Name of the case study	Pangnirtung- Individual and collective adaptive strategies to face climate change- Canada (Resilience)	
What about this case makes it interesting? How does this case contribute to understanding of resilience and/or regime shifts in the Arctic?	This case presents one of the few communities in Nunavut that has significant commercial and subsistence fisheries activity. Located on Baffin Island, Pangnirtung is an Inuit fishing community that has developed collective and individual adaptive strategies to respond to ecological and social-economical disturbance. The community recognized six fundamental changes attributable to climate change: sea-ice conditions, landscape, seascape, weather conditions. Meanwhile, socio-economic changes are related to change in Inuit fishing and lifestyle and the market and fish prices. Pangnirtung it is one of the few communities that has commercial Inuit-owned and subsistence fisheries activities. Two co-existing fisheries increase the community's flexibility, having additional income and source of food. Other strategies developed by the community are related to the use of technology to cope with travel risks on ice, food sharing, social learning, integration of different knowledge systems, strong local institutions, and co-management.	
Main Contributors	Carla Lanyon Garrido, Stockholm Resilience Centre Juan Rocha, Stockholm Resilience Centre	**Key references: Cite in the text using , (2), (3) etc. and provide a reference list at the bottom of the template.** Galappaththi, E. K., J. D. Ford, E. M. Bennett, and F. Berkes. 2019. Climate change and community fisheries in the arctic: A case study from Pangnirtung, Canada. *Journal of Environmental Management* 250:109534 **(2)** Derksen, C., Burgess, D., Duguay, C., Howell, S., Mudryk, L., Smith, S., Thackeray, C. and Kirchmeier-Young, M. (2019): Changes in snow, ice, and permafrost across Canada; Chapter 5 in Canada's Changing Climate Report, (ed.) E. Bush and D.S. Lemmen; Government of Canada, Ottawa, Ontario, p.194–260. **(3)** Cunsolo Willox, A., S. L. Harper, J. D. Ford, K. Landman, K. Houle, and V. L. Edge. 2012. "From this place and of this place:" Climate change, sense of place, and health in Nunatsiavut, Canada. *Social Science & Medicine* 75(3):538–547. **(4)** Idrobo, C. J., and F. Berkes. 2012. Pangnirtung Inuit and the Greenland Shark: Co-producing Knowledge of a Little Discussed Species. Human Ecology 40(3):405–414.

					(*) Mainly all the information comes from (1). Otherwise, is explicit cited			
Other Contributors								
Reviewed by (name and affiliation)								
Category (mark with X)	**Resilience/ Adaptability**			**Loss of resilience/ Collapse**		**Transformation**		
	X							
Case study details:	**Country**	**Place**		**Scale – space**	**Scale – time**	**Sector(s)**	**Other (e.g. disturbance)**	
	Nunavut, Canda	**Pangnirtung**			**1990-2019**	**Fisheries**		
Drivers (mark with X in appropriate boxes)	**Climate**	**Geopolitical**	**Mineral/ oil extraction & infrastructure**	**Tourism**	**Shipping**	**Biological invasion**	**Rapid demographic change**	**Other: *state here***
	X							X Market prices

	Biophysical	**Social**
1. Basic description of coupled social-ecological system in focus (What are the key components and stake holders) If possible draw a systems diagram or conceptual map of the	a) What types of ecosystem(s) and other major biophysical features are present? Arctic marine ecosystem Sea-ice Seascape Coastline of Pangnirtung	c) Who are the key groups of people in this case? Pangnirtung community with 1,481 inhabitants (according to census 2016) is an isolated community accessible only by aircraft and by boat during the summer for supplies. The Inuit community has lived in Cumberland's surrounding area in several settlements called 'outpost camps.' Pangnirtung Inuit fishers: From the data collected in the study the 79% of fishers are involved in commercial fishing (Arctic char and/or turbot), 95% are engaged in

case – this can be a series of diagrams to capture different periods in the case and the drivers/ actors/ events that characterize the period.	Cumberland Sound (water bodies): Surrounding lakes Pangnirtung Fjord has completed land fast ice cover each winter. This region is affected by water masses from the Atlantic in the Baffin Bay and the Davis Strait. (4) b) How are the case boundaries defined in terms of ecosystems or biophysical characteristics? The boundaries are defined by the Pangnirtung community settlement, and fjord, among the Cumberland sound (water body).	char fishing for subsistence purposes, while 15% commercialize arctic char. Partner Institutions in fisheries co-management d) What kinds of livelihoods are important in the system? Arctic char and turbot (Greenland halibut) fisheries (productive and subsistence) are the main livelihoods. Arctic char is used for subsistence and commercialized in summer. Only a few fishers have the licenses to catch arctic char, given by the HTA. During the summer, they travel across the Pangnirtung fjord free of ice. In winter, due to the sea ice in the fjord, they surround lakes looking for arctic char by snowmobile. Turbot fishery is a popular fishery due to the rentable market. It is carried out during winter and spring. In winter, sea ice is key to travel on the frozen ocean. Fishers can spend days on the ice. Therefore is a high-risk fishing operation. Other livelihoods are related to hunting, arts, handcrafts, and outfitting for Auyuittuq National Park. Pangnirtung is one of the few communities in Nunavut that has significant commercial and subsistence fisheries activity. Arctic Char and turbot are the main species in fisheries. e) What institutions are key to this case? If possible define what scale it addresses. At a local scale:

		Pangnirtung Community with their social structures based on cooperation. Fish processing plant Inuit owned. Employs 8 full-time permanent and up to 30 full-time seasonal residents (Nunavut Development Corporation). The plant operates year-round to process, freeze, and ship char and turbot to southern markets. HTA (Hunters and Trappers Association)**:** Community organization responsible for managing hunting, fishing, and trapping activities to ensure that the community has an adequate country food supply. It is owned and operated by Inuit of Pangnirtung. HTA is the key co-management partner from the community for the Pangnirtung Arctic char and turbot fisheries. **Regional Scale (Nunavut territory and national scale)** **D**FO (Department of Fisheries and Oceans): Canadian federal government department responsible for developing and implementing fisheries policies across the country. DFO is one of the critical co-management partners for the Pangnirtung Arctic char and turbot fisheries. RWO (Regional Wildlife Organization): Represents multiple HTAs at the regional level. It oversees local harvesting practices and the regional management of Inuit country food. NWMB (Nunavut Wildlife Management Board): NWMB is a territorial government institution responsible for

		wildlife management activities in the Nunavut settlement area. It is one of the critical co-management partners for the Pangnirtung Arctic char and turbot fisheries. GN (Government of Nunavut): This is the Government of Nunavut local office located in Pangnirtung. It focuses on economic development and the funding aspects of the fishers and community fisheries. For example, GN sponsors programs that support fishers by providing loans for upgrading their fishing gear and snowmobiles. NTI (Nunavut Tunngavik Incorporated): This regional organization oversees negotiations for Inuit rights aimed at treaties and land claims. NTI negotiates for Inuit rights in the context of fisheries co-management. f) How are the case's boundaries socially defined, and how do these social boundaries relate to biophysical boundaries? The system's social boundaries are the Pangnirtung community's settlement and the surrounding lakes from Cumberland Sound used to fish in winter arctic char and commercial purposes.

2. Timeline Draw a timeline of *key* events/ developments to the case. Points to include: Make clear the period of time over which the change is being considered. Provide a brief description of event/ actors, and ecological impacts. Mark particularly significant events with *. Consider both biophysical and social dimensions. Additional points that can be considered: Is it possible to identify periods of change from one type of system to another, transformations? Identify disturbances	1921: Pangnirtung was settled with the established trading post by the Hudson Bay Company. At the time, Inuit communities lived surrounding the area of Cumberland sound. (4) 1940: The settlement grew when the Royal Canadian Mounted Police (RCMP) detachment was established in the 1940s. (4) 1960s: Dog distemper arrived in the Cumberland Sound area and killed nearly two-thirds of all sled dogs. Many families experienced starvation, and a state of emergency was declared. In 1962, government officials pressured Inuit to relocate to the settlement, to Pangnirtung. (4) 1992: Operation of the fish processing plant, Pang Fisheries Ltd. Located in the community is an Inuit-owned private entity. 1993: Nunavut Agreement was between the Inuit of Nunavut and the Queen in Right of Canada recognized the human-nature relation and their rights of Inuit people to use the resources from their ecosystem. This agreement defined the level of harvesting by Inuit and conservation goals, among others. From this agreement, several co-managed fisheries have been created in this area, establishing fishing quotas according to local knowledge and resource availability (Nunavut Land Claims Agreement Act (S.C. 1993, c. 29) 2000: Caribou migration affected the food system. This place was caribou's place. Community-associated this behaviour to a storm event and climate change. During November-December 2000'sThe area was covered by inches of ice, impeding caribou to get food and migrating to other places. Since that incident, the community started to rely more on seafood. Arctic char and turbot became key species in their food system. 2008: The market for Arctic char has shrunk, and most of the Arctic char presently goes to buyers in Nunavut. 1948-2014: Increase of temperature, generating a loss of sea ice, reduced snow cover, a loss of lake/river ice, permafrost degradation, warmer seas that hasten the melting of glaciers and ice sheets, and species shifts.

or events that challenged, built, or reduced resilience or adaptive capacity in the system.		
3. Disturbances What are the key disturbances in the system (present and past)	a) Have there been major biophysical disturbances that are relevant for the case? Species shifts. There is a decrease in Caribou in the area. In addition, the community has perceived a reduction in the arctic char population and the emergence of capelin, which wasn't a common species in the area. The increase of capelin has implications for Arctic char feeding habits. The community attributes the quality of meat of artic char to change in species food habits.	b) Have there been major social disturbances that are relevant for the case? Increase the risk of traveling on ice for fishing/hunting Shorter fishing seasons Weaker bonding among family members. Food security: Inuit is still considered more nutritious and less expensive than processed food from the store. Food also has significant cultural value. A change in their food system has an impact on their culture and way of life. (3) Change in traditional knowledge: decreased local knowledge in practices such as survival skills on the ice, reading sky, and technology integration, especially in young Inuits.
4. Drivers of change Clarify what impacts these drivers have on the SES and if these are direct or indirect	a) What are the key biophysical drivers of change? Increase of the temperature. The region warmed by 1.6 °C during the period 1948–2014. A warming Arctic has led to a loss of sea ice, reduced snow cover, a loss of lake/river ice, permafrost degradation, warmer seas that hasten the melting of glaciers and ice sheets—changing sea and landscape affecting the local species health and distribution. (2) (4)	b) What are the key social drivers of change? Definition of quotas and co-management system Changes in market and fish selling: Inuit fishing are vulnerable to the global economy. The market for Arctic char has shrunk during the last five years partly because buyers such as US restaurants are getting supplies from fish farms. Limited access to financial resources: Fishers has limited

		opportunities to obtain loans to purchase equipment such as snowmobiles and fishing gear, but they do have some access to credit. People are starting to rely on the external “world.” Part of the community thinks that young Inuit are becoming money-oriented.
5. Sources of adaptive capacity: What factors allow(ed) the system to adapt to disturbances in the past and present? Give a brief assessment of recent or on-going changes (+/-/0 = increasing/ reducing/ not affecting adaptive capacity)	a) Within the ecosystem? (+) The specific conditions of the area allow having two fisheries systems, the Arctic char and the turbot, helping the Pangnirtung community to cope with change as a food and money source in different seasons. Arctic char is available during the summer; meanwhile, turbot fishing is during the winter and spring. (-) Shorter fishing season because sea ice melts and breaks faster, and new ice forms more slowly (85%). (-) The decrease in sea ice affects sailing security. The sea-ice is thinner and weaker, making communities at higher risk during fishing seasons. (-) Food security is affected due to the changes in Arctic char colour. Elders rather not eat the Arctic char due to the change in their colour. They assume that the change in the arctic is because of the increase of capelin.	b) Within society (e.g. people, social capital, management, institutions, infrastructure): (-) Weaker community and family bonds due to connection with the "external world." (-) Limit access to financial resources (+) Diversification of activities. Occupational job at the municipality, participation in different kinds of fishing, access to snowmobiles, trucks, gears, boats, and the diversity of fishing gear can provide the flexibility to adapt to climate changes. (+) Diversification of food sources (store and local food) can decrease the community’s vulnerability in crisis times. However, Inuit rather local food as a better source of nutrients. (+) Fishers integrate technology to cope with travel's risk, especially young fishers. With GPS, they mark the spot for

		turbot fishing, guide the direction for traveling on ice, use radio to communicate between them, and give information about the state of routes. Others uses satellite images and social media to share weather conditions. (+) Fisheries co-management strategies with other institutions. The DFO, HTA and NWB and other Inuit organizations are co-manager of the fisheries in Nunavut. (+) Pangnirtung Inuit knowledge changes, accumulating, and evolving over the generations and shared among friends and peer groups. Keeping the traditional knowledge and cultural values around fishing activities.

The next two sections break down the information in Section I. While it is not necessary to fill these sections, if you have additional information pertinent to specific rows below feel free to enter the material.

II.1-8 SES, resilience and adaptive capacity

	Biophysical	**Social**
II.1. Where do we find changes and resilience in the face of change?	a) Within nature Change in sea-ice conditions, weather conditions, permafrost, and seasonality. Summers arrive earlier, and winters are shorter. Sea-ice is a key variable for the marine ecosystem. Change in the ice dynamics has stressed wildlife and population dynamics. Fishers perceive a decrease in arctic char population and the emerging of new species not common in the area as **Resilience:** The seasonality of arctic char and turbot fisheries allow the community to cope with ecosystem changes.	b) Within society Due to sea ice conditions, there are shorter seasons and increased travel risk. In addition, unpredictable weather has increased the use of technology to prepare the travel, affecting traditional knowledge. Especially concerning survival skills, reading the sky, among others. However, traditional knowledge is still the central wisdom source. Elders have perceived weak family and community bonds. People are more money-oriented and reliant on the world out of the community.

		Food security is also affected. Elders are concerned about the arctic char's meat quality, attributing this to the arctic char diet change. Community is more vulnerable to market fluctuations. For instance, fish prices have dropped over the 30 years, and fishers only sell their catch in one place. Resilience: The case recognized 3 adaptive strategies. -Productive activities diversification: Different sources of income such us, two-coexisting fisheries, town-job, art-craft, tourism guide for Auyuittuq national park allow the community to have access to different sources of food and invest on technology. -Integration of technology in fisheries -Fishing quotas support subsistence and sustainable fish production. This structure has, partnership with government and local groups, sharing power, knowledge and learning by doing.
II.2. What are the system's key components?	a) Key Ecological components (e.g. lakes, coastal zones, caribou) Sea ice Marine wildlife Coastal line Fjords Lakes	b) Actors in society (e.g. individuals, groups, public or private organizations)? How are people organised – by geography, livelihood, family, etc.? Inuit is a community-based society. As part of their social norms, they share food and look for the families of the communities. Hunters and fishers are a source of pride and central to community wellbeing. Pangnirtung's main employment activities are municipal and territorial government services, two local stores, the

	Rivers Arctic char, seal and caribou (diet) Turbot (market	Pangnirtung fishery and fish plant, subsistence hunting, and arts and craft industries.
II.3. What are the key linkages? E.g. ecosystem services, resource extraction. These linkages should exist. If there are not mutual links between social and ecological components the case is not a social-ecological system.	a) From nature to society (e.g. ecosystem services) Provisioning ES Cultural ES	b) From society to nature – modifying nature, extracting resources (e.g. hunting, mining, water pollution) Inuit perceive de decrease in the arctic char population.
II.4. What are key interactions?	a) What are the key ecological interactions within the case? The weather changes have impacted the seascape having several consequences in the abundance, distribution, and health of the species of the area. Due to changes in the sea ice, Arctic char had changed their movement patterns. The introduction of new species as capelin in the food web has affected the arctic char's meat quality. b) What are the most important biophysical tele-connections to distant systems? The decrease of sea ice could affect the ecosystem, making	c) What collaborations, conflicts, or other key linkages exist between actors? The co-management system has a bottom-up perspective. Thus, there haven't been recognized significant conflicts between the organizations involved. The Fishing Plant is an essential job source for the community and contributes to different local initiatives and organizations. d) Between local actors and distant actors? There has been no conflict recognized among actors. However, due to changes in seascape and the area's richness

	it more vulnerable to new species' arrival. The increase of frequent windy weather brings plastic and garbage to the Cumberland Sea.	to catch different species, outside fishers can compete with the local community.
II.5. Culture	a) How is the relationship between society and nature viewed? Sea ice is a crucial element for Inuit people, where they reproduce their culture. The extension of sea ice allows Inuit people to travel and practice traditional fishing, access food, and have all the ritual and cultural practice around it, reinforcing their social networks. Inuit have developed a detailed knowledge of sea ice conditions, freeze/thaw processes, and the influences of winds and currents on ice conditions. b) What meanings are attributed to nature and to interactions with nature? Nature is the foundation of their culture. Nature provides an essential source of food, income, culture, and knowledge reproduction (skills, languages, etc.) Their livelihoods and culture are land-sea based—for instance, their calendar of food according to seasons.	c) What are key cultural features of relevance for the case? Fishing and harvesting are traditional practices and the foundation of community relations. A practice that represents this is the share-food system. When families are in need, the community supports them and shares food. They also share the discount of individual fisheries or the plant to communal café, elders, and needy families. d) What are key cultural practices and beliefs related to nature? -Fishing and harvesting. -Food source and nutritional value of local food for the community.
II.6. Disturbance What are important types of stress & shock	a) Describe important biophysical or ecological shocks and stresses (e.g. floods, storms, etc). During 2000 an extreme storm is generated by inches of ice, impeding caribou to get food, and migrating to other places.	b) Describe important social shock and stresses (e.g. austerity policies, changes in government policy, introduction of new technologies, etc) -Environmental, social, economic, and cultural changes

	The Arctic experienced a record-low sea ice extent in September 2012.	challenge the capacity of young Inuit to learn and transmit traditional knowledge about the land. -Inuit harvesters are under pressure to conform to global markets and wage economies that disconnect Inuit from land and animals, and therefore from their social structure.
II.7. What are key slow variables Changes that occur over decadal or longer time scales	a) What types of ecological processes (e.g. loss of permafrost, shifts in species composition) are driving important long-term changes in ecological structures and processes? Sea ice has been replaced by thinner seasonal sea ice. Summer sea ice area declined across the Canadian Arctic at a rate of 5% per decade to 20% per decade since 1968. Winter sea ice area decreased in eastern Canada by 8% per decade (2).	b) What types of slow social processes (e.g. aging, population growth, loss of language) are driving important changes in social institutions and behaviours? Traditional knowledge is at risk. Fisheries management discussions are commonly centred on the availability of the resource and the equipment. They do not integrate into the decisions of the social and cultural value of fishing, such as strengthening personal bonds with the land. This lack of perspective puts at risk the cultural significance and knowledge that involves fisheries activities. Younger fishers and hunters who do not have a good knowledge of ice or the land are prone to take risks and go out ill-prepared. But because most young Inuit can use such technology, this potentially moderates knowledge gaps by improving human agency and enhancing adaptive capacity. However, in the long term, this could lead to decreased traditional knowledge in future generations.
II.8. Relationships with ecological regime shifts	a) Are ecological regime shifts driving further ecological change or pressure? Predictions sustain that if the increase of temperature and their effect on the sea-ice continues will be a regime shift.	c) Can social stresses or major changes be attributed to ecological regime shifts? Local ‘country food’ is an essential part of Inuit culture and way of life. Changes in food availability can have a massive impact on the Inuit diet. There have been several changes in

	b) Are external or internal ecological dynamics potentially or actually producing ecological regime shift(s)?	their food due to ecological disturbance. For instance, the area was recognized as a good caribou hunting ground before the caribou migrated to western Nunavut lands. The absence of caribou in the region increases the reliance on the ocean for food security. Currently, Arctic char meat is changing, and elders instead do not consume it. d) Are there specific social practices that might be contributing to ecological regime shifts The pressure on arctic chair and turbot can decrease the population of the species. Greenland shark is a potential by-catch for turbot long-lines and can also be affected by fishing. The increase in the commercial value of turbot can increase their catch from foreign fishers.
II.8 Regime shifts	**If a regime shift exists and is important to this case describe it below.** Please indicate whether the regime dynamics are well-established, contested, or speculative.	
II.8.a. Detailed description of alternate regime shifts A case study can contain more than one type of regime shift	Briefly describe the structure of each regime. What does each regime look like? What are differences in ecosystem structure and function? (e.g. permafrost loss, vegetation change)? How do the properties and behaviours of regimes differ? e.g. collapse of subsistence food sources, fundamental change in types of livelihoods, change in governance institutions, new actors with significant political power who transform decision making)	
II.8.b. Feedback mechanisms within the system that	Ecological feedback mechanisms	Social feedback mechanisms

maintain each regime		
II.8.c. What key changes drive regime shifts? Describe how these changes alter the state of the system or feedback processes.	a) Drivers of ecological regime shifts (either social or ecological). b) How do these changes alter biophysical feedback processes?	c) Drivers of social regime shifts (either social or ecological). d) How do these changes alter the social feedback processes?
II.8.d. Ecosystem services substantially impacted by regime shift	a) Changes in ecological processes that produce ecosystem services	b) Changes in demand for ecosystem services (market and non-market) c) Changes in the institutional context of ecosystem services e.g. changes in access and changes in how ecosystem services are valued as expressed by rules and regulations.
II.8.e. What is (+/-) impacted by changes in ecosystem services directly or indirectly	a) Impacts from regime shift on ecological components	b) Impacts from regime shift on social actors
II.8.f. Potential cascading effects	Describe, if any, the likelihood of potential ecological cascading effects to other SES	Describe, if any, the likelihood of potential social cascading effects to other SES
II.8.g. Where do actors intervene to alter regime shift dynamics and who can do the intervening?	Ecological oriented interventions	Socially oriented interventions

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(2)	**(2)** Derksen, C., Burgess, D., Duguay, C., Howell, S., Mudryk, L., Smith, S., Thackeray, C. and Kirchmeier-Young, M. (2019): Changes in snow, ice, and permafrost across Canada; Chapter 5 in Canada's Changing Climate Report, (ed.) E. Bush and D.S. Lemmen; Government of Canada, Ottawa, Ontario, p.194–260.
(3)	**(3)** Cunsolo Willox, A., S. L. Harper, J. D. Ford, K. Landman, K. Houle, and V. L. Edge. 2012. "From this place and of this place:" Climate change, sense of place, and health in Nunatsiavut, Canada. *Social Science & Medicine* 75(3):538–547.
(4)	**(4)** Idrobo, C. J., and F. Berkes. 2012. Pangnirtung Inuit and the Greenland Shark: Co-producing Knowledge of a Little Discussed Species. Human Ecology 40(3):405–414.
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GLOSSARY OF TERMS IN THE TEMPLATE

Actor	We use this term generally to look for individuals, groups, organisations, and so on that structure actions and/ or are stakeholders.
Adaptive capacity	Is the capacity of actors in the system to manage resilience in order to stay within a desired state during periods of change. This is related to the diversity in the system behind the provision of a function.
Disturbance	This refers to any disturbance to the system, regardless of scale, duration, intensity and frequency. See shock and stress.
Driver	Actor or process that directly or indirectly affects change in a social-ecological system. External means that the system in question (the scale being looked at) is unable to affect the driver in question – there is no feedback from the system to the driver.
Ecosystem services	The goods and services humans derive from ecosystems. These include: provisioning, regulating, cultural ecosystem services respectively.
Feedbacks	A change within a system that occurs in response to a driver, and that loops back to control the system. A feedback can help to maintain stability in a system (negative or balancing feedback), or it can speed up processes and change within the system (positive or enhancing feedback). Feedback processes play a very important role in determining system thresholds and in maintaining system resilience.
Institution	Here we refer to the humanly devised constraints that shape human interactions, such as rules, norms and laws. These can be formal or informal. Note that we are not referring here to institutions as organisations.
Regime shift	For complex systems, a substantial and enduring reorganization of the system, where the internal dynamics and the extent of feedbacks undergo change.
Resilience	This is a property, in this context of social-ecological systems. It relates to the capacity of a system to cope with disturbances and recover in such a way that they maintain their core function and identity. It also relates to the capacity to learn from and adapt to changing conditions, and when necessary, transform.
Shock	A sudden, unexpected disturbance. This kind of disturbance is often punctual, and has important impacts on large parts of the system.
Slow variable	When analysing complex system is often useful separating “fast” and “slow” variables. Fast variables often represent the primary concern of ecosystem users, for instance game or crop production. Slow variables shape the behaviour of fast ones but change slowly with respect to the overall dynamics of the system. Examples of slow variables might include permafrost thawing for a social-ecological system of Arctic hunters where the fast variable is game, or soil organic matter for an agricultural system where the fast variable is crop production.
Stress	This is a disturbance that has long persistence and often low intensity in impact.
Social-ecological system	This is an interwoven system of human societies and ecosystems. This concept emphasises that humans are part of nature and that these components function in interdependent ways. In the template identifying these interactions between the components

	aims to identify the processes and actors/ components that interact and particularly the feedbacks between the human-related components and the ecosystems/ biophysical components.
Stakeholder	See “actor”
Systems Diagram	This is using a diagram to illustrate the configuration of a system. This is done by defining its structure, function, and feedbacks. For a case there may be more than one diagram if the system changes in character (actors, processes, drivers, disturbances, feedbacks etc.) over time.
Timeline	The goal with the timeline is to capture important events – both punctual and over longer periods of time, identifying the causes of these events and the actors/ processes involved. This should be done chronologically and distinguishing events.