

Annalisa Trentin

Khouribga

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Engineering, Architecture and Contradictions of a Moroccan Mining Town

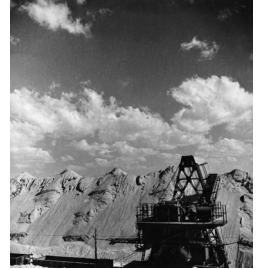
For more than a hundred years, the discovery of the mineral deposit and subsequent mining activity on the Ouled Abdoun basin, located south of Casablanca near the current city of Khouribga, have dramatically altered the harmony of the existing landscape, introducing new dimensions in time and space through the construction of industrial plants, road infrastructure, and new cities. Although some excavation and survey work had been carried out as early as 1912, only in 1919, as a result of the work conducted by the Moroccan Mining Service, the importance of the phosphate deposit in the Ouled Abdoun basin started to become clear, and on August 7th, 1920, the Office Chérifien des Phosphates (OCP) was established through a decree promulgated on the initiative of Marshal Lyautey.¹

The transformation of this once-pastoral region into Morocco's phosphate heartland marked a pivotal moment in the country's industrial development. The establishment of the OCP, under the rules of French protectorate, represented not just the beginning of systematic phosphate extraction, but also the dawn of modern industrial practices in Morocco. Within a few years, the previously uninhabited plateau became dotted with extraction sites, processing facilities, and railway lines connecting the mines to the Atlantic ports. The local Bedouin populations, who had traditionally used the land for grazing, witnessed their ancestral territories gradually transformed into an industrial landscape (**figs. 1-3**).

Before 1921, the plateau area was sparsely populated, characterised by an almost desert landscape; the situation changed suddenly when the phosphate factory began operating. In a few years, the few nomadic inhabitants, farmers, and sheep herders literally saw a new landscape emerge, first through the installation of machinery for phosphate collection and processing, then with the appearance of enormous mountains (*terrils*) generated by phosphate processing waste, and subsequently through the construction of new residential settlements completely dissimilar from local/traditional housing models.

The needs related to mining activity were addressed by OCP as a priority: while in Casablanca French architects and engineers were building the new European city with buildings and services for the *bourgeoisie*, experimenting with the new possibilities offered by reinforced concrete, in Khouribga, in 1925, even before the realisation of residential settlements, OCP built futuristic industrial infrastructure, such as the reinforced concrete accumulator designed to store phosphate and load it onto wagons for transport to the embarkation station in Casablanca.

This dual approach to urban development reflected the colonial administration's priorities and the technological imperatives of the time. In Casablanca, architects like Henri Prost and Albert Laprade were crafting an idealised vision of a modern colonial city, with wide boulevards, art deco facades, and carefully planned public spaces that would



1 Revue économique franco Suisse, *L'Office Chérifien des Phosphates*, in "Revue économique franco Suisse", Chambre de Commerce Suisse en France, vol. 33, n. 12, Paris, 1953.

1 Khouribga. Open-air mining at a new extraction site located in Sidi Daoui, where there is a reserve of 20 million tonnes of phosphate. 20 September 1952, Archive: Protectorat Maroc / Sélection de la résidence générale, N009627. Ph: J. Belin.

2 Khouribga. Phosphate drying area. 30 Juin 1941, Archive: Protectorat Maroc / Sélection de la résidence générale, N009637. Ph: J. Belin.

3 Khouribga. Recette III, 9 Février 1947, Archive: Protectorat marocain, 51238, Ph: Anonymous.

have met the European sensibilities. Their designs incorporated decorative elements that blended French modernism with selective Moorish motifs, creating what became known as the neo-Moroccan style.²

Meanwhile, in Khouribga, the architectural focus was decidedly utilitarian, driven by industrial efficiency rather than aesthetic considerations. The reinforced concrete accumulator stood as a monument to functional design, its massive structure embodying the raw industrial power of the mining operation.

The productive factor was the priority, which is why, in a territory where there were few human settlements, industrial installations were the first to arise. Technological research intensively focused on developing advanced factories capable of ensuring high hourly productivity. In response to this industrial challenge, European engineers and builders were strategically mobilized to experiment with innovative technological solutions designed to address emerging industrial functions and manufacturing requirements.

Phosphate extraction was at that time a complex industrial process involving significant material movement and infrastructure development. The extraction typically required massive earthmoving operations to access phosphate rock deposits, with large-scale excavation and transportation of mineral-bearing materials. Mechanization played a crucial role in this process. Heavy machinery like large excavators, front-end loaders, and specialized mining trucks were essential for efficiently removing overburden (surface layers) and extracting phosphate-rich rock. Processing facilities had to be designed to handle enormous volumes of material, incorporating sophisticated screening, crushing, and separation technologies.

Storage and transportation infrastructure were equally critical. Massive storage silos and warehousing systems were required to manage processed phosphate materials. Conveyor systems, rail networks, and specialized transport vehicles were developed to move these materials from extraction sites to processing plants and ultimately to agricultural or industrial consumers. To ensure rapid loading of phosphates onto railway wagons, that would transport them to the port of Casablanca, it was necessary to operate by simple gravity and load an entire train at once: under these conditions, OCP decided that it was essential to build an accumulator that would have covered the loading tracks to form, in a sense, a covered station.

Following a competition among specialists, the proposal of the Swiss engineer Henry Lossier together with the Parisian construction company Fourré & Rhodes³ was selected. Fourré & Rhodes and Lossier had collaborated a few years earlier on designing a series of twelve airship hangars for the French Navy in Montebourg, Normandy, to be used for monitoring maritime routes to deal with Germany's increased



4 Khouribga. Phosphate Drying Plant, 1 April 1947, Archive: Protectorat Maroc / Sélection de la résidence générale, N009639. Ph: J. Belin.

5 Maroc: the large phosphate silo in Kourigha, Archives: Office du Protectorat marocain. A006054, Ph: Anonymous

2 Cohen Jean-Louis, Eleb Monique, *Casablanca: Mythes et figures d'une aventure urbaine*, Hazan, Paris, 1998; english edition, Cohen Jean-Louis, Eleb Monique, *Casablanca: Colonial Myths and Architectural Ventures*, Monacelli Press, New York, 2003.

3 Willm Frédéric, *Accumulateur en béton armé pour le stockage et le chargement du phosphate de chaux, à Kourigha (Maroc)*, in "Le Génie Civil", Paris, 24 January 1925.

submarine warfare.⁴ The dimensions of the Hangar d'Ecausseville, built between 1917 and 1919, were considerable, with a height of 32 m and a length of 150 m. This innovative airship station⁵ served as an extraordinary example for imagining the new phosphate loading station in Khouribga, with its particularly complex operation, pioneered to solve new needs never addressed before. The dimensions of the new factory, built entirely in reinforced concrete, approached those of the hangar with a length of 120 m, a width of 60 m, and a height of 16 m, 400 pillars, and six railway lines; around it, countless processing buildings occupied an area equal to a medium-sized city (figs. 4-7).

Land occupation of the Khouribga territory began with the construction of the industrial city and would have extended, to house workers and employees of the mining industry, through the construction of the European city and the Indigenous city according to the colonial logic that had already characterised the construction of Casablanca at the beginning of the 20th Century.

The industrial town of Khouribga cannot be considered as a sedimentary space whose genesis could be thought of in terms of continuity and integration with an historical space; on the contrary, it fits into a colonial logic of juxtaposition or even rupture with the pre-existing order.

More generally, the foundation narratives, which can be read through a wide literature produced on the colonial city, emphasise the desire, manifested from the first years of the establishment of the French protectorate, to operate a metaphor of physical and cultural distance from a pre-existing environment creating a new type of urban settlement that stood in contrast to traditional Moroccan cities and villages.


Pascon and Lazarev⁶ note how the first mining villages were founded with the sole purpose of housing the workforce of the mines and OCP offices. This intention would soon prove to be in contradiction with the tendency towards autonomy of the inhabitants. The environment in which Moroccan workers were forced to live was no longer the rural one they were used to; however, they could not escape what had now become the only possible work in the area: phosphate extraction.⁷

The development of Khouribga was therefore strictly linked to the sole development of its fundamental economic activity. From its birth, as an urban, cultural, and political project, the mining city entered into the register of duality and separation, where two social orders

- 4 Gouault Émile, *L'aérostation maritime*, in "Le Génie civil", n. 1931, 16 August 1919 pp. 141-147.
- 5 Lieutenant-colonel G. Espitallier, *Les voûtes en béton armé dans la couverture des bâtiments. Le hangar de Montebourg pour ballons dirigeables*, in "Le Génie civil", n. 1934, 6 september 1919, pp. 213-218.
- 6 Lazarev Grigori, Pascon Paul, *Gestion des villages miniers*, OCP, Rabat, 1969.
- 7 Bianco Luisa, *Emigrare dal Marocco. Squilibri socio-ambientali ed esodo da un polo minerario (Khouribga) 1921-2013*, Rubettino, Soveria Mannelli, 2015.

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- 6 Advertising of Etablissements Fourré & Rhodes, in: Chantiers. Revue illustrée de la construction en Afrique du Nord, n. 1, 1950. pp. 66-68.

- 7 Khouribga, OCP drying plant, 20 September 1952, Archive: Protectorat Maroc / Sélection de la résidence générale, N009638. Ph: J. Belin.

faced each other and interwove their unequal social relations, accentuated by cultural and physical distance, through the mediation of urban and architectural space.⁸ This logic was characterised by the mobilization action of potential local workforce and by a totalitarian social policy, through the total management of the population, fixed in multiple areas of the territory by mean of the daily life activities. The OCP not only controlled their labour but also shaped their daily lives through the provision of housing, services, and social infrastructure, creating a form of industrial paternalism that both supported and constrained the worker community.

Khouribga and the cities of the Ouled Abdoun basin territory (Boulanouare, Boujniba, Hattane) should be understood as particular colonial cities, in the sense that, unlike other contemporary examples, for instance in nearby Algeria, they present no original imperial aesthetics, they were minor centre that functioned as a system for draining local wealth through colonisation. These mining cities represent an interesting case study, specially if related to how urban cultures emerge and evolve, being the design, often ex nihilo, of an urban area that breaks sharply with the indigenous society, characterised by a rural lifestyle, attracting, besides the inhabitants of the mining region, people from very different cultural contexts and often remote regions. For this reason, OCP had to provide housing and facilities to all these people and their families and, in 1925, planned the settlement of Khouribga. The different social classes and the different roles of workers within the phosphate industry were also manifested in the shape of the city, which, as in Casablanca and as in the experience of many European foundation cities, was planned in a clearly divided cadre city and workers' city.

The European city of Khouribga, substantially built for employees and managers mostly from France, was composed of more than three hundred urban houses, whose blocks were interspersed with hotels, shops, and offices; in the south areas of the city, many villas of different sizes, surrounded by small gardens, were built, indicating the corporate role of its inhabitant. The architecture of the European city did not seek any local aesthetics or mimicry, the language seemed to be borrowed from contemporary European garden cities or from the research introduced by architects and urban planners for the definition of urban blocks (**fig. 8**).

OCP also had to build several public buildings, such as post offices, administrative buildings, and primary and professional schools to ensure daily life, but above all to ensure adequate professional training related to mining activity for Europeans and natives. It was also necessary to build health facilities, as Khouribga was too far from the



8
Khouribga. The European city. Aerial view. 9 September 1942, Archive: Protectorat Maroc / Sélection de la résidence Générale, N009648. Ph: J. Belin.

8 Abdelmajid Arrif, *La ville coloniale au Maroc*, communication at the seminar "Architectures exportées: transferts, expérimentations, métissages", Laboratoire Urbama (Université de Tours), équipe LAA (EAParis-la Villette), laboratoire Ladrhaus (l'EA Versailles), Tours, 1993.

most important Moroccan cities; then various sports facilities, a house for theatrical, musical, and cinematographic performances, and a club house with reading and game rooms reserved for engineers were provided for the physical and mental development of the population.⁹ The maintenance of all these buildings, many of which had separate structures for the Europeans and for the Moroccans, but also that of roads, squares, and public facilities, of the entire European settlement, was under the responsibility of OCP as well as infrastructure for water supply, since the semi-desert area forced them to transport drinking water from many kilometres away to be stored in a tank in the centre of the city. Engineering works overlapped with those of architecture, where the former managed to be an expression of research and innovation while the latter remained bound to a generic image of European garden city.

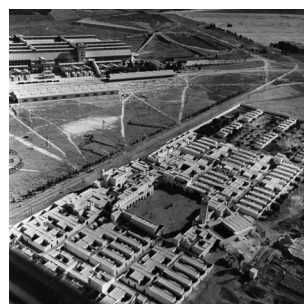
More than fifteen years after the start of mining activity, OCP decided to build, not far from the European quarter and near the industrial complex of the loading station, a settlement for mine workers who until then had been forced to live in precarious conditions (**fig. 9**). The leaders of OCP (in line with the construction of the COSUMA city – the workers' city built by French architect Edmond Brion in 1932, in the area called Roches Noires, close to the Moroccan Sugar Company factory), decided to undertake the design and construction of two workers' cities, two indigenous settlements, in the cities of Boujniba and Khouribga, between 1938 and 1940.

The architecture of the new workers' cities of Khouribga and Boujniba followed that experimented by Brion for COSUMA city, and as with the latter, the effects of perspective research can be found within the enclosure. Edmond Pauty (head of the Historic Monuments Service of the French Protectorate of Morocco) wrote that Edmond Brion knew how to bring into these new cities the atmosphere of ancient medinas through the capricious circuit of streets, unexpected intersections decorated with fountains, the overflow of trellises above the fences, many small details that are acquired through patient observation from the indigenous environment.¹⁰ He was referring particularly to Brion's work for Casablanca, but it is also possible to attribute it to the context of workers' cities built for OCP (**figs. 10, 11**).

The workers' cities of Khouribga and Boujniba, built simultaneously with the same workforce and with the same materials, were conceived following the model of a small medina, with everything that belongs to it, such as the mosque, the Koranic school, the oven, the washhouse, the Moorish café, the hammam, a large square with shops,

9 The social segregation between European and Moroccan populations was reflected not only in housing but also in daily life. While sharing the same employer, the two communities had separate social clubs, markets, and recreational facilities. The Moroccan quarter developed its own culture, with traditional souks and gathering places that served as important community hubs. Despite the company's efforts to provide adequate facilities for all residents, the disparity in living conditions and amenities between the European and Moroccan sections remained notable.

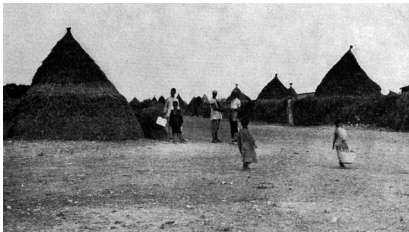
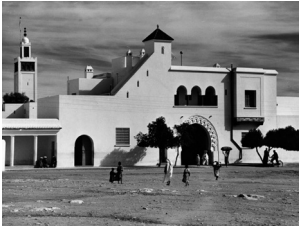
10 Pauty Edmond, *Tradition et modernisme a Casablanca*, in "Architecture", n. 4; p. 140.



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Khouribga. The New Moroccan city. Vue d'avion. 9 September 1942, Archive: Protectorat Maroc / Sélection de la résidence générale, N009644. Ph: J. Belin.

10
Khouribga. The New Moroccan city. 4 April 1947, Archive: Protectorat Maroc / Sélection de la résidence générale, N26750. Ph: J. Belin.

11
Khouribga. The New Medina Mosque. 1 April 1947, Archive: Protectorat Maroc / Sélection de la résidence générale, N009645. Ph: J. Belin.



souks, and the city walls. The houses were white, low, with a patio in Arab style, even if the layout was affected by a rationalist and regular setting, perhaps dictated by reasons of construction economy. These worker's cities were characterised by a white and rational architecture that generates a contradiction compared with the structure of ancient medinas. As in COSUMA city, in Khouribga and Boujniba many Moroccan decorative elements were in evidence, such as fountains, doors, carved wooden or stone corbels, square or octagonal minarets, citations that seek to bring to memory the character of ancient medinas, with the willingness to design cities through a desire to restore an atmosphere marked by the seal of friendly urbanity (figs. 12, 13).¹¹

Already during the 1920s, in peripheral areas of Khouribga, and near what would become the new medina, OCP had built on its own land, a series of *douars* (typical Moroccan indigenous villages) with numerous cone-shaped huts of reeds and straw, the *noualals*, where life was supposed to be conducted according to the traditional nomad's peasant style. Many men, who would work in the phosphate factories, would have been able to cultivate the land, partially maintaining their traditions. They were called stabilisation villages or adaptation settlements, born with the aim of making a nomadic population sedentary. In 1929 OCP had organised a stabilisation perimeter where were inserted some blocks composed of four dwellings of two rooms, for a total of 32 units without services, suitable to accommodate workers from neighbouring tribes. Beyond the stabilisation perimeter, OCP tried to cope with the continuous

influx of workers by structuring villages composed of traditional residential units. The *douar* of the Concasseurs (1929), that of the Escuries (1930), and the *douar* of Criblage (1933), were structured to prevent tents used as temporary housing by workers from being distributed in a disorderly manner throughout the mining territory, but also with the purpose of being able to better control the workers themselves. The latter were left with the illusion of being able to preserve their traditions and rhythms of life, but in reality, this became increasingly difficult.

With the ongoing development of extraction activities and phosphate processing, the number of immigrant residents had grown, as had the numbers of workers and employees; the objective was therefore to make it easier for indigenous immigrants, who wanted to work in the mines, to make the transition from nomadic life and agricultural occupation to permanent residence and wage labour, without suddenly and completely alienating them from their previous habits. This was the reason why each worker was granted free of charge a hectare of irriga-

12
Bou-Iniba. New Moroccan city in the phosphate region of Khouribga, 9 February 1955, Archive: Protectorat Maroc / Sélection de la résidence générale, N008940. Ph: J. Belin.

13
Bou-Iniba. New Moroccan city in the phosphate region of Khouribga, 9 February 1955, Archive: Protectorat Maroc / Sélection de la résidence générale, N008940. Ph: J. Belin.

14
Khouribga: the natives' *douar* consisting of reed and straw huts (stabilization village/village de stabilisation), in "Geographica Helvetica", 31 December 1947.

11 Meffre Gislhaine, *Architecture marocaine du XX siècle. Edmond Brion et Auguste Cadet*, Senso Unico Éditions, Mohammeda, 2010, p. 179.

ble land to cultivate (fig. 14).¹² The construction of a linear and multilevel housing block provided houses for single men and constituted a further attempt to formalise a new housing system that would then be additionally developed and structured at the end of the 1930s with the construction of the new medina.

The white city, the medina, which was supposed to resemble a traditional settlement, was in reality an architecture within which it had become necessary to adapt and learn to live through a transition period. Living with an ever-increasing number of families, the new proportions of housing, standardised living certainly offered advantages, but the housing model was still very distant from the inhabitants' living habits.

It was necessary to learn to live all together in a city that at the time must have seemed a kind of fortress with fences and gates that guaranteed security for the inhabitants but at the same time oppression and control: a city full of services but at the same time a comfortable prison. It is possible to imagine a first disorientation of the inhabitants, of the workers who moved to the city with their families, mediated by the creation within the city of small neighbourhoods, capable of accommodating workers and families from the same geographical areas of Morocco, to define communities and to ensure the perpetuation of their traditions.

By the mid-1950s, the *Cité du Séchage*, the sum of the workers' settlements, assumed the structure of a real city which occupied the southeast area of Khouribga, near the large industrial processing plant. This complex residential system included the large stabilisation perimeter, with houses and land for workers defined in 1929, the ancient medina built in 1938, the housing for unmarried men and the construction of the Pèpinière district (1955) (fig. 15), which housed both European and Moroccan employees, and the new medina built in 1954. The latter was conceived with different proportions compared to the previous one. While in the ancient medina the dimensions of the streets had been conceived to allow the passage of donkeys (which at the time were to be considered as the main means of transport), the size of the spaces in the new medina according to an aggregative model based on the grid system defined by Michel Ecochard, were to be considered in relation to the more modern means of transport such as the car. The small one-storey patio houses of the old medina were transformed here into larger and better-equipped dwellings, measuring eight metres by eight metres, echoing the structure of the cells developed during the same period by Ecochard in Casablanca.¹³ The low-density and low-cost housing schemes aimed to synthesise modernist ideals with vernacular elements and industrialised construction principles, everything



12 Suter Karl, *Marokko in der Nachkriegszeit*, in "Geographica Helvetica", 31 December 1947, vol. 2, pp. 229-242.

13 In Casablanca, for the design of housing settlements for workers coming from rural areas, Ecochard designed a plan based on a grid dimensioned according to a patio-type dwelling, which (he believed) was more suitable to the needs of future inhabitants.

15
Khouribga. Quartier de la Pèpinière: construction of housing for Moroccan supervisory staff. 9 February 1955, Archive: Protectorat Maroc / Sélection de la résidence générale N008941. Ph: J. Belin.

was rational, the spaces in the market square were accessible from the “gate of freedom” were spacious and enriched by the presence of trees, seating areas, gardens. The new medina took the form of a modern city and, despite its enclosure, found a close relationship with its surroundings. The structure of the market space emphasised the desire for architectural research as the modernity taking place in Casablanca, but at the same time sought to preserve the traditions that saw the coexistence of shops and temporary sales activities, making this space particularly used and alive.

Casablanca remains a model to look up to, even if the dichotomy between Casablanca’s colonial urbanisation and Khouribga’s industrial development reflected broader tensions within Morocco’s modernisation process, where economic imperatives often took precedence over social considerations, and where technological innovation coexisted with traditional ways of life.

Today, the architectural legacy of that period continues to influence these cities, serving as a reminder of the complex relationship between colonial power, industrial development, and urban planning in early 20th Century Morocco. Moreover, despite the initial colonial vision of these settlements, as purely functional spaces for resource extraction, the inhabitants gradually had developed their own social networks, cultural practices, and forms of resistance. The very rigidity of the colonial urban planning inadvertently created spaces where workers could forge new identities and communities, merging their rural heritage with their industrial present.

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Francesco Collotti

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