Executive Summary

This case study focuses on the Tongling-Tangkou Highway (TTH) project. The highway was built to address the development challenge of poor transportation access in low-income areas, and the consequent barrier this presented to tourism and the local economy. In particular, the case study examines how the agency responsible for implementing the project, the Anhui Provincial Communications Department (APCD), responded to and minimized any potentially adverse effects of the TTH on the environment, and on the lives of local residents resettled during its construction. The case study finds that the key factors in the success of the TTH’s construction were: mechanisms for monitoring and evaluating the project’s progress; an adaptive implementation mechanism that enabled the project teams to remain responsive and design solutions to local challenges as they arose; and community participation through consultation, which helped ensure locals’ needs could be recognized and met during the resettlement process.

Introduction

Located along the route of the Tongling-Tangkou Highway (TTH), the Huangshan Scenic Area is listed as a World Heritage Site, and a 5A tourist
destination. With its breathtaking views and rich ecosystems, Huangshan is the only mountain included in China’s ten most beautiful scenic areas. Shancha Village is located in the town of Tangkou at the southern entrance to the Huangshan Scenic Area. The area suffers from a lack of arable lands, and as a result, villagers have historically relied on tourism for their income. Many locals run small tourist sites or offer accommodation and transportation services to visitors. The small, winding roads within the scenic area itself, though, were difficult for both locals and tourists to navigate, resulting in a reduction of the number of tourists able to visit the area. The roads also made the transportation of goods difficult, restricting the extent to which locals could access the materials they needed to capitalize on the tourism that did occur. Reflecting on the problem, villager Guangcheng Fang said “growing crops is not as important to us now and, given the chance, we'd rather make arts and crafts to sell to tourists. The roads are bad, though, and it’s very difficult to get raw materials or products up here.” Improvement to road conditions and transport links were identified as the key to providing support for the development of the local tourist trade.

When plans for the TTH were announced, villagers felt both excitement and concern. Would the highway detract from or damage Huangshan’s natural beauty? Would they need to resettle? If so, how would this affect them? Fortunately, these concerns were put to rest as the TTH project progressed. The new highway shortened the distance between Shancha Village and the Huangshan Scenic Area, made tourist sites near the village such as Jade Valley, Jiulong Waterfall, and Heaven’s Lake more accessible and helped drive the development of the local tourist industry. Villagers that did have to relocate moved into brand new Hui-style homes. Celebrating, Mr. Fang remarked that “living conditions are better now and, after opening a guesthouse, our income has increased. Each family made around RMB 2,000 during the recent May holiday alone. Our businesses have boomed!”

This case study will examine the steps taken during the planning and construction of the highway to protect the environment, and to resettle the local population in a manner sensitive to their needs. It will also assess how the teams responsible for the project’s implementation responded to changes and developments as construction progressed, and the impact these decisions had on the highway and its surrounding area.

**Development Challenge: Lack of Transportation Access in Low-Income Areas**

The TTH is located in southern Anhui Province, a mountainous area that is less economically developed than other parts of the province (see Annex 3 for the geographic location of the project). The mountainous terrain was a costly and technical challenge to road construction, and as a result there were no highways in the area before the construction of the TTH began. The increase in tourism in the area since the TTH construction proves that limited transportation access to the region kept tourists away. Additionally, the two roads that did connect Huangshan with the Yangtze River and northern Anhui were not large enough to safely cope with periodically high levels of traffic. This created road safety risks, and again limited tourism to Huangshan, Jiuhuashan, and Taiping Lake. Improved transportation access, particularly in low-income areas, was identified as essential to realizing the area’s full potential and improving the economic condition of the local population.

The TTH passes through three major cities along the southern bank of the Yangtze River: Tongling, Chizhou and Huangshan. Nearly 10 percent of the province’s population lived below the poverty line.\(^1\) The project impact zone covers 13.8 percent of the entire province and affected 5.9 percent of the total population. The project’s goal was to improve transportation access to a mountainous region thereby increasing the number of tourists, which would, in turn, present a significant opportunity for the local population to take advantage of higher levels of tourism to the area.

**Delivery Challenges: Protecting the Natural and Human Environment, and Resettling Local Residents**

**Protecting the Natural and Human Environment**

The highway’s proposed route bordered the Huangshan and Jiuhuashan scenic areas, and passed beside the Taiping Lake and Shilishan Nature Preserve. One of the

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\(^1\) Provincial statistics for Anhui for the year 2000.
biggest challenges for the project staff, therefore, was preventing damage to the landscape during construction. Accordingly, the project fell under Category “A” of the World Bank’s Environmental Safeguards Assessment, reflecting the risk that improper implementation could irrevocably damage the natural environment. The protection of the ecosystem and its biodiversity was strictly enforced during both the project’s planning and implementation.

In addition, the TTH passes through areas steeped in history and cultural significance. During both the planning and implementation stages, therefore, sites of cultural heritage were identified, and their preservation secured during construction.

Resettling Local Residents
The other significant challenge was the resettlement of local residents. The area of land needed for the TTH meant the project would affect 3,601 rural households containing 14,404 people, 611 of whom would need to be resettled. To support this, the process of resettlement was approached and communicated not as a government-driven compulsory scheme, but as an act of participation in a scheme that would lead to long-term benefits including improved living standards and employment opportunities for the relocated citizens. Throughout, project staff had three main considerations: (a) ensuring the lifestyles of relocated citizens would not change dramatically; (b) improving infrastructure and living conditions in resettlement locations despite limited funding; and (c) protecting the interests of disadvantaged groups, including people living below the poverty line, elderly residents, and individuals without a legal claim to land.

Protecting the Environment, and the Area’s Cultural Heritage

Environmentally Sensitive Planning
Planning for the TTH project began in 2000. The area’s complex topography made the project more technically demanding and costly than the construction of a standard highway on flat terrain. While planners were careful to balance the construction costs associated with the heightened technical challenges against the potential economic and infrastructural benefits for local and surrounding areas in their initial ‘Western Route’ blueprint, the plan failed to fully consider the potential impact of the project on the environment and local residents. In July 2001, Mr. Rod Hamilton of the United Nations World Tourism Organization submitted a letter to the Anhui Provincial Government questioning the proposed route. He warned that construction along this route would likely cause significant damage to and pollution of a ‘currently tranquil and sensitive natural environment,’ significantly undermining the project’s aim of bringing more tourism to the Huangshan, Jiuhuashan and Taiping Lake regions. Instead, he recommended the highway take an ‘Eastern Route,’ from Tongling to Nangling and Jingxian.

The Anhui Provincial Government took his reservations seriously. The Shanghai Ship & Shipping Research Institute, which had been contracted as an environmental consultant in November 2001, was asked to carry out an assessment of the potential impact the TTH might have after construction and provide solutions for preventing or reducing any negative environmental impacts. In December 2001, the Anhui Provincial Government organized a panel of environmental, tourism, and planning experts to examine the Western and Eastern route proposals. This panel included experts from: the Anhui Engineering Consultation and Research Institute, Anhui Agricultural University, Southeast University, the provincial Development and Reform Commission, the provincial Department of Transport, the provincial Department of Housing and Urban-Rural Development and the provincial Department of Environmental Protection. The expert panel carried out fieldwork in relation to the two proposed routes, and also heard from municipal and county governments and related
governmental agencies located along both routes. After careful comparison, the Anhui Provincial Government chose to alter the original Western Route plan, generating a new Western route that placed greater emphasis on reducing the environmental impact so as to promote tourism to the Huangshan, Jiuhuashan, and Taiping Lake regions.

**Environmental and Cultural Protection During Implementation**

Project implementation began in 2004, overseen by a central joint monitoring team that included both domestic staff and international experts. The Louise Berger Group Co., U.S., which was selected by the PMO for construction supervision consulting services in accordance with World Bank procurement guidelines, soon highlighted several key environmental concerns in greater detail. Specifically, it was concerned that the highway might cause irrevocable damage to the local environment, particularly to the scenery and wildlife in Jiuhuashan, Taiping Lake, and Huangshan, and their lake, wetland, and river ecosystems. It also expressed concern that the highway might damage cultural and historical sites along its route.

The APCD was put under pressure to reexamine the issue of environmental protection. It subsequently adopted the following measures:

**First, organizational structures were strengthened.** The APCD set up an environmental management and monitoring system to ensure that any potentially adverse impact on the environment caused by the highway’s construction could be identified and ameliorated. The system introduced dedicated environmental protection units at different levels: the Provincial Environmental Protection Department, Municipal Environmental Protection Bureaus in Tongling, Chizhou and Huangshan, and county and district level Environmental Protection Offices (Implementation Completion and Results Report [IBRD-71830]). Furthermore, an Environmental Monitoring Leading Group was established within (and led by the chief of) the Project Construction Management Office, which took on responsibility for implementing the environmental protection measures. Additionally, all construction contractors were required to establish Environmental Protection Units headed by project managers and staffed by dedicated engineers specializing in environmental protection (see Figure 1).

**Second, training and institutional capability was enhanced.** The creation of the environmental management and supervision system laid the foundations for the project’s implementation, but the execution teams were responsible for project management of the highway’s construction. During the World Bank’s first highway project in Anhui it became clear that any staff responsible for project management needed an adequate knowledge of and involvement in environmental safeguards, so that protective strategies such as pollution control could be deployed effectively at construction sites. The

![Figure 1: Environmental Protection Organizational Structure](image-url)
APCD consequently decided to hold training for all related project staff, including its own key managers, contractors, and staff from branches of local governments in charge of coordinating project services. Environmental protection experts from the Scientific Research Institute of the Ministry of Communications, the Shanghai Ship & Shipping Research Institute, and the Anhui Provincial Department of Environmental Protection led the domestic training. Training also took place in Germany, to take advantage of the country’s experience in highway construction and operation. The training focused on issues including environmental regulation, the maintenance of biodiversity, recognition of protected varieties of flora and fauna, and the conservation of water-based ecosystems. Project managers also received training in resettlement practices and the conservation of cultural sites.

Third was the addition of clear environmental protection clauses in contracts. Contractors were required to include environmental protection clauses in their bids. While construction was underway, dedicated agencies undertook comprehensive monitoring of environmental standards, with reference to the contracting companies’ bids. These contracts also clarified each party’s responsibilities for the quality of construction, and adoption of environmentally conscious construction practices.

Fourth, the agencies responsible for construction used an adaptive implementation approach. Facing numerous challenges relating to the protection of natural ecosystems and sites of cultural significance, the project design was continually tweaked and revised throughout the construction process. This often meant that final construction plans differed considerably from those submitted during the bidding phase. An adaptive implementation approach enabled the construction teams to incorporate revised suggestions into their construction methods and route, as the project progressed. This flexible approach was based on three key principles: preventing damage in the first place is the best form of preservation; minimizing damage during construction would maximize recovery; and strong controls were needed during construction.

Following are examples of how this mechanism was implemented:

1. Protection of biodiversity. The Maire Yew (Taxus mairei S.Y.Hu) is the ‘Giant Panda’ of the plant kingdom and enjoys national Class 1 protection. In the original project design, one of the roadbeds passed a Maire Yew. Designers and construction workers did not recognize the tree until it was discovered and reported by a member of staff in the Environmental Protection Unit, at which point construction stopped. To provide the tree with the space it needed, the APCD, advised by environmental specialists, decided to change the course of the road. The tree was surrounded by a protective barrier, and warning signs were posted to alert the public to the tree’s significance.

2. Protection of cultural heritage. A large number of World and National Heritage Sites, both cultural and natural, lie along the TTH. The APCD surveyed sites of cultural significance that lay beside 22 proposed dig and disposal areas, and decided to adjust the highway’s construction path accordingly to help protect some of these sites. For instance, the highway became the subject of debate among locals in Huizhou, who feared it might damage a set of ancient dwellings that lay in its path. The APCD carried out a survey of the site and, in collaboration with the local government, asked contractors to guarantee the protection of trees, ancient roads, and bridges. In addition, the APCD controlled the use of explosives during the construction process by asking contractors to use smaller packs of dynamite, and asked an independent consultancy to monitor the impact of construction on the nearby dwellings. Finally, the agency established a dedicated fund for the repair and stabilization of the small number of buildings or dwellings that were affected by the construction process.

Fifth, the project’s underlying environmental strategy shifted from one of ‘passive protection’ to one that supported ‘active beautification.’ As the project progressed, so too did the APCD’s knowledge and understanding of environmental construction and protection methods. Its strategy subsequently transitioned from one that sought simply to limit the highway’s impact on the surrounding environment to one that actively encouraged beautification along its route. The agency hired landscape architects to make the highway ‘greener,’ and their designs saw the visual impact of the highway, including its overpasses, central barriers, hard shoulders, and service centers softened with local flora. By using trees, shrubs, and grass, the designers helped compensate for the vegetation lost during the highway’s construction,
and in so doing reinforced the topsoil and enabled the highway to blend into its surrounding environment more effectively.

This process of ‘beautification’ was not limited to the natural environment. The APCD collected information about the architecture, heritage, and traditions of settlements and local populations along the TTH’s route, and used this to inform the design of new buildings. Jiuhuashan, for example, is a sacred Buddhist mountain, and so the APCD incorporated Buddhist elements into the design of service stations and tollgates. In Huizhou, such facilities adopted the Hui architectural style. As the Chairman of the Anhui Transportation Investment Corporation, Mr. Chuanfu Qiao, said, "highways are no longer simply a way to transport tourists from one destination to another; they should be shining examples of the natural beauty and unique cultural traditions of an area."

**Resettling Local Residents**

Another major challenge was the resettlement of local residents. Historically, local governments have been responsible for implementing the Chinese state’s resettlement and compensatory practices. Resettlement was traditionally considered complete once compensation had been provided to those affected. In cooperating with the World Bank, though, the agencies involved in the planning and construction of the TTH were required to extend this approach and find a means to provide any relocated people with a comparable if not enhanced standard of living, including access to employment opportunities. To meet these expectations, the APCD took two important steps:

First, **it adopted a localized organizational structure, with regional oversight.** A Project Resettlement Agency was set up within the Project Execution Office of the APCD, containing specially recruited technical experts and administrative staff with abundant experience in overseeing the allocation of land and resettlement work. In addition, each city involved in the project, and the counties and townships under them, created offices to strengthen the leadership and coordination of any local resettlement that needed to take place (see Figure 2).

The second measure was to support and encourage community participation through open communication and consultation. Throughout the planning and implementation phase, APCD communicated developments openly through public meetings with residents affected by

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**Figure 2: Resettlement Organizational Structure**

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<table>
<thead>
<tr>
<th>Municipal Resettlement Leading Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>County/District Resettlement Leading Group</td>
</tr>
<tr>
<td>Anhui Provincial Highway Survey and Design Institute (Design Agency)</td>
</tr>
<tr>
<td>County/District Resettlement Office (under the Communications Bureaus)</td>
</tr>
<tr>
<td>Township/Town Resettlement Office</td>
</tr>
<tr>
<td>Village Committee and Village Group</td>
</tr>
<tr>
<td>Resettled Households</td>
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<tr>
<td>Project Resettlement Office (World Bank Loan Office within APCD)</td>
</tr>
<tr>
<td>Project Resettlement Leading Group</td>
</tr>
<tr>
<td>Anhui University School of Communications (Monitoring Agency)</td>
</tr>
</tbody>
</table>
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Upholding Environmental and Social Safeguards: Challenges and innovations in building an eco-friendly road in Huangshan

resettlement as well as relevant local governmental and non-governmental bodies. This ensured that residents understood their rights and options, and even meant they could participate in planning and monitoring the project. The APCD contracted the Anhui Highway Design Institute and the Huadong Engineering Corporation to draft a resettlement plan, the research for which included household surveys on affected populations, and was completed in May and June of 2002. Huadong Engineering Corporation carried out on-site consultations with residents affected by resettlement, explaining their options to them. On the recommendation of the World Bank, the APCD also contracted the Sun Yat-Sen University Center for Migration and Ethnic Studies to carry out a social evaluation survey to collect information about the needs of people facing relocation. The APCD used information from this survey, and feedback from the World Bank, to make revisions to its 'Resettlement Action Plan.'

The APCD overcame three major challenges in implementing this resettlement plan:

1. Meeting residents’ needs, and securing a high standard of living for relocated populations. The villagers affected by resettlement outlined a core set of needs. They said that, after relocating, they wanted to remain part of the same village community from which they came, and that their new settlement should be accessible by road, have electricity and water, and be on level ground.

To meet these needs, the central resettlement office undertook a costly process of unified planning, design, and land allocation, and permitted the construction of individual houses. Wherever possible, villagers would be resettled close to their original homes. The Project Resettlement Agency also drafted plans with the local government in each area to provide employment and livelihood support for the newly relocated residents, involving adjustments to infrastructure such as farmland irrigation, and encouraging the uptake of more efficient farming practices. In some areas, the local governments supported the development of rural tourism in the form of providing guesthouse accommodations, and catering for visitors using locally farmed produce. In areas facing significant levels of relocation, local governments provided residents with training to help improve their farming techniques, and converted previously infertile hillsides into farmland.

In addition, residents received financial compensation to ensure their standard of living would be maintained or enhanced following their relocation.

2. Securing enhancements to infrastructure despite limited funding. With limited funding available, a key challenge was securing the infrastructure necessary to improve the standard of living of people affected by the highway’s construction. The solution was to take advantage of the temporary infrastructure built during construction, including a large number of roads, bridges, electric lines, and storage stations. These would normally be removed or decay following the project’s completion, but the team decided to use an integrated ‘temporary/permanent’ model to adapt and enhance this infrastructure so that local communities could use it on a permanent basis. For example, after the project’s completion, the construction team integrated temporary electrical networks into village power grids, now used on a permanent basis by the villagers. Infrastructure improvements were therefore made at low cost.

3. Giving disadvantaged groups a voice during relocation. A number of vulnerable groups were affected by the project, including people living below the poverty line, elderly residents, and individuals without a legal claim to land. The TTH Resettlement Action Plan worked to identify these groups using information obtained from interviews with residents, and data held by local civil authorities. Having been designated ‘vulnerable,’ a household then received special assistance from the authorities during the relocation process, including special consideration in the allocation of housing and other resources.

The TTH opened on September 28, 2007, greatly improving Anhui’s intra-provincial highway network and interprovincial links. Delivered on time, the project is an example of how provincial road building can be sensitive both to environmental and human needs. Daily traffic flow from Tongling to Huangshan has increased from 5,000 to 21,000 passenger vehicles a day, and travel times have been cut. A journey from the provincial capital city Hefei to Huangshan used to take six hours; it now takes just three. Dust control and noise reduction measures were implemented to mitigate the implication of increased traffic pollution on the environment. The number of road traffic accidents has fallen by around 60 percent. Tourism has increased, and improved infrastructure has supported increased levels of income. Monitoring data from the
relocation programs, for instance, suggests that income from tea cultivation and other agricultural products has increased from 23 percent to 34 percent. The growth rate of the tourists visiting the region has sped up, from 3 percent a year to 15 percent. The media have called the project a ‘lifesaver’ for Anhui’s tourism industry.

Lessons from the Case Study

Mechanisms for Monitoring and Evaluation Provided High-Quality, Real-Time Information about the Project’s Impact

The TTH would pass through areas of great environmental and cultural significance. During the scoping and planning phase, the World Bank and a cohort of domestic and international experts and consultants consequently prompted the APCD to strengthen its comprehensive monitoring plan and ensure that high-quality information about the ongoing impact of the highway’s construction was available to project staff.

The APCD established environmental protection units at provincial, municipal, county and district levels, each with responsibilities for monitoring the impact of construction. The central office contained a joint monitoring team (comprised of domestic and international experts, consultants, and project staff) that had overarching responsibility for securing the quality and cost-effectiveness of the project. It did this by drawing together information from its onsite staff, local offices, and contractors to monitor the highway’s ongoing impact and the suitability of the construction methods in use.

Contractors were required to set up Environmental Protection Units, which were led by project managers, and whose staff included engineers who were specialists in environmental construction methods. These teams were able to provide both on-the-ground support and advice during construction, and also pass information to local and central offices about the suitability and impact of these methods. Domestic and international consultants and experts, with extensive experience in, and understanding of, issues such as environmental protection and biodiversity, also supported this process.

The APCD devolved responsibility for monitoring and evaluating the project to its local offices, to help ensure timely information collection by staff with an excellent understanding of the local conditions. In order to ensure that onsite staff and those working in local offices had the capacity to effectively monitor and evaluate the project’s progress, and identify potential challenges ahead of time, domestic and international experts hired by the APCD provided training in issues such as environmental regulation and the recognition of protected species of flora and fauna.

The communication between the various teams, whether they were contractors or part of government, and across the local and central levels, meant there was a reliable flow of information between different actors throughout the project.

This capacity building meant that the quality of the information collected by the project and construction staff was high, and that it could be used to monitor and evaluate the project’s progress in real time. As explained in the next section, project planning could consequently remain nimble and adaptive, and responsive to local needs rather than implementing more generalized solutions.

Adaptive Implementation Mechanisms Reduced the Adverse Environmental and Human Impact of Construction

With all the uncertainties that come from undertaking construction projects in mountainous environments, the original plans drawn up before work begins may not always be appropriate. For this reason, an adaptive implementation mechanism enabled organizers to balance their overarching objectives with the flexibility required to ensure the project could be a success.

The APCD was committed to a project design that supported adaptability, and took steps to build flexibility into planning and implementation. For instance, during the bidding process contractors outlined the precautions they would take to preserve the environmental and cultural integrity of the area for which they were responsible. They also committed to establishing their own Environmental Protection Units to support monitoring and evaluation, and to taking remedial action to reduce their environmental impact during construction if necessary.

Another step the APCD took was to install onsite designers who could help draft potential solutions after an obstacle had been identified. Because the APCD devolved power to its local offices, these designers were able to craft solutions to challenges that appreciated the local context
and environmental needs, and did not need to follow more
generic plans unsuited to the problem at hand. These
commitments to flexible implementation meant that
construction could be adapted on a number of occasions,
to reduce its environmental and cultural impact. As
mentioned previously, on one such occasion construction
was halted and rerouted to protect a Maire Yew tree.

Furthermore, as the project progressed, the designers
adopted a strategy of active beautification. Rather
than seeking simply to ameliorate difficulties as they
arose, they proactively found ways to enhance the
project’s environmental and cultural impact. For
example, designers began to use local flora to disguise
the highway and its infrastructure, and to mimic local
architectural styles to help new buildings blend into their
surroundings.

Local Participation through
Consultation Enabled Residents to
Voice their Needs, and Helped Protect
Vulnerable Groups

An emphasis on community participation during the
project’s design and implementation meant that residents
affected by the highway’s construction, particularly those
facing the prospect of resettlement, were well informed
about their options, and could ensure their needs were
taken into account. This strategy was about more than
simply aiding effective planning and implementation;
it ensured the residents and communities affected by
the project engaged with it, and gave them a voice with
which to communicate their needs.

The APCD conducted meetings, interviews, and
surveys to consult residents facing relocation, as well as
communities, local governmental, and non-governmental
organizations affected by the construction process.
Residents were therefore able to find out about the
project, and voice any concerns they held. It also enabled
them to outline their needs and aspirations following the
resettlement process, and explore possible ways in which
these needs could be met. Significant efforts were made to
identify and interview vulnerable residents, whose voices
might otherwise have gone unheard. Consequently, the
process became seen as one being done with residents, rather than to them.

This flow of information between community groups
and central project teams also provided useful and
important information that could be incorporated
into project planning, and used on an ongoing basis to
monitor and evaluate its implementation.

These three key aspects of the TTH case combined
in the adaptation of temporary infrastructure for
permanent use. Residents facing resettlement expressed
their desire for a respectable standard of living in their
new homes and, specifically, electricity and good road
access. The consultation process captured these views,
which were then fed back to the local and central
project teams. This process catalyzed the adaptation of
temporary infrastructure set up to support the highway’s
construction so that residents could continue to use these
facilities after the project was complete. This meant the
needs of the communities affected by the TTH could be
met, but also enabled the APCD to secure cost-efficient
improvements in infrastructure.
## Annex 1: TTH Project Timeline

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
<th>Reason/Rational for Inclusion</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000–2001</td>
<td>Project work timeline submitted, initial 'Western Route' confirmed</td>
<td>World Bank, major stakeholders and lenders reached a consensus on project goals, preparation, and design.</td>
<td>Facilitating tool</td>
</tr>
<tr>
<td>2001</td>
<td>World Travel Organization expert Mr. Hamilton expressed concern to the Anhui Provincial Government over the 'Western Route' proposal, suggesting an 'Eastern Route'</td>
<td>The Anhui Provincial Government and the APCD took Mr. Rod Hamilton’s concerns seriously.</td>
<td>Inflection Point</td>
</tr>
<tr>
<td>December 2001</td>
<td>'Western Route’ adjusted and confirmed</td>
<td>The Anhui Provincial Government made appropriate changes to the 'Western Route’ proposal so that it would better support the development of tourism in the area. The final project proposal was confirmed.</td>
<td>Adaptation</td>
</tr>
<tr>
<td>2002-2003</td>
<td>Resettlement Research Consultation took place between the residents affected by the project and other relevant organizations, after which the APCD confirmed its resettlement plans with consent from the World Bank.</td>
<td>Consultation took place between the residents affected by the project and other relevant organizations, after which the APCD confirmed its resettlement plans with consent from the World Bank.</td>
<td>Inflection Point/Adaptation</td>
</tr>
<tr>
<td>2003</td>
<td>Domestic/Foreign resettlement monitoring mechanism established</td>
<td>The mechanism ensured the successful resettlement of locals in line with the resettlement plans.</td>
<td>Facilitating tool</td>
</tr>
<tr>
<td>End of 2003</td>
<td>Completion of planning and design of collective resettlement zones</td>
<td>A new ‘collective resettlement’ method and ‘temporary/permanent’ model used limited funds to improve local infrastructure and enhance the standard of living of resettled residents.</td>
<td>Facilitating tool</td>
</tr>
<tr>
<td>August 2004</td>
<td>Project implementation begins; foreign monitoring companies point out specific environmental threats</td>
<td>Many of the issues raised by foreign monitoring companies prompted the ACPD to re-evaluate the difficulties of environmental protection during project construction.</td>
<td>Inflection Point</td>
</tr>
<tr>
<td>2004</td>
<td>Strengthened organizational structures and capabilities</td>
<td>Environmental awareness improved among project staff; executional capabilities strengthened within organizations.</td>
<td>Facilitating tool</td>
</tr>
<tr>
<td>2004-2007</td>
<td>Adaptive implementation mechanisms used to maximize environmental protection capabilities</td>
<td>Incorporating flexibility with basic principles, this approach allowed incorporation of regional culture and folk traditions into the project.</td>
<td>Adaptation</td>
</tr>
<tr>
<td>September 28, 2007</td>
<td>Completion</td>
<td>The completed road network improved transportation links and drove economic development within the region.</td>
<td></td>
</tr>
</tbody>
</table>
Annex 2: Project Map

MAP OF THE TONGLING–TANGKOU HIGHWAY

MAP SYMBOLE
- This Project
- National Road
- River
- Scenic Area
Annex 3: TTH Project Process Mapping

Origins: Anhui Province is one of China’s less developed provinces, especially so in southern Anhui, which has suffered from poor transportation, a lack of investment and slow economic development. Roadways within Tongling, Chizhou and Huangshan were often too small to safely handle increasing levels of residential and commercial traffic. Many roadbeds and surfaces were damaged, and poor transportation links meant the full potential of tourist destinations like Huangshan, Jiuhuashan, and Taiping Lake could not be utilized.

Expected Results: Project design incorporated natural environments, local culture and new corridors, focusing on ecology, tourism and culture. All resettlement sites, toll gates, and service centers incorporated local cultural themes. Great effort was made to minimize damage to the natural environment and local cultural traditions.

Theoretical Bases: Expressways improve the structure of highway networks, make shipping more efficient, drive domestic demand, and therefore benefit the economy and society.

Objective: Improve management capabilities and strengthen monitoring

Measure 1: Create a powerful executive agency
Measure 2: Strengthen education/training
Measure 3: Create a complete monitoring system

Mid-term Results: Improved management capabilities at provincial, county and village levels

Implementation Strategies: Full public participation and attention to disadvantaged groups; centralized resettlement and unified planning; temporary/permanent integration; niche economic development

Mid-term Results: No petitions submitted; livelihoods and lifestyles of affected populations restored or improved

Objective: Ensure no drop in standard of living among migrants

Measure: Integrate resettlement with regional economic development and new countryside policy

Mid-term Results: Local vegetation over 80%; greennification covered 99.7% of route; 90% recovery of dirt dump sites

Objective: Avoid sensitive ecological environments and reduce impact

Measure 1: Full-scale surveys and careful route selection
Measure 2: Dynamic optimization design

Implementation Strategies: No damage is the best protection; minimum damage, maximum restoration; stronger controls during construction; dynamic optimization design

Mid-term Results: No petitions submitted; livelihoods and lifestyles of affected populations restored or improved

Objective: Ensure no drop in standard of living among migrants

Measure: Integrate resettlement with regional economic development and new countryside policy

Implementation Strategies: Full public participation and attention to disadvantaged groups; centralized resettlement and unified planning; temporary/permanent integration; niche economic development

Mid-term Results: No petitions submitted; livelihoods and lifestyles of affected populations restored or improved
Annex 4: Stakeholder Mapping
References


中华人民共和国财政部
Ministry of Finance People’s Republic of China

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