

SAFETY

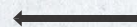
ACCURACY

SERVICE

# 2020

TAIWAN RAILWAYS  
ANNUAL REPORT

109



GENGZI  
YEAR

UNITE

HONOR

INNOVATION

## INTRODUCTION

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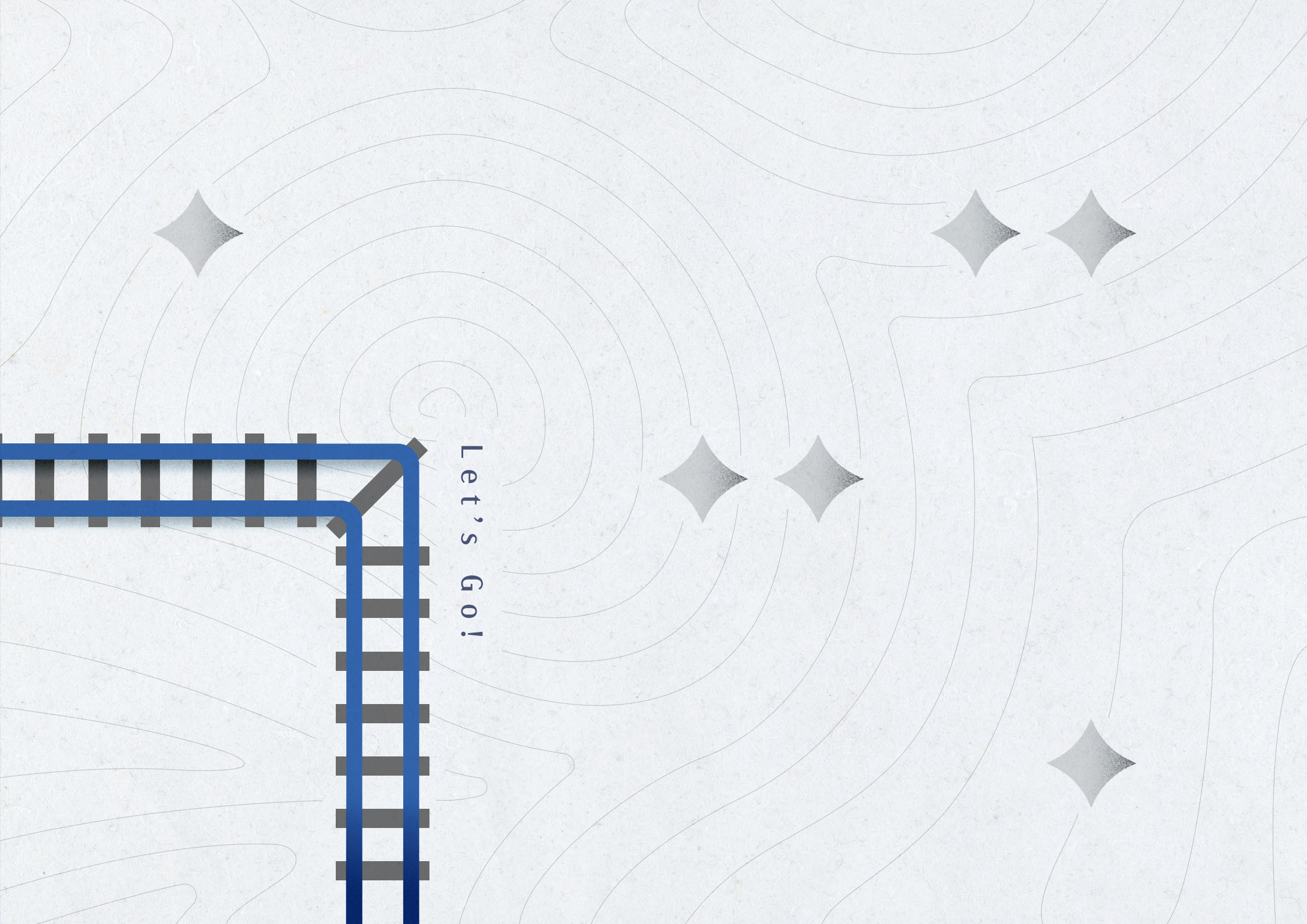
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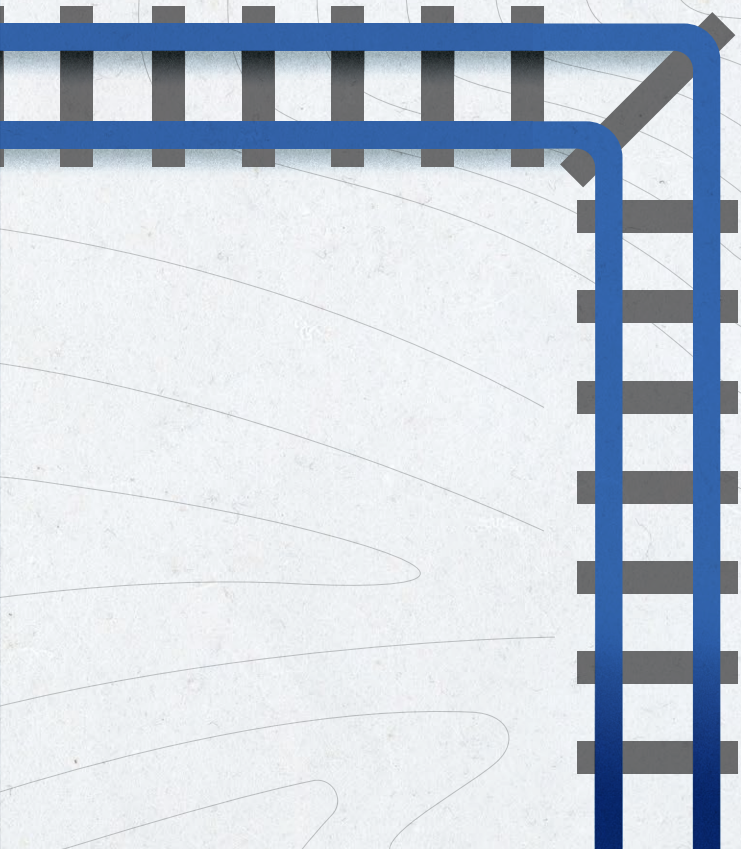
C O N T E N T

INTRODUCTION





Let's Go!



## I. → INTRODUCTION

2020 marked the 133rd anniversary of Taiwan Railways. As the COVID-19 pandemic raged worldwide in the same year, the Taiwan Railways Administration (TRA), the operator of a vital part of the public transportation system, faithfully implemented pandemic prevention measures required by the Ministry of Transportation and Communications (MOTC) and the Central Epidemic Command Center. Monitoring passengers in all sites to check their temperature and masks assures the health and safety of all our passengers and staff. While fighting the pandemic, the TRA endeavored to ascertain the integrity of our transportation network and bring peace-of-mind to passengers when using our services.

The TRA operates Taiwan's only railway network that spreads around the island. Considering the network's long history, we set a primary goal of improving operational safety, efficiency, and quality continuously. In terms of transportation services, (1) we began allowing passengers to buy tickets up to 28 days in advance instead of 14 days; (2) we built our first VIP departure waiting room in Hualien Station according to the standards for airport terminal's VIP rooms; (3) upon completion of the electrification of the South-link Line (Fangliao—Zhiben), the introduction of the Puyuma Express and push-pull Tze-Chiang Express trains could shorten the traveling time from Kaohsiung to Taitung and Hualien. For core businesses, our efforts in continuous innovation and improvement aimed to bring passengers a more comfortable, convenient, and efficient riding experience.

In addition to enhancing soft services, we have also committed to upgrading railway infrastructure and enhancing operational safety. Under the "Rail Structural Safety Enhancement Program," we replaced worn-out main track rails and outdated track maintenance equipment to ensure railway line safety and improve track strength. With regard to the "Batch Purchase and Train Replacement Program," the first batch of EMU900 series commuter trains comprising 20 railroad cars was delivered in Hualien Port in October 2020. After being put into operation, as an important addition to the existing commuter rolling stock, the trains effectively increase the transportation capacity. Moreover, the stepless carriage remodeling project for all existing train types was completed. We want to thank all the staff for their efforts in improving the quality of tracks and cars, thereby increasing track transportation capacity continuously. As for operational safety, the intelligent safety and disaster prevention system installed in the Taipei Station Union Emergency Operation Center building was awarded the "2020 Intelligent Transportation System Industry Innovation Award" for the system's performance in enhancing overall safety in the station district of the Taipei Main Station. Furthermore, as recommended by Executive Yuan in its comprehensive evaluation report "that a speed limit feature should be introduced to ensure safety even when the automatic train protection (ATP) system is cut off," we worked with the National Chung-Shan Institute of Science and Technology to develop a "speed limit backup system to ATP," which are installed on Puyuma and Taroko Express trains first to enhance train operation safety further. As the operator of a railway network that spreads around the Taiwan Island, the TRA has put the provision of safe passenger transportation service at the core of everything we do. We will also strive for operational safety in the future to meet public expectations on the railway network.

Additionally, we have also achieved fruitful results on property development, revitalization, and subsidiary business. For the first time in its history of more than 100 years, Taiwan Railways began

cooperating with convenience stores to distribute bento to expand channels and brand equity and make them available to more consumers with improved convenience. The shift in operational mode was coupled with brand-building efforts for the "TR Bento." For example, we have launched a TR Bento concept store in Hsinchu Station. With the aesthetic design, the store flipped the perception about public sector facilities and showcased a new style for the century-old brand. Additionally, the success in attracting tenants for the urban renewal project of East Kaohsiung, and the promotion of the urban renewal project of Nangang Marshalling Yard and the build-operate-transfer (BOT) project of the Taichung Railway Cultural Park represent considerable achievements in property development and revitalization. Our target is to promote the "Pearl Necklace Project," where the pearls refer to hundreds of stations while the necklace refers to over 1,000 km of railway. It is expected that the transit-oriented-development (TOD) railway economy could grow spectacularly by fostering property development and optimizing Taiwan Railway's financial structure.

Additionally, we are working to improve employee welfare. To build an attractive organization and develop a sense of dignity among the employees, we provide facilities and services to lighten their burdens. In February 2020, the TRA implemented the "Benefits-improving Measures—Living Allowances" approved by Executive Yuan to substantially increase employees' life stability while making a great contribution to a harmonious labor relationship. For train crew members who work on shifts and may have little time to take care of their families, we insisted on a minimum of eight hours between shifts as stipulated by Taiwan's Labor Standards Act. The MOTC supported our position, and the Ministry of Labor confirmed the applicability in an announcement. To improve the working environment and stimulate employee morale, we also plan to upgrade accommodation facilities for standby staff and improve track maintainers' working conditions.

While 2020 was a year full of challenges, with the pandemic, domestic travel became the most popular form of travel. The MOTC named the year 2022 as the "Year of Railway Tourism." Taiwan Railways will play a key role in the campaign. The launch of the "Future" tour trains by the end of 2020 officially marked the new form of railway tourism. In the future, we will also launch the "Blue Cozy," "Sea Wind," "Mountain Haze," and top luxury sleeper tourist trains to present a new Taiwan Railway fleet to lead the new trend of railway tourism.

With a profound knowledge base, Taiwan Railways used to be one of the pillars of Taiwan's transportation networks. Building on this history, we will continuously improve rail transportation capacity and service quality while ensuring operational safety. As aesthetic design becomes an increasingly vital part of business operations, we will keep promoting railway aesthetic design to boost railway tourism's quality and development comprehensively. Meanwhile, we will actively develop and revitalize station stores to advance the railway economy. With urban built-up areas around railway stations, our transportation and tourism service could bring prosperity to every corner of Taiwan.

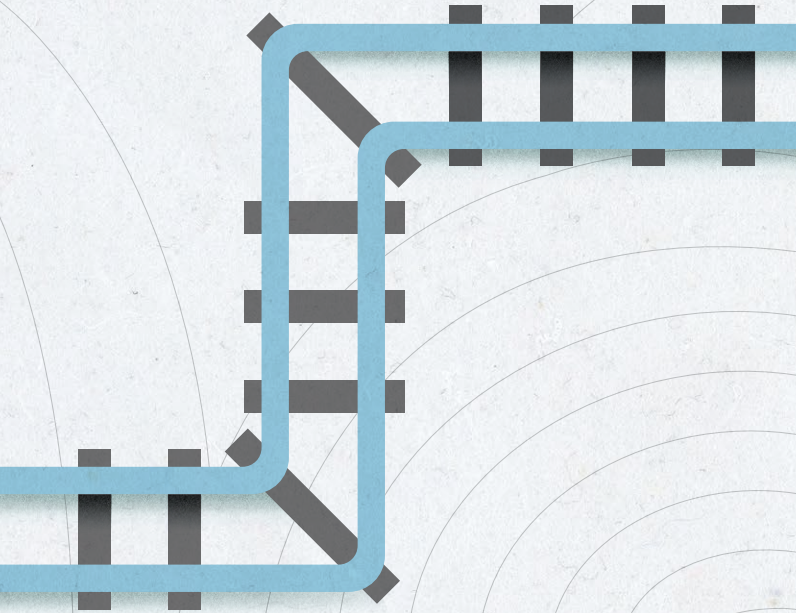
Director  
General

Victor Tu

INTRODUCTION



## CHAPTER ONE.





## Vision of TRA

- I. Vision and Strategic Goals
- II. Operational Policies

## I. ↔ VISION AND STRATEGIC GOALS

### A Vision

Railways will be part of people's daily lives by building a superior public transportation system oriented to customer satisfaction while attaching equal importance to subsidiary operations.

### B Strategic Goals

1. Ensure operational safety: Build a safe, accurate, convenient, comfortable, and green transportation environment.
2. Improve Taiwan Railway's culture: Reshape the values of our corporate, encourage innovative thinking, build teamwork, and enhance the sense of honor.
3. Raise the quality of service: Embrace the service philosophy of "regarding customers as your family members" and provide intelligent, intuitive, useful, friendly, and digitalized operating equipment.
4. Improve working environment: Provide safe, hygiene, and comfortable working space, simplify the operational process, strengthen talent retention and development, pay attention to the physical and mental health of employees, and protect the rights and interests of employees.
5. Upgrade vehicle and road facilities: Improve hardware and software facilities, simplify the operational interface, and improve system availability and stability.
6. Enhance business operations: Improve the robustness of operations, optimize the financial structure, develop subsidiary businesses, strengthen property revitalization, develop a distinctive railway culture, create additional value for surrounding areas, and promote international cooperation and communication.



## II. ↔ OPERATIONAL POLICIES

### A Implementation of Government Policies

In line with the policy guidelines of Executive Yuan in 2020, we adopted the following measures:

1. Accelerate public construction plans and drive private investment—7 investment projects were planned for this year, totaling NT\$20,718,950,000.
2. Provision and improvement of a barrier-free environment—the budget for provision and maintenance of barrier-free facilities was NT\$606,128,000.
3. A total of NT\$85,233,000 was allocated to ensure employees' safety and health at work and reduce occupational hazards—expenses for workers' health examinations, personal protective equipment, and education.
4. In line with the government's environmental protection policies, a total of NT\$460,659,000 was allocated for pollution prevention and control measures, including wastewater treatment, waste removal and transportation, and air pollution prevention and control.
5. Assist the development, unity, and independent management of the labor union—donated NT\$2,382,000 to the Taiwan Railway Labor Union.

### B Operations Management

1. Define our transportation market position, specifically, strengthen the medium and long-distance inter-city transportation (Taipei–Taitung and Taipei–Kaohsiung) and cross-line transportation (Taichung–Hualien) on the east-western trunk lines; strengthen commuter transport on the western trunk lines.
2. Promote seamless transportation by integrating tickets, schedule information, stations, and operations of bus, mass rapid transit (MRT), Taiwan High Speed Rail (THSR), and other passenger transportation services to build a diversified, convenient, and high-quality public transportation system.
3. Implement universal design and continue to build barrier-free space for creating a modern and friendly transportation environment.
4. Develop cross-industry alliance while incorporating railway culture to strengthen marketing strategies and create new customer bases.
5. Promote sustainable development and the philosophy of "human-centered design." Effectively utilize existing assets to develop travel and leisure services. Create more TOD benefits by combining transportation construction and land development and enhance Taiwan Railway's role as "the bridge to a better life."
6. Fully implement the repayment plan through property revitalization of selected key properties, such as promoting private participation in infrastructure projects, urban renewal, and superficies establishment.
7. Enhance on-the-job training and assessment of staff on risk management and crisis response, strengthen disaster and terrorism prevention mechanisms, and enhance the emergency response capability, to maintain the safety of trains and passengers.
8. Strengthen internal vertical communication and horizontal coordination to establish harmonious

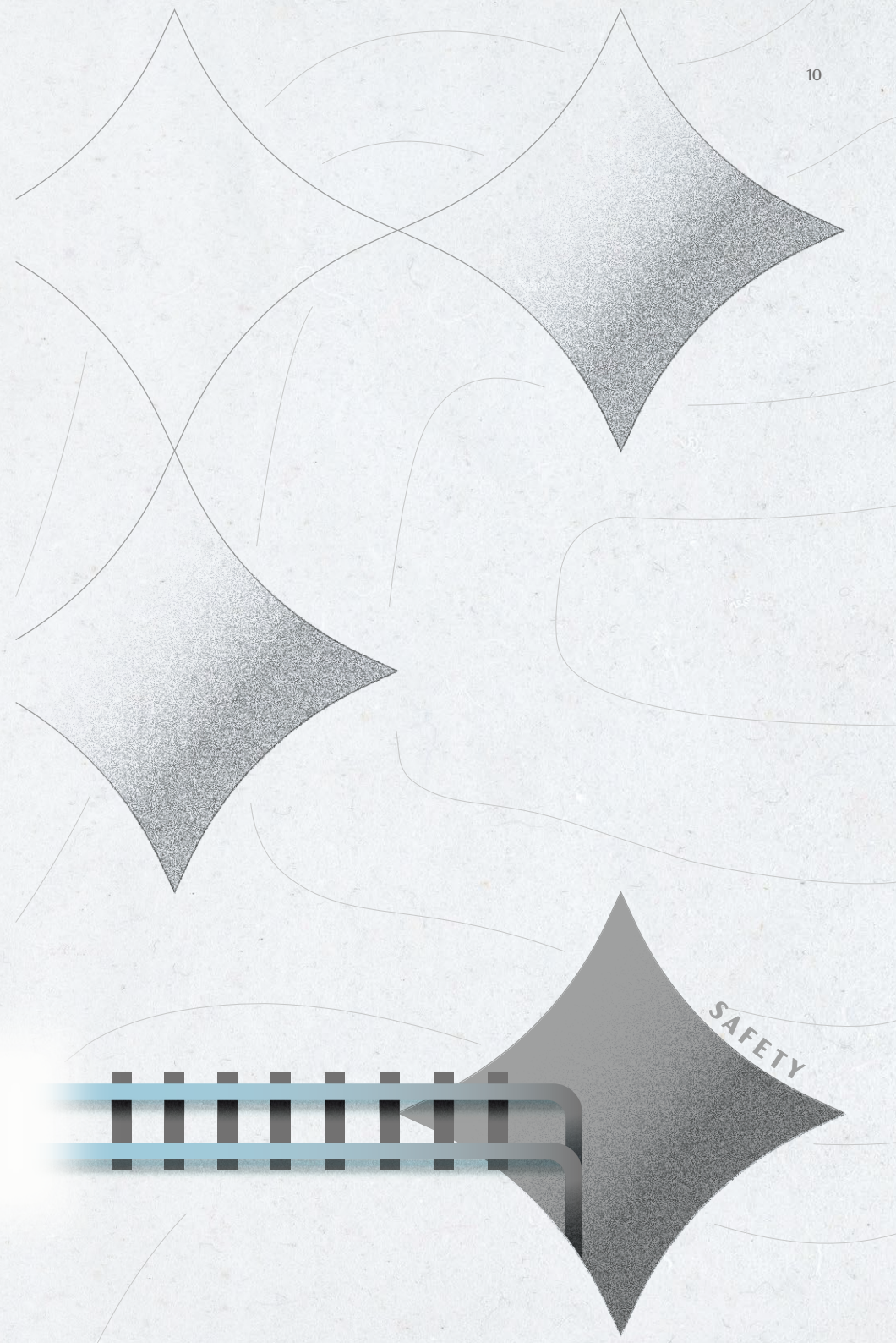
labor relations and improve organizational efficiency.

9. Study and discuss a reasonable fare adjustment mechanism, and commit to improve quality and reduce costs, thereby ensuring financial viability and sustainable development.



### Coordination between Supply and Demand

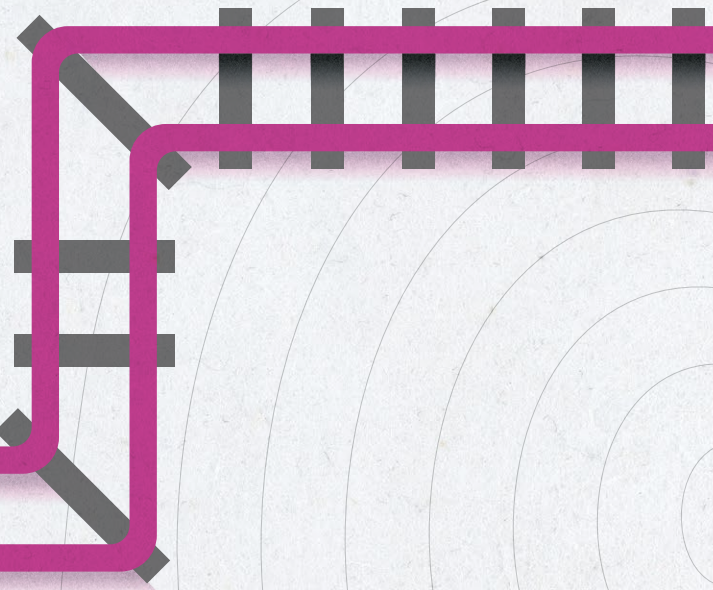
1. Continuously purchase and replace operating vehicles, reduce vehicle types, and improve service quality.
2. Proceed with the relocation plan of Kaohsiung Workshop to improve vehicle maintenance technology and quality, and thus ensuring train operation safety. Promote the development and operation of the original workshop site and preserve and revitalize railway culture to expand the scope of subsidiary businesses.
3. Implement the Plan for Railway Safety Improvement, including joint inspection of mechanics and electricity, disaster prevention measures; and boost infrastructure construction to improve train operation efficiency to enhance train operation safety and service quality.
4. Implement the ticketing system integration and re-development plan to optimize the ticketing information process and efficiency and overcome bottleneck in peak booking periods. Enhance customer relationship management and improve satisfaction with service quality.
5. Implement intelligent system in electrical engineering by upgrading hardware and software, introducing the latest technologies and intelligent features to improve transportation efficiency, expanding service scope, and enhancing service quality, thereby providing passengers with more convenience.
6. Implement the double-track project for the Chenggong–Zhuifen section to facilitate coastline passengers transferring to THSR.
7. Implement the transfer and interconnection project between Taiwan Railways and THSR lines at THSR Changhua Station to improve the transfer and interconnection between the two railways, expand the scope of the transfer service, and improve the service quality of the connected transportation system.
8. Improve the Jiji branch line infrastructure, including improving stations' hardware establishment along the line, track alignment, slope stability detection, enhance the overall service quality of the branch line, and provide passengers with better convenience, safety, and tourism service quality.



## CHAPTER TWO.

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● 區間 1298	苗栗	→ 南港	00:27
● 區間 4128	樹林	→ 蘇澳	05:26
● 區間 1106	樹林	→ 基隆	05:46
● 太魯閣 402	樹林	→ 知本	06:14
● 區間 4138	中壢	→ 蘇澳	06:18

SERVICE





## Organization and Operation

I. Organization and Workforce

II. Overview of Operational Facilities



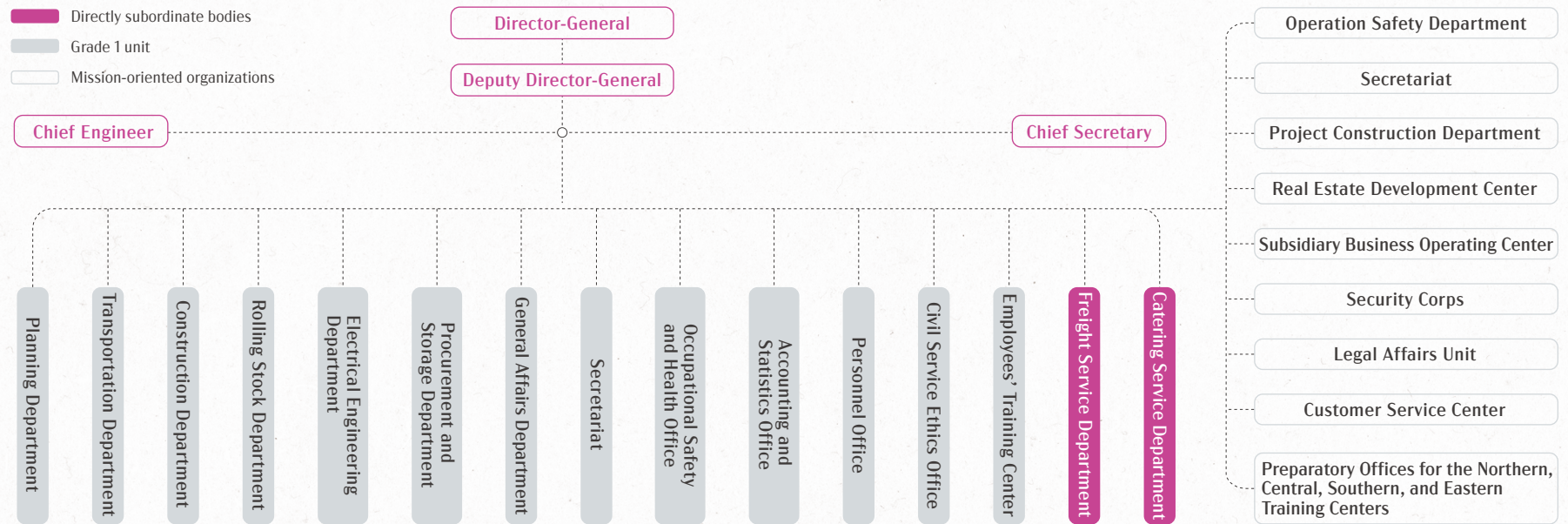
## I. ↔ ORGANIZATION AND WORKFORCE

Shortly after the retrocession, the railway in Taiwan was operated and managed by the Taiwan Provincial Government on behalf of the Central Government. In 1945, the Taiwan Railway Administration Committee was founded; in 1948, the Taiwan Railways Administration was founded. Since July 1, 1999, the Taiwan Railways Administration was put under the authority of the MOTC. There are 13 units under the Director-General, Deputy Director-General, Chief Engineer, and Chief Secretary, including the Planning Department, Transportation Department, Construction Department, Rolling Stock Department, Electrical Engineering Department, Procurement and Storage Department, General Affairs Department, Secretariat, Occupational Safety and Health Office, Accounting and Statistics Office, Personnel Office, Civil Service Ethics Office, Employees' Training Center, Freight Service Department, and Catering Service Department.

Department, Secretariat, Occupational Safety and Health Office, Accounting and Statistics Office, Personnel Office, Civil Service Ethics Office, and Employees' Training Center. There are also 12 task groups, including Operational Safety Department, Secretariat, Project Construction Department, Real Estate Development Center, Subsidiary Business Operating Center, Security Corps, Legal Affairs Unit, Customer Service Center, and the Preparatory Offices for the Northern, Central, Southern, and Eastern Training Centers. Except for two directly affiliated organizations, the Freight Service Department and Catering Service Department, there are 43 branch units including workshops, sub-branches, centers, offices, and teams.

The authorized complement for 2020 was 17,362 full-time employees (FTEs), while the actual figure by the end of 2020 was 15,867 FTEs.

### ◆ TRA organizational chart



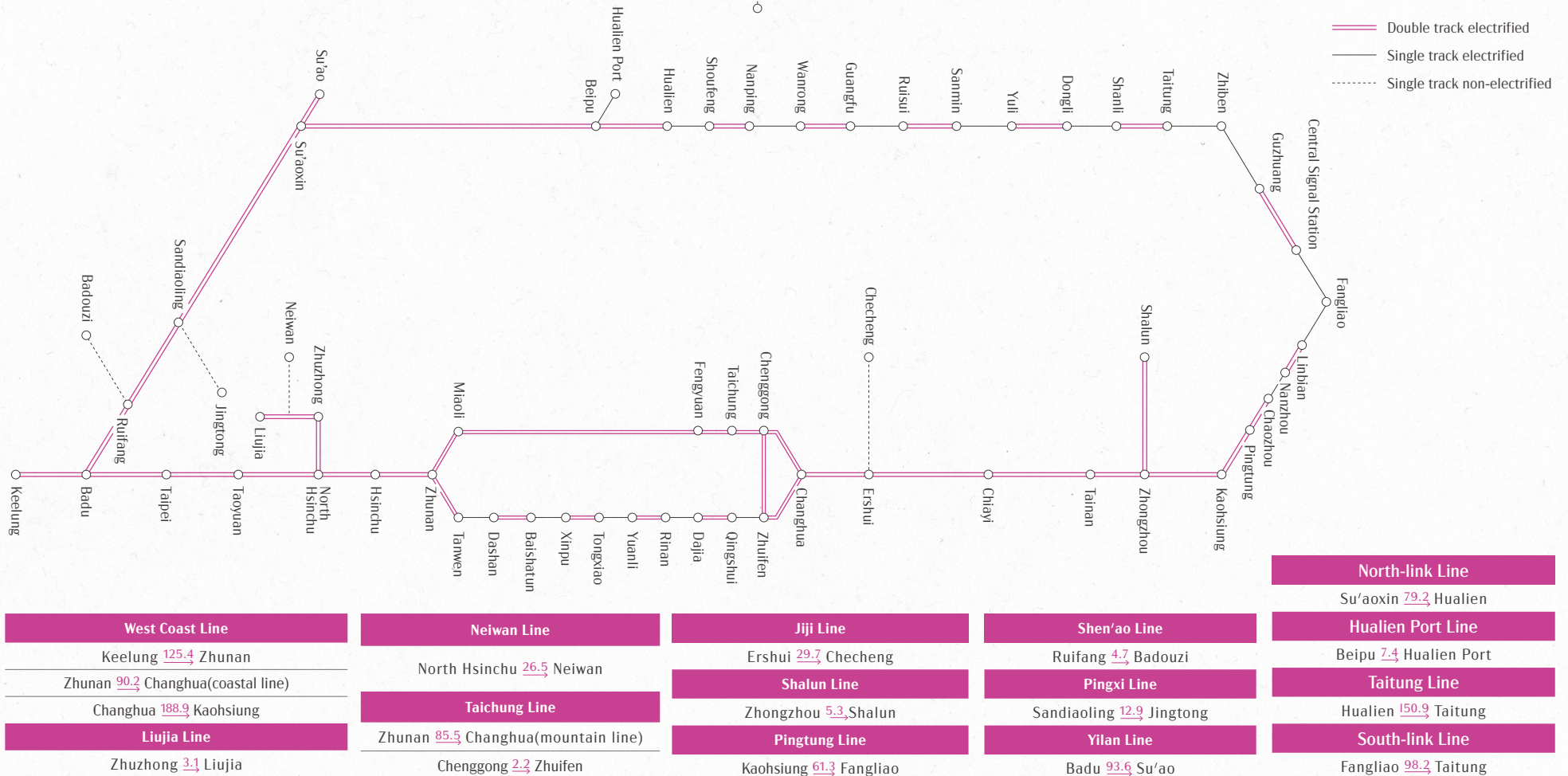
## II. ↔ OVERVIEW OF OPERATIONAL FACILITIES

### A Operating Mileage

1. Among an operating mileage of 1,065 km, double track electrified makes up 742.1 km, single track electrified makes up 255.6, and single track non-electrified makes up 67.3 km.
2. Stations: There are 241 stations in total, including 4 special class stations, 28 first

class stations, and 209 second class and other stations.

3. Grade crossings: 419 crossings: 3 Type I, 1 Type II, 370 Type III, 28 semi-closed, 11 manually controlled, and 6 for special uses.
4. 1,615 bridges and 133 tunnels.

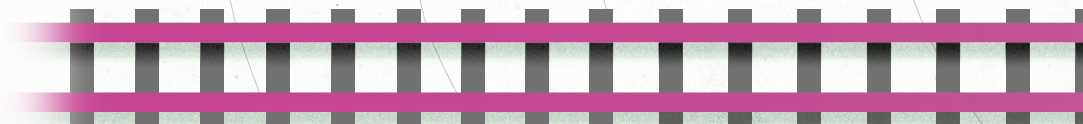


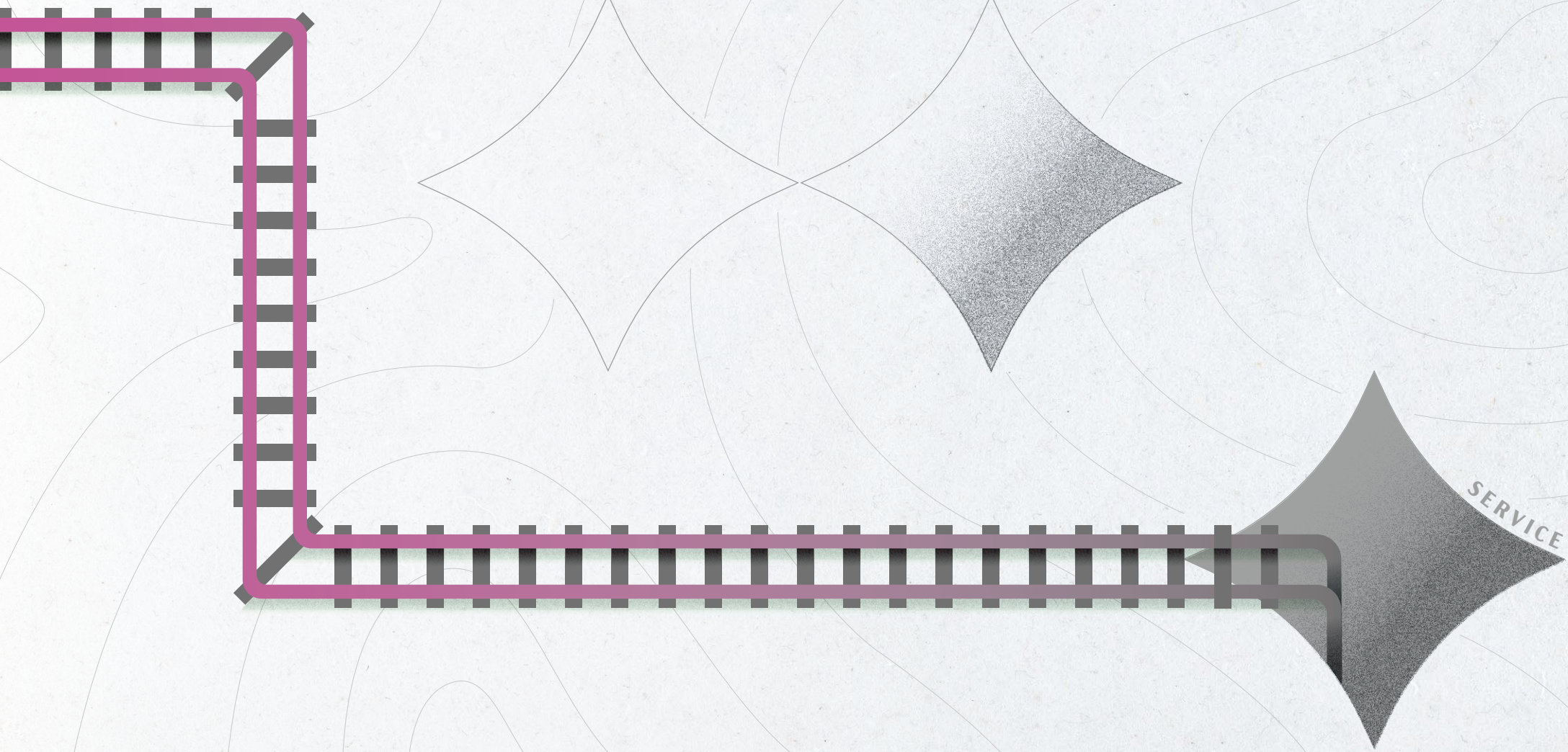
## B Number and Utilization Efficiency of Rolling Stock

Locomotives	Number	Passenger Cars	Number
Electric Locomotives	85	Tze-Chiang Express EMUs	285
Push-Pull Electric Locomotives	64	Push-Pull Tze-Chiang Express Passenger Cars	381
Diesel-Electric Locomotives (Including The Ones Owned By Other Companies)	93	Commuter EMUs	950
Diesel-Hydraulic Locomotives	16	Tze-Chiang Express Diesel Multiple Units (DMUs)	165
258 Locomotives		Diesel Rail Cars	46
		Passenger Cars With Air Conditioners	406
<b>Freight Cars</b>	<b>Number</b>	Passenger Cars Without Air Conditioners	27
1,571 freight cars (excluding the ones owned by other companies)		Other Cars	45
		2,305 passenger cars	

### ◆ Utilization efficiency

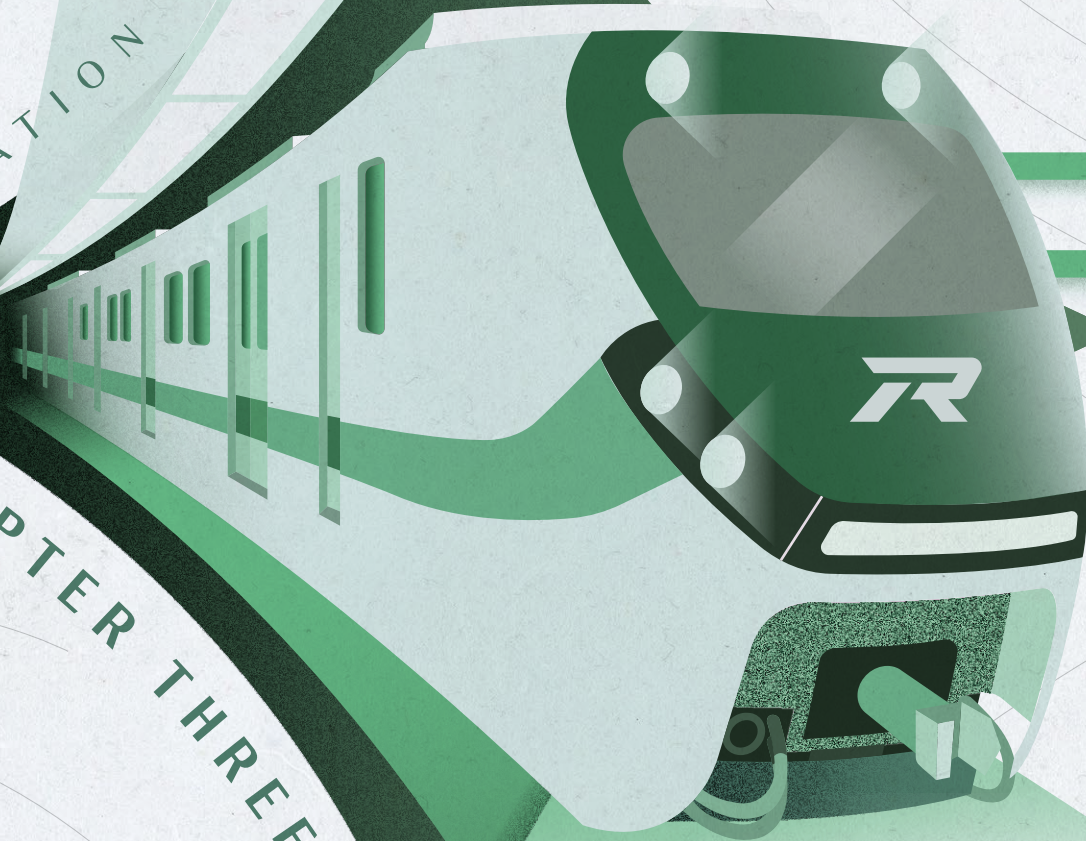
The availability rate for locomotives was 89.39% for this year. The rate was 86.38% for electric locomotives, 87.09% for push-pull electric locomotives, 92.39% for diesel-electric locomotives, 84.63% for diesel-hydraulic locomotives, 90.03% for EMUs, 97.40% for tilting EMUs, and 86.98% for diesel passenger cars.

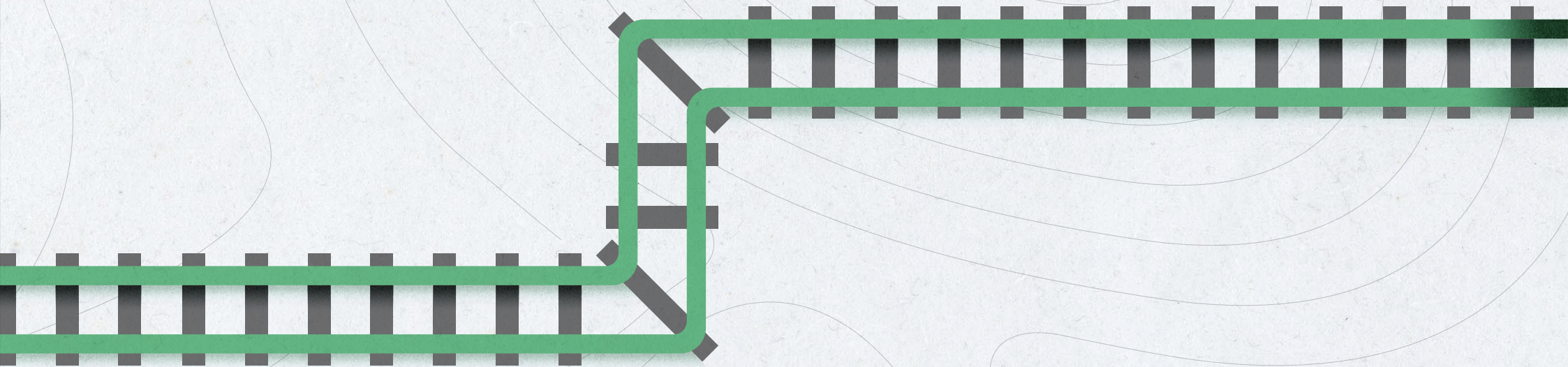




INNOVATION

CHAPTER THREE.





# Achievements and Business Innovations

I. Achievements

II. Innovative Businesses



## I. ↔ Achievements

### A Taiwan Railways Aesthetics

On February 7, 2020, Taiwan Railways held the “Inaugural Trip of Future Train—Aesthetic Renaissance 2.0 Action Forum and 2020 Taiwan Lantern Festival.” Aesthetic, design, architectural, cultural, and media professionals were invited to ride the “Future” tourist train together back to the birthplace of Taiwan Railway’s aesthetic drive—the Houli Flora Expo in Taichung connecting the aesthetic renaissance’s past and future.

In promoting aesthetic designs, the TRA launched the new “Future Train Locomotive” on August 1, 2020. In terms of corporate image and the stations, the TRA completed the renovation of Hsinchu Station and the “TR Bento Store” in October. The aesthetic drive will be rolled out in four dimensions of “minimalist aesthetic stations, vehicle transformation, corporate image, and cultural and creative products.” In the pursuit of aesthetic designs, we will build a tourist train fleet, implement minimalist aesthetic in stations, and redesign staff uniforms and cultural and creative products based on our customer characteristics and market demand.



### B Future Tourist Train

The “Future,” the first among the TRA’s new series of tourist trains, won the Japan 2020 Good Design Award in the transportation category in October 2020. The electric locomotive with a new coating design matched with the Future train was built in August 2020. Additionally, we have planned to add food preparation cars and transform dining cars. The preliminary design was completed in December 2020. These cars are expected to be completed and put into operation in the first quarter of 2021.

Preparing for the 2022 “Year of Railway Tourism” planned by the MOTC, the TRA strengthened railway tourism services. An investment promotion meeting was held on October 14, 2020, for public bidding for the “2021–2026 Operation Rights for Future and Blue Cozy Tourist Trains.” Many businesses were interested in the operation rights. A total of 19 businesses (42 representatives) attended the meeting.

The property leasing announcement was posted on the government e-procurement system website on October 22, 2020. After the qualification and document review on November 11, 2020, three tourism agencies were approved. Lion Travel Service Co., Ltd. ranked first in the selection meeting on November 18, 2020, and the result was published in a press release on November 23, 2020.

The Future’s inaugural tour package included two trains departing from Nangang and Xinwuri and traveling via the north-link line, Hualien-Taitung line, west trunk lines, and south-link line. The two trains were arranged to meet at Taimali Station, where the welcome concert was held, and the guests witnessed the first sunrise of 2021. After the event, more travel packages of the Future tourist train were made available to the travelers.



## C Happy 900 Arrived at Taiwan with a Smile—EMU900 Series Commuter Trains

The first batch of EMU900 series commuter trains comprising 20 railroad cars was delivered to Hualien Port on October 24, 2020. It is known as the most beautiful local service train in Taiwan. With optimized space and aesthetic design, it provides customers with a quality and comfortable environment.

With diverse train types and their different appearance, combining Taiwan's beautiful scenery and local characteristics, we have designed several travel routes around the island to attract domestic and international travelers.

Several features for passengers on the EMU900:

1. The back of forward and rear facing seats are raised, and headrests are added.
2. To increase the passenger capacity during the peak hours, ten cars per train are used for the first time. The seats in the middle section of cars 3, 4, 7, and 8 are arranged in a single row. There is no grab handle at the entrance area. Poles with three fixed handlebars are provided instead to encourage passengers to move towards the middle of the car.
3. Plates are used for luggage racks to prevent water from dripping.
4. For the first time, full-color LEDs on the platform doors are used for station indicators (SI) and destination indicators (DI) to show the information clearly.
5. The first and the tenth cars are equipped with vertical bicycle racks, and the number of parking vehicles is increased to 12 (the first and the tenth cars have compartments with bike storage for six bicycles respectively).
6. The number of wheelchair spaces was increased to eight, and are arranged in car six so that the conductor could provide services to them more conveniently. Also, 110V power sockets are provided in each space for electric wheelchairs.
7. The priority seats for pregnant women are equipped with displays, which can be controlled remotely to remind passengers to offer their seats to pregnant women.
8. To save energy and reduce carbon emission, the LED lights in passenger cars automatically adjust brightness based on the surrounding lighting conditions.



## D TRA and National Chung-Shan Institute of Science and Technology (NCSIST) Signed Agreement on "Speed Limit Backup System"

To improve train operation safety, the MOTC approved the "train speed-limit backup system" budget on July 30, 2020. The TRA and NCSIST held a signing ceremony for the system on October 14, 2020. Witnessed by MOTC Minister Lin Chia-lung and Deputy Minister of National Defense Lee Tsung-hsiao, Director-General Chang Cheng-yuan and NCSIST President Chang Chung-chung jointly signed the agreement. Fifty-two sets of equipment were delivered at the beginning of December, and they passed the sampling inspection.



## E Ticketing Services

### 1. Accepting Multiple Electronic Stored Value Cards (e-SVCs)

The TRA has installed facilities in 239 stations of the railway network spread around Taiwan for accepting e-SVCs. We also cooperated with the Directorate General of Highways (DGH) to provide passengers with a special offer for taking coaches or buses from 32 stations along the east and west lines for energy conservation and carbon reduction. At present, we plan to combine the periodic ticket with the e-SVCs so that a passenger with any of the cards can travel freely in Taiwan.

From January to December 2020, 138.93 million people took trains with e-SVCs. The daily average is 380,000 people, and the e-SVCs revenue is NT\$4,715,680,000.

### 2. Convenient Ticketing Services

#### (1) Ticket purchase and collection at convenience stores

In 2020, on average, 17,200 people used the service every day. In terms of the tickets collected, 0.39% were from post offices, 69.27% from 7-Eleven, 26.06% from FamilyMart, 3.10% from Hi-Life, and 1.18% from OK Mart.

#### (2) 24-hour Internet and telephone booking service

Passengers may book tickets at least one hour in advance and pay for them at least half an hour before departure on the same day. The booking is open 24 hours a day and is more convenient. In 2020, approximately 13.18 million tickets were collected after booking.

#### (3) Real-name booking service for Hualien and Taitung

The “Real-name Booking Service for Hualien and Taitung Residents” has been maintained. Tickets are available for people with national ID card numbers beginning with U or V or with a registered address in Hualien or Taitung. The spouse or first degree of kinship can also purchase a ticket. In 2020, a total of 34 train trips were arranged, and 16,934 people were transported.

To enhance the service, the daily No. 207 and 238 and the No. 206 trains on Saturday from Taipei to Hualien are available for priority booking to Hualien residents on a real-name basis. The daily No. 408 and 431 and the No. 405 trains on Saturday, Sunday, and Monday from Taipei to Taitung are also available for priority booking to Taitung residents on a real-name basis.

#### (4) Pre-sale tickets available 28 days in advance

Beginning on August 5, 2020, pre-sale tickets were available 28 days in advance. Passengers can book tickets four weeks before departure. Every Friday, riders can book the tickets for Friday,

Saturday, and Sunday four weeks in advance. The extended time provides passengers more flexibility in making travel arrangements, hotel reservation, or planning transfers to THSR or other transportation modes when returning homes or workplaces.

#### (5) Membership services

Since the introduction of the membership bonus point and booking match mechanism in 2011, the number of members has reached 1,154,648 by the end of 2020. There were 139,825 bookings matched successfully, with a success rate of 37.66%.

### 3. Diversified mobile payment methods

With a new generation ticketing system put into operation on April 23, 2019, the station ticket windows could accept mobile payment methods such as Apple Pay, Samsung Pay, and Google Pay. Other payment methods may also be available in the future based on the development of e-payment and customer demands. These payment methods could reduce the use of cash and accomplish the vision of mobile payment in Smart Taiwan.

### 4. Installation of automatic ticketing equipment

To improve service quality and ticket management, we installed and upgraded automatic ticketing equipment continuously.

	Computer ticketing terminal	Ticket vending machine for trains with reserved seats	Ticket vending machine	Automatic gate	Ticket inspection stand	On-board portable fare-adjustment device
Stations	191	13	151	68	239	8 (Train teams)
Quantity	436	40	395	409	770	800

## F Railway Tourism Business

### 1. 2020 Taiwan Scientific Exploration Train

On October 26–29, 2020, the “2020 Taiwan Scientific Exploration Train” ran between Taipei Main Station and 26 stations. Local implementation teams for Popular Science Week (Day) were required to lead groups of local students, their parents, and other visitors to enjoy scientific exploration in the stations, on trains, and on arrival.

### 2. 2020 Summer Formosa Train

On July 18, July 25, and August 1, 2020, the Summer Formosa Train comprises a CT273 steam locomotive, and five air-conditioned cars ran from Yuli to Taitung. It was operated like a cruise ship, stopping at only designated stations such as Dongli, Chishang, and Shanli, where passengers can enjoy the unmatched beauty of Hualien-Taitung Valley in addition to the nostalgic mood evoked by the steam train.

### 3. Train + Bicycle Environmental-friendly Travel

The environmental-friendly transportation and charter trains launched by the TRA aimed at promoting train + bicycle environmental-friendly travel. A total of 167,242 people were transported by trains in 2020. The TRA will keep reviewing the service to add trains as appropriate and improve the service.

### 4. The Children Friendly Car Attached to the Push-pull Tze-Chiang Express Train

The children-friendly car was put into operation on August 6, 2017. After adjusting to the schedule on December 23, 2020, weekly trips were increased to 105 from 102 in 2019, with 50,117 people transported in 2020.

### 5. Charter Trains for Group Travelers

To promote railway tourism and provide comfortable and convenient travel services for domestic and foreign tourists, we accepted 281 groups of travelers in 2020. With a total of 79,741 people transported under the service, the revenue was NT\$28,700,426.

### 6. Continuous Issuance of TR-Pass

To attract domestic and foreign tourists, we continued the TR-Pass issuance for the general public and students. Revenue from the business in 2020 is illustrated in the table below.

	For general public	For students
Quantity	18,593	3,341
Revenue	NT\$26,527,279	NT\$2,156,320

### 7. Issuance of Joint-Pass with THSR

To accommodate foreign tourists to Taiwan for business activities or sightseeing, we continued cooperating with the THSR to issue Joint-Passes. A total of 198 passes

were issued in 2020 with a revenue of NT\$131,891.

### 8. Issuance of TR-Summer Pass

Given the easing of the pandemic in Taiwan and the arrival of the summer vacation, the TRA launched a more generous plan to boost railway tourism to attract students. From July 15 to September 15, 2020, a total of 4,951 passes were issued for revenue of NT\$4,455,900.

### 9. One-Day Pass for Branch Lines

We have promoted regional tourism continuously. The table below illustrates the one-day pass revenue for branch lines in 2020.

	Northeast coast	Pingxi-Shen'ao	Neiwan	Jiji
Quantity	481	39,466	1,835	6,662
Revenue	NT\$55,398	NT\$2,929,520	NT\$161,945	NT\$509,535



## G Cooperation with International Partners

### 1. Ticket Exchange with Japan's Hisatsu Orange Railway Starting from March 1, 2020

Taiwanese passengers holding the Xinzuoing-Fangliao One-day Pass or the Blue Ordinary Train One-way Ticket issued by the TRA can exchange it for a free One-Day Train Pass for Overseas Tourists at the ticket counters of "Yatsushiro, Izumi, and Sendai." Japanese passengers holding the Hisatsu Orange Railway's "One Day Train Pass," "Exciting Ticket," or "Weekday Senior Ticket" can exchange it for both a free adult Xinzuoing-Fangliao One-day Pass and the Blue Ordinary Train Ticket during the program period at the TRA ticket counters in "Xinzuoing, Kaohsiung, Fengshan, Pingtung, Chaozhou, and Fangliao." The program is expected to boost regional sightseeing in both Japan and Taiwan.

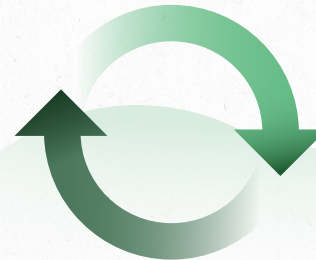


### 2. Wanhua Station Concluded a Sister Station Agreement with Ohmi Railway's Taga Taisha-mae Station

TRA's Wanhua Station is near the famous Longshan Temple, while the Taga Taisha-mae Station is adjacent to the Taga Taisha. As both stations are essential to sightseeing transportation, the two parties concluded the sister station agreement on November 4, 2020, enhancing the railway friendship between Taiwan and Japan.

### 3. Jiaoxi Station Concluded a Sister Station Agreement with Izu Nagaoka Station of Izuhakone Railway in Japan

Both stations are famous for the natural hot springs around them, and they are local sightseeing hub stations. The railway brings convenient transportation to the local area and promotes the development of sightseeing tourism around it. Domestic and foreign tourists can easily enjoy in-depth local exploration by taking the train. In 2020, because of the pandemic, international exchange activities dropped sharply. Nevertheless, the TRA and Seibu Group still managed to hold a signing ceremony on November 4, 2020. It was hoped that the event could stimulate the interactions among the parties for enhancing "International Friendship via Hot Springs."



## H Beautification and Renovation of Puxin Station

The Puxin Station is the TRA's third class station with average daily passenger traffic of 10,000. In addition to serving many people, the station is located near schools, a business center, and the Puxin Ranch, functioning as an essential transportation facility in Yangmei District of Taoyuan. However, after being put into operation in 2002 as part of the TRA's MRT program, it has been operated for 15 years, as evidenced by its out-of-date exterior design.

The TRA decided to invest NT\$66.5 million in the "Beautification and Renovation Project of Puxin and Fugang Stations," which included beautifying the external wall of Puxin Station, renovation of the stairs, and canopy of the cross-station overpass, and improvement of the square in front of the station. The cross-station overpass, stairs, and platform canopy project of the Fugang Station started on May 10, 2019, and was completed on September 23, 2020, after about 350 calendar days. The renovated station building incorporated local characteristics and duly presented the TRA image. The improvements also include passengers' traffic flow in and out of the station, safety and service quality, and local landscape elements. The project could enhance tourism value and drive local construction and prosperity.



The exterior of Puxin Station after renovation

## I New Cross-rail Main Building for Dounan Station and the Project's First Phase Put into Operation

Dounan Station is on the trunk line and is formerly known as the "Tali Smoggy Station." Its latest renovation was in March 1945. It has great historical significance as it was the last station built by the Japanese in Taiwan. The station has an average daily passenger traffic of 5,000. To provide easy access for people who reside on both the east and west sides of the railway and easing traffic jams before the station, the TRA decided to build a cross-rail main building in December 2017. The original station building with historical significance was retained while enhancing existing transportation facilities and barrier-free spaces. Spaces of multiple purposes were also increased for holding local commercial and cultural events to promote local prosperity and development.

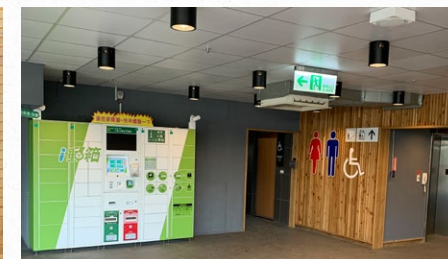
The TRA invested NT\$189,980,000 in the project, including building a two-floor cross-rail main building with a steel framework, installing four accessible elevators and six standard escalators, and adding parking spaces for 25 cars, ten motorcycles, and 16 bicycles. The project was executed in two phases. The first one covers the main building, stairs for the front and back buildings, elevators, steel platform ladder, and necessary travel facilities. The new building incorporated the Japanese architectural features of the original building. It was designed to be in harmony with the old building and surrounding railway warehouses to minimize the damage to the historic building. The improvements in facilities, mobility, environmental-friendliness duly represent the TRA's image while enhancing passenger safety and service quality.



A picture of Dounan Station illustrating both the old and new buildings



Inside the cross-rail main building



Service facilities inside the new building of Dounan Station

## J The 6th Formosa Railroad Bento Festival 2020

The 6th annual Formosa Railroad Bento Festival was held in Taipei Main Station's first-floor lobby on November 13–16, 2020. This year's theme was “Classic Taste Always with You.” Thirty businesses participated in the event, including seven international railway operators and four domestic star restaurants.

Under the theme of “Traveling with Food Ingredients,” the TRA's six catering service centers launched seven special super eye-catching Bentos prepared with local ingredients. Two specially designed dining cars were presented on the site, including “Classic Dining Car” to restore scenes from “the good old days” in the 1960s and 1970s. The elegant “Travel Time on Future” represents the future of the Taiwan Railways. Its exterior follows the design of the Future, which has been awarded the Japan 2020 Good Design Award.

This year, in addition to railway food and commodities, four forums were held in the exhibition period, with food, cultural creation, tourism, and design themes. Many speakers were invited to discuss and share the classics and future belonging to Taiwan Railways with the public.



The 6th Formosa Railroad Bento Festival flyer in English and Japanese

## K Launch a Variety of Innovative Bentos

1. In line with the MOTC's comfortable travel policy to revitalize relevant industries and promote domestic travel, in terms of “food,” the TRA has marshaled its six catering service centers for Taipei, Taichung, Kaohsiung, Qidu, Hualien, and Taitung to provide seven types of Bentos on a limited basis each day from June 24 to July 31, 2020. As local ingredients were used, the program could support local agriculture and encourage people to plan domestic travel actively. A total of 39,326 plates of Bentos were sold.



1.



2.



3.



4.



5.



6.



7.

1	2	3	4
Shaoxing Chicken Thigh Bento	Toon Vegetable Bento	Sesame Oil Matsuzaka Pork Bento	Taro Vitality Bento
5	6	7	-
HÓ-li minanay Bento (HÓ-li Red Quinoa Bento)	Chicken and Pumpkin Rice Bento	Nourishing Ginseng Drumstick Bento	-

2. The Railway Bento Festival was held in the multifunctional performance hall in Taipei Main Station on November 13–16, 2020. The six catering service centers launched nine unique Bentos during the event, and they were sold on-site with limited supply. They were made with unique local ingredients, and seven of them were designed for the festival exclusively. The most notable was the Taitung Bento, which was prepared with characteristic Taitung ingredients, such as flying fish and red quinoa.



## L MOTC Relief 2.0 Program for Businesses in Need

The TRA issued the “Operational Guidelines on Providing Rent and Loyalty Subsidies to Stations and Station Business Operators Affected by COVID-19” on April 25. For example, 381 applications were approved by July 21 for the applications submitted before the deadline on July 15. The approved subsidies of NT\$125,000,000 represent 100% of the implementation rate.



COVID-19 pandemic subsidy program—an inspector in Nangang

## M Power of Mobility—2020 Exhibition of Track Economic Achievements

The TRA has entered the era of track economy 4.0 characterized by sustainable and people-oriented development, efficient use of existing assets, the transformation of railway businesses, sustainable utilization of railway assets, and local development promotion. Taiwan Railways will become the center of urban life and the urban economy's promoter under the TOD concept. The “2020 Exhibition of Track Economic Achievements” was held on December 16, 2020. The thematic exhibition areas such as moving tracks and station cities showcased Taiwan Railways' results in transformation and the life brought by the railway economy.



2020 Exhibition of Track Economic Achievements (Photo/Courtesy of Interplan Group)

## N Ensure Information and Communication Security: Renewal of ISO270001 Certificate

The Central Train Control System (CTC) was introduced in 2004 and obtained ISO27001 certificate in 2006. The Information Center (including the management of engine room, network and facilities) and the Ticketing System also obtained ISO certificate in 2017 and 2018 respectively. In 2020, the system was re-evaluated by an impartial third party SGS for the confirmation of the certificate's validity.

## O All Public Toilets under TRA Control Certified as Excellent

In 2020, all the public toilets under the TRA control were certified as excellent, and 637 of them were regarded as superior. The percentage of superior public toilets increased by 2.2% from 90% in 2019. We will improve the rate further in the future.

## II. ↔ INNOVATIVE BUSINESSES

### A Franchising TR Bento

1. For developing differential food for TR Bento, increasing food types, targeting particular market segments, and increasing channel and brand interests, the TRA franchised FamilyMart in strategic alliance cooperation. The pork chop and sauerkraut, the key elements of TR Bento, were used as the basis for developing new dishes. The transformation of TR Bento's business model aimed to realize sustainable development and make the Bento available to more consumers with improved convenience so that the food is passed on to future generations.
2. Six new dishes were launched on May 20, 2020. These were “Classic Pork Chop Rice Ball, Fried Rice with Pork Chop and Potherb, Mixed Noodle with Pork Chop, Pork Chops with Salad, Pork Chops Hamburg, and Classic Pork Chop (frozen).” The other two, “Traditional Pork Chop with Glutinous Rice Ball and Pork Chop Bun,” were launched on June 3, 2020.
3. Two dishes, “Chop Egg Toast” and “Classic Pork Chop Rice Roll,” were available on August 13, 2020. Four other ones, “Pork Chop Noodle,” “Pork Chop Rice,” “Potherb Meat Bun,” and “Classic Braised Pork Chop,” were launched on August 26, 2020.
4. On November 18, the “Classic Pork Chop with Sweet Potato Rice,” “Noodles with Pickled Vegetable,” “Pickled Bean Curd,” and the “Classic Braised Dish” were launched. The “Future Grilled Eel with Rice” with a limited 1,000 plates were sold on November 13–16 during the Bento Festival.



Advertisement of co-branded goods (courtesy of FamilyMart)

## B Brand Optimization of “TR Bento”

On October 1, 2020, the TR Bento shop in Hsinchu Station was put into operation. The shop was designed by referring to the classic Guanghua Train. The corrugated stainless-steel exterior created the image of a sustainable brand. The shop also improved the service process and provided passengers with a more convenient way to buy the Bento. The opening ceremony was presided over by Director-General Chang Cheng-yuan. Lin Chih-chien, Mayor of Hsinchu City, Chang Chi-yi, President at Taiwan Design Research Institute, and several aesthetic design scholars were invited to attend the event. After integration and optimization, the TR Bento concept store of Hsinchu Station once again flipped the perception about the public sector aesthetics. It created a more specific and distinctive brand image. During the 2020 Taiwan design exhibition, the TRA worked with Taiwan Design Research Institute and China Pacific Catering Services to launch three limited Bentos. They showcased the TRA's vitality and design capability and enhanced the TR Bento concept store's visibility. With a 40% increase in TR Classic Pork Chop Bento's sales, the overall revenue grew significantly.



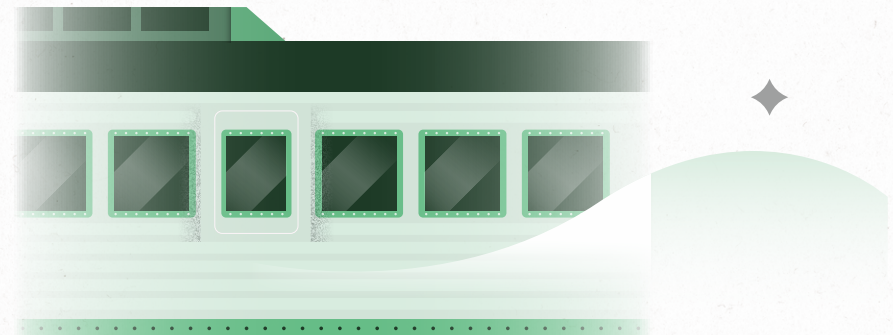
## C Multiple Payment Options for TR Bento

To provide passengers with more diversified payment options, 31 TR Bento physical stores in Taiwan rolled out an card payment service by iPass from September 16, 2020. Also, the TRA provided an exclusive 10% discount for iPass payment since October 15, 2020. The discount was also available to passengers paying for TR Bento items with Taiwan Pay payment code (debit card/account only) in physical stores and Taiwan Railways trains from November 18 to December 30, 2020.

With electronic transaction facilities, physical Bento stores could accept payment with credit cards (including Apple Pay, Google Pay, Samsung Pay), mobile payment (Taiwan Pay), and an electronic stored value card (iPass).



Multiple payment poster

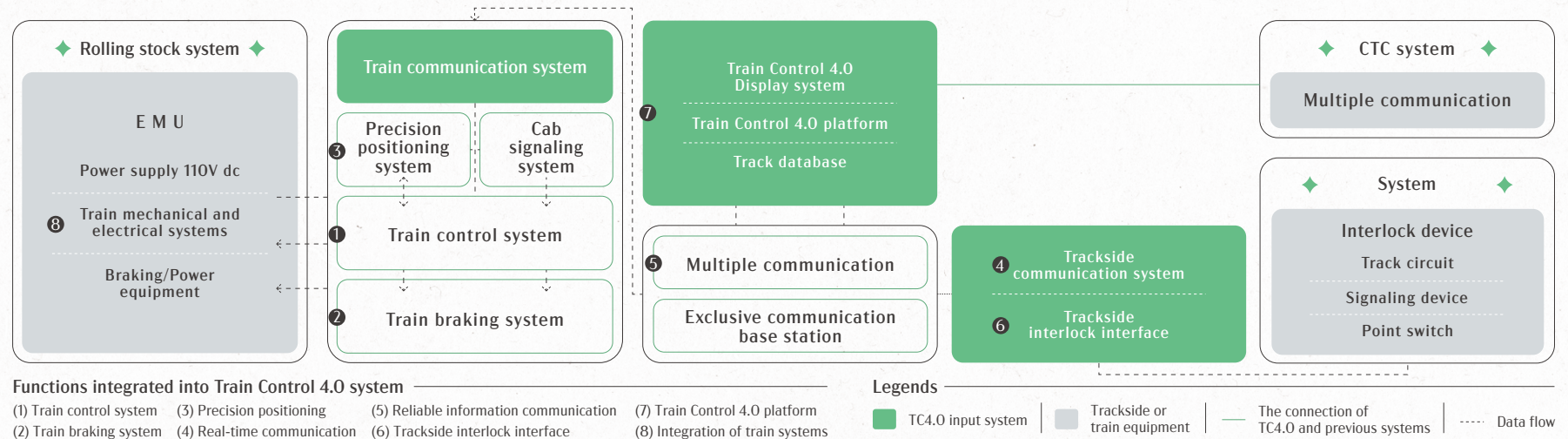


## D Train Control 4.0 System based on Multi-Communication Architecture

The TRA has been committed to improving train operation safety, particularly after the No. 1021 Puyuma Express accident in 2018. The review indicated that the existing traditional train control system still controls train status passively. It could not monitor a train's preventive and control functions remotely, continuously, and in real-time. To prevent similar accidents effectively, the TRA has proposed the development plan for the train control 4.0 system after a holistic review of its software and hardware architecture. Specifically, four functions will be added to the TRA's existing train control system: real-time broadband radio communications, continuous train control, precision positioning, and cab signaling. The radio communication system could be used to monitor the train operation state holistically and continuously. It upgraded the traditional railway train control system to prevent major accident recurrence due to equipment failure and driver maloperation. It is expected that the existing train control system will be improved through technological innovation and development while maintaining a balance between safety and efficiency.

Concerning the project, we applied for a subsidy from the Management Board of the National Science and Technology Development Fund, Executive Yuan. The application was approved on December 30, 2020. The project will be implemented from December 1, 2020, to November 30, 2020 on the Liujia branch line.

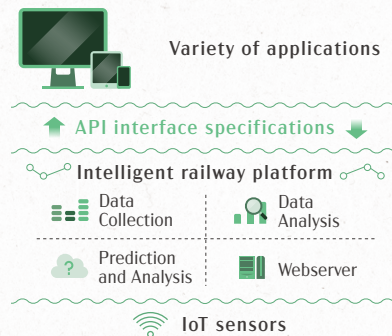
The project's expected short- to medium-term outcome is set to establish a feasible Train Control 4.0 system to enhance train operation safety and efficiency. In the long run, we will integrate the local railway industry's ecological system and strengthen the strategic cooperation with international partners to build Taiwan into a major railway exporter.



## E Taiwan Railways Intelligent Railway IoT Platform

The TRA held a symposium on “Digital Transformation of Rail Transportation Industry” on June 28, 2018. Shortly after, it launched the “Taiwan Railways Intelligent 4.0” program by drawing from peer experiences at home and abroad. The program would also contribute to the MOTC’s vision in railway technological industries in the “White Paper on 2020 Transportation Technology Industry Policies.” The vision involves: “in terms of software, leading technologies such as the Internet of Things (IoT), big data, cloud computing, and artificial intelligence should be incorporated to enhance real-time monitoring and information feedback in passenger services, train control, maintenance, and safety. For Taiwan, there is an urgent need to promote intelligent railway development architecture and strategies by building an intelligent railway IoT platform. With the development of architecture specifications and interface standards for terminals, network, and cloud, we can connect railway with information and communication industry to promote the development of intelligent railway industry.” Taiwan’s advantages in the information and communication industry could be leveraged to promote intelligent railway transportation. To ensure interoperability of sub-information systems of the Transportation Department, Construction Department, Rolling Stock Department, and Electrical Engineering Department, the TRA has planned to promote information integration for an intelligent railway platform. In 2020, the TRA completed preliminary inventory of the information systems and preparation works related to system architecture planning and the outsourcing system planning to a service vendor. It planned to integrate internal information systems and speed up the digital transformation. It was expected that the standardization of information interface specifications could be completed by 2021. The outsourcing plan will be completed in 2022 and the relevant works for the platform will be implemented continuously to enhance Taiwan Railways’ system safety and reliability.

### ◆ Architecture diagram of intelligent railway information platform



#### Intelligent railway platform

Collecting operational data through the systems or IoT sensors. Big data analysis and prediction could generate insights from the data.

#### API interface specifications

Define API interface specifications to facilitate interaction between applications and the intelligent railway platform.

#### Interface for applications

Through the API interface specifications, data could be extracted from the intelligent railway platform for various purposes.

## F Study on CNC Manufacturing of UIC60 Switch Rail Sets

The project aimed at meeting the operational requirements of maintaining the UIC60 switch rail and replacing the switch and stock rail that cannot be used. The UIC60 switch rail is different from the 50kg one as new cross-sectional dimensions and structures are used. Therefore, new processing equipment and tools are required.

Homemade replacement of UIC60 switch and stock rail could reduce costs and lead time. A cost-benefit analysis demonstrated that the cost reduced for 214 sets of the rail was approximately NT\$58,000,000.



Computer numerical control tool machine (CNC) of 10 meters:

In addition to improving dimension precision and reducing production time, the CNC could also ensure quality and improve maintenance efficiency.



CNC working on switch rail flange:

With fewer processing procedures, the CNC could reduce the processing time. In the switch rail case, as only one step is required instead of ten times for handling, the processing time could be reduced from 72 hours to 8 hours.



Bundling of finished rail:

The lines were aligned for the switch and stock rail before bundling for transporting to the trial layout site.



Trial layout for the North Hsinchu Station:

UIC60#12 left hand turnout and stock rail were laid in North Hsinchu's No. 103B track. The point switch could be positioned and appropriately switched, and the train could run smoothly. The rail's alignment and train operation will be monitored continuously.

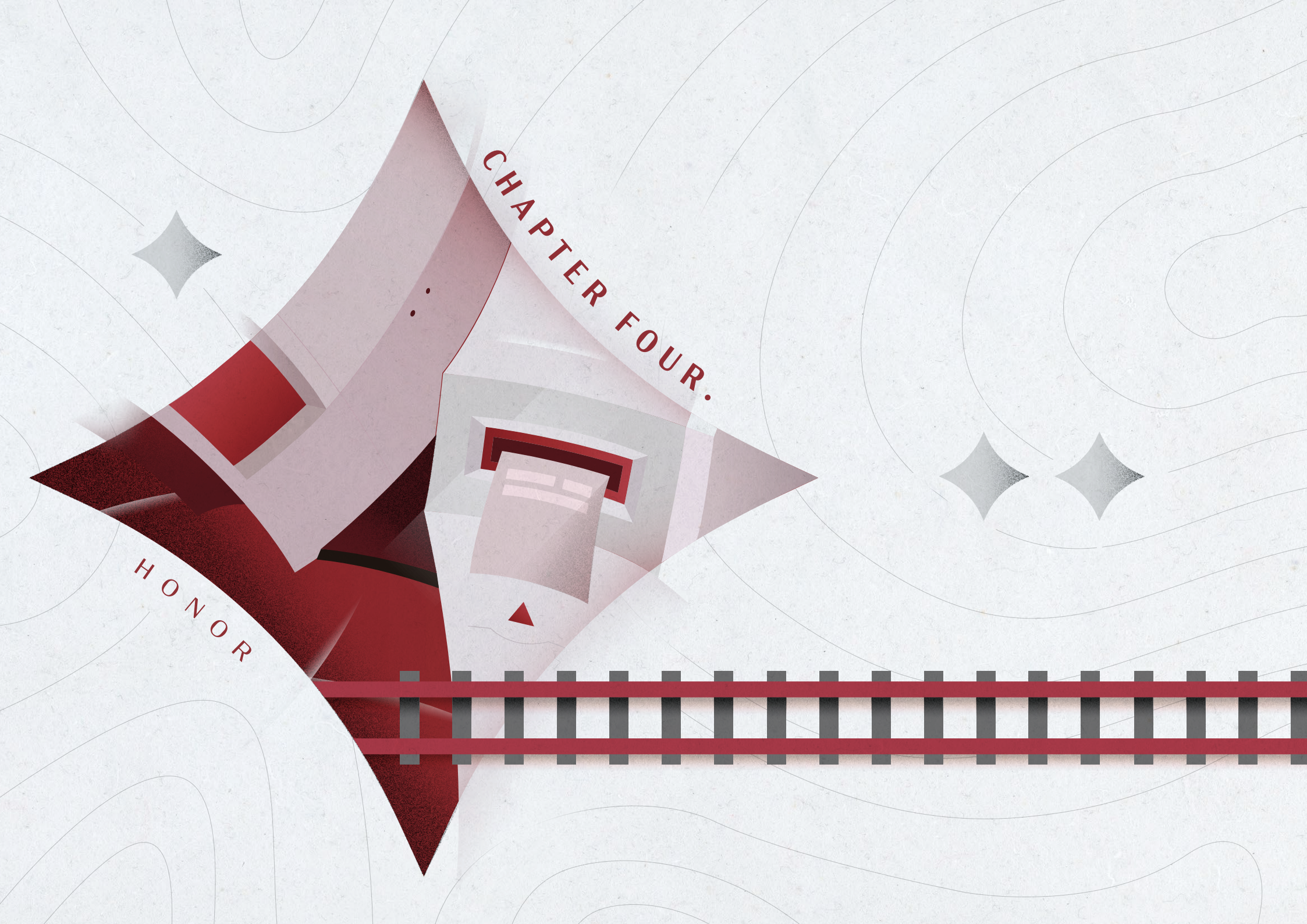


INNOVATION

The image features a light gray, textured background with a repeating pattern of stylized, four-pointed stars. Each star is formed by two overlapping, rounded, teardrop-like shapes. Some stars are filled with a dark gray, grainy texture, while others are empty. A prominent green path, consisting of two parallel lines, starts from the left edge, moves horizontally, turns 90 degrees downward, and then turns 90 degrees to the right, ending near the bottom right. A dark gray spiral binding is visible along the left edge of the green path, suggesting it is part of a notebook or a bound document. The word 'INNOVATION' is written in a bold, sans-serif font, slanted upwards, in the bottom right corner.

CHAPTER FOUR.

HONOR





## 2020 Operating Performance

- I. Profit and Loss Analysis
- II. Passenger and Freight  
Transportation Volumes
- III. Earnings from Affiliate Businesses

## I. ← PROFIT AND LOSS ANALYSIS

### ◆ Comparison of Revenue Statements for 2020 and 2019

Unit: Thousand NT\$

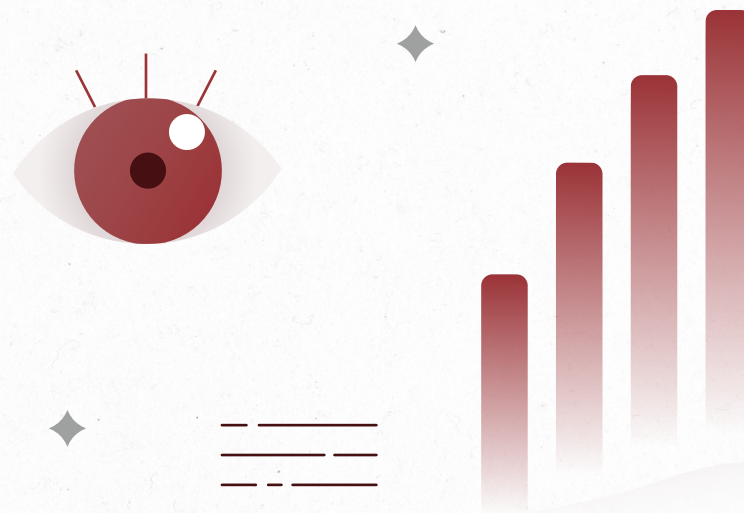
Items	2020	2019	Compared with 2019 %
<b>Total Revenue</b>	<b>25,966,758</b>	<b>28,648,891</b>	<b>-9.36</b>
Passenger Transport Revenue	14,941,480	17,770,071	-15.92
Freight Revenue	601,405	638,062	-5.75
Other Operating Revenue	8,242,112	7,676,367	7.37
Non-Operating Revenue	2,181,761	2,564,391	-14.92
<b>Total Expenses</b>	<b>32,777,476</b>	<b>31,930,756</b>	<b>2.65</b>
Operating Costs	28,464,687	27,033,941	5.29
Operating Expenses	1,263,812	1,278,004	-1.11
Non-Operating Expenses	3,048,977	3,618,811	-15.75
<b>Net Revenue</b>	<b>-6,810,718</b>	<b>-3,281,865</b>	<b>Loss increased by 107.53%</b>

Figures in this table are from audited final accounts for 2019 and preliminary final accounts for 2020.

#### ◆ Analysis of the cause

1. The 2020 total revenue was NT\$25,967 million and dropped by NT\$2,682 million from 2019. Revenue from passengers decreased by NT\$2,829 million, mostly due to the reduced number of passengers because of COVID-19. Other operating revenue increased by NT\$566 million, including an increase of NT\$851 million in government subsidies, which was partially offset by the decrease of NT\$270 million in catering and travel services. Non-operating revenue decreased by NT\$383 million, including a NT\$663 million decrease in real estate disposal and a NT\$243 million increase in miscellaneous income.

2. The total expenses in 2020 were NT\$32,777 million, an increase of NT\$847 million over 2019, of which employment costs increased by NT\$528 million due to an increase in employees and “Benefits-improving Measures—Living Allowances”. The increase in depreciation and amortization of NT\$1.021 billion was due to the acceptance of the ATP system in December 2019 that increased the depreciation of transportation equipment while loss and compensation payments, materials and supplies costs, and rent and interest decreased by NT\$290 million, NT\$205 million, and NT\$184 million, respectively.



## II. ↔ Passenger and Freight Transportation Volumes

### ◆ Passenger and freight transportation in 2016–2020

Year	Number of Passengers (in thousand people)	Passenger Transport Revenue (in thousand NT\$)	Freight Transport (in thousand tons)	Freight Revenue (in thousand NT\$)
2016	230,365	18,126,453	9,215	668,099
2017	232,806	18,132,149	7,764	619,530
2018	231,268	17,853,724	7,720	645,008
2019	236,151	17,770,071	7,313	638,062
2020	203,521	14,941,480	7,255	601,405

## III. ↔ Earnings from Affiliate Businesses

### ◆ A Property Development and Revitalization

TRA in recent years has been active in promotion of private participation, urban renewal, and superfices in land development to increase earnings related to affiliate businesses. In property revitalization, TRA also attached great importance to traditional businesses, such as houses, land, base stations, station malls, parking areas, advertising, and filming, to increase revenue and improve financial performance. In 2020, the total business income from the Real Estate Development Center was over NT\$4,551,510,000.

#### ◆ Property Development Center Business Income

Unit: Thousand NT\$

Items	Scope of businesses	Income (untaxed )
Traditional business	Cement, limestone	2,662
Investment in real estate	Lot No. 9	58,565
Royalty income	Promotion of private participation, shopping malls, real estate, and superfices	748,089
Leasing	Houses, land, base stations, shopping malls, station retail spaces, machinery, parking areas, advertising, and filming	2,518,388
Real estate disposal	Selling fixed assets	1,207,941
Others	Interest and miscellaneous income	15,865
Total		4,551,510

### ◆ B Operation of Affiliated Businesses

#### 1. Promoting TR Bento Actively

In 2020, a total of 7,938,564 TR Bentos were sold (an average daily sale of 21,690), and the total revenue was NT\$566,269,638.

#### 2. Two-day and One-night Cruise-styled Train

The two days and one-night (or more) shuttle services were provided through competitive bidding to attract travel agencies to promote railway tourism. In 2020, there were 31 shuttle trips, with an average seat utilization of 67.85% and revenue of NT\$10,553,775 (including

tickets, Bentos, royalties, and products sold on the train).

### 3. Increased Royalties from Authorized Use of TRA Trademarks and Images

Six review meetings were held in 2020 and the Ministry of Economic Affairs approved 182 categories of registered trademarks and 261 items of goods using the trademarks. Trademark and image licensing revenue (including image royalties) totaled more than NT\$2.44 million.

### 4. Developing Cultural and Creative Businesses through TRA-branded Products and Marketing Events

Launched classic products in conjunction with various festival events, such as (1) Future series products—Future mugs, sports towels, keyrings with hanging ornaments, notes, and tie packaging boxes; (2) EMU900 series products—EMU900 souvenir wine, modeling towels, USB portable disks, tie clip sets, tie packaging boxes, round collar T-shirts, and vests; (3) Cross-industrial cooperation—Taiwan Railways and Kuai Kuai Co., Ltd. jointly launched the pork chop flavor Rice Kuai Kuai; (4) Taiwan Railways and Cosmos Hotel jointly launched a creative food product, “TR Limited Yuzubby Mooncake Gift Box” (Picture 1); (5) The TR Tissot Antique Pocket Watch (Picture 2); and (6) 2021 Taiwan Railways Centennial Calendar (Picture 3).

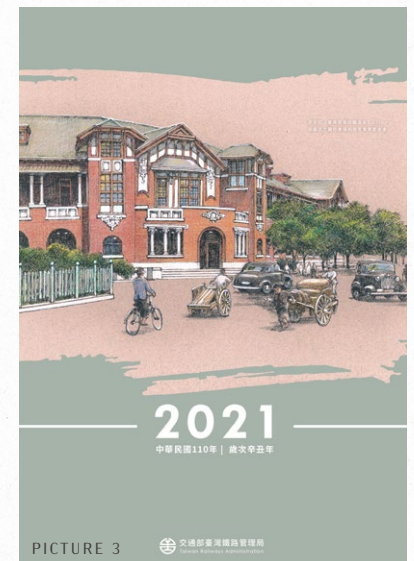
The annual sales of railway products amounted to more than NT\$28.91 million.



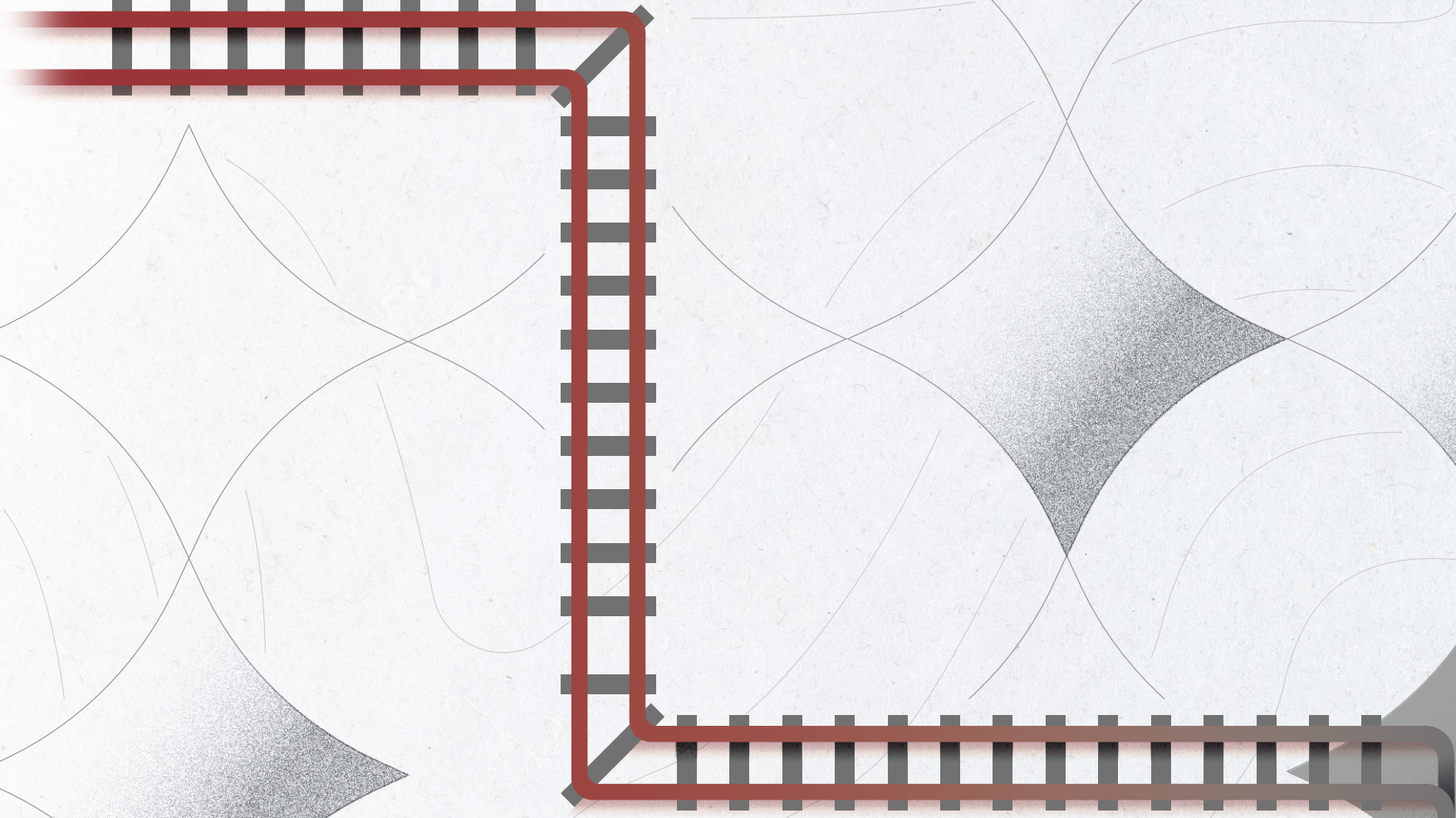
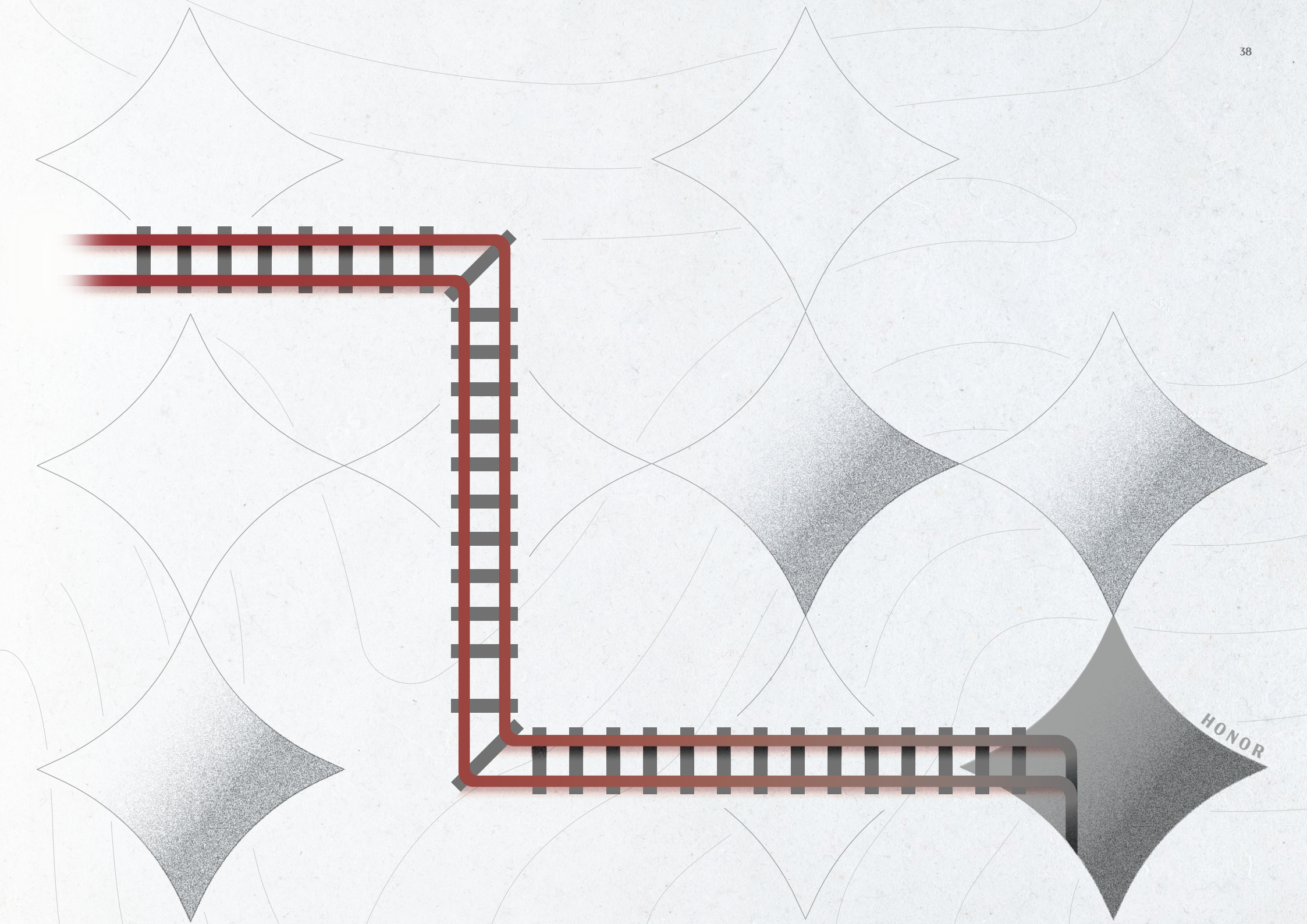
PICTURE 1



PICTURE 2



PICTURE 3



HONOR

CHAPTER FIVE.



ACCURACY





## Operational Performance

**O. Special Report**

**I. Passenger and Freight Transportation**

**II. Property Development and Revitalization**

**III. Operation Management**

**IV. Procurement Operations**

**V. Personnel Affairs**

**VI. Training**

**VII. Occupational Safety**

**VIII. Railway Safety and Investigation**

**IX. Disaster Prevention and Preparation**

**X. Civil Service Ethics**

## 0. ↔ Special Report

### Special Report—2020 Railway Festival (133rd Anniversary of Taiwan Railways) Award Ceremony

For this year's TRA "2020 Railway Festival (133rd Anniversary of Taiwan Railways) Award Ceremony," we extended a special invitation to pandemic-fighting workers who worked in the stations around Taiwan. MOTC Minister Lin Chia-lung was also invited to present the awards. He expressed gratitude to Taiwan Railways workers for their dedication and all-year-round services, particularly the hard work during the pandemic. The 434 front-line pandemic-fighting workers were specifically recognized for their efforts in protecting Taiwan.

Minister Lin said the government had been committed to a sustainable and people-oriented transportation service. The government's Forward-looking Railway Infrastructure Program aimed to provide equally excellent services for urban and rural areas. Taiwan Railways played a crucial role in the efforts. Taiwan Railways' endeavor to provide safe, convenient, passenger-friendly, and warm transportation services could promote urban development, improve the environment, and upgrade people's life quality.



The key visual of Taiwan Railways 133rd anniversary ceremony



A group photo of participants at the anniversary ceremony



Minister Lin presenting the Pandemic-fighting Angel Award



Minister Lin presenting the Friends of Taiwan Railways Award

The annual ceremony was still held according to the regular schedule, with activities usually held in stations across Taiwan canceled due to the pandemic. The Friends of Taiwan Railways (5), Excellent Volunteers (8), and Outstanding Employees (40), and 40-year of Service (10) awards were presented on-site to recognize dedication and outstanding contribution.

The Director-General Chang Cheng-yuan said that this year's event was particularly memorable as there was still the threat of the pandemic. We still made considerable achievements in transportation services, labor relations, requesting more generous employee benefits, operation of subsidiary businesses, and property development during this challenging time. However, many works still need to be completed, including transforming the organization into an enterprise entity, licensing TR brands, railway tourism, aesthetic design, and asset development. All TRA staff work diligently together for Taiwan Railways' sustainable development.



The Director-General presenting the Senior Employee Award



The Director-General presenting the Outstanding Employee Award

## I. ↔ Passenger and Freight Transportation

### A Passenger Transportation

#### 1. Timetable Adjusted on December 23, 2020

- (1) With the electrification of Fangliao–Zhiben and the introduction of the Puyuma Express and push-pull Tze-Chiang Express into operation on the south-link line, two trips by the Puyuma Express per day, and two additional trips of the push-pull type Tze-Chiang Express on Saturday and Sunday were added. This increased the capacity of the south-link line by 7% on weekdays and 13% on weekends.
- (2) Three more trains were added to the south-link line to connect the east and west lines. Consequently, fewer transfers were required. Additionally, as there is no need to replace the Chu-Kuang Express on the south loop line with electric locomotives at Taitung and Fangliao stations, passengers could take the trains more comfortably and conveniently.
- (3) Fangliao station was upgraded to a second-class station and became a tourist transfer center in the Pingtung area, with five Puyuma trains and two (four on weekends) push-pull type Tze-Chiang trains stopping by per day.
- (4) Diesel trains were reduced 18 times (from 36 to 18 times) on the south-link line and 11 times for the Kaohsiung railway underpass section (from 25 to 14 times) to improve the riding experience.
- (5) By replacing diesel trains with electric ones, the shortest travel time between Kaohsiung and Taitung can be shortened by 27 minutes and between Kaohsiung and Hualien by 39 minutes.

#### 2. Provide Safe and Punctual Transportation Services

The 2020 passenger trains' punctuality rate was 92.34%, 1.37% higher than 90.97% in the same period of 2019. The main reasons for train delays were equipment failures, natural disasters, level crossings, death and injury accidents, and invasion of objects. In implementing the recommendations of Executive Yuan's comprehensive expert evaluation committee, TRA has reviewed and improved the maintenance process and strengthened staff training on professional competence. In 2020, equipment failures significantly decreased by 14.02% from the same period in 2019. In the future, TRA will continue to strengthen the maintenance of equipments and accelerate its replacement to provide safe and punctuate services.

#### 3. Implement the Taipei–Luodong–Hualien Railway and Highway Combined Transportation

TRA cooperated with highway transportation operators (Capital Bus, Kamalan Bus, Metropolitan Transport Corporation, and Kuo-Kuang Moter Transport) to provide combined transportation services. In 2020, 125,760 people used the service, with an average number of 344 passengers per day.

### B Freight Transportation

1. Concerning the batch (44 sets) of the railway flatcar aluminum bridge plates, the contract amount was NT\$2,369,850 (including tax). The design drawings for the bridge plates were approved on August 25, 2020, and SGS Taiwan Limited carried out the static test on November 11 in Wugu District, New Taipei City. As the test results conformed to the standards, the dynamic loaded test was performed on November 25 in the Army Moter Vehicles Depot. Based on satisfactory test results, mass production of the bridge plates began at the end of November.
2. Under the revision of Article 4 of the Regulations for Train Driver Qualification, License Issuance, and Management of Public and Private Railways, for the types of driving licenses of state-owned railway train drivers, the type of "shunting locomotive drivers and depot train drivers" was added (the third point of the revised article).
3. The vehicle history database was established (six locomotives in the first batch, six in the second, and six in the third). A RAMS (reliability, availability, maintainability, and security) analysis in the warranty period was also carried out (five in the fourth (4-1) and one in the fifth (4-2)). This ensured a smooth operation of the 24 newly purchased diesel-hydraulic shunting locomotives.
4. We also arranged freight cars and other transportation equipment in advance to handle the military transportation needs of the army.

## II. ↔ PROPERTY DEVELOPMENT AND REVITALIZATION

### A Property Development

We have strived to maximize public construct benefits by responding to social and economic changes and combining transportation construction with property development. All the development projects were handled according to our established mechanisms of property development and subsidiary operations, as per the Act for Promotion of Private Participation in Infrastructure Projects, Urban Renewal Regulations, and National Property Act, and in line with the government's railway construction plan, Executive Yuan's program to speed up urban renewal, and local government's urban development plans.

So far, by promoting private participation in infrastructure projects, urban renewal, and superfices, we performed well in land development. From the signing of the development contract for Zone No. 9 of the Taipei Main Station District in December 2004 to the signing of a land development contract between investors and Taipei City government on C1/D1 of the Taipei Main Station District (the east half block), the total income from land development of all projects reached NT\$5,637 million. As illustrated in detail in the table below, revenue related to land development and operation in 2020 was NT\$471,250,000.



Unit: Thousand NT\$

Land development mode	Project	Revenue (before tax) in 2020	
		Rent	Licensing fees
Promotion of private participation in Infrastructure Project	Development of Zone No. 9 of the Taipei Main Station District	58,565	163
	The Nangang Station Building BOT	55,016	97,300
	Songshan Station compound building and parking tower BOT	57,397	55,965
	Wanhua (east and west) station building BOT	42,617	-
	Taichung Station Railway Cultural Park BOT	1,418	18,301
Superficies	Banqiao Station District (special zone 2) international tourism hotel build-operate project	15,146	9,191
	Jingxiu Road, Yuanlin Township, Changhua County superfices	286	830
	Fuhe Section, Zhongzheng District, Taipei City superfices	1,485	3,300
	Baoqing Section, Songshan District, Taipei City superfices	4,025	24,200
	Chenggong Section, Zhongzheng District, Taipei City superfices (126 and 127)	4,257	10,419
	Chenggong Section, Zhongzheng District, Taipei City superfices (125 and 129)	3,100	8,277
	Sub-Total	243,312	227,946
Total			471,258

Additionally, in promoting the “Kaohsiung Railway Station East Old Dormitory Area” urban renewal development and business solicitation project, we signed a contract with the best applicant, Titan Development and Construction Co., Ltd., on February 6, 2020. It is expected that the building's total floor area could reach more than 35,000 ping (115,710 square meters). The value of the entire property to be recovered by TRA is at least NT\$8 billion.



Signing Ceremony of the Urban Renewal Project of Kaohsiung Railway Station East Old Dormitory Area

We worked with National Taiwan Museum to implement the “Restoration and Utilization of Historic Site of the Railway Department of the General Governor of Taiwan and Museum Park Construction Plan.” The National Taiwan Museum restored the historic sites by leveraging its expertise. The two parties collected railway cultural relics to build an excellent museum park with complete service functions. The Railway Department Park was officially opened on July 7, 2020, revitalizing the national historic buildings to showcase the past of Taiwan Railways.



The opening of National Taiwan Museum's Railway Department Park

The Taichung Railway Cultural Park BOT project launched in 2018, and the store street of the new station mall was opened officially on December 6, 2020. The first and second floors attracted 43 tenants, covering food, gifts, theme restaurants, and grocery shops. Passengers who access the station both from the first and second floors can enjoy a convenient shopping experience.



Taichung Railway Station New Station Shopping Mall's Food Street



Taichung Station Railway Cultural Park—Old Rail Track Stage

TRA participated in urban renewal and recovered Utek Kotota (No. 1 Wanquan Street, Datong District, Taipei City). All 41 units and 31 parking spaces were sold through bidding as of July 9, 2020. The total proceeds were NT\$1,337,495,888.

As of 2020, five projects are under development. Two are urban renewal projects planned by the government, and three are superficies. Details of the projects are illustrated in the table below.

Urban renewal projects (government planning)				
	Project	Base area	Signing date	
Contracted Project in 2020	Urban Renewal Project of Kaohsiung Railway Station East Old Dormitory Area	27,744 m <sup>2</sup>	109.2.6	
Planned Projects	Urban renewal of Keelung Railway Station	83,000 m <sup>2</sup>	-	
	Urban renewal of Yuanlin Railway Station’ s Surrounding Area	18,364 m <sup>2</sup>	-	
Superficies				
	Project	Base area	License term	Signing date
Contracted Project in 2020	Yucheng Section, Nangang District, Taipei City superficies	1,774 m <sup>2</sup>	70 years	109.6.29
Planned Projects	Andong Street Dormitory superficies	12,029 m <sup>2</sup>	50 years	-
	Hualien Phase Six Replotting Hotel Area, build and operate project	24,876 m <sup>2</sup>	50 years	-
	New Taipei City, Shulin Dormitory superficies, build and operate project	10,127 m <sup>2</sup>	50 years	-

## B Property Revitalization

### 1. Station Shopping Mall/Travel Service Space

As per relevant provisions of the “Act for Promotion of Private Participation in Infrastructure Projects,” we introduced private investments and creativity to build stations into local business centers. With a full range of travel and tourism services, the stations became the perfect places to attract people and businesses. By the end of 2020, the total amount of shopping-mall royalties from the four private participation projects in Nangang, Taipei, Banqiao, and Xinzuoing Stations that had participation was over NT\$309.83 million. We also worked to recruit tenants for small and medium-sized station shops. One vendor retrofitted Zhubei’s old station into a noodle restaurant using original facilities, including reusing ticketing windows to deliver food and the bulletin board as a menu post. These unique features attracted many diners. In Luodong Station, DCC Luodong Square was branded as a shopping mall, and through its operation, in a leisure space surrounded by wood, visitors were reminded of Luodong’s history and culture as a timber center. The annual rental income of the two was approximately NT\$2.74 million.



Opening of the shopping mall on the 2nd floor of Luodong Station (Courtesy of Development Consultants Co., Ltd.)

### 2. Warehouses and Cultural Assets as Creative and Cultural Tourist Attractions

We leased out old warehouses to develop and revitalize TRA’s assets. To effectively maintain, manage, and utilize TRA’s cultural assets (historical sites, buildings and old dormitories), TRA has worked with local governments to renovate these buildings and turned them into exhibition venues and cultural landmarks, providing leisure venues to the public. In 2020, 78 warehouses were rented for a total rental income of NT\$48.18 million.

### 3. Real Estate Rental

We developed a comprehensive plan for the available real estates in the peripheral areas around train stations. Without affecting the original purposes, the idled spaces, dormitories, office spaces, lands, and parking lots were developed and operated in diversified ways. As of 2020, a total of 713 spaces and 128 parking lots have been rented, with a total rental income of over NT\$868,970,000.

### 4. Rental Spaces for Advertising at Train Stations

Under the premise of aesthetic design of train stations, we continued to offer station space for advertising. Advertising options included posters, LCD, and car body painting in cars and posters, lightboxes, and multimedia in stations.

The advertising spaces were rented out for one or several stations. The successful bidder could plan the advertising location, size, and media form to maximize the advertising effects. The 2020 total advertising rental income was more than NT\$110,810,000.

Additionally, the Forestry Bureau jointly hosted the “Satoyama Train Farewell Exhibition” along the west corridor of Taipei Main Station on July 7, 2020. With exhibits like prose, images, paintings, and embroidery, the event evoked memories of the Satoyama Animal Train launched by the Forestry Bureau and TRA.



Satoyama Train Farewell Exhibition

#### 5. Filming Location Rentals

For promoting cultural industries and TRA's image, as well as revitalizing TRA's assets, spaces were offered for filming dramas, movies, documentaries, and advertisements. In 2020, there were 27 such rentals, and the rental income was more than NT\$780,000.

#### 6. Rental Spaces for Base Stations

To facilitate travel, improve telecommunication quality, and support the government's telecommunication liberalization policies, we offered train stations, estates, and land to telecommunication operators to set up their mobile phone base stations as long as they do not compromise railway safety and telecommunication quality. The 2020 rental income was approximately NT\$34,930,000.

#### 7. Rental Spaces for Solar Photovoltaic Modules

To contribute to Executive Yuan's policy target of 20% renewable energy in the total electricity generation by 2025, we offered the installation of solar photovoltaic (PV) modules on rooftops of public buildings. Besides the "Rental Agreement on Installing Solar PV Modules in Chaozhou Vehicle Base" that has been executed and implemented, the "Agreement on Hualien-Taitung Building Rooftop" and "Agreement on Installing Solar PV Modules on Hualien Workshop Rooftop" were also implemented in 2018 and the first quarter of 2020 respectively. The "Agreement on Taitung Rolling Stock Sub-Branch's Workshop Rooftop" and "Agreement on Rooftop of Taitung Station and Peripheral Buildings" were likewise executed in the second and fourth quarters of 2020 for a 20-year leasing term. Installing equipment for the two agreements are currently under construction. The total annual rental income from the above-executed agreements was approximately NT\$4,630,000. We will continue to identify suitable places for PV modules to develop the emerging green energy industries.

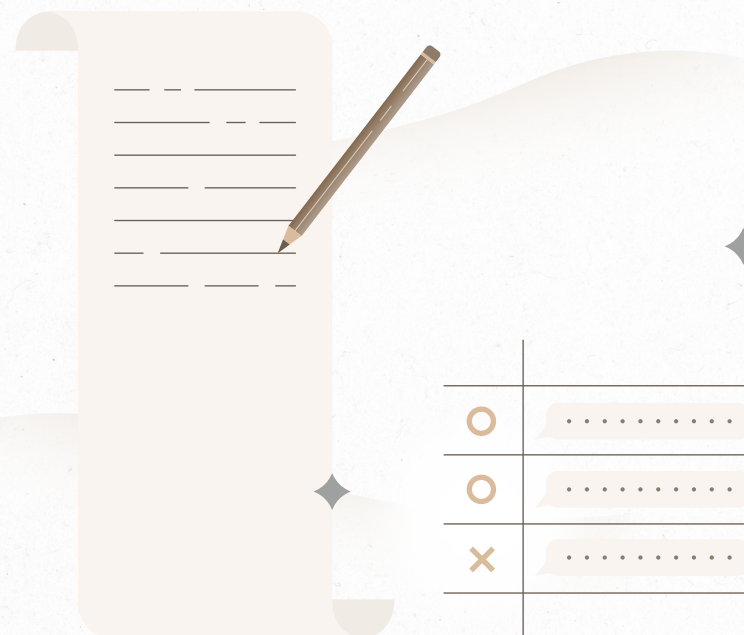


PV modules on Hualien workshop's rooftop (Courtesy of Li R Shin Corporation)

### III. ↔ Operation Management

As part of our "customer-oriented" business philosophy, "TRA passenger satisfaction survey" was carried out to understand the latest public opinion

In 2020, a "TRA passenger satisfaction survey" was carried out to collect information from passengers on various measures adopted by TRA, travelers' satisfaction and recommendations, and the overall satisfaction score. Relevant business units could use the data to review their service gaps, develop countermeasures, and enhance service quality.



## IV. ↔ PROCUREMENT OPERATIONS

### A Procurement Statistics

We handled 847 procurement projects in 2020, where 342 were related to construction work, 290 to service, and 215 to property. The total amount exceeded NT\$13,539,020,000. The procurements included the TRA Electrical Engineering Intelligence Enhancing Program (terminal devices and their installation), 50KG-N and 60E1 rails, carriage video CCTV and EMU600 information screens, and the Ticketing System Integration Program—Back-up Systems Center extended procurement project, TRA Electrical Engineering Intelligence Enhancing Program (Taiwan Optical Fiber Transmission Network System Upgrade Project), 6-year Plan for Railway Safety Improvement (Xiaqijie Bridge, Qiwu-Lanchuan Bridge, Erjie drainage channels, and Sijiexi Bridge Reconstruction Project), and 2-year Station Elevator and Escalator Upgrade Project (2020–2021), station cleanliness maintenance service in 2021–2023, credit card payment service in 2021–2023 and two-year maintenance and operation management of the wireless radio system for train dispatching.

### B Operational Regulations Revised to Improve Efficiency in Procurement and Material Management

#### 1. Roles and Responsibilities for Procurement Projects and Internal Control Mechanisms Revised to Improve Procurement Efficiency

Corresponding to revisions made by the MOTC on the provisions authorizing acceptance at a reduced price for procurement projects above a set amount, given the existing organizational structure, TRA issued the “Roles and Responsibilities for Procurement Projects and Internal Control Mechanisms” (January 2020 version) on January 3, 2020. To enhance the branches’ authority in property and service procurement and facilitate budget implementation, TRA issued another “Roles and Responsibilities for Procurement Projects and Internal Control Mechanisms” (November 2020 version) on November 17, 2020.

#### 2. Operating Procedures Revised for Reproting Non-performing Vendors on the Government’s Procurement System according to Meet Regulations

In coordination with the official document from the Public Construction Committee of the Executive Yuan, TRA revised the “Operating Procedures for Reporting Non-performing Vendors on the Government’s Procurement System” and issued a revision on August 24, 2020 to comply with relevant regulations and operational requirements.

#### 3. Procurement Instructions to Tenderers and Contract Terms Revised according to Relevant Regulations from Public Construction Committee of the Executive Yuan

- (1) “Information Services Procurement Contract” was revised on March 16.
- (2) “Procurement Contract for Turnkey Project” was revised on April 20.
- (3) “Procurement Contract for Construction Work” was revised on April 30.
- (4) “Procurement Instructions to Tenderers” and “Bidding Instructions for Procurement below Publication Amount but above its One-tenth to the Most Advantageous Tender” were revised on May 29.
- (5) “Service Procurement Contract” was revised on June 15.
- (6) “Procurement Contract for Construction Work,” “Service Procurement Contract,” and “Procurement Contract for Public Construction’s Technical Service” were revised on July 30.
- (7) “Procurement Instructions to Tenderers” and “Bidding Instructions for Procurement below Publication Amount but above its One-tenth to the Most Advantageous Tender” were revised on October 30.
- (8) “Professional Construction Management Contract for Public Construction” was revised on November 16.
- (9) “Procurement Contract for Construction Work,” “Procurement Contract for Turnkey Project,” “Service Procurement Contract,” and “Procurement Contract for Information Service” were revised on December 16.

#### 4. Revised “List of Authorized Self-Purchased Materials” to Improve the Efficiency of Material Supply

The limit of authorized self-purchased materials was adjusted, and the “List of Authorized Self-Purchased Materials” was revised to improve the efficiency of material supply. The revision was implemented on January 1, 2020.

#### 5. In Line with the Localization Policy of the Executive Yuan and TRA, we developed the Operational Procurement Guidelines for Taiwan Railways’ Localized Research and Development

To improve the efficiency of local procurement, we published the “Procurement Operational Guidelines for Taiwan Railways’ Localized Research and Development” on May 22, 2020, as guidance for relevant units.

### C Benchmarking, On-the-job Training, and Operational Audit

1. In March and August 2020, we visited the Taipei Rapid Transit Corporation and the Taiwan High Speed Rail Corporation’s Zuoying Base for benchmarking. We were briefed on the corporations’ material-management information system framework and operational model, based on which we can plan TRA’s system in the future.
2. In July 2020, to enhance professional capabilities, 80 procurement officers throughout TRA were trained with the necessary skills.
3. In August 2020, we inspected the identification of ten major risk factors and their countermeasures. Additionally, we carried out on-site small-amount procurement audits in the Northern, Central, and Southern Region Supply Workshops. They were required to implement relevant operational regulations according to their business characteristics to ensure the quality and safe storage of the procured materials.

4. From July to September of 2020, we inspected TRA branches to safeguard the rights of the contracted workers. In 2020, we inspected six branches, which were selected randomly.
5. In October 2020, a training course was provided on “Construction Cost Estimating System” to enhance construction procurement officers’ understanding of the procedures and the use of the construction coding system.
6. Further training of procurement officers was provided in October 2020. The service procurement training for construction projects involved 69 officers in the first round, and the property procurement training involved 48 officers. Case studies and common mistakes were provided to improve procurement officers’ practical abilities.
7. The 2020 Workshop on Auditing Self-purchased Materials was held in December 2020. A total of 70 procurement or acceptance officers handling self-purchased materials participated in the workshop.



Materials to be inspected appropriately stored in a particular area



Ten major risk factors and their countermeasures and small-amount procurement audit



Benchmarking- Taipei Rapid Transit



Material management audit in Northern Region Supply Workshop



Benchmarking- Taiwan HSR Zuoying Base



On-site inspection of new workshop planning and office equipment configuration in Chaozhou

## V. ↔ PERSONNEL AFFAIRS

### A Staff On-the-job Training

On November 12, 2020, the Jide Fulai Business Management Consulting Firm’s General Manager, Wang Shicheng, delivered a lecture on core education “Service”—“All-Staff Marketing and Comprehensive Services—Charming Passengers at Contact Points.”

### B Course Lecture on Staff Assistance Program

1. On July 29, 2020—Full Staff Training on Staff Assistance and Caring—“What can we say other than cheer up? Empathy Course for Everyone” was delivered by clinical psychologist Su Yixian, deputy director of True Colors Psychotherapy Institute.
2. August 3 and 4, 2020—In-depth training on the staff caring—“EAPs Concepts and Staff Caring Awareness” and “Sensitivity and Empathy from the Perspective of Caregivers” courses were delivered by Huang Zongci, a psychologist at “Teacher Chang” Foundation.
3. December 24, 2020—Staff Assistance Program—“Happy Message Essay Contest Award Ceremony and Special Lecture Sharing”
  - (1) The special lecture of “Happy Moment of Meeting Taiwan Railways—No Need to Travel Far Away to Be Touched as True Beauty Is Here along the Taiwan Railway” was delivered by Prof. Su Zhaoxu from the Department of Airline and Transport Service Management, National Kaohsiung University of Hospitality and Tourism.
  - (2) “Happy Message Essay Contest Award Ceremony”



Chief Secretary Yan Wenzhong presenting the happy message board to the best authors

## C Award Ceremony for Model Civil Servants in 2020

The award ceremony was held at the 5th-floor auditorium of the MOTC on July 3, 2020 (Friday). It was presided over by the MOTC Minister Lin Chia-lung. A total of 35 model civil servants were honored at the ceremony. They included the Deputy Director General Tu Wei, Chief Lin Yijing, Chief Chen Jinshun, and Chief Liang Yuyu.



Minister Lin Chia-lung with the model civil servants of TRA

## D 2020 Annual "Director General Cup" Basketball Championship

To enhance staff friendship, strengthen the body, and develop team spirit, the 2020 "Director General Cup" Basketball Championship was held on October 28–29, 2020 (Wednesday and Thursday). There were 25 teams in total (15 in the men's group; ten in the women's group), with a total of 285 team members. After a competitive competition, the Hualien recreational team won the first prize, followed by Keelung recreational team, Taitung recreational team, and Yilan recreational team, respectively. In the women's group, the Kaohsiung recreational team won the first prize, followed by the Taichung recreational team and TRA headquarter recreational team.



Deputy Director General Feng Huisheng and the basketball players



Chief Secretary Yan Wenzhong presenting the prize to the Men's Champion Team



Personnel Office Director Wu Junlin presenting the prize to the Women's Champion Team

## E 2020 Family Day

To enhance the affection among employees and their families, each unit planned and held family day activities separately. The different activities designed by each unit promoted family interaction and harmony. All of the activities were concluded successfully.



The Tickets Administration Center held the 2020 family day by inviting colleagues and their children to participate in DIY activities together



Kaohsiung Transportation Branch held the event by touring the cultural and creative industry park of Chiayi Distillery

## VI. ↔ TRAINING

### A Training Missions and Tasks

In addition to continuously promoting the six core values of “Safety, Accuracy, Service, Innovation, Unity, and Honor,” the staff training objectives of 2020 include providing quality railway public transportation services and other diversified operations and ensuring the sustainable development of Taiwan Railways by training all types of railway professionals. To address the issue of limited capacity in the TRA Employees’ Training Center and enhance the local training mechanism, we conducted training in each region. Up to the present, training center preparatory offices have been established in the central region (Wuri Construction Maintenance Corps), southern region (Chaozhou Base), and eastern region (Hualien Workshop). Given existing equipment and on-site internship demands, practical and further training courses were provided to enhance the professional capabilities. Additionally, we produced a series of digital courses on accident prevention (pain points learning), including micro-videos and digital courses, to refresh students’ memories, shorten training hours, and respond to emergencies more rapidly.

### B Training Provided in 2020

Due to the impact of COVID-19, the training courses were suspended from March to May 2020. The TRA Employees’ Training Center organized 127 classes for 5,435 employees and used 47,900 person-days. The training was as follows:

1. Orientation training for new employees—to help new employees to adapt at the job as soon as possible, basic training classes (TRA training), professional skills training (department training), and field operational training (rolling stock inspection branch training) were provided for each batch of new employees passing special railway examination. The total number of classes was 50, with 2,225 employees and 17,488 person-days.
2. Rail professional skills training—to enhance the staff’s professional and technical ability, transportation, operation, and dispatcher courses were provided to ensure the safety of operation and pass down professional techniques. The total number of classes was 57, with 2,346 employees and 26,046 person-days.
3. Professional procurement training—to enhance the procurement officers’ familiarization of the government procurement law and professional knowledge, we organized introductory training, retraining, and material management courses. The total number of classes was 4, with 197 employees and 1,471 person-days.
4. Professional training on information systems—to comply with the development of digital government and strengthen the control of information security, the training of management system or information security related training was provided, such as introductory classes for video and audio editing. The total number of classes was 1, with 56 employees and 56 person-days.
5. Occupational safety competency training—to protect the health and safety of workers, we

organized classes for safety and health education and training for class-1 and class-3 manager of occupational safety and health affairs to prevent occupational hazards and improve workplace safety. We organized four classes, trained 234 employees and used 942 person-days.

6. Personnel affairs and anticorruption competency training—to enhance the professional capabilities of personnel and ethics professionals, relevant training courses were provided, such as part-time personnel affairs staff training seminars, ethics review sessions, consensus camps, and rank promotion training. In total, five classes were provided, 190 employees were trained and 1,229 person-days were used.
7. Management competency training—to improve the management ability or technical ability of middle and senior personnel or supervisors in TRA, various management practice classes were planned, such as RAMS track system specification and empirical application classes. In total, one class was provided, 50 employees were trained and 100 person-days were used.
8. Instructor training—to promote instructor certification and improve teaching quality, external specialized agencies were appointed to handle the certification of teaching skills courses for internal instructors. In total, three classes were provided in north, central and south of Taiwan with 72 trainees, 59 employees were certified and 288 person-days were used.
9. Other training—in accordance with national construction policies and affiliated businesses development, two professional courses were offered, such as course of railway construction route blockades (substitute training course for Railway Bureau, MOTC) and course of asset development. In total, two classes were provided, 78 trainees and 322 person-days were used.



A group photo of 2020 newly recruited employees and Director-General Chang Cheng-yuan



52nd Transportation Course graduation photo



46th Train Driver Course graduation photo

## VII. ↔ OCCUPATIONAL SAFETY

### A Improve TRA's Workplace Safety Culture

TRA regards safety culture as a core value. A total of 12-hour occupational health and safety courses were provided as part of the basic training for newly recruited employees. The four-hour zero-hazard dangerous activity prediction course aims to instill safety concepts in new employees to build a safety culture and reduce hazards. This year, 658 employees participated in the training.

### B To Promote Employees' Physical and Mental Health

1. Occupational health and safety on-site health consultation services were held once a month, three hours a time, for a total of 12 times.
2. To provide health promotion staff with the knowledge and skills needed to promote workplace health, primary education and training for health promotion staff in the workplace were provided on October 19, 2020, for nurses, heads of occupation safety, and labor representatives of all branches.



Occupational health and safety on-site health consultation service

### C Strengthen Education and Training in Health and Safety

The safety and health education and training for class-1 manager of occupational safety and health affairs (one class for 50 people), the safety and health education and training for class-3 manager of occupational safety and health affairs (one class for 119 people), and ISO 45001/CNS 45001 internal auditors (nine classes for 447 people) were held respectively. Introduction to occupational health and safety regulations and hazard identification (four classes for 395 people) was provided to first aid personnel (two classes for 117 people); the interpretation of ISO provisions (four classes for 82 people) was provided to first aid personnel as on-the-job training (further training; six

classes for 343 people) and 2020 new employees on-the-job training (one class for 32 people); and occupational accident investigation training (one class for 40 people) and leading auditors training course (one class for 20 people) was provided to enhance health and safety competency of the employees and build a safe and healthy working environment.



First aid personnel on-the-job training



Training of occupational health and safety management system leading auditors

### D Continuously Promote Occupational Health and Safety Management Systems (OHSAS 18001 & ISO 45001)

The implementation of the health and safety cross-check, leading auditor guidance check, and evaluation system was aimed to build institutionalized management, effectively control harm from the facilities and the environment, enhance TRA's workplace safety culture, and promote the physical and mental health of employees. By the end of November 2020, 38 units were revalidated for ISO 45001.

### E Improve the Health and Safety Standards in Construction Projects

For major construction projects, strengthened health and safety operation inspections were carried out at least once a month. The inspection team was led by the Head of Occupational Safety and comprised the branches' counterparts and occupational health and safety personnel from the occupational safety offices. External experts were invited to participate in each inspection. Major construction projects inspected in 2020 included: (1) Six-Year Plan for Railway Safety Improvement—Phase 2 Niupu River Bridge Reconstruction Project; (2) Six-Year Plan for Railway Safety Improvement—Tainan Station Historic Sites Protection and Revitalization Project; (3) Relocation of Kaohsiung Workshop to Chaozhou and Development Plan for the Original Site—No. CL121 Chaozhou Workshop (including the Southern Region Supply Workshop) Main Construction Project; (4) Six-Year Plan for Railway Safety Improvement—(Retrofit and Installation Project for Interlocking System of the Crossover between Qidu and Badu), Reconstruction Project for Changhua Station Tourism

and Transportation Facilities, Construction Project for Material Stocking Site of Taitung Construction Branch; (5) Six-Year Plan for Railway Safety Improvement—Phase 2 Reconstruction Project for Wencuobu River Bridge; (6) Six-Year Plan for Railway Safety Improvement—Phase 2 Reconstruction Project for the West Line Shanjiao Drainage Bridge; (7) Six-Year Plan for Railway Safety Improvement—Reconstruction Project for the Third Shuangxi and Xinshe Bridges along Yilan Line; (8) Six-Year Plan for Railway Safety Improvement—Phase 2 North-link Line K51+170-500 Mountain-Side Slope Safety Protection Facilities; (9) Six-Year Plan for Railway Safety Improvement—Platform Extending and Widening Project for Yilan Line's Zhongli Station; (10) Six-Year Plan for Railway Safety Improvement—Project for Adding Accessible Elevator in Neili Station; (11) Six-Year Plan for Railway Safety Improvement—Platform Raising Project in Taipei Construction Branch; and (12) Six-Year Plan for Railway Safety Improvement—Reconstruction Project for Yilan Line's First and Second Shuangxi Bridges.



Strengthening inspection of health and safety operations

## F

### Measures to Improve Occupational Safety

1. Horizontal communication and information sharing among branches of the same nature after occupational hazards.
2. Enhance post-disaster feedback and improve the occupational safety management system
  - (1) Strengthen the ability to explore the causes of accidents. On May 13, we invited Manager Hong of the SGS Taiwan Ltd. to deliver a lecture on the techniques and key points of accident investigations, review the preventable checkpoints of accidents, identify the reasons for the failure of checkpoints, and formulate countermeasures to prevent a recurrence.
  - (2) On June 5, we invited Manager Hong of the SGS Taiwan Ltd. to guide the implementation of the occupational safety management system PDCA after the occupational hazard.
3. Enhance the implementation of cross-checking
 

Among the branches' cross-check reports, about 25 per quarter were sent to external experts to review, particularly for falling, electric shocks, hitting, and document implementation. For those who conducted thorough inspection and provided feasible actions for improvement, they were given commendations, and it's considered to enhance TRA's occupational safety.
4. Introduce remote real-time dynamic checks in working areas. This enabled detection by mobile phones and computers. For any defects identified, immediate notice of improvement could be sent.



Enhance horizontal communication after occupational hazards and strengthens the impression with film footage.



Strengthening the use of technical safety measures, and thereby increases verification frequency.

## VIII. ↔ RAILWAY SAFETY AND INVESTIGATION



To strengthen the safety and inspection order work of the railway stations, the TRA Operation Safety Department carried out the 74th railway safety week event on November 3–9, 2020. Meanwhile, level crossing safety notification and related inspections were expanded to maintain TRA's operation safety.



Preparing for the railway safety week



Cable inspection operations



Preparing for the inspection route



Examining the implementation of railway safety week activities

## IX. ↔ DISASTER PREVENTION AND PREPARATION



### Rail Safety Drills for Mobilization, Disaster Prevention, and Counter-terrorism

In 2020, TRA conducted large-scale comprehensive drills for emergency responses and rescue (repair) in case of various railway disasters. Five districts in total had five drills, with 997 people mobilized. Additionally, TRA corps held the “TRA Building Disaster Prevention Drill” at the Taipei Main Station on October 21, 2020. As a precautionary measure against the pandemic, the drill was separated as the “TRA Building On-site Evacuation Drill in Earthquakes” and “Five Major Team Drill.” About 950 people participated in the first part and 25 in the second part.

No.	Units	Date	Location
1	TRA Corps	109.10.21	TRA Building
2	Taipei Brigade	109.9.17	Xiangshan Station
3	Taichung Brigade	109.9.10	Ershui Stations
4	Kaohsiung Brigade	109.8.19	Jiuqutang Station
5	Yilan Brigade	109.9.24	Erjie Station
6	Hualien Brigade	109.9.3	Kangle Station



Drills taking place in different districts

## B Training of Military Service Teams

The TRA and Armed Force Reserve Command of the Ministry of National Defense held marshal training of the military service team. Two independent district teams trained a total of 90 personnel. They successfully conducted the training in Taichung construct branch (August 7, 2020) and in Kaohsiung construct branch (August 21, 2020).

## C Civil Defense Teams Received Year-round Training

This training was to enhance civil defense knowledge; deepen the concept of civil defense; enhance the operation function of the civil defense team; establish the function of disaster prevention and rescue, anti-terrorism, self-defense, and self-rescue in peacetime; and implement the national defense mobilization preparation to effectively support military service in wartime and ensure national security. Civil defense teams received year-round training: A total of 402 people were engaged in six events. Lecturers from civil defense, firefighting, and public health authorities were engaged to conduct comprehensive training on civil defense formation, disaster prevention and rescue, first aid for wounded people, and general knowledge of fire fighting for on-site personnel.

No.	Unit	Date
1	TRA Corps	109.9.23
2	Taipei Brigade	109.7.28
3	Taichung Brigade	109.8.5
4	Kaohsiung Brigade	109.8.26
5	Yilan Brigade	109.7.29
6	Hualien Brigade	109.8.12

## X. ↔ CIVIL SERVICE ETHICS

## A Anti-corruption Platform

Supplementing the external supervision, such as by the Agency Against Corruption, Ministry of Justice, and MOTC Civil Service Ethics Office, the TRA deployed the “Anti-corruption Platform for Vehicle Procurement” and “Anti-corruption Platform for Intelligent Electrical Engineering.” With regular information-sharing meetings, deployment of special webpages for transparent government, implementing anti-corruption initiatives, and enhancing public engagement, the TRA has been eager to expel improper external interferences, promote smooth procurement operations, and build a quality administrative environment thereby building an efficient and effective government. On April 24 and October 14, 2020, the 17th and 18th information-sharing meetings of the anti-corruption platform for vehicle procurement projects were held, reaching a total of 11 consensuses. On March 24 and October 6, 2020, the 5th and 6th information-sharing meetings of the anti-corruption platform for intelligent electric engineering projects were held, reaching a total of nine consensuses.



Information-sharing meeting of the anti-corruption platform for vehicle procurement projects



Information-sharing meeting of the anti-corruption platform for intelligent electric engineering projects

## B Anti-corruption Activities

### 1. Promoting Integrity

Anti-corruption activities were planned, initiated, and promoted, targeting our colleagues to improve their awareness of relevant regulations. In 2020, the TRA had six workshops on project regulations, with 42 relevant training and exercises, three prize quizzes, and eight anti-corruption newsletters. The TRA also made posters or newspapers to reinforce relevant legal concepts.

### 2. Public Engagement

The activities targeted individuals and groups from non-public sectors. They aimed to enhance awareness and support anti-corruption policies through various means. In 2020, during the MOTC lantern festival and local events, the TRA worked with railway police, schools, local district offices, and travel agencies to interact with the public with stands or games. A total of 12 events were held, attracting the participation of 1,112 people. Additionally, supporting the policy targets of the

Agency Against Corruption to extend anti-corruption education, the TRA promoted a series of activities in remote schools and targeting vulnerable students (such as nursery homes and children's homes). A total of 11 events were held, attracting the participation of 497 people.



Series of activities targeting remote areas



Series of activities targeting remote areas

### C Special Audit

In 2020, TRA audited the “Baggage, Parcel Consignment, and Lost Property Management Procedures.” Through pre-consultation, preparation meetings, visitings and studies, questionnaire surveys, on-site audits, and consultation meetings, we inspected 64 stations and mobilized the participation of 636 people. Based on the research and discussion of the audit results, 14 relevant suggestions on laws, regulations, implementation, and internal control were put forward so that all units could understand the importance of luggage and parcel consignment and lost property management. The measures effectively reduced the risk to the clean government initiative and achieved the goal of increasing public welfare and reducing public complaints.



Pre-meetings for audit



On-site audit

### D Anti-corruption Briefing

To implement the clean and capable government initiative and improve administrative efficiency, the TRA held an anti-corruption briefing on September 25, 2020. In addition to awarding integrity models, the meeting also reviewed the promotion of the Civil Service Ethics Office's agendas. The items discussed, and chairperson's directives were issued to all the units for implementation and supervision, thereby enhancing internal control. Additionally, to enhance regional liaison, the TRA inspectors went to 43 branches and convened ten regional anti-corruption meetings in total to improve the quality of anti-corruption work and build consensus among staff on anti-corruption.



Presenting awards to excellent stations



Presenting awards to integrity models

## E

## Management of Information Use

The TRA carried out audits of information use management from April to July 2020 for the “4th Generation Ticketing System” and “Automatic Train Protection System.” There were on-site audit in 45 areas in the four dimensions of establishing log files, abnormal system access and account usage, report of abnormal situations, and network security and report. They covered the compliance to personal data protection law, information security management law, and other relevant laws and regulations. We have been committed to preventing compromise and improper use of personal data to ensure the safety of data, systems, equipment, and networks.



On-site audit of the 4th generation ticketing system



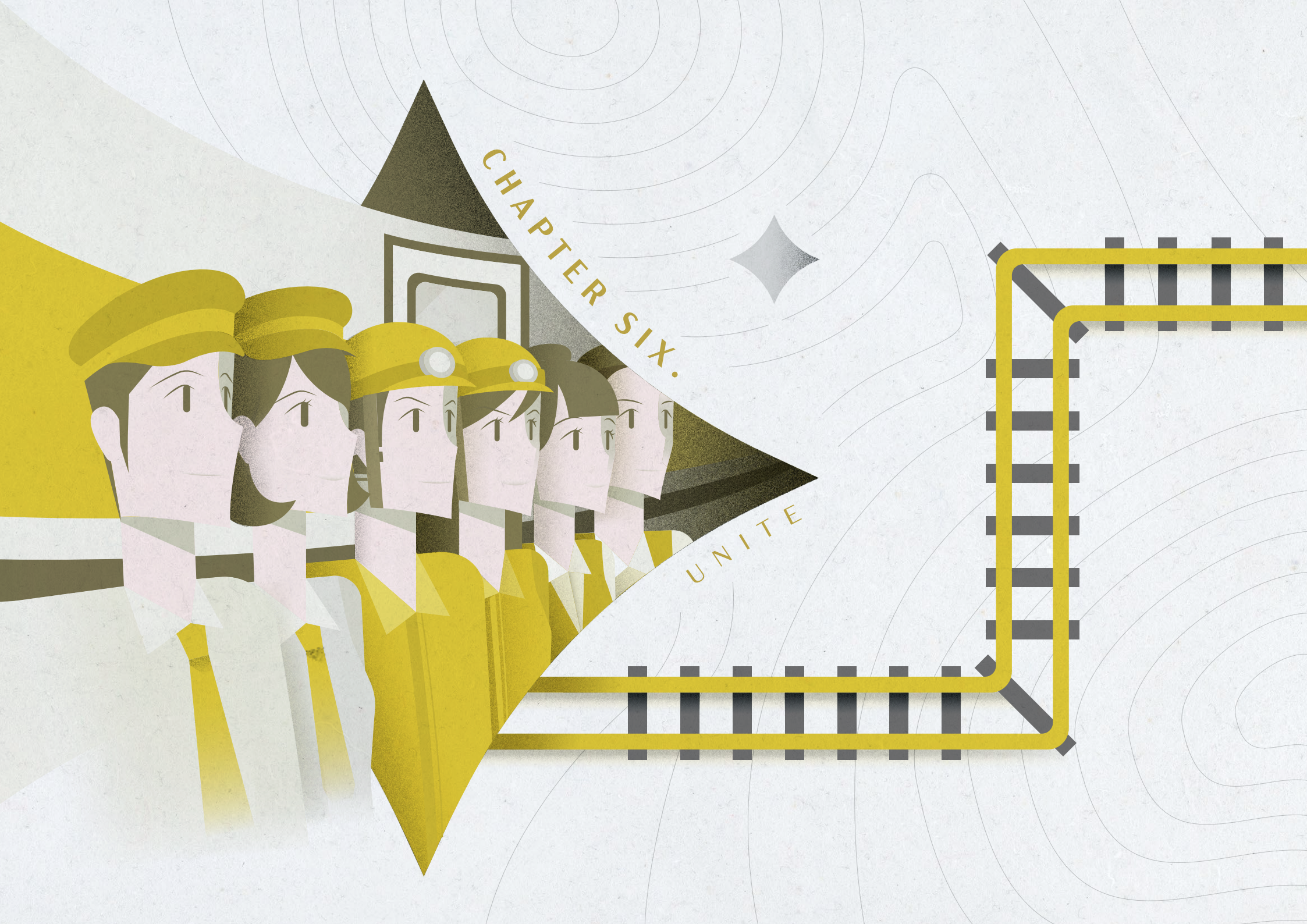
On-site audit of the automatic train protection system

A stylized illustration of a spiral-bound notebook. The notebook is positioned diagonally across the frame. It has a light-colored cover with a repeating pattern of four-pointed stars, each formed by two overlapping circles. The stars are filled with a dark, textured material. The notebook's pages are visible, showing a similar pattern. The spiral binding is on the left side. The word "ACCURACY" is written in a bold, sans-serif font on the bottom right corner of the notebook's cover.

ACCURACY

CHAPTER SIX.

UNITE





## Major Construction and Investment Projects

- I. 6-Year Plan for Railway Safety Improvement (2015–2022)
- II. Forward-Looking Infrastructure Plans
- III. Plan for the feasibility study for improving the route between Guishan and Wai'ao Station along the Yilan Line
- IV. Various Construction Projects
- V. Plan for Overall Purchase and Replacement of TRA Vehicles (2015–2024)
- VI. Project Construction-Relocation of Kaohsiung Workshop to Chaozhou and Development Planning for the Original Site

## 1. ↔ 6-YEAR PLAN FOR RAILWAY SAFETY IMPROVEMENT (2015–2022)

### A Construction

#### 1. Plan summary

- (1) Installation and improvement of level crossing signals: to install remote optical fiber monitoring and automatic obstacle detection system for level crossings.
- (2) Installation of fences and soundproof walls at dangerous road sections: to install 175 km fences and soundproof walls in total.
- (3) Reconstruction and reinforcement of bridges according to the existing legal specifications: reconstruct 15 bridges, including Wencuobuxi Bridge.
- (4) Development of the forewarning system for slope sliding, debris flow, and strong wind: improve the slope, roadbed, and drainage facilities at the high-risk sections along the whole TRA line, and develop the slope disaster prevention and early warning system.
- (5) Upgrading station facilities under the applicable laws and regulations: increasing the height of all TRA stations' platforms and improving safety facilities such as public toilets for men and women and accessible facilities.
- (6) Replacement of track facilities: replacement with 250 km of 50 kg-rail, 60 km of 50 kg head-hardened rail, and 600 sets of 50 kg-PC sleeper turnouts along the whole TRA line, and improvement of Xinma Curve.

#### 2. Results

- (1) The slope maintenance manual was submitted to the MOTC for filing in June 2020. The slope improvement projects had been contracted and are now under construction.
- (2) In 2020, we completed the platform raising project for 35 stations, including Baifu Station.
- (3) In 2020, accessible elevators were installed at six stations, including Beipu Station.
- (4) In 2020, we completed the project for improving public toilets for men and women at nine stations, including Jiabei Station and Chiayi Station.
- (5) The first phase of the new cross-rail construction project at Dounan Station was put into operation on September 5, 2020.



Accessible elevators newly installed at Beipu Station



Accessible elevators newly installed at Baishatun Station



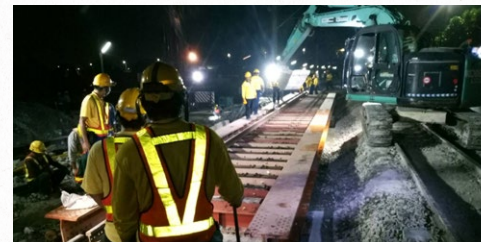
Raised platform at Beihu Station.



Raised platform at Baifu Station.

#### 3. Reconstruction project of the First Minxiong Bridge

This project is located around the flood-prone area, which was flooded during several typhoons and rainstorms over the years. In September 2013, Legislator Wong Chung Chun convened relevant units to conduct an investigation and discuss the improvement measures for this situation. Additionally, the Chiayi County government prepared a report on planning the drainage system in the Beizitou area of Chiayi County in implementing the Regulation Project of Flood-prone Areas. The First Minxiong Bridge, Tai'an Bridge, and Dongshihu Bridge failed to comply with the flood control plan due to their insufficient drainage cross-sections and the height of the bottom of the bridge abutment. Therefore, the three bridges were incorporated into TRA's 6-Year Plan for Railway Safety Improvement for the reconstruction project. After the completion of bridge reconstruction, it would extend the bridge length and raise the elevation of the beam bottom to increase the water passage section of the river channel and improve the flood discharge performance. Therefore, it could relieve the flooding situation of TRA lines and the surrounding area caused by Provincial Highway No. 1 in Minxiong Township, Chiayi County, during typhoons and rainstorms. Additionally, the bridge structure could be strengthened to meet the current earthquake and flood resistance regulations and improve and ensure the safety of TRA trains. The main culvert of the First Minxiong Bridge is expected to be completed by the end of March 2021.



Re-laying of turnouts



Construction of the beam bearing of the First Minxiong Bridge



Construction of new culvert of First Minxiong Bridge



Re-laying of turnouts of the First Minxiong Bridge

## B

**Rolling Stock****1. Stepless carriage remodeling**

To ensure passengers' safety, the height difference between the floor of passenger trains and the platform is planned to be eliminated. In 2020, we completed the work for 100 vehicles, including 36 EMU500 carriages and 64 Taroko carriages.

**2. Replacement of power system and SIV system on 252 local passenger trains (EMU 500)**

Shihlin Electric Co., Ltd., the contractor for this project, completed the test run, and delivery of the sample vehicle and Group 1 to 8 units and is expected to complete the delivery in 2023.

## C

**Electrical Engineering****1. Installation of the obstacle detection system**

The installation of an automatic level crossing obstacle detection system along the main track to prevent road vehicles from breaking down at level crossings and improve safety is planned. With such a detection system, the TRA emergency alarm system can be started if an obstacle is detected, transmitting the signal to the train operator, who will then make the proper adjustment in time to reduce the occurrence of level crossing accidents.

In total, 293 working sites are planned to be completed, 249 sites have been installed so far, and 103 sites were completed and put into operation by the end of 2020. All sites are expected to be installed and put into operation by the end of 2021 so that the level crossing safety will be greatly enhanced.

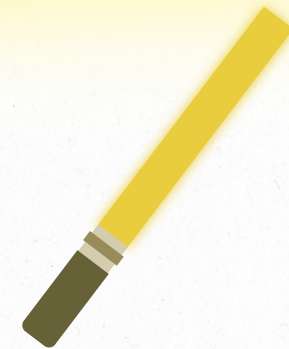
**2. Replacement of 95 mm<sup>2</sup> messenger wire**

The original 49.5mm<sup>2</sup> messenger wire was updated to 95mm<sup>2</sup> with a budget of NT\$867 million. A total of 1,260 kilometers needs to be constructed, and by the end of 2020, 1,252

kilometers had been completed. The progress reached 99%, and it is scheduled to be completed before June 30, 2021.

**3. Purchase of 17 cable maintenance and 11 railway engineering maintenance vehicles**

The first batch of ten vehicles was accepted in June 2019, and the second batch of nine vehicles was accepted on December 30, 2020. They were successively put into operation on-site to improve the maintenance efficiency of the cable and shorten the time for troubleshooting.



## II. ↔ FORWARD-LOOKING INFRASTRUCTURE PLANS

### A Plan for transfer and connection between THSR and TRA Changhua Station

#### 1. Plan summary

This plan aims to achieve a seamless transfer between the THSR and TRA Changhua Station, linked operations with the Jiji Line, and inclusion of tourism services, with a total budget of NT\$1.892 billion and a planned period of six years. The main contents include: the structure of Tianzhong Branch Line adopts a single-track elevated line, with a line length of 3km, including about 1,350 meters of a viaduct and about 1,650 meters of embankment and flat approach; it is operated jointly with the Jiji Line with the crossing function.

#### 2. Results

The final feasibility study report on transfer and connection between the THSR and TRA Changhua Station was submitted to Executive Yuan on August 29, 2019, and approved by Executive Yuan on September 27, 2019. The comprehensive planning operation commenced on July 17, 2020. The geological survey report was approved on November 20, 2020, while the survey report was approved on December 14, 2020.

### B Plan for new construction of a double-track railway for Chenggong to Zhuifen section

To solve the single-track operation bottleneck of the Chenggong to Zhuifen section, the double-track operation will be implemented in this section, which will improve the bottleneck section in the Taichung area and provide convenient, fast, comfortable, and efficient rail transportation services for people in the Grand Taichung area. This plan was approved by Executive Yuan in 2016, with the approved total budget of NT\$1.5405 billion and a planned period from January 1, 2017, to December 31, 2020.

The main contents include:

1. Increase the line capacity.
2. Shorten the interval between trains.
3. Meet the needs of commuters and realize the functions of rapid transit.
4. Improve the bottleneck section in the Taichung area.

This plan, including the roadbed, civil constructions, track, signal, communication, and electricity projects, began to be designed and constructed in 2017, with double-track works completed at the end of December 2019 and put into operation on January 3, 2020. We will continue to strengthen the surrounding lines and improve stations' passenger transport facilities.

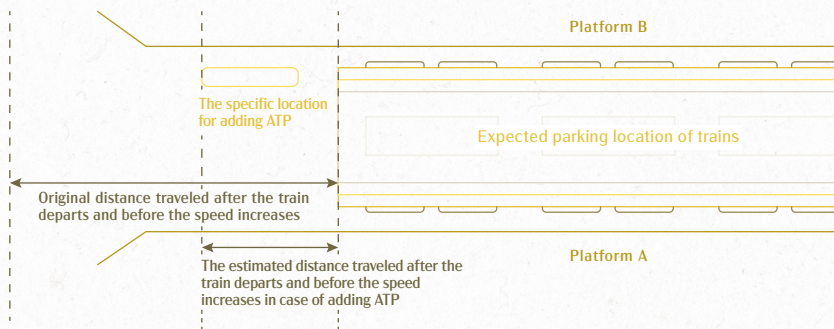


Aerial view of Chenggong to Zhuifen Section

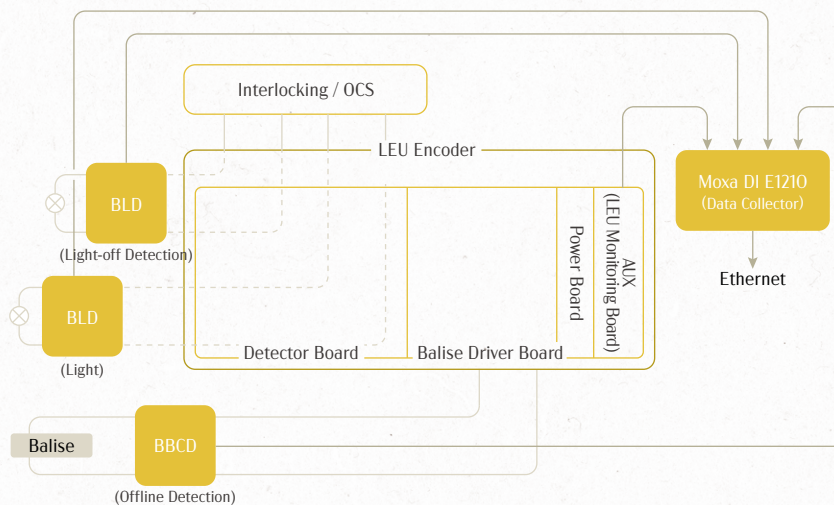
### C TRA Electrical Engineering Intelligence Enhancing Program

1. Twenty-three radio optimization projects have been completed (Nangang, Dongshan, Sicheng, Dingpu, Wudu, Shulin, Xinfu, North Puxin, Sanxingqiao, South Qiding, Xinshi, Daqiao, Rende, Luzhu, Nanzhou, South Fangliao, Jialu, Chaozhou Base, Dongli, North Ruibei, Pinghe, South Minxiang Level Crossing, and West Heping Power Plant), enhancing the coverage of radio field strength, with 100% coverage for mobile radios and 99.84% for walkie-talkie portable radios.
2. We purchased 3,000 new portable radios (model: MTP3550), which were accepted upon inspection in June 2020 and distributed to all units in July to ensure the safety of driving operations and on-site maintenance personnel.
3. For the second loop laying project of 96-core optical cable, the whole project's laying length is expected to be about 556km. The construction was commenced on June 28, 2019, and would last for 500 working days; and 198.83km was completed by the end of 2020. After the whole project is completed, the TRA will obtain dual-loop physical optical fiber protection to improve security.
4. The equipment systems of nine substations were upgraded (including installation), with NT\$268 million allocated, and the old 15MVA transformer was updated to 25MVA, which was accepted and put into use in August 2020 to improve the load level and power supply stability.
5. It is planned to make 297 effectiveness enhancements concerning the above-ground ATP facilities. The project commenced on November 21, 2018, and would last for 800 calendar days. As of December 31, 2020, all of the facilities (49 in total) had been optimized, and 100 had been monitored. The whole project is expected to have monitored 296 places by August 31, 2021, to retrieve the updated signal information as early as possible, learn the operation status of the system in real-time, and improve the operation efficiency and operation management of trains.

#### ◆ Schematic Diagram for Adding ATP Sensing Point to Improve Effectiveness



#### ◆ ATP monitor signal pick-up



#### ◆ D Plan for improving the infrastructure of TRA Jiji Line

This plan involves the facility construction of all stations along the Jiji Line, track alignment, slope stability inspection and improvement, in order to enhance the branch line's overall service intensity and enhance the convenience, safety, and tourism quality of the passengers. The plan's total budget is NT\$2,363 million, and the period is planned to be from August 23, 2019, to July 31, 2026.

Executive Yuan approved the plan on August 23, 2019, and the track project commenced on April 30, 2020, with the completion of rail replacement of 5,000 meters and improvement of 184 meters of mud gush sections and continuous rail replacement and mud gush sections improvement. The main contents include:

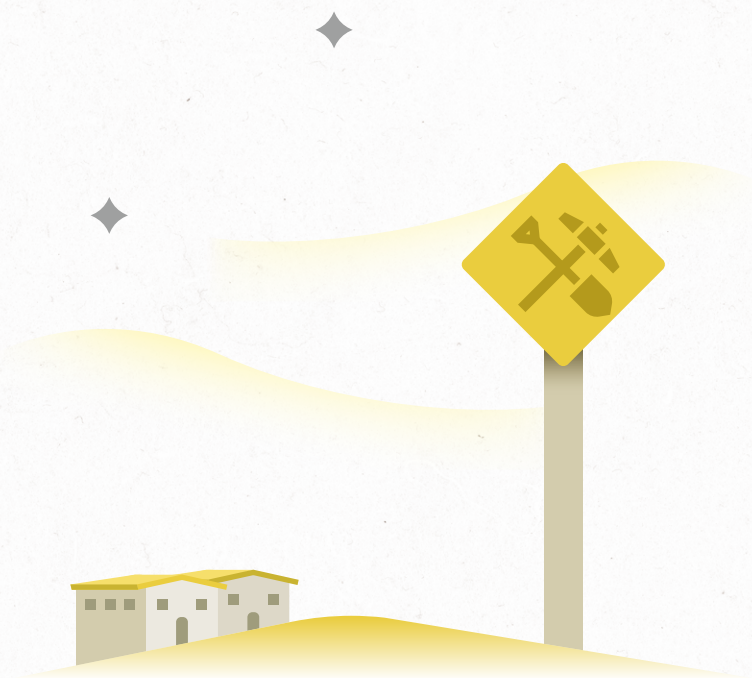
1. Project for raising and extending station platforms.
2. Project for improving station exterior and transport facilities.
3. Project for improving the fence and drainage along the line.
4. Project for slope stability reinforcement and remote monitoring.
5. Project for reconstructing bridges and tunnels.
6. Project for improving track alignment curve.
7. Project for strengthening station track functions.
8. Project for the relocation of level crossings.



Steel rail replacement and rail maintenance project for Jiji Line and the peripheral area

### PLAN FOR THE FEASIBILITY STUDY FOR III. ↔ IMPROVING THE ROUTE BETWEEN GUISHAN AND WAI'AO STATION ALONG THE YILAN LINE

The plan mainly includes: The route, after the exit from Guishan Station, avoids disaster-prone areas and residential areas at the exit of the tunnel in the form of a long tunnel structure with a linear curvature of more than 1,000 meters, and then connects the existing track north of Wai'ao Station, without any change to the existing curves in Wai'ao Station and north of Wai'ao Station. The plan for such an improvement project, with a total budget of NT\$1.95 billion, is expected to be completed within three years after Executive Yuan's approval on November 25, 2019. The comprehensive planning operation commenced on October 19, 2020.



### IV. ↔ VARIOUS CONSTRUCTION PROJECTS

#### A Subsequent reconstruction project of the First Babaozhen Bridge

In coordination with the local river improvement plan, the TRA began to carry out the reconstruction of the First Babaozhen Bridge in 2015 and was terminated due to the contractor's financial difficulties in 2017. Then TRA conducted bidding for the follow-up projects, increased the bidding willingness of the contractors, adjusted the procurement and contracting strategy, and invited tenders for both the Six Year Plan for Railway Safety Improvement (Reconstruction of the First Minxiong Bridge, Tai'an Bridge, and Dongshihu Bridge) and Subsequent Reconstruction Project of Fanzigou Bridge on Behalf of Chiayi City Government. The project was implemented according to the most advantageous tender approved by the Ministry of Transportation and Communications on May 10, 2018, and was restarted on November 13, 2018. The East Main Line at the new First Babaozhen Bridge was switched for traffic on September 22, 2019, and the West Main Line was switched for traffic on February 16, 2020.

So far, except around 40 meters of the embankment of the upstream and downstream of the original old railway bridge, all sections have been rectified, with the old railway bridges demolished and stone masonry revetment and gravity retaining walls newly constructed; thus, the channel has reached the planned width of 37 meters.



Ramp switch operation in New East Main Line



Guardrail block painting

## B Subsequent reconstruction project of Fanzigou Bridge on behalf of Chiayi City Government

In line with the local river regulation plan, the TRA began to carry out the reconstruction project of Fanzigou Bridge (West Line K297 + 321) on behalf of the Chiayi City Government in 2014. The beams for the East Main Line and West Main Line were erected on September 29 and October 1, 2019, respectively, and the whole project was completed on November 6, 2020.



Erection of east-west support steel beam



Construction of Beam Erection at Night for East Main Line



Construction of East and West Main Line beams



Completion of RC culvert construction of the main works

## C Project for improving the accommodation facilities for standby staff

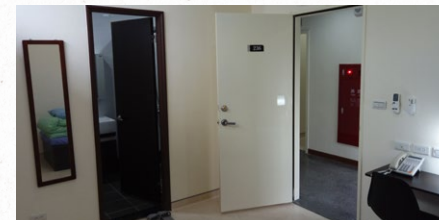
With a history of over a century, the TRA is out of date in terms of its facilities. Most of the working environment is small, simple, and simple with long service life, due to the accommodation of the existing station housing environment without proper planning at the early stage, especially the accommodation facilities for standby staff (drivers and conductors) and station lounges. Therefore, Director-General Chang Cheng-yuan instructed new accommodation facilities for standby staff to be built, adopted the principle of installing air-tight windows in single-person suites, separating wet and dry bathrooms, and set up social activity rooms to improve the quality of the on-duty and standby spaces.

A project for improving the accommodation facilities for standby staff was included

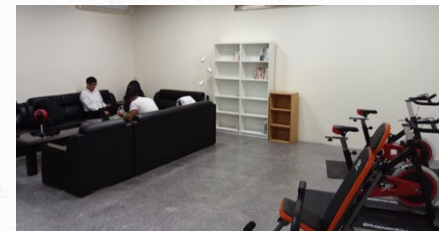
in the “Meeting on Improving the TRA Working Environment” in November 2018, and 26 improvements involving 270 houses were completed by 2020.



Exterior appearance of accommodation facilities for standby staff of Taipei Subsection



Accommodation facilities for standby staff of Taipei Subsection



Social activity room of accommodation facilities for standby staff of Taipei Subsection



Accommodation facilities for standby staff at Houli Station



## D Route maintenance works

The Construction Department of the TRA carried out the work to improve the whole line's track routes in 2020 and accumulatively replaced 107,511 sleepers, 152,857 meters of steel rails, 35,178 cubic meters (92km) of ballasts, and 321 sets of turnouts.



## V. ↔ PLAN FOR OVERALL PURCHASE AND REPLACEMENT OF TRA VEHICLES (2015–2024)

A total of NT\$99.73 billion is budgeted for the purchase of 1,307 locomotives. The items to be purchased are as follows.

1. According to the purchase contract signed with Japanese Hitachi on January 15, 2019, a total of 600 inter-city EMUs are purchased, and are expected to be delivered in 2021.
2. According to the contract dated November 1, 2019, a total of 520 commuter EMUs were purchased from Rotem, a South Korean entity, confirming the detailed design of the vehicles and the delivery of 20 vehicles on October 24, 2020, with the remaining to be delivered from 2021 to 2023.
3. According to the purchase contract signed with Toshiba, a Japanese entity, on November 21, 2019, the purchase of 127 locomotives is planned (102 to be first purchased, and the rest to be purchased and supplied in the form of follow-up expansion) and are expected to be delivered in 2023.
4. The purchase of 60 branch-line passenger cars is planned, which are expected to be delivered in June 2023; pre-bidding formalities are currently being handled.



## PROJECT ENGINEERING-RELOCATION OF KAOHSIUNG VI. ↔ WORKSHOP TO CHAOZHOU AND DEVELOPMENT PLANNING FOR THE ORIGINAL SITE

In response to the railway underground project in the urban area of Kaohsiung, it is necessary to move the Kaohsiung Workshop, Southern Region Supply Workshop, and Kaohsiung Port Maintenance Sub-Branch to Chaozhou to ensure smooth supply of passenger and freight car maintenance and repair parts and materials. The land vacated by the original workshop will be changed for development and utilization according to urban planning. This ensures the regular operation and driving safety of passenger and freight transportation, meets the maintenance demand of TRA vehicles, and creates the newly-built Chaozhou base as the vehicle maintenance center in the south. The first revised plan was approved by Executive Yuan in 2017, with the total budget revised to NT\$13.4818 billion, and the period adjusted was from August 13, 2013, to December 31, 2021.

Under the strategy of purchasing extended EMUs as provided in the “Plan for Overall Purchase and Replacement of TRA Vehicles,” and after adjusting the positioning and function of each TRA maintenance workshop through overall evaluation, it is planned to expand the reserved land in the original plan into the extended EMU maintenance center. Therefore, the second revision of the plan was submitted to Executive Yuan for approval on October 7, 2020, to meet the expansion demands, ensure the maintenance capacity of TRA vehicles, and guarantee operational safety.

We completed all the structures of the workshops. We are currently constructing the road and landscape facilities in the area, and going through the formalities to inspect the fire safety equipment of each building, and applying for building use permit. Except for the landscape facility project, which is expected to be completed by the end of 2021, the rest of the projects will be gradually completed by the end of 2020.

The main contents include:

1. Relocation of Kaohsiung Workshop to Chaozhou.
2. Relocation of the Southern Region Supply Workshop to Chaozhou.
3. A newly-built maintenance workshop for push-pull passenger trains.
4. Development and utilization of the land vacated by the original workshop according to the Urban Planning.

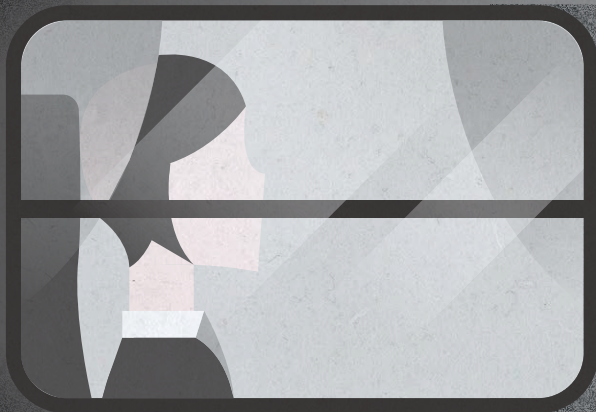


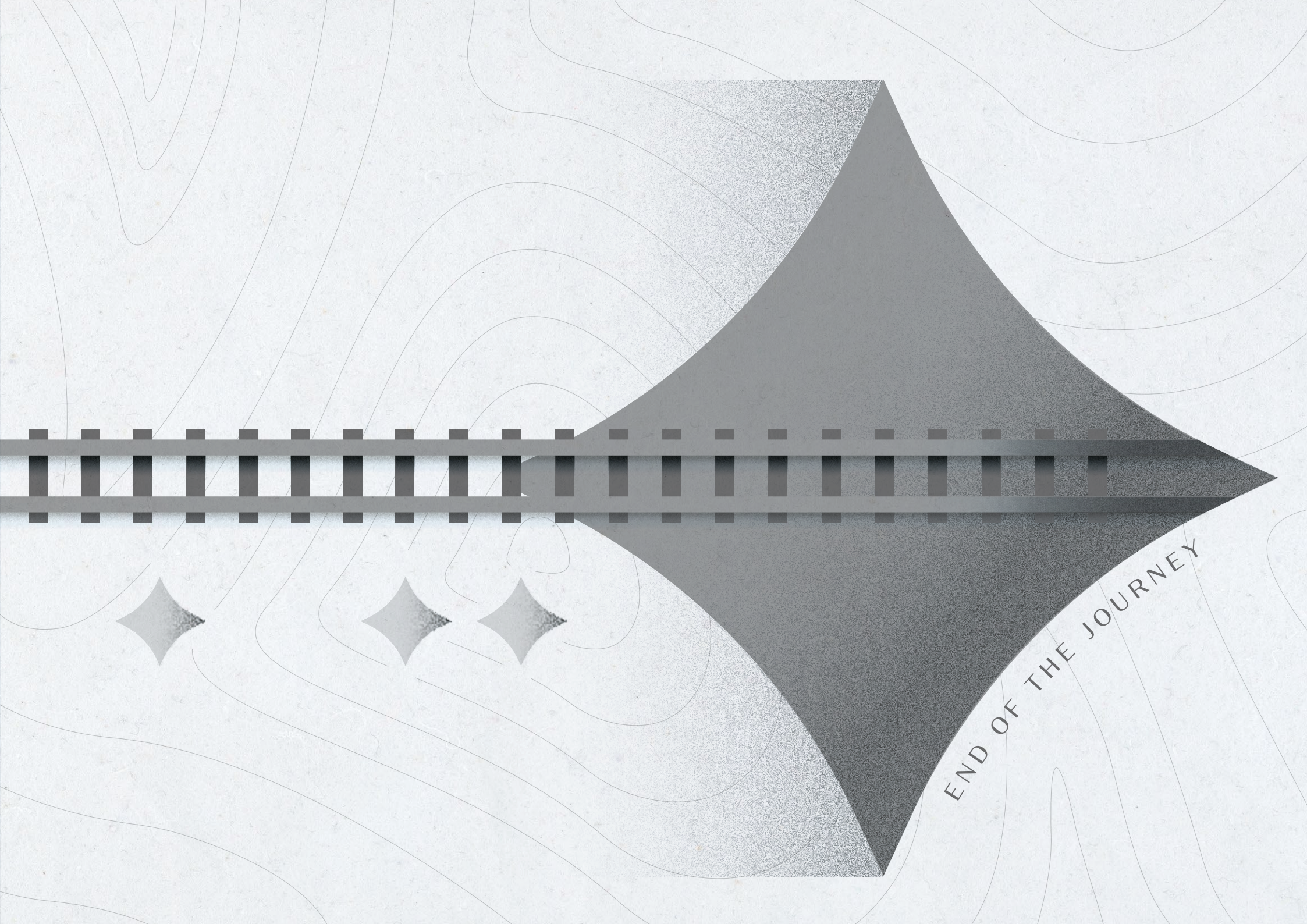
Aerial view of Chaozhou Workshop



APPENDIX

MAJOR EVENTS IN 2020





END OF THE JOURNEY

## APPENDIX ↔ MAJOR EVENTS IN 2020



DATE	EVENTS
January 01	<p>Successful completion of passenger transportation tasks during consecutive holidays for the New Year.</p> <p>To transport passengers during the holidays for the new year from December 31, 2019, to January 01, 2020, the TRA deployed 23 additional trains for the whole line, transporting 1,389,889 passengers in total, with an average of 694,945 passengers per day, representing a decrease of 30.78% over the same period of 2019. The revenue from passenger transport during the New Year holiday in 2020 totaled NT\$101,550,204 with average daily revenue of NT\$50,775,102, representing a decrease over the same period last year.</p>
January 03	The opening ceremony for the double-track operation of Chenggong to Zhuifen Section
January 16	TRA's Neiwan Station along the Neiwan Line and Japan's Wakasa Station of Japan Wakasa Railway Co., Ltd. formed a sister station agreement.
January 21	Premier Su Tseng-chang of the Executive Yuan inspected Taipei Main Station District on the eve of Spring Festival, accompanied by MOTC Minister Lin Chia-lung and TRA Director-General Chang Cheng-yuan.
January 22	Vice-Premier Chen Chi-mai of the Executive Yuan inspected transportation and track maintenance of Xinzuoing Station during the Spring Festival holiday, accompanied by TRA Deputy Director-General Chu Lai-shun and other TRA officials.
January 30	<p>Successful completion of consecutive holiday transportation duties for the Spring Festival in 2020.</p> <p>We completed passenger transportation tasks during the ten-day consecutive holiday for the Spring Festival in 2020 from January 21 to 30. We deployed 312 additional trains and 1,015 additional cars for the whole line. We transported 6.068 million passengers in total, with an average of 606,800 passengers per day, representing a decrease of 13.43% over the same period of 2018. The revenue from passenger transport totaled NT\$601.64 million, with average daily revenue of NT\$60.164 million, representing a decrease of 9.39% over the same period of 2018. It was found that due to the COVID-19 outbreak and worsening of the pandemic before the Spring Festival, the public's willingness of taking public transportation was reduced.</p> <p>(We compared 2020 with 2018 as both have a Spring Festival holiday of seven days, while the 2019 holiday lasted for nine days).</p>
February 03	Director-General Chang Cheng-yuan inspected stations in the TRA northern area and appreciated staff for their hard work.

DATE	EVENTS
February 06	The TRA and Titan Development and Construction Co., Ltd. jointly held the Signing Ceremony for the Urban Renewal Project in the East Old Dormitory Area of Kaohsiung Railway Station, signed by TRA Director-General Chang Cheng-yuan and Mr. Chen Qing-xiang, President of Titan Development and Construction Co., Ltd.
February 07	The "Aesthetics Renaissance 2.0 Action Forum" for Future tourist train was held.
February 11	Yuji Nagae, President of Kumagawa Railroad Co., Ltd., visited the TRA and was received by Deputy Director-General Chu Lai-shun.
February 12	Director-General Chang Cheng-yuan delivered a lecture to the additionally-enrolled staff who have passed the 2019 TRA Special Entrance Examination at the Employees' Training Center.
February 15	The Executive Yuan approved the Benefits-improving Measures-Living Allowances of the TRA.
February 16	The subsequent reconstruction project of the First Baobaozhen Bridge-beam switch of the West Main Line.
February 17	Tadao Okada, President of Shinano Railway Co., Ltd. and his six colleagues visited the TRA and were received by Deputy Director-General Tu Wei.
March 09	The TRA launched the Heartwarming Bento program for "Salute to the Medical Personnel."
March 25	Chen Ching-tsai and the other eight members of the Control Yuan inspected the tracks of Pingxi Line and Shen'ao Line accompanied by Director-General Chang Cheng-yuan and the first-level supervisors.
March 26	Member Fu Kun-chi of the Legislative Yuan inspected the Hualien area, accompanied by Director-General Chang Cheng-yuan and other officials.
March 27	Director-General Chang Cheng-yuan presided over the "Meeting on Epidemic Prevention" to implement prevention measures for COVID-19.
March 31	MOTC Minister Lin Chia-lung inspected transportation and epidemic prevention measures at Banqiao Station during the Ching Ming Festival holiday, accompanied by Director-General Chang Cheng-yuan and other relevant personnel from TRA Transportation Department.

DATE	EVENTS
April 06	<p><b>Successful completion of consecutive holiday transportation duties for the Ching Ming Festival in 2020.</b></p> <p>We completed passenger transportation tasks during the six-day consecutive holiday for the Ching Ming Festival from April 01 to April 06, deploying 158 additional trains and 490 additional cars for the whole line, transporting 2.55 million passengers in total, with an average of 425,000 passengers per day. Due to the COVID-19 epidemic, the transportation volume was 45.4% less than that of the same period in 2019. Passenger transport revenue totaled NT\$242.89 million, with an average of NT\$40.48 million per day, representing a decrease of 41.8% over the same period of 2019.</p>
April 09	Director-General Chang Cheng-yuan inspected stations of the Hualien area and appreciated staff for their hard work.
April 20	After the launch of the Heartwarming Bento program of “Salute to the Medical Personnel,” we further expanded the heartwarming bento for the “police and firefighters.”
April 22	According to the 6-year Plan for Railway Safety Improvement, the improvement construction of Wuta Station was officially put into operation.
April 24	Director-General Chang Cheng-yuan led a delegation to visit Ms. Hsu Chen-wei, Magistrate of Hualien County Government discussed and exchanged views on the joint development of Huilan Station City in Hualien Station and Huilan Star Sky City of the old station.
April 25	In response to the COVID-19 epidemic, the MOTC revised the measures for relief and economic stimulus. The TRA drafted out the guidelines of rental subsidies, which was approved by MOTC on April 24, announced and implemented on April 25, and received applications from operators commencing on April 27.
May 01	MOTC Minister Lin Chia-lung inspected the transportation construction of Grand Hsinchu Station and the preparation of the Lantern Fair accompanied by Deputy Director-General Feng Hui-sheng.
May 08	The revised Guidelines of the TRA on Provision of Subsidies for Rents and Fixed Royalties to the Travel Service and Commercial Facility Providers at Stations and in Station Areas Affected by COVID-19 was implemented upon announcement.
May 08	Director-General Chang Cheng-yuan inspected the property revitalization development base and stations of TRA in the Kaohsiung area.

DATE	EVENTS
May 11	He Xin-chun, Chuang Ching-cheng, and other members of the Legislative Yuan inspected transportation construction in the Taichung area accompanied by MOTC Minister Lin Chia-lung, Director-General Chang Cheng-yuan, Deputy Director-General Chu Lai-shun, and other officials.
May 12	MOTC Minister Lin Chia-lung inspected the relief measures of Nangang Station and Shopping Mall seriously affected by COVID-19, accompanied by Director-General Chang Cheng-yuan.
May 19	In the signing ceremony for the TRA-FamilyMart cooperation, TRA Director-General Chang Cheng-yuan, and FamilyMart Chairman Ye Rong-ting signed a cooperation agreement in the presence of MOTC Minister Lin Chia-lung, representing the first breakthrough in the enterprise operation through the brand authorization and FamilyMart franchise strategy cooperation.
May 30	6 Year Plan for Railway Safety Improvement (New Accessible Elevator Project at Baishatun Station) was launched.
June 09	2020 Railway Festival (133rd Anniversary of TRA) Award Ceremony was held at TRA Auditorium.
June 10	MOTC Minister Lin Chia-lung alongside with members of the Legislative Yuan Huang Guo-shu, and Chen Bo-wei, inspected the Grand Taichung Station construction and the planning of the railway cultural park accompanied by Director-General Hu Hsiang-ling of the Railway Bureau and Deputy Director-General Feng Hui-sheng.
June 12	Member of the Legislative Yuan Chen Ou-po inspected the construction of the old iron bridge at Lanyang River near Erjie Station in the Yilan area, accompanied by Director-General Chang Cheng-yuan and other officials.
June 20	A 2-day First-level Supervisor Consensus Camp in 2020
June 24	MOTC Minister Lin Chia-lung inspected transportation and epidemic prevention measures at Taipei Main Station during the Dragon Boat Festival holiday, accompanied by Director-General Chang Cheng-yuan and other officials.
June 24	Director-General Chang Cheng-yuan led a delegation to visit Mr. Lin Yu-chang, Mayor of Keelung City Government. Both sides reached a consensus on property revitalization issues, such as development and investment as well as forwarded the vision for future development.

DATE	EVENTS
June 24	Full train load of the flavor of happiness, "Vigor Bento of Taiwan Railways" was opened for sale in Taiwan from this day on with limited quantity.
June 24	MOTC Minister Lin Chia-lung inspected transportation construction in the Taitung area, accompanied by Deputy Director-General Chu Lai-shun and other officials.
June 28	<p><b>Successful completion of consecutive holiday transportation duties for the Dragon Boat Festival in 2020.</b></p> <p>For the passenger transportation during the five-day consecutive holiday for the Dragon Boat Festival in 2020 from June 24 to 28, TRA deployed additional 164 trains and 572 cars for the whole line. The revenue from passenger transport totaled NT\$312.01 million, with average daily revenue of NT\$62.4 million, representing a decrease of 1.2% over the same period of 2019. The total number of passengers transported was 3.137 million, with an average of 627,000 passengers per day, representing a decrease of 12.1% over the same period of 2019.</p>
June 30	Completion of space revitalization and facade beautification project of Jiaoxi Station
July 10	The Triple Stimulus Voucher started to be used to purchase tickets, railway tourism services, shopping mall products, and other services.
July 12	Smiles in the lobby of Taipei Main Station, creating a diversified friendly environment.
July 14	MOTC Minister Lin Chia-lung inspected the beautification and improvement construction at Puxin Station and Fugang Station, accompanied by Director-General Chang Cheng-yuan.
July 15	The 2nd Supervisor Consensus Camp 2020.
August 06	The Labor Day Awarding Ceremony 2020 was held.
August 11	Yasuda Natsuki, General Manager of Taipei Branch, Prince Hotels, Inc., Seibu Group, and two other staff members visited the TRA and was received by Chief Secretary Yan Wen-zhong.

DATE	EVENTS
August 15	The first "Fugang Railway Arts Festival 2020" was co-organized by the TRA and Taoyuan City Government, co-chaired by Mr. Cheng Wen-tsan, Mayor of Taoyuan City, and Director-General Chang Cheng-yuan.
August 18	Director-General Chang Cheng-yuan inspected stations in the TRA southern area and appreciated staff for their hard work.
August 19	Yao Ching-ling, Taitung county magistrate, visited the TRA to discuss matters concerning the Mid-Autumn Festival holiday transportation and deployment of additional trains, and was received by Director-General Chang Cheng-yuan.
August 21	MOTC Minister Lin Chia-lung inspected the EMU500 system renewal project in Dadu, Taichung, accompanied by Deputy Director-General Feng Hui-sheng.
August 24	Renovation of Lounge Room of Hualien Station—Commencement.
August 31	The TRA and the LEALEA Foundation co-hosted an exhibition entitled the "Illustration of TRA and Taiwan Architectural Heritage" at Kaohsiung Railway Station, with the opening press conference co-chaired by Director-General Chang Cheng-yuan and Mr. Kuo Chuan-ching, Chairman of LEALEA Foundation.
September 05	The opening ceremony of the Cross Station Building at Dounan Station.
September 07	MOTC Minister Lin Chia-lung inspected Taichung Station, accompanied by the Director-General Chang Cheng-yuan and other officials.
September 16	The TRA Operation Safety Department held the 14th Meeting of "Safety Management Reform Group."
September 16	Director-General Chang Cheng-yuan delivered a lecture for the TRA transport class at the Employees' Training Center.
September 24	The TRA held the 7th Committee Meeting of the "Organization Management Reform Group."
September 30	MOTC Minister Lin Chia-lung inspected TRA transportation preparation and plan for the Mid-Autumn Festival holiday, accompanied by Director-General Chang Cheng-yuan.

DATE	EVENTS
October 01	Hsinchu Station “TR Bento” Concept Store launched.
October 03	Minister Lin Chia-lung of the Ministry of Transportation and Communications inspected transportation and epidemic prevention measures of Taipei Main Station during the Mid-Autumn Festival, accompanied by Deputy Director Tu Wei-ting and Station Master Tu Wei-ting of the Taipei Main Station.
October 04	Deputy Director Wang Kwo-tsay of the MOTC inspected transportation and epidemic prevention measures at Kaohsiung Station during the Mid-Autumn Festival holiday, accompanied by Chief Secretary Yan Wen-zhong, together with Shang Kuan Hui-chu, Station Master of Kaohsiung Station.
October 05	<p><b>Successful completion of consecutive holiday transportation duties for the Mid-Autumn Festival in 2020.</b></p> <p>We completed passenger transportation tasks during the six-day consecutive holiday for the Mid-Autumn Festival in 2020 from September 30 to October 05, deploying additional 203 trains and 580 cars for the whole line. The total number of passengers transported was 4.036 million, with an average of 673,000 passengers per day, representing a decrease of 9.89% over the same period of 2019. The revenue from passenger transport totaled NT\$382.98 million, with average daily revenue of NT\$63.83 million, representing a decrease of 6.86% over the same period of 2019.</p>
October 12	<p><b>Successful completion of the consecutive holiday transportation duties for the National Day of the Republic of China in 2020.</b></p> <p>TRA completed passenger transportation tasks during the five-day consecutive holiday for the National Day of the Republic of China in 2020 from October 08 to 12, deploying additional 161 trains and 403 cars for the whole line. A total of 3,285,000 passengers were transported, 657,000 passengers per day on average, representing a decrease of 19% over the Mid-Autumn Festival in 2019. The revenue from passenger transport totaled NT\$290.82 million, with average daily revenue of NT\$58.164 million, dropping 18% over the same period of 2019.</p>
October 14	Contract Signing Ceremony of “Speed Limit Backup System” between the TRA and NCSIST.
October 24	New EMU 900 Arrival Ceremony “A Smiling Welcome”
October 25	New EMU900 launch event.

DATE	EVENTS
October 26	Taiwan's popular science round-the-island train officially running from Taipei Station.
October 27	The 21st Golden Road Award Ceremony organized by the MOTC, the TRA won three awards, namely, Station Environment Maintenance, Road Maintenance, and Equipment Maintenance.
October 28	Deputy Director-General Feng Hui-sheng presided over the TRA Director-General's Cup Basketball Championship in 2020.
November 02	Su Chiao-hui, a member of the Legislative Yuan, inspected Yingge Station on the site design of the additional escalators, accompanied by Deputy Minister Wang Kwo-tsay of the MOTC and the Director-General Chang Cheng-yuan of the TRA.
November 03	MOTC Taiwan Railways Track Safety Supervision Group inspected the current track maintenance of the TRA.
November 04	Ceremony for forming sister station relation between the TRA's “Wanhua Station” and Ohmi Railway's “Taga Taisha-mae Station.”
November 04	Ceremony for forming sister station relation between the TRA's “Jiaoxi Station” and Izuhakone Railway's “Izu Nagaoka Station.”
November 04	Premier of the Executive Yuan Su Tseng-chang, accompanied by member of the Legislative Yuan Mr. Chen Ou-po, , MOTC Minister Lin Chia-lung, Magistrate of Yilan County Ms. Lin Zi-miao, , and TRA Director-General Chang Cheng-yuan, together inspected the replacement of track turnouts at Yilin Station and praised the colleagues for their hard work.
November 05	Collection of Taiwan Railways, Achievements of one Century - Monthly Calendar of Taiwan Railways Centennial Achievements was on sale with limited quantity.
November 09	The TRA Operation Safety Department held the 15th Meeting of the “Safety Management Reform Group.”
November 13	Press Conference on the Opening of the 6th Formosa Railroad Bento Festival in 2020.
November 18	The TRA and the Bank of Taiwan jointly held another rewarding activity for the “Get the Best Bento from Taiwan Railways, Enjoy Preferential Price with Taiwan Pay.”

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DATE	EVENTS
November 21	A new construction project of an accessible elevator at Yongjing Station - Commencement Ceremony.
November 27	The TRA held the 9th Committee Meeting of the "Organization Management Reform Group."
December 06	Taichung railway cultural park "TIELU AVENUE" was put into operation.
December 14	The East Main Line of Ruifang-Houtong, two-way traffic on a single line of railway resumed after a slope collapse.
December 16	2020 Rail Economy Achievement Exhibition.
December 19	Changhua Railway Hospital restored its former unique style of the VIP restaurant.
December 20	President Tsai Ing-wen presided over the official opening ceremony of the "Electrification of South-link Line" at Taitung Station, accompanied by the Executive Yuan Premier Su Tseng-chang, MOTC Minister Lin Chia-lung, Railway Bureau, MOTC Director-General Hu Hsiang-ling, and TRA Director-General Chang Cheng-yuan.
December 25	Completion of the construction of elevated soundproof walls in Xizhi
December 29	Press conference of the launch of "Future tourist train" was held at Nangang Station.



MAJOR EVENTS IN 2020

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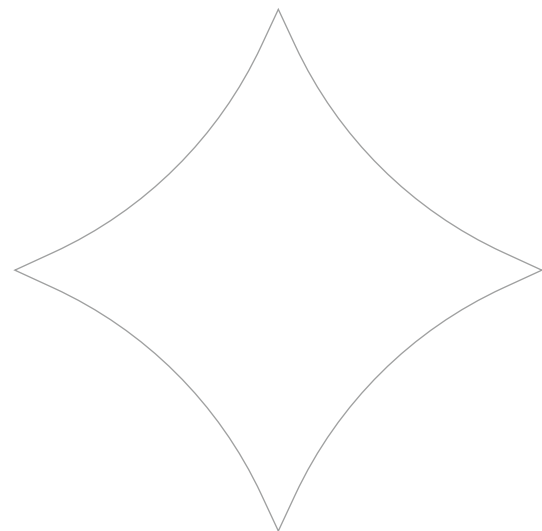
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**ACCURACY**

**SERVICE**

**HONOR**

**UNITE**

**INNOVATION**



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