

# Analysis of the Integrated Sustainable Development of **Lin'an** --Economy, Ecology and Livelihood



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# 1. Baseline information of Lin'an



- Lin'an is under the administration of Hangzhou, the capital of Zhejiang Province.
- The total population of Lin'an as up to year 2010 is 525,859.
- The total area of Lin'an is 3126.8 square kilometers; the hilly and mountainous area covers 86% of the total area. Up to year 2010, the total farmland area was 17,055 hectares, total forests area was 259,713 hectares. The forest coverage was 78%.



## 2. Status of economy, ecology and livelihood of Lin'an in the past 32 years



### 2.1 Mono-culture of crops could not alleviate the poverty in Lin'an

- Before the Opening-Up and Reform Policy, Lin'an was one of the Poverty Counties.
- Focused on resolving the problems of “**food**” and “**warmth**” of the people, and proposed the guiding policy making “food” the principle development goal. ~~damages~~ of large areas of forests, serious water and soil erosion, as well as land degradation.
- These had given Lin'an **a serious lesson**: mono-culture of crops could not alleviate poverty and provide enough food.

- Since 1978, Lin'an has experienced a **transformation** process:

- Poverty → well-off
- damaging resources → protecting resources
- mono-management → multiple management
- cutting down trees → protecting trees, even ornamental trees
- Now it has achieved a comparatively sustainable and balanced win-win situation in ecology, economy and livelihood.

## 2.2 Status of economy, ecology and livelihood of Lin'an



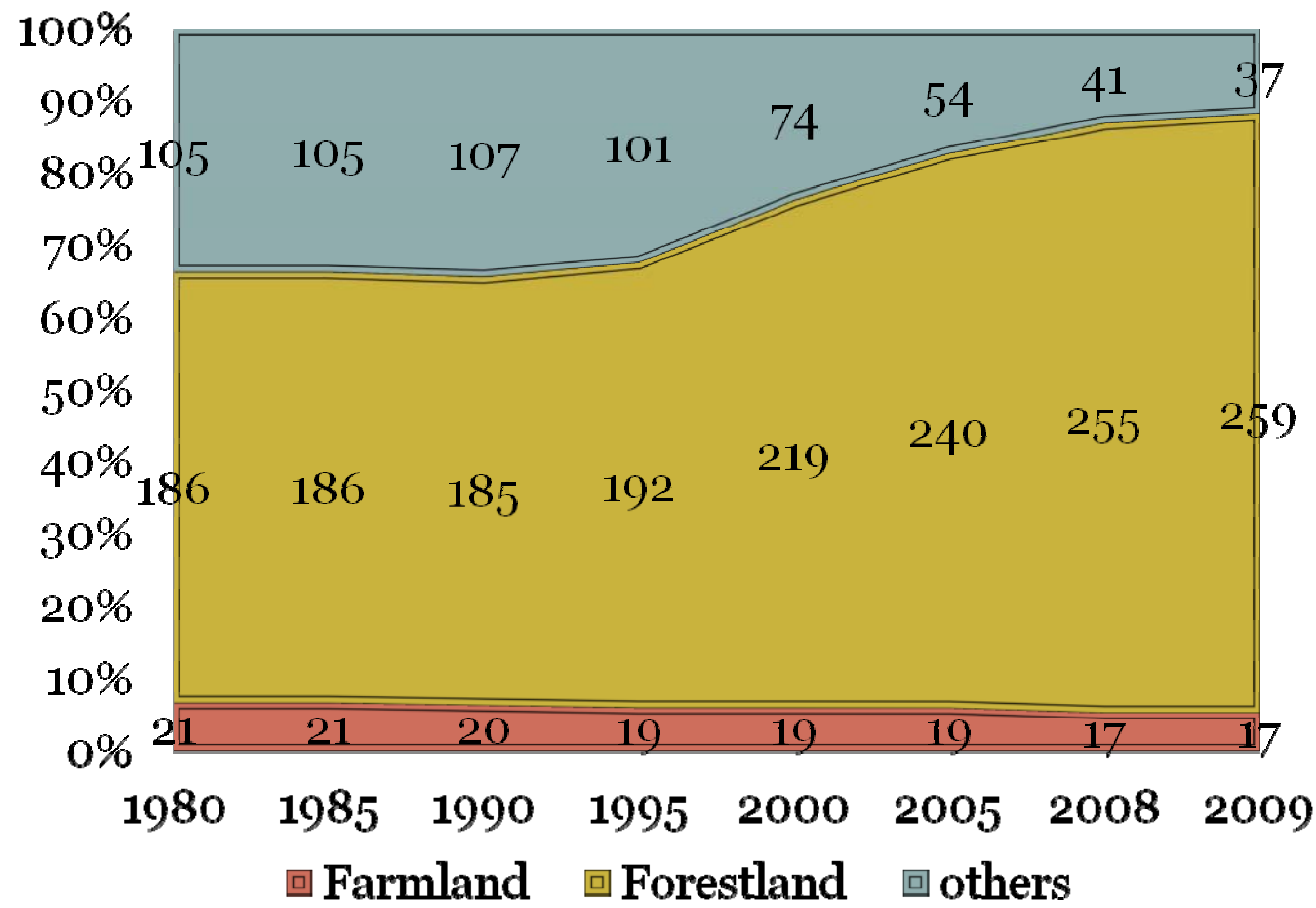
- A series of data are indicating Lin'an's **development** in economy, ecology and livelihood over the past 32 years.
- These data show that great **changes** happened in this hilly and mountainous county-level city.

## 2.2.1 The achievements in **ecology construction**

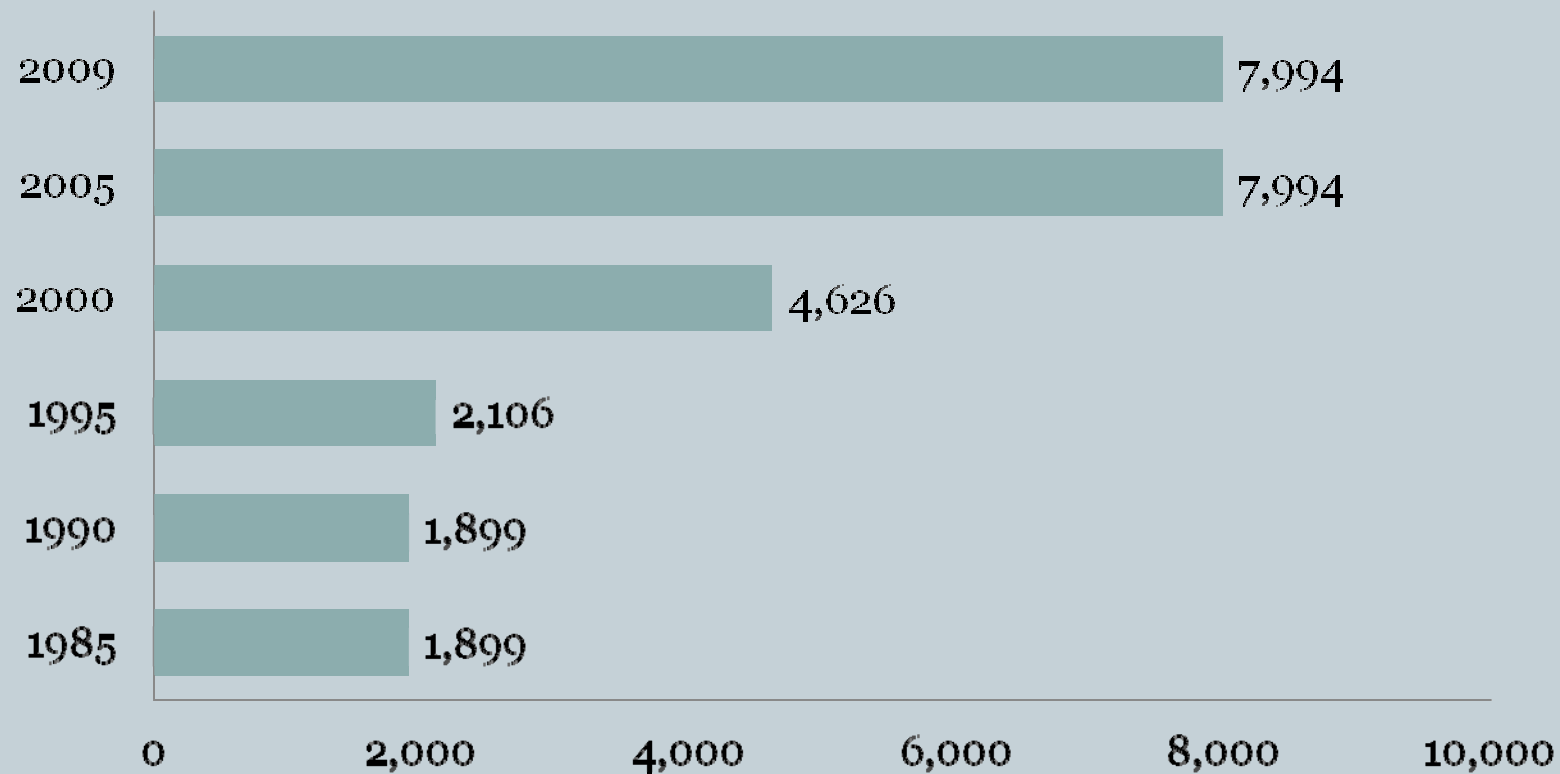
- Forests coverage rate: 64.1% (in 1985) ----78% (in 2009);
- Total standing volume: 5.14 million m<sup>3</sup> in 1985 --- 8.30 million m<sup>3</sup> in 2009;

| N <sub>o</sub> | Items                       | Unit                   | 1980   | 1985    | 1990    | 1995    | 2000    | 2005    | 2008    | 2009    |
|----------------|-----------------------------|------------------------|--------|---------|---------|---------|---------|---------|---------|---------|
| 1              | Forestland area             | Ha                     |        | 186,333 | 185,460 | 192,067 | 219,126 | 240,389 | 254,885 | 259,713 |
| 2              | Forest coverage             | %                      |        | 64.1    | 64.9    | 67      | 74.9    | 76.55   | 76.55   | 78      |
| 3              | Standing volume of forests  | Million m <sup>3</sup> |        | 5.14    | 4.86    | 5.08    | 5.16    | 8.58    | 8.30    | 8.30    |
| 4              | Standing volume per hectare | m <sup>3</sup> /ha     |        | 42      | 26.2    | 31.05   |         | 44.7    | 39.1    | 39.1    |
| 5              | Timber logging              | m <sup>3</sup>         | 99,400 | 128,600 | 173,600 | 83,000  | 72,650  | 65,043  | 81,879  | 95700   |

Areas of Farmland and Forestland (Thousand Ha)



- **Natural reserve area: 1899 ha in 1985 --- 7994 ha in 2009;**







- Since 1980, the number of Shutdown polluting enterprises is 125; the ratio of qualified industrial wastewater discharge is 99.45%; the garbage treatment rate in rural areas was 87% in 2009;
- On green energy development, the number of small hydropower station increased from 29 in 1980 to 99 in 2009; power capacity increased from 22,000 kw/h to 400,000 kw/h; rural household solar energy utilization rate reached 50%.

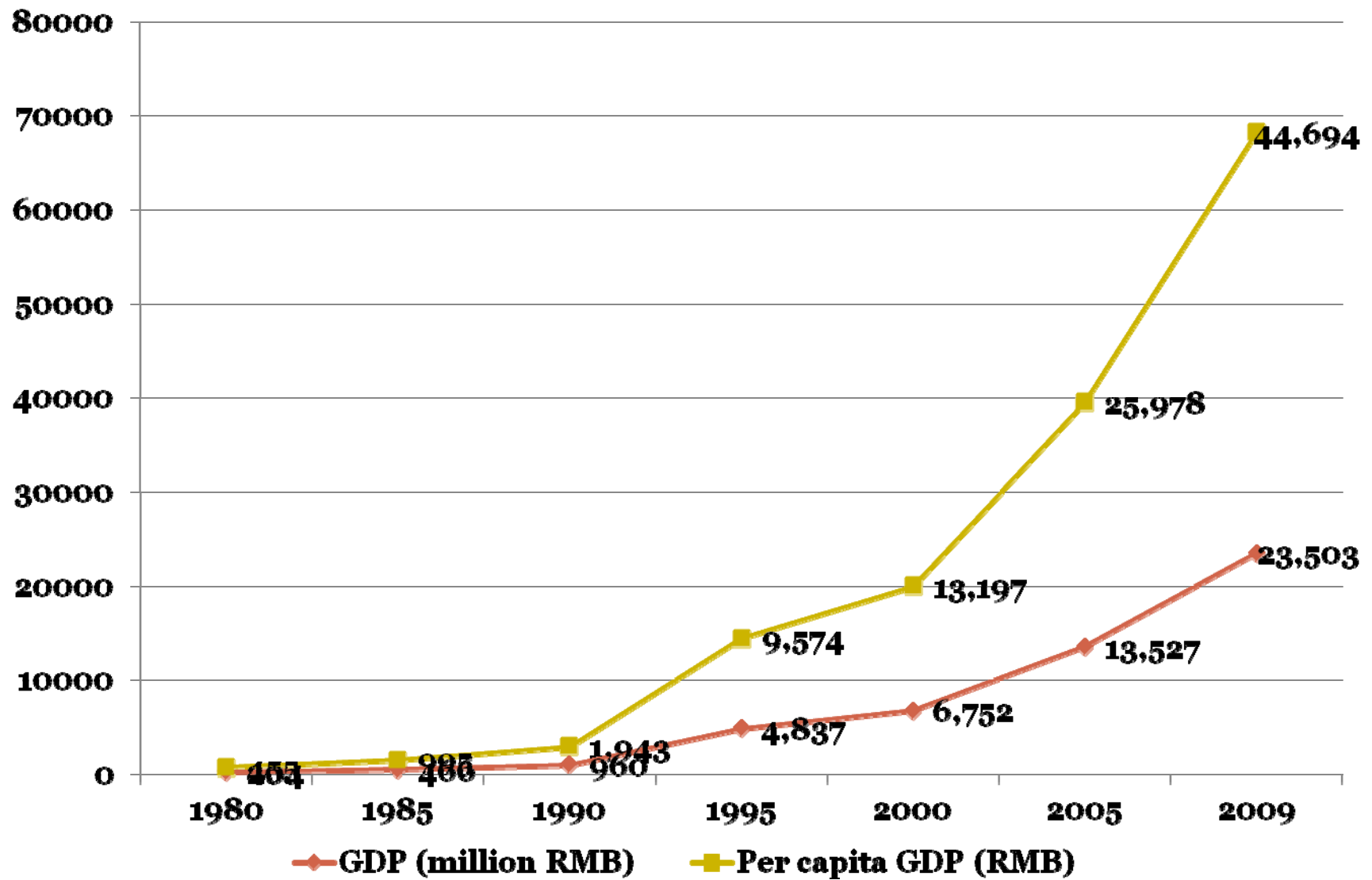
| No | Items   | Unit           | 1980  | 1985   | 1990   | 1995   | 2000    | 2005    | 2008    | 2009 |  |
|----|---|----------------|---|--------|--------|--------|---------|---------|---------|------|--|
| 1  | The number of small hydropower stations       | stations       | 29  | 51     | 61     | 69     | 78      | 89      | 98      | 99   |  |
| 2  | Power capacity                                | thousand kw/h  | 22,000  | 72,840 | 92,700 | 97,750 | 251,800 | 290,390 | 400,000 |      |  |
| 3  | Rural household solar energy utilization rate | %              | Up to 2008, reached 50%                         |        |        |        |         |         |         |      |  |
| 4  | Methane utilization                           | m <sup>3</sup> | Up to 2008, reached 245,00 m <sup>3</sup> /year |        |        |        |         |         |         |      |  |



## 2.2.2 The achievements on **economic development**

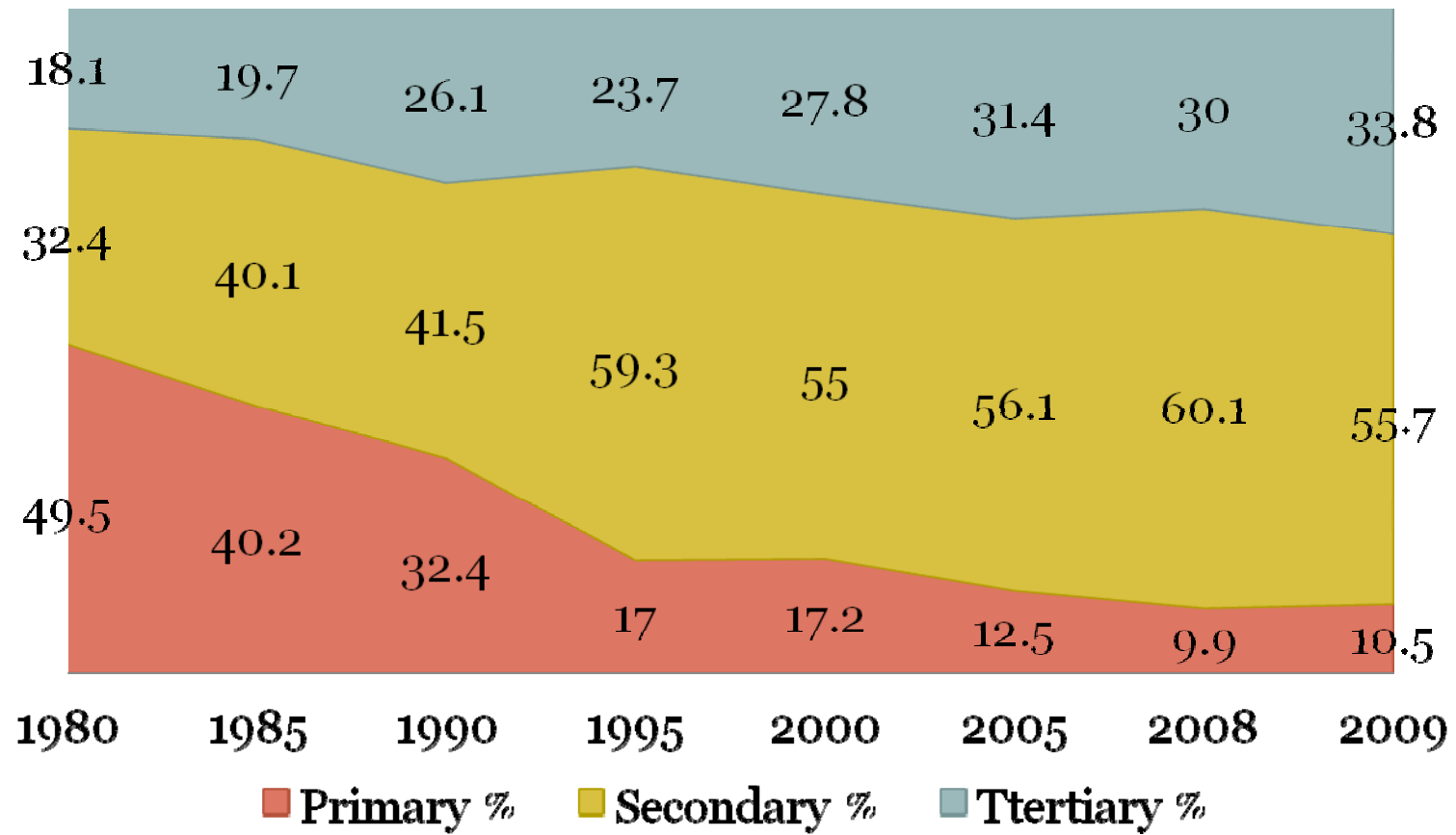


- The **total GDP** increased: 204 million RMB in 1980 --- 23,503 million RMB in 2009;
- 
- **Per capita GDP** : 455RMB (297.3USD) in 1980 --- 44,694RMB (6543USD) in 2009; In 2011, it will reach 7000USD.





- **Industrial structure** became more and more rational:  
Portion of primary, secondary, and tertiary industry:  
49.5%/32.40%/18.10% in 1980 --- 10.5%/55.7%/33.8% in  
2009.





- Rural industrial structure also changed dramatically, **forestry products** became dominating in place of traditional agricultural products.

**1980**, the portions of agricultural production value took 51.5% of the gross agricultural production value, forestry production value took 23.1%;

**2008**, the portions became 30.2% and 46.8% respectively.

The production value of forestry products increased from 3.05 million RMB in 1980 to 4935 million RMB in 2009.



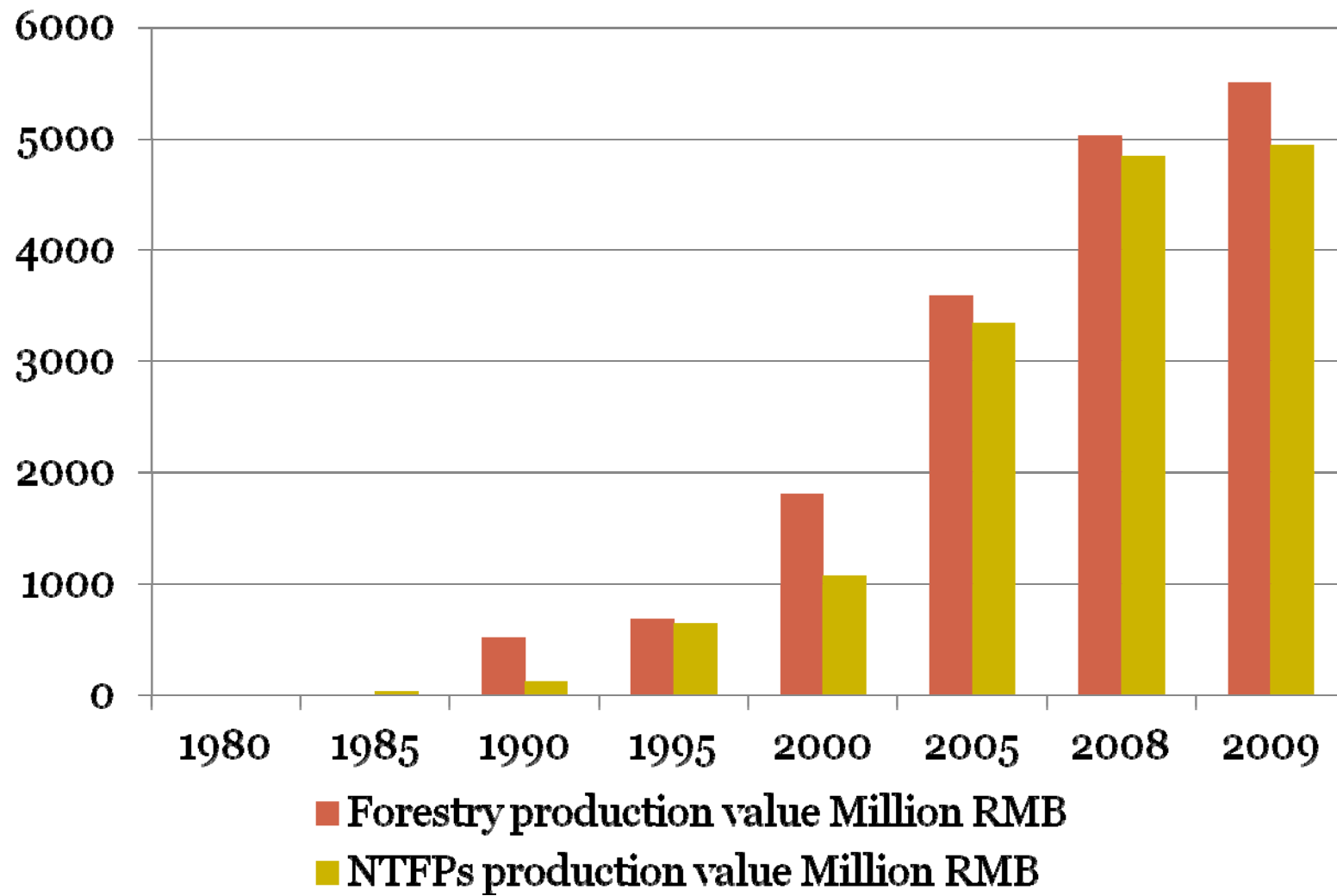
## 2.2.3 Promote the development of **environment friendly industries**

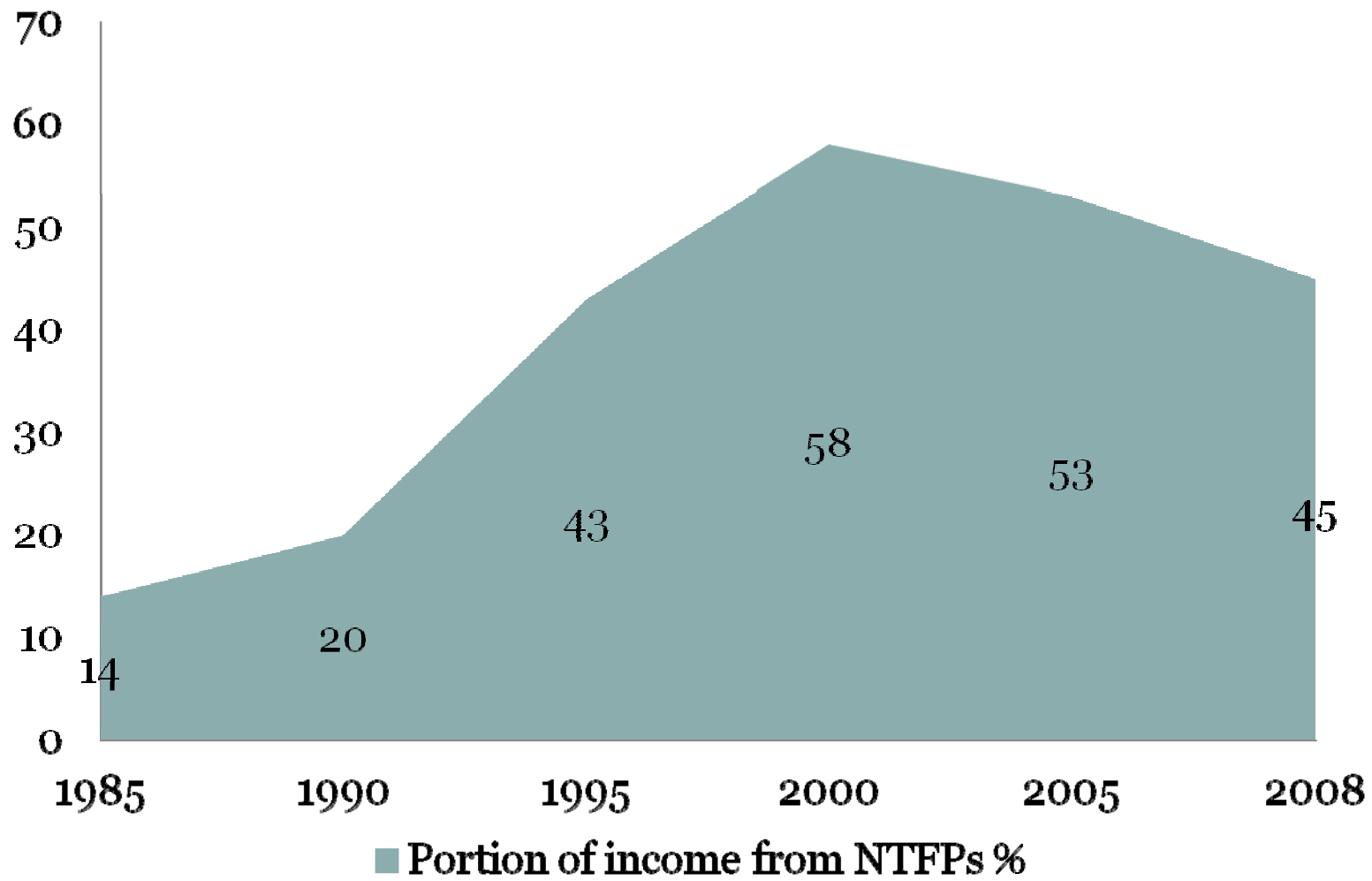


- **Governments took measures to promote NTFPs development and forests sustainable management**

NTFPs became the dominating industry in the mountainous rural areas. The NTFPs industries are green industries whose development is not at the cost of destroying the natural ecological systems.

| Items   | Unit               | 1980 | 1985 | 1990  | 1995 | 2000  | 2005  | 2008  | 2009  |
|---|--------------------|------|------|-------|------|-------|-------|-------|-------|
| <b>Forestry production value (excluding eco-tourism)</b>  | <b>Million RMB</b> |      |      | 510   | 680  | 1,800 | 3,580 | 5,019 | 5,498 |
| <b>NTFPs production value (including bamboo, hickory, medicinal plants, flowers, fruit, seedlings, Yang Tong, etc.)</b> | <b>Million RMB</b> | 3.05 | 32.0 | 116.1 | 641  | 1,069 | 3,350 | 4,832 | 4,935 |
| <b>Portion of NTFPs production value in forestry production value</b>   | <b>%</b>           |      |      | 22.8  | 94.3 | 59.4  | 93.2  | 96.3  | 89.8  |







- **Eco-tourism and farm-stay** have become new growth point of rural economy
- Eco-tourism (started from 1997) and rural leisure tourism (farm-stay) (started from 2003) had also been developing fast, which did not only increase farmer households' incomes, but also improved the cultural awareness of the rural communities and had become the new growth point of rural economy, enhancing the urbanization process of the rural hilly and mountainous areas.



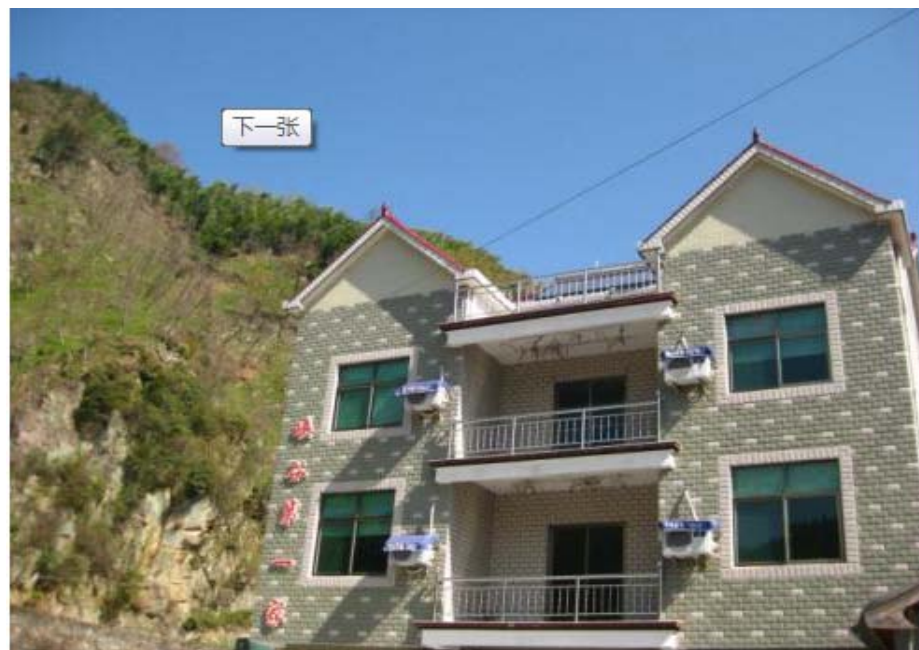
- Since **1997** and **2003**, **eco-tourism and farm-stay** respectively started to be developed in Lin'an; until now, they have become new economic growth points.
- The **number of tourists** increased from 1.71million in 2000 to 5.235 million in 2009;
- the **tourism revenue** increased from 800 million RMB to 2.85 billion RMB in 2009.
- Up to 2009, the **number of guests of farm-stay** reached 963,500;
- NTFPs eco-tourism and farm-stay have become one of the three pillar green industries in Lin'an mountain area.

## Fast development of the eco-tourism sector (1997-to date)



| No | Items               | Unit                    | 1980 | 1985 | 1990 | 1995 | 2000  | 2005  | 2008  | 2009  |
|----|---------------------|-------------------------|------|------|------|------|-------|-------|-------|-------|
| 1  | Tourism revenue     | Million RMB             |      |      |      |      | 800   | 1,560 | 2,420 | 2,850 |
| 2  | Number of visitors  | thousand tourists/times |      |      |      |      | 1,710 | 3,301 | 4,559 | 5,235 |
| 3  | Tour ticket revenue | Million RMB             |      |      |      |      | 23    | 53    | 83.23 | 105   |

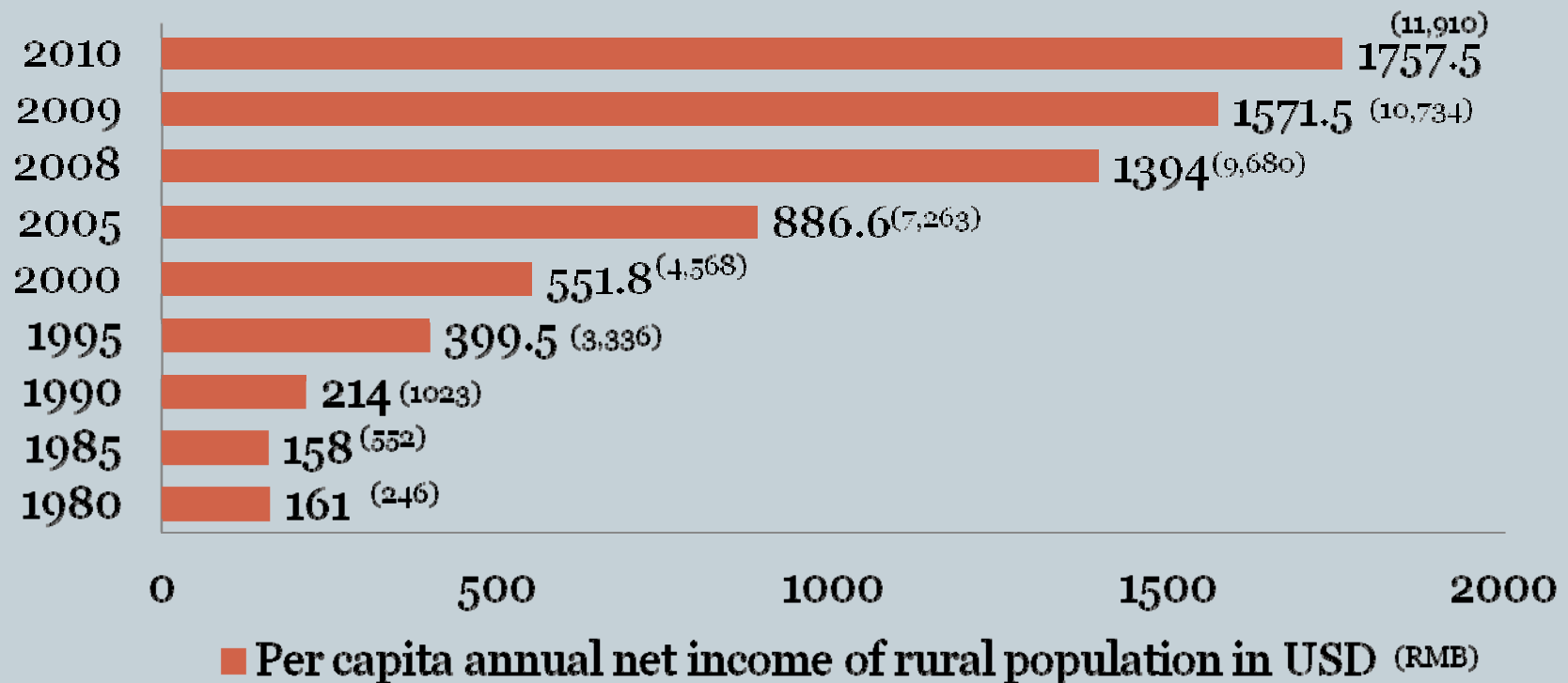






## 2.2.4 The public services in rural area and farmer's livelihood was greatly improved

- The per capita annual net income of rural population increased from 246 RMB (161 USD) in 1980 to 11910 RMB (1759.5 USD) in 2010;



## 2.2.5 Rural urbanization and industrialization



- The New Rural Development Program had promoted the integrated livelihood development in hilly and mountainous areas
- **Housing area** increased from 35m<sup>2</sup> in 1980 to 71m<sup>2</sup> in 2009. The past shade houses have turned into multi-storied houses.

- **Education:** As early as in 1985, the enrollment in school for 9-year compulsory education in rural areas reached 100%; the popularization of medical insurance in 2009 covered 92% of the rural population.

| No | Items  | Unit | 1980 | 1985 | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 |
|----|--|------|------|------|------|------|------|------|------|------|
| 1  | Enrollment in schools for 9-year compulsory education in rural areas | %    |      | 100  | 100  | 100  | 100  | 100  | 100  | 100  |
| 2  | Popularization of medical insurance                                  | %    |      |      |      |      |      | 88   | 90.4 | 92   |
| 3  | Pension insurance rates  | %    |      |      |      |      |      | 31.7 | 42.5 | 45   |
| 4  | Participation rate of medical insurance in rural areas               | %    |      |      |      |      |      | 90   | 98.5 | 99   |



- Since 2005, the availability of hardened roads, **public transportation facilities** for each village, and TV sets for households reached 100%; the living conditions of farmers basically reached well-off level. The portion of poverty population reduced from 60% in 1980 to less than 1% in 2005.

## Construction of public facilities

| No | Items  | Unit | 1985 | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 |
|----|--|------|------|------|------|------|------|------|------|
| 1  | Availability of hardened roads and public transportation facilities for each village   | %    | 50   | 70   | 90   | 99.5 | 100  | 100  | 100  |
| 2  | Availability of communication facilities in the hilly and mountainous areas (village, household telephone, mobile phone, and Internet) | %    |      |      |      | 60   | 100  | 100  | 100  |
| 3  | Availability of cable TV   | %    |      |      |      |      | 100  | 100  | 100  |

| No | Items                          | Unit           | 1980 | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 |
|----|--------------------------------|----------------|------|------|------|------|------|------|------|
| 1  | Per capita urbane housing area | m <sup>2</sup> |      | 10   | 18.3 | 26.6 | 38   | 38   | 41   |
| 2  | Per capita rural housing area  | m <sup>2</sup> | 35   |      | 45.7 | 51.6 | 65.6 | 70   | 71   |

## Per Capita Rural Housing Area (m<sup>2</sup>)

35m<sup>2</sup> in 1980



71m<sup>2</sup> in 2009



| No | Items                                 | Unit | 1980 | 1985 | 1990 | 1995 | 2000 | 2005                                | 2008 |
|----|---------------------------------------|------|------|------|------|------|------|-------------------------------------|------|
| 1  | Income standard of poverty population | CNY  | 120  | 331  | 613  | 2001 | 2751 | Subsidies for low-income households |      |
| 2  | Portion of poverty population         | %    | 60   | 50   | 40   | 25   | 5    |                                     |      |

- Popularization of electronic appliances in rural households (number of appliances per hundred households)



| Items                     | 1982 | 1985 | 1990 | 1995 | 1998 | 2000 | 2002 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| <b>Black and white TV</b> | 3    | 25   | 59   | 63   | 55   | 38   |      |      |      |      |      |      |
| <b>Color TV</b>           | 0    | 8    | 20   | 44   | 78   | 103  | 118  | 148  | 150  | 159  | 164  | 170  |
| <b>Washing machine</b>    | 0    | 2    | 12   | 28   | 42   | 52   | 58   | 71   | 84   | 85   | 86   | 88   |
| <b>Refrigerator</b>       | 0    | 0    | 16   | 33   | 52   | 57   | 58   | 74   | 78   | 89   | 90   | 97   |
| <b>Air conditioner</b>    | 0    | 0    | 0    | 0    | 3    | 5    | 7    | 32   | 39   | 48   | 50   | 52   |
| <b>Computer</b>           |      |      |      |      |      |      |      | 8    | 14   | 22   | 23   | 34   |
| <b>Telephone</b>          |      |      |      |      |      | 40   | 73   | 97   | 97   | 97   | 97   | 98   |
| <b>Cell phone</b>         |      |      |      |      |      | 18   | 42   | 130  | 146  | 170  | 184  | 204  |
| <b>Camera</b>             |      |      | 4    |      |      | 12   |      | 13   | 13   | 11   | 15   | 15   |
| <b>Motorcycle</b>         |      |      | 8    |      |      | 60   |      | 82   | 79   | 63   | 65   | 66   |
| <b>Automobiles</b>        |      |      |      |      |      |      |      | 4    | 5    | 8    | 9    | 13   |

### 3. Lin'an Model is commonly appraised nationally and internationally



- 3.1 These accomplishments in the past 32 years gained Lin'an **many rewards and honors in China**
  - “China Bamboo Hometown”,
  - “China Hickory Hometown”,
  - “National Forests City”,
  - “National Model City of Environmental Protection”,
  - “One of the Top Hundred Countries in Comprehensive Strength”
  - “National Excellent Tourism City” and so on.





National Forests City

- 3.2 In September, 2010, the **International Symposium on Integrated Sustainable Development in Mountain Areas** was held in Lin'an.

- **“Lin'an Declaration”** was launched to extend Lin'an experiences to other developing countries.





# Lin'an Declaration, China

September 24th, 2010

## Background

An International Symposium on Integrated Sustainable Development in Mountain Areas was held in Lin'an City, Zhejiang Province, China from 20-24th September 2010. The Symposium aimed to discuss the success and replicability of the Lin'an sustainable development model, share experiences from other parts of the world, and seek ways of fostering its broader adaptation. Over 100 delegates including development practitioners, university and government researchers, policy makers, entrepreneurs and investors, from 25 countries in Asia, Africa, Latin America, Europe and North America participated.

## Declaration

Recognizing that:

- Mountain areas cover 20% of the world's land area and are rich in resources, including forests and minerals, and are the source of much of the world's freshwater.
- Forests in mountain areas provide essential ecosystem services, protect biodiversity and are essential for the mitigation of, and adaptation to, climate change.
- Mountain areas are home to a disproportionately high percentage of poor people who depend on these resources for their lives and livelihoods. The livelihoods of the 17% of the world's population (i.e. approximately 900 million people) (Worldbank, 2010<sup>1</sup>) who live in the mountains depend directly on their ability to grow, harvest, process and market crop, livestock, fish and forest produce, and their ability to adapt production and marketing as conditions change.
- Mountain areas are highly fragile and susceptible to natural disasters, but their deforestation and degradation are rampant in many developing countries, resulting in increasing threats to the livelihoods of inhabitants, and to the global environment. Economic and population growth have combined to increase pressure on land, water, forest and biodiversity.
- The Millennium Ecosystem Assessment and other global and regional studies have established beyond doubt that global sustainability is in crisis.

## 4. **Main Experiences** of Integrated Sustainable Development in Mountain Areas in Lin'an:

- The main experience of Lin'an development can be concluded into **9** aspects:

- ❑ 正确的指导思想 (The right guiding ideology and development goals)
- ❑ 科学规划: 区域协调发展的前提 (Scientific planning)
- ❑ 土地改革: 经济持续发展的动力 (Reform of the land policies: the driven power)
- ❑ 生态系统的改造和重建 (Rehabilitation and reconstruction of the ecological system)
- ❑ 产业扶持: 产业健康发展的保障 (Supporting policies for industries: guarantee)
- ❑ 环境友好型产业 (Environmentally friendly sectors)
- ❑ 科技支撑: 经济快速发展的基础 (Science and technology supports: foundation)
- ❑ 利益相关方的多方参与 (Multi-participation of the stakeholders)
- ❑ 农村城市化和工业化道路 (Rural urbanization and industrialization)

## The **right guiding ideology** and development goals



### The **Triple-win (co-win)** development model

- In early 1990s, Lin'an had already proposed the visions of “**Green mountains, clear water and rich people**”, as well as “**To develop an economic ecology and an ecological economy**”.
- In 1995, Lin'an identified specific approaches to achieve the above, thus, “While keeping the development of fine crop fields steadily, promote the greening of hilltops and mountain tops, with major efforts dedicated to developing the NTPFs at the hillsides and gentle slopes”, achieving **a co-win situation in ecological, economic and people's livelihoods**.
- Sustainable forests management contributed the most to this co-win situation in Lin'an.

## 5. **Challenges** for further development of Lin'an mountainous area



- 5.1 The eco-system remains fragile
  - 5.1.1 The forests' water and soil conservation capacity and production capacity is still weak, as most of the forests are still young.
  - 5.1.2 Industrial pollutions of surrounding cities threatens the ecological security of Lin'an; Acid rain is a severe challenge.



- **5.2 Creating new balance between economy and ecology**
  - **5.2.1 Too much land were taken for industrial use, which might bring soil and water erosion.**
  - **5.2.2 Big challenges from urbanization**
- **5.3 Aging of rural labor force**



**Thank You!**