

1. Regional Profile

Geographical Location	Country and Region	Ochi Town, Kochi Prefecture, Japan, East Asia												
	Longitude and Latitude	North Latitude 33°31'59", East Longitude 133°15'6" (Ochi Town hall)												
	Geographical Conditions	<ul style="list-style-type: none"> • Mountainous agricultural village region • Roughly 15 km away from the nearest ocean in straight-line distance • Roughly 650 km away from Tokyo (capital) in straight-line distance • Roughly 25 km away from Kochi City (prefectural capital) in straight-line distance 												
Natural Environment	Topography and Altitude	<ul style="list-style-type: none"> • Ochi Town is mountainous for the most part with its lowest elevation at 40 meters above sea level and its highest point 1,073 meters above sea level. • Flat land is extremely limited and only found along the rivers. 												
	Climate	<ul style="list-style-type: none"> • No weather observatory in town. In Motoyama Town, a town in Kochi Prefecture which falls under the same climate classification, the annual mean temperature is about 13.8°C and the annual precipitation is roughly 2,645 mm. • Falls under Cfa (humid subtropical climates) in the Koeppen climatic classification. 												
	Vegetation and Soil	<ul style="list-style-type: none"> • Forests cover the majority of the town, with the highest ratios of cedar and cypress plantation, followed by konara oak secondary forest. Farmland vegetation exists primarily along the valleys between forests. • The soil is brown forest soil. 												
	Biodiversity and Ecosystem	<ul style="list-style-type: none"> • As Ochi Town has extremely complicated topographical features, there are abundant microclimate changes that offer natural environmental factors suitable for habitation by diverse organisms. • Although a good portion of the forests within the town have been changed to artificial forests, biodiversity in secondary and natural forests is extremely high. • In particular at Yokokura Mountain, there are a variety of rocks and stones such as serpentinite and limestone. In addition, as the mountain was a religious symbol with little artificial impact, the area is known for its abundant forest vegetation. In a limited area, there are seven vegetation types: Japanese nutmeg community, deciduous broad-leaved trees community, Machilus japonica community, Quercus acuta community, Japanese hemlock-cypress community, hornbeam community, and cedar community. 												
Social Background	Population and Changes in Population	<ul style="list-style-type: none"> • The population of Ochi Town was 10,624 in 1960, however it declined to 6,952 by 2005. • As of 2000, the aging rate (proportion of people aged 65 or older to the total population) is 38.2%, and aging is progressing. 												
	History and Culture	<ul style="list-style-type: none"> • In the present area of Ochi Town, it is said that humans resided at latest by the 10th century, and in 957, Yokokura Mountain was said to have developed as a sacred site to perform ascetic practices. 												
	Regional Economy (Major Industries, Livelihood (including data and forecasts))	<ul style="list-style-type: none"> • The core industries of Ochi Town are agriculture, forestry, and tourism. In recent years, however, the local economy has been generally sluggish due to changes in industrial structure, depopulation, and the aging of residents. • The number of workers in each industry sector in 2005 is as follows: <table border="1" data-bbox="598 1832 1426 2002"> <tr> <td>Primary Industry (agriculture, forestry and fishery)</td> <td>497</td> <td>15.9%</td> </tr> <tr> <td>Secondary Industry (mining, manufacturing and construction)</td> <td>864</td> <td>27.7%</td> </tr> <tr> <td>Tertiary Industry (commerce, tourism and others)</td> <td>1,756</td> <td>56.3%</td> </tr> <tr> <td>Total*</td> <td>3,119</td> <td>100.0%</td> </tr> </table> 		Primary Industry (agriculture, forestry and fishery)	497	15.9%	Secondary Industry (mining, manufacturing and construction)	864	27.7%	Tertiary Industry (commerce, tourism and others)	1,756	56.3%	Total*	3,119
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<p><i>*Note: As the percentages of workers in Primary Industry, Secondary Industry, and Tertiary Industry are rounded off to one decimal place, they may not add up to 100.0%.</i></p>														

2. Use and Management of Natural Resources in the Region

(1) Use and Management of Natural Resources in the Past and Present

1) Land Use Related to the Use and Management of Natural Resources in the Past and Present

- Ochi Town covers a total area of 111.95 km² of which 103.5 km² (92.5%) are forests. Much of the forests were artificially planted in the 1950s through 1970s.
- Rivers weave between forests, and farmland and villages exist on narrow flat land along the rivers and by the coast in mosaic-like patterns reflecting their different types of usage.
- In the past, natural resources were used and managed such that varying land characteristics complemented one another, e.g. using underbrush in the woods as fertilizers for farmlands. However, such correlative management has diminished drastically.

2) Objectives and Details of the Current Use and Management of Natural Resources

- Forestry: Production is done of cedar and cypress as construction material as well as of hybrid mulberry tree and oriental paperbush as raw material for Japanese paper.
- Agriculture: Various types of agricultural goods are produced by making use of complex natural conditions. In recent years, the cultivation area for natural medicine (medicine containing effective substances extracted and unrefined from naturally existing animals, plants, minerals and other items with pharmaceutical effect) currently accounts for approximately half of the total cultivation area of the town.
- Fishery: Fishing for Japanese mitten crab and ayu (sweetfish) is carried out in the Niyodo River.

(2) Problems Associated with the Use and Management of Natural Resources and their Impact on Biodiversity

- In Ochi Town, ratios of artificial cedar and cypress forests planted from the 1950s through the 70s are high. However, given stagnant forestry conditions, the forests were not properly managed, e.g. no thinning or underbrush cutting, and consequently, devastated areas are increasing.
- Also in secondary forests, the use of timber has declined considerably due to a drop in demand for firewood and charcoal due to the rise of fossil fuels and the use of forest-based fertilizers due to the rise of chemical fertilizers. As a result, succession of the secondary forest, that had been maintained for many years, is progressing and the living environment for wild animals and plants is deteriorating.
- In addition to the decline and aging of farming population in Ochi Town, a lot of the farmland is disadvantaged farmland located on mountain slopes. Work load on farmland located on slopes is heavy for elder farmers and this is accelerating the expansion of abandoned farmland.

(3) Regional Plans and Other Measures toward a Resolution of the Above Problems

- Local administrative entities including Ochi Town and Kochi Prefecture have developed various plans concerning regional restoration and the primary industry to deal with these problems described above.
- There is no plan that primarily aims to conserve biodiversity.

3. Details

(1) Overview

At Ochi Town, the diversity of natural conditions had long been utilized to grow a number of natural medicines (e.g. ginger). In the recent years, the area of cultivation has expanded and natural medicines have become the core agricultural product for the town.

As a case of efforts made by Ochi Town regarding the sustainable cultivation of natural medicine, the following outlines the contract cultivation pursued between the farmers of Ochi Town and the herbal medicine company; and the “Collaborative Forest Restoration Project” carried out in cooperation among various entities.

Location	Ochi Town, Kochi Prefecture
Involved Parties	<p>■ Contract cultivation of natural medicine</p> <p>[Cultivation of natural medicinal ingredients] Juridical Agricultural Union Human Life Tosa (hereinafter referred to as “ Human Life Tosa”)</p> <p>[Purchase of natural medicine] Tsumura & Co. (hereinafter referred to as “Tsumura”)</p> <p>* Sales contract entered into between local farmers and Tsumura</p> <p>■ “Collaborative Forest Restoration Project” (Initiative launched by Kochi Prefecture)</p> <p>[Activity standard and implementation] Human Life Tosa</p> <p>[Provision of funding and labor] Tsumura</p> <p>[Land owner and activity support] Ochi Town</p> <p>[Execution of initiative & support for activities] Kochi Prefecture</p> <p>* The above four parties entered into the “Partners Agreement” based on the initiative introduced by Kochi Prefecture</p> <p>[Implementation of forest maintenance activities] Niyodo-gawa Forestry Union (Maintenance operation consigned by Ochi Town)</p>
Background and history	<p>[History of cultivation of natural medicine in Kochi Prefecture]</p> <p>Given the humid, subtropical climate and the complicated topographic features of Kochi Prefecture, various types of natural medicine have been produced since long ago.</p> <ul style="list-style-type: none"> · Also in Ochi Town, the natural medicines such as ginger have historically been produced. <p>[Start of full-blown contract cultivation of natural medicine (1992)]</p> <ul style="list-style-type: none"> · In 1991, a union of natural medicine-producing farmers, Human Life Tosa, was established, and in 1992, cultivation under contract with Tsumura began. <p>(Even before this, there had been dealings between farmers and Tsumura although the details are not known.)</p> <p>[Start of “Collaborative Forest Restoration Project” (2008)]</p> <ul style="list-style-type: none"> · In an effort to achieve sustainable cultivation of natural medicine, four parties: Human Life Tosa, Tsumura, Ochi Town, and Kochi Prefecture, entered into a Partners Agreement in June 2008 to promote the soundness of forests located at the source of the river flowing into the cultivation area. · The contract period is three years from FY2008 to FY2010.
Purpose and objectives	<p>■ Contract cultivation of natural medicine</p> <ul style="list-style-type: none"> · (For Human Life Tosa) The cultivation of a new regional principal product that leads to stable and enhanced agricultural income. · (For Tsumura) The sustainable procurement of natural medicine <p>■ Collaborative forest restoration</p> <ul style="list-style-type: none"> · Promoting the soundness of forests located at the source of the river flowing into the cultivation area to support the sustainable cultivation of natural medicine

<p>Main contents</p>	<p>■ Contract cultivation of natural medicine</p> <ul style="list-style-type: none"> · Natural medicine cultivation (e.g. Bupleurum root, Angelica root, and Japanese pepper) based on an agricultural method that enables sustainability · As of FY2009, approximately 300 farmers grow natural medicines under the management of Human Life Tosa, and the cultivation area amounts to roughly 70 ha (the total natural medicine cultivation area for the entire town is approximately 200 ha.) <p>■ Collaborative forest restoration</p> <ul style="list-style-type: none"> · The following projects are performed. <table border="1" data-bbox="363 488 1433 1003"> <thead> <tr> <th>Type</th> <th>Size</th> <th>Activity</th> </tr> </thead> <tbody> <tr> <td>Exchange and experience zone (mainly broad-leaved forests)</td> <td>Four locations totaling 12.4 ha</td> <td>Training, exchange, etc. for employees of Tsumura and others <ul style="list-style-type: none"> ○ Experiencing various tasks such as: tree planting, grass cutting, periodic thinning and cutting, and pedestrian road maintenance ○ Performing cultivation management of natural medicines, harvesting, etc. ○ Lectures on agricultural chemicals, fertilizers, etc. </td> </tr> <tr> <td>Sink measure zone (mainly artificial conifer forests)</td> <td>Six locations totaling 43.8 ha * Including one location outside of Ochi Town (14.6 ha)</td> <td>Continuous forest maintenance operation (operation consigned to the forestry union) <ul style="list-style-type: none"> ○ Artificial forest development ○ Opening of task roads in forests ○ Survey on the conditions of forests, boundary management, etc. </td> </tr> <tr> <td>Total</td> <td>10 locations totaling 56.2 ha</td> <td>-</td> </tr> </tbody> </table>	Type	Size	Activity	Exchange and experience zone (mainly broad-leaved forests)	Four locations totaling 12.4 ha	Training, exchange, etc. for employees of Tsumura and others <ul style="list-style-type: none"> ○ Experiencing various tasks such as: tree planting, grass cutting, periodic thinning and cutting, and pedestrian road maintenance ○ Performing cultivation management of natural medicines, harvesting, etc. ○ Lectures on agricultural chemicals, fertilizers, etc. 	Sink measure zone (mainly artificial conifer forests)	Six locations totaling 43.8 ha * Including one location outside of Ochi Town (14.6 ha)	Continuous forest maintenance operation (operation consigned to the forestry union) <ul style="list-style-type: none"> ○ Artificial forest development ○ Opening of task roads in forests ○ Survey on the conditions of forests, boundary management, etc. 	Total	10 locations totaling 56.2 ha	-
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<p>Major Successes</p>	<p>■ Contract cultivation of natural medicine</p> <ul style="list-style-type: none"> · (For Human Life Tosa) The cultivation area for natural medicines has been increasing yearly, which is leading to increased stabilization and the enhancement of farmer income. · (For Tsumura) The increase in the procurement volume under contract cultivation has been contributing to an enhancement of the domestic procurement rate of natural medicines for Tsumura as well as the general procurement rate through cultivation. · (For the local community) Given the increase in the production volume of natural medicinal ingredients, the borrowing of idle land from former farmers has been occurring in part, which has contributed to reduce idle farmland. <p>■ Collaborative forest restoration</p> <ul style="list-style-type: none"> · Given the recent start of this initiative, no results have been shown yet. However, by progressing these efforts, it is expected that the devastated deforests will improve and forests are expected to bring benefits to the public (e.g. functioning as a headwater forest, preventing disasters, and supporting health and relaxation). 												



Pictures: *Bupleurum scorzonerifolium*, a primary plant grown under contract cultivation; and the cultivation land (Photos provided by Tsumura & Co.)

(2) Details of the Use and Management of Natural Resources from the “Five Perspectives” of the Satoyama Initiative

The table below shows the primary relevance of this case to the five perspectives.

Details are given below the table for the perspectives which have high relevance (items with the “ ” mark in the table).

Five Perspectives	Relevance to this Case	
	Degree of Relevance	Degree of Relevance
1) Resource use within the carrying capacity and resilience of the environment		<ul style="list-style-type: none"> Under the contract cultivation of natural medicines between Human Life Tosa and Tsumura, management to ensure sustainability and quality is carried out. Contract cultivation of natural medicines and “Collaborative Forest Restoration Project” contribute to controlling the lack of use of natural resources in farmland and forests. <p><i>* Details to follow.</i></p>
2) Cyclic use of natural resources	○	(Nothing in particular)
3) Recognition of the value and importance of local traditions and cultures		<ul style="list-style-type: none"> Contract cultivation of natural medicines takes into account the tradition of natural medicine cultivation in Ochi Town. The traditional knowledge and techniques of farmers are also utilized in under today’s cultivation,. <p><i>* Details to follow.</i></p>
4) Natural resource management by various participating and cooperating entities		<ul style="list-style-type: none"> “Collaborative Forest Restoration Project” is being jointly implemented with roles and responsibilities shared among the agricultural organization (Human Life Tosa), company (Tsumura), the local administrative entities (Ochi Town and Kochi Prefecture), and the forestry union. <p><i>* Details to follow.</i></p>
5) Contributions to local socio-economics		<ul style="list-style-type: none"> Farmers participating in Human Life Tosa have been stabilizing and increasing their income through the contract cultivation of natural medicines with Tsumura. The land subject to “Collaborative Forest Restoration Project” is used as a place of environmental education for the local junior high school. <p><i>* Details to follow.</i></p>

1) Resource use within the carrying capacity and resilience of the environment

[Sustainable procurement of natural medicine by Tsumura]

- Tsumura has a history of more than 100 years as a Chinese herbal medicine company, and is a major firm that accounts for the top share of medically applied Chinese herbal medicine in Japan. Tsumura, in order to promote the sustainable procurement of natural medicinal ingredients as raw materials for herbal medicine, is shifting from natural harvesting to cultivation.
- The contract cultivation between Tsumura and Human Life Tosa was achieved as a result of Tsumura’s needs for domestic cultivation land meeting the needs of farmers to promote agricultural restoration

through cultivating natural medicines as a principal product of the region.

[Sustainable production of high-quality natural medicine under contract cultivation]

- In order to promote a sustainable production of high-quality natural medicine, Tsumura entered a contract with Human Life Tosa requiring adherence to the “procedures” for agricultural tasks. In the event of non-compliance, Tsumura will not make the purchase as contracted.
- All farmers participating in the contract cultivation are required to submit a credential document on their agricultural practices and input of agricultural chemicals and fertilizers, which are used in quality management and the improvement of natural medicine.
- Human Life Tosa, with the aim of pursuing the sustainable production of high-quality natural medicine, has been selecting cultivation lots that enable an efficient growing of quality medicinal ingredients with limited agricultural chemicals, and independently coming up with the most appropriate methods for planting and thinning.

[Contribution to eliminating the lack of management over farmland and forests]

- At Ochi Town, the expansion of cultivation-abandoned land due to the stagnancy in agriculture, aging of farmers, and other factors has become an issue. Under such circumstances, some farmers who participate in Human Life Tosa have made contributions to preventing the increase in abandoned farmland by borrowing unused land from former farmers to expand production volume.
- At Ochi Town, the deterioration of forests due to a stagnancy in forestry, the aging of farmers, and other factors has become an issue. However, future improvements are expected given the development of a support structure by a company (Tsumura) and the local administration through the implementation of “Collaborative Forest Restoration Project”.

2) Recognition of the value and importance of local traditions and cultures

[Use of traditional knowledge and techniques concerning cultivation of natural medicine]

- Given the humid, subtropical climate and the complex topographic features of Kochi Prefecture, various types of natural medicine have been produced from long ago. Ochi Town also has a history of producing ingredients of natural medicine such as ginger.
- Today’s cultivation of natural medicine is based on such local tradition, and Ochi Town farmers hold dear their original knowledge and techniques that have been acquired over long years of history in producing natural medicine. For example, it is known that cutting the buds of *Bupleurum scorzonerifolium* at a certain time can promote growth.
- Human Life Tosa has been identifying such experience-based knowledge and techniques as much as possible and making efforts to have farmers share their know-how amongst themselves.

4) Natural resource management by various participating and cooperating entities

[“ Collaborative Forest Restoration Project” based on collaboration among parties within and out of Ochi Town]

- The “Collaborative Forest Restoration Project” suggested by Human Life Tosa was realized with the cooperation of Tsumura as part of the company’s social contribution efforts.
- A background factor that supported the implementation of this initiative was the continuous, stable increase in

the production volume of natural medicines under a favorable contract cultivation relationship between Human Life Tosa and Tsumura.

- Details of specific collaboration, roles and responsibilities among related parties are as indicated in the table below.

Table: Operation Structure of “Collaborative Forest Restoration with Environmentally Progressive Companies”

Parties		Roles and Responsibilities
Parties engaged in Partners Agreement	Human Life Tosa	<ul style="list-style-type: none"> • Planning, proposal and execution of exchange activities • Planning, proposal and execution of experience programs and practices • Accounting administration for the “Collaborative Forest Restoration with Environmentally Progressive Companies” project
	Tsumura & Co.	<ul style="list-style-type: none"> • Regional restoration of areas around the Niyodo River through corporate activities • Provision of support funding • Interaction with the local community
	Ochi Town	<ul style="list-style-type: none"> • Proper management and maintenance of the forests owned by the town • Support for exchange activities • Promoting activities under “Collaborative Forest Restoration with Environmentally Progressive Companies”
	Kochi Prefecture	<ul style="list-style-type: none"> • Communication liaison for business promotion • Support for exchange activities • Support and confirmation in planning, proposal and execution of try-out programs, practices and other activities • Issuance of CO2 absorption certificate • Promoting activities under “Collaborative Forest Restoration with Environmentally Progressive Companies”
Related parties	Niyodo River Forestry Union (Consigned by Ochi Town to perform the tasks on the right)	<ul style="list-style-type: none"> • Receiving consignment of the maintenance of forests owned by the town, etc. • Planning for maintenance activities (afforestation, forest road building, etc.) • Support for exchange activities and test programs

Source: Plan for “Collaborative Forest Restoration with Environmentally Progressive Companies” by Tsumura & Ochi (Draft)



Picture: Land subject to the initiative under “Collaborative Forest Restoration Project”

(Photo provided by Tsumura & Co.)

5) Contributions to local socio-economics

[Contribution to the stabilization of agricultural income through the contract cultivation of natural medicine]

- The cultivation of natural medicine requires less work than growing other agricultural products. As natural medicinal ingredients are harvested in winter, the products comprise a valuable source of income in off-seasons for farmers. In Ochi Town, where the aging of farmers was quite prominent, the production of natural medicine has been widely implemented in consideration of these advantages.
- Farmers working with Human Life Tosa have been able to secure greater stability and an improvement in income through pursuing the cultivation of natural medicine under a contract with Tsumura. As of FY2009, about 300 farmers cultivate natural medicinal ingredients under the management of Human Life Tosa, and the cultivation area accounts for approximately 70 ha.

[Acceptance of environmental education under “Collaborative Forest Restoration Project”]

- In locations subject to the “Collaborative Forest Restoration Project”, forestry experience programs for junior high school students are being held.



Picture: Junior high school students experiencing forestry in locations subject to “Collaborative Forest Restoration Project” (Photo provided by Tsumura & Co.)

End