Building a Colorful Sustainable Community After a Mega Disaster

the Experience of Post Typhoon Morakot Reconstruction in Taiwan

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The Threat of Climate Change



- Climate change disaster is upon us (UN, Oct. 5, 2007)
- UN warns climate change could trigger "mega-disasters" (John Holms, UN emergency relief coordinator, June 7, 2010)
- 2010 was the worst year ever for natural disasters. 297,000 people died; 373 major disasters; 109 billion worth of loss; 89% of total people affected in Asia. (UN research)
- 2013 IPCC: Climate change has not stopped and man is the main cause.

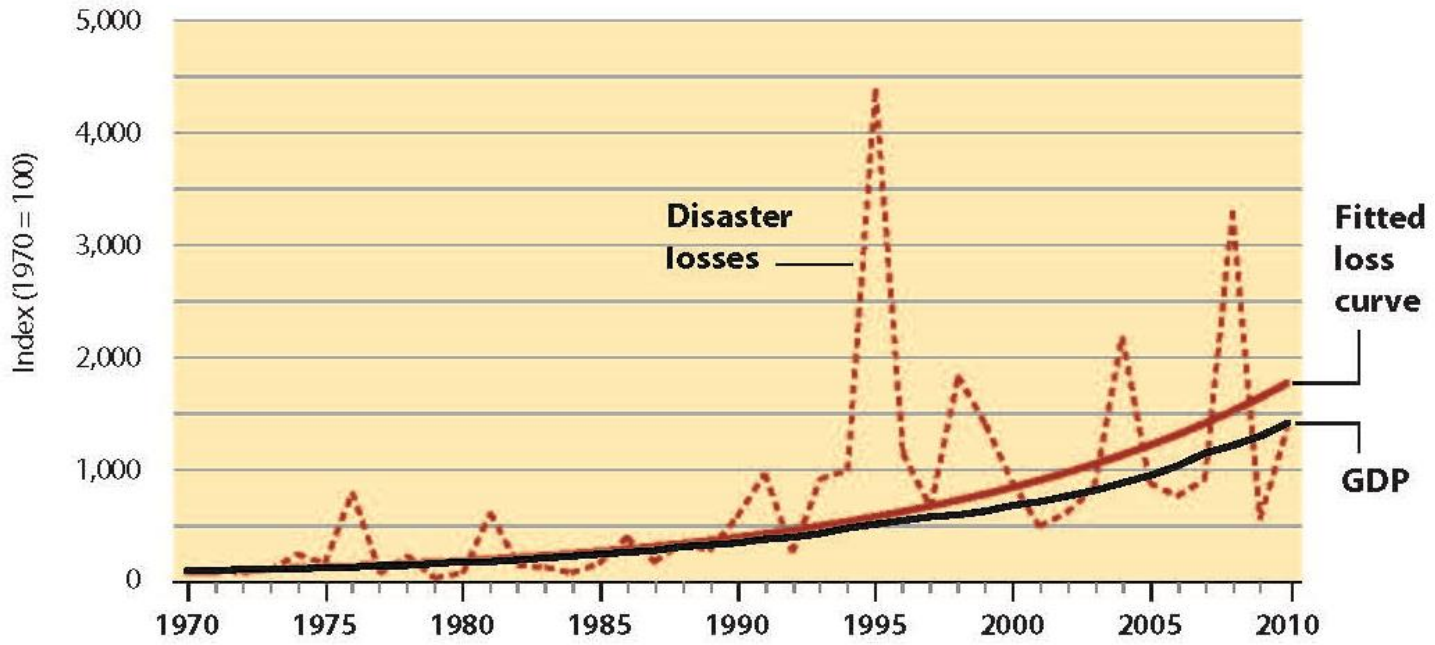
Recent Major Disasters



1999	921	Chi-Chi Earthquake (Taiwan)
2004	1226	Indian Ocean Earthquake & Tsunami
2005		Hurricane Katrina (U.S.A.)
2008	512	Sichuan Earthquake (China)
2009	0808	Typhoon Morakot (Taiwan)
2010		Floods in Europe ,Pakistan and China
2011		Floods & Landslide in Rio de Janeiro (Brazil)
		Floods in Queensland (Australia), 2011
	0222	Christchurch City Earthquake (New Zealand)
	0311	Tohoku-Pacific Ocean Earthquake (Japan)
	0324	Burma Earthquake, 2011
	0904	Talas Typhoon (Japan)
	0725~	Thailand Floods
2012	1029	Hurricane Sandy (U.S.A.)
2013	1109	Super Typhoon Haiyan (Philippines, Vietnam)

ADB 1970–2010 GDP Loss

- Comparative Real Growth in Gross Domestic Product and in Direct Physical Losses as a result of Natural Hazards in the Asia and Pacific region.

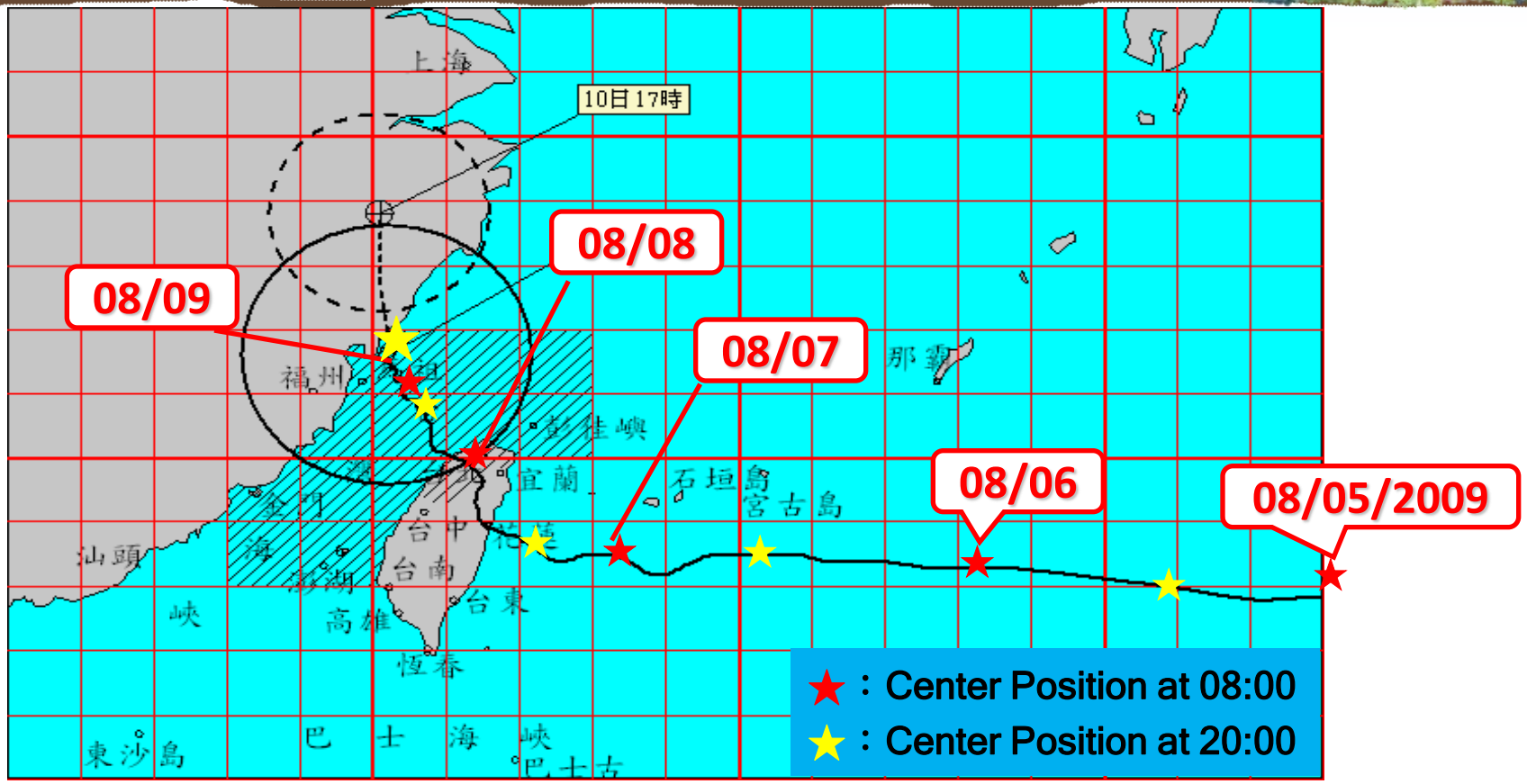


The ADB Report 2013



- Investing in Resilience: Ensuring a Disaster-Resistant Future
- Direct Physical Disaster Losses > growth in GDP (disaster losses have continued to increase)
- Long-term losses of GDP can be reduced by lowering the vulnerability to natural disasters and by increasing the resilience of recovery.

Typhoon Morakot



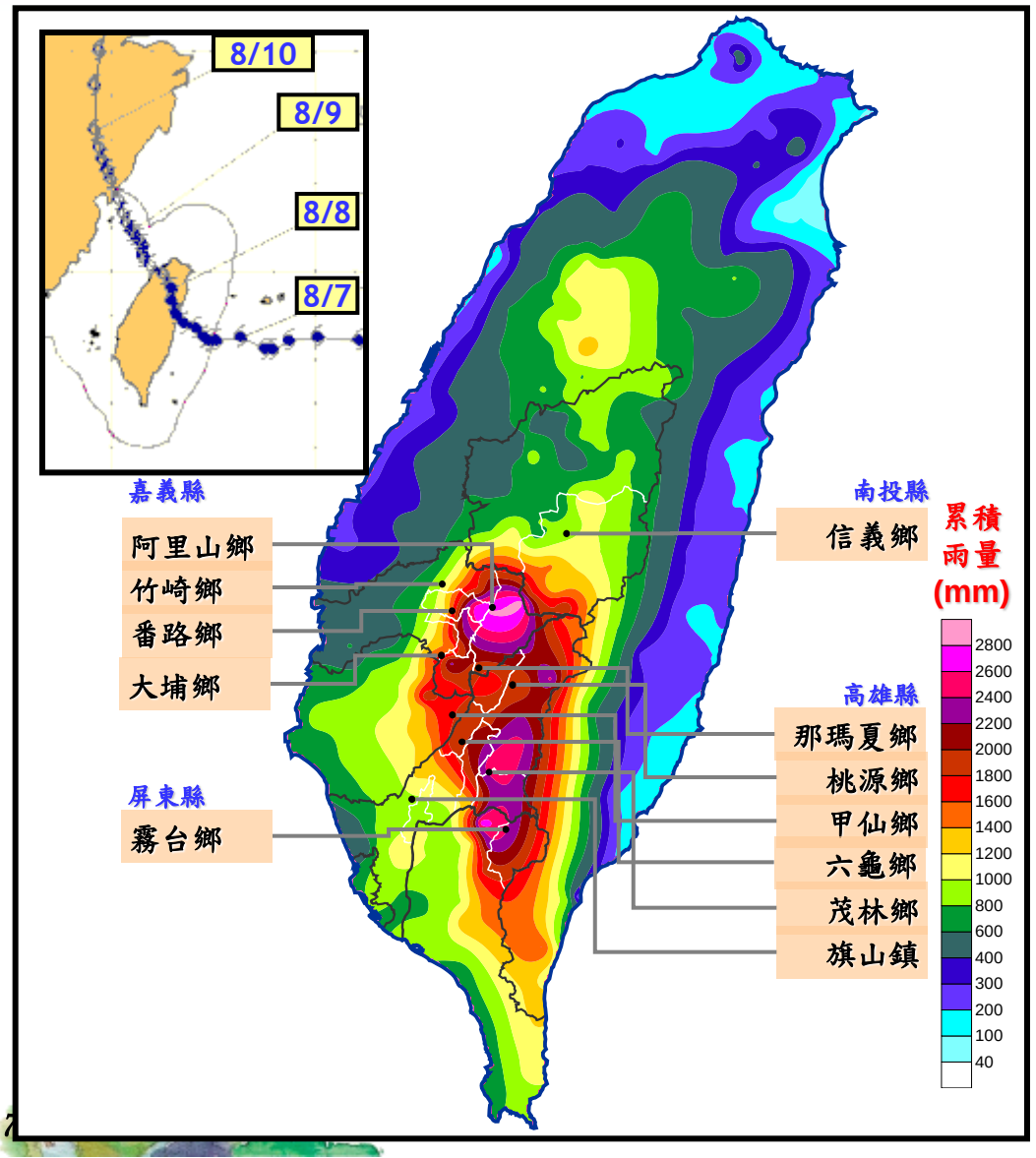
Aug 5-6 Moved fast toward Taiwan

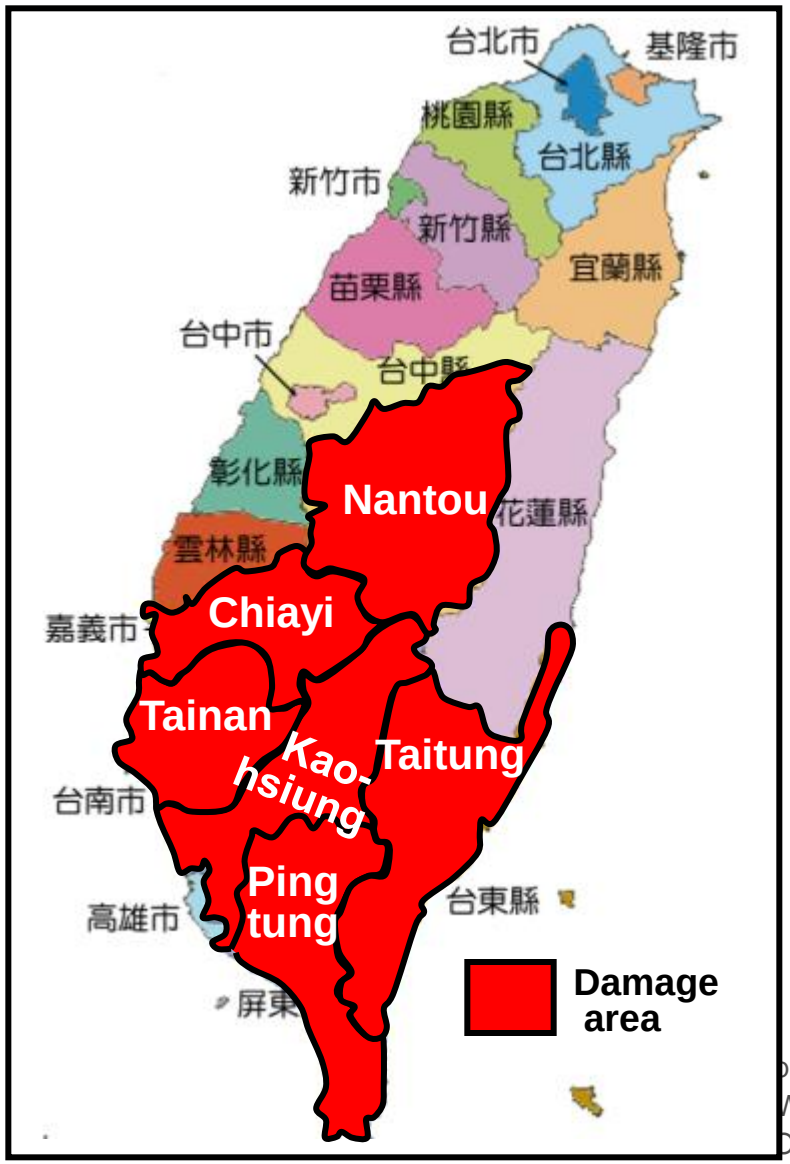
Aug. 7 Slowed down and out skirt touched the island

Aug. 8 Made landfall at 00:0; Center left the island at 14:00 at a very low pace; exerted substantial impact on the whole island

Aug. 9 Gradually moved toward China

Accumulated Max. Rainfall 2,854mm (Alishan)





Damage



- **3 days' accumulated rainfall reached 2,854mm**

  disaster area:

  - **11 counties, 50% of total land area**
  - **9.16 M people, 40% of Taiwan population**

- **People affected by the disaster:**

  510,668 people

  - **flood damage: 491,477 people**
  - **landslide and river scour: 19,191 people**

Damage



- 699 people died and missing; 4 people seriously injured
- 1,766 houses damaged seriously; 28 b NT$ of agricultural loss
- Total lose 199.8 b NT$ (1.6% GDP)
- More than 161 inhabitant areas found unsafe
  - 62 indigenous tribe sites
  - 99 non-indigenous spots

Features of post-Morakot Reconstruction



- **Efficiency, Respect, and Innovation**
- **Join NGOs and industries for Reconstruction**
- **Simultaneous Prevention and Relief Efforts for Reconstruction**

The Great Suffering of Indigenous People

- Most indigenous people live in high mountain areas.
- 75% of the disaster-affected are indigenous people





Indigenous People in Taiwan

- **16 tribes; 0.51 M people (2% of the total Taiwan's population)…Taiwan's versatile culture**



Pressure from Social Response



- Great expectations from the victims
- Pressure of upcoming flooding season
- High unemployment rate
- Threat of the epidemic distribution of H1N1
- Hazard mitigation、risk management and post-disaster reconstruction have to be undertaken simultaneously

Challenges of Reconstruction



- Large debris amounts, lack of dredging roads
- Loosing land (slopes, riverbeds etc.)
- Isolated islands as a result of typhoons and heavy rain
- Frequent evacuation and relocation of disaster refugees
- High reconstruction budget

To prevent subsequent disasters, the reconstruction efficiency and relocation of refugees are competing for time with the forthcoming rainy and typhoon season.

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The Morakot Typhoon Post-Disaster Reconstruction Special Act

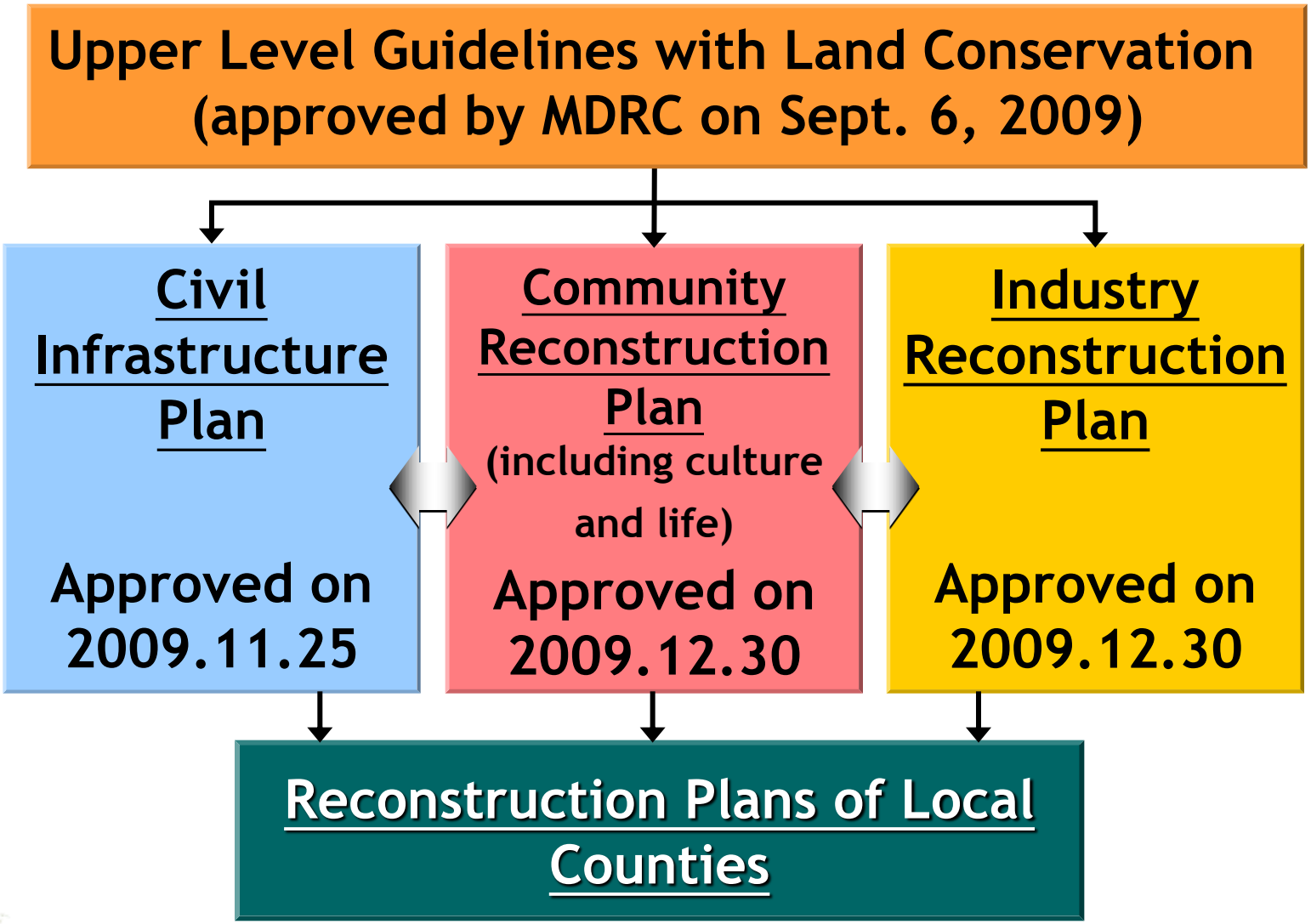


- Released on August 28, 1999
- Core spirit (item 2)

  The post-disaster reconstruction has to be based on humanity, emphasizing the importance of the victims' livelihood, respect the versatile culture, assure the community participation, and consider both national land protection and environmental conservation.

Frameworks of Reconstruction Plan





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Public Budget & Donation



Unit: NTD billion

Public Budget	Donation
138.5 billion NTD ■ Special Budget: 116.5 ■ Reallocated Budget: 22	**25.3 billion NTD** ■ Tzuchi Foundation: 4.8 ■ Red Cross R.O.C.: 5.2 ■ World Vision Taiwan:1.4 ■ Others: 13.9

Total: NT$163.6b (US$5.5b)

Community Reconstruction Plan



To meet the community demand, participation, culture, and environmental sustainability

Building new schools in the location chosen to be permanent housing site

Indigenous culture and living content

Strategies & Principles

Integrate CSR and new tech., set up new eco- and smart villages

The revival of agricultural villages (infrastructure, community, industry, and social function)

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Strategy of Relocation



- **Emergent Relocation**
- **Intermediate Relocation (military barracks or temporary houses)**
- **Long Term Settlement**
  - **Rent Subsidy (1,274 cases approved)**
  - **Buy house (0.5 M NT$ & interest/household)**
  - **Provide free house for permanent stay**
- **Reducing the use of shelter houses; providing the permanent houses by NGOs.**

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Private Participation in Providing the Free Housing

- **The construction of permanent houses and communities by private sectors and NGOs**

  - **Tzu-Chi Foundation**
  - **Red Cross Society of R.O.C.**
  - **World Vision Taiwan**
  - **Evergreen group**
  - **Dharma Drum Mt.**

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The process of Reconstruction

Emergent Evacuation

Short Term Allocation

Civil Infrastructure Reconstruction

Permanent House Construction

School Reconstruction

Colorful Sustainable Community



Cultural Reconstruction

Spiritual Reconstruction

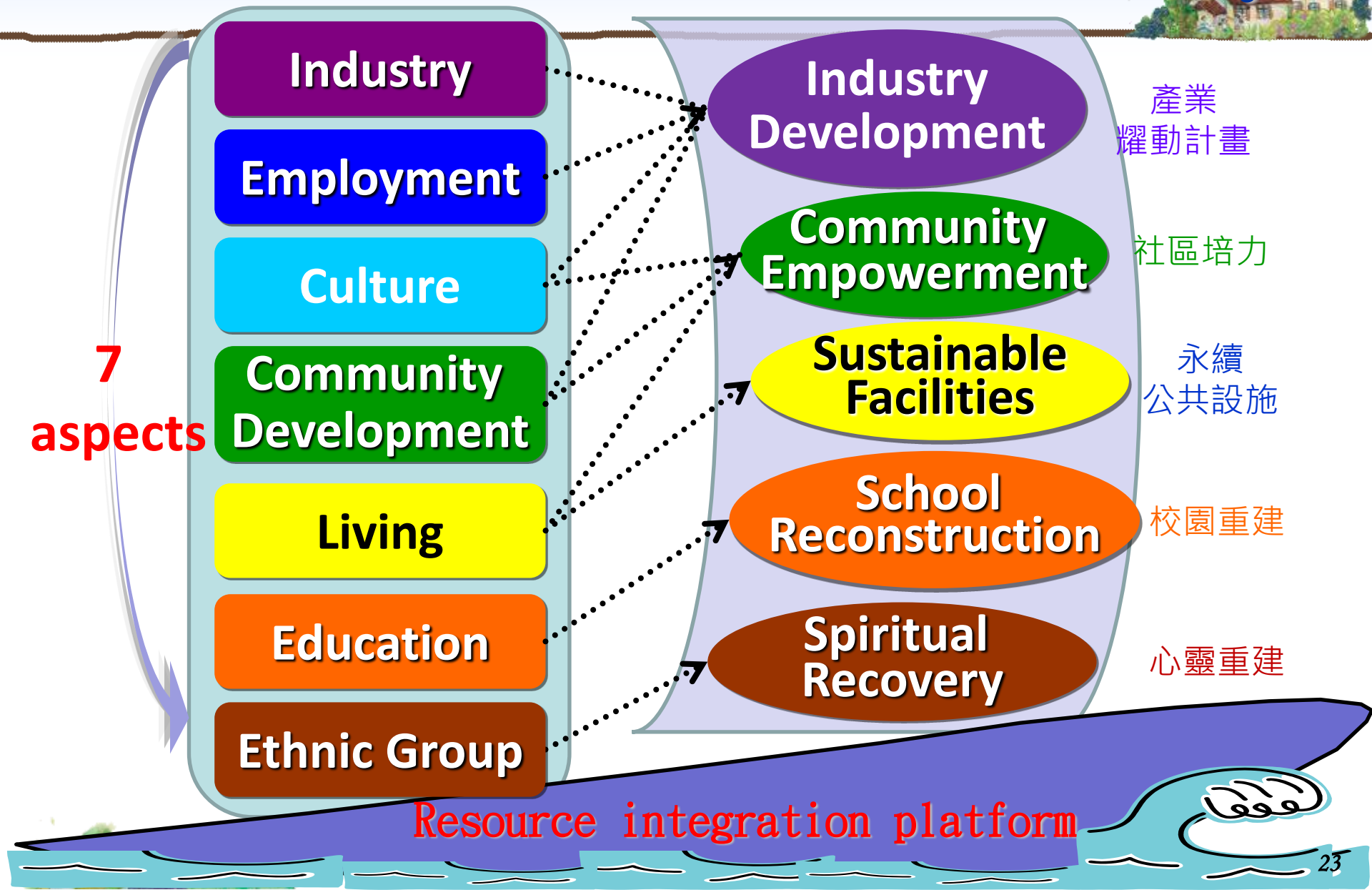
Industry Reconstruction

Safe locations confirmed



- Safety assessment by experts with the participation of inhabitants; discuss to reach conscious with tribe people; declare the special area; limit the habitation and select relocation and relief program.
- 291 sites of safety assessment; 115 public hearings for zoning development-restricted areas, 160 site investigations and review meetings

Colorful Sustainable Community



Concept of Sustainable Community

House

Home

Community

Organic Development



COLORFUL SUSTAINABLE COMMUNITY

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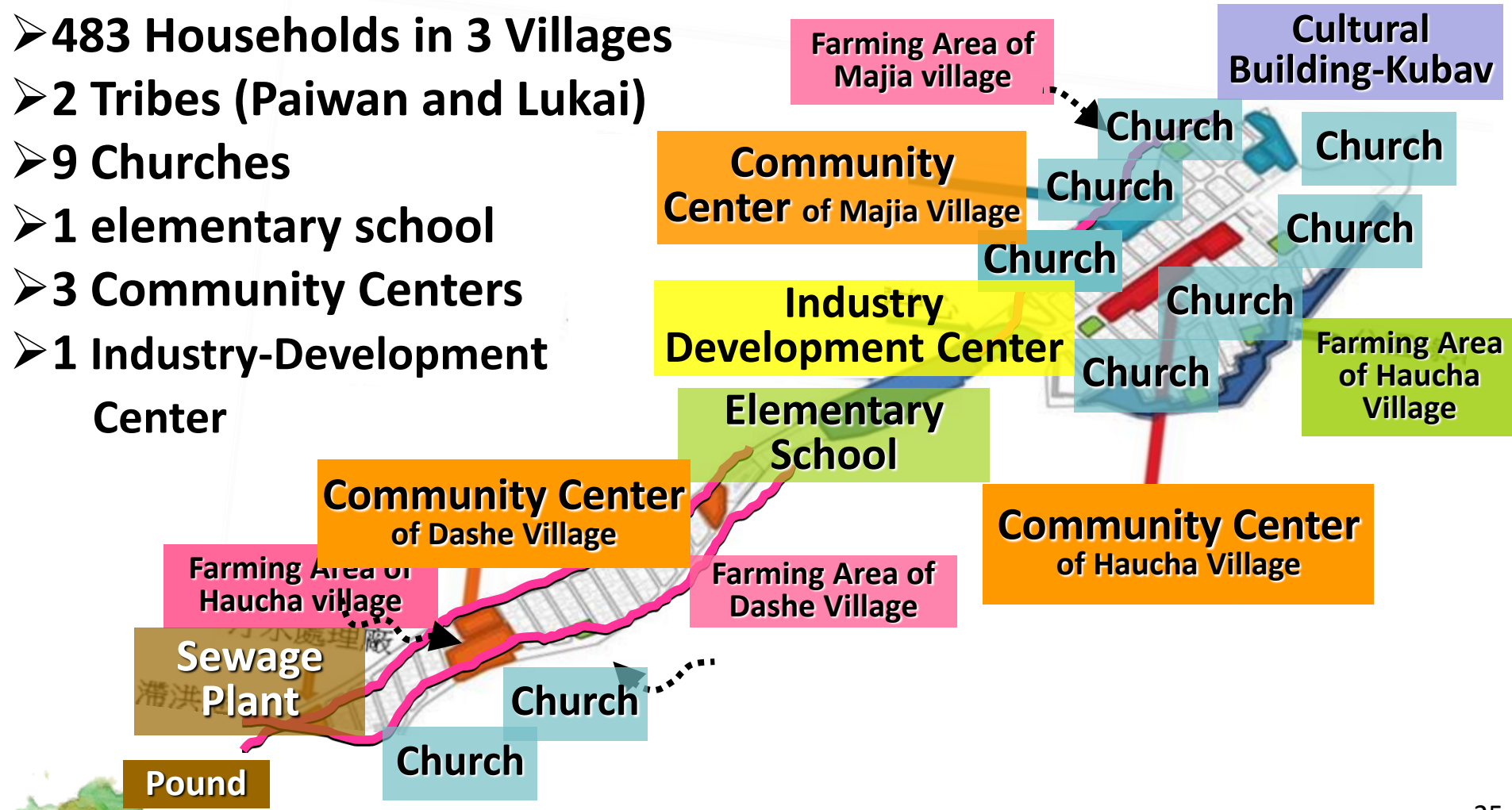
Layout of a Sustainable Community

The Rinari Community

- 483 Households in 3 Villages
- 2 Tribes (Paiwan and Lukai)
- 9 Churches
- 1 elementary school
- 3 Community Centers
- 1 Industry-Development Center



Building Permanent Housing

- There are total 3,561 units of permanent housing planned in 43 sites for relocation. Until now there are 42 sites with 3,519 unites of permanent housing are completed.



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Building Permanent Housing



Central Gov.	Making policies, laws, budgets, land offer, simply administrative procedures, matching resources, major infrastructure construction
Local Gov.	Qualification review, accept application and complete process, community management
NGOs & Enterprise	Fund raising, building Local Infrastructure (in collaboration with the central and local Governments)

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Permanent Housing (Nantou County)







Permanent Housing (Nantou County)

The Changliyuan Community (2010.11.12 completed)







The New Xinyi Star Community
(2011.1.27 completed)



The Inauguration ceremony

Permanent Housing (Chiayi County)



The Ri An Community



The Saviki Community





The Ri Man Community

Permanent Housing (Chiayi County)


Ri An Phase I (2010.9.12 completed)



Saviki (2012.4.28 completed)



Ri An Phase II (2011.12.31completed)


Ri Man (2011.1.20 completed)

Permanent Housing (Kaohsiung County)

The Lo Lo Community



The Xaolin Community



The Da Ai Community



Permanent Housing (Kaohsiung County)


Lo Lo Comm. (2012.4.21 completed)


Sunshine Xiolin (2011.12.24 completed)


Da Ai Phase I (2010.2.11 completed)



Da Ai Phase II (2011.10.2 completed)



Dinner Party with President Ma (2012.1.25)



Xiaolin Thank-U Dinner Party (2012.2.25)



Xiaolin Religious Center (2012.5.5)

Permanent Housing (Pingtung County)



The New Laiyi Community



The Ulaluze Community

The Rinari Community



The Hi Land Community



Permanent Housing (Pingtung County)



New Laiyi (2012.8.20 completed)


Ulaluze (2011.8.15 completed)


Rinari (2010.12.25 completed)


Hi Land (2012.7.30 completed)

Permanent Housing (Taitung County)

Binmao Community



Jialan East Community



Jialan 2



Dawu Community



Jialan West



Living Recovery

- 27 Living Reconstruction Service Centers & 41 Culture Community Service Points
- Provide services to up to 664,982 persons



高雄那瑪夏區生活重建服務中心



台南南化區生活重建服務中心

School Reconstruction

- 1,426 schools were damaged and in need of repair.
- 16 schools have to be reconstructed, and all complete by this year.
- All the students were relocated to other proper places for schooling during the reconstructed period.


Mintzu Elem. School, Kaohsiung


Laiyi Elem. School, Pingtung


Taiwu Elem. School, Pingtung

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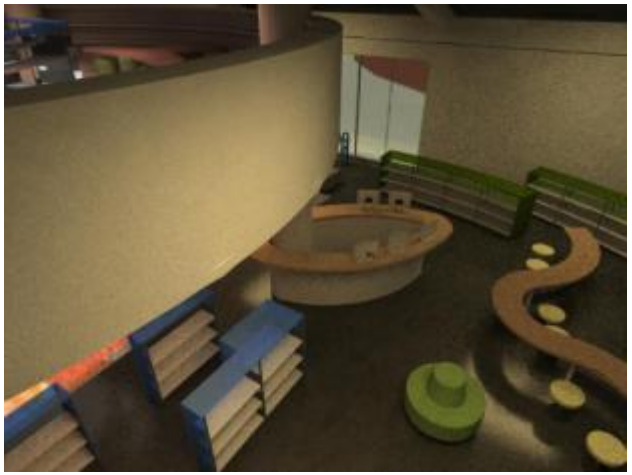
School Reconstruction

- 16 schools have been completed now, all of which are designed with local or indigenous features.
- In addition to reconstructing the schools, the government and NGOs also build libraries, kindergartens, child-care centers, and invest resources to counseling courses for children.





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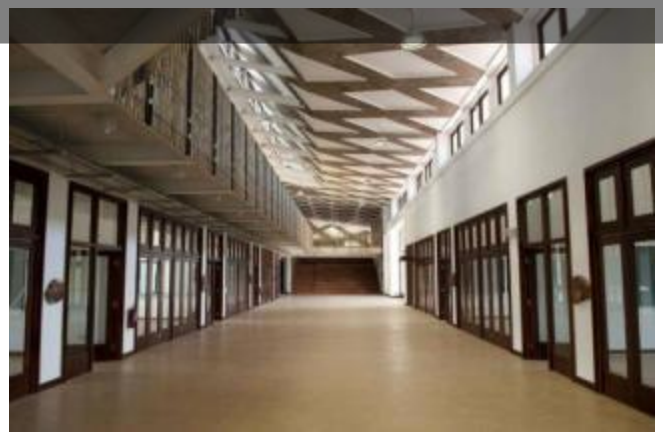
Minchuan Elementary School

Constructed by the DELTA Foundation (2.4.2012 completed)



Green Buildings









Mintzu Da-Ai Elementary School

Constructed by the Tzuchi Charitable Foundation (1.16.2012 completed)













Xiaolin Elementary School

Constructed by TVBS Taiwan Caring Foundation (09.29.2012 completed)







features the Pinpu tribe culture



Taiwu Elementary School

Constructed by the BENQ Foundation (9.28.2011 completed)







features the Paiwan tribe culture







Evergreen Lily Elementary School

Constructed by the Chang Yung-Fa Foundation (2012.5.18 completed)







features the Paiwan and Lukai tribe culture







Dabon Elementary School

TVBS Foundation (2013.5.7 Opening ceremony)

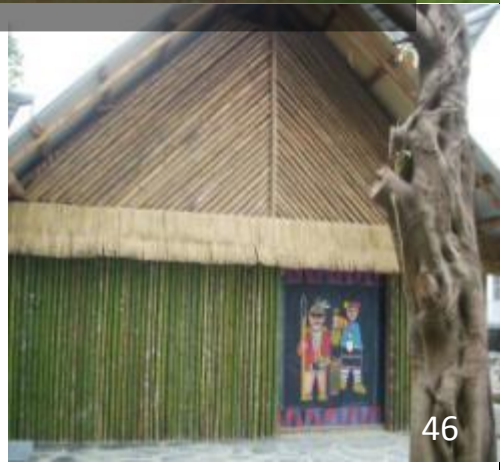


features the Tsou tribe culture









Community Facilities



Da-Ai Community Center, Kaohsiung



Rinari Community Center, Pingtung



Hi-Life convenient Store in Da-Ai Community, Kaohsiung



Churu Community Center, Chiayi

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Community Facilities



Da-Ai Community Cultural Park



Pangolin Shape Leisure Park
Rinari Community



Lily shape Activity Center
Rinari Community







Symbols of the Tribes

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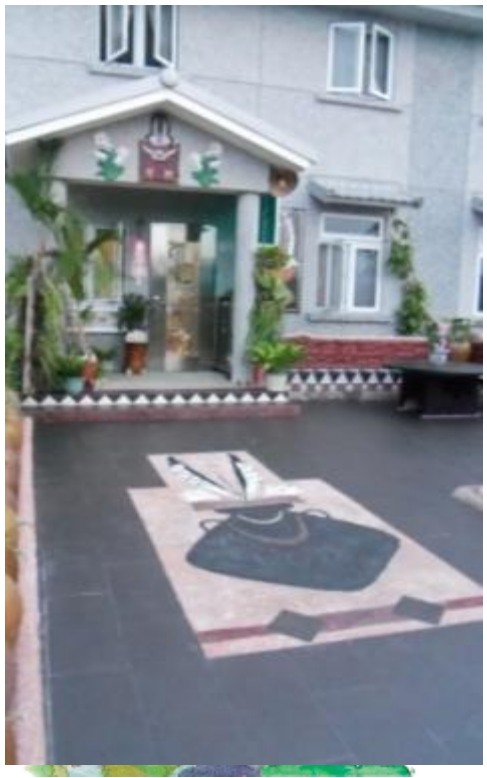
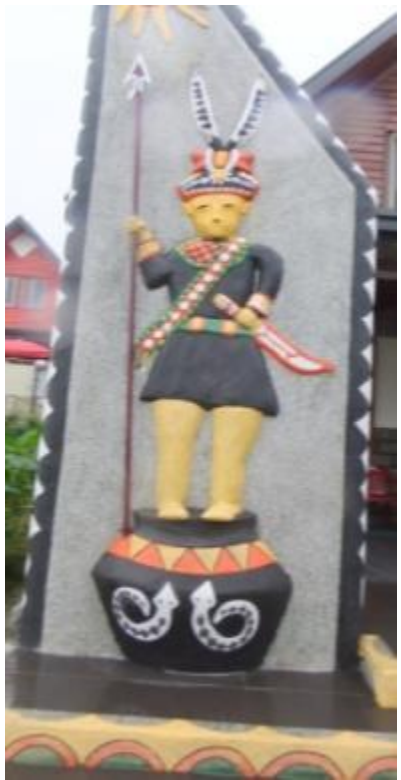
Cultural Messages

- **To strengthen the indigenous features of permanent housing, the government subsidized $100,000 NTD/each house to decorate their houses with *traditional indigenous symbols and icons*.**



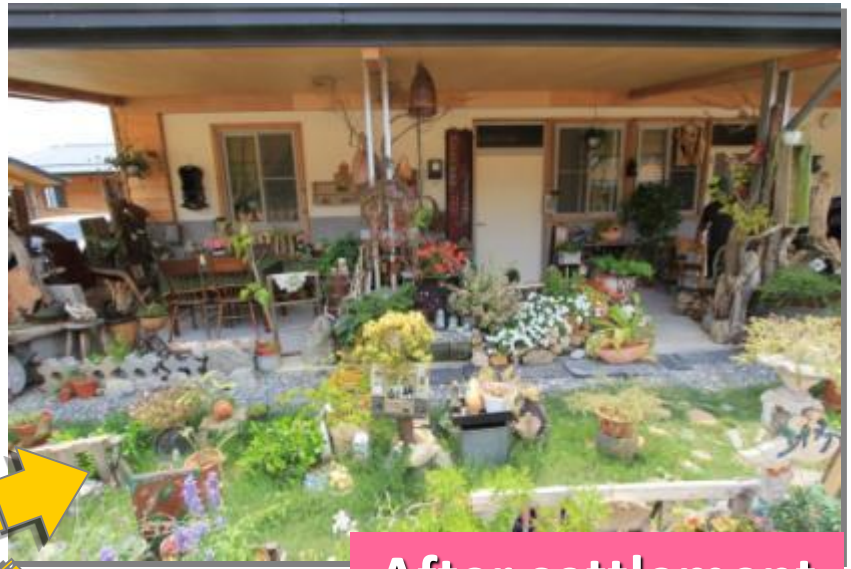




Cultural Messages

Rinari - newly constructed





After settlement





Cultural Messages

Lily village – newly constructed



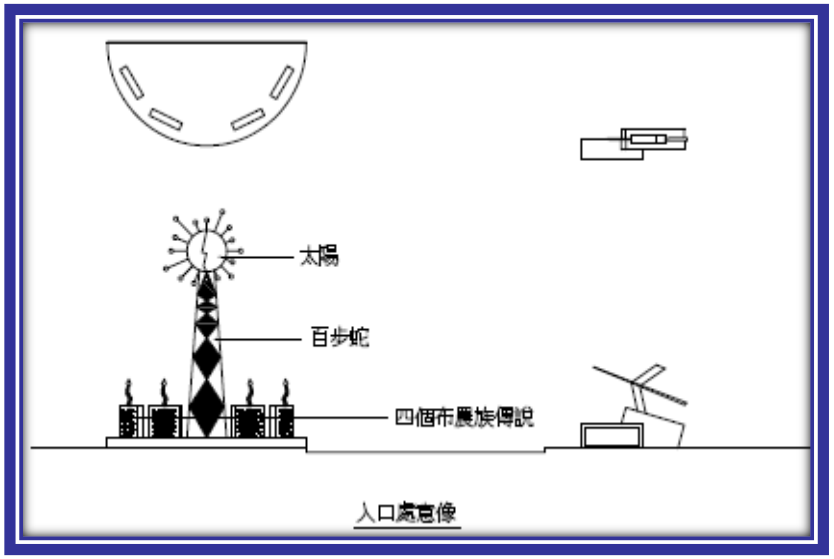


After settlement

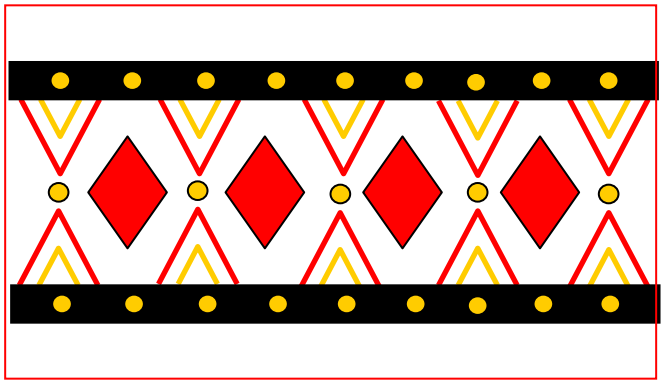




SunMoon Twin Bridge



Symbol of Sun & Bow

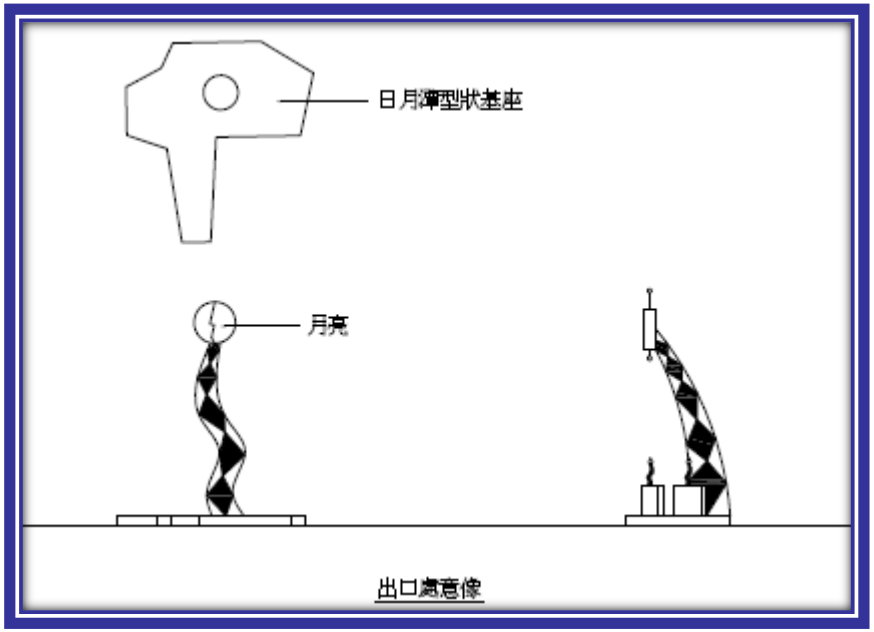


Symbol of Male



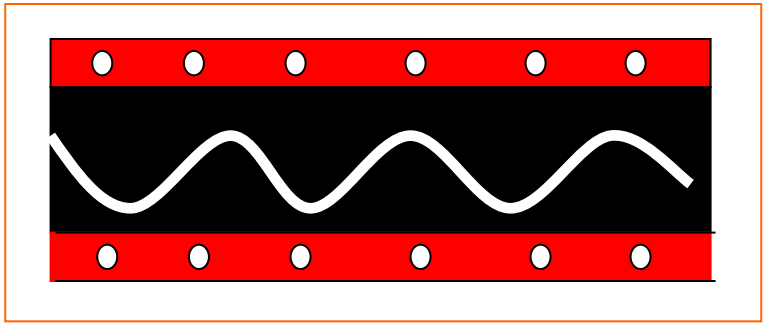


SunMoon Twin Bridge



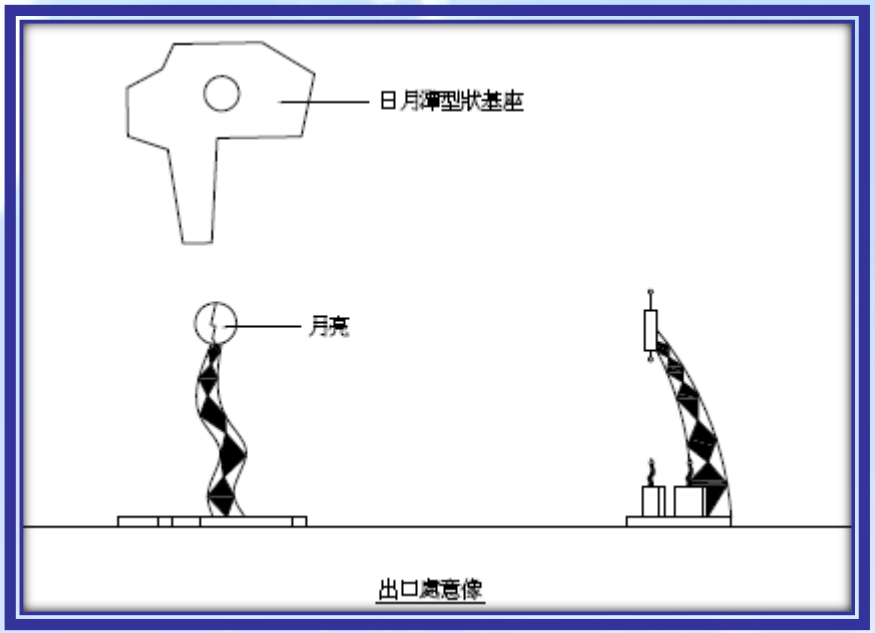


Symbol of Moon



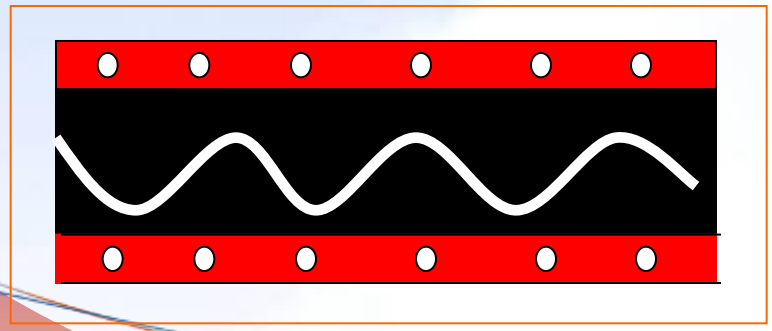
Symbol of Female





規劃圖-月亮意象





規劃圖-二號橋女性彩繪圖



Saviki Bridge



Cultural Facilities

To memorize the victims who passed away in Typhoon Morakot, the government planned to build memorial parks to mourn the victims and preserve the disaster-destroyed sites.





Xinkai Memorial Park

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Cultural Facilities

The Xiaolin Village Memorial Park was built near the Xiaolin Village, which was buried by landslide during Typhoon Morakot, which killed 462 people.



The Xiaolin Village Memorial Park



Cultural Facilities

The Xiaolin Memorial Park won the Most Livable Communities Awards, for the contributions it had made to raise the public awareness of environmental protection and to foster a sense of community amid post-disaster rehabilitation and reconstruction efforts.



Cultural Facilities

Xiaolin Pinpu tribe museum





Xiaolin Pinpu tribe Konkai(公廨)

Night Festival



Mental Health & Spiritual Recovery

- Various attempts were made to mitigate the post-disaster trauma.
- Various sources of mental support were available to the victims to sustain their mental health, either from religious groups, art therapy, or from social workers.



Concerted Efforts in Spiritual Recovery Made by Various Parties

- **Concerted efforts made by the government, NGOs, and corporations**
- **Endeavors by the governments**

- 46 buildings were constructed for religious purposes (with assistance from NGOs)
- Planned "The land of heart" (stretching over 18 hectares)
- Consistent care and counseling provided by the Ministry of Health and Welfare
- Various events were held to provide entertainment for indigenous people

--Recovery service centers were established to assist the victims in re-planning their lives

"The land of heart"



Assistance from NGOs



- **Red Cross**
  Established recovery service centers to assist the victims in re-planning their lives.
- **World Vision Taiwan**
  Established 10 child care centers for post-disaster children.
- **The Tzu-Chi Charitable Foundation**
  The total number of volunteers participating in the reconstruction supposed 190,000; provided services to over 540,000 people at a life recovery service center in Shalin District, Kaohsiung.
- **Dharma Drum Mountain**
  Established three service centers to support the victims in their lives.
- **Fo Guang Shan**
  Held baseball camps to help students of indigenous groups realize their dreams.
- **The Eden Social Welfare Foundation**
  Help the victims rebuild their homes; established service centers.

Corporate Contributions

- **The Chang Yung-Fa Foundation**
  Held five large-scale concerts to heal the traumatized hearts of the victims.
- **The Chunghwa Telecom**
  Launched online and personalized afterschool programs and created curriculum of the education of the heart in collaboration with institutes such as Fu Jen Catholic University and National Kaohsiung Normal University.



Service Center


Concert


Online afterschool program

The Importance of Local Churches

- Indigenous people accounted for some 70% of the victims, 90% of whom are either Christian or Catholic. Churches, therefore, were closely related the lives of indigenous people, with the pastors having an intimate relationship with them.
- The church system served not only as a liaison between indigenous tribes and the outside world but also as a mental support.





Religious Facilities

46 Religious facilities were planned in permanent housing communities, and 31 completed by Aug. 2014.



Seventh-day Adventist Church in Howcha Village



Catholic Church in Howcha Village, Rinari Community



Earth God Temple in Sunlight Xiaolin Community



The Presbyterian Church in Majia Village, Rinari Community



Buddist Temple in Shanlin Da-Ai Community



Earth God Temple in XiaoAi Xiaolin Community

Spiritual Recovery

The government established a "spiritual farming area" in permanent housing communities for elders.

- To preserve indigenous culture by growing traditional crops
- To maintain a lifestyle similar as usual
- To keep elders healthy and happy, physically and mentally





Farm land for elders

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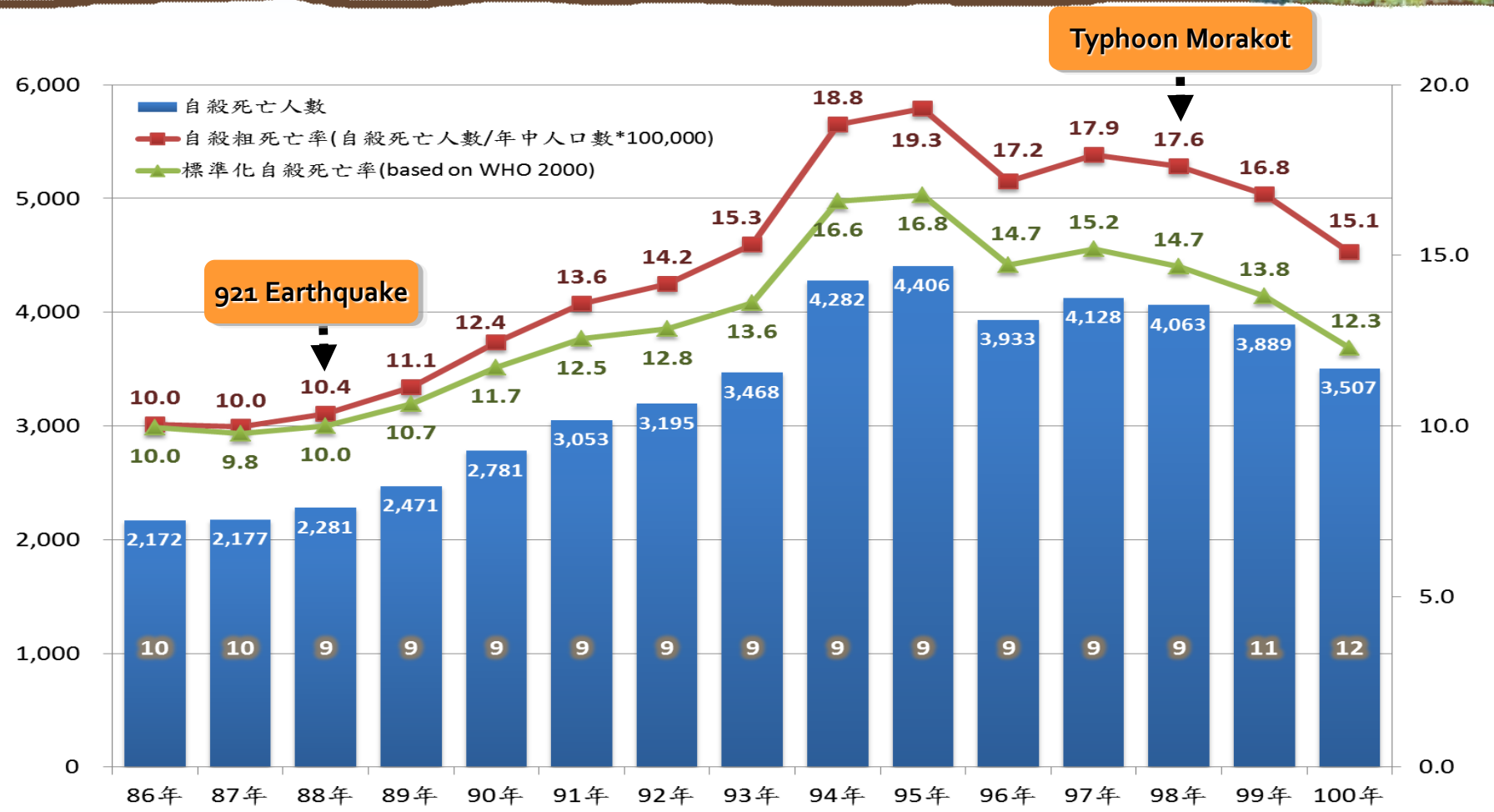
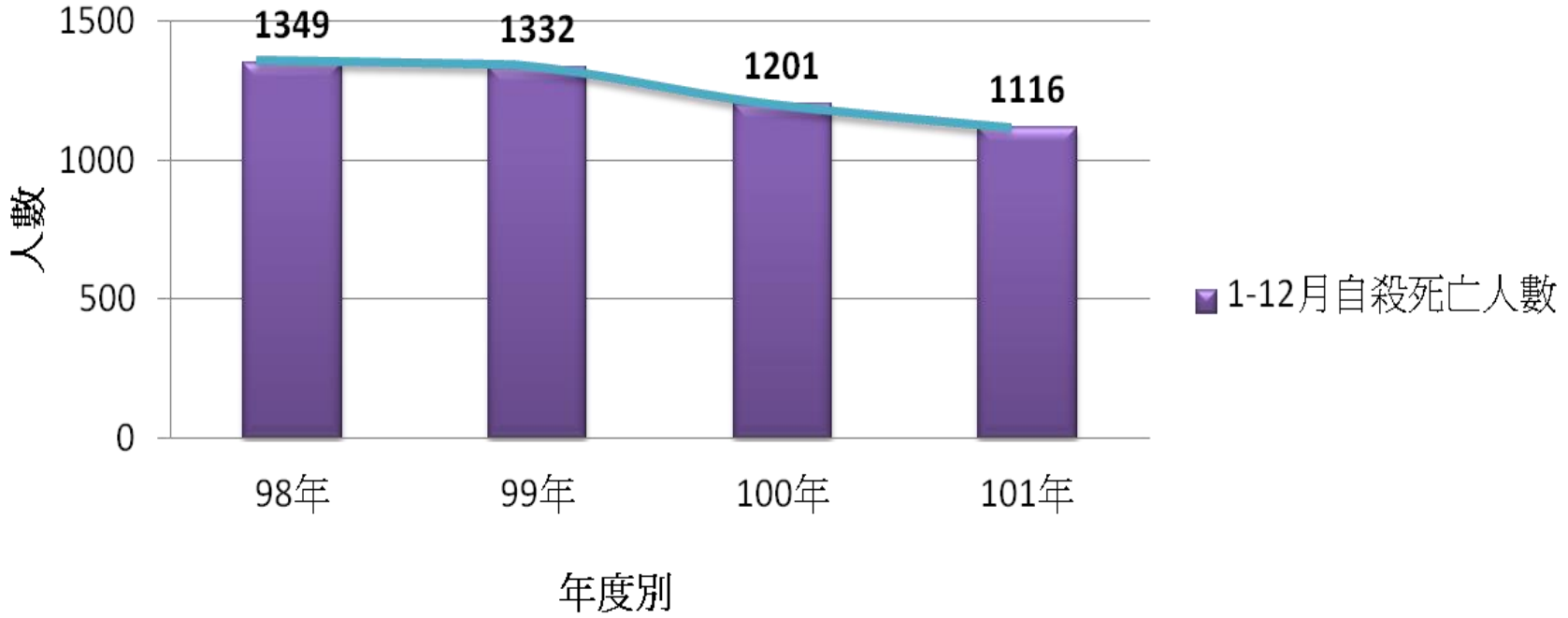
Suicide Rates on the Decrease for the Past 3 Years



- In 2011, the total number of suicide deaths was 3,507; the standardized mortality ratio (SMR) was the lowest for the past 10 years.
- The rank of suicide has gradually dropped in the rankings of the causes of death.

The Effect of Spiritual Recovery

- The central government and local governments stimulated spiritual recovery following the disaster.
- The suicide rates in disaster-affected areas have been on the decrease for four years from 2009-2012.



suicide rate in disaster-affected 6 counties (2009~2012)

Ethnic Issues



To keep the wholeness of tribes and ethnic groups through….

- Planning the layout of permanent housing communities with the concepts of “tribes” and “ethnic groups”.
- Moving the “whole” village to keep the relationship and social network unchanged.
- Maintaining the original right belong to the indigenous people, making sure their right won’t be affected by moving from the mountain.

Ethnic

Holding traditional festivals in the new community





identification with the new home





Community Development



Community Empowerment

To reach a consensus in the community, the government hired community developers and sought help from professional groups to facilitate the process.

Cultural developers

To help the employment in permanent housing communities, and promote the relationships among different ethnic groups.

Community Development



- **Set up the benchmark**

- **To encourage the communities develop power from themselves, the Reconstruction Council has proposed an "Outstanding community appraisal program".**
- **The awarding of "The Environment Development Award", "The Community Organization Award", and "The Community Contribution Award" is planned in this program.**
- **To gain and strengthen the recognition and identification of the community.**

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Community Development

- **Children summer sports camp**





- **Open-air concert**





Industry Reconstruction Strategy



- **Integrate the resources from**
  Communities + NGOs + Governments
  - **Prompt Help right after disasters**
  - **Reconstruct and develop the local industry**
  - **Introducing new industry and marketing**
  - **Developing the power of community itself**

Industry Reconstruction Strategy



- **"Working Groups Project" /Apr. 2010**
- **The concept of "Colorful Sustainable Community" proposed by Reconstruction Council /Oct.2010**
- **"Pulami Project" /Oct.2011**
  - **Being a resource integration platform**
  - **To find out and integrate the demand and urgent problems in community**
- **"Glory and Revitalization Project" (耀動計畫) /Jun.2012**
  - **4 aspects:**
    Industry Development, Employment, Culture, Living
  - **To provide newly reconstructed communities with better care and development.**

Private Participation

- **A village a recovery plan – Indigenous villages (culture, industry, living etc)**
- **More than 18 industries, including Foxconn, TSMS, UMC & China Steel Corp etc., have participated in the industry recovery plan.**
- **Social enterprise (Xiaolin Village)**



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Recovery of Farm Product

- **Orchid Export** (100% recovery), 2010 sale increase 32% than FY 2009
- **Grouper industry** (damaged 725 ha, recovered 80%), 2010 sale increase 80% than 2009





With Military Assistance

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One Township, One Industry

- **Considering indigenous hometown industry reconstruction and the livelihood of the survivors, the Reconstruction Council developed a "One Township One Industry Program," which focuses on the industry reconstruction in disaster-stricken areas.**





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Yonglin Organic Farm



- Along with Da-Ai Village, this farm established the enterprise by joining ecology, living and production together and developed the tourism business with the neighboring area.
- Create the international model of Disaster Refugee Relocation, job placement, and new enterprise development by BOPT (Built-Operate-Profit-Transfer).

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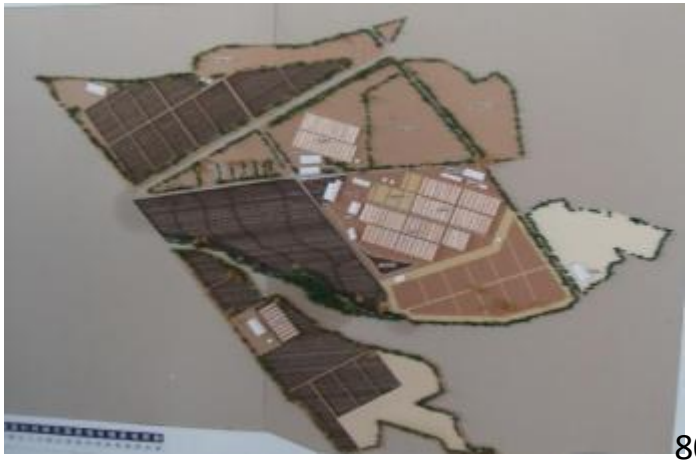
BOPT Model- YongLin Farm

- BOPT (built-operate-profit-transfer)
- Foxconn invested $500 million NTD to build a organic farm and hire local people.
- The ownership of farm will be transferred to the Kaohsiung City government after six years' management.
- Land area:
  166 ha.
  (rent from government)



Yonglin Shanlin Organic Farm











Enterprise Adopted Villages

Bamboo processing Plant at LiChia Village built by TSMC





Tea processing Plant



Tourism promoting activity



Industry Development of Li-Chia Village by TSMC

- TSMC Typhoon Morakot Relief Project
- Legalization of 5 civilian hotels
- Compound Management by joining Bamboo Plant, tea plant, civilian hotel, and tourism.



New Logo



Tea Plant



Bamboo Plant

With Help of Enterprises






Tea Plant and Bamboo Plant by TSMC







Wood Studio by Chant Oil Co.





Sustainable and Settlement Project by China Steel Co.

Developing Local Industry

- The development of indigenous industry stagnated as a result of the unstable transportation condition.
- Government introduced professionals to provide technology service and consultant operation to help recover indigenous industry.











85

Develop Organic Products





































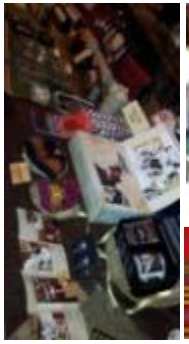
Innovative Indigenous Arts

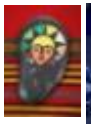

















87

Celebrating



Danayiku Park Reopen



LioKui Brdg. & Hot Spring Season


LiDow Brdg. Open



SinFa Brdg. & Industry Pormotion

Tourism Promotion

- 15 Tourism Routes
- Tourism Passport
- Subsidy Tour Bus







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Alishan







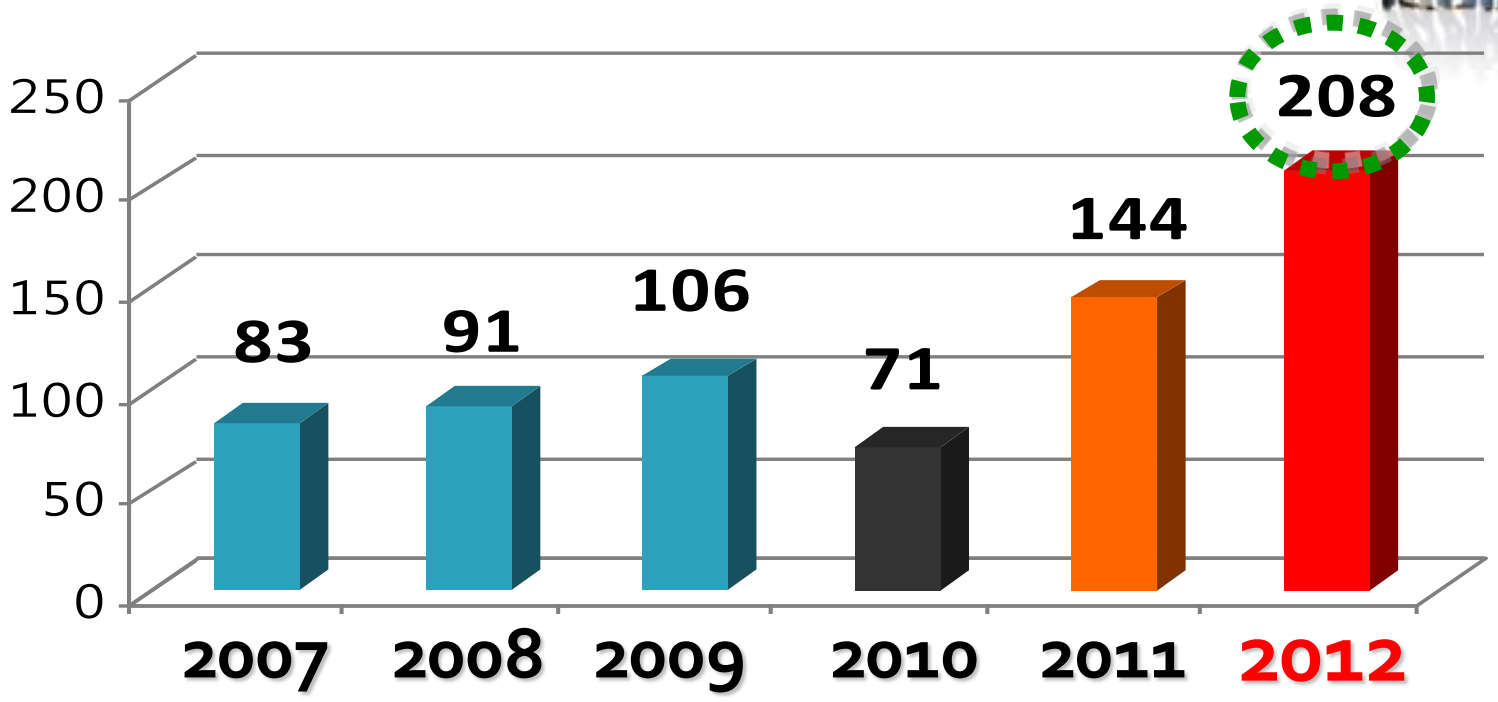




Alishan Revitalization

- After reconstruction, the number of tourists to Alishan Forrest Park has amounted to 2.08 m man-trip, as the highest ever.





Green Reconstruction

- Solar Heaters：248 households
- Solar Power Systems：68 sites
- Wind Power Systems：6 sets





Solar Power Energy Parks in Linben (23628 Kw)

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Green Energy



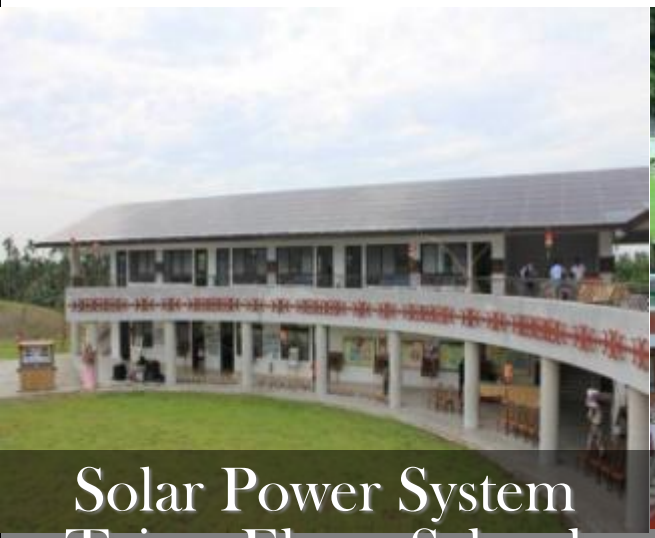
Solar Power System
Da Ai Village



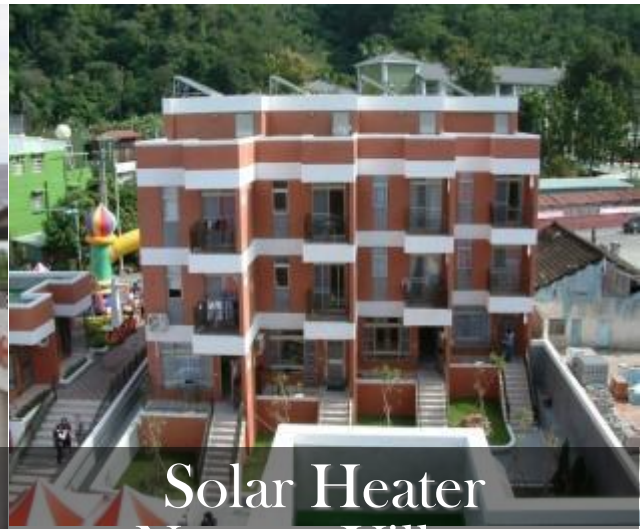
Solar Heater
Xiaolin Village



Wind Power System
Minchuan Elem. School



Solar Power System
Taiwu Elem. School



Solar Heater
Nantou Village

Anticipated Effects of Photovoltaic Farming



- Assist at least 168 families in recovering from Typhoon Morakot and further in obtaining new sources of income
- Reduce groundwater abstraction by 9855000 cubic meter
- Increase the amount of electricity generated by renewable energy resources (43,362,000 KW)
- Create 5,400 jobs in the townships of Chiatung and Linbian.

Power of Community Itself

- To assist Da-Ai community to develop their own brand and attract tourists by creating a "Owl Festival".
- Owls symbolize "Good Luck" in the Bunun tribe.
- Cohere the consensus of the community through the process of holding a festival of their own together.





Social Enterprise

- Xiaolin village victims & Mr. Chien (Allion Labs, Inc.) co-founded the “2021 Social Enterprise” on Aug. 7, 2013.
- Develop a plum product chain using naturally-grown native organic plums.





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Innovation The Rainbow Sustainable Community

A dynamic organic development



HOUSE

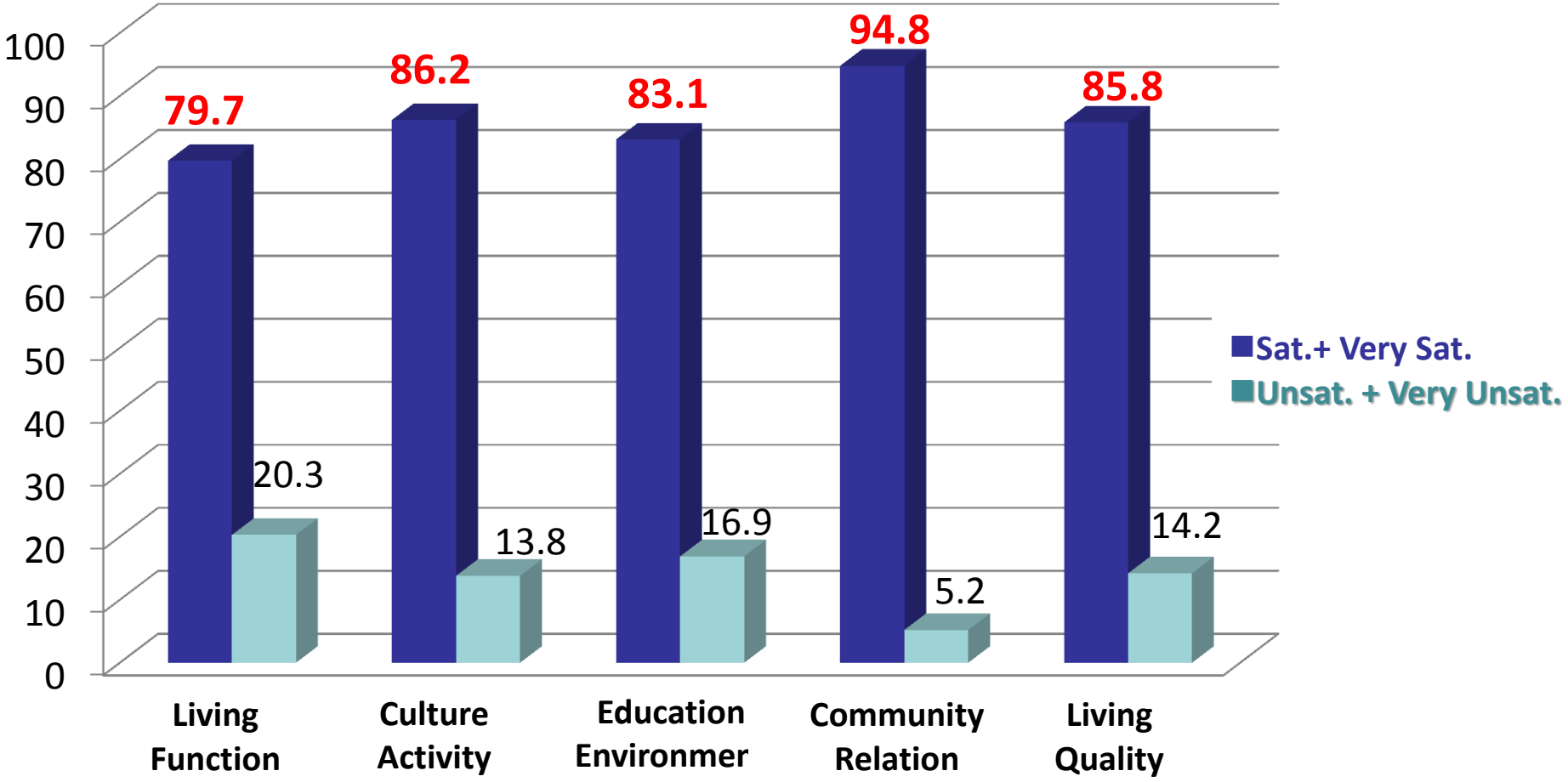
HOME

COMMUNITY

THE RAINBOW SUSTAINABLE COMMUNITY

Survey of Satisfaction in Permanent Houses

All items about living quality with satisfaction exceed 80%



By Dept. of Social Work, National Pingtung Univ. of Science & Technology, 2014

Not only Reconstruction…

is Reborn

Safety

Humanity

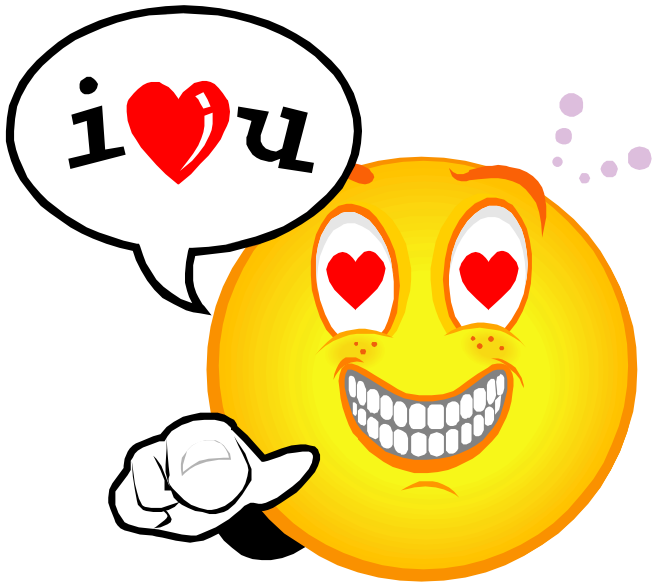
Innovation…

& Sustainability



A World Model on Reconstruction

- This is a join effort of the Government, NGOs, Charitable Organizations, and the Industry, regardless of race or political orientation; and with the own efforts of the victims after the Disaster.



To Summarize...



Live with safety

Live in peace

Work with enjoyment

Growing attached to one's home

Long-term residency

Sustainable Development

Morakot Reconstruction Exhibition Hall

Kaohsiung









Thank you for your attention.

For more information,
please visit our official website:

http://88flood.www.gov.tw/

