

## JAPAN

<b>Payments for forest and agriculture land management</b>
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Japan suffers frequent natural disasters, such as earthquakes, typhoons, or floods. In Japanese culture, people live within nature and have great respect for it. Against this background, payments for ecosystem service have taken place for over a hundred years, particularly for ecosystem services associated with forests. For example, the local government of Tokyo has held and managed forest in the upstream basin since 1901 to ensure that the watershed continues to provide water filtration and avoided soil erosion services.

Japan has mountainous landscapes and almost two-thirds of land is covered by forest. However, half of forest area is planted forest. In the past, the forestry sector expanded rapidly to support Japanese industrialization and urbanization after World War II and during the period of high economic growth from 1950s to 1960s. The current situation is very different. Japan imports cheap foreign timber, has an aging population and a declining domestic forestry sector. This has resulted in an expansion in the area of unmanaged plantation forests. Currently most of Japan's forests are unmanaged and the ecosystem services provided by forests are degrading. The challenge for Japan is not decreasing forest area, but the degradation of plantation forest ecosystems through insufficient management, particularly on privately-owned land.

Payment schemes for ecosystem services have been implemented by both local governments and companies. Ecosystem service payment agreements are of three types. There has been direct negotiation between ecosystem service suppliers and beneficiaries, e.g. the local government of Tokyo has paid several companies for the conservation of watershed forest. Second, the government has applied earmarked taxes and/or charges, for water consumption for example, and payments are subsequently made to landholders in watersheds who adopt forest management practices that ensure the provision hydrological regulation. Third, there is small amount of trade in ecosystem services, for instance, a pilot carbon trading scheme organized by Ministry of the Environment.

A good example of a payment scheme based on direct negotiations between buyers (a company) and sellers (farmers) is implemented in Kyushu area. A company has introduced the concept of "returning groundwater that is consumed in a manufacture factory". The company uses groundwater extracted from the aquifer under the factory. The company makes a contract with several farmers which allows the company to flood nearby agriculture fields between crop cultivation periods in summer. The flooded water filters down through the ground and recharges the groundwater aquifer. Payments are made from the company to farmers via local intermediaries. The payment is 11,000 JYen /10ha for 30 days of flooding and 16500JYen/10ha for 60 days. The payment is based on the farmers' costs associated with the preparation of land and flood management. There are several other direct negotiation examples in which companies provide monetary and/or non-monetary contribution to conserve forest ecosystems in upstream watersheds, on a voluntary basis.

Since 2003, 29 prefectures have introduced earmarked environmental fees on beneficiaries of forest ecosystem services. Part of the revenue is earmarked for direct payments to forest owners for forest management practices that protect critical watershed areas. Such a PES scheme is implemented in Toyota city in Aichi prefecture (adjacent to the COP-10 host city of Nagoya). 78 percent of tap water in Toyota city comes from Yasaku River. A surcharge on tap water (1 JYen/m<sup>3</sup>) was introduced in 1994 and its revenue is earmarked for the Toyota city tap water

conservation fund, constituting, depending on the volume of water usage, 0.3 to 1.2 percent of the total water usage fee. Since 2000, the fund has financed water resource conservation projects in privately-owned plantation forests, such as tree thinning which is required in unmanaged plantations to reduce water uptake of young trees. Forest owners have to agree to halt clear-cutting of forest in order to receive payments from the fund. Similar tap water fees for conservation purpose have been introduced by other local governments, e.g. in Fukuoka.

In many prefectures, forest management is partly funded by earmarked local taxes. Kochi prefecture, in the south-west of Japan, was the first prefecture to introduce a local tax for protecting forest ecosystem service. The tax ranges from 500 to 1000 JYen per person, depending on the prefecture. Revenue generated from the tax is used for tree thinning and for transforming unmanaged plantation forests into natural mixed forests (broadleaf and coniferous trees) through enrichment planting. In Kanagawa prefecture, near Tokyo, a forest management tax was introduced in 2007. The tax rate was based on a study of willingness to pay and estimates of the expenditure required for the conservation project. There was extensive participation and public consultation with citizens on issues relating to the costs to households of the tax and on the use of tax revenue. Revenue is also used for household wastewater management, water conservation measures, and forest conservation and restoration.

However, there are several issues to be tackled. Most taxes earmarked for forest management are set at levels which are very low compared to willingness to pay. Because tax rates are low, little revenue for improving ecosystem management is generated. Moreover, these taxes are generally levied on all citizens in a prefecture and are not targeted to beneficiaries of ecosystem services. Finally, in some cases revenue earmarked for ecosystem management is used for non-forest management purposes.

In addition, Japan has introduced a number of PES-like systems at the local level, some of which also relate to payments for agriculture ecosystem services. For example, payments from local governments to farmers to encourage biodiversity friendly rice production are made to compensate for the additional costs even though biodiversity friendly rice sells at a premium.

### **Replicability**

The proliferation of PES schemes in Japan suggests that this experience is replicable.

#### **Lessons learned**

It is important to set the taxes that finance PES schemes at a level that approaches the marginal value of the ecosystem service used and which provides a level of revenue which can contribute to effective sustainable resource management.

In Japan each PES system is implemented independently, with no coordination amongst schemes. This negatively affects the effectiveness of schemes.

There seems to be considerable scope for bundling ecosystem service payments.

*Source:* Hayashi (2010).