From Innovation (SHIFT) to Adaptation (shift)

—— The Share-holding Integrated Forestry Tenure (SHIFT) System in Sanming, China

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Yale University

Property Matters: Collective Forest Policy Issues & Opportunities
Fuzhou, China, January 11, 2005
Geographic Distribution of Yale-China Programs

[Map showing locations in China with red dots marked as Collaboration Sites.]

- Urumqi
- Lanzhou
- Xian
- Zhengzhou
- Wuhan
- Changsha
- Sanming
- Kunming
- Guangzhou
- Hong Kong
- Taipei
- Shanghai
- Tianjin
- Beijing
- Shenyang
- Tibet
Why Research on SHIFT?

- **Why SHIFT** – representative of social forestry trends
- **Why Sanming** – important community forestry and timber forestry regions in South
- **Why Fujian** – comparatively & competitively over others (North, Taiwan and beyond)
- **Why Yale** – one of the world innovator & opinion leader of social forestry
- **Why Now** - the past trends & trends leading to future
The SHIFT Studies

- Background - The SHIFT System
- Methods and Approaches
- Share Holding (SH) & Forestry Tenure (FT)
- Case & Hypothesis
- Research & Summary
- What’s the Next?
耶鲁 & SHIFT

- Validity — 求实
- Originality — 创新
Timber forest

Ecological forest

Economic forest
The *oligopoly* of certain tree species and the overall **lack of diversity** pose increasing challenges to ecological health of Sanming forests.

<table>
<thead>
<tr>
<th>Timber Forest Type</th>
<th>Area in hectares</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese Fir</td>
<td>384,216</td>
<td><strong>31</strong></td>
</tr>
<tr>
<td>Masson Pine</td>
<td>557,734</td>
<td><strong>45</strong></td>
</tr>
<tr>
<td>Broad-Leafed</td>
<td>284,117</td>
<td><strong>23</strong></td>
</tr>
</tbody>
</table>
To better protect relatively rare species, forestry departments classified the 1,636,145 hectares community-owned forest into three categories.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Area hectares</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timber Forest</td>
<td>1,226,126</td>
<td>75</td>
</tr>
<tr>
<td>Ecological Forest</td>
<td>317,293</td>
<td>19</td>
</tr>
<tr>
<td>Economic Forest</td>
<td>92,726</td>
<td>6</td>
</tr>
</tbody>
</table>
Fig. 4. Decline of afforestable bare land in Sanming (Sanming Forestry Statistics, 1980–1993).
Background

- **Post People’s Commune**
  1980-1983

- **Forestry Property Rights**
  Share Holding (SH) System

- **Forestry Management**
  Forestry Tenure (FT) Arrangement

- **Integrated Togethere (I)**
  \[ SH \sim I \sim FT = SHIFT \]
What is the SHIFT System?

A Private-LIKE community forest property rights experiment (SH) with a Capitalist-LIKE forestry tenure arrangements (FT) initiated in Sanming Prefecture, Fujian Province, China in the early 1980s.
Background

The SHIFT Development

<table>
<thead>
<tr>
<th>Stage</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation</td>
<td>1980 - 1992</td>
</tr>
<tr>
<td>Adaptation</td>
<td>1993 - 2001</td>
</tr>
<tr>
<td>Reformation</td>
<td>2002-</td>
</tr>
</tbody>
</table>
Background

Key FACTORS:

- **Sustainability** – property rights
- **Productivity** – management rights
- **Equity** – foresters rights
Yale’s SHIFT Research

Methods & Approaches
Method – Sample Selection

6 sample villages (either SHIFT treated and non-SHIFT treated) were chosen based on government recommendation and random selection.
## Villages Sampled during the 1991 Study

<table>
<thead>
<tr>
<th>Village</th>
<th>Sanming Prefecture</th>
<th>SHIFT System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longci</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Huangzhuang</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Chonghou</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Qingyao</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Lifang</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Shangyang</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
### Villages Sampled during the 2001 Study*

<table>
<thead>
<tr>
<th>Village</th>
<th>Sanming Prefecture</th>
<th>SHIFT System</th>
<th>Original/New</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longci</td>
<td>Yes</td>
<td>Yes</td>
<td>Original</td>
</tr>
<tr>
<td>Huangzhuang</td>
<td>Yes</td>
<td>Yes</td>
<td>Original</td>
</tr>
<tr>
<td>Chonghou</td>
<td>Yes</td>
<td>Yes</td>
<td>Original</td>
</tr>
<tr>
<td>Qingyao</td>
<td>Yes</td>
<td>Yes</td>
<td>Original</td>
</tr>
<tr>
<td>Songkou</td>
<td>Yes</td>
<td>Yes</td>
<td>New</td>
</tr>
<tr>
<td>Kaotang</td>
<td>No</td>
<td>No</td>
<td>New</td>
</tr>
</tbody>
</table>

The study replaced two original villages with two new ones that represented significant recent innovation of SHIFT.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIFB</td>
<td>Forest biomass increment</td>
</tr>
<tr>
<td></td>
<td>Net forest biomass change</td>
</tr>
<tr>
<td>AFBL</td>
<td>Afforestable bare land</td>
</tr>
<tr>
<td></td>
<td>Forestland efficiency</td>
</tr>
<tr>
<td>RFA</td>
<td>Size of replanted area</td>
</tr>
<tr>
<td></td>
<td>Efficiency of regeneration</td>
</tr>
<tr>
<td>Timber Harvest</td>
<td>Volume of timber harvest</td>
</tr>
<tr>
<td></td>
<td>Commercial log productivity</td>
</tr>
<tr>
<td>Income</td>
<td>Average villager income</td>
</tr>
<tr>
<td></td>
<td>Financial status</td>
</tr>
<tr>
<td>Income Range</td>
<td>The gap between the rich and poor in village scale</td>
</tr>
<tr>
<td></td>
<td>Social and equity status</td>
</tr>
</tbody>
</table>
Data Source

- **Diversified Sources** – Local forestry station, county, prefecture forestry committee, village committee, on-site survey, interview from villagers.

- **Valid Ground Truthing** - Data and investigation consistency, reliability and validity.
Approaches

- **6** randomly selected villages, and each **12**, total **72** households from each sampling village

- data, questionnaires and interview schedule
Questionnaire & Interview Schedule

- **Questionnaire**: forms designed for interviewees

- **Interview Schedule**: systematic information designed for interviewers
Yale’s SHIFT Research

Share Holding (SH) & Forestry Tenure (FT)
Types of Forestry Tenure

Existed
- **OFT**: Output guaranteed forest tenure
- **DFT**: Deposit forest tenure
- **FLT**: Forestland leasing tenure
- **MHT**: Multi-households tenure
- **HFT**: Household forest tenure
- **FMT**: Forest maintenance tenure

Re-dentified
- **HRF**: Household reserved forest

New
- **OST**: Ownership splitting tenure
<table>
<thead>
<tr>
<th>Type</th>
<th>Tenant Rights</th>
<th>Tenant Responsibilities</th>
<th>Tenure Term (years)</th>
<th>2001 Percent</th>
<th>Forest Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output guaranteed forest tenure (OFT)</td>
<td>Land use, ownership of trees planted during tenure</td>
<td>Revenue sharing, maintenance and protection</td>
<td>25-30</td>
<td>2</td>
<td>Afforestation of bare land or premature forests</td>
</tr>
<tr>
<td>Maintenance Forest Tenure (MFT)</td>
<td>Contract for maintenance, limited rights and fuelwood harvest</td>
<td>Maintenance and protection</td>
<td>8-12</td>
<td>30</td>
<td>Ecological forests, near mature timber forests, forests of poor quality and marketability</td>
</tr>
<tr>
<td>Forestland leasing Tenure (FLT)</td>
<td>Land use, ownership of trees planted during tenure</td>
<td>Land use fee, harvest sharing, maintenance and protection</td>
<td>25-30</td>
<td>2</td>
<td>Reforestation of plantations</td>
</tr>
<tr>
<td>Household Reserved Forest (HRF)</td>
<td>Land use, long term ownership of timber and non-timber forest resources</td>
<td>Forest maintenance and protection</td>
<td>50+</td>
<td>15</td>
<td>Household forests for private usage</td>
</tr>
<tr>
<td>Type</td>
<td>Tenantant Rights</td>
<td>Tenantant Responsibilities</td>
<td>Tenure Term (years)</td>
<td>2001 Percent</td>
<td>Forest Type</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------------------------------------</td>
<td>----------------------------------------------------</td>
<td>---------------------</td>
<td>--------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Deposit Forest Tenure (DFT)</td>
<td>Land use, ownership of existing trees</td>
<td>Down payment, harvest sharing, maintenance and protection</td>
<td>25-30</td>
<td>5</td>
<td>Pre-mature forests</td>
</tr>
<tr>
<td>Multi-household Forest Tenure (MHT)</td>
<td>Land use, ownership of trees planted during tenure</td>
<td>Revenue sharing, maintenance and protection</td>
<td>25-30</td>
<td>20</td>
<td>Reforestation of plantations</td>
</tr>
<tr>
<td>Household Forest Tenure (HFT)</td>
<td>Land use, ownership of existing trees</td>
<td>Revenue sharing, maintenance and protection</td>
<td>25-30</td>
<td>25</td>
<td>Economic forests: tea, fruit trees and bamboo</td>
</tr>
<tr>
<td>Ownership Splitting Tenure (OST)</td>
<td>Land use, and share of timber revenues</td>
<td>Revenue and obligation sharing with co-tenants and village</td>
<td>7-10</td>
<td>1</td>
<td>Pre-mature forests</td>
</tr>
</tbody>
</table>
Yale’s SHIFT Research

Case Studies &
Testable Hypothesis
Annual percentage changes in forest land area (ha) in Sanming. The observed data were verified through field research and claimed data collected from Sanming forestry data (SFC).
Yale’s SHIFT Research

Research & Summary
Sustainability

- Forest coverage increased close to the upper limit
- Afforestable bare land was almost eliminated
- Forest biomass decreased by 4% since 1990
- Forest diversification reduced, and new measures adopted
Productivity

- Forest productivity has decreased as a result of the decrease of harvesting and biomass stock;
- Overall productivity has increased with major forestry-related income from non-timber products;
- The average income of both tenure contractors and other villagers increased.
Root Carving

Paper Making

Bamboo Mat Making
Equity

- Equity (represented by the distribution of forestry income) has dropped over the last decade mainly due to big overheads and land use oligopolies.
- Villagers’ living standard and life quality have improved.
- Shareholders stopped receiving cash dividends since 1997.
Villager Satisfaction

- The income gap between tenure holders and non-tenure holders was significantly enlarged.
- A comparison study between the year 1990 and 2000 showed the general perception of stronger unequal income distribution, slightly decreasing forest resource sustainability and even forest productivity.
Villagers’ preferences for SHIFT and other systems in Sanming (1991)
Villagers’ preferences for SHIFT and other systems in Sanming (2001)

<table>
<thead>
<tr>
<th></th>
<th>Sustainability</th>
<th>Productivity</th>
<th>Equity</th>
<th>System Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHIFT-2001</td>
<td>216</td>
<td>189</td>
<td>125</td>
<td>530</td>
</tr>
<tr>
<td>SHIFT-1991</td>
<td>223</td>
<td>218</td>
<td>174</td>
<td>615</td>
</tr>
<tr>
<td>Household Tenure</td>
<td>102</td>
<td>174</td>
<td>193</td>
<td>469</td>
</tr>
<tr>
<td>People’s Commune</td>
<td>149</td>
<td>72</td>
<td>56</td>
<td>277</td>
</tr>
<tr>
<td>Senior Collectives</td>
<td>151</td>
<td>122</td>
<td>123</td>
<td>396</td>
</tr>
<tr>
<td>Primary Collectives</td>
<td>131</td>
<td>133</td>
<td>135</td>
<td>399</td>
</tr>
<tr>
<td>Mutual Aid Team</td>
<td>128</td>
<td>98</td>
<td>198</td>
<td>424</td>
</tr>
<tr>
<td>Private-owned</td>
<td>97</td>
<td>103</td>
<td>283</td>
<td>483</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **Social Organizational\Institutional Environment** | · Diversity of region’s population  
· Long-term interest of Central Government  
· Experiments in ‘private-like’ economic organization and legislative opportunities  
· Traditional forestry practices of low scale, energy and capital grass-roots  
· Opinioned leadership to adopt SHIFT  
· ‘Trainability’ of the innovation established its possible utility in Sanming | · The legislative rules change with 1998 Village Committee Organization Act  
· Rules regulating FT changed (open bidding on forest product; tenure system expanded and responsibilities reassigned; monopolization of tenure contracts; HT revived and privatized)  
· SHIFT set practice in electoral governance and incentives encouraged market-like behavior |
| **Economic Environment** | · A poor district dependent upon primary production and ready for any change that promised improvement  
· Mountainous terrain impeded transportation and other economic activities  
· Already familiar with appropriate enterprise scale and operation  
· SH provided incentives for reforestation and protection of the established forest  
· Timber price fluctuation was permitted | · Market driven economic system  
· Significant rise in income for local households  
· Increasing income gap  
· Outside contractors win most bid  
· Household private management of forest increased  
· Increase in overall value of harvested forest products due to diversification of |
|-----------------------|-----------------------------|--------------------------|
| **Cultural Environment** | · Cultural diversity and history of risk taking  
· High proportion of out migrants reflects tradition of seeking opportunity  
· Press of limited resources encouraged high degree of entrepreneurial attitude  
· Problems of managing a ‘common’ resource were perceived as needing reform if the forest resource was to remain as means of economic support | · Villagers still value SHIFT as the preferred forest system though there is some decline in preference level  
· Value shift from common to private ownership  
· Value shift from production orientation to consumption orientation  
· The traditional regional entrepreneurial interest is manifest in discovering greater economic opportunities in non-timber forest products-with nature-based tourism a likely economic activity in the near future |
| **Biophysical Environment** | · Favorable soils and climate for growing forests  
· Large proportion of barren land available for reforestation (475,000 ha)  
· Overgrazing by domestic livestock | · No large afforestable bare lands exist, thus Sanming’s forest coverage has approached its carrying capacity.  
· The high growth of biomass at the outset of the SHIFT has stabilized |
Challenges

- **Property Rights**
  - sustainability

- **Management Efficiency**
  - productivity

- **Benefit Distribution**
  - equity
Yale’s Research on shifting

What’s the Next?
From SHIFT to shift

- **SHIFT** was initiated as an innovative rural development program of “private like” forest management and has now experienced the “innovation phase” and “adaptive phase”.

- **shift** is an ongoing long-term process hinging on flexibility and the ability to meet the changing ecological, social, economic, political, and technological conditions.
From shift to shifting

- What we have learned from the **SHIFT** innovation and **shift** adaption so far?
- How can we better study from **shift** and **shifting** from now on?
Comparative Studies

- **Regionally** with other Southern regions
- **Domestically** with northern & Taiwanese forestry
- **Globally** with other countries and beyond
Thank you!