Bachelor Thesis

“Do traditions of Greenlandic Inuit’s culture promote sustainable practices?”

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I. Abstract

The research study conducted by this thesis investigates whether the traditions of Greenlandic Inuit culture are and promote sustainable practices, in the context of a changing climate. Founded on a systematic literature review and a qualitative content analysis, the research aims to understand how indigenous knowledge and cultural practices shape sustainability. Indeed, the research explores Greenlandic Inuit's lifestyle, development, adaptation, and familiarisation to sustainability. Hence, by accessing a diverse range of literary and academic resources through search engines, the data collecting process was realised via quoting and coding of text. Moreover, the main identified issue revealed along the systematic literature review and qualitative content analysis, is the constant development the indigenous culture is undergoing given the climate consequences influencing their traditional savoir-faire. Additionally, even if the Greenlandic Inuit community undertakes adaptive strategies, they struggle to be seen, heard, and valued as a community engaged against rising climate change.

II. Introduction

A. Context

Climate change policymaking is often made at the nation-state or international level. For instance, European initiatives against climate change began in 1992 with the adoption of a climate change strategy. (European commission) (Ciot, 2021) In that way, the European Union has long been a leader in policies to combat climate changes. (Ciot, 2021) Since then, the EU has participated and motivated the emergence of many efforts to tackle climate change action, as much on EU level, as well as on international level. Thus, one of their latest most promising actions has been published in 2019 by the commission of the EU and is entitled the European Green Deal (EGD), which is meaning to actualise the new EU growth strategy. And yet despite being set at the national or international levels, the impacts of a changing climate and the pursuit of nationally or internationally set targets often take place locally, making local communities the front line of climate change policymaking.

The global-to-local-to-global paradigm investigates in how "climate change is a global problem which affects people and their livelihoods, ecosystems and bio-diversity." (Baldos, 2023) In this case, local impacts are further shaped by the local context, such as specific socio-economic conditions, as well as local policy responses. Hence, the latter might include climate adaptation measures, and economic or environmental policies. (Baldo,2023). Impacts from intensified global warming are appearing in form of cascading effects that affect a wide selection of natural systems, which in turn affect humans and their livelihoods. For example, changes in the atmospheric system influence the physical system, which itself influences the biological system, as well as human managed systems. Thus, it is acknowledged that climate change impacts on human livelihoods result in increasing vulnerability, particularly among those who directly depend on nature for their subsistence, as indigenous minorities do. (Zant, 2022) Affected populations must adapt to climate change.

Climate change adaptation (CCA) concept is a complex, multidisciplinary, and culture-dependent approach. According to the definition of the United Nation International Strategy for Disaster Reduction (UNISDR), CCA is defined as "The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial". Even if several definitions exist, the common important issue in all of them includes measures or strategies decreasing vulnerability caused by climate change.(Salehi, 2019). Moreover, Adger (2004) argues that, "the success of an adaptation strategy or adaptation decision depends on how that action meets the objectives of adaptation, and how it affects the ability of others to meet their adaptation goals." However, once the strategy becomes a success for one individual, organisation or level of government, it does not systematically represent a global success on all levels. Success therefore depends on the scale of implementation and the criteria used to evaluate it at each scale. (Adger, 2004) Therefore, in order to evaluate global climate change and its sustainability, it is important to examine how implementation happens in local communities and to what extent the action is sustainably relevant. For the purpose of this thesis, the paper is going to investigate the indigenous community of Greenlandic Inuit and their approach to sustainability in the context of climate change.

B. Research Question

The adaptation strategy chosen by local communities depends on what goal is to be reached, which does not always align with international policy. Nevertheless, the sustainable development approach is quite adopted by the majority. Sustainable development mainly aims to identify what to develop, what to sustain, to characterise links between entities to be sustained and entities to be developed and to envision future contexts for these links (NRC, 1999). It is about making efforts to promote alternative development pathways that are more sustainable. Thus, my thesis will set its focus on the adoption of sustainable practices within indigenous cultural knowledge and practices to combat climate change. The

research question of the thesis is: **"Do traditions of Greenlandic Inuit's culture promote sustainable practices?"**.

Therefore, my thesis is aiming to dive into the importance of traditional and cultural practices of the Greenlandic Inuit community, and in how far these can undergo change and evolution in order to be considered as sustainable. First of all, to lead my thesis, I am orienting my theoretical framework around the sub question: "**Are smaller cultural minorities affected by climate change?**". By analysing a generality of other cultural communities coping with climate change, and investigating case studies of other smaller minorities handling with climate change impacts too, I can analyse the changes they have undertaken in their traditions. Moreover, as my research question mentions climate change impacts, it is crucial to observe what kind of adaptive strategies the traditions of Greenlandic Inuit are undergoing in order to survive. To do so, the sub question: "**How are Greenlandic Inuit adapting their traditions to climate change?"** is interested in the development of cultural and traditional knowledge. Finally, the last sub-question, which also corresponds to the main research question: "**Do traditions of Greenlandic Inuit's culture promote sustainable practices?**" is establishing the link, and correlation that cultural practices and sustainable practices can develop. Therefore, not only does the research aim to dive into the implementation of sustainable practices, but is also interested in connecting the knowledge of traditional and cultural practices with the growing climate change threat, in order to develop alternatives which, rely on sustainable practices. Altogether, the leading questions articulated above are the foundation stones for answering the main research question of this thesis. I examine the extant literature to find answers to this question.

This thesis uses a systematic literature review of the extant academic literature on this topic. As mentioned earlier, the present research paper aims to investigate the content of Inuit traditional knowledge and practices, so that a link to sustainable action in climate change may be discovered. To a large extent the literature on sustainable development practices focuses on Western or Capitalist contexts, neglecting the sustainable development practices of cultural minorities, and yet studies of indigenous communities traditional practices seem to suggest that indigenous practices at the very least adhere to principles of social and environmental sustainability. Hence, knowledge from indigenous and local knowledge (ILK) systems are rarely involved in research, especially in transformation research. The contributions of this knowledge for sustainability and research are increasingly considered in sustainability science (Lam, 2020) And yet there is a rich body of work on indigenous practices which can be assessed from this perspective.

III. Scientific and societal relevance

On one hand, the matter of this thesis unveils the dimension of the scientific relevance it contains. Indeed, indigenous communities are confronted to climate change consequences which are faster reflected in their lifestyle than other communities. Not that they are the only population victims of climate change impacts, however they are the one building a strong relationship to their natural environment, they are the one basing their traditions and habits on ancestral practices, they are the one depending on the balance of their environment to function economically and socially. These characteristics portray their approach of climate change adaptation strategies management. As a matter of fact, indigenous adaptation strategies still are an under-studied subject. By diving its interest in this topic, one could acknowledge the pertinence of their strategies aiming to align with sustainable practices and traditional knowledge. For instance, indigenous communities mainly frame their lifestyle around locality, inland sufficiency, and natural resources. As an outcome of studying their strategies and their alignment with traditional and cultural knowledge, the worldwide knowledge and science around sustainable practices, could be improved and inspired.

On the other hand, the matter of this thesis unveils the dimension of the social relevance it contains. In fact, adapting, planning, modernising may be an approach to overcome climate change consequences, however on a day-to-day scale, consequences are still leaving their marks on the communities. The social structure of indigenous communities is bounded to the nature and the natural resources

surrounding them, hence, it also relies on practices of traditional and cultural knowledge. In those words, the social structure of indigenous communities stands in the front row as climate change victims. Nevertheless, their life environment promotes harmony with the nature, and solidarity within the society, which provides arguments of the well functioning and minimalist society they developed. The indigenous communities may not share the same societal ideology than most of the developed societies, however, that is why the rest of the world should inform themselves about different functioning, and most importantly about new perspectives of integrating sustainable practices within a community. Finally, should more countries be inspired by indigenous climate change adaptation strategies and development of sustainable practices, would the indigenous communities become less stigmatised, as incapable and dependant (from the prior coloniser or else), and finally gain the recognition for their legitimate efforts to adopt and promote sustainable practices.

IV. Theory

The goal of sustainable development by putting it into practice, is to achieve a harmonious balance between economic growth, environmental protection, and societal well-being (Robinson and Herbert, 2001; Munasinghe et al., 2003; Kates et al., 2005) (IPCC, 2007). Hence, the IPCC (2007), consistent with the Bruntland Commission defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". (IPCC, 2007). Sustainable development mainly aims to identify what to develop, what to sustain, to characterise links between entities to be sustained and entities to be developed and to envision future contexts for these links (NRC, 1999). Efforts to promote alternative development pathways that are more sustainable could happen through reducing non-renewable energy consumption, for example. Thus, in the near future, an interconnected world would promote to expand the use of innovative technology, however the warning about technology not solving all problems and whether leading to the loss of indigenous cultures, is still existing. (Gupta and Tol 2003) (IPCC, 2007)

Sustainable practices also focus on adapting to the impacts of climate change that are already affecting communities and ecosystems. The ecological dimension of sustainability seeks to protect the integrity and resilience of ecological systems, and the social dimension focuses on enriching human relationships and reaching collective harmony (Munasinghe and Swart, 2000), as well as addressing concerns related to social justice and promotion of greater societal awareness of environmental issues (O'Riordan, 2004). (IPCC, 2007)

V. Research

Section a. The impact of climate change on smaller cultural minorities

With help of literature about indigenous adaptation and sustainable practices in Greenland and other cultural communities, several impacts have been identified which may apply to the case of the Greenlandic Inuit. These studies indicate that Greenlandic Inuit are indeed exposed to climate change, and that this exposure is creating adaptation pressures. However, to better approach the challenges they are encountering, the observation of other cultural minorities being impacted by climate change may be useful. For instance, the Sto´:lo¯, cultural minority from British Columbia in North America, have witnessed significant changes to their traditional lands and environments. Their territory S'o´lh Te´me´xw has suffered from intense urbanization, resource development, and environmental change. Road and freeway building, diking for flood prevention, lake draining, forestry and agricultural development, and encroachment comprise some of the most significant impacts that have historically altered the region. The result has been considerable losses in traditional resources and use of the areas for Sto´:lo¯ communities. (Gauer, 2021)

Climate change introduces new challenges. Changes to the Fraser River-North America, such as warmer river temperatures, lower water levels, more variable water levels, and lower water quality, were also consistently reported. Warmer river temperatures are among the drivers of Fraser River salmon decline. Other observations included warmer and drier summers, reduced snowfall, and perceptions of increased risk of floods and wildfires. (Gauer, 2021) Furthermore, the observations of climate change made on the indigenous Apache community from Arizona, US, describe the ongoing change pushed by growing global warming, with as one of the main effects local aridification. People from the community observed warmer temperatures, reduced snowfall and rainfall, lower stream flows, and most consequentially, larger, and more frequent regional wildfires. The consequences of the wildfires are impacting the traditions and the culture of the Apache during the summer fire season, such as it is a source of threat to their safety and also scaring away the tourism they initiate. Hence, the matter of aridification is also crucial for Western Apaches, which traditionally relied on a combination of subsistence agriculture, hunting, and plant gathering. Decreased precipitation and run off are leading to difficulties in subsistence farming, less healthy elk and deer populations, and less access to fishing in summer months due to low river water levels. (Gauer, 2021) These findings indicate that climate change is having an impact on natural environment where cultural minorities live. This can have secondary consequences.

For instance, there is evidence that climate change is having an impact on traditions and practices. The focus of Cunera's study reveals, that Inuit's traditions have been experiencing ongoing change and evolution due to climate change consequences. (Buijs, 2010) In this work, Buijs unveils the close connection between traditional knowledge and technological modernity, which enables Inuit's adaptation; in particular when the unpredictable climate change influences their traditions, and as a result Inuit started to use new tools. (Buijs, 2010)

Additionally, climate change may also have an impact on livelihood. Sejersen structures his research about the interconnectivity of cultural knowledge present in Greenlandic regions with the aspect of sustainability and global warming debate and sets a focus of attention on the importance of transmission of knowledge and traditions within the Greenlandic communities. To investigate this interconnectivity, Sejersen leverages case studies of beluga whaling and management to unveil information about realistic point of views and statement of local communities, which highlight the interconnectivity between cultural knowledge and sustainability. His research reveals the consequences of climate change on traditional indigenous practices, specifically about the hunting culture and economy. (Sejersen, 2002)

Therefore, in answer to sub-question one: "Are smaller cultural minorities affected by climate change?", and as the proposition one, this thesis expects that climate change is indeed impacting the natural environment, traditions, practices, and livelihoods of cultural minorities, such as of the Greenlandic Inuit Communities.

Section b. Local adaptation to climate change

Following the identification of the climate change impacts on cultural indigenous communities, the thesis will address the ongoing adaptation strategy and practices from the communities towards climate change. According to Buijs's research paper, the impacts of climate change push the communities to realise the value of their traditional knowledge and in how far it preserves their environment. As the consequences of climate change are more and more observable on their lifestyle, the younger Greenlandic Inuit generations are reconsidering their roots. In fact, one of the changes taking place right now is that the younger generations are keen to learn both traditional skills and language. This change in attitude has come up through new, quite exciting developments in education, in various heritage and cultural projects, and to some extent by the radio and television programs being broadcast in various Inuit languages. Hence, there is still extensive traditional knowledge of the weather, sailing routes, sea currents, tides, ice conditions, and iceberg movements. Traditional knowledge is combined with modern technology and scientific knowledge. (Buijs, 2010) This renewal or cultural reinforcement may not correspond to new strategies for climate change adaptation, but it is a general reconsideration of the

members of the communities towards the wealth of their knowledge and what it can teach them, especially when facing the changes in nature.

The extensive literature seems to suggest that cultural communities may be adapting their land use and environmental management practices in response to climate change. For instance, the Sto´:lo¯ community members are constantly identifying environmental changes to S'o'lh Téméxw and adapting accordingly. As resources become less available or geographical distributions shift, community members are using more remote parts of their territory to maintain traditional plant gathering and hunting practices. Commitment and the set of rules for the traditional use of indigenous territory, would allow them to proclaim their rights and to proactively protect their resources. Indigenous rights need to be fully recognized and respected for the Sto´:lo¯ to effectively exercise their rights to use, manage, and protect their traditional territories beyond Indian reserves. Nevertheless, the community stays convinced that recognition of their knowledge, traditions, and history would enable climate adaptation. Indeed, their skills and practice are also perceived as important means for individual and community adaptation and survival. (Gauer, 2021)

In another example, studies have found that in order to face the impacts of climate change, the indigenous Apache from Arizona have to adapt. Their adaptation includes tribal forest management planning, wildfire preparedness, long-term water supply planning, economic diversification, and changes in traditional plants gathering. The better the preparation and management is, the slower the climate change will lead their traditional knowledge and culture to vanish. Hence, now that the Apache have identified their priorities for them to adapt to, some big ideas and initiatives are emerging to enable the best adaptation strategy. For the matter of the wildfires, awareness campaign measures have been informing people, and the Apache are closely cooperating with the neighbouring indigenous communities to raise awareness and solidarity among each other. Moreover, for the matter of water scarcity, the community is planning the design and construction of a dam. Finally, the touristic field of the ski resort diversifies its services to adjust to climate change. As the Apache community shows its resilience and will of adapting to change, the federal governmental funding seams to decrease and disengage from the cause. Hence, they also claim the need of an education about climate change and global warming. The Apache wish to educate the local communities to the futuristic risks, particularly the ones impacting their traditional practices. (Gauer, 2021)

As a result of the review of the literature based on the case study of the Stolo and Apache, the indigenous communities are adapting their land-use and environmental management practices. Therefore, in answer to research question 2: "How are Greenlandic Inuit adapting their traditions to climate change?", is expected a similar approach.

Section c. The sustainability of local strategies

As impacts and strategies have been tackled in the case of adapting to climate change, research question number three seeks to investigate in how far these initiatives are sustainably committed.
Sejersen's research study has revealed the importance of cultural knowledge in the development of sustainable practices. As he links sustainability with traditions, he observes and investigates the changes hunter practices could undergo to become more sustainable. Thus, to be successful, a hunter has to have the necessary technology, have a detailed knowledge about animal behaviour and surroundings and have flexible resourceful strategies. (Sejersen, 2002) In order to make hunting sustainable the locals hunters accentuate the fact that the local and traditional way of living focuses the economy on a small scale which enables every member of the community to participate and procure itself food, such as it hinders that imported and non-seasonal goods influence the hunters' practices. (Sejersen, 2002) In Sejersen's perspective, sustainability in hunting is achievable if the whole community supports this lifestyle and if the traditional practices and knowledge are reinforced. Traditional ecological practices of indigenous peoples are widely considered to align with good environmental practice.

Looking at other cultural communities, sustainability and planetary health are clearly an important concern when adapting to climate change. In the case of the Stolo community, their sustainable strategy

development relies mainly on the preservation of their environment and their resources. Whereas the Apache act in projects for improving their environment, the Stolo rather engage in discussion for being recognised and protected by high authorities. As a result of this recognition obtention, they hope to effectively exercise their rights to use, manage, and protect their traditional territories beyond Indian reserves. The adaptation strategies of the Stolo towards climate change are rather being expressed in administrative, legal fight than in adopting sustainable practices. (Gauer, 2021) Similarly, the Apache community from Arizona sees a great adaptation to climate change in their environment. They aim to spread a lot of awareness around the consequences of climate change on their nature, culture, and traditions. To do that, they wish to educate their community and make any generation sensible about that matter. Hence, the Apache developed strategies and plans to overcome the climate change. This includes, tribal forest management planning, wildfire preparedness, long-term water supply planning, and economic diversification. Their strategy is mainly oriented towards sustainability since it is aimed to improve the security and preservation of their nature. Even if the Apache are lacking big economic activities and governmental founding, they prioritise the preservation of their environment through technology, like the dam, and through awareness, and education. (Gauer, 2021)

To answer the sub-research question three: "Do traditions of Greenlandic Inuit's culture promote sustainable practices?", the answer will rely on the suggestion of the proposition three above, which implies that adaptation practices of indigenous communities are willing to be sustainable, and in the case of this thesis of the Greenlandic Inuit.

VI. Methods

My choice of tackling the subject of Greenlandic Inuit communities and the value of their traditional and cultural knowledge in the context of adapting to climate change consequences, has seen the light after I hand taken part in the *Festival des Libertés* 2023 in Brussels. This festival emphasises the voice of political, artistic, intercultural, creative, and subversive projects. Moreover, I participated in the film projection of the documentary "Twice colonized", which portrays the Inuk activist and lawyer Aaju Peter. The documentary revealed the fight of Greenlandic and Canadian Inuit for the recognition of their culture, traditions, and for the recognition of the harm they have endured by the colonial governments of Denmark and Canada. As a result of watching this documentary, I was very much interested in diving into the importance and diaspora of these indigenous communities, which are often in systematic fight for the protection of their rights. Hence, as my bachelor circle topic integrated climate action against climate change, I dived into the meaning and additional value of Greenlandic Inuit traditions, in order to measure how these traditions are promoting sustainable practices. (Festival des Libertés, 2023)

A. Case Background

The research study of Granheim (2021) defines the meaning of "indigenous people", according to the International Labour Organisation (ILO) (1989) Convention concerning Indigenous and Tribal Peoples in Independent Countries as "peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonisation or the establishment of present state boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions" (Granheim, 2021). Among the totality of Greenland's inhabitants, the native population, Inuit, make up more than 90% of the population. Hence, genetically, Greenlanders are Inuit with a mixture of European, mainly Scandinavian genes, since this Island has been the prey of several colonisation processes. Moreover, as the world's largest island, Greenland happens to have a low population density and limited infrastructure, such as demographic challenges. As a society with strong interrelations between the human and natural environments, Greenland and its population have been witnesses of drastic change in their natural environment, due to climate change consequences.

The Greenlandic Inuit indigenous communities, initially, have a very own way of living based on a combination of novel and traditional practices. As these communities opened to the world, various

influences came along and marked the Inuit's traditions in their evolution. The East Greenland economy shifted from subsistence hunting, fishing, and gathering to a mixed cash economy. Nowadays, the primary mainstays of the Greenlandic economy are including renewable resources, adding more fisheries and fish processing, with important revenues from mining, hydroelectric and hydrocarbon development. In fact, their initial economy, based on seal hunting and sealskin trade, has been quite impacted by boycotts and activist actions. (Buijs, 2010) All these practices show Inuit's resilience, which also include good, however forced adaptation to a changeable environment. An interesting reason for studying the traditional practices of these communities, is to observe how they evolved and changed. Indeed, the matter of climate change is one of the main data growing in importance when observing the change and evolution of these communities. (Stenbaek, 1987)

Today, Inuit mainly understand the increasingly unpredictable weather as the reason why their access to natural resources is reduced and why travelling is encountering greater difficulties. Some of the dog sled, and snowmobile routes have changed because of bad ice conditions. People often say that the weather has become unpredictable with more storms and rain, and this perception is corroborated by data from the Tasiilaq weather station. Nowadays, older methods of navigation and orientation coexist with such new technologies as GPS and mobile telephones. The use of electricity, power and technology is made more accessible for this community. It primarily helps them in their adaptation to new practices, but also allows them to continue their traditions, however impacted by climate change. Nevertheless, some local hunters and villagers feel unfairly accused of increasing CO2 emissions and pollution due to their motorboats and generators. (Buijs,2010) As a result of these environmental changes, the residents express their understanding towards the necessity of changing human behaviour, influencing this way the harvesting and consumption of Greenlandic foods.

B. Research design

The research design approach of this research paper will then be oriented towards systematic review and document analysis. A review earns the adjective systematic if it is based on a clearly formulated question, identifies relevant studies, appraises their quality and summarises the evidence by use of explicit methodology. It is the explicit and systematic approach that distinguishes systematic reviews from traditional reviews and commentaries. According to the direction taken by my thesis and the clear research question **"Do traditions of Greenlandic Inuit's culture promote sustainable practices?"**, systematic reviews seem to be the most appropriate literature to my work. Hence, systematic reviews base their research on multiple study resources and by this way gather qualitative evidence. ("Five steps of conducting a systematic review")

There is a lot of literary and academic resources available about all the different topics useful to this thesis. The literary resources mostly included observations and interviews, which helped quite a lot to get the perception of the communities themselves. Hence, to dive into the diversity of implementation forms of adopting sustainable practices to traditional knowledge and culture, the research will investigate the managemental organisation of other indigenous communities too. Therefore, the live interactions, meaning interviews and observation, were crucial. Moreover, the literary diversity enabled the paper to properly investigate the sense and meaning of each notion tackled.

C. Method of data collecting

For the purpose of my thesis, I was looking for resources related to the Inuit communities, the Greenlandic Inuit community, the great actions lead against climate change, the challenges faced by every world citizen and then only by the indigenous communities. I have searched many keywords, in order to access the right information. Additionally, I looked into the reference list of the research and had been given the direct opportunity to access the literature which was quoted.

To access a broader and high number of articles and reviews, I used the search engine Web of Science accessible through the university of Twente. In the search space, I entered the keywords "Climate

change" and "Greenlandic Inuit", so that the search engine could show me all the articles related to those keywords. At this point, Web Of Science gathered 104 articles corresponding to my keywords research. Hence, to go through all the articles and to classify them according to their relevancy, I uploaded the citation report and exported it in an Excel table. The full report included the type of publication, the author's name, the article's title, the source title, the link, and so on.

I proceeded with sorting out in different phases the relevancy of these articles. At first, I took out the two chapters present in the list from the potential articles I would use. Then, I excluded all the 39 articles not linked to social sciences and climate change matters based on their source title. Moreover, I identified 37 articles with the help of the article's title, which did not seem relevant for my thesis and research question. Likewise, two other articles have been excluded, on second thought and based on the article title as well. Furthermore, two articles appeared to be more relevant for the introduction part of my thesis than for the method part, which is why they have been removed from the selection. Finally, out of the 22 articles remaining, 11 have restricted access to their content, leaving only 11 articles to be analysed for data collecting.

Additionally, five articles have been added to the selection of 11 articles to be analysed, which are originating from an anterior article selection for this thesis. By then, I made typical searches based on keywords related to my theme in Google Scholar, internet, and Web of Science. The resulting "dataset" includes 16 articles to be analysed and coded for the purpose of my thesis, which followed its structure and especially the three main sub-questions of my research (See Table 1).

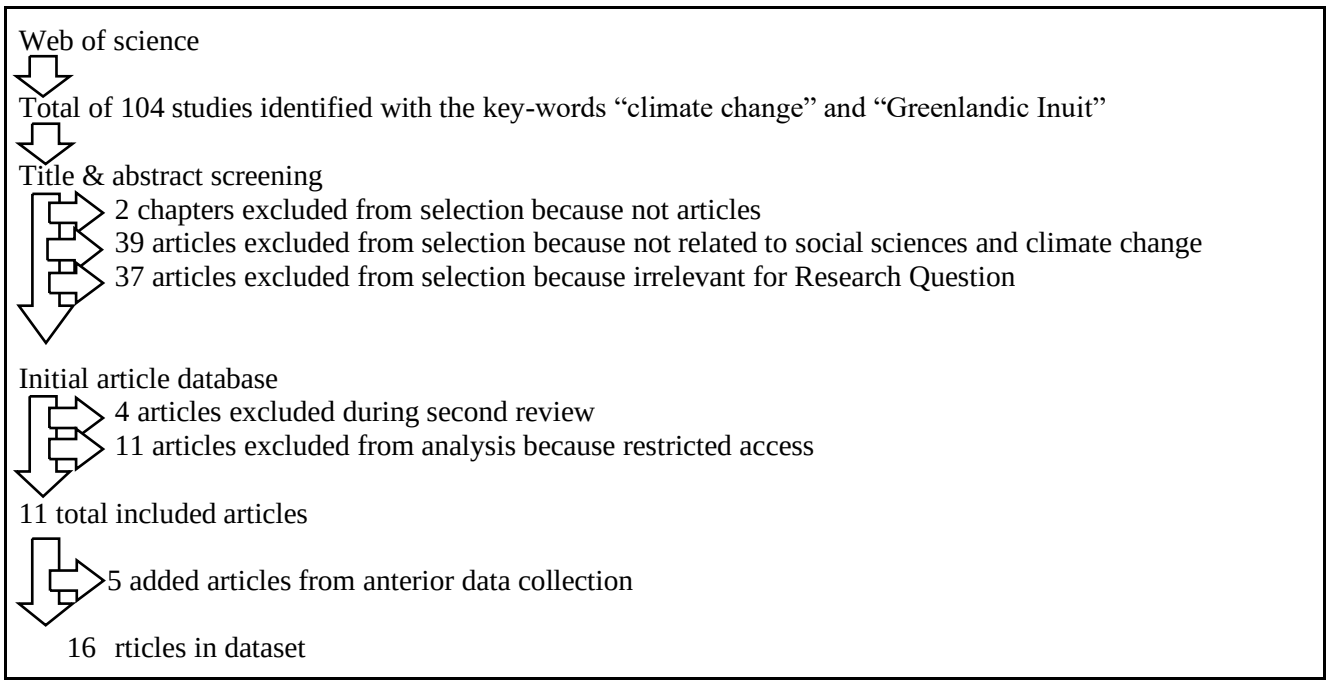
Table 1. Articles included in the study

Key words	Article	Theme
● climate change adaptation	W.N.Adger, "Successful adaptation to climate change across scales", 2004	- Environmental sciences and studies - Geography
● climate change adaptive strategies ● indigenous community action	U.L.C.Baldos, "Global-to-local-to-global interactions and climate change",2023	- Environmental sciences - meteorology atmospheric sciences
● Green deal ● EU action against climate change ● EU climate Policies	M-G.Ciot, "On European Green Deal and Sustainable Development Policy", 2021	- Green sustainable science technology - Environmental sciences and studies
● indigenous adaptation to climate change ● indigenous resilience ● adaptation strategies cultural minorities	V.H.Gauer, "Supporting Indigenous adaptation in a changing climate: Insights from the Sto`:lo- Research and Resource Management Centre (British Columbia) and the Fort Apache Heritage Foundation (Arizona)", 2021	- Environmental sciences - Meteorology atmospheric sciences
● Impacts of climate change	A.J.Grande, " Climate change and mental health of Indigenous peoples living in their territory:	- Psychiatry

● Indigenous communities coping with climate change	a concept mapping study », 2023	
● Social impacts of climate change ● Changing Inuit communities ● Resilience approach to climate change	I.P.H. Granheim, "Socio-demographic, psychosocial and environmental factors associated with suicidal behaviour in Indigenous Sami and Greenlandic Inuit adolescents; the WBYG and NAAHS studies", 2021	- Public Environmental Occupational Health
● traditional and cultural indigenous knowledge ● traditional practices of minorities	D.P.M.Lam "Indigenous and local knowledge in sustainability transformations research: a literature review », 2020	- Ecology - Environmental studies
● Impacts of climate change ● Indigenous adaptation to climate change	Y-R.Lin," Situating Indigenous Resilience: Climate Change and Tayal's "Millet Ark" Action in Taiwan », 2020	- Green sustainable science technology - Environmental sciences and studies
● Indigenous adaptation to climate change ● Youth action ● Indigenous action against climate change	M.MacKay, « Youth Engagement in Climate Change Action: Case Study on Indigenous Youth at COP24", 2020	- Green sustainable science technology - Environmental sciences and studies
● Sustainable practices ● Climate action	S.Salehi, "Conceptual definition and framework of climate change and dust storm adaptation: a qualitative study", 2019	- Engineering environmental - Environmental sciences
● Indigenous adaptation to climate change	M.Zant,"Incremental and transformational adaptation to climate change among Indigenous Peoples and local communities: a global review",2022	- Environmental sciences

As we can observe in *Table 1*, the majority of the articles used were related to environmental sciences, green sustainable science technology, and environmental study themes. Meanwhile, the other articles were grouped into either only environmental science themes or also in another theme less used. For instance, the themes engineering environmental, psychiatry, meteorology atmospheric science appeared

only on one occasion each. For the matter of the remaining five articles, they approximately have been found and researched in the same way, however through the search engine “Google Scholar”.



D. Method of data analysis

The data set of articles were analysed using text analysis methods, namely content analysis. Following the content analysis, a codebook will be developed and applied to the articles included in the study. The thesis asks and puts forward propositions about the climate change impacts on the Greenlandic Inuit (theme one highlighted in green); about whether they are adapting to these changes (theme two highlighted in blue); and about whether these strategies are sustainable (theme three highlighted in yellow).

The green theme was a general approach for identifying text about how Inuit are impacted by climate change in their environment, by tackling the sub-question “Are smaller cultural minorities affected by climate change?”. It mainly revealed negative and positive changes in the nature, the habits, and in their culture. Codes and quotes stating this tendency are available in the coding table, which is to be found in the appendix, and gathers quotations of the sub-questions, as well as individual codes describing the sub-questions quotations. All in one, the green theme evaluating the climate change impacts on Greenlandic Inuit is very diversified; whether the impacts are positive or negative, whether they affect the nature of the minority. Meanwhile, impacts and change are being observed on first sight, that is not contestable.

Once the impacts of climate change have been observed through the green theme, the blue theme tackles “How are Greenlandic Inuit adapting their traditions to climate change?”, which stands for the resilience capacity of Inuit regarding climate change adaptation. Moreover, it portrays the importance of traditions when acclimating to climate change, which consequences are rapidly identified in an environment like the Arctic North. As an example of a highlighted text, Grande (2023) mentioned the importance of indigenous culture and knowledge recognition, when trying to adapt to climate change. Their traditions and cultural approach to the climatic problem is often the most adapted way of building a strong resilience.

Finally, the third and yellow theme, naming “Do traditions of Greenlandic Inuit’s culture promote sustainable practices?” is the leading research question of the thesis, which aims to specially focus on cultural traditions from the Greenlandic Inuit minority regarding sustainability in climate change. In

fact, this theme addresses the degree of sustainability in action taken by Inuit, such as the evolution of their traditions according to climate change. In fact, as the blue theme discussed it, traditions can adapt, survive change, and evolve when facing climate change. However, the yellow theme is now looking for initiatives and ideas originating from Inuit's culture which are portrayed as sustainable and climate friendly.

1. From theme to codes

While reading the texts, I inductively arrived at a set of codes, which were updated en vivo as the coding progressed. More specifically, the approach I used when developing those codes, was initially founded on a first attempt of analysing and describing the quoted theme section, which led me to the creation of keywords sentences. The keywords I chose and thought corresponding the best, were somehow general enough to be used for other coding sections, and also related to the global matter of the article or/and of my thesis.

Once I coded partially all quoted theme sections, I transcribed the codes, the articles I found it in, and the themes it corresponded to in a coding table, allowing me to maintain an overview. Once I gathered a little diversification in coding keywords, I always looked back to the one I created to see if they would match with uncoded quoted theme section. As a result of this process, I created 12 codes, from which six are corresponding to the green theme, eight to the blue theme, and four to the yellow theme. Moreover, six codes are corresponding to two themes simultaneously. In order to identify the different dimensions of climate change impacts on Inuit minority, parallelly to the sub-questions themes, inductive codes have been created arising from the theme sections. Each coloured theme has corresponding codes. Sometimes codes are present in multiple-coloured themes sections, when they correspond to more than one theme.

The complete version of this coding table is to be found in the Appendix.

Codes present in the **themes**	"Are smaller cultural minorities affected by climate change?"	"How are Greenlandic Inuit adapting their traditions to climate change?"	"Do traditions of Greenlandic Inuit's culture promote sustainable practices?"
Indigenous knowledge regarding lifestyle	X	x	
Cooperation with indigenous in adaptation strategies		x	x
Food provision alternatives		x	
Negative climate change consequences on nature and population	X		
Negative impacts of food system	X		
Positive climate change consequences on economy and society	X	x	
Conserving traditions integrity	X	x	
Hunting and fishing regulation			x
Sustainability in traditional practices		x	x

Evolution of food system provision	X		
Climate education strategy		x	x
Response to climate change		x	

The approach I went for, by dividing my thesis in those three precise sub-questions, was motivated by a method which allowed me to tackle my thesis step by step. All questions were correlated to the matter of my thesis, however they each brought different perceptions and fields of interests with them. Moreover, since they all specifically addressed various themes, the research and analysis conducted in literature and articles was rich in information and diversified.

2. Reflection on process

The structure of the analytical process of my thesis starts with the analysis of the chosen articles. By diving into the meaning and content of the literature, I was able to collect data which I coded, in order to develop arguments for the leading of my research question. Hence, the main path, my analysis process has taken, was dictated by the three predefined sub-questions of my thesis. Indeed, these three sub-questions had to be addressed at all time during the article analysis and coding. All the coded quotes alluded to the sub-questions themes. Hence, this approach enabled me to keep track of an understandable structure and red thread. Moreover, this process was built on an inductive approach, based on what type of content the sub-questions quotations were providing. As a result, depending on the topic of the articles, these sub-questions quotations sometimes differed according to what they alluded to, whether to Inuit food systems, to Inuit's mobility, and so on. Nevertheless, regarding the quotation frequency of the codes, it has happened that only one or two articles were providing data about that specific code. In that case, the codes must have been relevant enough for the analysis process to be mentioned at all, since only a few articles were supporting these arguments. Finally, I found myself in an uncertain position at that moment, since I recognize and analyse a relevant data for my thesis, however I only possess a limited amount of articles stating the same, and supporting that code.

VII. Results

To answer the question, "Do traditions of Greenlandic Inuit's culture promote sustainable practices?", a content analysis was applied to the literature – as described above. Below, the answer to this question is obtained thanks to the reported results from the sub-questions, which helped to organise the following findings.

A. The literature suggests that climate change is impacting smaller cultural minorities

The first sub-question "Are smaller cultural minorities affected by climate change?" is addressing the thesis theme from a broader perspective. Indeed, the question could concern any cultural minorities, anywhere and anytime, as long as a link to climate change impacts is present. In the case of this sub-question analysis, the answer is **yes there are**. Impacts of climate change are easily observable on

cultural minorities, whether they are implying positive or negative consequences, because of the traditional and cultural proximity they have to their natural environment. Moreover, the impacts are influencing their lifestyle and habits, especially in their mobility and diet. The articles revealed global information about frequent impacts patterns, definitions, and climate change consequences.

For instance, Gauer (2011) observed negative consequences of climate change on the traditional and cultural practices of the minority: "Indigenous peoples are disproportionately threatened by a changing climate relative to non-Indigenous groups. Detrimental impacts to traditional environments constitute threats to Indigenous cultures, languages, lifestyles, knowledge systems, and peoples". Furthermore, their typical lifestyle and ways of feeding themselves have been identified as threatened by climate change effects. Similarly, Hovelsrud (2010) observes that "Within the traditional food sector, the presence of sea ice (known as vestisen), storm frequency and general climatic variability have direct implications on the availability of animal resources, the number of safe harvesting days each season, and the capital investment needed to hunt." These observations suggest that climate change negatively impacts small cultural minorities. However, some studies suggest that, the climate change impacts can also be interpreted as having positive consequences, in the way that they allow the development of adaptive strategies which stimulates the social and economic opportunities of the Inuit community. Based on that interpretation Hovelsrud (2010) pointed it out by saying that: "Potential benefits have also been identified, including enhanced opportunities for resource development and exploitation of hydrological resources as the ice cap recedes, improved shipping, and new opportunities for commercial fishing." On balance, most of the articles observed rather negative impacts of climate change on indigenous communities. On a large scale, the indigenous communities very much portray the position of victims of climate change impacts. Their lifestyle, from the traditions to their environment, is heavily threatened.

According to the literature, the main areas of indigenous peoples lives which are affected by climate change are the fields of: technological advancements in the adaptation process to climate change consequences, of stability of social and ecological environments, and of longevity and determination of lasting indigenous cultural knowledge.

- Technological advancements (*Lin 2020, Ciot 2021)*
- Social and ecological environments (Zant 2022, MacKay 2020, Lin 2020, Lam 2020, Gauer 2021, Adger 2004, Granheim 2021)
- Indigenous cultural knowledge longevity (Zant 2022, MacKay 2020, Lin 2020, Gauer 2020)

Moreover, in the case of Greenlandic Inuit, the most significant impacts of climate change have been identified across the studies. More specifically, these impacts are on: food provision through fishing and hunting, on economic activity of fishing and hunting, and on Inuit cultural knowledge longevity.

- Food provision *(Hovelsrud 2010, Schiott 2022, Ford 2012)*
- Economic activity *(Jacobsen 2023, Hovelsrud 2010, Schiott 2022, Ford 2012, Sejersen 2002)*
- Inuit's cultural knowledge longevity *(Gauer 2021, Sejersen 2002, Jacobsen 2023, Ford 2012, Grande 2023, Reibero 2021, MacKay 2020, Minor 2023, Schiott 2022)*

Meanwhile, the results from the above list of most impacted fields from climate change, enables a general observation. Indeed, it is the socioecological environment of indigenous communities which is impacted the most. Additionally, for the case of the indigenous community of Greenlandic Inuit, it happens to be the traditional and cultural knowledge sphere which is the most impacted.

As the climate continues to change, it is important to recognise the disproportionate impacts on these communities.

Photo by Sonia Wesche from the "Community adaptation and vulnerability in arctic regions" book from Hovelsrud, 2010. *Hunters take the extra precaution of hauling a canoe when travelling by snowmobile on Great Slave Lake in the spring. The canoe helped us access areas along the shoreline that were in various stages of melt.*

B. The literature suggests that cultural minorities are adapting to climate change

Secondly, the following sub-question: "How are Greenlandic Inuit adapting their traditions to climate change?" specifically focuses on the cultural community of Greenlandic Inuit and therefore of their traditional lifestyle. This question allows diving more precisely in what constitutes Inuit traditional culture and how it evolves through the generations and natural crisis. Hence, the evolution and development they are ongoing is tightly linked to resilience and adaptation strategies, in order to overcome climate change consequences. In general, this thesis finds that, in answer to sub-question two, cultural minorities are adapting through resilience, prevention, and good use of knowledge. The role and importance of traditions for the identity of Greenlandic Inuit is so integrated in their system, that any process of evolution, adaptation, development will insure the longevity of the traditions. Nevertheless, the traditions also undergo evolution, adaptation, and development because it is a necessity, but sometimes also because norms and values are evolving with the generations of Greenlandic Inuit. In fact, in the case of this sub-question, traditions must adapt to the climate change urgency happening to today's generations. Promising examples of adaptation encompass: education and awareness, solidarity and cooperation, open mindedness and alternatives.

Moreover, the analysed articles are mainly reporting about resilience strategies and behaviours to preserve their traditions, such as about the knowledge and skills which can be gained from this experience. This knowledge and access to skills partly happens thanks to cooperative institutions giving them legitimacy and keys to achieve their goal. Therefore, "Some developed governments have shared recognition of the importance of Indigenous world-views in addressing the causes and consequences of climate change." Hence, during the years they have developed economic, cultural, and social spheres, which constitute an important structure of the local functioning of Inuit's society. The researcher Ford (2012) indeed analysed this structure from closer and conducted a research which: " was structured [...] to develop a baseline understanding of how climatic risks and change are currently experienced and responded to, focusing primarily on the culturally and economically important subsistence-based economy (i.e. hunting, fishing)".

The local focus contrasts the political discourse on climate change in Greenland, where national interests have been prioritised over local issues, and small subsistence-based communities have been largely overlooked. As it appears, the Inuit cultural and traditional value of resilience, in matters of climate change, immediately allows them to overcome climate change impacts based on adapting their traditions to those impacts. In one example, "Indigenous knowledge of the fjord ecosystem can be used to assess what to expect in the future and how the fjord system may develop, if climate change continues to impact the local marine ecosystem. Knowledge about these topics may address specific conditions and

fluctuations that can be used to better foresee future activities and avoid over-fishing or be used to assess changing abundances of local species that are of social and economic interest." (Schiott,2021) Furthermore, "The extensive Inuit knowledge of technology, nature and animals, sea ice, and hunting strategies have been studied and scrutinised at great length – and with good reason. Knowledge of the environment and ways to deal with it constitute the basis for an interface between Inuit and the environment. The elaboration of knowledge associated with this interface is a continuous process which takes place to adjust, change or respond to changing settings and needs." (Sejersen, 2002)

Groups that are particularly vulnerable to climate change are households relying on a hunting and fishing economic activity, such as youth generations. They use the following practices to adapt to the changing conditions:

- change of traditional food consumption *(Schiott 2022, Hovelsrud 2010, Ford 2012)*
- food sharing networks *(Hovelsrud 2010)*
- regulation of hunting and fishing activity to strengthen *(Sejersen 2002, Hovelsrud 2010, Jacobsen 2023, Ford 2012)*
    - the income production of occupational hunters
    - the social economy
    - the respect of the nature
- climate related education *(MacKay 2020, Grande 2023)*
- cross-cultural learning of the youth *(MacKay 2020)*
- youth advocation to environmental security *(Grande 2023)*

C. Culture and tradition continue to drive indigenous practices even during a changing climate

Finally, the third sub-question: "Do traditions of Greenlandic Inuit's culture promote sustainable practices?" encompasses the red thread of the thesis. Once impacts and adaptation of/to climate change have been analysed, the question raised is pointing to the Inuit's ability to match traditions' preservation with sustainable climate change practices. Based on the analysis, the answer to this question is that Greenlandic Inuit's cultural traditions propose and build a stable foundation of knowledge and experience, which grows despite the presence of climate change consequences, such as it happens to represent characteristics of sustainable practices. Indeed, Greenlandic Inuit's traditions rely on local consumption, seasonal activities, and on the maximisation of inland's goods sufficiency.

The analysis of the articles unveiled a diversity in alternatives, changes, adaptation, and policies allowing Greenlandic Inuit culture to somehow align with sustainable practices. First of all, the hunting and fishing tradition of Inuit demonstrates the small scale economy and local practice it represents, which promotes the respect and the connection to their natural environment. Gauer (2021) states that: "Some participants see the sources of disconnections between ceremonies and seasonal cycles in human actions as "confusing mother nature" and leading to climatic changes." Secondly, rising awareness, educating, sensibilizing about the importance of the Inuit culture, and the importance the nature and its balance hold for their culture, brings the members of the minority to act in conscious for the protection of their environment. The author MacKay (2020) quotes: "Climate related education is considered a useful strategy for addressing hopelessness and motivating action. At present, it is suggested that youth has a relatively limited understanding of both the causes and potential adaptive strategies available to address climate change."

VIII. Discussion

A. Findings

The literature on indigenous peoples' climate adaptation strategy has been scattered. To address this issue, I conducted a systematic literature review to find common themes and insights from the literature. This effort has been productive. It has allowed me to arrive, by means of the continuity of the analysis of the sub-questions findings, at some conclusions.

In the context of the first sub-question, impacts of climate change do have been observed on cultural minorities. The impacts have meanly been identified on the natural environment, due to the traditional and cultural proximity bounding the communities to the nature. For instance, the impacts on natural environments influence their mobility, their diet, their habits, and their development. Therefore, the thesis can conclude that climate change threatens these cultural minorities ability to continue their way of life.

Furthermore, in the context of the sub-question two, the Greenlandic Inuit's societies have been used to evolve rapidly in contexts of sudden changes. They, indeed, possess a great resiliency and adaptivity capacity, which strongly stays bounded to their traditional and cultural knowledge. However, their traditional and cultural knowledge is undergoing evolutive processes, which allows it to persist through the generations. These take place through modernisation, education, cooperation. Therefore, the thesis can conclude that Greenlandic Inuit's traditions are adapting to the impacts of climate change in a way that implies acceptance and resiliency. The community chose to grow according to the climate change pressure, and to adopt it to their day-to-day life.

Nevertheless, the final sub-question reveals that, Greenlandic Inuit's cultural and traditional knowledge is carried by a stable foundation of skills and experience, which persist despite the climate change consequences. Also based on that foundation, sustainable traditional practices have been unveiled such as: local consumption, seasonal activities, and the maximisation of inland's goods sufficiency. Therefore, the thesis can conclude that Greenlandic Inuit's culture promotes the adoption and development of sustainable practices relying on the structure of traditional and cultural knowledge.

Taken together, the answer to the overarching research question, "Do traditions of Greenlandic Inuit's culture promote sustainable practices? ", is: the Greenlandic Inuit lifestyle, such as their traditional and cultural knowledge, is aiming to promote the sustainable dimension their traditions have. Hence, their traditions are built in a way that concords with the objective of sustainability, however Greenlandic Inuit also commit to develop, actualise, and adapt their traditions to follow up with the urgency and intensity of climate change impacts. The implication of this finding is that indigenous communities have a stronger bound to nature and its evolution, which influences their approach towards sustainable climate change strategies, and therefore propose a different perception of adapting its culture to overcome rising climate change in comparison with western/European perceptions. As a result, Greenlandic Inuit's approach is relevant and should be studied more, in order to develop global policies of sustainable practices.

B. Limitations

The major part of my study research lies on the discoveries and the conducting of other research articles. The articles, exclusively written in English, happen to be my primary source of information and content for my thesis topic, since I did not personally conduct an on-field study, or interviews. The dimensions of my thesis topic are somehow demanding a lot of budget and time, if it should have been including field studies and interviews. Hence, in order to formulate a proper answer to my research question, I need to access information about Greenlandic Inuit's culture from multiple periods of time. This quest is made possible through the investigation of articles dated from those periods. Nevertheless, the fact that the study relies heavily on academic articles from specific databases such as Web of Science and

Google Scholar, may lead to a narrow perspective, missing out on grey literature or reports that may provide more localised or practical insights. Hence, 16 out of the 27 initially considered articles were excluded due to restricted access, which also suggests a limitation in the comprehensiveness of the literature review. Important insights may have been lost due to these access restrictions.

Therefore, I would suggest the next researcher studying this topic to built his study by including direct informative source like testimonies, interviews, surveys, or even documentaries, which would enable to transcribe the way the community sees, feels, lives those climate change impacts and the impacts on their traditions. Of course, the support of research studies and articles is primordial, but also mainly scientifically oriented, instead of diving into the social dimensions of the topic. Speaking of literary resources, the diversity of these resources should not be limited to the written language and to the free access or not.

C. Personal reflection

Meanwhile, in order to come to some findings, the relevancy selection process I underwent with the articles allowed me to get a proper overview of the resources I could work with, for my data collection. This first approach enabled me to structure my analytical framework. Indeed, by observing, analysing, and interpreting data from relevant literature, I got only less distracted by additional content drifting from the topic of my thesis. Hence, in correlation with the solid structure of my analytic framework, the predefinition of themes I investigated in the articles, enabled the development of inductive codes emerging from the themes. As a result of working with a solid analytical framework, my research study has conducted an investigation in climate change consequences on small cultural minorities. The aim of the thesis contributed to enhance the position, role, and situation of indigenous communities when facing crisis and adaptation. This lens reveals the way they handle urgencies, and undergo resilience strategic processes, including development of sustainable practices, hand in hand with their cultural and traditional knowledge. Finally, even if this thesis is focused on Greenlandic Inuit, it still contributes to put into the light other climate change resilience strategies, than the already well-know and well-studied western/European approaches.

To conclude my personal reflection, I would like to add that this immersion into the traditional and cultural structure of the Greenlandic Inuit community very much interested me the whole process during. Hence, their resiliency ability is very much inspiring as well, since they are only a few people belonging to this indigenous minority, and that they are witnessing the climate change impacts the first. This portrays their determination to stick to their traditional identity despite the harsh reality of environmental deterioration surrounding them.

IX. Conclusion

This thesis investigates the degree of sustainability present in the traditional and cultural knowledge and practices of Greenlandic Inuit communities, in a global context of climate change urgency. As a result of conducting this thesis, the answer to the research question happens to be positive. In fact, the traditions of Greenlandic Inuit communities hold traditional and cultural knowledge, which is reflected in societal practices. These practices are bounded to the ancestral cultural traditions, but are also evolving according to day-to-day events and time. In the context of climate change, these traditions are impacted. Indeed, they undergo a process of modernisation, adaptation, and development, allowing them to show resilience skills and to persist through changes. Hence, these traditions can evolve with the climate change urgency, because they are composed of habits, and practices corresponding to a climate change friendly approach. Indeed, these habits and practices of Greenlandic Inuit are framed by local, and seasonal activities, such as by an independent and solidary society. In those words, the Greenlandic Inuit's traditions promote the sustainable practices, but also develop and adopt them.
All in one, the indigenous traditional and cultural knowledge is a broad and still understudied field sprinkled with skills and experiences. The specificity of that knowledge is the approach and perception indigenous communities have, and pass, about matters. Indeed, as observable along the thesis, the Greenlandic Inuit have constituted their culture around the land they lived on, they have built a strong link to the nature surrounding them, such as they have learned to identify and transform the natural resources surrounding them. Through that spectrum, Greenlandic Inuit have built their wealth with the gifts of the nature. Meanwhile, what is to be learned and transmitted from that, is the simplicity and sufficiency which can be found in natural environment, and the positive impacts a bound to nature can enable. Moreover, the Indigenous, and Greenlandic Inuit's relationship conducted to traditional and cultural knowledge, such as to nature is, besides of being very inspiring, also interesting to integrate in bigger communities. Indeed, the prolongation of this thesis could rely on the wondering of if the indigenous approach is applicable to bigger communities and societies. Meanwhile, what may make this approach a success for the indigenous communities is their intimate society, their isolation from huge flows of modernisation, their bound to nature.

However, it is to remember to let oneself be curious of other cultures and practices, such as to let oneself be inspired by them, should they be of any interest or good.

X. Literature list

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I. Appendix

Themes/ coding	Are smaller cultural minorities affected by climate change?"	"How are Greenlandic Inuit adapting their traditions to climate change?"	Do traditions of Greenlandic Inuit's culture promote sustainable practices?".	Quotes	Description	Article
indigenous knowledge regarding lifestyle	x	x		« Indigenous knowledge of the fjord ecosystem can be used to assess what to expect in the future and how the fjord system may develop, if climate change continues to impact the local marine ecosystem. Knowledge about these topics may address specific conditions and fluctuations that can be used to better foresee future activities and avoid overfishing or be used to assess changing abundances of local species that are of social and economic interest." *Schiott,2021* "The extensive Inuit knowledge of technology, nature and animals, sea ice, and hunting strategies have been studied and scrutinised at great length – and with good reason. Knowledge of the environment and ways to deal with it constitute the basis for an interface between Inuit and the Environment. The elaboration of knowledge associated with this interface is a continuous process which takes place to adjust, change or respond to changing settings and needs." *Sejersen, 2002* "In some developed countries, Indigenous communities find new places to hunt, build cabins, and reinforce cultural activities. They are using technology and improving infrastructure to protect themselves against extreme weather, combining traditional and Western knowledge for survival. » *Grande, 2023*	Code identifying initiatives of Inuits regarding the adaptation and the preservation of their traditions and their natural environment when facing climate change.	Schiott, Sejersen, Grande, Gauer
cooperation with indigenous in adaptation strategies		X	X	"Greenland and Canada support ecosystem monitoring and conservation of living resources, and work with indigenous organisations and local communities to implement a management regime for the polynya, and the creation of an Indigenous Protected Area (IPA). » *Reibero, 2021*	Code determining whether the opinion and participation of Inuit's contribution and knowledge is included in societal, political, economic and scientific matters	Schiott, Reibero, Jacobsen, Minor, Grande, Cueva, Gauer

				"Some developed governments have shared recognition of the importance of Indigenous worldviews in addressing the causes and consequences of climate change » *Grande, 2023* "The results of the interview survey also emphasize the value of including indigenous knowledge in research, as their observations and how they have adapted to a changing environment can be combined with science in describing an ecosystem that is otherwise difficult to access and be used to foresee what to expect in the future. » *Schiott, 2021*	tackling climate change.	
food provision alternatives		x		"The diversification of the food system in recent decades to include store food options, while not nutritionally or culturally preferable to traditional foods, buffers the food system, helping increase local food security and reducing risk of hunger by providing alternatives when traditional foods are inaccessible » *Hovelsrud, 2010* "Food sharing practices can benefit hunters when a hunting trip is unsuccessful and may aid hunters as they adapt to changing weather and sea ice conditions noted by many participants. » *Hovelsrud, 2010*	Code revealing what alternatives the Inuits are exploiting to ensure food provision since the climate change consequences have impacted their usual fishing/ hunting/harvesting	Schiott, Hovelsrud, Ford
negative climate change consequences on nature and population	X			"Indigenous peoples are disproportionately threatened by a changing climate relative to non-Indigenous groups. Detrimental impacts to traditional environments constitute threats to Indigenous cultures, languages, lifeways, knowledge systems, and peoples » *Gauer, 2021* « The circumpolar region is warming several times faster than the global average, exposing ecosystems and populations—including Indigenous communities— to changes in sea ice, snow cover, permafrost, precipitation, rain-on-snow, ice sheet hydrology and coastal sedimentary flux." *Minor, 2023* "The statistics also show that these different prey species were affected by changes in temperatures. Marine mammals and	Code highlighting all kind of impacts and consequences of climate change on the artic north environment and on the Greenlandic Inuit population.	Schiott, Reibero, Hovelsrud, MacKay, Jacobsen, Minor, Grande, Gauer, Ford

				fish moved northward during warmer periods and southward during colder periods. Climate change could result in a shift in the ecosystem, as species usually found in more southern regions could move further north, and thereby cause changes in the local ecosystem, replacing species that used to dominate the region. » *Schiott, 2022*		
negative impacts of food system	x			" Therefore, future changes to the fjord's ecosystem could be that ringed seals that are unique to the Icefjord may become less abundant due to competition with harp seals for resources. In addition, less suitable breeding habitats with stable sea ice will have a negative effect on their pup survival rate » *Schiott, 2022* "Within the traditional food sector, the presence of sea ice (known as vestisen), storm frequency and general climatic variability have direct implications on the availability of animal resources, the number of safe harvesting days each season, and the capital investment needed to hunt. Changes in these environmental characteristics thereby directly influence traditional food harvests, cash income incurred in the community, and hence food security. » *Hovelsrud, 2010* "One quarter of survey respondents identified environmental conditions such as sea ice extent, hazardous weather and a general lack of animal resources as the primary barrier restricting their consumption of Greenlandic foods from March 2007-March 2008 in Qeqertarsuaq. » *Hovelsrud, 2010*	Code revealing in how far climate change is impacting the traditional food provision system of the Inuits and the natural habitat of their prey.	Schiott, Hovelsrud, Ford
positive climate change consequences on economy and society	x	x		"All previous climate change assessments operate with the possibility of increased abundance of fishery resources and a northward migration of key species in the current fisheries." *Jacobsen, 2023* "Potential benefits have also been identified including enhanced opportunities for	Code identifying impacts of climate change on development of economic activity, fishing activity which act positively on the Inuit population.	Schiott, Hovelsrud, Jacobsen, Ford

				resource development and exploitation of hydrological resources as the ice cap recedes, improved shipping, and new opportunities for commercial fishing. » *Hovelsrud, 2010* « This study also highlights the potential role of climate change on the marine ecosystem in the Icefjord, as changes in the sea ice conditions and warmer waters may bring other species into the Icefjord, initiating cascading effects on the local ecosystem, potentially affecting species higher up in the food chain. » Schiott, 2022		
conserving traditions integrity	x	X		« Although not referred to as such, the change from dog sledding to snowmobile is notable in connection to cultural heritage, especially in terms of intangible cultural heritage and tacit, local knowledge » *Jacobsen, 2023* "The research was structured using a vulnerability approach, and incorporates mixed methods to develop a baseline understanding of how climatic risks and change are currently experienced and responded to, focusing primarily on the culturally and economically important subsistence-based economy (i.e. hunting, fishing). The local focus contrasts the political discourse on climate change in Greenland, where national interests have been prioritized over local issues, and small subsistence-based communities have been largely overlooked » *Ford,2012*	Code identifying the will of the Inuits to preserve their traditions and to adapt them to climate change.	Sejersen, Jacobsen, Grande, Gauer, Ford
hunting and fishing regulation			X	"Hunting and fishing are tightly regulated in Greenland, with two legally defined categories of hunters forming the basis of the licensing system: occupational and non-occupational hunters. Applicants have to meet specific criteria to obtain an occupational hunting license, harvesting a minimum portion of their food from traditional sources, in addition to meeting income criteria. » *Hovelsrud, 2010* « These factors all improve the *accessibility* - the most important thing to make hunting a viable way of life. And when one has access to the resources (if all the factors are put together), hunting contributes to	Code highlighting the adaptive changes the hunting and fishing fields are undergoing regarding regulations and climate change.	Sejersen, Hovelsrud, Jacobsen, Ford

				sustain the household in terms of meat and often also in terms of money. The household's economic, social and cultural continuity and integrity are closely linked to the accessibility of resources." *Sejersen, 2002* "Constraints on the mobility and flexibility of harvesters to respond to changing conditions imposed by regulations, however, are significant in Greenland and constrain adaptive capacity by affecting who can hunt/fish what, where, how, and when. » *Ford, 2012*		
sustainability in traditional practices		X	X	"Several tools to implement socio-economic sustainability are suggested by hunters: • Hunters from households which are sustained by meat and cash stemming from small-scale hunting activities should have the best access possibilities • The market should be closed for certain user groups in order to strengthen the cash production of hunters and to discourage people from hunting as a means to produce cash. • Certain hunting methods could be limited." *Sejersen , 2002* "Indigenous views and knowledge can also point to more broadly needed changes in the relationship with nature to restore climatic and environmental balances. Some participants see the sources of disconnections between ceremonies and seasonal cycles in human actions as "confusing mother nature" and leading to climatic Changes. » *Gauer,2021*	Code highlighting Inuits traditional practices that align with sustainable practices regarding climate change	Sejersen, Gauer
evolution of food system provision	X			"Many residents expressed an understanding that environmental changes may necessitate changes in human behaviour, influencing the harvesting and consumption of Greenlandic foods. » *Hovelsrud, 2010* "Within the traditional food sector, the availability of animal species, the number of safe hunting days each season, the cost and availability of necessary hunting and fishing equipment, the prevalence of harvesting skills, the cost and availability of country foods	Code identifying the impacts of climate change on the evolution and adaptation of Inuits food provision system	Hovelsrud

				sold within the community, in addition to dynamics of food sharing networks all play a role in determining access to Greenlandic food. » *Hovelsrud, 2010*		
Climate education strategy		X	X	"Climate related education is considered a useful strategy for addressing hopelessness and motivating action. At present, it is suggested that youth have a relatively limited understanding of both the causes and potential adaptive strategies available to address climate change. » *MacKay, 2020* "Culturally appropriate, place-based education and exposure to new opportunities for cross-cultural learning are among the strategies considered wise practice for Indigenous youth. » *MacKay, 2020* "Developing processes that facilitate the involvement of Indigenous youths to advocate for their environmental security may positively impact their health and wellbeing. » *Grande, 2023*	Code highlighting the alternatives raising awareness and promoting change in behaviours regarding climate change consequences	MacKay, Grande
Response to climate change		X		"a scheduled helicopter service is now the primary transportation option during winter months when the ferry service does not operate.» *Ford, 2012* « The research community describes human resilience as the process of adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress. As much as resilience involves "bouncing back" from these difficult experiences, it can also involve profound individual and collective growth. Adverse events and chronic exposure to adverse events are like rough ocean water—challenging and difficult. The perspective of many Arctic communities is that resilience is what allows us to navigate rough waters and learn from the experience—and conceptually includes both individual and collective attributes. » *Cueva, 2021* « To this end, the European Green Deal (EGD), the new growth strategy for the EU, was published by the European Commission on 11 December	Code identifying initiatives proposing responses to the climate change consequences on different levels	Ciot, Cueva, Ford

				2019. It supports Member States in achieving the goal of climate neutrality and sets the guideline for various European public policies for the coming years, being closely linked to a number of legislative and non-legislative initiatives in multiple areas, such as the environment, climate changes, energy, industry, transports, agriculture, digitalization, and the financial sector. » *Ciot, 2021*		

XI. Appendix