

Building Adaptive Governance for Socio-Ecological Resilience and Community Response, Case Study from Japan.

Mgr. Mari Shioya¹

Mgr. Tatiana Kluvánková-Oravská, PhD.²

Mgr. Veronika Chobotová, PhD.³

Abstract

The governance of natural resources is confronting new challenges. Currently, an increase can be observed in the different levels of connections between different environmental issues and decisions of local, regional, national and international relevance. There is a need for stronger, more intensive coordination and exchange. Participation has the potential to promote adaptation in environmental governance through building up critical social relationships and learning in resource-based communities and locals. The example from study areas in Japan illustrates that the cooperation between locals and authorities is highly appreciated by different actors related to conservation area and the discussion between them is still ongoing concerning upcoming environmental management issues.

Keywords: *Adaptive Governance, Socio-Ecological Resilience, Biodiversity Conservation*

Acknowledgement

This publication is the result of the project VEGA No. 2/0016/11. We are also grateful to for the support of the project SPECTRA + Centre of Excellence for Settlement Infrastructure Development of the Knowledge Based Society (no.26240120002), supported by the Research & Development Operational Program funded by the ERDF.

¹ Department of Landscape Ecology, Natural Sciences Faculty, Comenius University. Mlynská dolina B2, 84215 Bratislava, Slovakia, mari.shioya@savba.sk

² Institute for Forecasting, Slovak Academy of Sciences, PÚ SAV, Šancova 56, 81105, Bratislava, Slovakia, progkluv@savba.sk

³ Institute for Forecasting, Slovak Academy of Sciences, PÚ SAV, Šancova 56, 81105, Bratislava, Slovakia, veronika.chobotova@savba.sk

1. Introduction and Research Focus

Conservation is now an issue of international concern. This is partly due to the development of a worldwide 'global commons' ethic, and because conservation is increasingly linked to international trade - either due to the growth in world-wide tourism or because rare biological and cultural commodities have an international market (Adger 2003, Pelling 2004). There are various environmental problems related to human activities, and the creation of protected areas such as national parks (NPs) is one solution for the conservation of nature and endangered species, or other aspects of human heritage. Many of these sites have links to tourism, as this is often seen as a mechanism to offset the costs of administering a site, as well as providing education.

Various work on resilience has focused on the capacity to absorb shocks and still maintain function (Berkes and Folke 1998, Berkes *et al.*, 2003, Paavola and Adger, 2005; Hodgson, 2004, Anderies *et al.* 2006, Smit and Wandel, 2006, Galaz *et al.*, 2008). Applying this theory to tourism management practice could give a better solution to environmental problems caused by human impact. In recent years, community-based tourism concept as a tool for both conservation and development has been increasingly recognized (Jain and Triraganon 2003), in the context of development assistance. The emergence of community-based tourism can be placed in terms of two developments: first, recent worldwide activities promoting sustainable and responsible forms of tourism; and second, the emergence of alternative approaches to protected area management and conservation efforts that link biodiversity conservation with local community development.

The central question of this paper is:

Can Adaptive Governance be a political tool to maintain socio-ecological resilience and sustainability?

Examples are taken from Biodiversity Conservation field.

The aim of the study is to identify problems associated with the management of conservation sites in a number of countries, identify their causes, and ultimately suggest possible management strategies to improve the present situation. This includes:

- Building on the theory of socio-ecological resilience and evaluating and suggesting mechanisms for managing the potential environmental and economic conflicts between

ecosystem and tourism

- Assessing the extent of participation of multi-level actors including indigenous people and utilisation of traditional knowledge.

2. Theoretical Background

Humanity is a major force in global change and shapes ecosystem dynamics from local environments to the biosphere as a whole (Redman, 1999; Steffen *et al.*, 2004; Kirch, 2005). At the same time human societies and globally interconnected economies rely on ecosystems services and support (Millennium Ecosystem Assessment, 2005).

Social and ecological dynamics and the human dependence on the capacity of ecosystems to generate essential services, and the vast importance of ecological feedbacks for societal development, suggest interconnection of social and ecological systems (Galaz *et al.*, 2008). To emphasise the concept, Berkes and Folke (1998) use the term social-ecological system (SES). Social-ecological systems include societal (human) and ecological (biophysical) subsystems in mutual interactions (Gallopin, 1991). The SES concept places humans within nature and focuses on the way in which interconnections between people and their biophysical contexts produce complex adaptive systems. Complex adaptive systems are nonlinear, meaning that a given cause – often resulting from a complex chain of biophysical and human interactions – can produce a disproportionate effect. The nonlinearity of complex system processes makes predicting the outcomes of reorganization difficult from both scientific and decision-making points of view. These systems adapt to change; whether or not the adaptation is amenable to the biota or humans in the region is often a matter of chance (Morehouse *et al.* 2008).

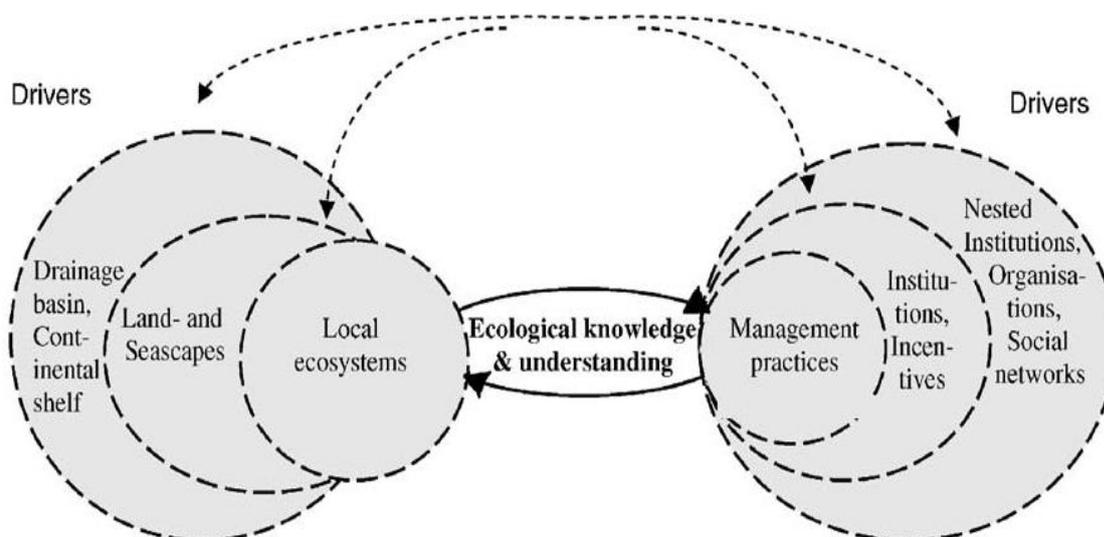
A resilient ecosystem has the capacity to withstand shocks and surprises and, if damaged, to rebuild itself. In a resilient ecosystem, the process of rebuilding after disturbance promotes renewal and innovation. Without resilience, ecosystems become vulnerable to the effects of disturbance that previously could be absorbed.

Current research inspired by social scientists making significant contribution to the political, economic, social and cultural dimension of global environmental change. Efforts to

improve the knowledge on the human dimensions of global environmental change and ensure relevance to society require periodical assessment of the conceptual frameworks used in the study of complex issues. There should be multidimensional and multi-scale concepts that could facilitate the understanding of the various complex interactions.

There are several conceptual frameworks developed in relation to the resilience approach. Figure 1. is a framework that focuses on knowledge and understanding of ecosystem dynamics, how to navigate it through management practices, institutions, organizations and social networks and how they relate to drivers of change (modified from Berkes *et al.* 2003, Folke 2006).

Figure 1. Ecosystem Dynamics and Resilience Approach



Adaptation to environmental variability has been a focus of anthropologists since the early 1900s. Adaptation is generally perceived to include and adjustment in social-ecological systems in response to actual perceived or expected environmental changes and their impacts. Folke (2009) discuss that the incidents range of vulnerability, adaptive and resilience with interaction between external drivers, natural and human capital and persistence.

Adaptive governance relies on polycentric institutional arrangements that are nested, quasi autonomous decision-making units operating at multiple scales (Ostrom 1996, McGinnis 1999). Spanning from local to higher organizational levels, polycentric institutions

provide a balance between decentralized and centralized control (Imperial 1999). Also, adaptive governance relies on networks that connect individuals, organizations, agencies, and institutions at multiple organizational levels (Folke *et al.* 2006). This form of governance also provides for collaborative, flexible, learning-based approaches to managing ecosystems, also referred to as “adaptive co-management” (Folke *et al.* 2003, Olsson *et al.* 2004).

3. Study Area

Shiretoko is located on Hokkaido, north island of Japan. Shiretoko National Park includes most of the Shiretokohanto Peninsula, a long and narrow peninsula on the eastern edge of Hokkaido, which extends into the sea of Okhotsk. It is a wedge-shaped peninsula about 65km long and 25 km wide at its base. The peninsula consists of the Shiretoko Mountain Range and coastal area. (Figure 2)

The Shiretoko National Park was established in 1964 as a 23rd of National Park in Japan and covers an area of 38,633 ha. It covers the region from the central area to the tip of the Shiretoko Peninsula, which is flanked by the Sea of Ohotsk and the Nemuro Strait. In February 1980, the zoning of this area was revised, and the area in the vicinity of Mt. Onnebetsu was designated as a Wilderness Area, which warrants ore stringent conservation and management. With the opening of the Shiretoko Crossroad in 1980, the number of visitors to the Park has increased to approximately 2.4million, and it has now become a popular site where tourists can experience natural surroundings. Visitor facilities have been set up at various tourist attractions. These include the mystical Shiretoko Five Lakes, which form a group of lakes on the Iwaobetsu Tableland; the Horobetsu park land, where a centre for providing information on the natural surroundings of Shiretoko has been set up; Shiretoko Path, which offers a view of Mt. Rausu and Kunashiri Island; and the Rausu hot spring facility complex (Hokkaido Government, 2006).



Figure 2: Map of Shiretoko cape, Shiretoko National Park, Japan (Source: Shiretoko Foundation UNESCO, 2006

This park contains largely undisturbed ecosystems containing sea eagles, Blakiston's fish-owls and brown bears. It is also very scenic, the west side of the Shiretoko Peninsula is covered with drift ice during the winter and the view of the Shiretoko mountain chain from the five lakes is splendid.

At the 29th UNESCO World Heritage Committee meeting held on July 17th, 2005 in Durban, South Africa. Shiretoko was inscribed on the World Natural Heritage List upon Japan's recommendation. Shiretoko's inscription attests to the international recognition of the importance of its ecosystem and biodiversity. Indigenous vegetation and rare animals are abundant in Shiretoko. Drift ice that surges in with winter has great influence on this, as the food chain begins with phytoplankton under the ice. Plankton is eaten by salmon and other marine organisms, and in turn supports the lives of a variety of species, including the brown bear and other mammals and Blackstone's fish owl, Settler's sea-eagle and other birds of prey. This extremely unique, complex ecosystem that extends from the sea to land is rare in the world. Being inscribed on the World Heritage List is a result of highly valued such wonderful nature is, as well as the environmental conservation activities in the local community. The total area of the World Natural Heritage Site is 71,000 hectares, including the surrounding sea area and reaching from the centre to the tip of the Shiretoko Peninsula, with Shari in the northwest and Rausu in the southeast sides (Ministry of Environment, 2008).

- Social features

In 1964, 38,633 ha of this area was designated as a national park for its dense wild life population and magnificent landscape. Designation of the park was on local requests in general and granted for its tourism promotion efforts. In 1977, the Shiretoko 100m² movement started in Shari Town as a pioneering project in Japanese National Trust movement. In 1988, Shiretoko Nature Foundation was established for research, education, communication and implementation of the nature conservation. In the 1980s, part of a national forest was cleared to by forestry agency to help regenerating by clearing old trees. Though it was enough near from the 100m² movements area so that all of Japan concerned about this logging activity. Forestry Agency needed to change their plan by the enormous pressure from media, environmentalists and activists, yet they managed to cut old trees which drew much attention to this area by not only environmental concerned people but large number of people in Japan which also leads Japanese society to think about other environmental issues. In 2005, Shiretoko was registered as a World Heritage Site for the four reasons: this is southern most region of drift ice on the Northern Hemisphere, the productivity of its ecosystem is influenced greatly by drift ice; Shiretoko provides the best example of interactions between marine and terrestrial ecosystems; Shiretoko is important for many marine and terrestrial Species including rare ones such as Blakiston's fish owl and Shiretoko violet (*viola kitamiana*); Shiretoko is globally important for many kinds of salmon and marine mammals such as Steller Sealion and many kinds of whale.

Utoro village is located next to Shiretoko National Park. Main economic activity here is fishing and farming. Few hundreds years ago, this place and whole Hokkaido area used to be called as "Ezo-chi", which means uncultivated place or unexplored place and it was not the interest of Japan. Around mid 1900s, Japanese government started colonising the area by sending settlers from poor farming are in Honshu. Those people mixed with Ainu or some Ainu were exploited by Japanese government for frontier projects.

4. Methodology

To assess the impact on the socio-ecological system, interview work has been done in Shiretoko National Park which has been also accessed as World Heritage Site in 2005 in

Japan. Semi-structured questionnaire form (appendix 1) has been used to interview multi-level actors who are related to park management. In summer 2010, the interview work has been conducted at the central government in Tokyo, local governmental office in Sapporo and in new World Heritage Site, Shiretoko in Japan to assess the impact on the socio-ecological system after the area was designated as a National Park and later as a World Heritage Site.

In total 25 actors were approached; of these 4 refusals were given and 20 interviews were completed including employees at central government, Hokkaido prefectural government, local municipalities, local park authorities, local fishermen/tourism association, and indigenous people in the Shiretoko area (appendix 2).

To encourage overall data triangulation, interviews were conducted directly in the central offices of related Ministries in Tokyo and governmental office in Sapporo, capital city of Hokkaido Island. Later, the interview work continued to be held in area of Shiretoko, which enabled direct observation as another method of data collection and verification, with the aim to observe the local activities in their natural setting and better understand situation in the park area.

Regarding the fact that collected data was mostly qualitative, analysis was based mainly on qualitative methods. Firstly, all interviews were recorded and transcribed. Data will be presented in the form of quotations from conducted interviews. Each quotation will be made with additional information of the interviewee – acronym identifying interviewed person that is indicated in annex as the information about interviewee.

5. Empirical Data and Analysis

To answer the central question of the research, “Can Adaptive Governance be a political tool to maintain socio-ecological resilience and sustainability?” the analysis of the interview work to assess the relationships between rural tourism and the vulnerability of regions with three major focuses:

1. Governance structure in the context of natural resource management,
2. Perturbations (shocks and shifts) arising from the socio-economic system: accession to World Heritage site, tourism activity,
3. Adaptation to the perturbations and participation process.

Governance structure is firstly presented with the framework of environmental law in Japan to give the overview of the natural resource management process at the central government. Later it shows the governance structure especially in Shiretoko area accompanying with the interview results from civil servants who are related to this area. Governance structure can be modified by the perturbation occurred in this study area after it accessed to World Heritage Site from National Park in 2005. The second part analyse this point as shocks and shifts that rose in this area to socio-economic system. Thirdly, the adaptation process as a response to absorb this shocks and shifts will be presented together with participation process from local actor.

5.1. Governance structure

The uniqueness of ecosystem and history of Shiretoko area has been presented at Section 3. Since it has been chosen as the candidate area for World Heritage Site in early 2000s, central government started to working on the legislative side across the different ministries. As it has been mentioned above at law framework, normally Japanese ministries have difficulties to cooperate each other. They tend to separate the issues from one another and there is not much cooperation has been observed. However, as it was the international scale project, the related ministries have been trying to tackle different subjects together with other actors such as prefectural government and local municipalities and later with local people in Shiretoko area.

Shiretoko is governed by mainly five stakeholders in Shiretoko, such as Hokkaido Prefecture, Ministry of Environment (MoE), National Forest Agency (NFA), Shari town municipality and Rausu town Municipality. This helps cooperation between different ministries to tackle different topics from different aspects, which also contribute to maintain the socio-ecological resilience to this area.

“We have five main actors as management authority such as: Hokkaido Prefecture, MoE, NFA, National, Shari town municipality and Rausu town Municipality. Depends on the concerning topic, we call related actors such as Local Tourism Association, Tour Guide Association, and Fisherman's Association. “ (respondent 1 & respondent 2)

Mutual cooperation between related ministries has been achieved for this Shiretoko

case. Normally Japanese ministries are described as “divided by thick walls” and it is rare to see the communication between. However this has been such a big scale of international project as a country level, so it must go beyond the “wall” between the ministries.

International project can accelerate the cooperation between different stakeholders. Not only between the ministries but the Hokkaido prefectural office and local municipalities of Shari and Rausu are on the same table to discuss about their concerning topics on Shiretoko management. They also intend to include local actors’ opinion by setting Regional Liaison Committee. Tourism association, fishing association is already there to discuss the concerned topics. And members from ministries, prefectural office and municipalities discuss the opinion at the meeting. So the different level of stakeholders sits together and trying to find better way of management.

Opinion from Scientific Council is considered as highly important too. Several respondents from ministry answered that it would cause a problem not to talk to the Committee in advance to make some decision. They are academics specialized in each area such as birds, sea mammals, plants, soils, water quality, and so on. Each management plan are drawn or checked by Scientific Council and they have intensive meeting at the each Working Group upon the management problems all over the year.

Working Group is the special commission to deal with pressuring concerning problems. There are three Working Group active from year 2004 as below: Ezo-deer and terrestrial biosphere working group (to balance the number deer to protect plants), Eco-tourism and coastal management working group (to find the proper way to utilize the natural resources) and River, stream regulation working group (to protect the area from flood as well as fish to be able to come back to their river). There is also a discussion to organize one more working group that is Higuma-bear working group to watch the behaviour of bears in the area.

Working Groups are set to answer the pressuring socio-ecological problems upon the observed problems, and it can be said that this is a flexible adaptive system to find the solution with different level of actors.

-Forestry Ownership

History of forestry ownership in Shiretoko is rather complicated than other forestry area in Japan. Firstly, it was owned by Pulp Company then handed it over to National Forestry Agency (NFA) when they finished business in 1960s. In the late 1970s Shari-town started 100m² Movement and as it was described in chapter 3, this is area is the birthplace of National

Trust Movement in Japan. Soon after in 1980s, NFA decided to cut the old trees to help regenerating the forest. Although it was too close to the National Trust Movement area, this act of NFA arose the huge argument between citizens and Environmental Conservation NGOs decided to take actions. They came to Shiretoko area to protest the NFA logging activity to “protect the virgin forest”. There were huge opposition group to this act and finally agency needed to call the police and to use helicopter to remove the old trees from the air. This “Shiretoko Riot against the country” was reported by media and took attention all over in Japan. In the consequence, NFA itself changed their attitude from “utilization of forest” to the “protection of the forest”.

“NFA is certainly the main stake holder here. We are the owner of this land area and we set this area as Forestry biodiversity protected area in 1990. After the Shiretoko conflict (which natural protection activist and civilians against NFA cutting trees decision here), we NFA re-think how to utilise the forest and then we changed our attitude towards conservation. Some realised that it is no longer the time just for logging but for protection so then this Forestry biodiversity protected area law had been made. “ (5)

-Over-rapping laws

Since it has been a National Park from 1964, this area has been protected by National Park Law. Then later, NFA set this area as Wild Life Protected Area and Bird Sanctuary so some more laws have legislative power to this area. Several different laws⁴ have legal power here, and management authorities are giving positive comments to this over-rapping law system (respondent 3,4,5,6). It is considered that having similar type of law which over-raps the function in one area can help conserving nature by covering as supplement to the each legal criteria.

“National Park has law is set by MoE, Protected Forest is covered by legal responsible by NFA. Each law has the special purpose and it is totally fine that the over-rapping law can supply each other if anything is missing in one law. So it is even better situation “(3).

There is no special WHS law regulation to protect the area, though Shiretoko is covered by different law set by different authorities, which can also encourage maintaining the ecological

⁴ National Park Law, Nature Conservation Law, Wildlife Sanctuary Protection Law

resilience to the area.

“There is no special law for WHS, but some of other law (NP law, Wildlife Sanctuary protection law) is active here. WHS is covering those different areas and encouraging people to protect. “ (6)

One respondent explained the meaning of accession to WHS from National Park as this area is considered as a natural heritage also for future generations.

“Shiretoko has been set as WHS to expand and go beyond that concept of National Park. This area is no longer just a recreational place but it is the natural heritage site that should be protected to our future generations. “ (3)

5.2. Perturbations (shocks and shifts)

Shiretoko area became a National Park in 1964 and then it set to World Heritage Site in 2005. Respondents as below have observed the changes in the society and economy especially after 2005.

Number of visitors boomed for 2 years (2005 to 2007) and tourism activity became popular here. There are new hotels, B&Bs and restaurants as well as new Shiretoko visitor centre built by MoE. Some of them were appreciated by tourists and visitors from outside of the area, however after the boom passed around year 2007 or 2008, those “hard facilities” of tourism left over having not enough visitors anymore. It was probably easy to build new facilities by expecting continuous large numbers of tourist, though the reality was different. The declining of the visitor number was not predicted enough to keep up the economic income from tourism sector, nor maintain those facilities.

Shiretoko Regional Liaison Committee is trying to figure out what is the reason of declining visitor numbers together with Scientific Council at Eco-tourism Working Group.

Some of them pointed out that not meeting the visitor’s high expectation of World Heritage Site might be the reason. Also over crowded by tourists could damage the scenery of the area. It used be a favourite place for hikers and mountaineers to go to Rausu-dake mountain area. Those people usually visited here over and over. Although after accession of this area to WHS and innocent tourist started to rush to this area, it does not attract those experienced hikers anymore because they were tired of crowded area.

Regulating the number of visitors is one of the response actions to it. They are starting to limit the number to most popularly visited site, Shiretoko Five Lakes area from 2011. Firstly those who want to visit this area have to take lecture for an hour to encourage them to understand the rule and importance of the nature. Secondary, they can only go into the area with professional tour guides. Thirdly the visitor's number is limited to 300 people per an hour in the Shiretoko five lakes area. The main purposes are to protect the vegetation from over use, to decrease the chance of encountering wild bears, and to provide the satisfactory visiting experience to visitors by preventing over crowd to the area.

Some of local people concerned that the limiting number of tourists would discourage tourist to come to Shiretoko area by giving impression that they might have possibility not have access to the area when they want. But the officer from Shiretoko Foundation told me that limiting the visitor's number can definitely give positive experience to the guests and it is the process of branding of the area but not discouraging people to come to the area.

-Visitor Density

Visitor density is not low in this area as it had been National Park and favourite place for hikers and tourists who want to watch ice drifts in this area. Though the biggest impact to here was the accession to WHS in 2005. The number of the visitors rose soon after WHS registration and it continued 2 year. Despite of the expectation to the local people here, the number of visitors started declining after 2007. (Figure 3,4).

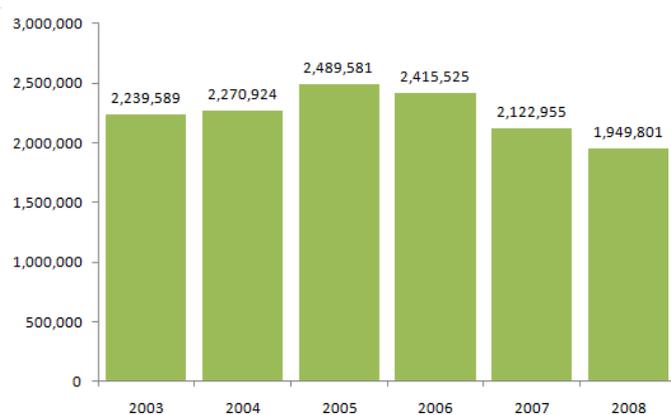


Figure 3: Number of the visitors to Shiretoko Area

(Source: Hokkaido Prefectural Office, http://pucchi.net/hokkaido/shiretoko/g_sightseen.php)

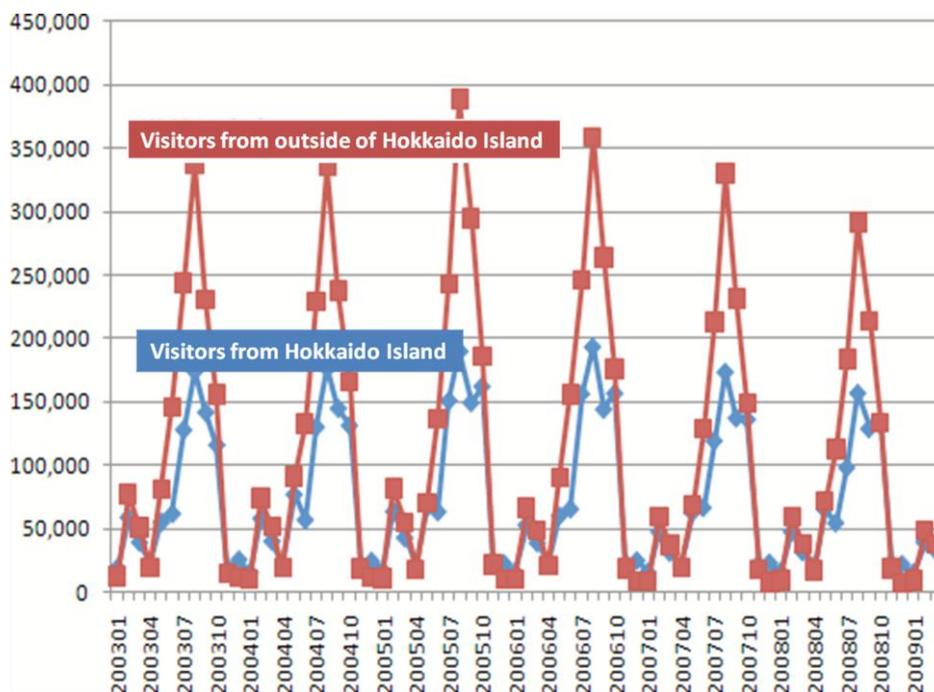
Number of the visitor dramatically rose soon after the world heritage site registration and it continued for two years. However after the year 2008, it has been continuously decreasing and that is the concerning issue for local people which affect to their income from tourism sector.

“The boom of the Shiretoko area finished in just 2 years. Some tourist get the impression of Shiretoko that the regulation inside the area became stronger and it seems convenient to travel inside the area. It used be an unexplored place and was just favorite place for skilled hikers, but those hikers do not want to visit Shiretoko anymore because it became very popular and intensely visited” (respondent 1&2)

Not many people expected such rapid decreasing numbers of the visitors and still cannot find the solution.

“The number of the tourist is decreasing”.(5)

Figure 4. Visitors to Shiretoko Area (Source: Shiretoko Data Center 2010)



Some people explained that the over use of the area would be the main problem and there is a pressure from tourisms.

“Overuse of this area is the main problem. There are pressure from tourisms” (3)

Car traffic can be the accompanying problems here as it happens in other national parks or protected areas in Japan. Especially after the accession to WHS, car traffic accompanying with heavy visitor density has been observed here.

“Since the tourism activity getting bigger and bigger, the car traffic get worsen. For instance, it became normal that the tour guide picks up the customers at their hotel and take them to Shiretoko five lakes even there are bus service. Also there are quite many bus companies started operating frequent night bus tour which seems more than too much compare to the size of Shiretoko. It also causes car traffic here day and night” (19).

-Economic Shift

Shiretoko has several fishing ports and the economic income from fishing industry was the biggest before it set as WHS. There is famous port called Rausu at east side and the fishing activity is still large part of the society. The economy in Rausu used to be based on fisheries, which has one of the biggest fishery yields per year in Japan. This relates to the fishing rights negotiation that will be mention later in part 4.3.

However, there are some economic activity shifts from fishery to the tourism after it became famous area for tourist by accessing to WHS in 2005. Building hotels, hostels and B&Bs are the “hard” facility of the tourism sector and some of local fishermen opened new business as hostel owners, which can be mainly observed in Utoro village.

By using knowledge of fishery, some of fisherman from Rausu town started new tourism activity such as whale and dolphin watching. This can be described as a “soft” part of the tourism.

“Whale watching and tourism guide industry are relatively new but they are the beneficiaries too.” (6)

Both “hard” and “soft” part of the tourism could give pressure to the environment, but this can

provide another economic income to fisherman's villages.

There are also some seasonal workers coming from outside of Shiretoko to help nature tour. Observing wild bears on Shiretoko bay from the boat/ferry became popular tourism activity especially during the summer so the locals needs help and call young workers also from the outside of the area to answer the tourism demand. (Landing on Shiretoko bay is prohibited so the only way to approach wild bears are taking boat from Utoro village.)

I decided to come here by finding this ferry guide job on the Internet. 15 years ago, there was almost nothing here. Ferry Company for tourists was one only or two, now it is grown as competitive section between more than 10-15 companies. (14)

Some people feels that the large scale hotels occupies the economic income from tourists by providing all necessary facilities such as restaurants, pubs and souvenir shops only inside the hotel territory. Which could limits the tourist to drop their money outside of their hotel.

"Hotel, Hostels and B&B are the beneficiaries from tourism sector. It has been a small fisherman's village and there were not so many restaurants or pubs. Everything is equipped to the large scale hotels like restaurants, souvenir shop, and hot spring bath. So the visitors don't drop money out side of the hotel. That is the huge difference with other tourist spots in Japan. Some people join in the bus tour so the bus tourism industry are the also beneficiaries. (6)

-Animal Control

It is the highest density of bear habitats in northern hemisphere (more than 200 bears / 330 km²). By increasing number of visitors and their behaviour of exploration to the deep nature, encountering of bear and human became the problem. There is no report of injury or killing since 1987. Although when locals recognize them coming down to the village side, they take action against bear attack. Some found in the school zone were immediately killed. Not concerned visitors can feed them or leave garbage after camping, which attract bears to come close to the human side. Shiretoko Foundation started investigating on the behaviour of bears by putting them GPS collar. (Currently four of them have one each and it will be fall down

automatically after two years.)

Increased number of deer is also a major problem in this area especially for farmers whose field can be damaged by Four to five of whole tree species of the tree (harunire: elm, Harigiri: paulownia, Mizunara: japanese oak, Akaezomatsu: Japanese red pine, ohyou, kihada). (Shiretoko data canter, 2010.)

“Once deer in Shiretoko area are nearly extinct, but now the number of Ezo-sika deer is insensibly increasing. They started monitor the number of deer and try to find out how to reduce the number experimentally at the end area of the cape, then will apply to the research to the whole Shiretoko area” (1&2)

“Ezo-sika deer used to be an endangered species, now there are too many number and lost the balance. Biodiversity has complication” (3).

“Overpopulation of deer is the urgent problem in Shiretoko Area. Five to six tree species are already died out from this area. We have a Working Group together with Regional Liaison Committee to tackle this issue. Setting trap fence is the one of the countermeasure we took, however the number of deer cannot be controlled fully yet.” (7)

5.3. Adaptive Governance and Local Participation

As it has been mentioned at the beginning of this chapter, the mutual cooperation between ministries or with the other level of stake holders are rarely seen in Japan. The bureaucrats are tend to keep issues inside their sections and sometimes that makes the problem bigger. The situation about Shiretoko is different. It has been such a big scale of international issue since it became a World Natural Heritage Site and the concern to this area got bigger too. The management process of this area is unique as different level of stake holders sit at the same table to and discuss about the related topics. Ministry of Environment, Ministry of Agriculture, Forestry and Fisheries, Ministry of Land and transportation are in cooperation. The natural resource management plan of the Shiretoko site is characterized by transparency and consensus building, because (i) UNESCO and IUCN require that the plan be sustainable; and (ii) the Government of Japan has guaranteed local fisheries that there will be

no additional regulations included in the plan. (Matsuda *et al.* 2009)

International level of concern made it possible for multi-level stakeholders to cooperate each other. And this has been the push to the current to accept local participation too. Locals group such as tourism association, fishing association, nowadays also tour guide association attend the Regional Liaison Committee, and their opinions are highly valued to be considered.

Fishing rights, regulating number of visitor were the main concern to the local community since fishing and tourism are the two main economic incomes here. As the condition of accessing Shiretoko to WHS, IUCN asked to widen the protected sea areas from surrounded 1km to 3km. Shiretoko Fisheries Cooperative Association afraid that their fishing right will be diminished by this act so they had a intensive negotiation with management authorities.

- Fishing rights

Since the fishing was the main income resource to the Shiretoko peninsula area, fisherman and its association greatly concerned about accepting wider protected sea area. They had intensive discussion with management authorities such as Ministry Environment, Hokkaido Prefecture and finally they received the written answer that this accession to WHS and expanding protected sea area from 1km to 3km will not affect the fishing rights and activity.

“When the protection area became 3km from 1km around Shiretoko peninsula, the fishing association concern much about the regulation to the fishing industry since that is the main income resource here. MoE promised them it won't pressure fishing activity. (7)”

Marine management in Japan is characterized by a long history of coastal co-management of fishers' organizations (Makino *et al.*, 2008). Co-management is defined as the sharing of responsibilities between governmental institutions and groups of resource users (Persoon *et al.*, 2005). They strictly monitor the number of sea animals together with Hokkaido University and bring the result to Scientific Council. The result will be discussed with different level of management authorities from local, regional and national level to see whether preservation and fishing activities are consistent. Governmental institutions and resource user groups act in cooperation to enhance the protection and utilization of the coastal area.

“We monitor the number of salmon, cod, sea lion with Hokkaido University and trying to find out the result of expanding protection area from 1km to 3km around the Shiretoko Peninsula. We monitor the numbers and bring to the Scientific Council to discuss if the preservation and fishing activity can be consistent” (6).

-Local Awareness-

Local awareness is rather high to the natural protection compared to other areas of Japan. Since it has complicated natural resource management history from the early time, local actors already recognize that natural protection issue is strongly connected to the politics. Through Shiretoko logging controversy issue, locals know importance of the negotiation to the authorities.

“They have long history for environmental protection. They know how to negotiate with management authorities. They join in the Regional Liaison Committee as observers and has strong voice. The main industries here are agriculture and fishery which has strong connection to the nature. 30 years ago, the 100m² movement stated here and then later the Shiretoko conflict occurs between NFA and environmental conservation NGOs which became a court case. The local people have been seen all of those events there. Their conscious to environmental protection is quite high. “ (7)

-Local Participation

Local participation is the key issue for the resource governance especially to the protected areas. Environmental resource use excluding local community can cause future problems. The system of park management in Japan constitutes a potentially viable mechanism for securing local community participation and building stakeholder consensus for sustainable park management (Hiwasaki 2006).

Matsuda *et al.*(2009) discusses that the natural resource management plan of the Shiretoko site is characterized by transparency and consensus building, because (i) UNESCO and IUCN require that the plan be sustainable; and (ii) the Government of Japan has guaranteed local natural resources that there will be no additional regulations included in the plan. To ensure deployment of effective measures with the close coordination of administrative bodies responsible for respective systems, local governments and the regional

organizations involved, utilizing the Regional Liaison Committee, and to promote high-quality management based on the advice of the Scientific Council (MoE *et al.* 2008).

Local participation is considered as necessary by the civil servants from central government (3), although some of the employer from local authority (8, 9) pointed out it is excluded from the decision making process. Regional Liaison Committee is recognized as the participation tool for local people but the actual situation is not necessarily the place is open to everybody in the local area.

“Local Participation is very necessary matter. The purpose of having Regional Liaison Committees for management issues are for that. Not only ministries or municipalities but also local participation is needed “(3).

Above opinion states that the local participation is necessary yet it has not been fully achieved so the effort has to be made to encourage all the related actors will join in the Regional Liaison Committee.

-Regulating Number of Visitors

Answering to the visitor density and car traffic problem and also to encourage the importance of natural protection of this area, regulation of visitor number will be taken place from 2011. The related ministries have been discussion the possible rules and measures together with prefectures and local municipalities.

“The rule has to be set to respect to the wildlife protection purpose and from next year in 2011, all of the visitors to Shiretoko Five lakes has to pay entrance fee and attend the short lecture to understand the rules in advance.” (1)

Some of locals concerned that the limiting number of tourists would discourage tourist to come to Shiretoko area by giving negative impression that they might have possibility not have access to the area when they want. But the officer from Shiretoko Foundation told me that limiting the visitor's number can definitely give positive experience to the guests and it is the process of branding of the area but not discouraging people to come to the area.

To encourage locals to understand the importance of protecting the nature, Shiretoko Foundation is organising educational classes for kids and adult.

“We organize Forestry Class to the elementary school pupils and also offering training programme to teachers to have better understanding of the forestry issues.” (3)

To increase the attention to protection matters and give them clear guide to social-ecological interaction to the wild life, lectures for different types of audience from all different ages including kids to adults, local fisherman and farmers to foreign students are often organised by Shiretoko Foundation.

6. Discussions and Conclusion

In many countries environmental management is reformulated from exclusive state control to various kinds of joint management in which local communities, indigenous peoples, and nongovernmental organizations share authority and benefits with governmental institutions (Matsuda *et al.* 2009). The system of park management in Japan constitutes a potentially viable mechanism for securing local community participation and building stakeholder consensus for sustainable park management (Hiwasaki 2006). Nature Conservation Society of Japan, referred as NACS-J, a prominent NGO, has stated that in the Japanese context, building a system of park management that ensures community participation and transparency in decision-making, and disseminating information on the results of monitoring in parks and details of the decision-making process, is precisely what is called for in order to build the consensus of all stakeholders regarding the sustainable management of parks (NACS-J 2000).

In the State of Conservation Report (UNEP, WCMC 2005), IUCN mentioned the initiatives for adaptive management in Shiretoko as “research and monitoring of the waters surrounding Shiretoko have already been conducted and initiatives for adaptive management have started.” It shows the administrative and conservation staff numbers total of 82 (MoE 17, NFA 20, Hokkaido 25, Shari 2, Rausu 7 and Natural Parks Foundation 11). The MoE employs 3 rangers, the NFA 25 foresters and 4 rangers, Hokkaido 2 research and 5

educational staff, in Shari the Shiretoko Nature Foundation has 25 staff, the Shari Museum 5 and there are 5 Natural Monument guardians. (UNEP, WCMC, 2005).

It can be clearly seen that the effort to cooperate between different level of stakeholders in Shiretoko has been made upon the decision requested measures and problems. Accession of Shiretoko National Park to the WHS could be an indicator to the socio-ecological resilience change that appears as above mentioned shifts and shocks in section 4. To adapt those changes by the system of governance, Scientific Council and Regional Liaison Committee was formed in Shiretoko by different governmental sectors later adjoined by local participation. Based on the cooperation of locals stakeholders and aimed for response for different management issues, Working Groups are set to answer the pressuring socio-ecological problems. This flexible adaptive system acts for finding the solution with different level of stakeholders from management authorities and locals.

The natural resource management plan of the Shiretoko site is characterized by transparency and consensus building, because (i) UNESCO and IUCN require that the plan be sustainable; and (ii) the Government of Japan has guaranteed local fisheries that there will be no additional regulations included in the plan (Matsuda *et al.* 2009). To ensure deployment of effective measures with the close coordination of administrative bodies responsible for respective systems, local governments and the regional organizations involved, utilizing the Regional Liaison Committee, and to promote high-quality management based on the advice of the Scientific Council (MoE *et al.* 2008). Scientists played a very important role during the registration process of the Shiretoko World Heritage Site by interpreting the evaluation and criticism of the IUCN to Japanese society. A general procedure for environmental risk management (Rossberg *et al.*, 2005) was proposed to devise a scientific procedure using consensus building among stakeholders. The purpose of management depends in part on all involved stakeholders (excluding the scientists). After a consensus concerning the objectives of management is reached, scientists can propose an action plan and numerical targets to achieve these goals. (Matsuda *et al.* 2009).

Currently, the diversity of local communities and stakeholders in park tourism in Japan—which can be attributed to factors such as: the multiple use of the protected area; the level of economic development of the area; the frequent migration of the population between urban and rural areas; and complex land ownership arrangements—has rendered consensus

building on protected area management. Community members and stakeholders are extremely diverse, and often have multiple and conflicting interests.

In order to optimize the participatory potential of the national park system, the role of the management authorities such as MoE as coordinator of stakeholders and facilitator of bottom-up approaches to decision-making needs to be strengthened (Hiwasaki 2005). Strengthening the coordinating role of the MoE to build multi stakeholder consensus regarding the objectives and long-term vision of each protected areas, by overriding divisions and cooperating between government agencies and involving local communities, can improve protected area management within the current management system. Strengthening the appropriate institutional arrangements would provide the table for discussions, and this could contribute to build consensus among the multi-level stakeholders. (Hiwasaki 2006).

Management and adaptive governance at each local level depends upon developing human awareness, not only among the visiting tourists, but also the local residents and the various authorities. Poor management and governance caused by a lack of information, education and participation, or actual neglect would create further problems. So the authorities, especially institutions must continuously assess the human impacts upon their sites. Following this, they need to inform and educate both tourists and locals in order to encourage people to protect the natural or cultural heritage resource concerned. Where the pressure comes from illegal activities they need to actively enforce the legislation.

For future research, which focuses on the applicability of the lessons learned from Shiretoko World Heritage sites, would make an important contribution to the literature on adaptive governance on the protected areas. In-depth analyses of stakeholders and deeper examination of the relationships of power that govern their interactions will be necessary in order to further refine our understanding of the policy shifts required to smooth the pathway to facilitate sustainable protected area management in Japan. (Hiwasaki 2006).

References

- ADGER, W.N. 2003. Social Capital, Collective Action, and Adaptation to Climate Change. In *Economic Geography*. 2003. vol. 79. no 4 . 387-403.
- ANDRIES, J. M., B. H. WALKER, and A. P. KINZIG. 2006. Fifteen weddings and a funeral: case studies and resilience-based management. *Ecology and Society* 11(1): 21.
- BERKES, F., COLDING, J., FOLKE, C. (Eds.), 2003. *Navigating Social–Ecological Systems: Building Resilience for Complexity and Change*. Cambridge University Press, Cambridge, UK.
- BERKES, F., FOLKE, C. (Eds.), 1998. *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience*. Cambridge University Press, Cambridge, UK.
- CARPENTER, S.R., GUNDERSON, L.H., 2001. Coping with collapse: ecological and social dynamics in ecosystem management. *BioScience* 51, 451–457.
- FOLKE, C., 2006. Resilience: The emergence of a perspective for social–ecological systems analyses *Global Environmental Change* 16 (2006) 253–267.
- FOLKE, C., COLDING, J., BERKES, F., 2003. Synthesis: building resilience and adaptive capacity in social–ecological systems. In: Berkes, F., Colding, J., Folke, C. (Eds.), *Navigating Social–Ecological Systems: Building Resilience for Complexity and Change*. Cambridge University Press, Cambridge, UK, pp. 352–387.
- GALAZ V, OLSSON P, HHAN T, SVEDIN U. 2008. The problem of fit among biophysical systems, environmental and resource regimes, and broader governance systems: insights and emerging challenges. In *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers*, Young O, Schroeder H, King LA (eds). MIT Press: Cambridge, MA; 147-186
- GALLOPIN, G.C., 1991. Human dimensions of global change: linking the global and the local processes. *International social science journal* 130: 707-718.
- HIWASAKI, L. 2005. Toward sustainable management of national parks in Japan: Securing local community and stakeholder participation. *Environ. Manage.* 35(6):753–764.
- HIWASAKI, L. 2006. Community-Based Tourism: A Pathway to Sustainability for Japan's Protected Areas. *Society and Natural Resources*, 19: 675-692

- HODGSON, G.M., 2004. *The Evolution of Institutional Economics: Agency, Structure, and Darwinism in American Institutionalism*. Routledge: London.
- Hokkaido Government, Department of Environment and Lifestyle, 2006. For those who love nature of Shiretoko. Book of acceptable behavior for nature observers. Hokkaido, Japan.
- IMPERIAL, M. T., 1999. Institutional analysis and ecosystem-based management: the institutional analysis and development framework. *Environmental Management* 24:449-465
- JAIN, N., TRIRAGANON, R., 2003. Community-based tourism for conservation and development: A training manual. Washington, DC, and Bangkok, Thailand: The Mountain Institute and RECOFTC.
- KIRCH, P.V., 2005. Archaeology and global change. *Annual Review of Environment and Resources* 30, 409–440.
- MATSUDA, H., MAKINO, M., SAKURAI, Y., 2009. Development of an adaptive marine ecosystem management and co-management plan at the Shiretoko World Natural Heritage Site. *Biological Conservation* 142: 1932-1942.
- McGINNIS, M. D., editor. 1999. *Polycentric governance and development: readings from the workshop in political theory and policy analysis*. University of Michigan Press, Ann Arbor, Michigan, USA.
- Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-Being: Synthesis Report*, Island Press, Washington, DC.
- Ministry of Environment, Government of Japan, 2008. *National Parks of Japan and Japan's strategy for a Sustainable Society*. Tokyo, Japan.
- Ministry of the Environment, Forestry Agency, Agency for Cultural Affairs, Ministry of Foreign Affairs of Japan, Hokkaido Government, Shari Town, Rausu Town. 2008. *Shiretoko- State of Conservation Report, Shiretoko World Heritage Site, Japan*.
- MOREHOUSE, B. J., FERGUSON D. B., Gigi O., BROWNING-AIKEN, A., WONG-GONZALEZ, P., PINEDA, N., VARADY, R., 2008. Science and socio-ecological resilience: examples from the Arizona-Sonora Border. *Environmental Science & Policy* 3, 272-284.
- Nature Conservation Society of Japan. 2000. *Yutakana shizen, fukai fureai, patonashippu-21 Seiki no kokuritsukoen no arikata wo kangaeru* (Rich nature, deep interactions,

- andpartnership: Considering national parks in the 21st century). Report 88. Tokyo: NACS-J
- OLSSON, P., FOLKE, C., BERKES, F., 2004. Adaptive co-management for building resilience in social-ecological systems. *Environmental Management* 34, 75–90.
- OLSSON, P., L. H. GUNDERSON, S. R. CARPENTER, P. RYAN, L. LEBEL, C. FOLKE, and C. S. HOLLING. 2006. Shooting the rapids: navigating transitions to adaptive governance of social-ecological systems. *Ecology and Society* 11(1): 18
- OSTROM, E. 1996. Crossing the great divide: coproduction, synergy, and development. *World Development* 24:1073-1087.
- PAAVOLA J, ADGER W.N. 2005. Institutional ecological economics. *Ecological Economics* 53: 353–368.
- PAAVOLA, J., GOULDSON, A., KLUVANKOVA-ORAVSKA, T., 2000. Interplay of Actors, Scales, Frameworks and Regimes in the Governance of Biodiversity. CETIP, Bratislava, Slovakia. 148-154
- PAAVOLA, J., GOULDSON, A., KLUVANKOVA-ORAVSKA, T., 2009. The institutions, ecosystems and the interplay of actors, scales, frameworks and regimes in the governance of biodiversity. *Environmental Policy and Governance. Env. Pol. Gov.* 19, 148-158.(2009).
- PELLING, M., HIGH, C., 2004. Understanding adaptation: What can social capital offer assessments of adaptive capacity?. In *Global Environmental Change*. 2005 vol. 15. no 4. pp. 308-319.
- PERSOON, G.A., VAN EST, D.M.E., SAJISE, P.E. (Eds.), 2005. Co-Management of Natural Resources in Asia: A Comparative Perspective. NIAS Press, Copenhagen, p. 320.
- REDMAN, C.L., 1999. Human Impact on Ancient Environments. The University of Arizona Press, Tucson AZ.
- ROSSBERG, A.G., MATSUDA, H., KOIKE, F., AMEMIYA, T., MAKINO, M., MORINO, M., KUBO, T., SHIMOIDE, S., NAKA, S., KATOH, M., SHIGEOKA, T., URANO, K., 2005. A guideline for ecological risk management procedures. *Landscape Ecol. Eng.* 1, 221–228.
- Shiretoko Data Center, 2010. Visitors to Shiretoko Area. Eco-tourism promotion Committee, Shiretoko. Japan. <http://dc.shiretoko-whc.com/>

SMIT, B., WANDEL, J., 2006. Adaptation, adaptive capacity and vulnerability. *Global Environmental Change* 16 (3), 282–292.

STEFFEN, W., SANDERSON, A., Jaeger, J., Tyson, P.D., Moore III, B., Matson, P.A., Richardson, K., Oldfield, F., Schellnhuber, H.-J., Turner II, B.L., Wasson, R.J., 2004. *Global Change and the Earth System: A Planet under Pressure*. Springer, Heidelberg, Germany.

UNEP, WCMC (World Conservation Monitoring Centre), 2005, 2011. Shiretoko, Hokkaido, Japan, World Heritage Sites, Protected Areas and World Heritage (<http://www.unep-wcmc.org/medialibrary/2011/06/13/a87547dc/Shiretoko.pdf>)

Appendix 1.**----Interview guideline---****1 The protected area and its surrounding area**

- 1.1 In your view, does the protected area **benefit** the people living in the surrounding municipalities? *If so, in what ways? Could you please give examples? How has this changed over the last 15 years?*
- 1.2 Does the protected area do **harm** to the people living in the surrounding municipalities? *If so, in what ways? Could you please give examples? How has this changed over the last 15 years?*
- 1.3 In your view, are the protected area and its surrounding municipalities currently **environmentally sustainable** (i.e. could and should the environment continue in this way in the long term)? *If not, why not?*
- 1.4 Are the protected area and its surrounding municipalities currently **economically sustainable** (i.e. could and should the economy continue in this way in the long term)? *If not, why not?*
- 1.5 In your view, are the protected area and its surrounding municipalities currently **socially sustainable** (i.e. could and should society continue in this way in the long term)? *If not, why not?*
- 1.6 How has the protected area itself **changed** over the last 15 years?
- 1.7 Which **rules** (e.g. laws, social norms) and measures (e.g. subsidy schemes, quotas) regulate the use of natural resources in and around the protected area?
- 1.8 Which rules and measures regulate visitors to the protected area, if any?
- 1.9 Which rules and measures regulate visitors to the municipalities surrounding the protected area, if any?
- 1.10 Are there any overlaps / redundancies between the rules or measures?
- 1.11 Who are the main stakeholders? In the context of natural resource and tourism management are they **cooperating**? *If yes, who cooperates with whom? Would you please give as many examples as possible? Do you cooperate with any individuals, groups or organisations in the context of natural resource management? Do you cooperate with any individuals, groups or organisations in the context of tourism?*

Did you have any negative experience when trying to cooperate with individuals, groups or organisations?

- 1.12 Whom can you **trust** that they are taking decisions that are for the best of the protected area in the short term?

Whom can you trust that they are taking decisions that are for the best of the protected area in the long term?

Whom can you trust that they are taking decisions that are for the best of the people in your municipality / in the municipalities surrounding the protected area in the short term?

Whom can you trust that they are taking decisions that are for the best of the people in your municipality / in the municipalities surrounding the protected area in the long term?

- 1.13 In the context of natural resource and tourism management are decisions often made in a **participatory** way? *If yes, who takes part in these decisions?*

If yes, is there anybody excluded in these decisions, who should – in your view – have a say? If no, how are decisions made? Would you please give as many examples as possible?

- 1.14 Can you give an example of **rules or measures, which address both, the socio-economic and the environmental dimension** of development in the region? Would you please give as many examples as possible?

2 Tourism and its development

- 2.1 How would you describe the **tourism activities** in the area surrounding the Shretoko protected area? *Where do the visitors come from? (different types?)*

What are visitors looking for when coming to Shiretoko area? How has this changed over the last 15 years?

- 2.2 Who are the people or organisations who offer services in the tourism sector? How has this changed over the last 15 years? *Who are the main beneficiaries of tourism in the Shiretoko area? How has this changed over the last 15 years?*

- 2.3 Which **rules** (e.g. laws, social norms) and measures (e.g. subsidy schemes, quotas) regulate visitors to the protected area, if any? *For each rule and each measure:*

Is it mostly oriented towards interests that are relevant in the short term or the long term

or both?

Are there any overlaps / redundancies between the rules or measures? Are the different rules and measures coherent? If they contradict each other (partly), please give examples.

- 2.4 Which rules and measures regulate visitors to the municipalities surrounding the protected area, if any? *For each rule and each measure:*

Is it mostly oriented towards interests that are relevant in the short term or the long term or both?

Are there any overlaps / redundancies between the rules or measures? Are the different rules and measures coherent? If they contradict each other (partly), please give examples.

3 Shocks and other perturbations arising from the socio-economic system

- 3.1 Do you remember Shiretoko NP's accession to UNESCO site? Why was this event significant for you and / or the region?

- 3.2 How did Shiretoko NP's accession to UNESCO site **influence the protected area**?

Would you please give as many examples as possible?

- 3.3 How did Shiretoko NP's accession to UNESCO site **influence the municipalities** surrounding the protected area? *Would you please give as many examples as possible?*

- 3.4 How did Shiretoko NP's accession to UNESCO site **influence tourism** in the area?

Would you please give as many examples as possible?

- 3.5 How did different rural **actors react** to set this area as UNESCO site? *Would you please give as many examples as possible?*

*Which (rural) actors were / are capable of **shaping / influencing** the adaptation processes Shiretoko NP's accession to UNESCO site?*

- 3.6 At which **spatial scale** (ward, municipality, region, nation, international) did the perturbation arise and where does it have repercussions?

- 3.7 At which **temporal scale** did the perturbation arise and when did / does it have repercussions (e.g. 8 years ago – for all future generations; last week – for the next two months)?

- 3.8 In this particular situation can you name individuals (one or more) who played the following **roles**, if any:

Stewards – Leaders - knowledge generators - knowledge carriers - sense-makers – facilitators – visionaries – inspirers – innovators – experimenters – followers – reinforcers

3.9 Did you observe that any **novel products or services** were developed as a promotion of AINU culture?

3.10 Did you observe that any **novel ways of doing things** as promotion of AINU culture?

Appendix 2.

List of the interview respondents

Category 1. National Actors (Central Government)

Respondent 1: Technical officer, Biodiversity Policy Division, Nature Conservation Bureau, Ministry of Environment

Respondent 2: Technical officer of National Park, Division of National Park Management, Ministry of Environment

Respondent 3: Division officer of Environmental Conservation, National Forestry Agency.

Respondent 4: Secretary of Japan Committee for IUCN, The Nature Conservation Society of Japan

Category 2. Regional Actors

Respondent 5: Natural Heritage Assessment officer, Natural Heritage Division, Forestry Management Department of Hokkaido, NFA, Hokkaido Branch office.

Respondent 6: Group Manager, Shiretoko World Heritage Site Group, Envi. Division, Hokkaido Environmental and Life cycle Department, Hokkaido Prefecture

Respondent 7: Shiretoko Natural Foundation(*Shiretoko Foundation was funded by Shari-cho, mainly carrying out research and educational programme at Shiretoko area.*)

Respondent 8: Forestry Officer National Forestry Agency Centre in Shiretoko

Respondent 9: Environmental Conservation Ranger in Utoro Branch, Ministry of Environment

Respondent 10: Environmental Conservation Ranger in Rausu Branch, Ministry of Environment

Respondent 11: Technical Officer, Department of Natural Protection, Division of Environmental Conservation. Shari-cho municipality town hall

Respondent 12 : Special Officer, Division of Environmental Management, Raus-cho municipality town hall.

Category 3. Local Actors

Respondent 13: Manager from Shiretoko Tourism Office

Respondent 14: Tourist Guide for Ferry Tour (seasonal worker)

Respondent 15: The Ainu hostel owner (an offspring of indigenous people)

Respondent 16: Executive Manager, Shiretoko Grand Hotel Kitakobusi

Respondent 17: Local Fisherman

Respondent 18: Local pub owner

Respondent 19: Bicycle rent shop owner

Respondent 20: Administrator from Hokkaido University