.

I. Iran Petroleum Museums and The Documentation Center

During 1969, the National Congress and Senate have approved a law requiring all ministries to conserve important documents. In this regard, the 'National Iranian Oil Company' also adopted, on February 4, 1970, The use of microfilm in archives, as well as the collection and concentration of registers, have imposed on all departments and offices under their control. The original document should be kept and also it was announced that the elimination of National Oil Company papers by law is illegal. In 1972, the administration council of the national oil company approved the constitution of a committee entitled 'Adoption of the recognition procedure and elimination'. Members of this commission were chosen from among representatives of the different units of the company, to review the topic and the rules.[1]

This commission was subsequently renamed under the title 'Assessment and identification of documents and letter', and at the meeting of 30 December 1972, he underlined the implementation of these two ordinances:[2]

1. Destruction of papers and documents relating to claims against the National Oil Company and its affiliates is prohibited before the publication of final decisions of authorities, the implementation of these decisions and clearance of definitive account is prohibited.
2. Destruction of papers and documents is the responsibility of the Commission after verifying that the documents do not have administrative, financial, economic, political, cultural, or historical values.

In 1996, as part of the implementation of article 35 of the statute of the National Iranian oil company, a decree has been approved, entitled 'Assessment of documents', by using a methodology for the execution of this instruction. The introduction of this directive states: 'In order to prevent the gradual accumulation documents, files, invoices, and stagnations, the optimal use of offices, this procedure of approval was ordered by established and well-appointed representatives of companies, directors, units of independent staff, including legal, inspection, internal audit services, secretariat, and security.[3]

[1] The website of Iran petroleum museum and documents http://petromuseum.ir
[2]The website of Iran petroleum museum and documents http://petromuseum.ir
[3]The website of Iran petroleum museum and documents http://petromuseum.ir

But the very important question that had been neglected until recently was the absence of an organization at the Ministry of Petroleum to review documents from a historical point of view or cultural, social, and political values. Because of the lack of such an organization, important documents were considered as superficial, worthless, and useless, were destroyed. That is why, in parallel with the ministerial decree of 2013, the creation of petroleum museums, and conservation of oil industry documents were also taken into account.[4]

Dating, technical and historical information, or presentation of an important event, including attributes of documents held in the treasury of Iranian oil company museums and documents; written documents such as contracts, protocols, memorandums,etc., documents related to top managers and senior executives of the oil industry (disposals, installations, upgrades, special orders, etc.), documents and communications containing important historical decisions, correspondence with other ministries and national and foreign institutions, titles of different courses, cards, seals, technical flowcharts, etc. Financial documents of the senate and approved documents for oil projects work on historical studies of oil and gas, old oil logs, photographs, films, reports on the oil industry, oil paintings and related artistic works to the petroleum industry, were located in the section of documentary and historical sources of documentation center Iranian oil industry.[5]

Oil industry documents have been abandoned during three periods:[6]

1. During the nationalization of the oil industry and the departure of British from the country where they cleared out the important oil records.
2. After the victory of the Islamic Revolution (1979), important documents were supplied to members of the consortium, which seems they have left them. In addition, many documents have been destroyed during the turmoil and strikes of the days preceding the revolution.
3. With the start of a war and the exposure of the southern oil fields to bombardments and destruction, many documents were also lost.

The Documentation Center, as an important part of the oil industry, keeps of identity and experience, and more precisely the history of the Iranian oil industry is now one of the precious

[4] The website of Iran petroleum museum and documents http://petromuseum.ir
[5] The website of Iran petroleum museum and documents http://petromuseum.ir
[6] The website of Iran petroleum museum and documents http://petromuseum.ir

documentary and museum collections of its predecessors where the administrative centers and archives have been deposited with its main position, the treasury of museums and oil archives.[7]

The center has five important sections :[8]

A. Documents (written document treasury) ; In this section, the written documents of the oil industry from various sources are archived and preserved. The partners of the Center identify valuable documents in various sectors of the oil industry. Department of southern Petroleum, Ministry of Petroleum, Management of Exploration Co., National Iranian Gas Company, National Iranian Oil Company, Oil Products Distribution, National Petrochemical Company, Iran Offshore Oil Company. After identification, collection, and registration in the office of documents, the experts in this section archive documents to the treasury, then they could be restored and used.
B. Visual and auditory part ; In this section, image documents, such as films, photos, slides, negatives, are archived. When creating the documentation center for museums and the oil industry, a multitude of photographs with their digital version, slide, negative and, cassettes were identified, collected and archived in this section.
C. Publications and library ; Books and magazines related to the history of oil are also important documents that are part of the center of the document. In this section, a collection of books on oil has been archived, as well as a collection of old newspapers published in the National Iranian Oil Company, containing valuable information on social, cultural, economic, and industrial events.
D. Oral history ; Record of memories of personal, senior executives, employees, and workers in the petroleum sector, present information about influential people of the history of the petroleum industry. Identification of the people to be interviewed, collection of oral history documents on the history of the oil industry, interviews with a number of workers from the experienced oil sector, adjustment, and archiving of data would be done in this section.
E. Media ; The media unit has a duty to inform about the activities of managers and experts of industry oil museums and documentation concerning the process of identification, collection, and registration of documents and objects of the oil industry in specialist journals, notably Mashaal Magazine, as well as on the website of Iran petroleum museum

[7] The website of Iran petroleum museum and documents http://petromuseum.ir
[8] The website of Iran petroleum museum and documents http://petromuseum.ir

and documents. Apart from that, besides familiarizing the different layers of the company and staff with the history of the oil industry as well as archival sources, it points out the importance of the status of documents and associated objects. Currently, a number of archival sources such as journals, donations, transmissions of documents from oil regions have been presented by the media section to the central ministry. In addition, the media section has a duty to interact with museums and the center of documentation with other subsidiaries ministry of Petroleum with regard to the display of historical documents.

II. Museumology

Following the travels of Nasser al-Din Shah Qajar to Europe in the 1910s the word 'museum' entered the Persian language. A museum is a place where objects are preserved to reflect the culture and civilization of a country. Museums have been created with the purpose of preservation, study and research, and display of origin of civilization. Museums are responsible for comprehensive culture, which means that in addition to preserving, restoring, and reviving objects, they have a duty for education, researching, and documenting. International Council of Museum (ICOM) defines the museum in its statute as follows: 'The museum is a permanent institution with no commercial purpose which Its doors are open to everyone and it works in the service of society and for its development'. Museums have different types according to the items they are displaying and the tasks they compile accordingly. Obviously museums of preservation of historical and archeological monuments, sociology, environment, technology, industry, military, and natural resources are among the most important museums which have been established in different parts of the world.[9]

Iranian Oil and Gas Museums

Oil is one of the most important natural resources that humans use it and because of the important place that this substance has had in human life from the past to the present, it is considered an important and vital resource. Oil museums are formed according to the documents and valuable objects in this industry and attract various audiences. Therefore, the environment and the space in which they are located are very important. The buildings that are selected to be turned into museums are very important. Architectural beauty, building strength, consistency of space with

[9] The website of Iran petroleum museum and documents http://petromuseum.ir

exhibited items, the security of showcases, and forecasts for unexpected events, level of public access, and suitable spaces would result in the encouragement of visitors.[10]

In the Iranian oil industry, with a lifespan of more than one hundred years, the project of setting up museums of the Iranian oil industry has started in January 2013. During this period, many works and documents of the historical value of the identity of the industry and its stakeholders would be identified, collected, and registered and would be transferred.to the cities where the first oil museums are to be established. The geographical extent of the oil industry, the existence of numerous works and places who are historically important, the effective role of the Oil Museum in the development and social and economic growth of the regions, help the reasons for the prosperity of tourism and the possibility of using the facilities of the oil industry in all parts of the country led to the selection of several points for the formation of the oil museum.[11]

Thus pursuing multiple journeys of expert groups of the Museum of the Oil Industry to different parts of the country and speeding up the process of identification and registration of objects and documents, Tehran Oil Museum was selected to show the technology of this industry and introduce the importance of oil, gas, and petrochemicals in various areas of life; Features that could turn this museum to become an important scientific and educational center. But Masjed Soleyman Oil Museum is considered, as the origin of the oil industry and the existence of first oil well, it will be dedicated to showing the history of the oil industry. Abadan Oil Museum also according to the existence of several centers of oil industries in the city, including the refinery, the first gas station, technical school, docks, and ceremonial houses display numerous historical value of the oil industry. In the west of the country, according to the first excavations in this area (Chayasar well) and most importantly the existence of the refinery of Kermanshah, the 'Oil Museum of the West' would be one of the projects. In addition to the above, the establishment of an oil museum in the east of the country, especially because of the existence of the Distribution Center of petroleum products in the region the Sabzevar Oil Museum, is under process.[12]

The country's oil industry hopes to set up oil museums in different parts of the country, an important step in the development and economic and social prosperity of the cities of Important and long-standing centers of the oil industry and the people of these areas would benefit from its

[10] The website of Iran petroleum museum and documents http://petromuseum.ir
[11] The website of Iran petroleum museum and documents http://petromuseum.ir
[12] The website of Iran petroleum museum and documents http://petromuseum.ir

achievements. The importance of the oil industry in the political, social, and economic development of technology in the country is one of the reasons for the establishment of a museum in this field with the aim of preserving and reflecting an important and influential part of the history and drawing a vision for the future. Cities in which the necessary measures have been taken to establish oil museums are as follows:[13]

Oil Industry Museum in Masjed-i Suleiman; The first city of Iran's oil industry; This city is one of the oldest oil extraction bases in the world and is projected to become one of the oil tourism attractions of Khuzestan province. There are currently five locations for the Petroleum Museum In Masjed Soleiman, it is considered that The well number one, Si-Berenj Oil seepages, Tembi Power Plant, Bi-Bayan Distillation and Sulfur Plant.[14]

Oil Museums in Abadan; There are currently five locations were selected in the city for the museum to be constructed: Abadan Gas Station as the first fuel station in the country, Artisan School as the first vocational training school for Oil industry workers in Iran, Abadan wharves No. 1 to 11, Storage of cranes, Ceremonial houses include three buildings in the Briam area.[15]

Museum of Oil Industry of the West in Kermanshah; This museum would be located in the oil filling factory near the Kermanshah refinery and considering the fact that this factory is about one hundred years old and it had a role in the distribution of petroleum products throughout the country over the past decades, it would represent the history of the oil industry in the west of the country.[16]

Petroleum Industry Technological Museum in Tehran; This museum introduces the nature and importance of oil in various aspects of human life from ancient times to the present and the technologies used in it.[17]

Gas Station Museum of Government Gate Metro station in Tehran; This museum has been built in fuel station No. 6 or the gas station of Darvazeh Dolat of Tehran in the last years of 1930, simultaneously with the first Pahlavi period, by the Anglo-Iranian Oil Company for the distribution of petroleum products such as kerosene, gasoline. The building of this place, which had been

[13] The website of Iran petroleum museum and documents http://petromuseum.ir
[14] The website of Iran petroleum museum and documents http://petromuseum.ir
[15] The website of Iran petroleum museum and documents http://petromuseum.ir
[16] The website of Iran petroleum museum and documents http://petromuseum.ir
[17] The website of Iran petroleum museum and documents http://petromuseum.ir

abandoned for years, was put on the agenda to become a museum by the oil industry museum and documentation center and was inaugurated in July 2019.[18]

III. Documentation

Currently, the Office of Museums and Documentation of the Oil Industry in Tehran operates in two parts:[19]

A. 'Treasure of objects' of Museums and documentation Center of Iran's oil industry the main purpose of collecting the objects of the Petroleum Museum is to protect them from common accidents and incidents and their preservation so that this heritage could pass to the next generations. To this end, by defining standards, the durability and maintenance of these treasures are largely guaranteed. Treasures of Objects of Museum and Documentation Center of Iranian Oil Industry consist of Works, Remaining objects and documents from different eras and the presence of foreign nationals before the victory of the Islamic revolution and then, up to the present. Among the collectibles related to the oil industry, there are documents and objects belonging to famous persons, influential objects in this industry, and items that narrate Iranian oil history in various historical, artistic, and technical aspects and are subject to destruction. Collection of the mentioned objects would be during the two main stages of 'identification' and 'transfer' under the supervision of technical experts who have been called in to prevent any damage to this heritage. The works collected in the treasury are related to the four main companies of the oil industry and objects from people who have donated them to the museum.

B. 'Documents'; Museums and Documentation Center of Iran's Oil Industry with seriousness work for the identification, collection, classification, organization, protection, and maintenance of oil industry documents, in order to prepare them to be used for research by authors, researchers, and enthusiasts of the domain. Currently, more than 151,000 pages of documents with historical, social, economic, political, geographical, and architectural issues, in different classification including personnel files, geographical maps, communication, facilities and construction, refinery location plan, booklets on mapping, seismography and exploration, administrative reports, photos, slides, negatives, films are

[18] The website of Iran petroleum museum and documents http://petromuseum.ir
[19] The website of Iran petroleum museum and documents http://petromuseum.ir

in the archive of this center. In addition to the abovementioned, letterheads of different periods, stamps, technical and organizational charts, financial documents, and approved documents of oil industry projects, will be located in these collections. While books in the field of historical studies of oil and gas, old oil publications, news reports, paintings, and works of art related to the oil industry are also considered.

IV. Abadan Gas Station Museum

According to some records, the Abadan gas station was built as the first fuel station in Iran in 1927 in the center of Abadan. This place was first used for the distribution and sale of kerosene and petroleum products. After the agreement of the Minister to set up oil museums in Abadan, this place became one of the priorities to become a museum of the oil industry. In this regard, the study and research phase of this project and in parallel with the identification and collection of old objects and related documents throughout the country, especially oil operational areas began and in January 2015, Abadan Gas Station Museum entered to the construction phase and after Months, February 16, 2017, with the presence of some officials of the Ministry of Oil, provincial and local officials of Abadan this museum was inaugurated.The Gas Station museum with an area of 1856 square meters is located next to the new gas station in the city center and in front of the Abadan City Council. The museum consists of the main building and two side buildings.[20]

Building number one; The main building of the museum, which is different from other buildings due to the type of architecture used in it, is six-dimensional and is almost 90 years old. Initially, it was the only fuel station building at that time, its structure has to be renovated and restored. This building, consists of two small halls, each one represent special and unique objects. Such as barrels, oil tanks, and funnels, all kinds of containers, and a set of 20-liter cans for transporting fuel and petroleum products, pictures of old gas stations, fuel distributors who have transported oil by the use of mules and camels to distant places.[21]

[20] The website of Iran petroleum museum and documents http://petromuseum.ir
[21] The website of Iran petroleum museum and documents http://petromuseum.ir

Figure 4 : Building number one of Abadan Gas Station Museum[22]

Building number two; on the northwest side of the museum is a 60-year-old building that was once used as a distribution building. The first foyer, as the entrance part of the building, introduces household and industrial oil-burning appliances and examples of banknotes and stamps of the oil industry that have been printed and issued on the occasion of the importance of this industry, lamps, round lamps, lanterns, food processors, the wick stove deal with the oil pump lamp. The second foyer; the second hall, which is separated from the first room by a glass containing various types of wick lights, displays various types of heaters, images of the main samples of engine oil containers, and other petroleum products. Another important and documentary part of this museum in the second hall is dedicated to newspaper advertisements and oil advertisements. It will definitely be interesting to see and read the pictures, and sentences, used in them that promote the use of oil. Most of these newspapers date back to the beginning of the twentieth century. The third foyer, This hall is intended for introducing and displaying the internal components of gas station devices (dispensers or distributors), followed by logo carving stereotypes on petroleum products distribution cans, various safety devices, and fire extinguishers. This place could be used as a workshop, interested people, especially students, can get acquainted with all the internal components of the gas station.[23]

Building No. 3 and the museum yard; On the northeast side of the museum is a tea house where visitors can relax. Upon entering the museum, a large area decorated with native plants and trees

[22] The website of Iran petroleum museum and documents http://petromuseum.ir
[23] The website of Iran petroleum museum and documents http://petromuseum.ir

can be seen. In this space, a series of gas station devices were arrayed in the order of the year of their built and are arranged according to the evolution process. Most of the devices on display, numbering up to 12, are made by British, American, and Japanese companies, but also include products from Germany, Australia, and India.[24]

V. Abadan Apprentices Museum

Abadan Apprentice Museum is the second museum of the oil industry museum project that has been opened in Abadan Artisan School. Abadan Artisan School was established in 1933 and the building of this school has been opened to the public after renovation and retrieval of related documents.[25]

After the discovery of oil, Meeting the company's need for a skilled local engineer, technician, and skilled hardware worker in the future could serve the long-term benefits of the company. As a result, at first, basic training was provided to hard workers. The result of this process was the establishment of the first training center in the last years of the thirteenth century in Masjed Soleiman, where basic skills, especially metalworking and electrical skills, turning and casting were taught. With the transfer of oil to Abadan and the establishment of a refinery, followed by the need to establish an educational complex in this area, the primary training center for apprentices was built. The increasing expansion of the oil industry and the Abadan refinery followed by the growing need for skilled labor.[26]

On the other hand, Iranian workers and apprentices have demanded equality with non-Iranian skilled apprentices and foremen which caused the issue of educating Iranians to be raised. Finally, with the pressure created in the workers' strikes in 1929 and then the cancellation of the Darcy contract by the first Pahlavi, a clause was included in 1933 agreement, according to which the Anglo-Iranian Oil Company should provide pre-employment training for Iranian employee, in the following courses, according to the needs of the refinery and its development, the four main disciplines of electricity, mechanics, precision instruments and the refining process became the main educational topics.[27]

[24] The website of Iran petroleum museum and documents http://petromuseum.ir
[25] The website of Iran petroleum museum and documents http://petromuseum.ir
[26] The website of Iran petroleum museum and documents http://petromuseum.ir
[27] The website of Iran petroleum museum and documents http://petromuseum.ir

Figure 5 : Abadan Artisan School.[28]

The building of the Artisan School with its set of training classes was the main educational space of the oil industry in Abadan for many years. In 1977, due to the high cost of administration, the deterioration of buildings and equipment, the advancement of oil industry technology, and also the increase of educated and job seekers, by the order of the officials of the National Oil Company, the training activities were stopped. In 2013, this complex was put on the agenda as part of the oil industry museum project. It consists of five rooms, yard, and workshops.[29]

Five rooms; This part of the museum consists of five rooms that used to be the administrative unit of the Apprentice School and now has a collection that narrates the story of the museum. Rooms

[28] The website of Iran petroleum museum and documents http://petromuseum.ir
[29] The website of Iran petroleum museum and documents http://petromuseum.ir

number one and two are called 'chronographs'. In these two chambers, the history of Iran and the world from the perspective of the oil industry has been demonstrated in six time lines, and the history of Abadan, education, and the school have also been presented. Next to these lines, showcases have been installed to display documents and objects related to these events. Room number three displays works that illustrate the importance and diversity of education in the oil industry. Room number four is reserved for trainees. A large showcase to display 1,200 photos of trainees from different courses, along with other documents, has given a special effect to this space. Room number five, which was reserved for the director at the time of the school's activities, is dedicated to displaying a collection of documents and objects related to the school administration.[30]

Schoolyard; The school grounds, once home to hundreds of trainees, now have a different function. The museum grounds present a variety of historic elements, including a boiler, refinery replicas, a set of industrial valves, an old bicycle stand, a barrel stand, a painting bus, and a children's playground.[31]

Figure 6 : The ground of Abadan Apprentices Museum, 2020.[32]

Workshops; The Artisan School workshop with an area of 4276 square meters consists of several sections that have undergone changes over the years, along with the development of the school and the increase in the required specialties by the refinery and the need to teach practical courses. The old and brick part of the building was built in 1933, the entrance of which can be seen on the eastern side of the building. The roof structure of this building was made in the form of a shed. The type of brick used in the building is a brick called Baghdadi brick, which can be seen in many examples

[30] The website of Iran petroleum museum and documents http://petromuseum.ir
[31] The website of Iran petroleum museum and documents http://petromuseum.ir
[32] The website of Iran petroleum museum and documents http://petromuseum.ir

of other buildings built by the British. The metal part of the building was built in the 1940s according to the needs of the refinery to incorporate the field of general mechanics into the school. This section, with a height of about 11.80 meters included external combustion machines, internal combustion, and piping workshops. In later courses, disciplines such as electricity were added to the trainees' courses according to the refinery's needs. [33]

Abadan Wharves Museum Park; It will be set up in the historical wharf of this city and the place where historic cranes are kept.

Figure 7 : Historical wharf of Abadan City

VI. Darvazeh Dolat Gas Station Museum in Tehran

Fuel station No. 6, or the gas station of Darvazeh Dolat of Tehran, was built in the last years of the 1930s, by the Anglo-Iranian Oil Company to distribute petroleum products such as kerosene, gasoline. The building of this place, which had been abandoned for many years, was restored and was inaugurated in July 2017 as Gas Station Museum. In each section of the museum, various topics are presented, including the history of the Darvazeh Dolat neighborhood, the formation and operation of the site, as well as photographs, documents, maps and historical films related to this place, examples of objects related to distribution, transportation, and fuel unloading. Examples of gas stations are on display in this museum. In August 2014 this place has been registered under

[33] The website of Iran petroleum museum and documents http://petromuseum.ir

number of 31711 in the list of national monuments of the Ministry of Cultural Heritage, Tourism and Handicrafts.[34]

In the sales section of the Darvazeh Dolat Gas Station Museum, which consists of two indoor and outdoor areas, a variety of measuring instruments including measuring cup, funnel, and equipment used in the distribution and transfer of kerosene for domestic use and also In other sections, examples of worksheets, related documents, and products offered in stores are on display for visitors.[35]

Figure 8 : The main building of Darvazeh Dolat Gas Sation Museum, 2020.[36]

Triple rooms; In the main building of the Darvazeh Dolat Gas Sation Museum, there are three rooms, each of which is dedicated to different topics:[37]

Room number 1; In this room, documents related to the history of Darvazeh Dolat neighborhood, purchased land by the Anglo-Iranian Oil Company, how the site was formed and operated, photographs, documents, maps, and historical videos of this site are displayed.

[34] The website of Iran petroleum museum and documents http://petromuseum.ir
[35] The website of Iran petroleum museum and documents http://petromuseum.ir
[36] The website of Iran petroleum museum and documents http://petromuseum.ir
[37] The website of Iran petroleum museum and documents http://petromuseum.ir

Room number 2; In this room, Oil Event chronology of the world and Iran, Billboards and Fuel Quotation Documents in Iran and Sample Showcase of Ordinary and Super Gasoline, Diesel, Black Oil, Kerosene, Engine Oil, are exposed to visitors.

Room number 3; In this room, visitors could see how the gas station devices work, there is a description of the parts and how they relate to each other in the fuel devices at the gas station and in the car. Presented examples in this section include a two-way pumping machine and its disassembled parts, the section of a nozzle machine and different types of this machine, display cases for manuals of pumping machines, gasoline tanks for motorcycles and cars, types of gasoline meter.

Figure 9 : The yard of Darvazeh Dolat Gas Station Museum, 2020.[38]

VII. Oil Museum in Other Countries

A. French Petroleum Museum (Musée du Petrole)

Located 51 km north of Strasbourg and near the border of Germany in the Alsace is a small town called Pechelbronn that houses one of the world's oil museums. The industrial extraction of oil in this region began in the first half of the eighteenth century. Oil Discovery in The north of Alsace caused the rural landscape of this region to change little by little. The peak of oil extraction in Alsace was in the 1921s. When more than 651 wells and four refineries were active in the area and more than 3111 employees were working. But the oil industry in Alsace gradually declined, and by 1961 oil production had almost ceased. In order to preserve the heritage of the oil industry in

[38] The website of Iran petroleum museum and documents http://petromuseum.ir

Alsace, the French Petroleum Museum was inaugurated by the mayor of Pechelbronn in May 1967. Visitors to the museum could discover 511 years of history of oil in the region with the help of videos, oil equipment and tools, old images and graphic designs.[39]

B. German Museum of Petroleum

The German Oil Museum and the Twist Oil and Gas Museum in Lover Saxon in northwestern Germany demonstrate the days when Germany was one of the most important oil producers in Europe. German Oil Museum is located next to the small village of Weitz in the west of Lower Saxony. 'Weitz' have played an important role in the history of German oil. In the seventeenth century, crude oil in the area was collected like droplets on the surface of the land and used for lubrication and medicinal purposes. Until the late nineteenth century, the oil extraction was in this manner in Lower Saxony. Drilling to extract oil in the region began in 1921, and during World War II, the region's oil was one of the sources that the German government relied on it to supply fuel. The Weitz oil field was closed in 1963. The German Petroleum Museum, now on a 21,000 square meter site near an old oil field, displays the history and how to extract crude oil and natural gas and their consumption. In 1938 a natural gas reservoir was discovered in Laver Saxon. This discovery was the beginning of a series of excavations in the area which led to discovering another gas reservoir in 1942. These activities made Lover Saxony one of the most important oil and gas production areas in Europe.[40]

Years after that oil and gas production in Laver Saxon was stopped, officials decided to create a museum to demonstrate the historical connection of the region with oil production and how oil was extracted and produced in the past. Twist Oil and Gas Museum was inaugurated in 1991. The exhibition space of this museum is about 451 square meters on two floors. The museum also has an outdoor exhibition where large facilities and equipment related to the oil and gas industry are shown. The museum has a small library and a room for meetings and lectures and film screenings. The architecture of the museum is comfortable for handicapped persons and the museum brochures provide the necessary information in two languages.[41]

[39] The website of Iran petroleum museum and documents http://petromuseum.ir
[40] The website of Iran petroleum museum and documents http://petromuseum.ir
[41] The website of Iran petroleum museum and documents http://petromuseum.ir

C. California Oil Museum

California Petroleum Museum in a two-story building with the architecture of the Queen Victoria era is located in the city of Santa Paula, California. Oil and gas have long played an important role for the people of the US state of California, the industry has created jobs for them, science and technology have advanced and transformed their life. California Petroleum Museum in a classic building from the 1890s tells the story of oil and gas in the state. This building, which is registered as a national historical monument, has been one of the buildings of the Union Oil company of California, and now the second floor is designed in such a way that evokes the company in the 1930s. Of other features of this building is its side tower which is decorated in an interesting way with a view of traditional bricks and inspired by Italian styles. And it shows one of the best reconstructions of a commercial building from the early twentieth century. California Petroleum Museum with old artifacts from the oil industry and old gas stations tells the story of a valuable asset that, for different generations in the state of California, has brought many job opportunities and wealth. Permanent and temporal exhibitions besides old gas devices, drilling rigs, models, pictures, Videosmemories, and relics from the past are presented at the California Petroleum Museum. Permanent exhibitions of the museum on the floor first demonstrate the Science, History of Petroleum Technology for visitors of different ages. They can get acquainted with the formation of oil underground, see that how Native Americans used natural oil ponds, and by the help of models, they get information about the refining process and stages of drilling oil at sea and land. Museum tower; a separate space of the museum houses a hundred-year-old tower. This oil rig, which is derived directly from an oil field in Los Angeles County, and transferred to the museum.[42]

VIII. Tourism and Local Development

Since the adoption of the World Heritage Convention by UNESCO in 1972, the extent of cultural heritage has expanded significantly. After the initial registration of historic monuments and sites, the World Heritage List now covers historic town centers, industrial landscapes, and sites linked to intangible heritage. There is a more disputed and contextualized issue about establishing heritage value, while the debate about the impact of the frameworks used to manage World Heritage Sites is limited. In front of complex heritage sites such as industrial landscapes , this issue is apparent where the management of heritage value is often in conflict with contemporary community life.

[42] The website of Iran petroleum museum and documents http://petromuseum.ir

Recently there are more references to the contribution that the World Heritage system makes to sustainable development, and this focus may be about to change.[43]

Since 1811 the concept of tourism was developed and it continues to change its definition. The term tourism is used for the activities related to people traveling abroad and people who serve the business.[44] Investment in infrastructure for tourism would be a source for creating jobs and employment in each country. Sustainable tourism development as a process would be beneficial to the tourists and the host community at the same time supports their needs and strengthens its future. By considering this concept we could hope to transform and requires the great efforts of all sections of society from the education sector or a specific community or industry to provide the conditions for local development. Today, tourism is recognized as an important factor in economic growth and development while initially it was considered as a Socio-cultural phenomenon. The tourism industry would have positive consequences such as the Interactions of nations, peace, security, and economic developments. Recently, the global tourism industry has been grown significantly and it has a remarkable quality worldwide and provides job opportunities, generates national income, and strengthens the national and international economy, as well as increases connections between cultures and civilizations.[45]

In 2017, The World Travel and Tourism Council (WTTC) in a report reviewed the situation of the tourism industry in that year and predicted that the direct participation of the travel and tourism sector in the world's gross domestic product will continue to grow considerably. [46]

In 2015, the direct contribution of tourism in world GDP and job creation respectively has been 2 trillion dollars and 118 million jobs. According to the annual report of the World Travel Council and (WTTC) on the economic impact of the tourism industry, the travel industry in the global economy had a 9% share of the world's gross domestic product with the amount of $ 7.7 trillion, with the creation of 2.2 million new jobs in 2015. According to the report, in the year 2014, a total of 7 million jobs have been created in this sector, and the total number of direct jobs in this area reached 118 million. Also, during 2015 the tourism industry has supported 284 million jobs. So, in 2015, the tourism industry contributed to GDP growth and employment more many other major

[43] Furtado, F., « Monitoring World Heritage », *City and Time 1*, no. 2, 2004, p. 43–6.
[44] Landbrg Donald, M., *The Tourism Economy*, 2004.
[45] Rahimpour Ali, Islamic Tourism, Tehran: Mohaba Publishing, 2002.
[46] Shamloui Amir, donya-e-eqtesad Newspaper No. 3519 Publication Date: February 17, 2018.

economic sectors, including manufacturing and retail. In the surveys done by WTTC at the national level, in 127 of 184 countries, the direct share of tourism in GDP growth was greater than the overall growth of GDP. Countries such as Iceland, Japan, Mexico, New Zealand, Qatar, Saudi Arabia, Thailand, and Uganda are among them. The demand for travel is rising and this sector has the ability to constantly overtake the global economy and has flexibility in the time of crisis which could be a key sector in economic development and job creation all over the world.[47]

Fundamental processes of restructuring increased mobility of capital, the rise, and decline of localities and regions, and the pursuit of new economic growth activities, particularly in the service sector, have characterized the economy of the post-industrial world. In the developing world, localized processes of marginalization and extreme poverty are frequently covered by economic change. In recent years, changing consumer preferences and choices, wealth, and local mobility have been forces for service-based economic sectors.[48]

These economic shifts have significant potential for areas that are trying to reshape their local economies as a result of economic change or marginalization. Tourism is one sector that has performed particularly well in this context. It is one of the most critical forces shaping the world economy.[49] Recently, marginalized areas, such as the Mediterranean and Caribbean islands, are enjoying new economic prosperity through the identification and promotion of sites as a result of their location, natural attractions, and tourist-orientated facilities. In the developing world, and development literature, the importance of tourism is increasing and many countries regard it as a 'passport to development'.[50]

Therefore in this setting, tourism as a so-called 'pro-poor' strategy is an emerging theme in development literature and the potential of tourism development would promote community development and sustainability in a manner that does not lead to drastic environmental and social change.[51] Many governments and development agencies around the world use tourism promotion as an inexpensive strategy that can draw in foreign exchange through 'exhibiting' local culture and

[47] Donya-e-Eqtesad Newspaper, International Economics Group No. 4141, February 2017.
[48] Hudson R, *Making music work? Alternative regeneration strategies in a deindustrialized locality: the case of Derwentside*, Transactions of the Institute of British Geographers NS 20 1995, p. 460–73.
[49] Williams S, *Tourism geography*, Routledge, London 1998.
[50] Dann G. M. S., « Tourism and development », in Desai V and Potter R B (eds.), *The companion to development studies*, Arnold, London 2002, p. 236–40.
[51] Wahab S, Pigram J, J, (eds.), *Tourism, development and growth: the challenge of sustainability* Routledge, London, 1997.

environments. This is reasonable when there is economic collapse, and significant economic alternatives are absent. However, we can rarely regard tourism as a 'development remedy'. As the data shows, tourism development usually comes at a price and economic profits must be balanced against social and environmental costs. There are questions to be asked concerning the expenses and consequences of tourism, and whether it truly can be an empowering development strategy for the host community, from which it can derive sustainable long-term benefits.[52]

Local development

In many states of the world, the presence of economic crises has produced a search for locally and innovative growth alternatives, which are frequently cited in the literature as 'local economic development' (LED).[53] An important factor of LED is that it attempts to stimulate economic growth and to expand the local economic base into sectors that are usually quite separate from those in which recent hardship has been experienced a pertinent consideration in communities undergoing economic change. For example, in South Africa, the contemporary inclination of authority and development leadership to local governments, as reflected in the country's recently stated commitment to 'developmental local government', has assisted local governments to explore innovative extension options to address the development supply and fill the employment gap that more traditional economic sectors appear incompetent to do. In this context, LED, in employing local resources and abilities, is identified by the government as a key medium for delivering economic change and easing poverty.[54]

The development encouraged tourism in regions trying to restructure their economies is an essential theme in academic literature. In the developed countries, for instance, the redevelopment of harbor areas in regions such as Liverpool, Baltimore, or Sydney for leisure and business tourism, or the use of past mining fields for heritage tourism, as in Wales and Yorkshire are identified trends.[55] An important element to the success of such projects is the extent to which a locality can 'market' itself to possible investors and tourists through 'place marketing', in order to produce a tourism-based

[52] Mitchella R, E., Reidb D. G., « Community integration:island tourism in Peru », *Annals of Tourism Research*, 28 2001, p. 113–39.
[53] Stöhr W. B., *Global challenge and local response*, United Nations Library, London, 1990.
[54] Binns T., Nel E., « Beyond the development impasse:local economic development and community self reliance », in South Africa Journal of Modern African Studies 37, 1999, p. 389–408.
[55] Edwards J. A., Coit J. C. L., « Mines and quarries: industrial heritage tourism », *Annals of Tourism Research* 23, 1996, p. 341–63.

economic growth.[56] Classifying and marketing new conceptualizations of space and place is key in this respect. Projects such as the hosting of festivals and the creation of flagship foci, such as heritage sites, conference centers, and benefiting from locally available natural resources, are all signs of this approach.[57]

After successful trends in more developed countries, the application of tourism-based development became also an essential issue in the developing world. Rogerson has explained it;[58] 'A discernable trend across many developed countries is for LED initiatives to be anchored upon promoting localities as centers of consumption rather than of production, applying a tourism-led approach to LED'.

The Sustainable Local Development

In 1987 the World Commission on Environment and Development (WCED) proposed a general definition of sustainable development. It was described as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs', this definition is established on a state of equilibrium across three interdependent dimensions; economic, environmental, and social.[59]

While sustainable development has a contentious conceptual nature, two key principles are constantly evident in the literature; the adoption of a long-term and general planning process, and the participation and support of multiple stakeholders. Particular support can be found for important planning as a long-term and holistic planning process. Simpson argues that strategic planning 'implies a long-term perspective, requires consideration of multiple situational influences, is … goal-oriented, and can accommodate a wide variety of conflicting perspectives'.[60] This incorporates many of the WCED policies of sustainable development. Further support is presented

[56] Hall T., Hubbard P., « The entrepreneurial city: new urban politics, new urban geographies Progress », *Human Geography* 20, 1996, p. 153–74.
[57] Boyle M., « Civic boosterism in the politics of local economic development 'institutional positions' and'strategic orientations' », *the consumption of hallmarkevents Environment and Planning* A 29, 1997.
[58] Rogerson C. M., « Tourism and uneven local economic development : route tourism in South Africa », Paper presented at the International Conference of Tourism Development and Management in Developing Countries, Guilin, China, November 2001.
[59] WCED. Our Common Future. Oxford: Oxford University Press, 1987.
[60] Simpson, K. « Strategic Planning and Community Involvement as Contributors to Sustainable Tourism Development », *Current Issues in Tourism* 4, no. 1, 2001, p. 3–41.

by Williams, who argues that a strong strategic planning process establishes the necessary liability and evaluation structures for sustainable development.[61]

The idea of the essential support of numerous stakeholders during the decision-making process is also generally accepted as crucial in attaining a collective sense of responsibility for the sustainable development of a resource. Concerning heritage, this matter has been studied by many authors. Aas et al., for example, examined community participation in tourism development at the World Heritage Site of Luang Prabang in Laos. An important proposal of the study was the necessity to develop stakeholder discussion skills. But, this continues to highlight the role of the expert in unlocking 'valid' collaboration practice, subconsciously strengthening a culturally dominant viewpoint of collaboration.[62]

While the sustainability of tourism at heritage sites have been widely investigated by academic researchers, the discussion about sustainable development is a relatively new issue. As a result sustainable development has been recognized as an underlying rule of the World Heritage system. In 2002, the Budapest Declaration on World Heritage (the 'Budapest Declaration') referred to World Heritage 'as an instrument for the sustainable development of all societies.[63] Additional references were given to secure that World Heritage properties contribute 'to the social and economic development and the quality of life of our communities', and to ensuring 'the active involvement of our local communities at all levels in the identification, protection, and management of our World Heritage properties'.[64]

After the Budapest Declaration, the conference *Linking Universal Values and Local Values: Managing a Sustainable Future for World Heritage* (the 'Amsterdam Conference') was held. The Conference: 'Acknowledged that World Heritage properties are dynamic entities where cultural and social values evolve. Indeed, the continuity between the past and future should be integrated with management systems accommodating the possibility for sustainable change, thus that the evolution of the local value of the place is not impaired'.[65]

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[61] Williams, P. « The Governance of Sustainable Development in Wales », *Local Environment* 11, no. 3 2006, p. 253–67.
[62] Waterton, E., L. Smith, and G. Campbell. « The Utility of Discourse Analysis to Heritage Studies: The Burra Charter and Social Inclusion », *International Journal of Heritage Studies* 12, no. 4, 2006, p. 339–55.
[63] UNESCO, *Budapest Declaration on World Heritage,* Paris: UNESCO World Heritage Centre, 2002.
[64] Landorf Chris, « A Framework for Sustainable Heritage Management: A Study of UK Industrial Heritage Sites », International Journal of Heritage Studies, 15:6, 2009, p. 494-510.
[65] de Merode, E., R. Smeets, and C. Westrik, (eds.), *World Heritage Papers 13. Linking Universal and Local*

Conclusion

This thesis aimed to do historical research about the oil industry in Iran from 1908 until 1951 and the emergence and development of the city of Abadan around a refinery in southwestern of the country. The period ranges from the time of first oil discovery in masjid-i Suleiman in1908 until the nationalization of the Iranian oil industry. Also, to discuss the activities for the conservation of Iranian oil industry heritage.

The researcher with a qualitative approach tended to reinterpret the existing knowledge about the considered subjects. The data used in this study were derived from written sources such as available books in the university library and articles in online databases. Due to limitations caused by the COVID-19 pandemic, it was not possible to benefit from local and enterprise archives.

Following the goal of this thesis, the first chapter summarized the history of oil in Iran from the first oil concession of D'Arcy in 1901 toward the discovery of oil in 1908, formation of the Anglo-Persian Oil Company in 1909, and throughout the First World War and developing years of the Company in 1920sm, and then its role in the Second World War and finally the Nationalization of the Iranian oil industry by the government of Mohammad Mosaddegh in 1951. Also, the concessionary relations between the Iranian Government, APOL, and the British Government as the main shareholder of the Company, concerning their negotiations, disputes, and agreements through the years were discussed.

In the second chapter, we have discussed the city of Abadan. The researcher studied the origins of the city, its expansion through the island simultaneously with the development of the Company, and urbanism and architectural ideas that were practiced to the construction of the company towns in the city. Also, the morphology of the city related to tissue urban was examined.

The third chapter discussed the major activities related to the industrial heritage in Iran. It presented the company archive and several oil museum projects in which some of them were built and others to be constructed bt the management of the Center of Documentation and Museums of Iran Oil Industry. Then the viewpoints about industrial heritage and their participation in sustainable local development were evaluated.

Values: Managing a Sustainable Future for World Heritage, Paris: UNESCO World Heritage Centre, 2004.

Abadan, as one of the first modern cities built in Iran in the twentieth century, has attracted the attention of many researchers around the world. This research a contemplative approach tried to increase the awareness of the existing knowledge about this city. The result of the research is a thesis volume that can be used to increase the knowledge of this city for Latin-speaking audiences and be used by other interested researchers.

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La partie personnelle du projet collectif tutoré

UNIVERSITÀ DEGLI STUDI DI PADOVA

DIPARTIMENTO DI SCIENZE STORICHE,
GEOGRAFICHE E DELL'ANTICHITÀ

LAUREA MAGISTRALE IN
TECNICHE, PATRIMONIO, TERRITORI DELL'INDUSTRIA -
TECHNIQUES, PATRIMOINE, TERRITOIRES DE L'INDUSTRIE

MASTER ERASMUS MUNDUS TPTI

La partie personnelle du projet collectif tutoré

L'histoire du chemin de fer en France, en Italie, au Portugal

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Introduction

Un projet de recherche mené pendant les deux années de Master TPTI en groupe était le projet tutoré. Le sujet de cette recherche était chemin de fer, paysage et l'innovation technique . L'objectif était d'identifier les chemins de fer du point de vue historique, architectural, économique et paysager dans trois pays: la France, l'Italie et le Portugal. Chaque membre du groupe a travaillé sur l'un de ces sujets selon son domaine d'expertise. Le résultat du travail a été fourni sous forme d'un site internet.

À cette fin, trois gares ; Gare du Nord, Gare Centrale de Milan et Gare du Rossio Lisbonne dans ces trois pays ont été sélectionnées comme étude de cas. En plus de l'utilisation des ressources académiques pour la recherche, les stations ont été visitée en groupe, les résultats comme les images et d'autres informations sont disponibles sur le site Web dédié au projet.

Dans la partie individuelle de travail du projet collectif tutoré, la tâche de l'auteur est la recherche sur l'histoire des chemins de fer dans les trois pays européens ce qui sera discuté comme une étude comparative dans cette partie du mémoire.

En France, la première ligne de chemin de fer de 16 kilomètres entre Saint-Etienne et Andrézieux est inaugurée le 18 juillet 1827.[66] Une décennie plus tard, en Italie, en 1837, la première concession ferroviaire est accordée pour construire une ligne entre Naples et Nocerna au sud de la péninsule.[67] Au Portugal, au cours des années 1853 et 1891, un plan général de construction des chemins de fer du pays a été réalisé.[68]

Le chemin de fer est l'une des industries symboliques du monde moderne. Il a également conservé sa position de moyen de transport public entre les villes et les pays européens au cours des deux derniers siècles. Le chercheur recherche des connaissances sur l'histoire de cette industrie et sur son évolution dans les trois pays.

Les Etudes Rhodaniennes dans la revue géographie écrit sur le réseau ferroviaire français au cours de son premier siècle d'existence. Dans son œuvre, M. Pierre Dauzet a exposé quatre grandes

[66] Hours Joseph, « L'histoire des chemins de fer français et ses enseignements géographiques », *Revue de géographie jointe au Bulletin de la Société de géographie de Lyon et de la région lyonnaise*, vol. 24, n°2, (1949): 127-137.
[67] P. M. Kalla-Bishop, *Italian Railways*, Newton Abbott, Devon, England: David & Charles, 1971, p. 15–16.
[68] Pinheiro Magda de Avelar, « Le rôle de l'Etat dans la construction des chemins de fer du Portugal au XIXe siècle », *Histoire, économie et société*, 11e année, n°1. Les transports terrestres en Europe Continentale (XIXe-XXe siècles) (1992): 173-184;

périodes de l'évolution du chemin de fer en France. La première période de 1821 à 1852 marquée par des initiatives isolées. Dans la deuxième phase, la création du réseau national a eu lieu de 1852 à 1884. De 1884 à 1914, les œuvres produites ont été bien exploitées. Enfin, de 1914 à 1948, l'évolution des conditions économiques et sociales a entraîné un réajustement des transports.[69]

En Italie, la construction des chemins de fer commence avec Armand Bayard de la Vingtrie qui a demandé une concession au roi Ferdinand II des Deux-Siciles en février 1837 pour construire un chemin de fer d'une longueur de 35,8 kilomètres (22, 3 km), de Naples à Nocera Inferiore sur la péninsule de Sorrente.[70] Dans la seconde moitié du XIXe siècle, Après la création du Royaume d'Italie en 1861, le réseau ferroviaire s'est développé sur la péninsule.[71]

Au Portugal la principale voie ferrée est située à l'ouest du pays et se prolonge dans l'axe sud-nord entre la capitale du pays Lisbonne et Porto deuxième grande ville. Le réseau est relié par les lignes transversales à la frontière espagnole.[72]

Le chercheur recherche des informations historiques sur l'industrie ferroviaire dans les trois pays. Il étude des informations telles que l'histoire d'événements importants dans l'industrie, des personnalités influentes dans la construction, des informations statistiques sur les lignes de chemin de fer, ainsi que des informations géographiques sur les zones couvertes par le chemin de fer. Afin de traiter le sujet et de répondre aux questions émises, le chercheur utilise des observations, des photographies, ainsi que des sources écrites telles que des articles dans les bases de données pour recueillir des informations.

[69] Dauzet Pierre, *Le siècle des chemins de fer en France,* Fontenay aux-Roses (Seine), Imprimeries Bellenand, s.d. in-8°, 1948.
[70] Kalla-Bishop P. M., *Italian Railways,* Newton Abbott, Devon, England: David & Charles, 1971, p. 15–16.
[71] Merger Michèle, « Les chemins de fer italiens : leur construction et leurs effets amont (1860-1915) », *Histoire, économie et société, 11ᵉ année, n°1. Les transports terrestres en Europe Continentale (XIXe-XXe siècles),* 1992, p. 109-129.
[72] Winchester C., ed, « Spain and Portugal », *Railway Wonders of the World,* 1936, p. 1473–1480.

L’histoire du chemin de fer en France, en Italie, au Portugal

I. L'Histoire du chemin de fer en France

Marcel Blanchard étais l'un des premiers chercheurs à avoir écrit plusieurs articles sur les chemins de fer.[73] M. D.-M. Jouffroy a réalisé un travail important dans sa thèse sur les origines du réseau oriental.[74] Il convient de dire que les études Rhodaniennes ont publié plusieurs ouvrages dans lesquels une étude récente de M. Châtelain (vol. XXII, p. 80) possède une riche bibliographie. M. Pierre Dauzet a présenté une histoire globale depuis les premieres lignes jusqu'à l'année 1948 où S.N.C.F. a obtenu la gestion des chemins de fer des grandes entreprises.[75]

Lancé à partir des années 1780, les diligences étaient le système de transport le plus rapide en France qui était encore un pays rural, avec la vitesse moyenne d'un cheval au trot (10 à 11 km / h), au milieu du XIXe siècle.[76] En 1830 avec le car postal qui était le moyen de transport le plus rapide circulait le trajet de Paris à Lyon en 47 heures, Bordeaux en 45 heures, Toulouse en 72 heures.[77]

L'émergence de la machine à vapeur a révolutionné le transport en introduisant le chemin de fer. Par l'apparition du chemin de fer et de sa vitesse, le poste de cheval disparut progressivement, le derniere malle-poste, qui reliait Toulouse à Montpellier, a cessé son service le 23 août 1857; la dernière ligne de diligence, entre Rouen et Amiens, disparut en 1872.[78]Dans la seconde moitié du XIXe siècle la construction ferroviaire en France s'est fortement développée. C'est après 1850 que le rythme de la construction ferroviaire s'est accéléré pour former un réseau ferroviaire comme les pays voisins comme l'Angleterre et la Belgique dont ils avaient commencé la construction ferroviaire avant la France. Le tracé des voies a été fixé par l'Etat et il a pris en compte les dépenses d'infrastructure: terrassements, ouvrages d'art. Elle a commencé à céder la concession d'exploitation des lignes à de grandes sociétés privées Compagnie de l'Ouest, Compagnie du Nord, P. L. M., Compagnie de l'Est.[79]

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[73] Blanchard Marcel, *Géographie des Chemins de fer*, Editions de la N.R.F, Paris, 1942.
[74] Jouffroy, L.-M.. *La ligne de Paris à la frontière d'Allemagne (1825- 1852)*, 4 vol, Paris, 1932.
[75] Hours, J., « L'histoire des chemins de fer français et ses enseignements géographique », *Revue de géographie jointe au Bulletin de la Société de géographie de Lyon et de la région lyonnaise* vol. 24, n°2, 1949, p. 127-137.
[76] Studeny Christophe, *L'invention de la vitesse,* France XVIIIe-XXe siècle, Gallimard, 1995, p. 408.
[77] Galoin Alain, « Les premiers chemins de fer », Histoire par l'image [en ligne], consulté le 12 juin 2020. URL : http://histoire-image.org/fr/etudes/premiers-chemins-fer
[78] Galoin Alain, « Les premiers chemins de fer », Histoire par l'image [en ligne], consulté le 12 juin 2020. URL : http://histoire-image.org/fr/etudes/premiers-chemins-fer
[79] Galoin Alain, « Les premiers chemins de fer », Histoire par l'image [en ligne], consulté le 12 juin 2020. URL : http://histoire-image.org/fr/etudes/premiers-chemins-fer

La loi de 11 juin 1842, qui a rendu possible la concession à long terme en plus les aides d'État, ont encouragé la participation des grandes entreprises. L'Etat voulait l'achèvement du réseau ferroviaire français et le travail a été soutenu par le petit groupe de Saint-Simoniens. La France était en changement avec l'achèvement du réseau. Les chemins de fer de 548 km en 1941 ont arrivé a 9 400 km en 1860, et 19 600 km, en 1875. Après le plan Freycinet en 1975, les lignes ont passé à 30,000 km en 1885. En 1914, les chemins de fer français s'étendent jusqu'à leur maximum de 40 000 km.[80] Entre 1832 et 2001, la combinaison de chemins de fer construits en France représentait près de 70 000 kilomètres.[81]

Dans son œuvre, M. Dauzet a exposé quatre grandes périodes de l'évolution du chemin de fer en France. La première période de 1821 à 1852 marquée par des initiatives isolées. Dans la deuxième phase, la création du réseau national a eu lieu de 1852 à 1884. De 1884 à 1914, les œuvres produites ont été bien exploitées. Enfin, de 1914 à 1948, l'évolution des conditions économiques et sociales a entraîné un réajustement des transports.[82]

Une concession d'un chemin de fer à 16 kilomètres, de Saint-Etienne à Andrézieux sur la Loire fut la première tentative de construction ferroviaire à la demande de l'ingénieur Beaunier à la tête de son entreprise en 5 mai 1821. Il a obtenu la concession le 26 février 1824 et le chemin de fer a mis en marche le 18 juillet 1827.[83] Cette ligne a été créée pour transporter le charbon vers les voies navigables les plus proches, la Loire et le Rhône. La concession d'Emile Pereire: Paris-Saint-Germain comme laboratoire expérimental a attiré l'opinion des Parisiens sur la construction du chemin de fer. Ouverte le 24 août 1837 était la première ligne utilisée pour le transport de passagers.[84]

Sur le plan financier à partir de 1833, l'administration des Ponts et Chaussées était maître d'œuvre du schéma des réseaux et des conditions techniques dans le régime des concessions de durée limitée

[80] Caralp Raymonde, « L'évolution de l'exploitation ferroviaire en France », *Annales de Géographie,* t. 60, n°322, 1951. p. 321-336.
[81] Etienne Auphan, « L'apogée des chemins de fer secondaires en France : essai d'interprétation cartographique », *Revue d'histoire des chemins de fer,* 24-25, 2002, p. 24-46.
[82] Dauzet, op. cit.
[83] Hours, J., « L'histoire des chemins de fer français et ses enseignements géographique ».
[84] Galoin Alain, « Les premiers chemins de fer », *Histoire par l'image* [en ligne], consulté le 12 juin 2020. URL : http://histoire-image.org/fr/etudes/premiers-chemins-fer

applicable à tout projet d'entreprises et à tous les investissements. Le ministère des Travaux publics a pris les décisions concernant les tarifs des projets.[85]

La différence entre ces monstres métalliques bruyants par son extraordinaire nouveauté et le transport traditionnel à cheval dans les premiers chemins de fer était un sujet intéressant pour les peintres, les lithographes. Nous voyons un exemple de peinture sur la figure 1 on voit un exemple de peinture sur la figure 1 extraite du premier livre d'Histoire de France par Gauthier-Deschamps-Aymard où le poster designer, illustrateur occasionnel de l'almanach des Postes et Télégraphes, Jean-Louis Beuzon, présente un train à vapeur et une diligence de la poste de cheval sur cette gravure en couleur.[86]

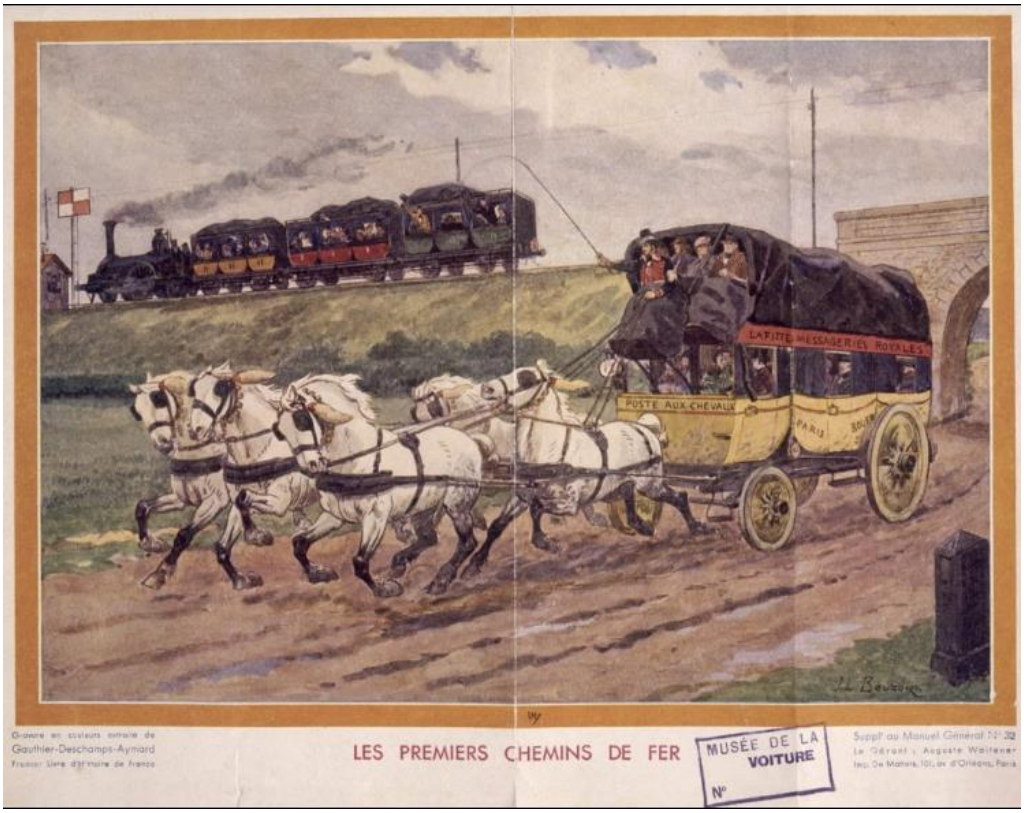

Figure 1 : LES PREMIERS CHEMINS DE FER. BEUZON Jean-Louis © Photo RMN-Grand Palais - D. Arnaudet

Ensuite, Marc Seguin a obtenu la concession de construire la ligne de Saint-Etienne à Lyon, concède en 1826 où il est employé la locomotive pour la première fois en 1832 on peut le nommer

[85] Leclercq Yves, « Les transferts financiers. Etat-compagnies privées de chemin de fer d'intérêt général (1833-1908) », *Revue économique,* volume 33, n°5, 1982. p. 896-924.
[86] Galoin Alain, « Les premiers chemins de fer », *Histoire par l'image* [en ligne], consulté le 12 juin 2020. URL : http://histoire-image.org/fr/etudes/premiers-chemins-fer

la date symbolique de la naissance du chemin de fer en France. Aussi le plan principal de construction d'un véritable réseau national avec une étude approfondie a été réalisé cette année par quatre ingénieurs Lamé Clapeyron et les frères Flachat.[87] Puis la ligne d'Andrézieux à Roanne, a été ouverte en 1844; le Grand Paulin Talabot a pris la charge de la ligne à Nîmes et Beaucaire pendant 1829 - 1841. Par la suite plusieurs travaux d'initiatives isolées sont effectués.[88] En 1840, le réseau français comptait environ 300 miles (500 km) de chemin de fer, en 1870, il atteignait 9 300 miles (15 500 km).[89]

Une entreprise franco-britannique dirigée par les banquiers Charles Laf Fitte et Edward Blount a obtenu la concession de la construction et de l'exploitation pour une durée de 99 ans du chemin de fer avec un tracé de 127 km reliant Paris à Rouen par la vallée de la Seine le 15 juillet 1840. Les travaux ont été réalisés principalement par des entrepreneurs et ouvriers anglais.[90]

Le 15 décembre 1837, la société Arcachon obtient la concession de la ligne de chemin de fer de Bordeaux à La Teste. L'ingénieur Fortuné de Vergès a commencé la construction en 1838 et la ligne a été ouverte en 1841. La ligne de l'Abscon - Saint Waast a été inaugurée le 21 octobre 1838. Elle a 15 km de long et est exploitée par la Compagnie des Mines d'Anzin à des fins industrielles. En 1838, le réseau principal en forme d'étoile centré sur Paris a été conçu par Baptiste Alexis Victor Legrand. Il était similaire au réseau routier du XVIIIe siècle et a conduit à l'amélioration de l'économie de la France. La ligne de Montpellier à Sète a été inaugurée le 9 juin 1939. Le 15 juin 1839, la Compagnie des Mines de la Grand'Combe et les chemins de fer du Gard a construit la ligne Nîmes - Beaucaire. Le 9 juillet 1836, le duc d'Orléans obtient la concession de la ligne Paris - Versailles inaugurée le 2 août 1839. Nicolas Koechlin a créé la ligne de Mulhouse à Thann qui a été inaugurée le 1er septembre 1839.[91]

la Compagnie du Chemin de Fer de Paris à Orléans, a créé la ligne de la gare Paris-Austerlitz à Corbeil qui passe par six gares: Choisy-le-Roi, Ablon, Mons, Viry, Ris et Evry et a été inaugurée

[87] Caron, F., « La naissance d'un système technique à grande échelle. Le chemin de fer en France (1832-1870) », *Annales. Histoire, Sciences Sociales*, 53e année, N. 4-5, 1998, p. 859-885.
[88] Les éditeurs de l'Encyclopédie Britannica, *Société Nationale des Chemins de Fer Français,* Encyclopædia Britannica, inc, 2010, consulté le 2 avril 2020. URL : https://www.britannica.com/topic/Societe-Nationale-des-Chemins-de-Fer-Francais.
[89] La SNCF, *Deux Siécles d'Histoire,* 2019, consulté le 2 avril 2020. URL : https://www.sncf.com/fr/groupe/patrimoine/deux-siecles-histoire .
[90] Croguennec Michel, « De la locomotive à vapeur à la locomotive électrique : 160 ans d'industrie ferroviaire dans l'agglomération rouennaise », *Études Normandes,* 52e année, n°2, 2003, Un tour de Normandie, p. 59-76.
[91] Caron François, *Histoire des chemins de fer en France,* Tome 1, 1740-1883, Fayard, Paris, 1997.

le 17 septembre 1840. En 1841, Nicolas Koechlin, au nom de la Compagnie des chemins de fer de Strasbourg à Bâle, a construit la ligne de Strasbourg-Ville à Saint-Louis.[92]

Un objectif qui favorise la construction du chemin de fer était de relier la Méditerranée à la Manche et à la mer du Nord pour avoir une route commerciale rapide. Une ligne unique a été conçue par Péreire de Marseille à la Champagne et de là se connecter aux lignes de Le Harve, Calais, Liège et Strasbourg. Et Paris, qui a devenue peu à peu une métropole mondiale après les Gaules, était au centre de tout le réseau. Par la croissance du réseau, le paysage de la France évoluait. Prereire a décidé de passer la ligne Bordeaux-Bayonne à travers les Landes et de rapprocher les parties sud-ouest.[93] En concevant le réseau P.L.M. le sud-est de la France est également devenu plus intégré.[94] Paulin Talabot étais le créateur du réseau P. L. M., il a décidé que Nîmes deviens le nœud de relations le plus important de la région. Il a travaillé à la prospérité de Marseille comme unique capitale du Midi même si cela était malheureux pour le centre de La Provence et la ville d'Aix.[95]

L'une des lignes les plus importantes était Paris-Marseille qui reliait la capitale à la Méditerranée. C'était une région que la plupart des cargaisons, y compris tous les savons, toutes les huiles, tous les fruits secs, traversaient vers Paris et le nord. Avant cela, les villes minières et industrielles étaient reliées à la mer ou à la rivière des voies navigables comme le chemin de fer de Saint-Etienne à Lyon, d'Alès à Beaucaire par Nîmes et le chemin de fer de Montpellier à Sète. Ainsi un chemin de fer notamment pour compléter la navigation sur le Rhône de Lyon à Marseille s'est avéré trop indispensable. Le 11 juin 1842, une loi est votée pour la construction d'une ligne de Paris à la Méditerranée par Lyon, Marseille et Sète.[96]

Avignon à Marseille a été la première partie de ce projet mené par Paulin Talabot, directeur général de la société P. L. M. pendant vingt-cinq ans. Avec l'effort de la Compagnie Le 15 janvier 1848, la section Pas-des Lanciers de Marseille est ouverte à la circulation. En revanche, le Gouvernement a travaillé sur le tronçon Dijon-Chalon et la ligne Paris-Dijon qui devaient traverser toute la vallée

[92] Caron François, *Histoire des chemins de fer en France*, Tome 1, 1740-1883, Fayard, Paris, 1997.
[93] Hours, J., « L'histoire des chemins de fer français et ses enseignements géographique ».
[94] Rivet Cf.. Félix, « Le quartier Perrache, contribution à l'histoire et à la géographie de Lyon », Etudes Rhodaniennes, XXI, 1946, p. 125-130.
[95] Hours, J., « L'histoire des chemins de fer français et ses enseignements géographique ».
[96] May Mathieu-Georges, « L'histoire du chemin de fer de Paris à Marseille », *Revue de géographie alpine*, tome 19, n°2, 1931. p. 473-493.

de la Seine par Gorbeil, Melun, Montereau, Nogent-sur-Seine, Romilly-surSeine, Troyes, Bar-sur-Seine, Châtillon-sur-Seine et Is-sur-Tille, soit 348 kilomètres.[97]

Suite à la loi du 16 juillet 1845, la ligne Lyon-Avignon est concédée le 10 juin 1846 à Paulin Talabot responsable d'une société public. En raison du faible soutien financier, la Société est dissoute le 11 octobre 1847. Après la Révolution de février 1848, état prend davantage possession de la construction du chemin de fer, la partie de Lyon-Avignon est confisquée, et par le décret août 17 1848, Paris-Lyon revient à la possession de état. Bien qu'après 1849 les dirigeants de la seconde République ont donné attention à de nouvelles concessions pour la ligne de Paris à Marseille.[98]

En 1851, le gouvernement acheva la ligne Paris-Chalon et travailla sur Chalon Lyon et Valence Avignon. Par la loi du 1er décembre 1851, la ligne Lyon-Avignon est concédée à une société Daois de Paulin Talabot le 3 janvier 1852. Puis une société dans laquelle, le Hottinguer, le Maillet, le Pillet-Will, le Rothschild, étaient ses financier a obtenu la concession de 99 ans du chemin de fer de Paris à Lyon par un décret du 5 janvier 1852. La ligne Lyon-Avignon et la ligne Paris-Lyon devaient être achevées en 1856. De 1849 à 1851, l'État a achevé les infrastructures de Ghalon-Lyon et Vailence-Avignon et Avignon-Marseille. Le 1er juin 1851, le Paris-Dijon a été officiellement inauguré, qui a été exploité régulièrement à partir de l'hiver 1851-1852. Par loi du 8 juillet 1852, la nouvelle Compagnie des Chemins de fer de Lyon à la Méditerranée de Talabot obtint la concession de compléter la ligne Lyon-Avignon.[99]

Par la suite, le manque d'une ligne directe entre Lyon et Chambéry a été perçu. La relation entre Lyon, le plateau suisse et le nord de l'Italie a nécessité la construction du chemin de fer vers ces pays. Lyon était un nœud dans l'expédition entre le nord de la France, la péninsule, la Suisse. De 1845 à 1850, la Chambre de commerce de Lyon adopte la ligne qui passe de Lyon à Chambéry pour aménager le réseau Lyon-Saint-Genis-d'Aoste. Au contraire, le gouvernement a prévu une ligne Paris-Genève par Ambérieu, La Cluse-des-Hôpitaux, Bourg, Mâcon, par Culoz. Ainsi en créant Paris-Culoz, pour se connecter à l'Italie et à la Suisse Chambéry a été dépossédé. Mais après plusieurs années, les Lyonnais ont suivi pour construire leur chemin de fer vers les pays voisins.

[97] May Mathieu-Georges, « L'histoire du chemin de fer de Paris à Marseille », *Revue de géographie alpine,* tome 19, n°2, 1931. p. 473-493.
[98] May Mathieu-Georges, « L'histoire du chemin de fer de Paris à Marseille », Revue de géographie alpine, tome 19, n°2, 1931. p. 473-493.
[99] May Mathieu-Georges, « L'histoire du chemin de fer de Paris à Marseille », Revue de géographie alpine, tome 19, n°2, 1931. p. 473-493.

En 1869, un ingénieur, M. Bachelier a demandé une nouvelle concession. Jusqu'en 1871, il n'avait pas réussi à réaliser le grand projet dont il avait fait une autre demande de concession. Avec un peu de chance de succès, il demande des concessions aux différents services concernés pour plaider l'intérêt général.[100]

En juillet 1872, l'Assemblée nationale examine le projet depuis le chemin de fer Lyon-Chambéry via Crémieu et Morestel. Il a fallu que Bachelier intègre Saint-André-le-Gaz à son projet. Le P.L.M. qui a dû coopérer avec, le 3 juillet 1875, une loi lui a donné les concessions des lignes de Saint-André-le-Gaz à Chambéry et de Saint-André-le-Gaz à Virieu-Legrand. Eugène Bachelier a obtenu l'autorisation pour la ligne Lyon-Saint-Genis-d'Aoste le 14 août 1877, maintenant il pourrait former une entreprise pour son projet. La ligne principale du réseau était; Lyon-Saint-Oenis-d'Aoste à 72 km. Saint-PTilaire-de-Brens-Jallieu à 11 km. Saisonnier-Montalieu Amblagnieu 22 km. Crémieu La Balme à 20 km. Auprès d'investisseurs belges, 18 197 000 francs ont été le capital investi dans ce projet. Le 30 octobre 1881, la ligne principale est mise en service. Le 18 juin 1882, la succursale de Montalieu est ouverte et agrandie en 1885 jusqu'à Porcieu-Amblagnieu. En 1899, la jonction sur Jallieu (Bourgoin) a été ouverte.[101]

Le chemin de fer de Grenoble et de Nice était une autre ligne dans le sud-est qui a été suivie par les différents groupes économiques de la région des Alpes et en particulier la Chambre de commerce de Nice. C'était un chemin de fer qui devait être construit en deux chaînes de montagnes clairement séparées par le fossé profond de la vallée de la Durance.[102]

La ligne de Paris à Toulouse est l'une des principales lignes du réseau français qui a été définitivement établie en 1893. Avant sa construction en 1842, il a été décidé de créer une ligne de Paris à Vierzon, puis les embranchements vers Limoges et Clermont qui était fait par le Grand Central. En 1856 la connexion de Paris à Limoges est établie mais il faut plusieurs années pour que l'idée d'une ligne Paris - Toulouse soit acceptée. la ligne directe de Paris à Toulouse va être de plus en plus, à la discussion au corps législatif, en 1855. A partir de 1868, un lien vers le rivage de Toulouse ayant été établi, via Figeac-Lexos, par sections des précédentes lignes, la construction d'une liaison Limoges-Brive via Saint-Yrieix a été réalisée en 1875. 748 km de route, soit la première liaison directe de Paris à Toulouse établie sans plan d'ensemble, n'était pas la plus directe.

[100] Carron M.-A., « Le chemin de fer de l'Est de Lyon », *Les Études rhodaniennes* vol. 23, n°1-2, 1948. p. 25-53.
[101] Carron M.-A., « Le chemin de fer de l'Est de Lyon », *Les Études rhodaniennes* vol. 23, n°1-2, 1948. p. 25-53.
[102] L. J. « Le chemin de fer Grenoble-Nice », *Revue de géographie alpine,* tome 8, n°4, 1920, p. 651-663.

A cette époque, le Grand Central, fut liquidé en juin 1857 et la construction fut en charge de P.L.M.[103]

Le tronçon allant de Paris à Argenton-sur-Creuse (295 km) traversait les plaines et les plateaux au sud du bassin parisien. Puis il passe un itinéraire commun d'environ 120 km. Avec la ligne de Bordeaux, à travers la Beáuce, jusqu'à Orléans, la ligne traverse la plaine sablo-argileuse de la Sologne, les calcaires du Champagne Berry, les sables granitiques de la Brenne. Elle traverse la Loire et va d'Orléans au Cher à Vierzon, où elle est coupée par la transversale de Nantes à Lyon, Indre à Châteauroux. Bientôt une lutte contre le trafic a commencé sur la ligne qui concernait les vins du Languedoc. Le P. L. M. a le monopole jusqu'en 1890 soit par Tarascon-Lyon (935 km.) soit par la ligne Cévennes (877 km.). En donnant à la route pou - Limoges 867 km en 1893 ce monopole a pris fin. Puis sur la base de la convention de Paris d'octobre 1909, 75% du trafic est attribué au P.-L.-M. Jusqu'à la création de S. N. C. F. en 1938. L'électrification de la ligne entre Paris et Toulouse s'est faite en 1928 sur sa partie nord, à fort trafic, elle est étendue à l'ensemble du tracé jusqu'en 1943.[104]

En Limousin, la ligne traverse les rochers. Après avoir traversé la Creuse, la ligne grimpe au bord du Plateau de la Marche. Après le métro et le tunnel de la Jéraphie, il traverse la Gartempe. Après Saint-Sulpice, le tunnel Laurière perce l'alignement granitique des Monts d'Ambazac. La ligne traverse un paysage verdoyant la ligne gagne par une tranchée à la gare de Limoges puis passe sous la ville et se dirige vers le viaduc de la Vienne. La ligne monte jusqu'au sommet du partage entre les bassins de la Loire (Vienne) et la Dordogne (Vézère et Gorrèze) et atteint 440m. Dans le tronçon de Brive à Caussade la ligne traverse les trois plateaux calcaires du Quercy, et les deux grands fleuves qui les délimitent, la Dordogne et le Lot. Puis il descend sur la Dordogne, sans interruption sur 24 km. Il y a six tunnels et six viaducs, l'impressionnant viaduc incurvé de Boulet (476 m), et Les Borrèze (450 m.) sont les plus longues..[105]

La ligne Paris-Bordeaux est une autre voie ferrée importante vers Océan. Cette ligne traverse trois grands bassins fluviaux elle traverse la dépression parisienne dans la vallée de la Loire la ligne

[103] Duchemin Philippe, « Le chemin de fer de Paris à Toulouse », *Annales de Géographie*, t. 54, n°296, 1945. p. 274-293.
[104] Duchemin Philippe, « Le chemin de fer de Paris à Toulouse », Annales de Géographie, t. 54, n°296, 1945. p. 274-293.
[105] Duchemin Philippe, « Le chemin de fer de Paris à Toulouse », Annales de Géographie, t. 54, n°296, 1945. p. 274-293.

traverse le plateau de Beauceron vers lequel elle élève à la fois les vallées Orge et de la Juine Tours, le chemin de fer quitte la vallée de la Loire et se diriger vers le sud-ouest vers le seuil de Poitou Il traverse les plateaux de Touraine. Paris Bordeaux transportait le trafic des produits des régions traversées, du commerce avec le nord de la France, l'Espagne, l'Amérique et les colonies africaines.[106]

En septembre 1832, le premier projet de la ligne Paris Bordeaux est adopté par une commission des ponts et routes. Il a été décidé d'exécuter le chemin le plus court et le plus droit, la section de Paris Orléans a été construit de 1839 à 1843 que les Tours d'Orléans de 1843 à 1846 celui de Tours Bordeaux de 1845 à 1853. Par les conditions de relief et d'hydrographie, la ligne pouvait être distinguée en trois sections. Tout d'abord, l'itinéraire traverse le plateau de Beauceron de Paris à la Loire, qui avait des rampes et des pentes assez importantes. D'Etampes à Monnerville gravit la pente du plateau de Beauce. La piste atteint alors son point culminant, à 145 m. D'Orléans à Chouzy, l'itinéraire, établi à une courte distance de la vallée de la Loire, descend vers le bas de la vallée. Après Chouzy la ligne passe par la plaine alluviale entre la Cisse et la Loire, par le Pont de Montlouis elle traverse la Loire. De la Loire à Poitiers, la ligne traverse les plateaux s'étendant entre la Loire et le seuil du Poitou. Il traverse Port-de-Piles, puis suit les vallées de Vienne et. du Clain et monte ainsi par des rampes très faibles vers Poitiers. De Poitiers à Bordeaux, le chemin de fer traverse une série de lignes de relief avant de descendre dans la vallée de la Garonne. De Poitiers à Luxé, le chemin de fer franchit le seuil du Poitou. Par la hauteur de la vallée de Cla, le chemin monte jusqu'au plateau à 135 m, puis descend vers la vallée de la Charente. De Luxé à Angoulème. De Montmoreau à Bordeaux, la ligne s'abaisse vers la vallée de la Garonne. Le chemin de fer contourne le plateau de l'Entre-deux-Mers et traverse des viaducs.[107]

Dans la période de 1883 à 1914, les techniciens ont amélioré en permanence le réseau et le financier agissait avec soin pour le développement futur du vaste patrimoine des grandes entreprises. Par exemple, le développement de la métallurgie Lorraine a un avantage à l'Est depuis 1899. Durant cette période, l'effort fait pour resserrer les liaisons du réseau ferroviaire par la construction de lignes secondaires d'intérêt local.[108] M. Dauzet[109] le décrit « établies au moindre prix des terrains,

[106] Billé R. « Le chemin de fer de Paris à Bordeaux », *Annales de Géographie*, t. 39, n°221, 1930. p. 449-467.
[107] Billé R., « Le chemin de fer de Paris à Bordeaux », *Annales de Géographie*, t. 39, n°221, 1930. p. 449-467.
[108] Hours, J., « L'histoire des chemins de fer français et ses enseignements géographique ».
[109] Dauzet, op. cit., p. 217.

en bordure éloignée des villages, exigeant entre l'agglomération et la station une liaison routière que l'hiver embourbait, attirant peu à peu de ce côté les maisons neuves ».

Au cours des années 1880-1890, des difficultés économiques ont affecté une petite extension du réseau ferroviaire. En 1879, sur la base du plan Freycinet, il a été décidé de construire environ 150 lignes à écartement standard qui devaient au moins connecter toutes les sous-préfectures au réseau national. Le programme fut presque complètement achevé en 1914. Après 1908, le réseau national dépendait de six grandes entreprises. Les réseaux secondaires se sont multipliés entre 1880 et 1914. Les tramways ont été construits dans les villes. La première ligne d'un chemin de fer métropolitain à Paris a été mise en service en 1900. Le chemin de fer de 1878 sur 24 200 km, a dépassé 40 000 km en 1900 et a atteint en 1914 une longueur de 51 300 km. De nombreux dommages ont atteint le chemin de fer pendant la guerre de 1914-1918 que, après la paix, sa restauration a été commencé.[110]

Au début du XXe siècle, la locomotive à vapeur a été améliorée. En 1907, le P.L.M a mise en service le célèbre Pacifique qui pouvait remorquer 400 t. 120 km puis en 1933 il pouvait remorquer 650 t. 140 km. Par la suite, 1920 L'électrification sur les grands réseaux commence avec Paris-Invalides à Issy-les-Moulineaux et se poursuit vers d'autres lignes: Juvisy-Vierzon, 1926; Les Aubrais - Tours, 1933; Vierzon-Brive, Montauban-Sète, 1935; Paris-Le Mans, 1937; Tours-Bordeaux, 1938; Brive-Montauban, 1943; Sète-Nîmes, 1947; Paris-Dijon, 1950.[111]

En cinq ans (1933-1937), Paris s'est débarrassé du tramway qui a fait valoir que le tramway entravait la circulation des voitures, presque toutes les autres villes de France ont fait de même.[112]Les lignes principales avec la longue route ont relié Paris aux grandes villes, ce qui a amélioré le transport commercial entre les régions, l'infrastructure améliorée a permis le mouvement de charges plus importantes. Après la destruction de 1939 à 1945, la reconstruction de gares dotées d'installations modernes a entraîné une augmentation du trafic. S. N. C. F. a choisi une zone géographique bien définie pour ces grandes gares et les a équipées de services routiers rayonnés. Outre les grandes lignes puissamment équipées qui effectuaient tout le trafic long

[110] Schnetzler Jacques, « Le chemin de fer et l'espace français », *Revue de géographie de Lyon*, vol. 42, n°1, 1967, p. 81-118.
[111] Caralp Raymonde, « L'évolution de l'exploitation ferroviaire en France », *Annales de Géographie*, t. 60, n°322, 1951, p. 321- 336.
[112] Schnetzler Jacques, « Le chemin de fer et l'espace français », Revue de géographie de Lyon, vol. 42, n°1, 1967, p. 81-118.

distance. S. N. C. F. a également prêté attention aux petites lignes afin de réaliser une exploitation économique sur celles-ci autant que possible. Bien que jusqu'en 1951 environ 12 000 km des chemins de fer départementaux ont disparu ce qui a donné leur place aux automobiles.[113]

Après 1920, le chemin de fer a dû faire face à une rude concurrence de l'automobile et d'autres moyens de transport, des oléoducs et de l'aviation. toutes les lignes à voie étroite ont été progressivement fermées. Seuls trois réseaux étaient maintenus en 1966: Breton (325 km), Corse (232 km) et Vivarais (157 km), également un certain nombre de lignes isolées. À la fin de 1938, la politique ferroviaire française se rétablit, S.N.C.F. fermé 4 500 km de lignes de trafic voyageurs. La guerre de 1939-1945 a également endommagé le système qui a mis longtemps à être réhabilité. Les lignes ont continué à être fermées à un rythme plus lent après la guerre, en 1965, 49 km ont été fermés; en 1966, 103 km.[114]

Deux grandes guerres ont affecté la société ainsi que le chemin de fer. le soutien financier a fait suite à un déficit chronique dans les années 1930 et il y a eu une réduction de l'économie française et de ses sources de revenus. Après la première guerre la géographie des transports a été révolutionné, l'automobile apparaît en 1920 comme une rivale et de 1926 à 1929 sillonne les routes de France. De plus, certains itinéraires comme Paris-Londres étaient favorables à l'avion.[115]

Outre les lignes principales, le développement des chemins de fer secondaires a été considérable en France avec leurs 24 000 km de longueur cumulée qu'ils avaient d'intérêt local en voies normales en lignes simples. Ils représentent un tiers du réseau total dont certains ont servi des mines ou des usines, répondent aux besoins locaux: bois pour les Landes, vins dans l'Aude, agriculture intensive dans l'Aisne, les Ardennes et le Loir-et-Cher. Les meilleures régions dotées sont: le bocage ouest et la côte atlantique sud; La région lyonnaise et les pays du bassin supérieur de la Saône; L'arc méditerranéen (notamment les Bouches-du-Rhône); Le nord de la France. les chemins de fer secondaires avec d'intérêt local étaient en deux différentes catégories: les chemins de fer d'intérêt

[113] Caralp Raymonde, « L'évolution de l'exploitation ferroviaire en France», *Annales de Géographie*, t. 60, n°322, 1951. pp. 321- 336.
[114] Schnetzler Jacques, « Le chemin de fer et l'espace français », *Revue de géographie de Lyon*, vol. 42, n°1, 1967, p. 81-118.
[115] Hours, J., « L'histoire des chemins de fer français et ses enseignements géographique ».

local proprement dit qui représentaient 55% (11 560 km) de toutes les concessions de chemins de fer secondaires et les tramways 45% (9 500 km) pour les voyageurs individuels.[116]

Après l'unification des 5 grandes compagnies ferroviaires du pays en 1937, la Société Nationale des Chemins de Fer française avec un réseau de 515 000 cheminots et 42 700 km de voies a vu le jour. Qui a mis fin à la division de la France en: grand réseaux, qui ont donné certaines caractéristiques à leur territoire.[117] La SNCF a donné une unité de gestion au réseau, le trafic est devenu plus fluide et le plus de lignes facilement exploitables.[118]

Le S.N.C.F. réduisait le nombre de travailleurs, il comptait en 1938, 514 000 cheminots; en 1947, 480 000 et en 1965, 356 000. Le chemin de fer s'est amélioré depuis la Seconde Guerre mondiale, principalement dans le domaine de la traction par électrification qui a débuté en France généralement en 1920. Puis l'électrification s'est poursuivie en fréquence monophasée AC industrielle (25 000 volts et 50 hertz) qui a été testée entre Aix-les-Bains et Annecy fin 1950.[119]

Paris à Lyon étais la première ligne du «Train à grande vitesse», ou «TGV», que la SNCF a lancé en 1981, de nouveaux trains dont la vitesse de pointe est supérieure à 235 milles / h (378 km / h). C'était entre Saint-Florentin et Sathonay-Rillieux, le TGV a relié Paris à Lyon en 2 h 40 min. [120] La seconde ligne à grande vitesse a été ouverte en 1989 d'une partie du T G V Atlantique. Le T G V en réalité est un nouveau système de transport pas seulement un train qui roule plus vite. Cette nouvelle technologie est en train de traversé le territoire national. Dans le progrès technologique du mode ferroviaire; les premiers trains avaient des 40 à 50 kilomètre/heure qui a dépasse à 100 km/h avec les locomotives à vapeur puis il est arrivé a 330 km/h avec la traction électronique et récemment T G V a atteint les 380km/h en vitesse maximale.[121]

On peut caractériser un mode de transport par quatre éléments : sa vitesse, sa fréquence, sa capacité, son prix. les différences de T G V avec ces précédents est une vitesse élevée , une fréquence élevée,

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[116] Etienne Auphan, « L'apogée des chemins de fer secondaires en France : essai d'interprétation cartographique », *Revue d'histoire des chemins de fer,* 24-25, 2002, p. 24-46.
[117] La SNCF, *Deux Siécles d'Histoire.*
[118] Caralp Raymonde, « L'évolution de l'exploitation ferroviaire en France », *Annales de Géographie,* t. 60, n°322, 1951. pp. 321- 336.
[119] Schnetzler Jacques, « Le chemin de fer et l'espace français », *Revue de géographie de Lyon,* vol. 42, n°1, 1967, p. 81-118.
[120] l'Encyclopédie Britannica, *Société Nationale des Chemins de Fer Français.*
[121] Plassard François, « Le réseau T G V et les transformations de l'espace : La région Rhône-Alpes », *Annales de la recherche urbaine,* N°39, 1988, Transports en commun. p. 112-116.

une capacité faible (400 à 500 personnes par rame) un prix apparent peu supérieur à celui du train classique.[122]

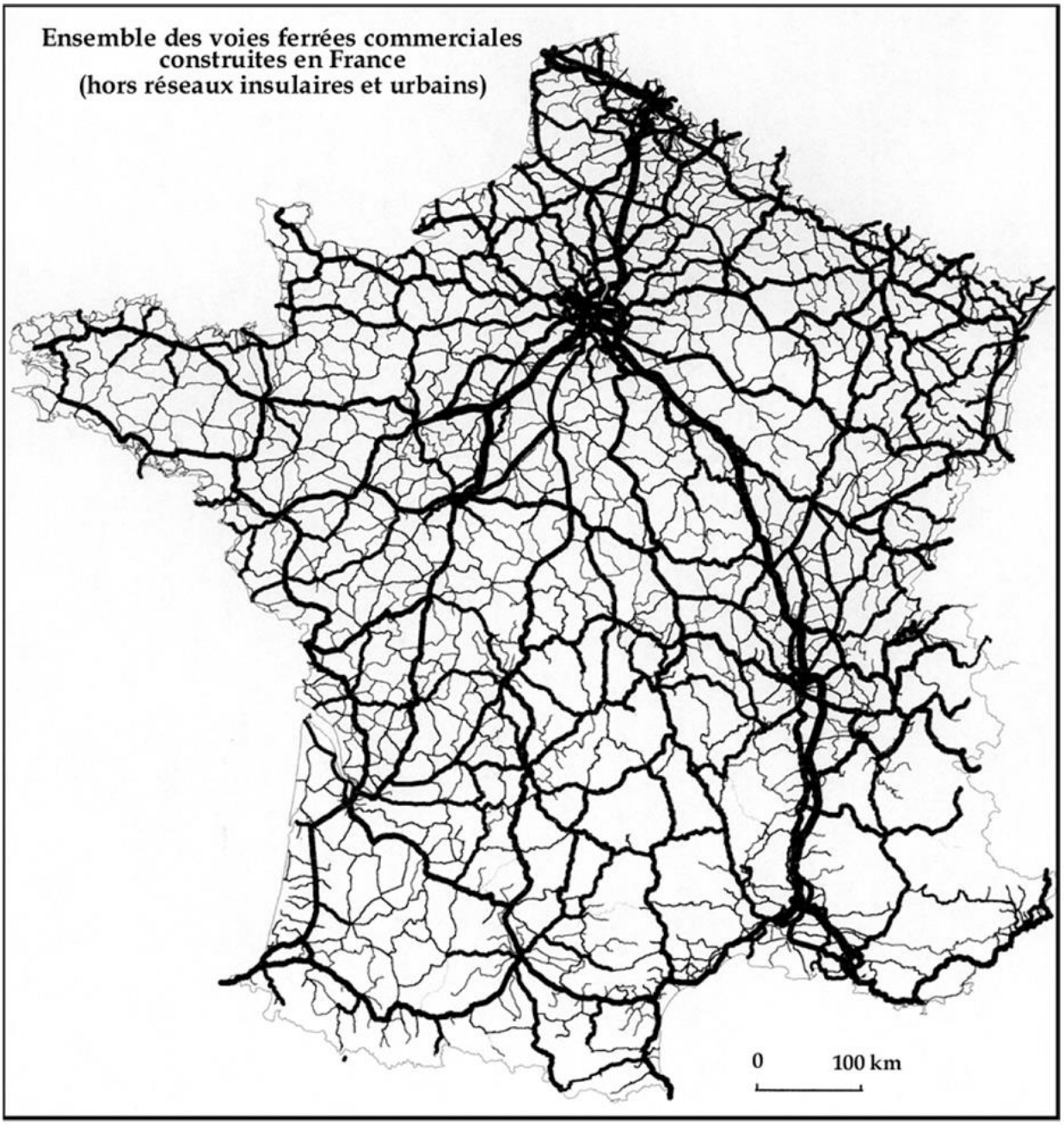

Figure 2 : Le réseau ferré français en 2001. © E. Auphan

[122] Plassard François, « Le réseau T G V et les transformations de l'espace : La région Rhône-Alpes », *les Annales de la recherche urbaine*, N°39, 1988, Transports en commun. p. 112-116.

II. L'Histoire du chemin de fer en Italie

Les chemins de fer ont fait l'objet de nombreuses études historiques ou économiques qui étaient considérées comme la cause de la croissance économique jusqu'au début du XXe siècle. L'histoire de chemin de fer en Italie commence par Armand Bayard de la Vingtrie qui a demandé une concession au roi Ferdinand II des Deux-Siciles en février 1837 pour construire un chemin de fer d'une longueur de 35,8 kilomètres (22,2 mi), de Naples à Nocera Inferiore sur la péninsule de Sorrente.[123]

Michèle Merger, dans ses recherches, a présenté la phase de construction du réseau ferroviaire en Italie; 1- de 1839 à 1860 avec une construction limitée du chemin de fer, 2 - entre 1860-1880 le réseau national a été créé, 3 - au cours de 1880-1914 l'achèvement du réseau national et l'établissement du réseau secondaire ont eu lieu.[124]

La construction d'un réseau ferroviaire italien n'a commencé que dans les années 1870, après le développement économique du pays et l'unification nationale en mars 1861. Tout au long de la période Risorgimento, les chemins de fer ont été le principal symbole de l'unité nationale, où la péninsule a été gouvernée par différents souverains.[125] Le comte Cavour, a déclaré en faveur des chemins de fer « l'esprit de la nation en Italie ».[126]

En 1960, la péninsule disposait d'un réseau ferroviaire de près de 2 200 km, avec une répartition inégale dont 1 637 km de voies, soit 75%, se trouvaient entre les principales villes de la plaine du Pô dans le nord de l'Italie. Avant, entre Turin et le centre d'Alexandrie n'était que le réseau du Piémont. Après les autres lignes ont été achevées; Turin-Alexandrie-Gênes (1853), Alexandrie-Mortara-Novare (1854) et Turin-Novare (1855). Puis le tronçon Novara-Buffalora et la ligne Turin-Alexandrie-Plaisance relient Bologne au réseau Lombard en 1859. La ligne Milan-Venise est achevée en 1854 qui comprend trois branches principales, celle du Tyrol vers le Brenner, celle de Mestre aux Cornions et enfin celle de Vérone à Mantoue.

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[123] Kalla-Bishop, P. M., *Italian Railways*, Newton Abbott, Devon, England: David & Charles, 1971, p. 15–16.
[124] Merger Michèle, « Chemins de fer et croissance économique en Italie au XIXème siècle et au début du XXème siècle. Etat de la question », *Histoire, économie et société,* 1984, 3e année, n°1. p. 123-144.
[125] Stefano Maggi, « Le cheminot en Italie. Image et culture », *Revue d'histoire des chemins de fer,* 36-37, 2007, p. 335-350.
[126] Article de La Revue Nouvelle, in Camillo Cavour, *Le Strade ferrate in Italia,* édition de A. Salvestrini, Florence, La Nuova Italia, 1976, p. 61.

Dans les autres parties du pays le réseau national se développait, la ligne de Florence à Livourne passait par Empoli et Pise a opéré en 1844 et l'axe Florence-Pise via Pistoia et Lucca a été complété en 1859, tous les deux en Toscane. La troisième ligne était entre Sienne à Empoli le "Central - Toscan" achevé en 1849. Les sections Rome-Frascati (1857), Rome-Civitavecchia (1859) et sur les deux lignes Naples-Torre Annunziata et Naples-Capoue avec les section de Castellammare, Nocera et Nola étaient les parties du réseau dans les États pontificaux et le Royaume de Naples.[127]

Les autorités italiennes ont suivi l'exemple français et après les conventions de 1859, le réseau italien avait considérablement prolongé par le travail de six grandes entreprises. En mai 1865, les premières grandes conventions de l'Italie s'unifient et toutes les lignes opèrent ou concèdent par quatre compagnies: celle de la Haute-Italie; celle de Chemins de fer romains; celle des chemins de fer du sud et de la société VictorEmmanuel.[128]

De 1865 à 1870, l'attention s'est portée sur la construction d'un véritable réseau national par le plan de construction de deux artères côtières de chaque côté des Apennins qui seraient reliées par des lignes transversales. En 1865, la ligne Bologne-Brindi a été achevée du côté adriatique qui a été prolongée jusqu'à Otrante en 1872. La deuxième ligne était entre Rome et l'ancien Royaume de Naples qui a été prolongée et complétée jusqu'à Liri en 1963. Et respectivement à la date de leur construction Bologne-Pistoia (1865); Rome-Ancône (1866); Naples-Foggia (1870) étaient les trois lignes transversales. Enfin, Florence a été reliée à Foligno en 1866 et Sienne à Orte en 1870 sur les parties supérieures des Apennins.[129]

Après 1870, le rythme de construction a fluctué. De 1871 à 1880, la baisse a augmenté. Puis il a été quasiment soutenu durant les années 1880 mais suivi d'une légère baisse de 1891 à 1895. L'extension du réseau a été limitée à partir de la fin du siècle et jusqu'en 1905. mais de 1906 au début de la Première Guerre mondiale elle s'est maintenue.[130]

Dans les années 1880, le développement du réseau national s'est poursuivi par la construction d'autres tronçons tels que Tarante-Bari sur la future ligne BariReggio en Calabre; Naples-

[127] Merger, M. 1992, « Les chemins de fer italiens : leur construction et leurs effets amont (1860-1915) », *Histoire, économie et société*, 11e année, n°1. Les transports terrestres en Europe Continentale (XIXe-XXe siècles) p. 109-129.
[128] Merger, M. 1992, « Les chemins de fer italiens : leur construction et leurs effets amont (1860-1915) », Histoire, économie et société, 11e année, n°1. Les transports terrestres en Europe Continentale (XIXe-XXe siècles) p. 109-129.
[129] Merger, M. 1992, « Les chemins de fer italiens : leur construction et leurs effets amont (1860-1915) », Histoire, économie et société, 11e année, n°1. Les transports terrestres en Europe Continentale (XIXe-XXe siècles) p. 109-129.
[130] Merger, M. 1992, « Les chemins de fer italiens : leur construction et leurs effets amont (1860-1915) », Histoire, économie et société, 11e année, n°1. Les transports terrestres en Europe Continentale (XIXe-XXe siècles) p. 109-129.

Campobasso. A cette période: - les lignes insulaires ont été établies avec les premiers travaux réalisés en Sicile à partir de 1863 et destiné à relier Palerme à Port Empedocles (jonction achevée en 1876, soit cinq ans après l'ouverture de l'axe Messine-Syracuse). En 1871, le premier projet ferroviaire a été réalisé en Sardaigne; en 1880, deux axes sont ouvert à la circulation: Cagliari-Porto Torres et sa branche vers Iglesias la jonction du réseau italien avec le réseau français avec l'achèvement de la ligne Bussoleno-Bardonnèche-Modane grâce au forage du tunnel de Fréjus sous Mont-Cenis qui a été inauguré en 1871.[131]

À partir de 1885, l'État était toujours propriétaire des lignes et des installations tandis que les opérations étaient confiées à de grandes entreprises. Le trafic entre le Nord et le Sud a été développé pour surmonter les dissensions entre les deux parties du pays. La Rete Adriatica, exploitait au total 4 379 km de lignes du réseau est et le réseau ouest, 4 171 km de long, a été attribué à la Rete Mediterranea; 1 100 km de lignes en Sicile étaient gérées par Rete Sicula.[132]

De 1880 à 1895, la construction ferroviaire se poursuit à un rythme plus rapide et près de 6700 km de nouvelles voies sont ouvertes à la circulation (1880-1885: 1800 km; 1885-1890: 2600 km; 1890-1895: 2300 km) .De 1895 à 1905 , seuls 800 km ont été mis en œuvre, mais le rythme des travaux s'est à nouveau accru de 1905 à 1913, en achevant le vaste programme ferroviaire sanctionné par la loi du 29 juillet 1879; nous pourrions l'appeler "version italienne" du programme Freycinet en France et il était prévu de mettre en place plus de 6 000 km de voies divisées en lignes principales et secondaires pour une dépense totale de près de 1 500 millions de lires, dont la quasi-totalité est financé par l'État; ce plan de 1879 a conduit aux nombreuses constructions apparues de 1880 à 1895 et concernant les routes secondaires; après la nationalisation de 1905, la construction reprend.[133]

Au cours des années 1880, par le développement de lignes secondaires le réseau national a été complété. Le rythme de la construction s'est limité à la fin du XIXe siècle.[134] Les conditions financières du système ont été affectées par la dépression économique qui a frappé la péninsule de

[131] Merger Michèle, « Chemins de fer et croissance économique en Italie au XIXème siècle et au début du XXème siècle. Etat de la question », *Histoire, économie et société*, 1984, 3e année, n°1. p. 123-144.
[132] Stefano Maggi, « Le cheminot en Italie. Image et culture », *Revue d'histoire des chemins de fer*, 36-37, 2007, p. 335-350.
[133] Merger Michèle, « Chemins de fer et croissance économique en Italie au XIXème siècle et au début du XXème siècle. Etat de la question », *Histoire, économie et société*, 1984, 3e année, n°1. p. 123-144.
[134] Stefano, M., « Le rôle économique et social des chemins de fer secondaires en Italie », *le Revue d'histoire des chemins de fer*, 24-25, 2002.

1887 à 1895. En conséquence, l'État a dû recourir à des expédients financiers a entraîné le ralentissement des nouveaux travaux, un ralentissement qui a été accentué par une politique de restriction budgétaire puis une grave crise des transports a secoué le pays. En 1898, le gouvernement prend des mesures pour apaiser la situation mais il le fait avec retard, la crise ferroviaire est aggravée par l'agitation fréquente des cheminots, l'idée de nationaliser les réseaux progressivement gagné du terrain, notamment chez les usagers du rail.[135] En raison des mauvais résultats et du besoin d'aides financières, l'État a été contraint de nationaliser le système qui a eu lieu le 22 avril 1905 et l'État a nationalisé 14 700 km de chemins de fer, la majorité du réseau, seulement 2 700 km étant entre les mains de petites entreprises locales.[136] Sous la tutelle du ministre des Travaux publics, la compagnie ferroviaire nationale (Ferrovie dello Stato) a ainsi été fondée. L'ingénieur Riccardo Bianchi était le directeur général de l'entreprise, ils comptaient environ 118 000 cheminots en 1905. L'organisation unitaire: le Syndicat des cheminots italiens (Sindacato ferrovieri italiani - SFI) a été fondée en mai 1907 et les cheminots avec leur grande responsabilité personnelle, l'esprit d'équipe, le dévouement au métier, ont permis le succès d'un syndicat fort qui est devenu à au début du XXe siècle, un modèle pour d'autres organisations de travailleurs.[137]

En Italie, les chemins de fer ont joué un rôle important dans la colonisation des territoires, diverses villes et villes ferroviaires développées au cours du XIXe siècle (Bussoleno, Novi Ligure, Foligno, Chiusi, Orte). Dans des zones où il n'y avait auparavant aucun établissement urbain, des maisons et des usines se sont rassemblées autour des stations. Le service ferroviaire est devenu un grand employeur et il y avait la diversité des fonctions des employés administratifs dans la gestion et les ingénieurs de bureau et d'autres spécialisations techniques de niveau inférieur, les employés responsables de l'aménagement et de l'entretien des voies, du matériel roulant et des installations électriques.[138]

Les industries sidérurgique et métallurgique se sont développées pour soutenir la construction ferroviaire. La présence de poêles à charbon, plusieurs forges dont certaines avec la technique des

[135] Merger, M. 1992, « Les chemins de fer italiens : leur construction et leurs effets amont (1860-1915) », *Histoire, économie et société*, 11ᵉ année, n°1. Les transports terrestres en Europe Continentale (XIXe-XXe siècles) p. 109-129.
[136] Loi n° 137 du 20 avril 1905. A. Papa, Classe politica e intervento pubblico nell'età giolittiana. La nazionalizzazione delle ferrovie, Naples, Guida, 1973.
[137] Stefano Maggi, « Le cheminot en Italie. Image et culture », *Revue d'histoire des chemins de fer,* 36-37, 2007, p. 335-350.
[138] Stefano Maggi, « Le cheminot en Italie. Image et culture », *Revue d'histoire des chemins de fer,* 36-37, 2007, p. 335-350.

flaques et de nombreux établissements, notamment La Lombardie, dans le Val d'Aoste, en Toscane et dans la région napolitaine était liée à ces industries. En 1860, l'Italie a produit 29 000 tonnes de fonte et 30 000 tonnes de fer, et les produits finis (rails en particulier) ont atteint 60 000 tonnes. La «Società per Industria del Ferro» pour répondre aux difficultés de l'industrie du fer. En 1881, il était impossible de soutenir la concurrence étrangère lorsque le ministre des Travaux publics, A. Baccarini, dénonça l'insuffisance et la mauvaise qualité des produits semi-finis produits nécessaires pour l'industrie ferroviaire.[139] Un des complexes de production de fer les plus importants était Terni en Ombrie qui a été fondée en mars 1884 avec la production d'acier à cycle complet. At the end of the 19th century, the Ligurian establishments produced 75% of Italian steel, ahead of those of Terni (14%), Lombardy (10%), Tuscany and Piedmont.[140]

Les premières années des cheminots du XXe siècle, participent au mouvement politique et social. Quirino Nofri a été le premier député ferroviaire élu au Parlement en 1897 sur les listes du Parti socialiste italien, fondé en 1892. Tous les courants politiques se sont également échangés entre les cheminots, en particulier l'idéologie fasciste. Les cadres étaient enclins au mouvement Mussolinii qui a provoqué une fracture sociale au sein de l'entreprise jusqu'aux licenciements des années 1920, lorsque l'effectif du personnel opérationnel est passé de 235 000 hommes en 1921 à 174 000 en 1924.[141]

Dans les années 1920 le réseau était sous extension. En octobre 1927, la direttis sima a été inaugurée Rome-Naples qui mesure 215 km. En octobre 1928, la nouvelle ligne internationale est ouverte au trafic. Coni-Ventimiglia qui passe par Breil en territoire français. Le 1er novembre 1928, la route Civita-Vecchia Orte a été inaugurée avec 86 km, il a ouvert une communication directe à travers les Apennins entre Ancone et Civita-Vecchia tandis que l'ancienne route à travers Rome avait 79 km. La nouvelle ligne Bologne-Florence était l'une des lignes les plus utiles pour supporter un trafic important. En creusant les tunnels les distances ont diminué, il y avait 29 autres tunnels 35 ponts le parcours a été réduit à 132 97 km. le 20 janvier 1929, un tunnel a été inauguré dans les Apennins par la longueur de 18 km qui est le deuxième plus grand tunnel en Europe. Dans les

[139] Merger, M. 1992, « Les chemins de fer italiens : leur construction et leurs effets amont (1860-1915) », *Histoire, économie et société,* 11e année, n°1. Les transports terrestres en Europe Continentale (XIXe-XXe siècles) p. 109-129.
[140] Bonelli Cf., *Lo sviluppo di una grande impresa in Italia. La Terni dal 1884 al 1962,* Torino, 1975, p. 3 et suivantes.
[141] Stefano Maggi, « Le cheminot en Italie. Image et culture », *Revue d'histoire des chemins de fer,* 36-37, 2007, p. 335-350.

années suivantes, les autres lignes de voie normales ont été construites telles que Fossano-Mondovi-Ceva 37 km. Ostiglia-Trévise 117 km. Sacile-Pinzano 0,67 km. Vittorio-Veneto-Ponte nelle Alpi à 26 km.[142]

Lors du développement du réseau italien, plusieurs tunnels ont été creusés; à 7 km. 640 de Naples-Granatello di Portici a ouvert ses portes en 1839, avec les étapes majeures du Cenis (1871), la route du Saint-Gothard (1882), le Simplon (1906) et à la suite d'améliorations majeures qui ont été la ligne Rome-Naples via Formia (1927) et la «direttissima» Bologne-Florence avec le long tunnel sous les Appennins (1934). Le Mont Cenis a été foré en 1857 et Saint-Gothard entre 1872-1880 qui a attiré l'attention des politiciens et des techniciens. Pour la construction de la ligne Arona-Domôdossola, le perçage du Gattico (3 308 m) était nécessaire. Et le tronçon Isella-Domodossola à travers les tunnels de Trasquera et Varzo (2 968 m).[143]

En ce qui concerne le matériel roulant, il y avait 491 machines à vapeur 10 076 voitures 895 camionnettes 160 589 wagons en juin 1925. À partir de 1923 1928 650 nouvelles machines d'exploitation et 20 000 véhicules ont été livrés et en 1928 350 locomotives1 et 10 000 voitures ou voitures étaient en construction.[144]

Il y avait aussi les chemins de fer secondaires en Italie, gérés par des entreprises locales détachées du réseau national. Les chemins de fer secondaires avaient des caractéristiques, comme un tracé établi pour desservir la campagne et les centres moins importants, un trafic limité, la fonction d'évacuation des produits principalement agricoles et, parfois, une clientèle touristique. Après la nationalisation des chemins de fer en 1905, il restait 3 000 km de voies ferrées et autant de lignes de tramway appartenaient à des entreprises privées ou municipales.[145]

Auparavant, il n'y avait pas de réelle différence entre les sections principales et secondaires, ni d'un point de vue réglementaire ni d'un point de vue technique. Mais la fin du XIXe siècle, lorsque le réseau national était terminé, entre les lignes supportant les grands trafics nord-sud ou est-ouest et les lignes ne gérant que le service local, indépendamment du fait que la gestion en était confiée à

[142] Pardé M., « Les chemins de fer italiens », *Annales de Géographie*, t. 39, n°218, 1930. p. 184-186.
[143] Caralp Raymonde, « Sezione documentazione del servizio personale ed affari generali, La gestione di Stato delle ferrovie italiane / La gestion par l'Etat des chemins de fer italiens (1905-1955) », *Revue de géographie de Lyon*, vol. 33, n°4, 1958. p. 379-381.
[144] Pardé M., « Les chemins de fer italiens », *Annales de Géographie*, t. 39, n°218, 1930. p. 184-186.
[145] Stefano Maggi, « Le rôle économique et social des chemins de fer secondaires en Italie », *Revue d'histoire des chemins de fer*, 24-25, 2002, p. 370-394.

des collectivités locales ou à de grandes sociétés concessionnaires. Une différence est apparue dans la pratique. Pendant les vingt ans de fascisme, les principaux chemins de fer se sont parfois électrifiés et leurs voies ont doublé et ont commencé à être empruntées par des trains rapides. Mais les lignes secondaires ont toujours été plus isolées mais ont néanmoins eu des effets significatifs sur le territoire, au moins jusque dans les années 1960, comme l'augmentation continue des stations-villages et l'afflux dans les stations de tous les produits des terres environnantes.[146]

En Italie, au cours des vingt dernières années du XIXe siècle, des chemins de fer secondaires se sont développés qui desservaient les centres urbains de la périphérie du pays.[147] Les chemins de fer ont progressivement atteint les villes vers les petits centres par des trains plus petits que les trains réguliers et les tramways. Après l'achèvement des lignes principales, les centres périphériques comme la société agricole et sans voiture voulaient également se relier à la civilisation par le train, ce qui pourrait apporter le développement économique et la modernisation politique et sociale.[148] En tant que journaliste et député Pacifico Valussi, a écrit:

« les villes secondaires, autrefois florissantes, se plaignent sans arrêt des effets néfastes que les voies ferrées provoquent chez elles, même si en fait elles les frôlent simplement ; mais même en les frôlant, elles emportent une partie de la vie locale dont ces centres jouissaient pour la déverser dans les grandes villes où les chemins de fer s'entremêlent. »[149]

En 1879, la «loi Baccarini» a été promulguée, par le ministre des Travaux publics reconnu «chemins de fer complémentaires» comme nécessaires à l'achèvement du réseau de la péninsule. La quatrième catégorie était constituée de "chemins de fer secondaires", à savoir 1,530 km de lignes qui pourraient être construites à condition de leur utilité dans les provinces et de la participation des habitants aux coûts.[150]

Les petites entreprises privées géraient surtout des chemins de fer moins importants surtout après les réformes administratives générales de 1865 et 1885, au 31 décembre 1887, 1 326 km de réseau: 414 km alloués à la Royal Sardinian Company, 189 km à la Company Palermo-Marsala -Trapani

[146] Stefano Maggi, « Le rôle économique et social des chemins de fer secondaires en Italie », *Revue d'histoire des chemins de fer*, 24-25, 2002, p. 370-394.
[147] Barchetta A., Sulla costruzione delle ferrovie secondarie. Considerazioni economiche, tecniche e finanziarie, Turin, 1866.
[148] Stefano Maggi, « Le rôle économique et social des chemins de fer secondaires en Italie », *Revue d'histoire des chemins de fer*, 24-25, 2002, p. 370-394.
[149] P. Valussi, « Le piccole città nel nuovo ordinamento d'Italia », *Nuova Antologia*, vol. VIII (juillet 1868), p. 541.
[150] Crispo A., *Le ferrovie italiane, Storia politica ed economica*, Milan, 1940, p. 197-201 et p. 122.

en Sicile; la Venetian Society comptait 134 km de lignes, dont la ligne Vicenza-Schio, la ligne Vicenza-Treviso et la ligne Padua-Bassano; 63 km étaient gérés par les chemins de fer du nord de Milan et augmenteraient considérablement au cours du nouveau siècle; 134 km étaient gérés par le Central Appennine Railway, Arezzo-Fossato di Vico.[151]

À Turin, le premier tramway à chevaux a été mis en œuvre en 1872, puis entre Milan et Monza, les sections extra-urbaines ont été étendues en 1876. L'utilisation de lignes de tramway a commencé en 1878 avec la ligne Milan-Vaprio Adda via Gorgonzola et la ligne Cuneo-Borgo San Dalmazzo. En 1890, les tramways électriques fonctionnent d'abord à Rome, puis entre Florence et Fiesole.[152] À la fin de 1879, 29 lignes d'une longueur totale de 515 km étaient en service dans la péninsule, dont 17 lignes utilisaient la locomotive. L'année prochaine, il a atteint 700 kilomètres dont la moitié dans la province de Milan. Le 1er octobre 1888, le réseau de tramways à vapeur comprenait 2 262 km: les rails étaient posés sur une longueur de 139 km de routes nationales, sur 1 572 km de routes provinciales et 269 km de routes municipales; d'autre part, 281 km de rails ont été posés sur leur propre site. La Lombardie (905 km) et le Piémont (774 km) ont le plus grand réseau. Au 31 décembre 1902, les lignes de tramway avaient atteint 3 541 km et 77 sociétés de transport les géraient avec 12 484 salariés; il y avait 264 conduites de vapeur dans la plupart des cas, plus précisément 3 067 km avec de la vapeur contre 705 km avec de l'électricité.[153]

La plupart des réseaux de tramways ont été construits dans le nord de l'Italie et au sud, seuls Rome, Naples et Messine étaient importants. La Compagnie de tramway interprovincial de la plaine du Pô, qui est devenue la deuxième plus grande entreprise de tramway du continent, gérait quelques lignes se terminant à Milan, y compris celle vers Vaprio. Le mode de traction préférable pour les lignes non urbaines était la vapeur. En revanche, la traction électrique a été utilisée dans les villes car elle était moins polluante, sauf à Ancône, Bergame et Gênes, où des tramways à vapeur ont été mis en place.[154]

Le tram extra-urbain avait un trafic de marchandises, transférant des produits ruraux vers les villes, il consistait également en produits manufacturés destinés aux centres de périphérie. le tram extra-urbain avait un trafic de marchandises, transférant des produits ruraux vers les villes, il était

[151] Ministero dei Lavori Pubblici, Relazione sull'esercizio delle strade ferrate per l'anno 1905, Rome, 1909, p. X.
[152] Viappiani A., *La costruzione e l'esercizio delle tramvie,* Turin, 1893.
[153] Guadagno W., *Ferrovie ed economia nell'Ottocento post-unitario,* Rome, CAFI, 1995, p. 265.
[154] Stefano Maggi, « Le rôle économique et social des chemins de fer secondaires en Italie », *Revue d'histoire des chemins de fer,* 24-25, 2002, p. 370-394.

également constitué de produits manufacturés destinés aux centres de la périphérie. Après les années 1930, les tramways extra-urbains ont décliné pour cette raison du ministre des Communications Costanzo Cianot que les rails posés sur les routes entraveraient le développement de l'automobile. en 1930, le réseau de tramway extra-urbain était de 4 217 km, qui est passé à 2 230 km en 1939.[155]

Dans la deuxième période d'après-guerre, en 1955, le réseau de chemins de fer secondaires s'est étendu à 21 923 km, mais le lancement commercial de la Fiat 600 a affecté le chemin de fer dont ils ont commencé à enlever ce que l'on appelait les "brindilles sèches", branches mortes. 2 100 km de lignes ont été progressivement mises hors service et les chemins de fer nationaux n'ont perdu que 600 km de lignes secondaires.[156]

La traction électrique a été conçue par Siemens Halske pour la première fois en 1879 à l'occasion de l'exposition de Berlin. Aux États-Unis, la traction électrique a été développée où la première ligne électrique à 3 lignes a été inaugurée à Cleveland en 1883 avec 3 kilomètres de long. En Europe, à la fin du siècle, le moteur triphasé a été utilisé. En Italie, l'électrification a commencé avec une grande diversité de systèmes. En 1899, sur la section Milan-Monza (12 km) et, en 1901, sur la ligne Bologne-San Felice (43 km), la traction avec accumulateurs est mise en œuvre par les compagnies des chemins de fer du sud (réseau adriatique) et de la Méditerranée qui exploitent les chemins de fer italiens jusqu'en 1905. Toujours en 1901, sur la taxe de Milan - Varese-Porto Ceresio, le troisième système ferroviaire DC a été utilisé puis que sur les lignes de la Valteline (105 km), le système actuel triphasé a été utilisé.[157]

D'octobre 1902, toute la ligne Lecco-Colico-Chiavenna est équipée pour la traction électrique qui est la première pratique d'électrification en Italie. Puis les nouvelles locomotives (G.R.E. 36) sont mises en service en juin 1904. En 1911, la section Pontedecimo-Busalla est ouverte et étendue à Gênes. L'électrification s'est poursuivie vers d'autres lignes de montagne importantes: la ligne parallèle à celle du Giovi en 1914; Savona-San Giuseppe-Ceva en 1915 et Bussoleno-Modane où les nouvelles unités d'entraînement électrique E 550 et E 330 ont été testées.

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[155] Fumi G., « Vie di comunicazione e trasporti », *Guida all'Italia contemporanea.* vol. I, Risorse e strutture economiche, Milan, Garzanti, 1998, p. 103.
[156] Stefano Maggi, « Le rôle économique et social des chemins de fer secondaires en Italie », *Revue d'histoire des chemins de fer*, 24-25, 2002, p. 370-394.
[157] Giannetti Renato, « Électrification des chemins de fer italiens (1899-1940) », *Histoire, économie et société*, 1992, 11e année, n°1. Les transports terrestres en Europe Continentale (XIXe-XXe siècles), p. 131-144

En mars 1911, dans toute l'Europe du Nord, les premières locomotives monophasées sont mises en service. Aux États-Unis, le système DC a été développé pour les tramways et étendu aux chemins de fer. avec ce nouveau système, les lignes étaient beaucoup plus légères et plus simples de construction. Et les locomotives DC étaient également très simples à construire. En Italie à la fin de 1918, le système DC a été présenté à l "'Association électrotechnique italienne" par ses avantages techniques et économiques. Et il y a eu un débat entre le défenseur du système triphasé et celui-ci. Le triphasé était préférable car l'Italie disposait déjà de 200 locomotives et d'un système de transformation de 160 000 kW. L'italien était moins enclin aux deux systèmes standard prédominants dans d'autres pays européens, à savoir les systèmes monophasés et à courant continu. Dans les années 1930, l'électrification italienne a continué selon les mêmes critères techniques que pendant la période antérieure à 1914. De 1917/18 à 1927/28, la longueur des lignes électriques est passée de 800 à 2 799 kilomètres sans amélioration qualitative notable les locomotives fournies avec trois le courant de phase est passé de 188 à 510 unités.[158]

Sur 16 600 km de lignes appartenant à l'Etat 1730 sont électrifiées et 1005 km de celles concédées par l'industrie privée. La section Spezia-Livorno de la ligne Modane-Rome de la traction électrique Modane Livorno fonctionne sur 450 km. De la ligne Florence-Bologne, le dernier tronçon appelé la Porretana, 132 km. La dernière section sur Villa-Literno-Naples de la nouvelle ligne NaplesRome, faisait partie des dernièr es lignes électrifiées.[159]

III. L'Histoire du chemin de fer au Portugal

La modernisation des transports a eu lieu dans la péninsule ibérique ainsi qu'au Portugal très tardivement par rapport aux autres pays européens. Dans les années 1850, le réseau anglais comptait déjà plus de 12 000 km de voies, la France 6 000 km et en Italie, qui avait également connu un retard important, plus de 1 300 km. Avant la construction du chemin de fer, les ports portugais soutenaient le commerce maritime à longue distance. Le Portugal a également profité de l'existence de canaux navigables qui permettaient aux terres de se connecter aux ports maritimes. Depuis le XVIIIe siècle, le transport du vin est assuré du Douro au marché de Porto et surtout aux marchés extérieurs. Au XIXe siècle, pour les Portugais, le chemin de fer allait devenir le moyen de

[158] Lanino P., « La questione del sistema », *L'Elettrotecnic*a, 1918, p. 277 et 346.
[159] Pardé M. « Les chemins de fer italiens », *Annales de Géographie*, t. 39, n°218, 1930. p. 184-186.

raccordement de leur pays à l'Europe. Cela leur permettrait de rapprocher leur marché national de l'Europe.[160]

La construction du chemin de fer au Portugal a commencé tard, trente et un ans après l'inauguration du premier tronçon de chemin de fer en Angleterre. La construction des chemins de fer était très chère à partir du capital privé national, il aurait dû pouvoir compter sur des structures de crédit capable de mobiliser des capitaux, drainant une épargne auparavant improductive. Et depuis la première décennie du XIXe siècle, le Portugal n'a pas développé de structures de crédit. Le pays n'a pas été en mesure de paiement de ses dépenses publiques qui étais défavorables aux investissements des capitalistes étrangers dans la construction des chemins de fer. Puis l'État a adopté la méthode de la Belgique et, en augmentant les impôts à partir de 1951, il a commencé à investir dans les chemins de fer. Malgré cela, l'État a aidé à la construction et à l'exploitation des chemins de fer en dépensant 60 871 millions de reis pendant 39 ans moyenne annuelle de 1 500 millions de reis (8 400 000 francs). Les risques que les capitaux privés envisagés étaient compensés par les investissements de l'État dans les chemins de fer. Le plan principal de la construction du chemin de fer au Portugal a été réalisée au cours de 1853 et 1891 au 19ème siècle. Après cette date, seule la construction des lignes est terminée.[161]

La première ligne de chemin de fer qui reliait Lisbonne à Carregado a été inaugurée le 28 octobre 1856 qui marque la naissance des chemins de fer portugais. En 1951, la Compagnie des chemins de fer portugais a été officiellement formée, après la combinaison des sociétés qui exploitent les différentes lignes portugaises, seule la Sociedade Estoril qui exploite la ligne de Cascais a été exclue. De 1886 à 1895, le rythme de construction était en moyenne de 83 km par an pour le nombre maximum de kilomètres de voies ferrées construites au Portugal.[162]

En 1866, le pays a connu une crise aux effets politiques et sociaux et a durement touché les compagnies de chemin de fer et il a forcé l'État à acheter la compagnie du sud-est. À l'origine, c'est

[160] Gomez Mendoza Antonio, « La modernisation des transports dans la Péninsule Ibérique au XIXe siècle », *Histoire, économie et société*, 1992, 11e année, n°1. Les transports terrestres en Europe Continentale (XIXe-XXe siècles) p. 145-156.
[161] de Avelar, P. M., « Le rôle de l'Etat dans la construction des chemins de fer du Portugal au XIXe siècle », *Histoire, économie et société*, 11e année, n°1. Les transports terrestres en Europe Continentale (XIXe-XXe siècles) 1992, p. 173-184.
[162] Gomez Mendoza Antonio, « La modernisation des transports dans la Péninsule Ibérique au XIXe siècle », *Histoire, économie et société*, 1992, 11e année, n°1. Les transports terrestres en Europe Continentale (XIXe-XXe siècles) p. 145-156.

l'État qui a construit le chemin de fer «Douro e Minho» et le chemin de fer Sud et Sud-Est est resté sa propriété jusqu'en 1926.[163]

En 1846, l'ingénieur belge Du Pré présente son premier projet de connexion de Lisbonne à la frontière espagnole. En août 1852, la concession du premier tronçon a été accordée à Companhia Central Peninsular dos Camonhos de Feno de Portugal. Entre Lisbonne et Porto serait la deuxième ligne la plus importante, ce qui a permis d'ouvrir une route plus directe entre le Portugal et la France en évitant le détour par Madrid.[164]

La principale voie ferrée du Portugal est située à l'ouest du pays et se prolonge dans l'axe sud-nord entre la capitale du pays Lisbonne et Porto deuxième grande ville. Le réseau est relié par les lignes transversales à la frontière espagnole. Il y a 2133 milles de chemin de fer: que la compagnie des chemins de fer portugais exploite 1 534 milles, le reste par quatre autres sociétés.[165]

L'homme d'affaires espagnol José de Salamanca y Mayol a fondé, la Companhia dos Caminhos de Ferro Portugueses, responsable de la construction des transport ferroviaire au Portugal. Il a obtenu l'autorisation de construire les lignes Nord et Est. La ligne Est reliait la gare d'Abrantes au Portugal, et la frontière avec l'Espagne. Sa première section fut exploitée le 28 octobre 1856. Il a été connecté au réseau ferroviaire espagnol le 24 septembre 1863. La construction de la ligne nord entre deux grandes villes; Lisbonne et Porto a commencé le 17 septembre 1853 et a pris du temps jusqu'à l'inauguration du pont D. Maria Pia le 5 novembre 1877.[166]

La ligne qui reliait le Nord au Sud était représentée sur une carte publiée dans les presses nationales. En 1877, des ingénieurs des travaux publics et plus particulièrement Sousa Brandâo, voulaient construire cette ligne afin de relier les réseaux à deux états celui de Minho et Douro et celui du Sud et du Sud-Est. Lourenço de Carvalho a présenté le premier projet de ce réseau au Parlement en 1879. Mais l'État n'avait pas la force de construire une telle ligne. A cette époque, la seule liaison Nord / Sud restait la ligne de Lisbonne à Porto appartenant à la Compagnie royale. Une ville comme

[163] de Avelar, P. M., « Le rôle de l'Etat dans la construction des chemins de fer du Portugal au XIXe siècle », *Histoire, économie et société,* 11e année, n°1. Les transports terrestres en Europe Continentale (XIXe-XXe siècles) 1992, p. 173-184.
[164] Gomez Mendoza Antonio, « La modernisation des transports dans la Péninsule Ibérique au XIXe siècle », *Histoire, économie et société,* 1992, 11e année, n°1. Les transports terrestres en Europe Continentale (XIXe-XXe siècles) p. 145-156.
[165] Winchester, C. Ed., « Spain and Portugal », *Railway Wonders of the World,* 1936, p. 1473–1480.
[166] Torres, C. M., « L'évolution des lignes portugaises et leur importance ferroviaire », *Gazeta dos Caminhos de Ferro,* Lisbonne, 1958, 70: 10, 11.

Covilhâ, à l'intérieur, a souffert qui avait connu une croissance industrielle importante sans le chemin de fer, auquel elle n'était reliée qu'en 1891. L'État portugais a fait un effort pour soutenir la construction de chemins de fer dans le pays même si les circonstances financières n'étaient pas les meilleures, même après 1853, il est devenu difficile de faire face aux frais de la dette.[167]

En 1887, la ligne de chemin de fer du Douro a été achevée et passe près du fleuve Douro, dans le nord du Portugal. Aussi dans cette année pour la première fois, le Sud Express a transféré des passagers de Lisbonne à Hendaye, une commune française à la frontière franco-espagnole.[168]Au début du XXe siècle, en assimilant plusieurs compagnies de chemin de fer privées, elle s'est développée. Mais après la Seconde Guerre mondiale et l'avancement du transport routier et aérien, l'importance des chemins de fer a un peu diminué.[169]

Aujourd'hui, le réseau ferroviaire portugais consiste essentiellement en un axe nord-sud, trois liaisons avec l'Espagne et des réseaux Lisbonne et Porto. Le réseau ferroviaire portugais comprend 3 621 km de voies ferrées, dont 1 935 km de voies uniques et 611 km multipistes. Au cours des dernières décennies, la gamme de lignes en service a été réduite à s'établir à 2 546 km, dont 1 639 km de lignes électrifiées. 440 stations étaient en service en 2018, dont 407 dédiés au transport de passagers, 10 pour le fret et 23 assurant les deux services.

[167] de Avelar, P. M., « Le rôle de l'Etat dans la construction des chemins de fer du Portugal au XIXe siècle », *Histoire, économie et société*, 11ᵉ année, n°1. Les transports terrestres en Europe Continentale (XIXe-XXe siècles) 1992, p. 173-184.
[168] Winchester, C. Ed., « Spain and Portugal », *Railway Wonders of the World*, 1936, p. 1473–1480.
[169] João, P. M. et al. « Os Caminhos de Ferro Portugueses 1856-2006 », *CP-Comboios de Portugal e Público-Comunicação Social S. A.*, 2006, p. 62.

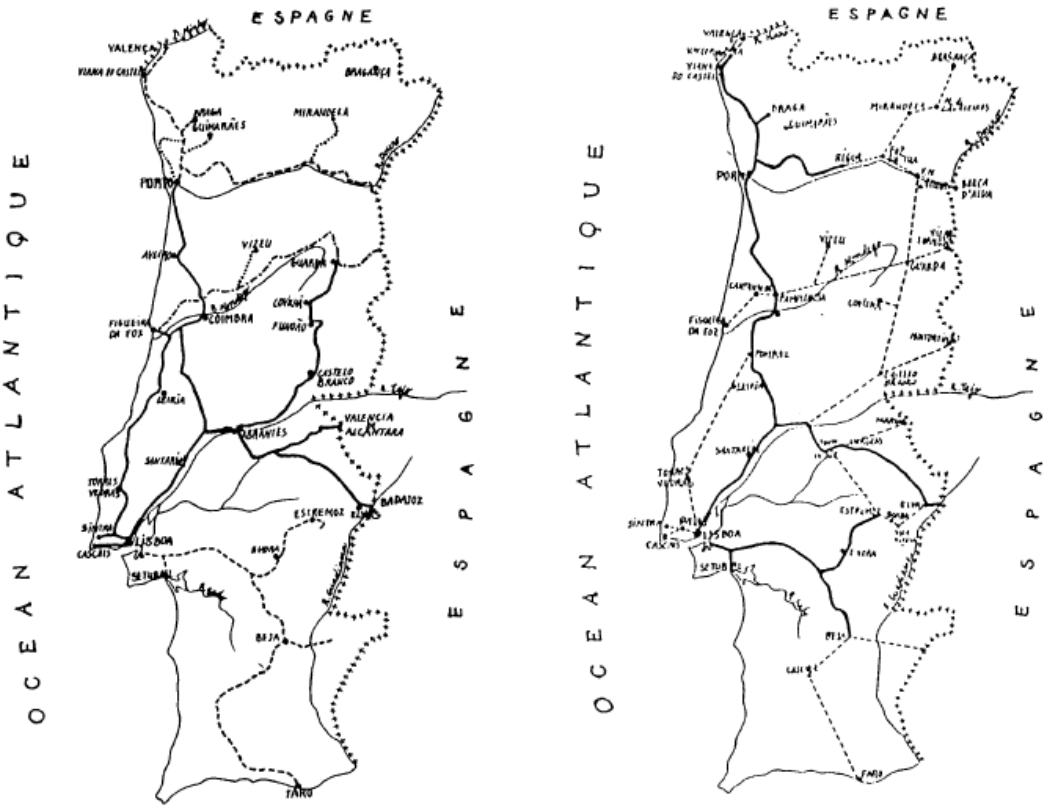

Figure 3 : Carte établie d'après Legislaçâo sobre caminhos de ferro, vol. I et II, Lisbonne. I.N., 18S3 et 1888.

Conclusion

Sujet de recherche du travail en groupe de projet tutoré étais le Chemins de fer et paysages de l'innovation technique que nous avons étudié depuis deux ans pendant le Master TPTI. Comme la partie individuel de projet, l'auteur a effectué des recherches sur l'histoire des chemins de fer dans les trois pays, la France, l'Italie et la France. Dont la connaissance de cette histoire que nous avons raconté est important pour comprendre l'influence du chemin de fer dans l'occupation et le changement du paysage et du territoire.

Pour répondre à la question centrale que est l'histoire du chemin de fer dans les trois pays: France, Italie, et Portugal le chercheur a presenté des informations telles que l'histoire d'événements importants dans l'industrie du chemin de fer, des personnalités influentes dans sa construction, des informations statistiques sur les lignes de chemin de fer, ainsi que des informations géographiques sur les zones couvertes par le chemin de fer. Afin d'obtenir et de synthétiser des informations, le chercheur a utilisé des sources de données et divers articles écrits sur l'histoire des chemins de fer dans les trois pays. Ces articles étais pour la plupart rédigés en français et sont disponibles sur des sites comme journals.openition.org et www.persee.fr.

Afin de répondre aux principales questions, le chercheur a tenté de trouver des informations sur la manière de la formation des projets nationaux de construction ferroviaire, les grandes entreprises en charge de la construction de lignes, d'importantes lignes interurbaines, l'électrification des lignes, la formation de sociétés nationales ferroviaires . Et comment, depuis le début de l'industrie au début du XIXe siècle jusqu'à nos jours, les chemins de fer se sont développés et ont évolué dans ces trois pays. Date de construction des premières lignes construites, poursuite de la construction des lignes avec intérêt général entre les villes importantes puis développement des lignes secondaires avec intérêt local entre des villes en provinces. En plus des textes historiques, des images et des cartes historiques ont été utilisées pour montrer le développement de cette industrie à travers les pays.

Cette recherche était courte, mais le chercheur a essayé de résumer autant d'informations que possible sur l'histoire des chemins de fer dans ces trois pays. Malgré de nombreuses études et articles de chercheurs dans ce domaine, des recherches plus approfondies peuvent encore être effectuées dans ce domaine.

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Ville pétrolière d'Abadan (1908-1951), Histoire, valorisation et patrimonialisation

Ce mémoire résume l'histoire de l'Anglo-Persian Oil Company (APOC) en Iran. Il commence de la première concession pétrolière de D'Arcy en 1901 à la découverte du pétrole en 1908, la formation d'APOC en 1909, et se poursuit tout au long des années entre les deux guerres mondiales, et enfin, il raconte le processus de la nationalisation de l'industrie pétrolière iranienne en 1951. En outre, l'histoire de la ville d'Abadan, la construction et le développement de ses villes entreprises, son urbanisme et son architecture en plus de la morphologie de la ville ont été étudiés. En outre, l'auteur discute les principales institutions et leurs activités liées au patrimoine industriel en Iran. Il présente les archives de la compagnie pétrolière et plusieurs projets de musée du pétrole dont certains sont construits et d'autres à construire par la direction du Centre de documentation et des musées de l'industrie pétrolière iranienne. Ensuite, les points de vue sur le patrimoine industriel et leur participation au développement local sont explorés.

Les mots-clés : Abadan, Histoire du pétrole Iranien, Patrimoine industriel, Musée du pétrole

Oil City of Abadan (1908-1951), History, Valorisation and Patrimonialisation

This thesis summarizes the history of the Anglo-Persian Oil Company (APOC) in Iran. It starts from the first oil concession of D'Arcy in 1901 toward the discovery of oil in 1908, the formation of APOC in 1909, and continues throughout the years between the two World Wars, and finally, it narrates the process of the Nationalization of the Iranian oil industry in 1951. Also, the history of the city of Abadan, the construction and development of its company towns, and its urbanism and architecture besides the morphology of the city are investigated. Furthermore, the author discusses the major institutions and their activities related to the industrial heritage in Iran. It presents the oil company archive and several oil museum projects that some of them are built and others to be constructed bt the management of the Center of Documentation and Museums of Iran Oil Industry. Then, the viewpoints about industrial heritage and their participation in sustainable local development are investigated.

Keywords : Abadan, Iran oil history, Industrial heritage, Petroleum museum