

# Study on the Reuse of the Sugar Railway Network in Chiayi County, Taiwan

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## Abstract

In order to modernize Taiwan, the Japanese colonial government promoted industrial development through railways. Many of the districts developed with the sugar factories or the sugar railways in the Japanese Colonial Period are in fact the downtown cities of Taiwan nowadays. Due to the growing of sugar industry and the increasing number of sugar factories, the sugar railways had become a network system by 1920. For the reasons mentioned above, the modern industrial heritages of sugar railways are the symbols of the changes of modernization and urbanization in Taiwan. After 1980s, Taiwan Sugar Cooperation (TSC) gradually closed their sugar factories and sugar railways that were not in use. Fortunately, some sugar factories and most of the sugar railways are preserved. But some of these sugar factories and railways were abandoned and became ruined space scattered in Taiwan.

The sugar factory and the railway network have become an important cultural and socioeconomic concern for the local residents, so it is a pragmatically important task to come up a comprehensive conservation plan for the entire sugar industrial system, which is largely unattended by the Taiwan Sugar Corporation (TSC). This paper, therefore, takes up this issue and proposes a conservation plan for the reuse of the sugar factories and sugar railway network in Chiayi County as a studying case. It is also the main focus of this research to relate the historical value to the conservation of the sugar factories and the sugar railways.

There are three main objectives in this study. 1. To explore the historical values of the sugar factories and the sugar railways by analyzing the history and the distribution of these sugar factories in Chiayi County. The characteristics of the sugar railway network connected the sugar factories, settlements and stations along main line. 2. A part of the sugar railway network connected the three sugar factories in Chiayi is reused as bicycle routes. This paper will analyze the local government's policy for the reuse of the sugar railways as bicycle routes. 3. To analyze the process of the development of the local communities and the role of the sugar railways and stations from Singang Railway Park, to Din-Tsai-Yen, in this development.

By revealing the characteristics of the sugar railway network this paper hope to show what constitutes a successful conservation policy for the conservation of the sugar railway network.

**Keywords:** Keywords: Sugar Railway, Sugar Factory, Bicycle path, Community Development, Chiayi County

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## **1. Introduction**

The modern sugar industry was the most important industry in Taiwan during the Japanese Colonial Period. With the decline of the sugar industry, sugar factories and the sugar railways have been closed down since the 1980s. Nowadays, the high-density sugar railway network in southern Taiwan has become an important industrial heritage site in the collective memory of the local communities. However, the Taiwan Sugar Corporation (TSC) and the local governments pay little attention to the sugar railway conservation, and as a result, these industrial heritage sites have become socio-economic burdens for the local society.

Currently, the local residents themselves strive to preserve the sugar railway heritage so as to improve the living quality of the environments and the development of, or preservation of, a collective memory from their communities. Inspired by the enthusiastic participation of the local residents, in their sugar railway conservation efforts, Chiayi County Government has also reused a part of the sugar railways as the bicycle route network, with the consent of TSC. This paper analyzes how the industrial heritage left us from the Japanese Colonial Period can be used by current, local communities and governments, and discusses some of the characteristics of the undertakings as such.

## **2. The sugar factories and the railway network in Chiayi County**

### **2.1 The sugar factories**

There are the three sugar factories in Chiayi County, namely "Nanjing" (1909), "Suandou" (1911) and "Dalin (1913). Nanjing sugar factory of the Toyo Sugar Manufacturing Co. was merged with Meiji Sugar Company in 1927; Dalin sugar factory of the Nitaka Sugar Manufacturing Co. was merged with Dainipon Sugar

Company. In other words, there were Toyo, Meiji and Dainipon Sugar Manufacturing Cos. in the Chiayi area before 1927. After the mergers of 1927 and 1935, there remained only Meiji(Suandou, Nanjing) and Dainipon Sugar Manufacturing Co. Meiji Sugar Manufacturing Co. was the most important sugar company, especially in the Chiayi area.

All of these factories had ceased their sugar production today, but there are some manufacturing operations in the Nanjing and Dalin sugar factories. Suandou sugar factory was redesigned by TSC in 2003 to become a cultural park of sugarcane plant called the “Zhe-Cheng Cultural Park.” This cultural park can be regarded as an important, large-scale, industrial heritage site in Chiayi.

Fig1. the summary of sugar factories in Chiayi County

Sugar Factory	Year Established	Date of Closure	Type of Merger	Current Status
Nanjing	1909	2009	Toyo-Meiji (1927)	Sugar Business Division
Suandou	1911	2002	Meiji	Zhe-Cheng Culture Park
Dalin	1913	1995	Nitaka -Dainipon (1935)	Biotechnology Business Division of Nanjing Sugar Factory

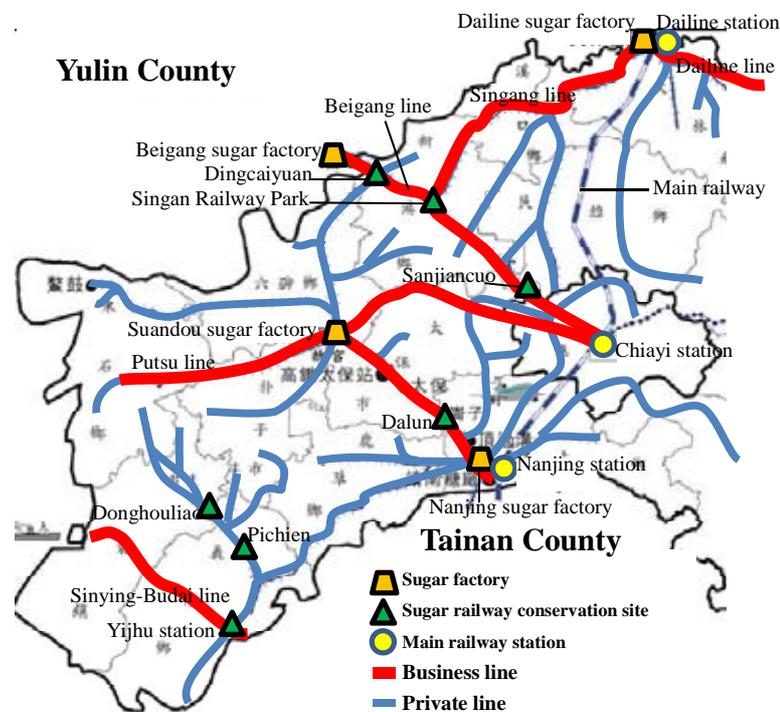


Fig1. The sugar factories and sugar railways in Chiayi County



Fig2. Nanjing sugar factory



Fig3. Dalin sugar factory



Fig4. Suandou sugar factory (Zhe-Cheng Cultural Park)



Fig5. The train display in Zhe-Cheng Cultural Park

## 2.2 The sugar railway network

Most of the sugar railway network was constructed from the three above-mentioned sugar factories. In addition, there are Beigang line from Beigang sugar factory near Yunlin County, and Lunzai line from Suandou sugar factory, located in the north and southern Chiayi County respectively. In other words, Chiayi County sugar railway system consists not only of the railway network of the three sugar factories, but also connects with the Beigang Sugar Factories and Ennsuikou Sugar Factory.

There are six business lines in Chiayi County mostly “east-west” bounds and “northwest - southeast” bounds. The following table indicates that the business lines connect sugar factories, traditional cities and the main line stations (north-south bound railway). After the sugar companies merged, the sugar railway systems divided

into the three networks of Meiji, Dainipon and Ensuihou. The two sugar railway systems of Suandou and Nanjing are the major railway networks.

For the reasons mentioned above, the historical value of the sugar railways in Chiayi County are as follows: 1. The density of the sugar railway network was higher in the past and more sugar companies (Meiji, Dainipon, Ensuihou) are connected to create an important modern sugar industrial heritage. 2. Since all the sugar railway systems of the three main sugar companies are situated in Chiayi County, the railway networks are more diverse and complex in this area. By studying these networks we can also trace the competitive history among the sugar companies in Japanese Colonial Taiwan. 3. Singing-Budai Line is the first business line in Taiwan, and is therefore historically valuable.

### **2.3 The sugar railway usage suspended and regional recession**

The business lines of the sugar railways were the most important transportation system from the Japanese Colonial Period to early Postwar Era. They connected populous traditional town, rural settlements, main-line railways and sugar factories. The business lines also have contributed to the urbanization of the cities and the development of traditional towns into cities along with the main line railway stations. The settlements along the sugar railway were expanded as well, due to the sugar railway system. However, as the roadway transportation system was increasingly built, these business lines became more and more difficult to maintain. In 1982, the business lines were completely suspended. Worse yet, as the sugar factories stopped sugar production, the private lines were also gradually suspended.

The suspension of these business lines had a great impact on the development of the local settlements. Examples of fact : 1. People in these settlements lost the

convenient public transportation of the sugar railway networks. 2. The development of stations surrounding the region was stopped. 3. Wasted sugar railways and stations turned into lost spaces. 4. These sugar railways became a garbage dump for the local residents. For the reasons given above, the wasted sugar railways lead to a regional recession. Besides the transportation considerations, TSC tore down their stations, which now have historical value, and neglected the reuse of the sugar railways as heritage sites. The wasted spaces of sugar railways have gradually become the main factor that has caused environmental pollution and landscape destruction. This is the main reason why local residents have been actively promoting sugar railway conservation to better their environments and preserve their cultural heritage.

### **3. The public participation in sugar railway conservation**

#### **3.1 The first case of public participation in sugar railway conservation**

##### **Singang Railway Park**

Since the Beigang Line was suspended in 1982, Singang Station and its railways were abandoned and even misused by local residents. Because the Singang station is located in the downtown near Feng-Tian Temple, the wasted sugar railway and station were an environmental issue that residents had to face every day. Although Singang Station has been torn down by TSC, due to road construction and urban planning (Zhong- Zheng Road), the sugar railway is still an important and memorable place for many people. Once the stations and some railways were demolished, residents asked to preserve the remaining platforms and railways. Residents started to straighten up the west side of station and railway, and promoted the greening and beautification of the railway. Since 1997, a resident organization, Hsinkang Foundation of Culture and Education, Singang Township Office, and TSC

discussed the reuse of sugar railways during many conferences. However, there was no conclusion about the issue of environmental management in the end. Encouraged by the voluntary efforts of the local residents to “green” and beautify the sugar railways, the village chief, Chiu Cong-Yi, and Hsinkang Foundation of Culture and Education started to lead the residents in openly reusing the railway space as a park. They did this even though they all knew that the reuse of the sugar railway might be illegal, at that time. After several successful negotiations between the two parties, the TSC finally agreed that the sugar railway could be reused by local residents and the local government. The east side railway from Singang Station (Zhong-Shan Road side) was re-established as “Singang Railway Park”, in 2000 by the Hsinkang Foundation of Culture and Education. Then Singang Railway Park was extended to the west side railway the next year. Not only were the railway facilities preserved in the Park, the TSC Japanese employees quarters, near the Singang Station were also remodeled and named the “Singang Parlor Restaurant” and the Singang Visitor’s Center.

### **3.2 Connection of the sugar railway network to the cultural resources of the community - a case study of Dingcaiyuan**

The railway preservation and station restoration projects, in the Dingcaiyuan area, were started by local resident, Chen Ming-Hui, in 2004. He led local people to promote the preservation and reuse work along the sugar railway without permission from TSC or any grant from government. The local residents began voluntarily to greening and beautify spaces along the sugar railway. They began with removing the topsoil and weeding. After cleaning up the sugar railway, the local residents began to reuse the spaces and turned them into gardens, pavilions, poetry roads, etc. In

addition, Ban-Dou-Cuo station was reused as a visitor center, and the platform was reused as a public space for community events, along the railway. We can say that the surrounding area of sugar railway was almost entirely cleaned up by local residents. The station restoration project was also promoted, almost solely, by the local people, with little financial support from the Chiayi County Government. Ban-Dou-Cuo Station and railway have not only become tourist sites and information centers, but also important core tourism destinations that help development in community.

President Chen Ming-Hui of the Community Development Association in Dingcaiyuan also lead residents to network the local historical and cultural resources along the Beigang Line in 2007. It was named, the “Wonderful First Road.” Residents and tourists can visit all of the important cultural sites in the community by way of pedestrian walkways along the sugar railway. The tourist walkway crosses the community and promotes comprehensive, local development using the formerly unused sugar railway. Soon after these projects, the north-south railway of the Lunzai Line was connected to the Suan-Duo Sugar Factory in Lioujiao and the possible future site of the National Palace Museum, Southern Branch. It has been named by local residents, the “Wonderful Second Road.” All in all, the tourism development plan that was started in the Dingcaiyuan area, has now connected two counties, two townships, and six villages by way of the sugar railways.

### **3.3 The other cases in Chiayi County**

The next case of public participation in sugar railway conservation was the “Singang Railway Park.” This project took pace because local people wanted to save the sugar railway in their community. The following table (Table 2) indicates the

amount of public participation in sugar railway conservation in Chiayi County. This table tells which parts of the sugar railways have been reopened, by local people, as parks and trails in recent years. It would be correct to say that sugar railway conservation has evoked memories of historical traffic and industrial development for local residents. It can also be said that wasted resources along the neglected railway has been transformed into cultural resources. Residents explain the local history through sharing old photographs, displaying the sugar train, and having arts exhibitions in the parks or on the pedestrian trails along the former railways. They use these artifacts, old and new, to affirm a sense of their local community. We can also say, with fair certainty, that public participation in the sugar railway conservation is a symbol of how the power of residents everywhere can be networked. In addition to the case of the Singan Railway Park, local culture and tourism resources have also been networked by residents in Dingcaiyuan. Dingcaiyuan is a case of the sugar railway being transformed into a sightseeing spot in yet another local community. As the table indicates, the residents this community also joined the sugar railway conservation trend by funding the projects themselves. Their goal was to preserve the railway and station, and to transform them into historical and public spaces. For the reasons given above, the sugar railways are an important part of the area's industrial heritage, and have become the main pathways for residents and tourists to visit communities throughout Chiayi County.



Fig6. The platform and train in Singang Railway Park

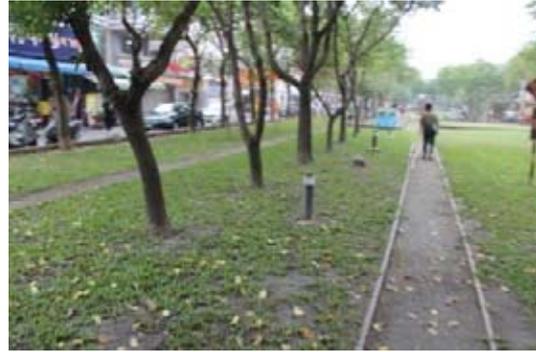


Fig7. The track in Singang Railway Park



Fig8. Bandoucuo station in Dingcaiyan



Fig9. The art exhibition along a sugar railway in Dingcaiyan



Fig10. The station and sugar railway conservation in Dalun (Dalun Community Development Association)



Fig11. Dalun Cane-Chengdao Park



Fig12. The pedestrian trail along the sugar railway in Donghouliao



Fig13. The pedestrian trail along the sugar railway in Donghouliao



Fig14. The train exhibition in Sanjiancuo



Fig15. The park and pond along the sugar railway in Sanjiancuo



Fig16. The train and historical exhibition in Pichien



Fig17. Pichien Station and the train display

Table2. Other cases in Chiayi County

Community	Region	Year	Railway Line	New Use
Center of Singan	Singan	1998	Beigang Line	parks, pedestrian trails, historical exhibition, train display, restaurant, visitor center
Dingcai yuan	Singan	2004	Beigang Line	parks, open space, pedestrian trails, visitor center, art and historical exhibition
Dalun	Shueishang	2004	Suandou -Shueishang Line	parks, pedestrian trails, train display
Donghouliao	Yijhu	2006	Private line of Ensui kou	parks, pedestrian trails, art exhibition
Sanjiancuo	Singan	2009	Beigang Line	parks, pedestrian trails
Pichien	Yijhu	2010	Private line of Ensui kou	pedestrian trails, train display

## **4. Conservation of the sugar railway by local government**

### **4.1 The bicycle paths network along sugar railways**

Chiayi County Government began building a bicycle path network along the sugar railways, for development of the tourism industry, in 2003. The bicycle path network is expected to connect with the coastal landscape at Dongshin and Budai Fishing Harbor, the future National Palace Museum, Southern Branch site, and with other natural and cultural resources, in the Alishan region, to establish a complete cultural and tourism network. In 2003, the “Suan-Ao Sugar Railway Regeneration project” was begun to set up a bicycle path along part of the westward, private line from the north side of the Suandou Sugar Factory and across the Putsu River. The 6.1 kilometers of bicycle path of the Suan-Ao Sugar Railway Regeneration Project were completed in 2005. Along this pathway the project has also integrated the Checheng platform of Zhong Gou, the Farmers' Association headquarters and other vital public lands. Other areas were also reused as open public spaces and a visitor's center. Despite all of the hard work, only part of the sugar railway that forms the north side of the Putsu River and crosses the bridge were reused as a bicycle path. This project was the first case of the sugar railway being reused as a bicycle path by the local government. After this project, Chiayi County Government went on to build a bicycle path loop line, called the Green Line (2009), and then the Purple Line (currently under construction). The plan is to expand and reuse of sugar railway everywhere in Chiayi County.

The Fig.18 and Table3 illustrate that Suandou Sugar Factory, in central Chiayi County, have been reused as “Zhe-Cheng Culture Park” and is at the core of the sugar industrial heritage revitalization projects. This is why it is a good starting and ending point for the bicycle path loop lines of the Green and Purple Lines. However,

only parts of the bicycle paths were built along the actual sugar railway. Most of the Purple Line is set along the sugar railway. In addition, the Green Line in northern Chiayi County connects to Dalin Sugar Factory, Alishan Mountain Railway and other mountain landscapes. The Purple Line on the southwest side of Chiayi County connects Nanjing Sugar Factory and the fishery landscape of west coast to make for an enjoyable ride. All in all, the bicycle paths have re-linked cultural and natural resources of many Chiayi County communities, starting from the three sugar factories that are at the core of this sugar industry heritage revitalization movement.

Table3. The characteristics of the bicycle loop line of the Green Line and Purple Line

bicycle path loop line	mileage	starting and ending	connected sugar factory	main bicycle path loop line
Green line(2009)	100km	Suandou	Dalin	1. Dalin (business line of Dalin line) 2. Manzhu (non-sugar railway) 3. Shingang (non-sugar railway) 4. Meishan (non-sugar railway) 5. Southern section (business line of Putsu line(1909) and private line of Chukou line)
Purple Line (under construction)	118km		Nanjing	1. Putsu (Suan-Ao line) (private line of Xiayiziliao line) 2. Minxiong (private line of Niuchou line) 3. Lucao (private line of Lucao line) 4. Luyi(private line of Zhuzixiao line) 5.Yibu East (private line of Guoluzi line)

#### 4.2 The station and iron bridge rehabilitation projects along sugar railway

##### (1) Putsu railway park

The 24.8 kilometers of business line, named the Putsu Line, was first opened in 1911. It was connected to the Suandou Sugar Factory, Chiayi Station and "Gangcian" on the west coast. This railway was an important corridor for transporting

agricultural and fishery goods from western Chiayi County to Chiayi City using the main line. However, the business line (passenger services) and private line (freight transport) of the Putz Line were suspended from 1980 to 1999. Soon thereafter the railway track of the Putz Line was removed by TSC, after the private line also ceased operation. Because the sugar railway area had become a dirty, lost space, Chiayi County and Putz City Government planned to set up parks and pedestrian trails in its place. The green landscaping works, tree planting, trails, beach chair areas, and nighttime illumination shows have been set up along 1,250 meters of the Putz Line in downtown Putz city since 2004.

### (2) Fushing Iron Bridge rehabilitation

The 879 meter long “Fushing Iron Bridge” was built in 1911 on the Beigan Line. It is the longest bridge on any part of the sugar railway, and was designated as an historic building in 2001. Fushing Iron Bridge linked Beigang Sugar Factory in Yunlin County and Chiayi Station on the main line. After the iron bridge was taken out of service in 1982, local residents took up the cause of preserving the bridge. Part of the Fushing Iron Bridge, which resides in Chiayi County, was restored by Chiayi County Government in 2009. The ancient Bengang Archaeological Park, nearby the sugar railway, has also been incorporated into the whole revitalization project. The iron bridge has been reused as a scenic platform and a walking trail. It has become one of the best scenic routes for visiting this community. The sugar railway along with Fushing Iron Bridge, which were restored by the local government, has become an important example for how these projects should be done in Taiwan.

### (3) Yichu Station rehabilitation

Yichu Station on the “Hsinyin-Bdai Line”, which was a business line, was located in southern Chiayi County, and connected Annai , the Shingying Sugar Factory

(Ensuikou Sugar Manufacturing Co.) and Hinying Station to the main line. The sugar railway in this area was abandoned in 1970 and caused the surrounding area to go to waste. The Yichu Station became a negative and dirty space in the community. In order for the green landscaping and tourism development to succeed, Yichu Station was repaired for reuse as the core of the “Shin-Man-Yi-Zhu Free Travel Project.” The area was set up as a bicycle path, using the former sugar railway, by the Yizhu Township Government. The Yijhu Station and bicycle path project was completed in 2009 and became the “Yi-Bu Eastern Section” of the Purple Line of the Bicycle Path Loop Line. Later, the Yichu Township Government cooperated with Piqian Community Development Association to also set up the sugar train exhibitions on the sugar railway in recent years.



Fig18. The Purple Line of the bicycle path loop system in Chaiyi County(Chaiyi County Government )

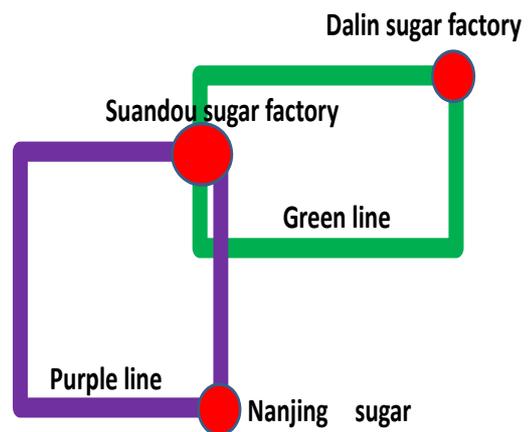


Fig19. The bicycle path loop system in Chaiyi County



Fig20. The Green Line of the bicycle path in Dalin



Fig21. Putsu Railway Park



Fig22. Fushing Iron Bridge and Bengang Archaeological Park



Fig23. Yijhu Station and platform

## 5. The characteristics and problems of sugar railway conservation in Chaiyi County

### 5.1 The characteristics of public participation along the sugar railway

Let Fig.24 indicate “the mode of public participation in sugar railway heritage conservation”. Fig.24 illustrates how sugar railways, stations, and platforms have been reused as open spaces, tourist centers and exhibition spaces. It also brings to light the neglect of TSC, a state-owned enterprise, which has largely ignored the movement toward sugar railway conservation. Local residents, on the other hand, have boldly undertaken the effort and have preserved the sugar railways and stations to revitalize their local environments, to beautify them, and develop them for tourism. Why is there a general theme of local residents wanting to preserve and reuse the sugar railways as industrial heritage sites from Japanese Colonial Period that remain in their communities? The sugar railways are important cultural resources in these communities for the following reasons.

- (1) The historical and cultural conservation of the sugar railways has become a subject of public participation and pride in the community. It has brought residents together in the effort of community building through this preservation movement.
- (2) Because of the sugar railways have become eyesores that dirty the local

environment and have been a “lost space” for the entire community. The local residents have taken the initiative in cleaning the railway area so that they can improve their own living environment.

- (3) The sugar railways and stations are a shared memory for many of the local residents. This is why the local residents put so much personal effort into reusing the industrial and civil heritage sites that allow them to display the historical context collective, historical narrative.
- (4) The factors of an aging population and a declining birth rate, have great impact on the decline in development of local communities. Residents reuse the sugar railway to network local cultural resources, left behind by former local industry and in an effort to revitalize the community through tourism development.

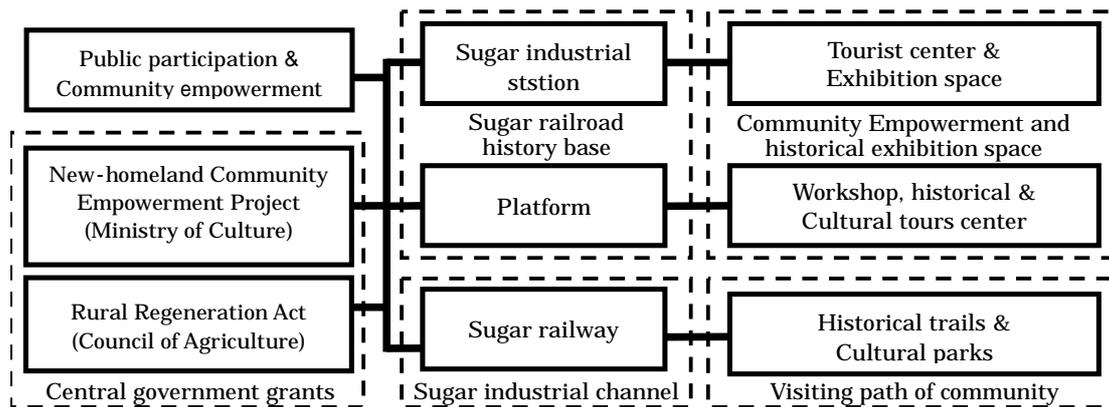


Fig.24 The mode of public participation in sugar railway heritage conservation

## 5.2 The characteristics of sugar railway conservation by local government

Fig.25 indicates “the mode of sugar railway heritage conservation by the Chiayi County Government”. Fig.25 shows how the railway heritage conservation of Chiayi County Government has taken on projects like; sugar railway reuse, bridge remodeling, station improvement, platforms revitalization, and have networked old railways as bikeways, open spaces and exhibition spaces. Chiayi County Government

has been the most active local government that preserves the sugar railways in Taiwan. The main conservation project has been the bicycle paths along the sugar railways. However, the question of authenticity has been a subject of discussion about the sugar railways. It has been a difficult problem, questioning whether the stations, tracks, and some other railway heritage sites were properly preserved or not. To make some simple examples; the tracks were covered and used as a bicycle path by local government workers, and even part of the stations and tracks were removed by TSC. In contrast, TSC and most of the local governments do not preserve the sugar railways accurately. We can say that the sugar railway conservation by the Chiayi County Government is one of the most significant outcomes of industrial heritage conservation in Taiwan. The characteristics of the sugar railway conservation by the Chiayi County Government are as follows:

- (1) The core of the bicycle path loop line is along the sugar railways near Suandou Sugar Factory. The bicycle path loop line of the Green Line connects with Dalin Sugar Factory, and the Purple Line connects with Nanjing Sugar Factory. All in all, the bicycle path loop line links with the three sugar factories in Chiayi County.
- (2) The bicycle path loop line of the Green Line links the area to mountain resources, and the Purple Line links the coastal and riparian zones in Chiayi County. It is the same as the original intention of sugar railway establishment.
- (3) Most of the bicycle paths connect the private line of sugar railway, and the Purple Line of the bicycle path loop line (southwest side) to a greater proportion of the sugar railways than the Green Line does.
- (4) Yichu Station and Fushing Iron Bridge are connected not only with cultural resources along the bicycle path loop line, but also the parks and trails of public participation along the sugar railway heritage conservation projects within the

communities.

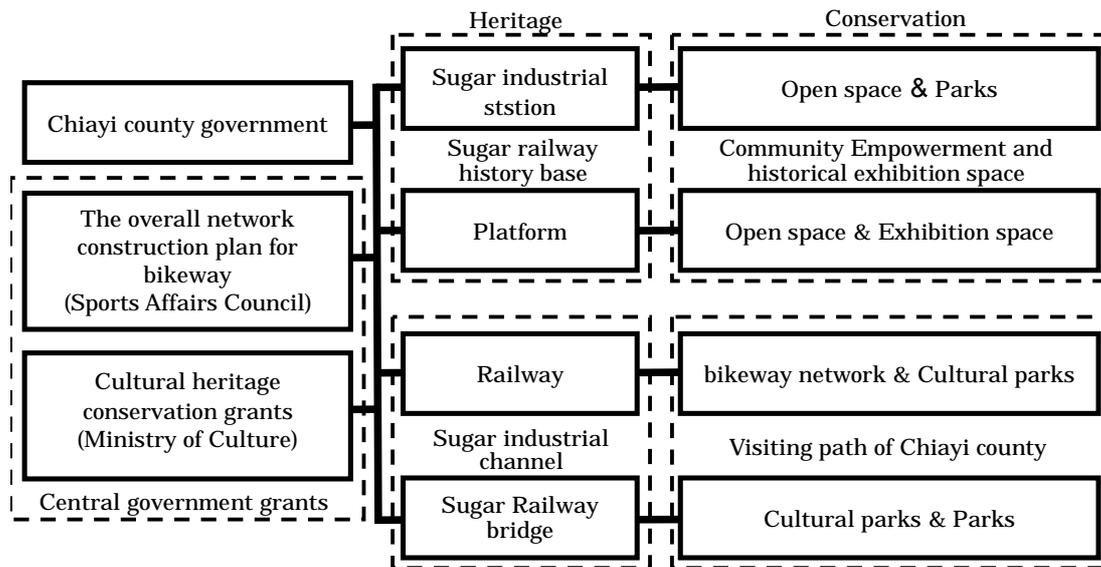


Fig.25 The mode of sugar railway heritage conservation of Chiayi County Government

### 5.3 The subject of sugar railway conservation in Chiayi County

The modern sugar industry flourished in Taiwan, starting from the Japanese Colonial Period. The industry's sugar production even reached third in the world at one time. The sugar industry accounted for 80-90% of Taiwan's industrial output during the Japanese Colonial Period, so it was clearly the most important economic industry in Taiwan. Even the sugar industry was still the main source of foreign exchange in Taiwan during the early postwar period (1949-1953). Compared to the first and second highest sugar producers, at that time, India and Cuba, the national territories of those two nations are far higher than Taiwan. It could be said that the density of the sugar factories and sugar railways in Taiwan may have been the highest in the world, based on landmass. For this reason, the current sugar factory sites and the remaining sugar railways have important historical value to the industrial development of not only Taiwan, but also the world. Because the modern sugar factories were important to the local industrial development, and sugar railway

network provided functional transportation in southern Taiwan, the industrial heritage of the Taiwan sugar industry is an extremely valuable memory for local residents. However, closed sugar factories have caused the de-industrialization and a hollowing-out of the local population that has led to an overall decrease in the area's population. We should face these difficult subjects of the wasted sugar factories and sugar railways immediately. The residents and local governments have to discuss the negative aspects of these industrial heritage sites and how to transform the local tourism and accentuate the cultural resources to improve their living environment and tourism development.

The biggest issue is that TSC has no desire or ability to preserve or reuse the sugar railways. The ownership of the sugar railways is still in TSC's hands, so local governments have no authority to intervene. The sugar railways have been disregarded over a long period of time, so the surrounding areas of the sugar railways have become filthy and rundown. In contrast to TSC, a state-owned enterprise, and the government, which has ignored the movement toward sugar industrial heritage conservation, residents of Chiayi County, themselves, have taken action to preserve the sugar railways and stations. Chiayi County Government is one government entity that has also actively promoted the bicycle path network and the Fushing Iron Bridge restoration projects along the sugar railways, under the influence of the public, in accordance with the sugar railway conservation movement. In recent years, the Chiayi County Government has actively striven to acquire railway sections of property from TSC, such as: in 2003, Chiayi County Government took over the property rights to Baigan Iron Bridges, and a part of the bicycle path network of the sugar railway management. In recent years, Chiayi County Government has solely worked to take over management of the part of the sugar railways that is used as

bicycle paths, and to see that the property rights to Fushing Iron Bridge be transferred to Chiayi County Government.

Fig.26 helps to define what the mechanism and impact of sugar railway conservation between the community empowerment movement and the Chiayi County Government should be. The sugar railway conservation projects should be at the core of the community-building movement. The uproar of and active participation of local residents and community groups caused local government to pay attention to the necessity of preserving the sugar industry heritage sites. There is no doubt that Chiayi County is the first case of the re-mastering of the sugar railway has been transferred to the communities and local governments by TSC. Fig. 27 indicates, the vision of the future re-usage of the sugar railway in Chiayi County. This paper suggests that the bicycle path loop line along the sugar railways, should link natural and cultural resources of the county, and the public participation in railways and stations conservation is vital to its overall success. Although the sugar railway is still an ongoing project, it is clear that they could be the main pathway towards tourism growth in communities by way of bicycle paths and trails along the former sugar railways.

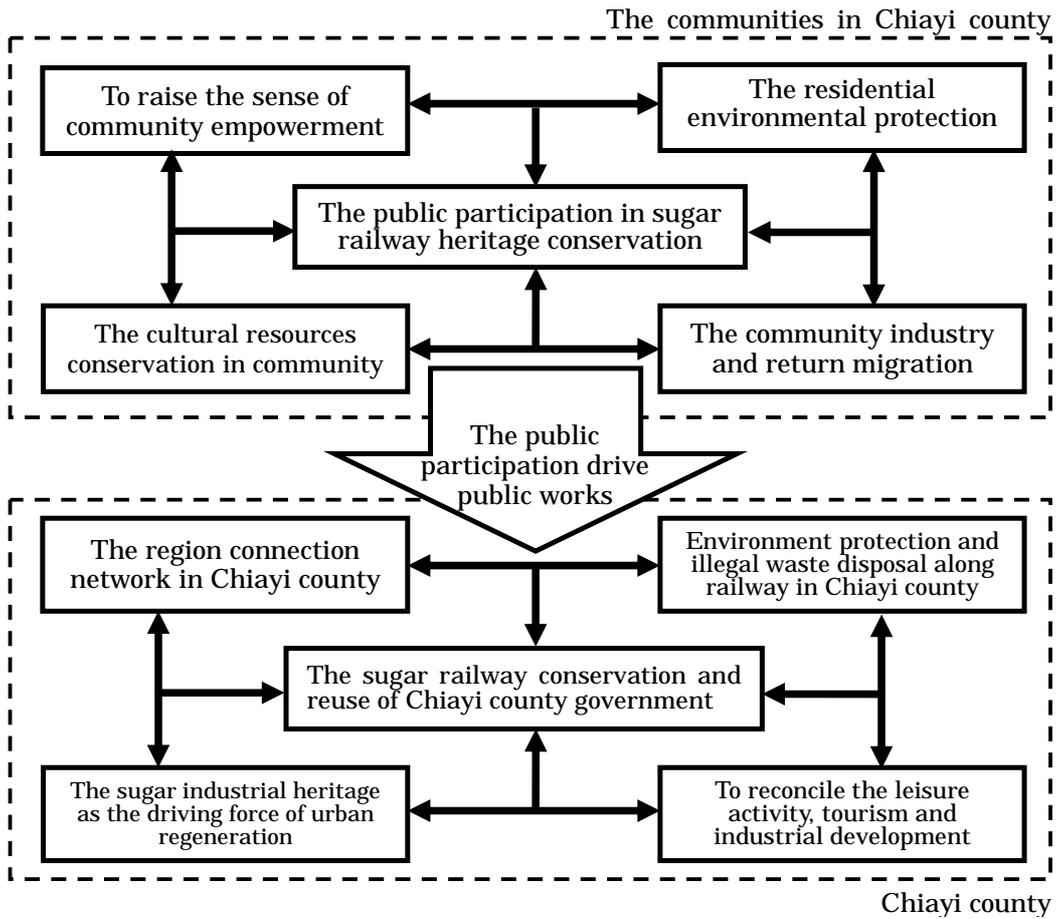


Fig.26 The mechanism and impact of sugar railway conservation between community empowerment and Chiayi County Government

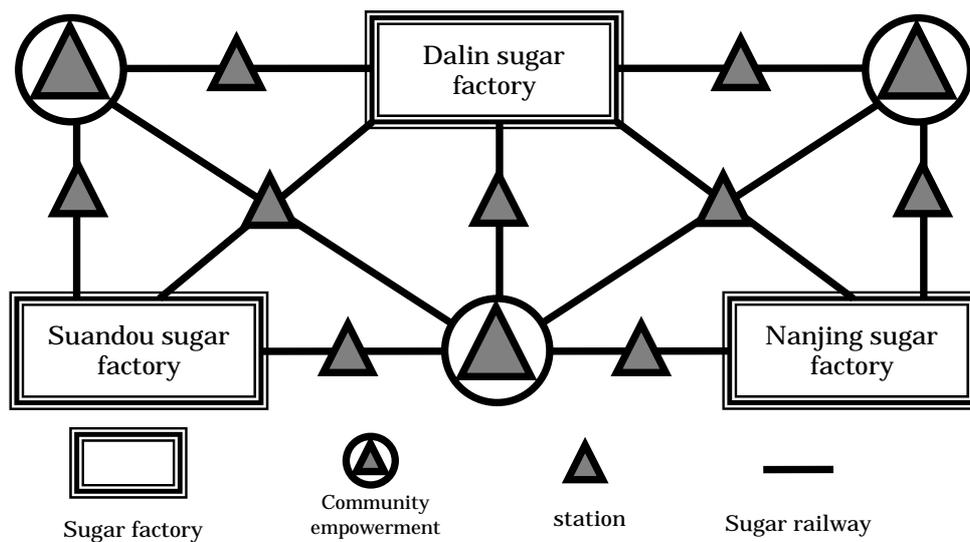


Fig.27 The schematic diagram of sugar railway heritage reuse in Chiayi County

## 6. Conclusion

Fig.28 is a simple formulation of the fact that the public participation in sugar railway heritage conservation drives public works of Chiayi County Government. Today, local residents and the Chiayi County Governments have joined together to promote the reuse of sugar railways as cultural resources for regional renewal.

However, the sugar railways were privately owned railways during the Japanese Colonial Period, and had become the assets of state-owned enterprises after World War II. For this reason, TSC should take complete responsibility for sugar railway conservation. In addition, the sugar railways are also an important local asset and should display the modern usage of the sugar industry's heritage in Taiwan. It is thus important for us to preserve the whole modern sugar industrial system. The highly dense sugar railways systems are spread out all over central and southern Taiwan, but TSC has not initiated any of the preservation projects during the past two decades. Worse yet, they have even removed the historical stations and small part of tracks do to needs for urban planning. For reasons already stated, the surrounding area of the sugar railways have become wasted spaces where local people dumped garbage. The problem of polluting the environment forced local residents to take on the task of sugar railway conservation, by themselves. Pressed by public opinion, with the demands of local residents, and the developing tourism industry in Chiayi County, the local government began to get involved in the sugar railways preservation projects and the reuse of the industrial and civil heritage sites. It is fair to say that both local residents and local government made collective efforts to preserve the sugar railways, so that Chiayi County can be regarded as a role model for the conservation of sugar railways in Taiwan.

This paper suggests that sugar railway conservation should be expanded to the

whole railway network, and the reuse project should consult industrial archeology and local museums for the best preservation of the local industrial heritage. We should apply the idea of “eco-museum” to help discover the greatest industrial heritage values, and the use of the cultural resources for further developing local industry and tourism. In my view, to promote the sugar railway heritage conservation successfully we should urge public participation in the sugar railway conservation that has been combined with bicycle-route, loop line projects.

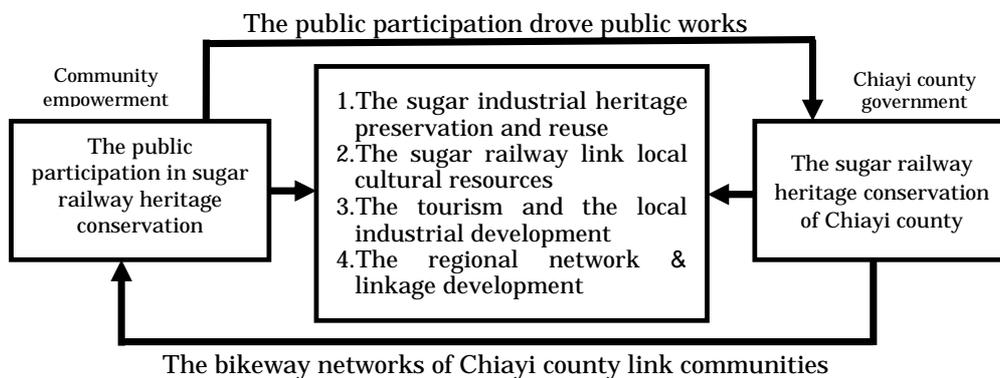


Fig.28 The results of sugar railway conservation between community empowerment and Chiayi County Government

## 7. References

1. Wang, Sin-Heng, “ Study on the Relationship between the Sugar Factories along Sugar Railways and Urban Sprawl of Southern Taiwan ” , 19th International Seminar on Urban Form , The Eighteenth International Seminar on Urban Form , 2011).
2. Chen, Zhao-Wei, Postwar government manage Taiwan sugar production(1945-1953) ( Daoxiang Publishing Co.,Ltd1,2003 ) , pp.31-3.
3. Fan, Bo-Sheng, “ Japanese occupation of the railway transportation construction impact on social and economic development ” , Master thesis of National university of Tainan, Tianan2003 ) .