Understanding the Challenges of Japanese Mountain Villages in the Light of Sustainable Livelihood Approach

Matsuyu Makino\(^2\) and Wu Yun Gao Wa\(^3\)

1. Introduction: population, resources, environment and development

Robert Chambers identified three main processes that are distinct in defining the interrelationships among the four problem areas (PRED\(^4\)) in developing countries as: 1) Rapid population growth, often most rapid in fragile rural areas; 2) “Core” invasions and pressures into rural areas by Northern and/or urban institutions that can make the livelihood of the rural poor less secure; and, 3) Responses of the rural poor to population growth and core pressures involving unsustainable exploitation of local resources and eventual migration to other areas where livelihoods often remain insecure. These processes are linked to each other and were not sustainable\(^5\).

Development Microeconomics tells us that poor people tend to have more children because they are poor, but not vice versa. Having many children is rational response of the poor, who lack secure access to resources and income today and also have to prepare for old-age security against risk and uncertainty. Without secure access to resources and livelihood, poor people are often forced to migrate, competing for resources, services and work. When having secure rights and adequate stocks of assets to deal with contingencies, they tend to take a long view, protecting and saving natural resources and providing for children. Thus enabling poor people to gain secure and sustainable livelihoods in resource-poor, mountainous and forest areas is the surest protection of environment\(^6\).

The problems facing rural areas in Japan today are seemingly quite different from those in developing countries. It is not population growth and overpopulation but population decrease and “depopulation” that characterize the nature of challenges of rural Japan today. “Excess Depopulation (kaso)” in general is a situation where the population decrease causes a severe decline of productive capacity with a lack of efficient use of resources and difficulty in maintaining the livelihoods and fundamental functions of the community such as preservation of resources and environment, disaster prevention, and education and health care. This process is unsustainable.

Japanese farmers and forest managers are not poor in absolute terms, though those living in

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\(^2\) Professor of Economics, University of Hyogo (Email: mmakino@econ.u-hyogo.ac.jp).

\(^3\) Graduate student, Graduate School of Economics, University of Hyogo.

\(^4\) These are population, resources, environment and development as in the title of this section.


mountainous villages are certainly among the more deprived of the nation. Nevertheless, the nature of the four problem areas (PRPD) and the government policies required to solve them seem to have much in common. Many decades of attempts have not been successful in overcoming the situation. Facing the crisis of the disappearance of marginalized villages and communities, new movements towards and government policies aimed at sustainable rural development are finally coming into practice. Therefore the challenges and responses may well be analyzed within the framework of Sustainable Livelihood (SL) approach, which is attracting increasingly more attention of researchers and practitioners in regional development. It may also shed some light on the present rural development challenges in China and other countries.

The next section (Section 2) overviews the vicious circle of population, resources and environment, and development (PRED) in the rural mountain villages of Japan, and the government’s regional development policy in the past. Section 3 introduces the framework of Sustainable Livelihood approach, and Section 4 conducts preliminary analysis of the livelihood system and strategies of rural mountain villages. The section also gives a review of new government policies on agriculture/forestry and on rural development. Section 5 closes the paper with short concluding remarks.

2. Depopulation, environmental degradation and community crisis in the mountain villages of Rural Japan

2.1 The problem of depopulation

Today Japan is called an advanced country, but it is not so well known that almost a half (49.7%: 188 thousand km²) of the national land area is registered to “depopulated regions”, which contains only 6.1 % (7,993 thousand) of the total of population. There are cities, towns and villages that are designated as ‘depopulated areas’ in all but Kanagawa and Osaka prefectures.

<table>
<thead>
<tr>
<th>Classification of Rural Areas by Land Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urbanized Area</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Plain Agricultural Area</td>
</tr>
<tr>
<td>Hilly Agricultural Area</td>
</tr>
<tr>
<td>Mountainous Agricultural Area</td>
</tr>
</tbody>
</table>

Note: The order of the decision: Urbanized → Mountainous → Plain → Hilly

Source: Ministry of Agriculture, Forestry and Fisheries

As shown in Table 1, Japanese rural areas are classified into several categories according to the land use. Agriculture-forestry statistics and official documents register four areas of ‘Urban’, ‘Plain-agriculture’, ‘Hilly-agriculture’, and ‘Mountainous-agriculture’. Hilly-
Mountainous-agriculture Areas are together called 'Hilly and Mountainous (HM) areas.' They account for 42% of the total cultivated area, 43% of the total agricultural households, and 50% of the total number of rural agricultural areas including cities, towns and villages (as of 2001). These are where kasō (excessive depopulation) and other major rural problems are concentrated, though other categories of rural areas share more or less similar problems.

HM Areas are disadvantaged by their natural conditions and geographical locations. The sharply sloped, small and relatively low-quality farmland is not very suitable for farming. The remoteness from the urban center has hindered them from attracting industries only but small manufactures and construction companies. Economic activities are still largely confined to and dependent on laborious, low-productive agriculture and forestry, and the long distance from the places of consumption is unfavorable for marketing and distribution of their products. Only limited employment opportunities are available, in particular for the young. As a result, there has been a continual out-migration of young people seeking jobs in urban secondary and tertiary industries. As of 2000, average income per household in Mountainous Areas was only 648 thousand yen as compared to 1,052 thousand yen in HM areas and 1,147 thousand yen in total rural areas.

![Graph showing share of aging rural population](image)

Source: Ministry of Agriculture, Forestry and Fisheries, *Census of Agriculture and Forestry.*

**Figure 1: Share of Aging Rural Population**

The HM areas also face a severe problem of aging. The majority of the households in villages are now composed of single family- and aging couple- households. Less than a half of these households have family members aged between 18 and 40 years old, who are either living together or living in cities with small possibilities of coming back as successors in agriculture and forestry. The share of the elderly (65 years old and above) in total HM agricultural households increased from 18.0% in 1985 to 30.6% in 2001. During the same period, the same share or 'rate of aging' changed from 10.3% to 17.3%.

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7 Those figures include households in forestry and fisheries.
for national total households, from 17.1% to 28.6% for total national agricultural household, and from 15.5% to 25.1% for total HM households (Figure 1). Being located at the upstream of the watersheds, the Hilly and Mountainous Areas provide downstream urban and rural residents with essential environmental services or “public functions” such as cultivation of water resources, and prevention of floods, soil erosion and decay. However, these functions are increasingly becoming weaker due to the abandonment of farming and dilapidation of forests. In the HM Areas, the share of abandoned to total land area increased from 2.8% in 1985 to 7.1% in 2001, while the share in the Plain Areas increased from 1.1% to 3.2% during the same period (Figure 2). Because of this, the damages from typhoon and heavy rainfalls, such as floods, mudslides and landslides, have been more serious in recent years. In the fiscal year 2004 alone, natural hazards — mostly caused by heavy rainfalls during typhoons — brought about devastating damages to these areas causing over 250 billion yen worth damages to the forests.

Presently, the following problems are common to the HM areas: 1) low income due to low productivity of agriculture and forestry; 2) a lack of off-farm, non-seasonal employment and income opportunities, particularly for the young; 3) an absolute decline in population: negative natural population growth coupled with non-decreasing out-migration; high share of aged population; and 4) abandonment of farming (forest work), dilapidation of farmland and forests, and 5) increasing damages from environmental degradation and ‘natural’ disasters. These problems constitute a vicious cycle, and many HM areas are now confronting the danger of the collapse or disappearance of the village and community.

Instead of the official terminology “hilly and mountainous (HM) areas” that sounds very formal, we will use more informal word “mountain villages” in the remainder of this paper. However the characteristics of these areas distinct from others should be paid careful attention.

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2.2 The pattern of regional development and government policy

Japan has become a country with low population growth during the past few decades. In the year 2006, the population turned to an absolute decline.

During the mid-1950s and the 1960s, the period after the post war reconstruction and the start of high economic growth, substantial rural-urban migration took place, reflecting a shift in industrial structure from agriculture to industry. While rapid population growth took place in larger cities, the majority of Japanese prefectures experienced an absolute population decrease. The population of the country became concentrated in only three metropolitan regions (Tokyo, Osaka-Kobe, Nagoya). As a consequence, the dual problem of excessive concentration (kamitsu) and excessive depopulation (kaso) emerged.

The current problem of depopulation largely reflects the government’s policy of industrialization and national land development in the past. The grand design of “Pacific Coast Belt” in 1960 accelerated urbanization and resulted in massive rural-urban migration in the subsequent years. Between 1962 and 1998, the Japanese government implemented a total of five regional development plans, namely, “Comprehensive National Development Plans (Zen-so)”. The primary goals of these plans were to ensure balanced development of national land and to reduce regional disparities. In practice, however, the direction remained to promote further industrialization and growth with only minor adjustments for the given pattern of development at the time. The main objective of regional development policies has shifted from (1) the development of key regions to (2) the advancement of industrial decentralization and relocation, and then, to (3) the support for endogenous regional development.

In the 1980s, the relocation of heavy industries and extensive public investment in infrastructure and large resorts into less advantaged prefectures created economic booms that became a part of the ‘Bubble’. The increase in employment and income opportunities for off-farm or part-time work were at least partially successful in upgrading the standard of living of the rural population. It also eased the population decline in some rural areas. However, the majority of mountain villages, which failed to attract secondary and tertiary industries even in this period, remained as agriculture and forestry-based economy and hardly enjoyed the benefits.

In spite of a large increase in food imports and declining food self-sufficiency, the government’s agricultural policy to control and cut back the “surplus” of rice production was unchanged. Rural areas as a whole became highly dependent on a number of small manufacturing and construction industries that offer off-farm employment and/or seasonal or part-time jobs. Otherwise, they counted on public investments in large infrastructure projects (such as dams and nuclear plants) that give a huge amount of subsidies to the local government or offsetting compensation to the residents of respective locations.

The first law that aimed at coping with the problem of depopulation was enacted in 1972. Since then, an act has been added every ten years. While the regional development policy against excess depopulation has been in place in the last thirty some years with total budget of 40 trillion yen spent on counter measures, there have been no fundamental solutions to the problem. In reality, as Yoshimura (2004) pointed out, “the off-the-shelf regional projects in the past tended to stifle the unique characteristics of individual local areas,
leading to further concentration in the Tokyo region”. The second-half of the 1990s also witnessed a major shift in trade policy towards agricultural liberalization, which put an end to government-supported prices of rice. During the prolonged recession in the 1990s, the problem of depopulation and the decline of agriculture and forestry became even more visible.

3. Sustainable Livelihoods: A Framework to Analyze Village Community Development

3.1 The conceptual framework of Sustainable Livelihood (SL) approach

The 1987 Report of the World Commission on Environment and Development Commission, Our Common Future, gave the most enduring definition of sustainable development: Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The definition was felt still too broad by many development researchers and practitioners. Later on, to make this concept more operational, they attempted to give alternative, slightly different definitions that were expected to be more adaptable to the context and objectives of their concern: Sustainable Cities, Sustainable Communities, Sustainable Energy, etc.

Sustainable Livelihood Approach (SLA) emerged as an alternative way of conceptualizing poverty alleviation. Robert Chambers (1987) provided the first and wide-accepted statement of the concept:

[Sustainable livelihood thinking] centres on enabling poor people to overcome conditions which force them to take the short view and live “from hand to mouth” or “from day to day”. It seeks to enable them to get above, not a poverty line defined in terms of consumption, but a sustainable livelihood line which includes the ability to save and accumulate, to adapt to changes, to meet contingencies, and to enhance long-term productivity.

In a seminal 1992 paper, Robert Chambers and Gordon Conway proposed the following composite definition of sustainable rural livelihood:

A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local levels and in the short and long term.\(^9\)

Since then, many efforts have been made: The Sustainable Livelihood (SL) Research Program of the Institute for Development Studies (IDS) at the University of Sussex and other researchers refined the SL concept both analytically and operationally. Several major development assistance agencies including the United Kingdom Department for International Development (DFID) and United Nations Development Program (UNDP) adopted the concept as a major principle of their programs\(^{10}\).

\(^9\) Chambers and Conway (1992), pp. 6.
\(^{10}\) For an excellent survey of these endeavors, see Kramtz (2001). Also refer to Scoones (1998), DFID (1999) for the SL framework.
There are several definitions of Sustainable Livelihood, but current parlance usually defines Sustainable Livelihood as “the capability of people to make a living and improve their quality of life without jeopardizing the livelihood options of others, either now or in the future.” Sustainable livelihoods are those that are able to cope with and recover from shocks and stresses through adaptive (for long-term) and coping (for short-term) strategies; economically viable; ecologically sound, ensuring that livelihood activities do not irreversibly degrade natural resources within a given ecosystem; and, socially equitable, which suggests that promotion of livelihood opportunities for one group should not foreclose options of other groups, either now or in the future.

According to UNDP and IDS/DFID, Sustainable livelihoods comprise the following core elements.

1) **Context of vulnerability**
   Rural natural and social environment has been characterized by greater degrees of variability than previously assumed. This includes shocks (natural disasters, conflicts, crop or livestock distress), trends (population, resources, the economy or governance) and seasonality (cyclical fluctuations in prices, production, health and employment). Recent research on ecology and rural economy univocally found that vulnerability is one of the salient features of today’s poverty\(^{11}\).

2) **Livelihoods**
   Livelihoods consist of means, activities, entitlements and assets by which people make a living. Means and activities are the technologies, production systems and enterprise activities at the core of any livelihood system. Entitlements refers to the rights that people have to use different livelihood assets, the most important of which for most rural populations in developing countries is land tenure.

3) **Livelihood Resources or Assets**
   The total collection or portfolios of the basic tangible and intangible assets are for the people to have rights to own or use for living. They are conceptualized as different types of capital to stress their role as a resource base. Usually four or five types of capital are identified, which may not be an exhaustive list: natural/biological (land, water, common-property resources, flora, fauna), social (community, family, social networks, participation, empowerment), human (education, labour, health, nutrition); physical (roads, clinics, markets, schools, bridges), and financial (savings, credits, etc.).

4) Livelihood strategies:
   A combination of activities, which may be highly specialized and concentrate on a few activities, or may be quite diverse. Three clusters of livelihood strategies can be identified: agricultural intensification/extensification, livelihood diversification and migration. Moreover different livelihood pathways may be pursued over seasons and between years as well as over longer periods, such as between generations\(^{12}\).

5) Structures (policies, institutions/organizations) and Processes:
   Policies, institutions and related processes give meaning and value to livelihood assets.

\(^{11}\) For example, World Bank (2001), a collection of testimonies of the “voices of the poor” addresses various kinds of vulnerability facing the poor.

Structures refer to the key roles of all levels of government and the private sector in shaping livelihoods. Processes determine the way in which structures and individuals operate and interact. Policies, laws and institutions might be either formal or informal, and directly or indirectly, mediate access to livelihood resources and the terms of trade between different types of livelihood assets, which in turn affect livelihood strategy options and, ultimately, the scope for sustainable livelihood outcomes. An understanding of these institutions, their underlying social relationships, and the power dynamics embedded in these, is therefore vital\textsuperscript{13}.

![Figure 1. Sustainable livelihoods framework](image)

Source: Department of International Development (DFID), 2000
Figure 1 Sustainable Livelihoods Framework

6) Livelihood outcomes
Livelihood outcomes are the results or ‘outcomes’ of the livelihood strategies.

Figure 1 shows the framework developed by DFID, which describes how, in the various vulnerability contexts, people pursue their livelihoods.

4. Preliminary analysis of the Japanese Mountain Villages in the SL Framework

In this section, we attempt to apply Sustainable Livelihood Approach (SLA) to conduct a preliminary analysis of the community’s responses to the current crises described in Section 2. We do not yet have detailed data at village level. We collected scattered information in the forms of case studies, reports published by non-profits, and documents available through government, prefectures and municipalities. We then put together the information to draw a rough sketch of the following.

1) How has the livelihood system in typical mountain villages become vulnerable?
2) What people are trying to get out of the situation utilizing the portfolio of their

\textsuperscript{13} Scoones (1998), pp. 11.
community resources?
3) What options and strategies are available to move out of the situation?
4) What are the roles of the government and other actors?
5) What institutions are influential in shaping their strategies?

4.1 The rural livelihood at stake

Land ownership and use in Japanese rural areas: Small-scale owner-farmers

Drastic agricultural land reform was implemented in Japan right after World War II. This reform is considered to be one of the most successful agrarian reform projects in the world. The land reform demolished a class structure based on landholding, and liberated former tenant farmers from the control of absentee landlords. It is often appraised that the reform gave former tenant farmers new incentives to work. However, Kawagoe (1999) argued that the reform had little effect on agricultural productivity, because it just transferred land ownership from landlords to tillers of the soil, and small tenant farmers became small owner-cultivators with no apparent change in farm size. Hence it did not transform traditional agricultural production structure. Given the tiny lots of cultivated land, the agricultural growth can be attributable to greater technical knowledge and recovery of critical inputs after the war (e.g. knowledge and fertilizer)\textsuperscript{14}.

This situation of land holding is similar to that for forestry. Although the total area of forests accounts for 70% of the total national land of Japan, per capita forest area is as low as 0.2 ha. The area of private forest is about 17 mil. ha, and 70% of which (11.9 mil. ha) are owned by 2.5 mil. households, which means that forest area per forest management household is only about 4.76 ha.

Full-time and part-time farm households

If we regard full-time engagement either in agriculture or forestry as a basic model, many of today’s households do not fit in this traditional model. Presently Japanese agriculture statistics classifies farmer households according to the pattern of engagement in farm and non-farm activities:

1) Business farm household: full-time engagement in agriculture
2) Semi-business farm household: part-time engagement in agriculture and/or forestry (main activity); part-time non-agricultural or seasonal employment.
3) Side-business farm household: part-time non-agricultural employment (main activity); part-time engagement in agriculture and/or forestry

We cannot find statistics for mountain villages separately, but today, the largest group of the above three categories is Side-business farm household having non-farm employment as their major economic activity (Category 3 above). In fact this is the strategy that the majority of those staying in villages have chosen.

\textsuperscript{14} Kawagoe (2006).
Table 2  Employment in the agriculture sector (farm households)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total incl. agriculture and forestry</th>
<th>Of which employed in construction</th>
<th>Of which employed in manufacturing</th>
<th>Of which employed in agriculture</th>
<th>Of which employed full-time</th>
<th>Of which employed seasonally</th>
<th>Of which employed daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>5,202</td>
<td>523</td>
<td>1,367</td>
<td>25</td>
<td>17</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>1994</td>
<td>5,236</td>
<td>536</td>
<td>1,340</td>
<td>26</td>
<td>18</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>1995</td>
<td>5,263</td>
<td>544</td>
<td>1,308</td>
<td>27</td>
<td>19</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>1996</td>
<td>5,322</td>
<td>551</td>
<td>1,307</td>
<td>29</td>
<td>21</td>
<td>4</td>
<td>4</td>
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<tr>
<td>1997</td>
<td>5,391</td>
<td>563</td>
<td>1,307</td>
<td>28</td>
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<td>1998</td>
<td>5,368</td>
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<td>1,258</td>
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<td>1999</td>
<td>5,331</td>
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<td>1,223</td>
<td>28</td>
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<td>2000</td>
<td>5,356</td>
<td>539</td>
<td>1,205</td>
<td>30</td>
<td>22</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>2001</td>
<td>5,369</td>
<td>520</td>
<td>1,185</td>
<td>33</td>
<td>25</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>2002</td>
<td>5,331</td>
<td>504</td>
<td>1,131</td>
<td>35</td>
<td>25</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>2003</td>
<td>5,335</td>
<td>493</td>
<td>1,091</td>
<td>35</td>
<td>25</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>

Source: Ministry of Internal Affairs and Communications

The number of Business farm household decreased drastically from 678 thousand in 1996 to 434 thousand in 2005, while the number of Semi-business farm household decreased from 695 thousand to 512 thousand, and the number of Side-business farm household only mildly from 1,279 thousand to 1,216 thousand during the same period. The share of Business farm household and Semi-business farm household together decreased from 51.8% in 1996 and 47.8% in 2005. This indicates that the Business farm and Semi-business farm households, particularly the former, are more vulnerable to, and suffer from the risks and uncertainties that agriculture has faced.

Table 3  Number of Business farms, sub-business firms and side-business firms

<table>
<thead>
<tr>
<th>Year</th>
<th>Business farm</th>
<th>Sub-business farm</th>
<th>Side-business farm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>678</td>
<td>658</td>
<td>612</td>
</tr>
<tr>
<td></td>
<td>695</td>
<td>745</td>
<td>717</td>
</tr>
<tr>
<td></td>
<td>1,279</td>
<td>1,204</td>
<td>1,239</td>
</tr>
</tbody>
</table>

Trends in agriculture
It is not difficult to see that one of the main sources of the low productivity of agriculture is unproductive use of land due to the segmentation of land into tiny lots. The incentives of
side-business farm households may not be as high as business and Semi-business farm households. Those who migrated to urban cities may keep the claim on land ownership. For this reason, full-time engagement in agriculture does not pay. Over the last forty or fifty years, the land has become valued as real estate assets rather than as agricultural production means, and the conservativeness made landowners reluctant to sell their plot.

Low productivity may not directly translate into low income: Price controls were in practice for a long time, and producers were given subsidized prices by item. The price control system was abolished in 1994. In addition, the policy of reducing the acreage planted for rice introduced in 1970, and strengthened between 1997 and 1998. Farmers who are willing to cooperate this policy received subsidy from the government.

Trends in forestry
After World War II, abundant labor force and the stable income from agriculture allowed farmers to be fully engaged in forestry, mainly in the production of firewood. Forestry was a lucrative business the 1950s. A shift in fuel use from firewood to oil gave significant impacts, but during the high growth period new demand for raw material for pulp increased and forest industry expanded. However increase in labor cost in the 1970s and cheap imports of logs made the self-sufficiency rate of logs as low as about 25% in recent years. Currently forestry was trapped by the vicious cycle of the sluggish domestic market, declining income for forestry management bodies, diminishing attractiveness of mountain village communities, decreasing business pursuit for cutting, tendering and other forestry works, and declining supply of domestic wood.15

The average income per operation unit (average ownership of 20-500ha) declined drastically from ¥740 thousand in 1996 to ¥203 thousand in 2001. In forestry industry forest owners were organized to forest cooperatives, which succeeded the iriai (commons) system from pre-modern period. They have been engaged in lumbering and exploiting non-timber products in a sustainable manner for centuries, and many still are. The situation they are facing may be even more devastating than farmers.

In such situations as stated above, people engaged fulltime in farming or lumbering may lose hope for the future of agriculture and forestry. They may not able to take a long-term view any more. They simply cannot afford to be concerned with the “role of agriculture and forestry” in preserving natural environment. While farmland is the most fundamental element in agricultural production, the total area of farmland has been shrinking over the last 20 years, owing largely to the abandonment of cultivation. During and right after the “Bubble Economy”, considerable parts of farmland were converted to golf courses and vacation houses. More recently it is more of involuntary retirement from agriculture due to aging and the lack of successors in farmer households. The same thing happened to forestry: the instances of abandoned forests and dilapidated forests are increasing

4.2 New livelihood strategies towards sustainable rural development

4.2.1 Overview of the livelihood system in mountain villages

Agriculture and forestry are the two basic industries in mountain villages in Japan. In hilly
villages, rice is grown in terrace paddy fields. Other products are grown such as edible wild plants, green summer vegetables, soba, nuts, mushrooms, and citrus fruits. Some villages are also engaged in cattle breeding. Forestry becomes more important for more mountainous villages. There, agriculture is mostly for family consumption rather than business. Households are usually engaged in multiple activities to make the ends meet. Farmers and lumbermen are usually owner-managers who worked on their own farmland or in their own forests.

In typical such villages, manufacturing is only a minor industry, usually composed of a small construction companies invited by some infrastructure projects and other companies processing local resources such as food-processing, wood products and craft. Recently green-tourism or eco-tourism has been becoming another important business. Some villages have invited a few large companies or facilities such as dams and nuclear power plants as a means of revitalization of the village and/or in exchange for government subsidies or financial compensation, and are heavily reliant on them.

4.2.2 Vulnerability context

The environment or vulnerability context is a part of the Sustainable Livelihood (SL) framework that lies furthest outside people’s control. In Section 2, we identified major challenges that today’s mountain villages face: low income; lack of off-firm employment and income opportunities for the young; absolute decline in population caused by negative natural population growth and out-migration; abandonment of farming (forest work), declining agriculture and forestry, and dilapidation of farmland and forest; increasing damage from natural disaster and environmental degradation; and finally, danger of the breakdown of communities.

In the previous passages in this section, we also found trends, shocks and seasonalities that affect the livelihood strategies open to rural villages and communities. The slowing down of economic growth, low population growth and aging society are important long-run trends in Japan. Natural disasters, which already had severe impacts in recent years and are expected to be quite often in the future, declining prices of rice and timbers, and continued out-migration comprise major natural and socio-economic shocks. Seasonalities of production and of prices are also important for agriculture, and can cause multiple adverse effects when combined with a natural disaster such as floods and heavy snowfalls.

The context also has positive aspects. Shifts in people’s life style and food preference towards, food safety, ‘slow food’, and ‘slow life’ are among them. People are increasingly becoming to appreciate natural environment, rural life and the role of agriculture and forestry. These constitute favorable trends for rural villages. Government policy changes on agriculture, forestry and rural development that emphasize “multi-functionality” of agriculture and forestry can have some positive impact on rural villages. The maturity of forests with trees planted after World War II, entering in the harvest period and adding plenty of forest resources, gives another good prospect.

This external environment is also the context in which government policies and measures at the national and the local level and the role of the institutions and organizations within and outside the village are critical. They can manage the context to help people to become more resilient and better able to capitalize on its positive aspects (Structures and
Processes). It can be achieved through supporting people to build up and put to strategic
use of their assets, that is, through "the discovery, or creation, and then valorization."
Another approach is to help ensure that relevant institutions and organizations are
responsive to the needs of the people.\(^\text{16}\)

4.2.3 Changes in the government policy for agriculture/forestry and rural
development

Under the current financial constraint, there is an acute need for the government,
prefectures and municipalities to facilitate the regeneration of local economies without
heavy dependence on public support and in a comprehensive manner. Coping with
industrial and economic globalization is another major challenge. Countering this trend
with the support of the national government in the form of trade measures (protection from
imports) and conventional across-the-board production subsidies is no more effective. To
ensure sustainable development from within the interdependent local economies
themselves would lead to more promising future. However, even from this perspective,
government intervention is indispensable in the two main areas: 1) measures to ease the
"vulnerability context," and 2) policy that enables rural villages to internalize their "public
functions".

The new direction of the government policy with regard to agriculture, forestry and rural
development is two folds. The first is to facilitate structural transformation through
changes in supporting measures: from across-the-board production subsidies (price
support) to performance-based direct payments that compensate for income losses due to
shocks (90% of the income decrease).

The second is to maintain and strengthen "multi-functionality" of agriculture and forestry,
which may revitalize agriculture and forestry and develop new types of agro-forestry-based
local economy. Ministry of Agriculture, Forestry and Fisheries Agriculture identifies
"multi-functionality of agriculture" as a key concept for the future development of
agriculture, forestry and fisheries and of rural communities.\(^\text{17}\). The concept centers on the
essential role of agriculture: conservation of land; fostering water resources; preservation
of the natural environment; development of favorable landscapes; maintenance of cultural
heritage; recreation/relaxation; viability of rural community; and food security.

In the same vein, an Annual Report on Trends of Forest and Forestry (Forestry Agency)
states that forestry and mountain villages ("hilly and mountainous areas" as an
administrative unit) are the focal points in forest management and conservation, and that
the policy goal is "maximizing multi-functional roles of the forests through maintaining the
vitality of forestry activities and mountain village communities."\(^\text{18}\)

Although stated as above, concrete measures of national government policy to support
"multi-functionality" are yet unclear. Forests and (sustainable) forestry have positive
externalities or "public function" or environmental services such as cultivation of water
resources, flood and erosion control, prevention of mudslides and landslides during

\(^{16}\) DF ID (1999), 2.2.
\(^{17}\) Taken from the website of the Ministry of Agriculture, Forestry and Fisheries.
(http://www.maff.go.jp/soshiki/kambou/joutai/onepoint/public/ta_me.html).
\(^{18}\) Forestry Agency (2004).
typhoons and earthquakes, the benefits of which “spill over” to every individual without extra payment. Green taxation or environmental taxation attempts to internalize the externalities, which is to tax out the gap between the social benefits over and above the private benefits that citizens pay through market transaction. Another type of policy measures is to give subsidies to the agents (villages and individuals) that assume the role for their social contribution. Unfortunately, at this moment government agencies, except for the Ministry of Environment, are generally still reluctant to introduce environmental taxation or social compensation for the “contributors”.

The forest tax is an example of environmental taxation, which has been introduced and implemented by prefectures. The first forest tax started in Kochi Prefecture in 2003 and next in Okayama Prefecture in 2004. As of 2005, forest tax was implemented by seven prefectures, planned to be implemented by eight prefectures by the end of year 2005, and was being discussed by yet another three prefectures. The tax is one designated for specific purposes the revenue of which is to be allocated to the construction of infrastructure for forest conservation, environmental management, education, and diffusion of information. The introduction of forest tax made a landmark for the environmental policy and legislation in Japan. However, the collection system is varied among prefectures, and the amount (and tax revenue) is generally very small.

Recently the government announced a series of basic plans, policies and measures for food, agriculture and rural areas. One important policy for mountain villages is the regeneration of agriculture and rural areas through ‘community farming’ or community-based management of farming. It is to facilitate concentration of land and management to principal farmers (full-time farmers) to improve productivity and efficiency of the “core” activity (farming) while creating agro-based diversified activities for other community members to take up new income-generating opportunities. “Direct payment system in hilly and mountainous areas”, which have been in practice since 2000, is to pay subsidy to the village (not distributed to individuals) on the condition that the villagers contract an agreement to collectively maintain and manage agriculture without abandoning farming. This measure has been welcomed as a direct support for local agricultural activities and as potential means of agricultural reform and revitalization of rural communities. A recent survey in the year 2005 by the Ministry of Agriculture, Forestry and Fishery found that villages evaluated to be active in maintaining agriculture increased from 6.4% of the sample villages before entering into the agreements to 37.0% after that, and those evaluated to be inactive deceased from 75.8% to 27.4%.

4.2.4 Discovery and creation of “community capital”

Natural capital such as biodiversity, landscape, recreation (relaxation) and leisure, food caught from the wild, and cultural capital such as history and culture can be best utilized when considered as “community capital”. Traditional value (e.g., to promote humble life and to thank to nature), beliefs and religions, social relations within village communities and between towns and villages, and traditional technology that helps humans to produce necessities but not to produce for mass consumption constitute important community social capital. In general, mountain villages have rich natural and social capital. They also have sufficient human capital in a form of educated population (with at least middle school, mostly with high school education), but they often lack people with leadership quality, state-the-art technical skills, and high management skills. In addition, mountain village are
in short of railroad transportation services and public transportation within their community. Table 4 summarizes the range of community capital (or lack of community capital) in mountain villages.

**Table 4. Examples of Community Capital**

<table>
<thead>
<tr>
<th>ASSET TYPES</th>
<th>EXAMPLES</th>
</tr>
</thead>
</table>
| Natural     | ● Economic and cultural goods/services: food (farmed and harvested or caught from the wild), wood and fiber, non-timber products; landscape; recreation and relaxation (+/−)  
              ● Biological and environmental services: soil formation, wildlife habitats, biological control of pests; water regulation and supply; waste assimilation, decomposition and treatment, nutrient cycling and fixation; climate regulation, storm protection and flood control, carbon sequestration (+/−) |
| Cultural    | ● History and historical heritages (old houses and streets, temples and shrines)  
              ● Traditional technologies; food culture; traditional festivals, performing arts |
| Social      | ● Tradition: common rules, norms, trust and cooperation, sanctions for behavior, reciprocity and exchanges  
              ● Social organizations: agricultural cooperatives, forest cooperatives and special financial districts, public corporations, nonprofit organizations, public/private partnerships, local universities, public R&D institutions |
| Human       | ● Educated population  
              ● Opportunity of adult education  
              ● Aging and declining young population (−)  
              ● Role of women (+/−)  
              ● Lack of the leadership quality of individuals (−)  
              ● Potential cut back in health and medical services (−) |
| Physical    | ● Insufficient local infrastructure: roads, agricultural and forest roads, railroad transportation (−)  
              ● Lack of or insufficient communications infrastructure and markets (−) |
| Financial   | ● Savings and credit opportunities  
              ● Uncertainty in welfare payments (−)  
              ● Uncertainty in grants and subsidies (−) |

"Discovery" of local resources, Regeneration of tradition

"Regeneration of tradition" is a process of adapting traditional social capital and traditional technology to new circumstances. This starts with discovery or creation of local resources. In mountain villages, several types of potential local resources such as follows have been identified:

1) Regeneration of natural resources (e.g., *tanada* or paddy fields in the slopes of the

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19 This phrase was born in the ‘one-village, one-product’ movement in O-ita Prefecture.
hill) *through recovery and conservation* with its landscape and living space as tourism resources.
Examples: sustainable forestry development in Hokkaido; preservation of paddy fields in Hyogo and Nara Prefectures; preservation of watersheds and forests in Mie Prefecture; and Eco-tourism in several prefectures.

2) New energy resources and/or agro-based new technologies *through development*
Examples: development of renewable energy such as wind farms commonly owned by citizens and operated by non-profits (Hokkaido and other prefectures); composting and recycling of organic waste to utilize as fertilizers and other inputs (Ibaragi Prefecture) and as biomass energy (Yakushima and Kagoshima Prefecture); and use of snow stocks for refrigerating and air-conditioning (Niigata and other prefectures).

3) Reviving food culture, traditional skills (weaving, wood-curving, fishing, etc.) and products and traditional performing arts such as *nou* and *bunraku* and entertainment ("*matsuri*”) through *revitalization*.

4.2.5 Livelihood strategies

*Revitalization of agriculture/forestry and agro-based development*

With an underdeveloped manufacturing base and sluggish local economy, opportunities for conventional off-farm employment and seasonal jobs in construction and transport industries are severely limited. Options open to livelihood strategies are not many.

Therefore, for most of the villages, strengthening the existing base of agriculture and forestry is the highest priority. To reorganize and revitalize agriculture and forestry through agricultural intensification and/or extensification is an obvious yet important option. This is composed of two kinds of strategies: The first is more efficient and productive use of land, whenever possible, with the exploitation of economies of scale. The second is diversification of agricultural activities through economies of scope. The goal is to create locality-based integrated agro-industry through vertical and horizontal linkages. It can be accomplished by internalizing processing and marketing functions that range from primary to secondary (processing of food and agricultural products) and tertiary industries (distribution, information, direct sales, farm inns and restaurants).

*More productive use of cultivated lands*

"Community farming" or community-based management of farming is one promising way to improve productivity of agriculture and prevent resource degradation in mountain villages. This notion is to acknowledge a village as a unit, which is applicable to a type of agriculture with intensive land use. Usually individual farmers enter into agreement to conduct a part or all activities of the agricultural production process.

Activities of community farming ranges from cooperation in the maintenance of common infrastructure such as water route and field road, common use of agricultural facilities and equipment, negotiations on contracting farming, human resource development and training, to creation of an organization for community farming itself. The direct payment (subsidy)
scheme is a policy measure to encourage community farming. It aims at preventing the abandonment of cultivated land and enabling farmers in mountain villages to sustain the various functions of agriculture. As of July 2006, it has been implemented by the Ministry of Agriculture, Forestry and Fisheries for the last five years, and is to be implemented for another five years from 2006 and 2010. Subsidies are given to farmers, cooperatives and other forms of public-private partnerships according to the areas of land to be maintained. As of 2000, there were about 10,000 of such community farming units in Japan, of which growing rice (70%) and wheat (12.4%) together account for 82.4%. As of 2005, there were 33,969 agreements for community farming (33,331 by villages and 638 by individuals). The total area covered was 665 thousand ha, which amounts to 85% of the target area of land.

Table 14  Direct payment for owners of land in “hilly and mountainous areas”

<table>
<thead>
<tr>
<th>types of land</th>
<th>category</th>
<th>payment per 10a</th>
</tr>
</thead>
<tbody>
<tr>
<td>paddy field</td>
<td>steeply sloped</td>
<td>21,000</td>
</tr>
<tr>
<td></td>
<td>gently sloped</td>
<td>8,000</td>
</tr>
<tr>
<td>field</td>
<td>steeply sloped</td>
<td>11,500</td>
</tr>
<tr>
<td></td>
<td>gently sloped</td>
<td>3,500</td>
</tr>
<tr>
<td>grassland</td>
<td>steeply sloped</td>
<td>10,500</td>
</tr>
<tr>
<td></td>
<td>gently sloped</td>
<td>3,000</td>
</tr>
<tr>
<td></td>
<td>grassland with high</td>
<td>1,500</td>
</tr>
<tr>
<td></td>
<td>grass rate</td>
<td></td>
</tr>
<tr>
<td>grazing land</td>
<td>steeply sloped</td>
<td>1,000</td>
</tr>
<tr>
<td></td>
<td>gently sloped</td>
<td>300</td>
</tr>
</tbody>
</table>

Note: 1) 80% of the unit payment when the second measure is not taken.  
2) additional payment of ¥500-1,500 when the following measures are taken.  
- new land allocation to principal farmer over certain percentage  
- land expansion by assuming disadvantaged land by new or incumbent farmers  
- establishment of corporation  
Source: Ministry of Agriculture, Forestry and Fisheries

Sustainable agriculture and sustainable forestry

Sustainable agriculture refers to pesticide-free, organic farming and animal husbandry. It has increasingly become attractive to consumers in urban cities due to the change in taste and preference for food safety.

In the forestry industry, it generally takes longer than forty years after planting that the operation becomes profitable with decreasing marginal cost. In those mountain villages such as in Hokkaido where forestry is still a viable strategy, they have adopted sustainable forest management system that optimizes the distribution of ages of the trees so that harvesting and planting can last permanently. The practice also includes planting tree varieties in suitable locations, fostering in appropriate timing and for sufficient periods. The maturity of forests of trees planted after World War II, which is entering in the harvest period and adding plenty of forest resources, gives a good prospect for reviving the domestic market for logs and forest products. Sustainable timber harvesting in turn enables

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the rural population to be engaged in more stable forest product processing.

4.2.6 Transforming structures and processes

Enhancing human and social capital: the community leader (s) and rural-urban exchange

The presence and the leadership of the “key person” are found potentially crucial. The key person is the one who can make reference to external culture, information, values and ideas and bring them to the locality, and who, in turn, is able to valorize local resources and local identity. Often times this person is an outsider or a returned resident, who has experience of living outside the region or even in foreign countries. It is extremely useful for “the discovery or creation, and then valorization (that is, putting to strategic use) of territorial means of production” to have someone who can identify the value of local and often intangible resources from outsider’s eyes.

The exchange and communication between rural settlers and outsiders are important in several aspects. First, it enhances human capital, one of the bottlenecks in village communities: It often leads to the creation of new rural leadership. The exchange may also attract young people within the village and stabilize out-migration, and may even bring about reverse migration (bringing in new settlers). Moreover it draws frequent temporary visits (forest volunteers, weekend farmers, voluntary tour guides, instructors for technology, management, history and culture, etc.). Second, the interaction and exchanges between urban and rural people facilitates social capital, both cognitive (trust, reciprocity, etc.) and structural (new organizations and institutions).

Rural facilities such as adult education/life-long learning classrooms and community centers, which are representatives of rural physical capital, are important resources for interactions and mutual learning.

Creation and Utilization of non-market mechanisms and institutions/organizations

Another important livelihood strategy is to use different forms of organizations and institutions and exploit the interrelationships between them. It is clear that given the state of productivity of agriculture, labor force, technology, and other conditions, mountain villages cannot be competitive, at least in the short and medium term, in the market. Therefore it is beneficial to utilize non-market mechanisms along with market mechanisms such as:

1) Community management and/or partial and voluntary collectivization of production factors: land, labor, and credit
2) Organization of voluntary labor and participation of residents in management
3) Creation of new internal and external distribution networks
4) Creation of diverse, multi-layer cooperatives
5) Microfinance and regional circulation of financial resources

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20 It is well known that in the earlier stage of “One Village, One Product” movement in O-ita Prefecture, one of the community leaders (in Ohyama Township) had experience of staying in a kibbutz in Israel and other countries.
21 Doria, et. al.(2003). This refers to a key concept of “endogenous development” that became popular in Europe, in particular, Italy, and Japan in the 1980s.
6) Organizations to support communication and exchanges of residents with other areas, particularly to facilitate urban-rural exchanges

Collaboration on direct sales between producers and consumers, between neighboring cities, villages and towns and between organizations on long-term contract basis helps to complement the remoteness and scarce marketing skills. Use of IT in advertisement and sales (e-commerce) is particularly relevant for depopulated remote rural villages. There are now considerable varieties of rural organizations, ranging from public corporations, consumers cooperatives, public-private partnership\textsuperscript{22}, limited stock companies to a small number of joint stock companies. The Not-for-profit organizations are particularly suitable for rural women with relatively high level of education to participate.

Successful village communities are using several combinations of the mechanisms above.

4.2.7 An example of community farming: Kokonoeno, Takeda City, O-ita Prefecture\textsuperscript{23}

Kokonoeno is a typical mountain village located at the skirt of Soboyama Mountain and with an altitude of 400 to 500 meters. Nearly a half of the total 111 farmer households are aged families, and their plots of land are small and on steep slopes. Therefore efficient agriculture management has been difficult and once there was even a crisis of the disappearance of the village.

The biggest bottleneck was the segmentation of land into tiny lots, which originated from the post-World War II Agricultural Land Reform. Over the last forty or fifty years, the land had become valued as real estate assets rather than as agricultural production means, and the conservativeness made landowners reluctant to sell their plot.

However with the leadership of a key figure in the village, strong sense of community and social relationship eventually led to the buying out (pooling the ownership) of the land by a newly created joint stock company. The ownership and user rights of land were separated. Larger areas of higher quality land were now reallocated to a much smaller number of principal farmers (those without an off-farm or part-time job), and other farmers can work for the new landowners or simply receive the share of the profits. In this manner, both economies of scale and economies of scope came into effect.

With this the agglomeration of land as the base, a major change in planting crops from rice to soybeans and soba and the formation of agricultural workers’ collectives took place. Growing rape blossoms as an interim crop made the land more fertile, producing higher value added rice with organic fertilizer and reduced pesticide. Village-wide careful planning improved land utilization rate from 96.7% in 1997 to as high as 173.8% in 1997. Though previously there were many barren plots, the present rate of abandoned land turned out to be zero.

Thirteen women groups of agro-processing were formed, the products of which are marketed through the newly established Takeda City Agriculture Corporation, a joint

\textsuperscript{22} The most popular type is a joint venture of municipalities and private citizens (individuals, groups and private companies). This form is incorrectly referred to “the third sector” in Japan.

\textsuperscript{23} Information was taken from the website of the Institute of Depopulation Issues (http://homepage2.nifty.com/kaso-ken/).
marketed through the newly established Takeda City Agriculture Corporation, a joint venture of the City and local JA (Japan Agricultural Co-operatives) as well as through a distribution company, which was co-invested by the shopkeepers of the shopping district. The latter cooperation between the village (producers) and the town (shopkeepers) is also vital. The distribution company operates a grocery store that was constructed by converting an empty old merchant house and is engaged in direct sales of soba, tofu, steamed (bean-jam) buns, and etc.

The transformation of the village was facilitated by the direct payment system introduced by the Ministry of Agriculture, Forestry and Fisheries (to hilly and mountainous areas). As an organization of principal farmers had been formed by the time of implementation of the system, the separation of land ownership and user rights was accomplished in such a way that the first investment was made from the grant to the organization and the rents distributed to the landowners according to their shares. Those without landownership can be hired by the organization of the principal farmers as employees to be engaged in farming or food processing.

The community farming is based on “valley farms” each of which selects crops suitable to the land condition, climate and surrounding environment. The farming of the valley farms employs small-scale techniques that utilize family labor of individual farmer households and circulates local natural resources. For example, after the introduction of the new system, a total of 5 ha paddy fields and copses previously owned by six households is now owned by two households, and the portion of the land that is not suitable for efficient farming was transformed to a pasture. The cows are now grown healthier by eating grass and crops planted in the paddy field on the slope, and the dung in turn makes the soil more fertile. The circular system helps create higher value added as well as a brand image of freshness, health, and safety. The village plans to put the two-third of the total amount of the grant to the common pool: for the training of operators specializing in the production of newly introduced crops and the construction of an agro-processing factory. The farmers wish to move forward to integrated sustainable agriculture in the future.

5. Conclusion

In this paper we examined the enormous challenges of Japanese mountain villages and the communities’ efforts to cope with them.

The present situation is characterized as a particular type of “a vicious cycle of population, resources, environment and development (PRED),” that is, a situation where the population decrease causes an inefficient use of resources and the decline of productive capacity, and further leads to difficulty in maintaining the livelihoods and fundamental functions of communities such as preservation of resources and environment, disaster prevention, education and health care.

The rural livelihoods are at stake. Nevertheless the mountain villages are trying hard to get out of the situation by “the discovery, or creation, and then valorization (putting to strategic use) of their community capital”. The main livelihood strategies of successful villages are:

1) Revitalization of agriculture/forestry through more productive use of cultivated lands,
2) Diversification into secondary and tertiary activities,
3) Preservation of the public function of agriculture and forestry (environmental services),
and
4) Building sustainable agriculture and forestry,

In this process, several factors were found to be important.
1) The leadership of a key person(s) who can make reference to external culture, information, values and ideas and bring them into the rural community,
2) Facilitating urban-rural exchanges
3) Utilization of non-market mechanisms and institution/organizations such as community farming, diverse and multi-layer cooperatives, public-private partnership in various forms, participation of residents in management and organization of voluntary labor

The government policy is crucial in the following areas: to support the villages’ adaptation and adjustment to structural reform; to acknowledge the role of agriculture and forestry in preserving the public function such as ecological and environmental services and disaster prevention; help the villages internalize those positive externalities though “green subsidies/taxes” and other means, and assist people to prevent, adapt to, recover from natural disasters.

Sustainable Likelihood Approach is found to be a useful and powerful framework to analyze the relationship between environment and development. This study is preliminary analysis for further detailed surveys at village level and empirical analysis in Japan and Inner Mongolia.

References


