

## Conserving Heritage Railways and Tramways in Egypt

Hanaa Moosa

Architecture Department, The Higher Institute of Engineering in El-Shorouk City, Cairo, Egypt

### Abstract:

This paper shall discuss heritage railways and tramways in Egypt to illustrate their contemporary state, as the Egyptian transportation heritage didn't yet get the proper attention of the authorities, professionals and researchers. Both railways and tramways were implemented in Egypt in the nineteenth century and since the early years of the twentieth century they were considered to be essential public transportation systems for the Egyptians. After several decades, the cities became over crowded by population and the trams speed were much less than that of the cars and buses beside cross circulations that used to exist at points of intersections between tramways and cars mobility. So, the state adopted a trend of removing tramways to give more space and clear the way for cars mobility. **The problem** lies in adopting the removal action instead of directing the strategy to upgrade or evolve the transportation heritage systems where modern needs can be accommodated and heritage is conserved. Such removal caused cities' essence and identity loss, lowered heritage awareness specially for the young generations and eliminated number of development opportunities that could have taken place. **Objectives:** to achieve a comprehensive understanding of the heritage railways and tramways in Egypt in-order to conclude a strategic framework that achieves community needs and heritage conservation. **Methodology:** The paper will adopt the analytical and comparative approaches through three phases. The first one will introduce the history of railways and tramways in Egypt, where it will be analyzed in means of the surrounding contexts as the political, economic, social and others. The analysis aims to conclude the multi-contextual role, advantages, factors of success and problems related to such transportation system. The second phase will represent similar cases listed as world heritage, where listing criteria are analyzed and compared to the local case in order to understand the possibility and conditions of listing the Egyptian heritage railways and tramways. The national and international practices, shall be also analyzed, in-order to propose conservation methods applicable to deal with the local case. Finally, a four stages strategic framework shall be displayed.

### Keywords:

*Conservation;  
Heritage  
Tramways*

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### 1- Introduction

Egyptian railways lines were the first to be established in Africa and the Middle East and the world's second country after the United Kingdom. It was first implemented on July 12<sup>th</sup> 1851 and began operating in 1854 to connect Cairo and Alexandria, then other lines were constructed to connect between Cairo and other territories as Suez and Upper Egypt. During the reign of Khedive Ismail (1863-1879), the state greatly considered maintaining the railways and extending the lines throughout the country, in order to spread urbanism and to facilitate trade and transportation between different regions of Egypt. In 1898, the construction of the third railway from Cairo to Luxor proceeded and a private company under the name of Qena Aswan Railway Company was established to extend the railway line to the southernmost city of Aswan. In 1946 the Egyptian

royal train of King Farouk was constructed, (Barsoum Terez,2017).

Alexandria's tramway was considered to be the first collective method of transportation in Egypt and Africa, as it began to operate in 1860, and considered to be the oldest among the world. During the period from 1870 to 1872, Cairo was linked to the suburb of Helwan, and that was considered to be the first attempt of linking suburban areas to downtown. The tram lines quickly spread in Cairo and was managed by both Belgian and French companies and later became the most popular public transport in Cairo during the first quarter of the twentieth century.

#### 1-1 Political dimension

After the British occupied Sudan in 1899, the colonial authority decided to extend the railway line connecting Luxor to Aswan to reach the first waterfall in the far south of Egypt. The project

was totally implemented in 1926, and the line was extended to the northern state of Sudan “Wadi Halfa”. Also, during the time of World War I (1914-1919), and World War II (1940-1945), the importance of railways increased for the British as they were considered to be the main reliance of transporting munitions, ammunition and soldiers.

They began to consider to construct a railway linking Egypt and Palestine starting from El-Qantara El-Sharqia located in the east bank of the Suez Canal and ends at Gaza to serve the war’s needs, and the construction was completed in 1918.

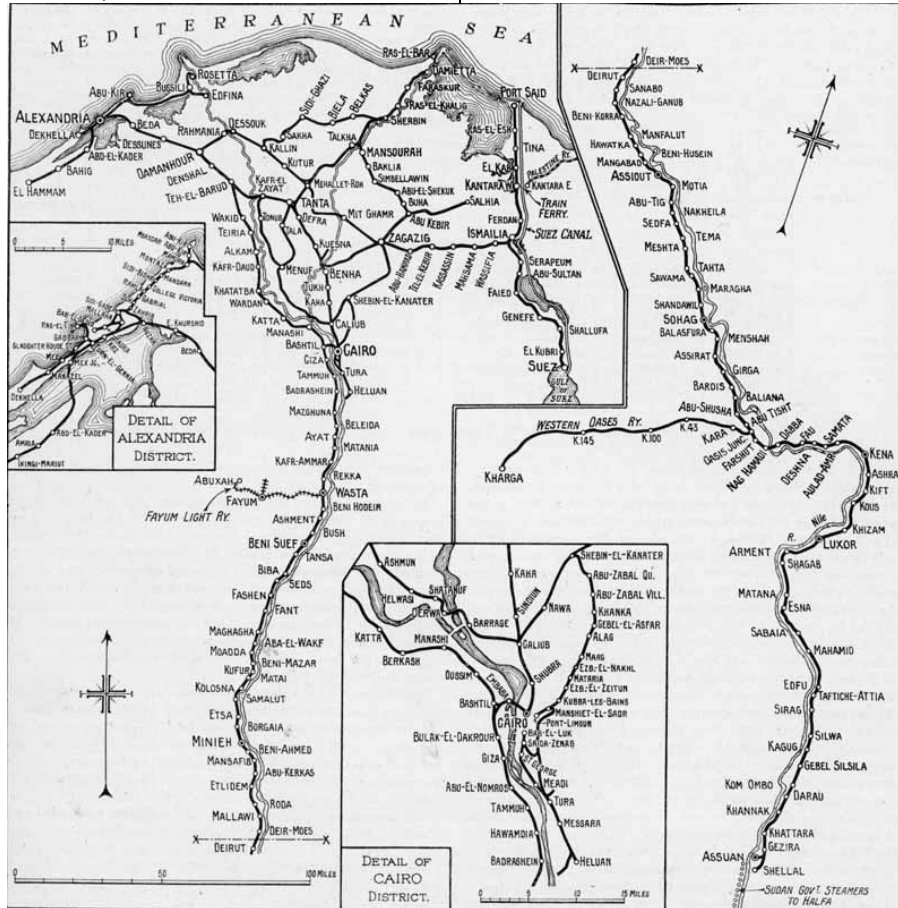


Fig. 1 Egyptian railways 1920s , (<http://www.gwrarchive.org/site/sitel2pg/Egypt/egypt.php>, 2018)

**1-2 Economic dimension**

Beside that the trams were being operated by private companies as mentioned above. The railways had and still having a direct economic use as transporting goods as bulk and packaged coal, coal, sugar cane, petroleum products, iron ore, phosphate ore, manufactured fertilizers, salt, different types of stones and others. Another service is being provided within the passengers’ transportation lines called “the express service”, where some types of goods could be freighted as baggage, parcels, light transport, food, newspapers, publications and letters and others.

**1-3 Social dimension**

According to the author’s childhood and teenage memories in the 1990s, the community and parents recognized the Heliopolis tram as a safe and acceptable public transportation rather than other transportation means as public buses and mini buses to move from one place to another. That perception that survived to the 1990s and

early 2000s was the same since Heliopolis and ‘The Cairo Tramway Company’ were ever founded and owned by Baron Empain. That company was responsible of constructing Cairo’s tramways since 1894. There were three main constructed lines, the first line linked Cairo to Mattareya, and the second was constructed in 1908 and linked Alataba al Khadra zone in central Cairo with other several median stations. Finally, the express train that used to start from the central Cairo station and used to operate in a separated track than the streets flow, was implemented in 1910.

At first, Heliopolis tramway used to run in Baghdad street, and it was relocated in 1956 in AL-Ahram street, where a great economic impact occurred and that spot of the city became afterwards one of the main commercial zones in Heliopolis. It is important to mention that that commercial use was forbidden at that time as it was possible at sometimes to view the pyramids

from Al-Ahram street's location whenever the sky was clear.

The memorial book "Memories of Heliopolis", published in 2005 mentioned a lot of stories that were told by Heliopolis inhabitants' about the city including their memories about the tramways. These stories provided the present community an image and essence of the place as it used to exist. Starting with the "Komsary" the person who was responsible of booking the tickets on board of the tram, used to be well dressed in a representable uniform and knew the majority of the passengers by name and the metro ride was considered to be a trip of relaxation after a long day of studying and frustration. The tram also was considered as a high-quality transporting system. As the tramways kept on expanding to accommodate the city's growth, the tramlines linked Heliopolis to the busiest streets of center of Cairo at that time, Emad-Eldin St. and Ex: Foad street (26 July Street), where most of the capital's commercial uses and recreational facilities as cinema's and theaters were located. The passengers mainly belonged to upper and middle classes that looked elegant and well dressed, their faces used to be familiar to each other as they used to meet daily on their ways to work or schools.

A Heliopolis citizen said that the old Belgian "Komsary" at the late night shift used to wake up sleeping passengers by shouting out loud to say "the store" in Arabic language to announce that they have arrived to the end of the line, within his Arabic Belgian accent the word used to be pronounced as Almaza, and it was predicted then that that was the reason Almaza's area was named after. Another one mentioned, that that transportation system was considered to be quite fast and efficient as it was applicable to get back to Heliopolis from Zamalek for a lunch break and get back again to work.

The tramway was not just a rigid tangible transportation system, it was integrated with the community, directly attached to the economic activities, and was the reason of encouraging people to live in Heliopolis due to the availability of transportation in and out of the place. Luckily, a reference as memories of Heliopolis was issued as mentioned above, to be able to save a lot of memories that have now afforded a better understanding of different aspects related to the city. Unfortunately, other tramways and lifestyles were not documented as tramways once existed in Giza, Shubra, Al-Sayeda Zainab, Alexandria and others, without an organized data collection, presentation or publishing.

During the seventies of the past century the

economic concept known as "the open door" aroused during president's Sadat regime. That concept enhanced the community's aims to implement private businesses, achieve luxurious lives and of course owning private cars which impacted the culture of using public transportation where it has been later classified to be used by middle and low social classes.

## 2- Present state contradictions

Recently, the authorities worked on removing tramlines to widen the streets to allow more cars mobility instead of maintaining and upgrading the trams 'system. On the other hand, implementing underground metro to link all over Cairo and its suburbs within a public transportation project is being under construction. Both tramways and railways experienced removal actions. Number of kilometers of tramways were removed from different Cairene neighborhoods. As for railway lines, the Cairo-Suez route that was built in 1858, got removed in 1878 due to the Suez Canal digging, later on a new one was constructed in 1867. Another example concerning Imbaba bridge or (Damietta bridge) where it once used to exist in Cairo to allow the trains mobility across the Nile. That case will be mentioned in details later in the paper, (Railways museum official website,2019).

According to the present critical economic status, especially after implementing the floating exchanging rate, taxes rates and other reasons, it became extremely expensive to afford buying a private car. In spite of that, owning cars culture is still dominant since the 1970s. It is highly predictable that such a culture will result an extra load to the community concerning the economic aspect. So, the authorities have to take a serious action towards giving acceptable options of transportation to the classes that have been affected by the existing economic circumstances.

## 3- Heritage railways and tramways as listed heritage

This section of the paper will represent railways heritage cases that were listed as world heritage sites due to their highly significance. Semmering Railway was constructed in 1854, located in Austria, has been listed in 1998, according to the second (ii) and fourth (iv) criteria of the outstanding universal values. The construction of the electrical poles that was erected to carry the contact wires required by electrical locomotives in the period between 1957 and 1959 caused a change in the line's appearance. The railway line was listed under criterion (ii) for being an example of an outstanding technological solution to a major physical problem in construction that used to exist in the early years of constructing railways. And

was listed according to criterion (iv) as it provides accessibility to natural sites, developing residential and recreational uses and creating a new form of landscape, (Icomos,2010). Although the appearance of the line has changed, but the authenticity still exists within the route itself as part of the authenticity lies in the natural role of railways in evolving the socio-technical systems, and change is considered to be an essential part of their identity in addition to the remarkable civil engineering works. The line itself and the civil engineering works also played an important role in perceiving the integrity, as the railway have been continuously in function since 1854 and still impacting the surrounding landscape and the area's development. (<https://whc.unesco.org/en/list/944/>, 2019).

The Darjeeling Himalayan railway is another example that is located in India; its significance was derived of being constructed across a mountainous terrain. It was listed in the year 1999 under the second (ii) and fourth (iv) criteria too. The Mountain Railway of India consists of three railways: the first is, the Darjeeling Himalayan Railway located in Northeast India in the foothills of the Himalayas in West Bengal. The second is the Nilgiri Mountain Railways located in South India in the Nilgiri Hills of Tamil Nadu, and the third is the Kalka Shimla Railway located in Northwest India in the Himalayan foothills of Himachal Pradesh. All three railways are still fully functional and operational. The Mountain Railways of India opened and operated between 1881 and 1908 representing ingenious engineering solutions of the late 19th and early 20th centuries of establishing an effective rail link across a mountainous terrain.

The railways were listed under Criterion (ii) as they were considered as an outstanding example of the interchange of values of technology, and the impact of an innovative transportation system on the social and economic development of a multicultural region. The Mountain Railways of India exhibit an important cultural and technologically that transfers and enables significant and endures human settlement. It also was listed under criterion (iv) for representing technical and material efforts of human societies of this period to deisolate mountain populations through the railway, which reflects the main role of railways that appeared in the 19th century that deeply affected social and economic developments.

As for the functional integrity, the lines have been systematically repaired and maintained. The use integrity being permanent has a major effect in

engaging mountain areas. The lines' initial services are still operated, particularly for passengers and tourists. Generally, the property is in a good condition in regard to infrastructure, technical operation and social use that enables it to adequately express its values. The main threats are mostly natural due to climatic and geological risks as the three areas have potential of hosting earthquakes. Authenticity is questioned due to the natural environmental changes, where number of repairs and reconstructions took place. Fortunately, restoration and maintenance took place in their latest form for the buildings, the railways structures were kept in their original form and finally the original rolling stock and engines were maintained and kept beside the new added ones. Continuous maintenance ensured functioning, retaining design and original quality even if some parts have got changed, (WHC Nomination Documentation,1999).

The Darjeeling Himalayan Railway (DHR) had UNESCO's attention since 2016. UNESCO New Delhi has been working with Indian Railways to develop a comprehensive conservation management plan (CCMP) for DHR and also to present its proposed boundaries and buffer zones. As part of UNESCO New Delhi's collaboration with Ministry of Railways for CCMP, a series of consultation meetings were held in Darjeeling with Ministry of Railways. The final consultation meeting for this project should have taken place in Darjeeling on 13-14 September 2019 (UNESCO Office in New Delhi,2019).

The city of Safranbolu in Turkey was listed in the year 1994, under the second (ii), fourth (iv) and fifth (v) criteria. The city included historical monuments that goes back to the 13th century in-addition to the construction of the railway in the early 20th century. It is remarkable that the city influenced several sites of the Ottoman Empire concerning urban development. Only criterion four (iv) is meant by railways where Safranbolu got its new socio-economic role after the construction of the railway and the towns along the caravan trade route that used to exist before, was out of business and adapted other economic activities. What's considered to be significant is that the city kept its original form and buildings to a remarkable extent even after that major change occurred. (World heritage committee,1994).

As for creative cities network, a town in Ecuador called Durán and known as "the railway town of Ecuador" was listed since 2015 as a city of crafts and folk art, as it has witnessed exchanging culture and practices through the years. It has been considered as the main meeting point between the

highlands and the coast of Ecuador due to the railway network, where culture and creativity as mediums for collective memory, urban well-being, and social cohesion took place. Also, folk and urban arts have been significantly enriched. An annual festival is taking place since 2007, that event enhanced what is called "history of frontages" where local artists are allowed to paint murals on house frontages that illustrate the history. Local awareness is extremely high and that is obvious through the wide participation of the youth. Durán hosts numerous cultural activities through a multitude of artistic forms to connect contemporary creative areas with historical customs and folk art. Both local artists and Durán convention center play a prominent role in fostering the city's cultural life in-order to keep enhancing the city as a creative cultural spot, (UNESCO, Creative Cities Network,2015).

#### 4- National experience

Damietta historic bridge reuse is considered to be one of the remarkable practices of conservation related to railway heritage in Egypt, although the project did not last a long time. It was thought that the bridge was first constructed in Damietta as a pedestrian bridge until Dr. Fathi AlBardi the ex-governor of Damietta noticed that the bridge has the same design features that used to serve railways in the second half of the nineteenth century in respect of the narrow width, size and the shape of the beams. After searching, it was discovered that that bridge was first constructed in Imbaba district in 1890 as a single rail track for commercial goods transportation that crosses the river Nile. The bridge was later removed and another one was constructed between 1913 and 1925 to support heavier carriages. As Damietta was in need of a bridge over the river Nile at that time, using the old Imbaba bridge was a perfect idea. The construction began in 1927 and was accomplished in 1929. In 2003 it was decided to construct a new bridge in Damietta, so the old one was removed and the metal was sold as scrap by 15% offered discount with a price of 170000 L.E. A year after, Dr. Bardie came to office as a governor and after he discovered the bridge's heritage and technical dimensions as it represents a technological achievement of postindustrial revolution, he worked on retrieving it, and so it did happen. The governor has taken a decision to conserve the bridge and three proposals were suggested for that purpose. The chosen one stated to use the removed metal to construct a cultural center named after President Mubarak. The local community supported the project as they were aware of the bridge's embedded values, (Mubarak

Library ,2019). Unfortunately, the happy ending did not last so long, as during the 2011 riot the center was destroyed and robbed and the structure was kept unused once again as an abandoned metal frame.

Museums are considered to be a method of conserving cultural heritage, so the Railway Museum in Cairo located in Misr Railway station in Ramsis square is considered to be as a national attempt to conserve the railway heritage. It was first opened in 1933 and includes a lot of sections displaying nearly three hundred models and exhibits, in addition to documents, maps and statistical data. It also contains a library of many researches and studies in various means of transportation in the past and modern times, as well as historical models of transport. There are also special sections that exhibit models of railways that explain the development of locomotives in the world and Egypt, including the first idea of a steam locomotive Rvha in the world that goes back to 1783. Another one represents the first steam locomotive in Egypt in-addition to a normal size model that shows all its internal parts. (Railways museum official website,2019).

#### 5- International Practices

Number of European cities still keep their tramway heritage in function till now as in Freiburg im Breisgau, Prague, Istanbul, Milan, (Fig 2), Lisbon, Budapest, Porto, Basel and others (Best trams in Europe ,2019), Furthermore, the city of Florence has recently implemented a tramway network to serve the public, (City of Florence ,2019). On the other hand, a decision was taken in the UK since 1930s to reduce tramways due to the spread of diesel buses and the interest in arising car manufacturing. Years after, specialists considered that removal as a loss of a great opportunity of having an easily approachable and friendly environment public transportation, (Reith-Banks, Symons& Swann,2018).

Several researches and reports about railways and tramways concerning different aspects and cities took place. Number of these researches mentioned the major role of the private sector and other stakeholders in constructing, maintaining and operating railways, tramways and other transportation methods as in France, Poland and Russia, (Alexander Y. Ryzkov, Pavel V. Zyuzin,2016). The impact of constructed railways and tramways impact to the social and cultural aspects, were clearly discussed as they are considered to be essential tools of urban growth and cities regeneration, (Brezinski, A., Suchorzewski, W., 2004). Worldwide the tramways and railways are considered to be a

preferable mean of transportation as they are considered to be an environmentally friendly transportation system, where energy is highly consumed in-addition to its contribution to lessen traffic jams; noise; pollution and occupancy of physical space, (Zbigniew Konopacki-Maciuk, 2014).



Fig2 Tram operating in Milan, (Author,2019)

In the Indian state Kalkata, tram-rides are considered to be one of the significant experiences to figure out the city. The tour is being advertised through famous tours booking websites. Also, in Melbourne, Australia, there is a restaurant tram where passengers could eat and drink while having a tour. Another example is found in a port city in Western Australia in Fremantle, where hop on hop off tram is being operated, (Hop on hop off bus tours ,2019).

Reading terminal station complex located in Pennsylvania was nationally registered on the national register of historic places in 1972, and as National Historic Landmark in 1976. (Jefferson,2015). It has been nominated due to the “apogee of the single-span, hinged arch balloon shed in U.S.”, which was considered as one of the important reasons that formed its significance. It also represented the only model designed and built by Joseph Wilson as there were other stations that was designed by the same technique and constructed by other specialists, (United states department of the interior ,1976).

Reading station was one of the most competitive railways that used to exist during the peak time of train travel. Beside the complex’s original significance, the building was used as an entrance to the convention center which added a lot of values to the city where it continued in performing its magnificent role in regenerating Philadelphia and bringing it back to life as a city of tourism and hospitality market, (Jefferson,2015).

The Ferry building is considered to be one of the most significant landmarks of San Francisco. It used to be considered as one of the primary portals of the city since 1898 till the 1930s where 50,000 people used to pass by after arriving by ferryboats. It is located on the western edge of the country, where the financing, banking and the city’s transportation are located. Due to the increase of cars mobility and the construction of both Bay Golden Gate Bridges, the operation of the ferry terminals had been negatively affected. The users kept on decreasing till the 1950’s the number was obviously much less than it used to be before. In 1955 the interior of the building was dramatically changed due to its reuse as standard office space. In 1989 Loma Prieta Earthquake, caused a huge destruction to the building. In March 2003, a four-year restoration got accomplished to give a chance for a new life to the iconic landmark of the city as a Marketplace. The new use enhanced the original one, as nowadays the ferry terminals operates several lines and future plans are being set for the aim of expanding and improving the network, (the Ferry Building, official website,2018).

## 6- Strategic framework of conserving heritage railways and tramways

The proposed strategic framework aims to decrease cars usage, rehabilitate the sense of the city, link transportation development to solve the societal and economic actual problems and fulfill their needs. This paper has already represented the first stage where related data were studied and analyzed. The second stage, will be meant by classifying concluded aspects related to railways and tramways. At stage three, further analytical and comparative study will take place. As, the contemporary national case will be put in comparison to both the old national case as it used be and the mentioned international ones in-order to find solutions that would keep advantages, use opportunities and overcome problems. The comparison will be conducted in respect of the categorized aspects. Finally, the fourth stage will be meant by a more detailed study where a specific urban area or neighborhood will be chosen to design and plan needed interventions according to the previous stage results. (Fig,3).

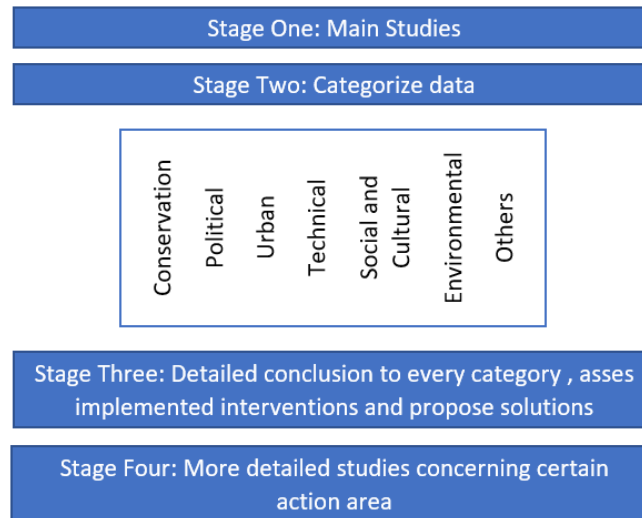


Figure3, Strategic framework of conserving railways and tramways heritage

### 6.1 Stage 1:

Previously, several issues were discussed to illustrate the nature of heritage railways and tramways concerning their embedded values, their mutual impact to the surrounding contexts and aspects as the economic, political, social, environmental, cultural, and others. The data was represented on both national and international levels, in means of conservation attempts and related conditions.

### 6.2 Stage 2 and stage 3

Stage two and three will be both integrated where concluded aspects will be categorized to main and sub issues. That will be followed by the related comparative study between the existing national case and both the old Egyptian case that used to exist and the international case in-order to trace the problems and propose solutions.

#### 6.2.1 First Category: Conservation

- Laws and legislations for conservation and listing criteria.
- Tentative lists.
- Buffer zone regulations.
- Authenticity (building, tracks, bridges, tunnels...).
- Integrity.
- Technical technology used in construction.

#### A. Comparative stage

It has been observed that both criteria two (ii) and four (iv) of the outstanding universal values are always related to railway heritage listing. Number of similarities were traced between the local case of Egypt and the international listed ones. As for criterion two (ii), the listed international examples were referenced to the outstanding technological solutions and providing accessibility and interchange of cultural values. The significant technological solution could be found in the

national case of the historic bridge of Damietta that was later reused as a cultural center, was first implemented as Imbaba bridge where its construction method and materials represented a technological achievement of postindustrial revolution.

Although the Egyptian community does not have major cultural differences as the listed Indian case, but still tramways and railways played an important role in connecting suburban and different territories to the center of Cairo where major economic and culture activities were located.

Listing criterion four (iv) was mainly related to technical and material effort of human solutions, connecting people, providing accessibility to natural sites, developing residential and recreational uses and creating new socio-economic role for towns. Several issues used to be available in the Egyptian case, especially for the socio-economic role.

Integrity is mainly related to the tramways and railways themselves, advanced technology or structure, connecting communities and social and cultural exchange. Functional integrity resulted due to a systematically repair and maintenance. The use integrity was conditioned to permanent technical operation, the continuity of affording the social use that enables connecting people and expressing its values. Authenticity is meant by keeping the natural role of evolving the socio-technical systems where the change is considered to be an essential part of keeping the identity. A lot of repairs and reconstruction took place to the listed cases as continuous maintenance ensures functioning, retaining design and original quality even if some parts got changed as buildings, structures rolling stock and engines. The following section will include proposed actions that would

rehabilitate lost integrity and authenticity based on the mentioned reasons.

The mentioned case of the listed creative city of Durán mentioned that the existence of railways was a main reason of enhancing crafts and folk art in the city and so it got listed. City of Cairo listed as a creative city did not include the important role of railways and tramways of being catalysts that enhanced the city to be a center of crafts and folk art, although it was mentioned that people moving to it played a main role in forming such a significant character.

#### B. Assessment /Possible action

- Connecting the community, serving cities 'growth, enhance economic and cultural activities used to exist in Egypt till the removal of tramways and that is considered now as a lost opportunity, unless rehabilitating tramway lines would occur.
- The removed tracks could be conserved, maintained and reused, and so social, economic and cultural integrity could be re-sustained.
- Repairing and modernization could be implemented within conserving historic elements as buildings, structure, engines or others to conserve the city's essence and authenticity, otherwise it would be considered as a lost opportunity.
- Search for the availability of adding railways and tramways as main reasons of listing Cairo as crafts and folk-art city.
- It is a must to found meant by governmental and non-governmental entities concerned by heritage transportation systems, and to issue specialized laws and regulations.

#### 6.2.1 Political

- Connecting Egypt to Regional countries to reflect contemporary political trends.
- Connecting Egyptian territories.

##### A. Comparative stage

As it has been explained above that railways had served before the army during WWI and WWII, through implementing railway lines reaching Sudan and Palestine. The same concept could be implemented in the present time if a long-term plan was put to connect Egypt to its African depth and Asian extension as in the gulf area through the Kingdom of Saudi Arabia. Also, political trends of national level could be served through connecting territories in Egypt as in Sinai, where it was linked before, will result a lot of multi-contextual benefits.

#### B. Assessment /Possible action

Serving political goals could be possible to re-construct removed tracks even in different

locations or implement new ones.

#### 6.2.3 Urban

- Street furniture.
- Urban tissue.
- Visual aspect.
- Streets of significant urban heritage.
- Streets of distinguished uses as the economic, touristic and others.

The Egyptian urban tissue lacks the existences of public spaces where could be considered as nodes between tramway lines as it used to exist before in Egypt and number of European cities. Also, it lacks wide streets that would afford implementing new lines and urban furniture needed for providing walkability. So, using public transportation should be first supported by providing the streets by functional and materialistic services and needs.

Railways and tramways always will have a remarkable impact to urban growth, urban tissue and uses. The Egyptian contemporary case also represents a contradiction between removing tramways lines and adopting the construction of underground lines that aims to link all Cairo's suburbs. Widening the streets to afford the enormous cars traffic would not result a sustainable city, more practical proposals should take place.

##### A. Assessment /Possible action

A long-term strategy is needed to get tramway lines partially rehabilitated, otherwise it will be considered as a lost opportunity. Walkability should be enhanced through redesigning streets to afford needed furniture and lanes where children, elderlies and people with special needs would be able to use the streets safely. Concerning the urban level, it should be decided which lines to keep, remove, rebuilt, reuse or rehabilitate. In-order to decide such interventions number of studies should take place concerning urban tissue, streets dimensions, the availability of avoiding different transportation methods, illegal transportation methods within suburbs and narrow streets, site seeing, heritage values, economic potentials, educational potentials and community needs of having a public transportation.

#### 6.2.4 Technical Support

- Systematic evaluation/ control monitoring.
- Technical documents.
- Continual maintenance.
- Modernize tramways and railways systems.

##### A. Comparative stage

Trams and trains were not replaced by more modernized systems, instead they were removed to give more space to cars mobility. And it was not



kept in consideration that such assets could have supported public transportation needs, if an advanced technical support was implemented.

#### **B. Assessment /Possible action**

Conserve the lines through setting plans and strategies to decide which parts of the operating system will be kept, replaced, maintained or modernized. Training specialized workers and engineers is a must.

#### **6.2.5 Economic**

- Possible Public/private partnership.
- Involve stakeholders.
- Funding system.
- Enhance touristic programs in Cairo.
- Rehabilitate tramways and railways symbolism of a modern city.

#### **A. Comparative stage**

Private sector should be put in charge once more in order to fund needed upgrading and maintenance instead of removing the lines. As in France, financing strategy depends on contributing all of meant by stakeholders as the government, the local authorities, local companies, and the passengers themselves. International practices also conducted redirecting tourists to certain attractions through hop on hop off trams. Linking daily needs and services to stops of tramways or railway stations may enhance the number of users of such public transportation systems as happened at the Ferry building of San Francisco. Tramways, railways and stations locations enhance city's expansion concerning different economic activities.

#### **B. Assessment /Possible action**

Involving private sector in operating tramways and railways, implementing public spaces, or economic and touristic itineraries is a must. Construct lines that would enhance certain economic activities needed to achieve contemporary social needs, tourism, culture, social and others. Also, tramways and railways could be used as a method of guiding visitors to experience local cultural spots and activities through making these spots more approachable.

#### **6.2.6 Social and culture**

- Social and cultural needs.
- Provide high quality services to middle and high classes to reuse the streets.
- Cultural awareness of tramways and railways heritage.

#### **A. Comparative stage**

The concluded sub items of the social and cultural category, should be defined in means of the experience of the trip itself and the sight-seeing and affording high quality transportation system. Culturally, using public transportation should not

be linked to a certain social standard.

#### **B. Assessment /Possible action**

Conserve the essence and the communities' needs within an acceptable quality of service. Cultural and recreational uses should be put in consideration in reusing the trams as moving restaurants or hop-on-hop-off tram or others. The identities of Cairene neighborhoods are barely recognized due to following almost the same intervention strategies to all areas of Cairo. So, the special characteristics of every zone should be respected while deciding and implementing any kind of interventions.

#### **6.2.7 Environmental**

- Cars mobility environmental evaluation.

#### **A. Comparative stage**

Tramways and railways are considered to be a friendly environment transportation system.

#### **B. Assessment /Possible action**

Environmental control could be achieved through rehabilitating electric tramways, and re-replace cars mobility causing pollution.

#### **Stage 4:**

All previous stages discussed the prevailing case of Cairo, where the state polices along the history affected the urban tissue and caused dominancy of cars mobility after the heritage railways and tramways were removed. This stage will be meant by specific areas in Heliopolis, Shubra, Giza and others, where more detailed studies will take place to decide possible zones to rehabilitate tramways to enhance economics, tourism, meet social needs, control environment, and others. Such a stage will be more introduced in details in further papers.

#### **Conclusion**

This paper aimed to achieve a conservation strategy where tramways, railways and stations would be conserved according to a wider perspective concept, where several aspects are put in consideration. Various public transportation methods should be implemented in respect of enhancing economy, considering communal social and economic state, providing high quality service, enhancing tourism, environmental control, rehabilitating lost cultural values and others.

The paper conducted the study of the Egyptian case of constructing railways and tramways. Also, it included the aspects that was affected by such implementation. A brief about world heritage listed railways was represented to provide a more detailed understanding of their role to the urban, social and other aspects. The national and international practices were introduced to contribute possible conservation methods.

All data were analyzed and categorized according to concluded aspects as the political, urban,

technical support, economic, social and cultural and environmental. It is available to add other related aspects in-case more information is available. A four stages strategic frame work was set, where stage one represented the whole data collection and analysis. Categorizing related aspects to main and sub-topics took place in the second stage. The third stage was meant by assessing detailed data and proposing possible actions. Finally, a detailed stage of a certain chosen area will take place, where proposed actions and other conclusions will be sorted and implemented according to the special characteristics of that certain area, the last stage requires further researches.

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