



**Environmental and Social Impact
Assessment for the Troilus Mine Project**

CONTRIBUTION OF THE TROILUS MINING
PROJECT TO SUSTAINABILITY

Environmental and Social Impact Assessment for the Troilus Mine Project

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Acronyms and Abbreviations

ASD	Apatsiwiin skills development
CEPA	Canadian Environmental Protection Act
CFP Baie-James	Centre de formation professionnelle de la Baie-James (Vocational Training Center de La Baie-James)
CNG	Cree Nation Government
ECCC	Environment and Climate Change Canada
ESIA	Environmental and Social Impact Assessment
FIFO	Fly in/fly out
GBA+	Gender-based analysis plus
GHG	Greenhouse gas
IAA	Impact Assessment Act
IAAC	Impact Assessment Agency of Canada
ISO	International Organization for Standardization
MELCCFP	Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (Ministry of the Environment and the Fight against Climate Change, Wildlife and Parks)
RWE	Riparian and wetland environments
TSF	Tailings Storage Facility
VC	Valued Component

29. Troilus mining project's contribution to sustainability

The Impact Assessment Act (IAA, 2019) provides for a proactive approach to sustainability, aimed at integrating environmental, social and economic considerations into the project assessment process. This approach relies on collaboration with communities, stakeholders and experts to identify a project's potential impacts from the earliest stages of its development.

This approach promotes the use of sustainable practices by assessing not only the immediate impacts of projects, but also their contribution to long-term objectives, such as combating climate change and protecting biodiversity. By promoting innovative solutions and encouraging transparency, this process aims to ensure that decisions taken today do not compromise the needs of future generations, while supporting responsible economic development.

29.1 Regulatory and Policy Setting

The assessment of the project's contribution to sustainability is carried out in accordance with the requirements of the Impact Assessment Agency of Canada (IAAC). This assessment is based on the description of the Troilus mining project, including expected adverse and positive impacts, and on the following documents:

- Guidance document "Assessing the extent to which a project contributes to sustainability" (IAAC, 2021);
- « Directive pour le projet minier de construction et d'exploitation d'un gisement cupro-aurifère sur le territoire d'Eeyou Istchee Baie-James » par Troilus Gold Corp (Troilus), Appendix A.1 of the Environmental and Social Impact Assessment (ESIA) report;
- Tailored Impact Statement Guidelines, Appendix A.2 of the ESIA report.

29.2 Methodology

As part of the environmental and social impact assessment (ESIA) for the Troilus mining project, the IAA (2019) calls for an assessment of a project's contribution to sustainability, which is defined based on the Rio Declaration on Environment and Development (UN A/CONF. 151/26, Vol. 1) and the Canadian Environmental Protection Act (CEPA, 1999), namely:

"The ability to protect the environment, contribute to the socio-economic well-being of the people of Canada and preserve their health in a manner that benefits present and future generations."

To determine how the Troilus mining project could contribute to sustainability, several engagement activities with project stakeholders were carried out. These consultation activities helped to target the Valued Components (VC) of the environment, i.e. "those components that have been identified by stakeholders as being socio-economically or environmentally significant."

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The assessment of how each VC contributes to sustainability was carried out systematically according to the following guiding principles:

1. Consideration of the interdependence and interconnectedness between human systems and ecosystems;
2. Consideration of the well-being of present and future generations;
3. Consideration of the positive impacts and reduction of the adverse impacts of the project;
4. Application of the precautionary principle, taking into account uncertainty and the risk of irreversible damage.

29.2.1 Information and consultation procedures

The Troilus copper-gold mining project benefits from having been in operation between 1996 and 2010. This experience allows us to draw on concrete data and stakeholder and employee feedback from the old project to identify the VC of the new project. In addition, the new Troilus project has been carried out a number of consultation activities, the main ones are outlined below:

- Preliminary consultation with surrounding communities (Chapais, Chibougamau, Mistissini and Oujé-Bougoumou) as part of the initial and detailed project description (2022);
- Workshops on water management with tallymen, Cree community of Mistissini, Cree Health Department and Grand Council of the Crees (2022 and 2024);
- Open-house consultation with project presentation in non-Indigenous and Indigenous communities (Chapais, Chibougamau, Mistissini and Oujé-Bougoumou (October 2024);
- Consultations as part of the gender-based analysis plus (GBA+), Jamesian and Indigenous groups (2024-2025);
- Indigenous knowledge collection campaign (2024-2025);
- Closure plan workshop with tallymen (M-34, M-39a, M-40) and Mistissini Cree community environment administrator (February 2025).

These consultation activities were complemented by numerous meetings and presentations with the surrounding communities. A complete list of mobilization activities is available in section 4 (Information and consultation activities). Troilus also used sources of information on the historic project, such as the case study carried out in partnership by the Cree Regional Authority and sociologists Roquet and Penn (2008), to justify the selection of VCs. In addition, certain VCs were defined by the Ministry of the Environment and the Fight against Climate Change, Wildlife and Parks (MELCCFP), IAAC, and the Cree Nation Government (CNG), as part of the Directive pour la réalisation de l'étude d'impact du projet Troilus (Appendix A.1) and the Tailored Impact Statement Guidelines for this study (Appendix A.2).

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29.2.2 Spatial and Temporal Boundaries of the assessment

The boundaries of the assessment specify how far (in terms of time and space) the impacts have been considered. The spatial boundary is determined for each component according to the impact of the project, considering ecological, topographical and social aspects, as well as the use of indigenous knowledge.

As for the temporal boundary, it aims to ensure the present and future well-being of generations. Thus, the assessment integrates the project's contribution to sustainability during its operational phase, as well as a post-closure period extending from the site's final closure to several decades thereafter.

Certain impacts may be amplified or mitigated depending on the phase of the project. This assessment therefore also includes the project's impact on sustainability during the following phases:

- Construction: 2-3 years;
- Operation: 22 years;
- Decommissioning and closure: ≥ 5 years;
- Post-closure: > 100 years.

29.2.3 Consideration of Alternatives

Assessing the project's contribution to sustainability requires consideration of the following elements:

- Alternatives to the project that are technically and economically feasible and directly related to the project;
- Alternatives for carrying out the designated project.

The full list of alternatives considered for the project is available in Chapter 2. These alternatives have been developed based on experience gained and historical findings from the previous project. In several cases, an assessment of these alternatives was presented to land users at technical workshops, notably those on water management, organized in 2022 and 2024. Consideration the concerns and recommendations expressed at these workshops enabled the project initiator to modify the proposed project to better meet the expectations of land users.

Given the specific nature of the project, no alternative solution is conceivable. Should the project not be carried out, the anticipated impacts would be as follows:

- Environmental and social impacts related to the Troilus mine site would remain limited to those currently observed;
- Jamesian communities would continue to experience demographic decline;
- Business opportunities in Nord-du-Québec would remain at current levels;
- No economic spin-offs or training opportunities would be offered to surrounding communities in connection with project development and operation.

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The proposed project is fully in line with the vision of the circular economy, enabling Quebec and Canada to seize an essential opportunity to develop their critical and strategic minerals industry.

29.2.4 Potential Impacts of the Project

The impacts of a mining project can be felt on several fronts. It is essential to understand the interactions between the various components likely to be impacted. Whether social or environmental, a change in one component can influence several others. It is therefore crucial to consider the following aspects:

- VCs likely to have long-term impacts;
- VCs likely to interact with each other;
- VCs likely to interact with potential project impacts;
- VCs likely to interact with project activities.

The list of VCs is presented in Table 29.1; some VCs have been grouped together to simplify Figures 1 to 9, which show the interconnections between the components.

Table 29.1 List of Valued Components and the reason for their inclusion as a Valued Component

Valued Component	Valued Component grouping
Atmospheric conditions (including air quality, dust and light)	Atmospheric quality
Greenhouse gases	
Acoustic environment	
Hydrology	Quality and quantity of water resources
Surface water quality	
Hydrogeology	
Groundwater quality	
Soils and sediments	Soils and sediments
Vegetation, riparian and wetland environments	Vegetation and riparian and wetland environments (RWE)
Terrestrial and avian wildlife	Terrestrial, avian and aquatic wildlife
Fish and fish habitat	
Land and resources use	Land use
Infrastructure and services	Economic conditions and Infrastructure and services
Economic conditions	
Indigenous communities	Indigenous communities
Landscape	Landscape
Health	Health

The way in which indigenous knowledge has been taken into account in the selection of Valued Components is described in the chapters dealing with the respective VCs.

29.3 Principle 1 - Consideration of the interdependence and interconnectivity between human systems and ecosystems

As a first step, the VCs presented in Table 1 have been categorized according to their influence on the physical, biological or social environment, based on the results of mobilization activities. This approach makes it possible to assess the importance of each VC according to the project's stakeholders.

The influence of each VC on the various environments is summarized as follows:

- **Physical environment:** A component is considered to exert an influence on the physical environment when it modifies the physical state of the area studied, i.e. when it affects non-living elements such as the soil, water or atmosphere. When a VC influences the physical environment, it is often also linked to an impact on the biological and human environment, due to the intrinsic interdependence between these elements;
- **Biological environment:** A component influences the biological environment if it can alter the health, distribution or behavior of species present in the study area;
- **Human environment:** A component has an impact on the social environment if it can affect health (including mental well-being), land use, services and infrastructures, demographics, the economy or culture.

Although this categorization is based on a Western approach, indigenous knowledge and the results of mobilization activities provide complementary insights. They make it possible to identify major concerns that support the selection of VCs, thus guiding the subsequent stages of sustainability assessment. These concerns are presented in Table 29.2.

1Table 29.2 Concerns and issues concerning Valued Components

Valued Component	Influence	Concerns / Issues
Atmospheric conditions (including dust)	P, B, H	Atmospheric emissions from the project.
Greenhouse gases	P, B, H	Influence of project on meeting Canada's emission targets, Climate Change.
Acoustic environment	B, H	Influence on the well-being of land users and wildlife.
Hydrology	P, B, H	Change in hydrological regime - impacts on land use and wildlife.
Surface water quality	P, B, H	Influence on aquatic fauna and user health.
Hydrogeology	P, B, H	Influence of mining infrastructures on groundwater resources.
Groundwater quality	B, H	Impact of groundwater quality on the biological and human environment.
Soils and sediments	P, B, H	Influence of mining activities (tree cutting, vegetation clearing, etc.), soil and sediment quality and function.
Vegetation, riparian and wetland environments	P, B, H	Influence of mining activities and infrastructures on health, function and distribution of vegetation and wetlands.
Terrestrial and avian fauna	B, H	Influence of project on health, distribution and behavior of terrestrial and avian fauna.

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Valued Component	Influence	Concerns / Issues
Fish and fish habitat	B, H	Influence of project on health, distribution and behavior of aquatic fauna.
Land and resources use	P, B, H	Influence of project activities and infrastructures on current and future land use.
Infrastructure and services	P, B, H	Influence of project on quality and availability of infrastructure and services.
Economic conditions	P, B, H	Influence of project on economic spinoffs, opportunities and business development in host communities.
Indigenous communities	P, B, H	Influence of project on Mistissini and Oujé-Bougoumou indigenous communities.
Landscape	P, B, H	Influence of the project on the landscape (cultural and natural heritage).
Health	P, B, H	Influence of project on health: physical and mental health.

Influence: Physical= P, Biological=B, Human=H

To assess the project's contribution to sustainability, an analysis of the interconnectivity of the VCs, based on anticipated impacts, was carried out for each VC. Figures 29.1 to 29.9 illustrate these interactions.

It is important to note that figures 29.1 to 29.9 have been drawn up qualitatively, to enable the reader to visualize the relative importance of the VCs according to the project's stakeholders. This importance is determined by the number of comments collected, as well as by their consideration during workshops, discussions and consultations, and by the experience of the population, particularly in relation to the Troilus historical project.

Arrows linking a VC to land use indicate that the VC may influence land use. Conversely, an arrow from land use to a VC suggests that land use can have an impact on the VC. When an arrow is bidirectional, this indicates a potential interaction between the two VCs.

Finally, certain associated components have been grouped together to simplify the reading of the figures (table 29.1).

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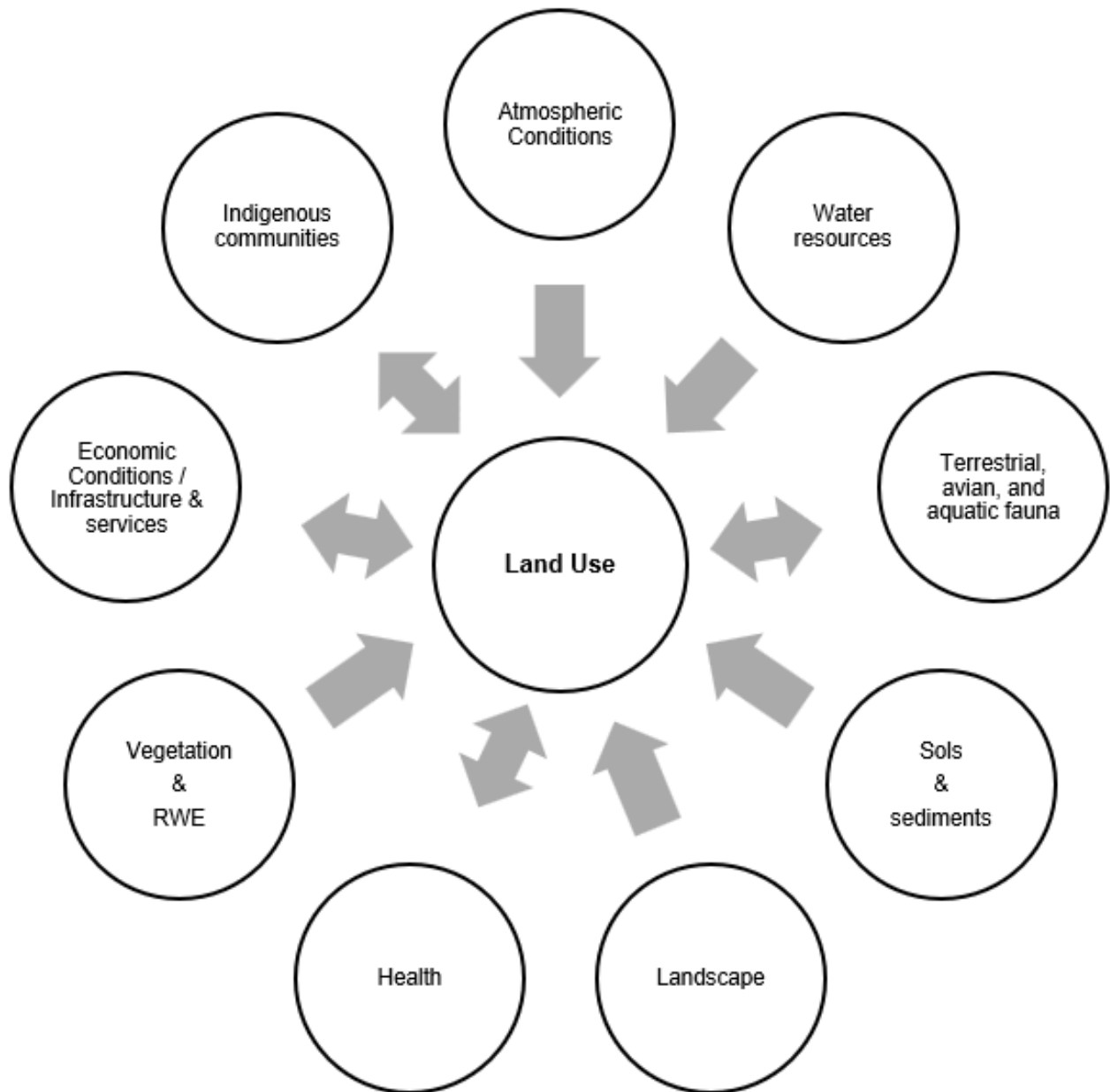


Figure 29.1 Interconnectivity between Land Use and other Valued Components

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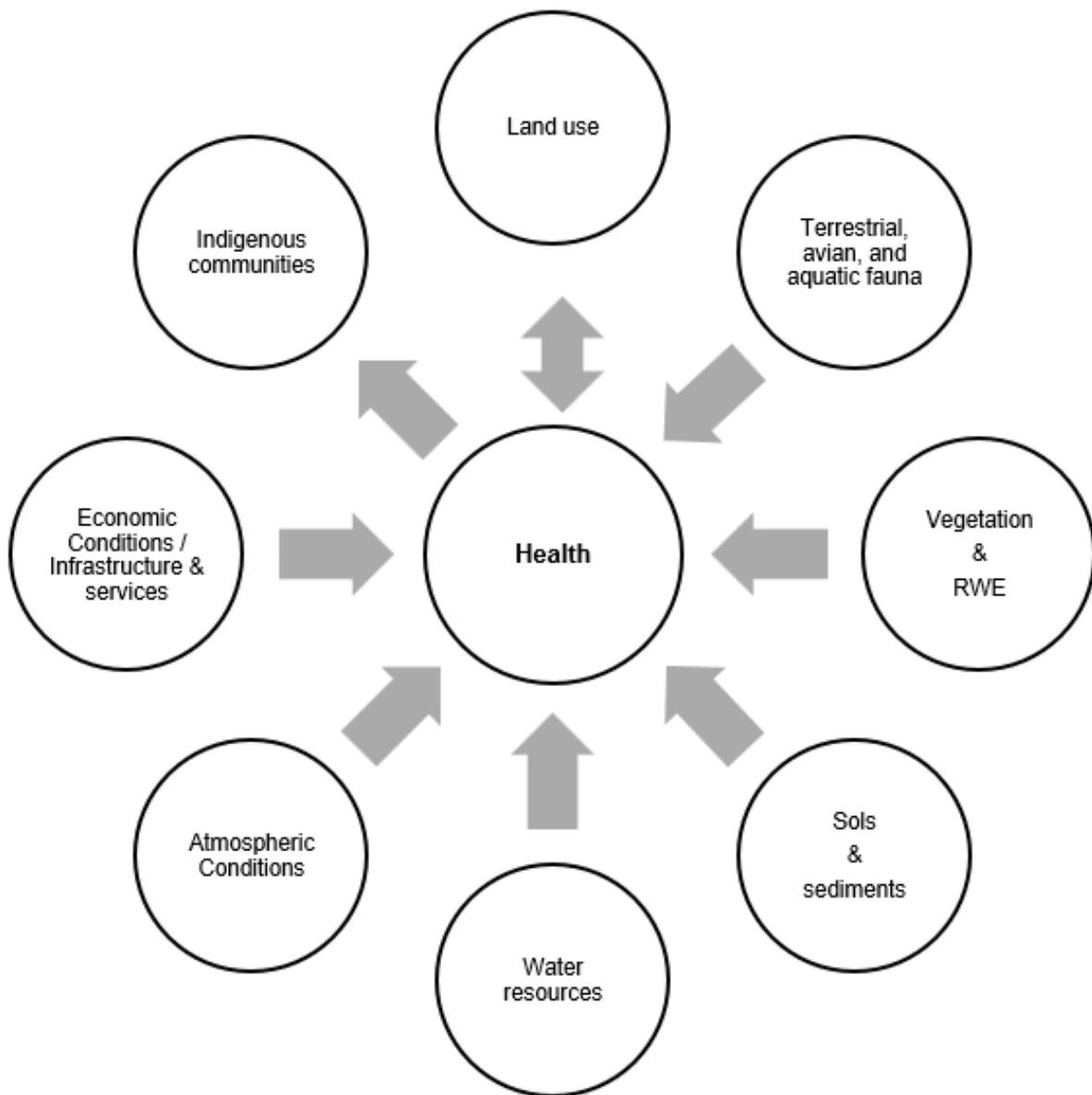


Figure 29.2 Interconnectivity between Health and other Valued Components

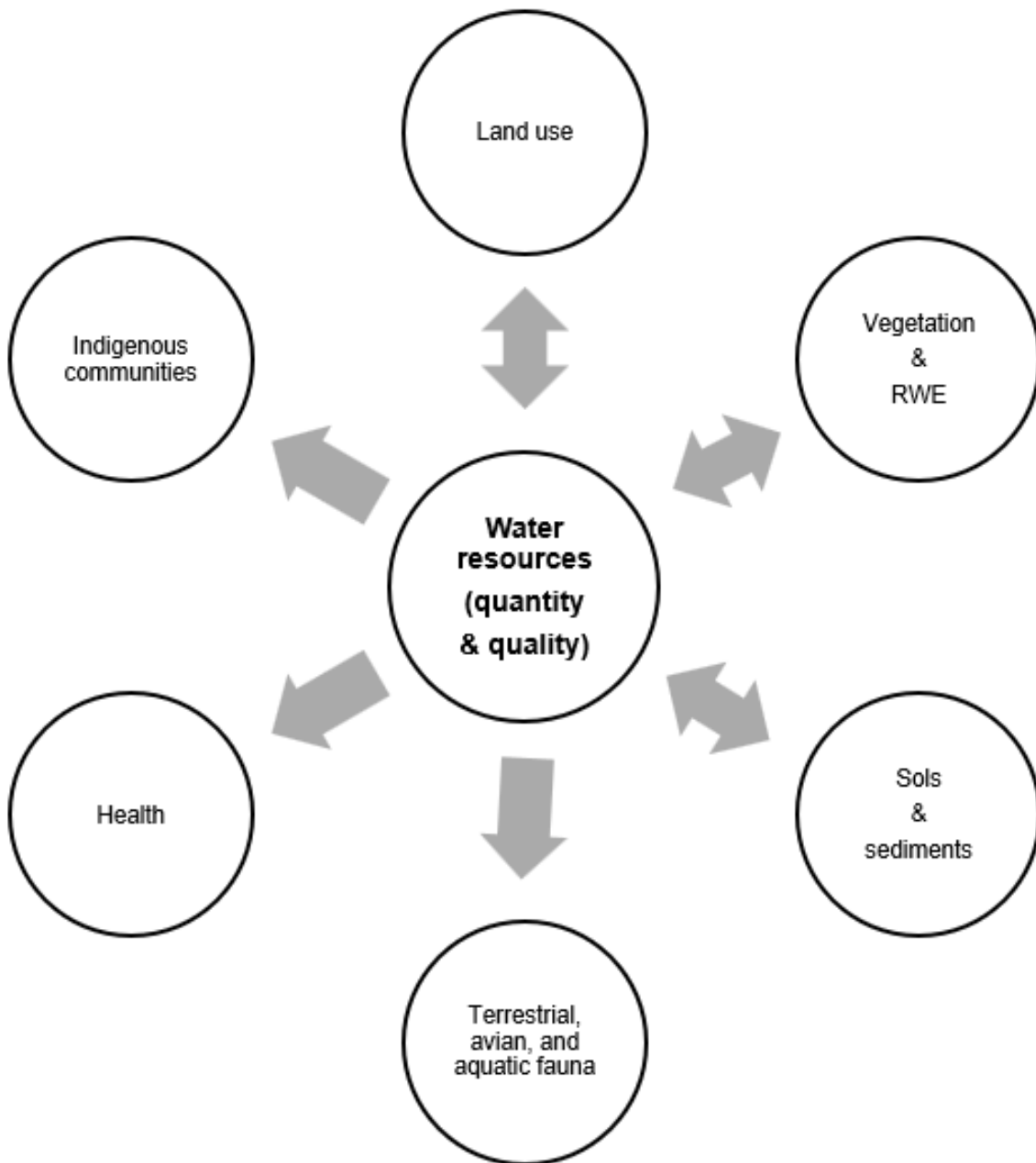


Figure 29.3 Interconnectivity between Water Resources (quality and quantity) and other Valued Components

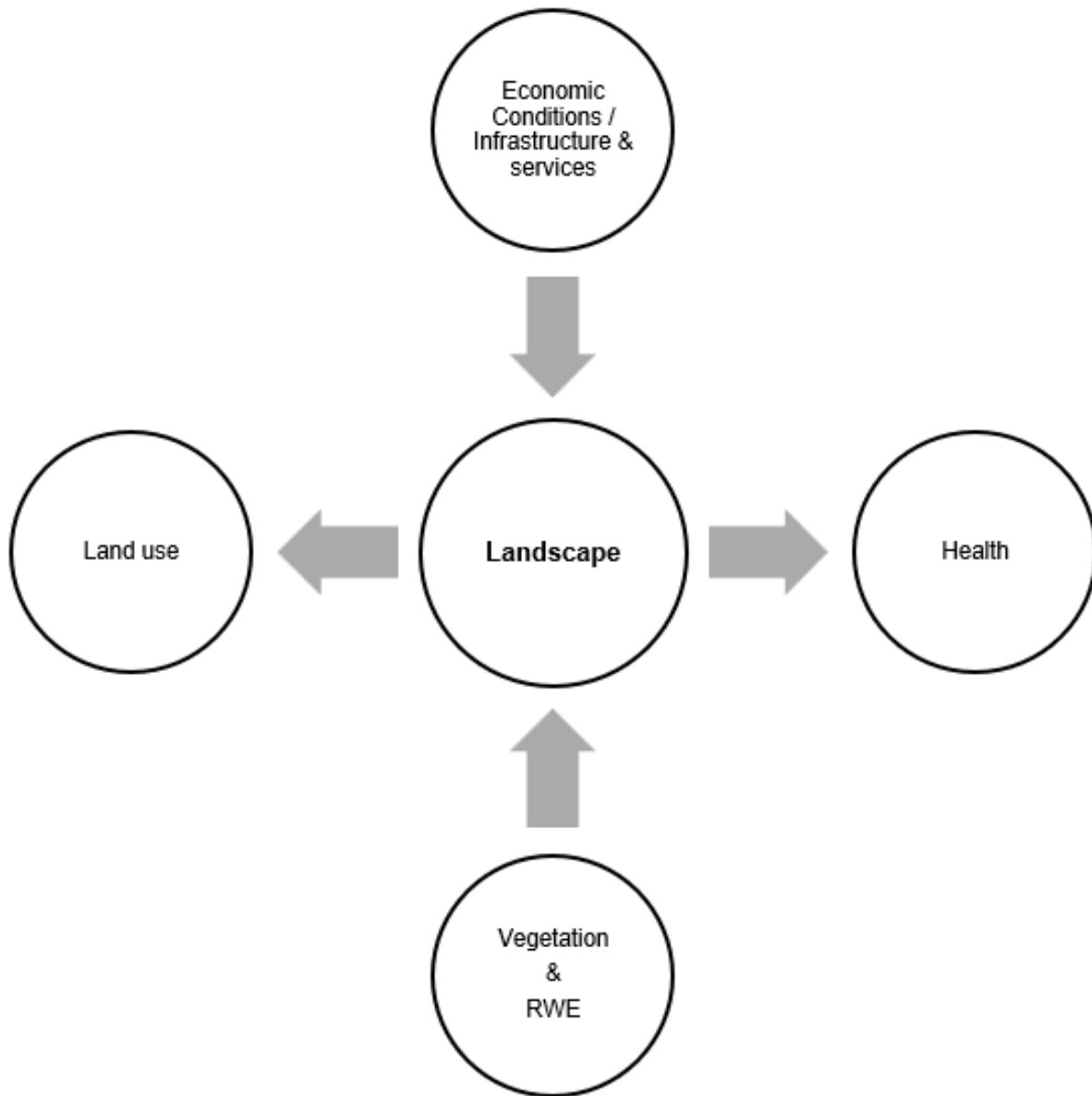


Figure 29.4 Interconnectivity between Landscape and other Valued Components

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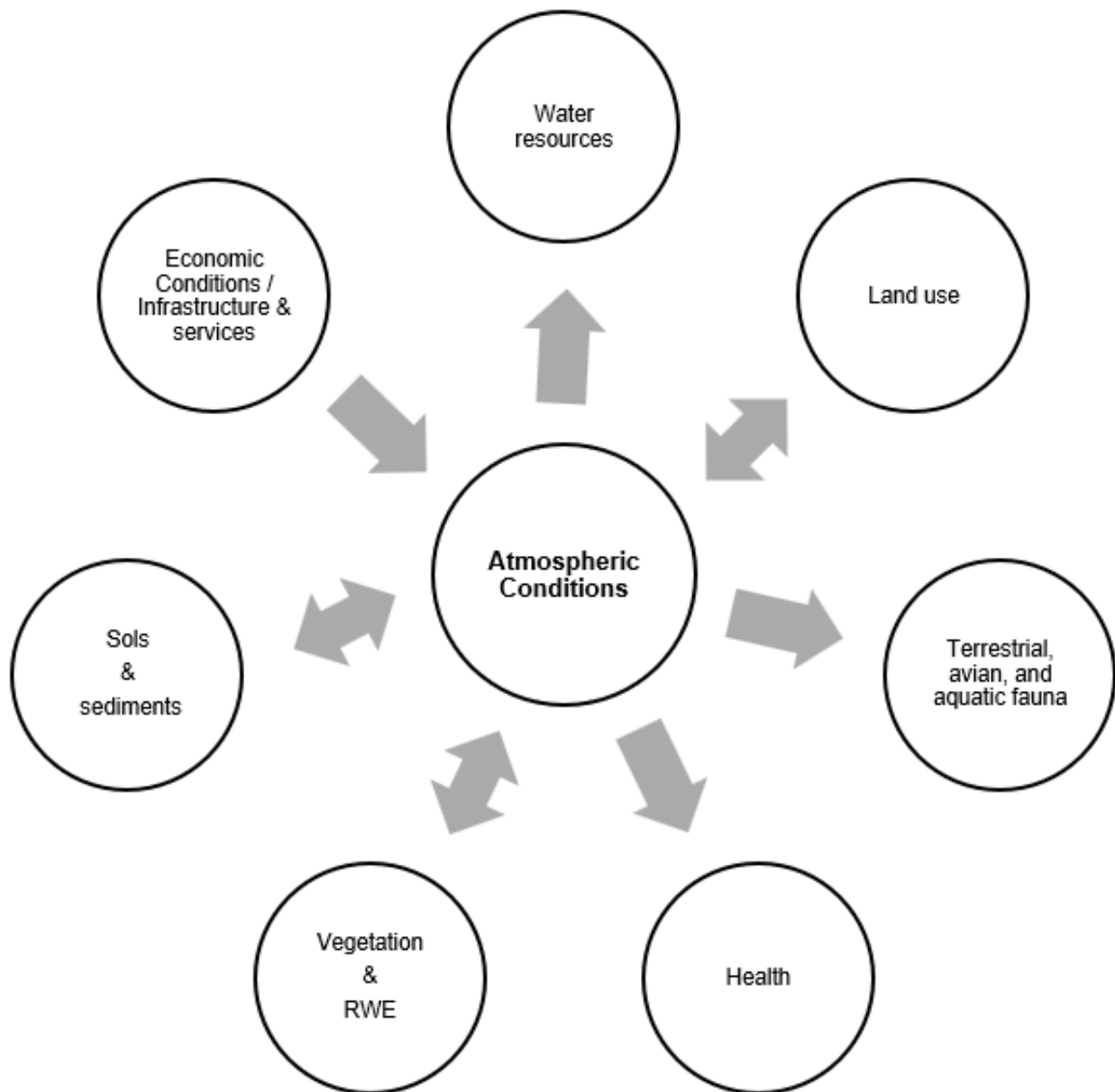


Figure 29.5 Interconnectivity between Air Quality and other Valued Components

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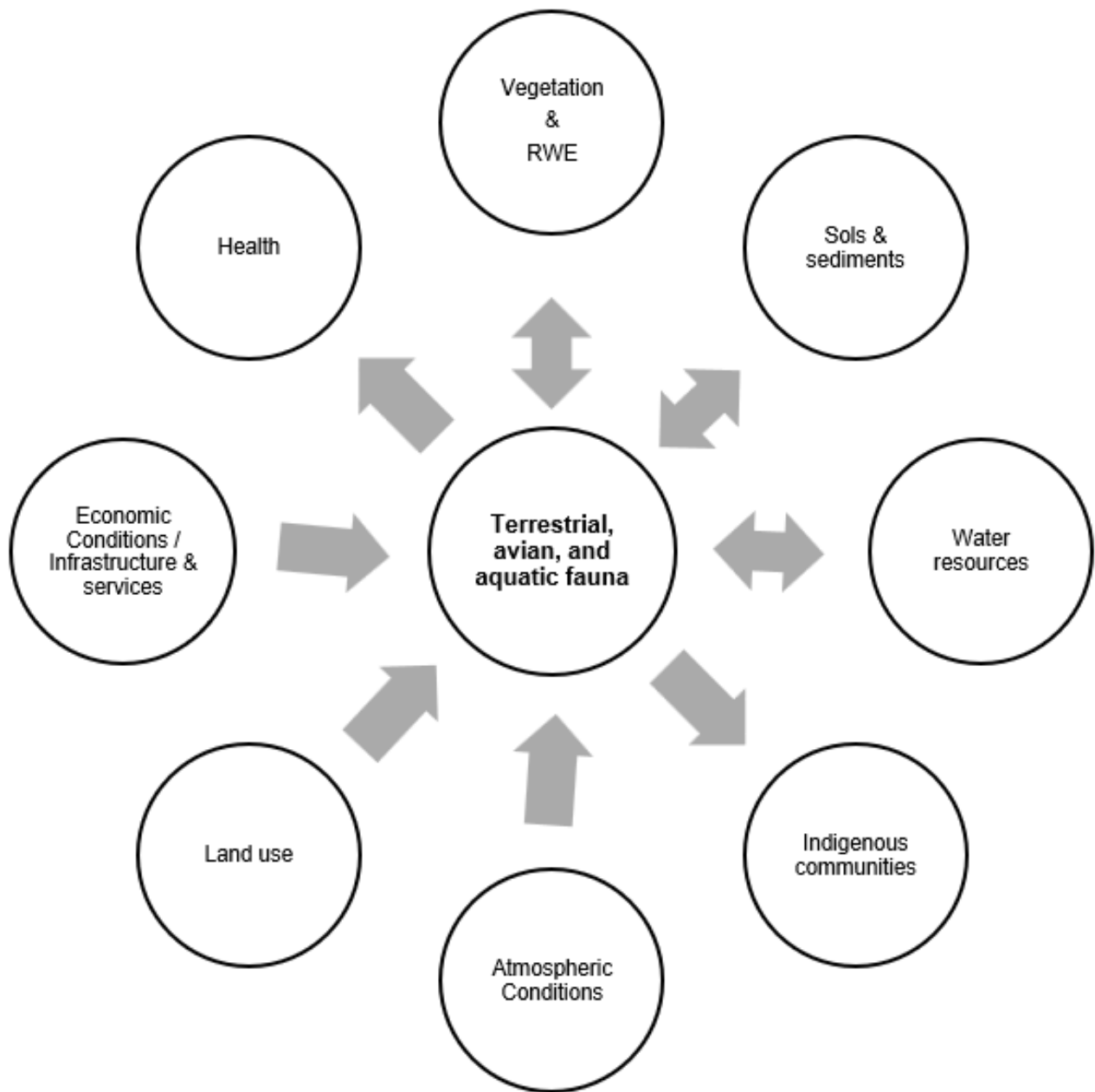


Figure 29.6 Interconnectivity between Terrestrial, Avian and Aquatic Fauna and other Valued Components

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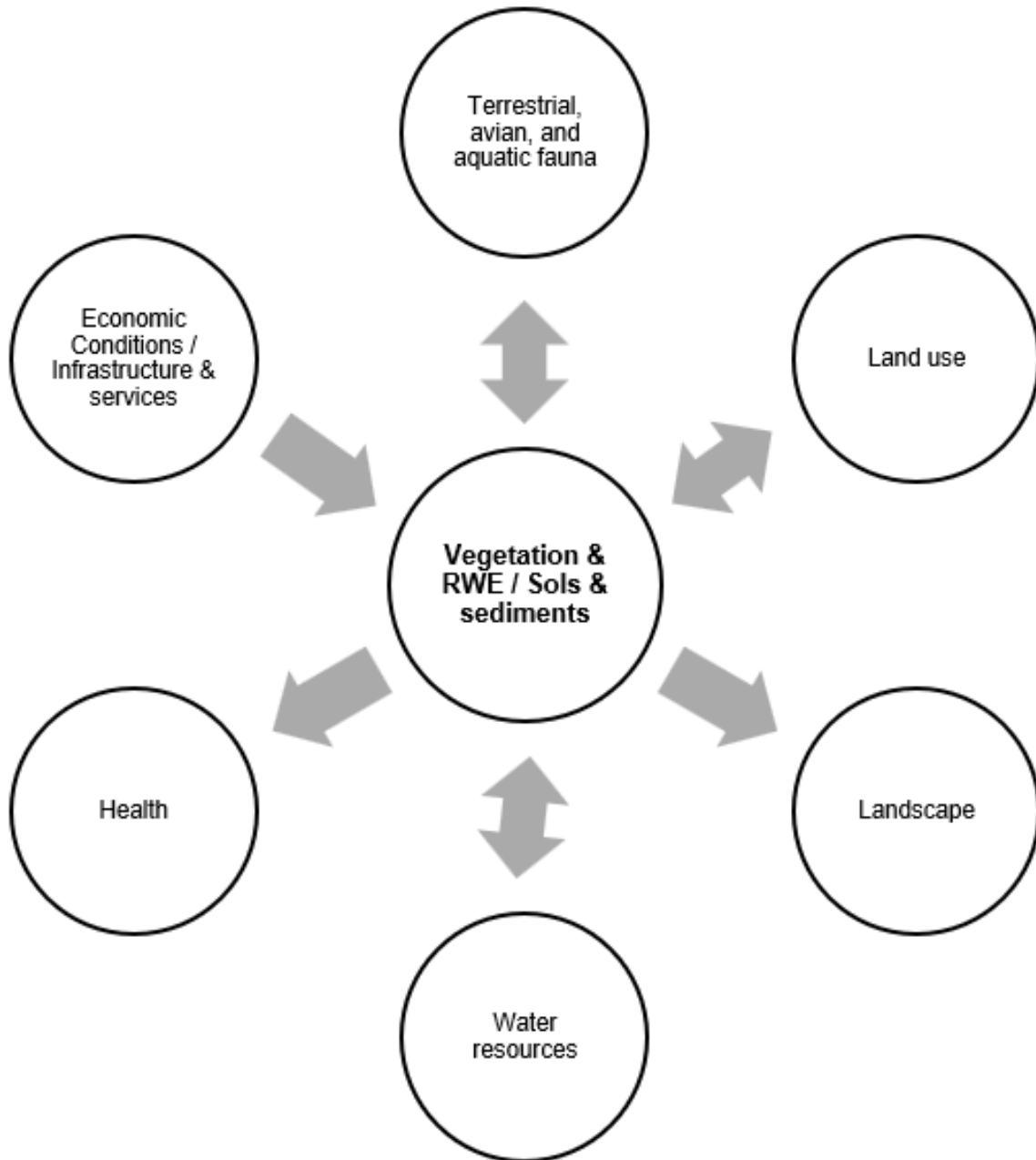


Figure 29.7 Interconnectivity between Vegetation and RWE and other Valued Components

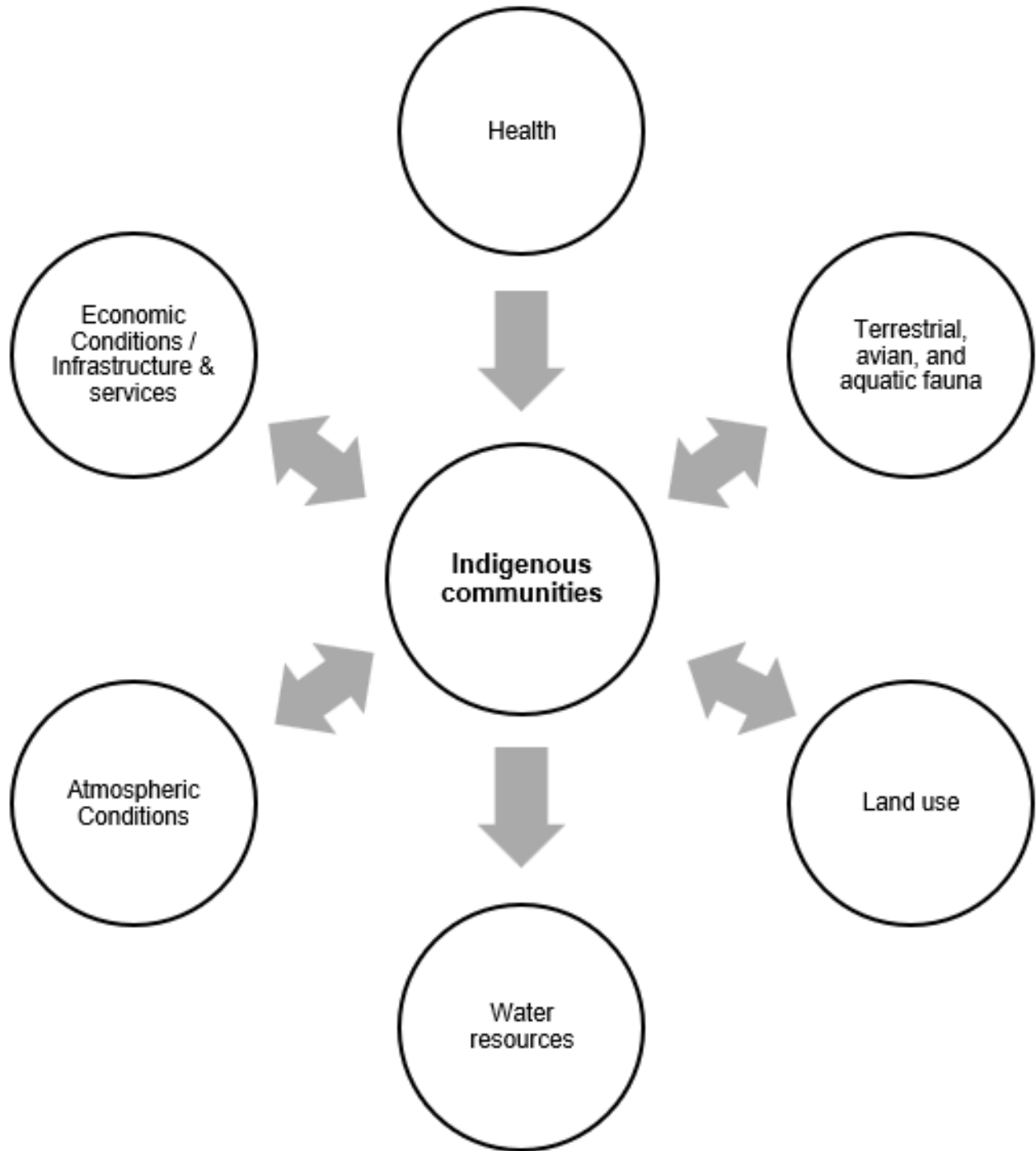


Figure 29.8 Interconnectivity between Indigenous Communities and other Valued Components

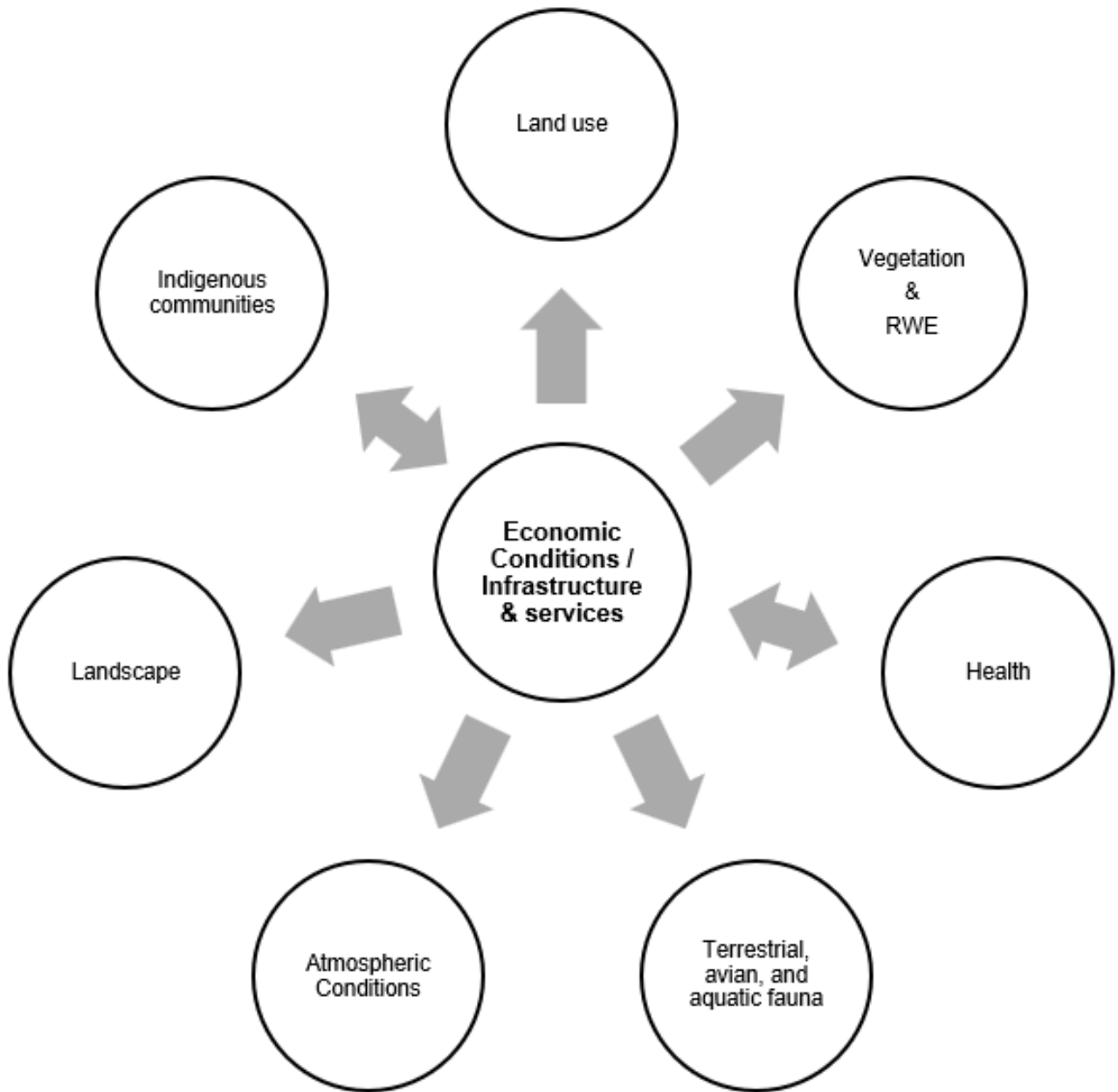


Figure 29.1 Interconnectivity between Economic Conditions / Infrastructure and Services and other Valued Components

29.3.1 Discussion of the interdependence and interconnectedness of components and their resilience to change

The interdependence and interconnectedness between VCs show that impacts, whether positive or adverse, are not limited to the component directly affected. Some components of the environment may be more resilient to predicted impacts, while others, less resilient, could suffer greater indirect impacts. It is therefore essential to take these dynamics into account for a complete assessment. The IAAC defines resilience as follows:

"The ability or inability of natural systems to recover from disturbance and tolerate or adapt to change." (IAAC,2021)

This concept is particularly important for assessing the potential impacts of the Troilus mining project, as it allows us to draw on indigenous knowledge, lived experience and current observations. This facilitates a better understanding of the impact on the various components during previous operations, as well as their capacity to adapt, from the construction phase through to the post-closure monitoring period.

29.4 Principle 2: Consideration of the well-being of current and future generations

When assessing sustainability, it is essential to take into account the well-being of current and future generations. However, assessing the well-being of communities over time poses challenges, as it cannot be fully quantified scientifically. Indeed, well-being can vary considerably from one group to another, as well as between individuals, due to cultural, economic, social or personal differences.

To assess the well-being of the communities affected by a project, it is crucial to define what is considered essential to their quality of life, taking into account their specific values, priorities and contexts. This ensures that the assessment accurately reflects their realities and expectations.

IAAC provides several determining factors to help developers identify and evaluate the elements that contribute to community well-being. These factors may include, but are not limited to:

- Public health and safety;
- Environmental quality (air, water, soil);
- Access to essential services (health, education, infrastructure);
- Social cohesion and sense of belonging;
- Economic security and job stability;
- Preservation of cultural and natural heritage;
- Community participation and consultation in the decision-making process.

By integrating these factors into their approach, the promotor can better understand and measure the potential impacts of their projects on community well-being, while respecting the diversity of needs and perceptions of each group.

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From the point of view of land users, land use and the protection of the environment and natural resources are essential to their well-being and that of future generations. Some communities that are not directly involved in the sector concerned share this view, while being able to attach greater importance to the training of future generations and community development. Thus, the impact of the project on the well-being of present and future generations may vary according to the communities consulted.

Families affected by the historic project, interviewed prior to the signing of the Troilus agreement, expressed their main concerns:

- Preservation of the environment and their ability to practice traditional activities;
- priority employment for family members at the mine.

These two points reflect the key issues for the well-being of present and future generations, namely financial self-sufficiency and environmental conservation, as they emerged during the original project consultations.

One land user expressed that his father had had the following vision:

"Prospectors explored the area for over 30 years. His father and brothers were employed as line cutters. "My grandfather had a vision that something would come from this mountain. He didn't see what it was, but he saw that there would be opportunities for the younger generations." (Roquet and Penn (2009, p.20)

29.5 Principle 3: Consideration of the project's positive impacts and the reduction of its adverse impacts

According to the guidance document *Assessing a Project's Contribution to Sustainability* (IAAC, 2021), the proponent should ask the following questions when applying Principle 3:

- Are other mitigation measures required to mitigate impacts within federal jurisdiction?
- Have positive impacts been identified?
- Can positive impacts be maximized?
- Does the pattern of impacts (i.e. positive or adverse) vary between groups and sub-groups?
- Do some benefit while others don't?
- Are there strengths and vulnerabilities in communities at risk of being affected that could influence impacts?
- Do the impacts cause regional inequities?
- Do short-term benefits lead to further disadvantages for future generations?

To better understand the potential impacts of the project, the 2009 Troilus implementation case study was used. The main objectives of this study were to:

- Learn from the past;



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- Strengthen relations with communities affected by mining operations.

The study highlighted the benefits of the historic project, while identifying more precisely its adverse impacts, to propose measures to eliminate or at least mitigate the impacts of the proposed project.

The following extracts are taken from this case study by Roquet and Penn (2009), entitled *Implementing the Troilus agreement: a joint study of Cree employment and service contracts in the mining industry*.

These points are based on 74 individual interviews conducted with the following groups:

- 40 interviews with former (23) and current (1996-2020) workers, 17 Cree mine workers;
- 11 interviews with non-native workers currently (2009) employed at the mine;
- 7 interviews with former or current (2009) Troilus management representatives;
- 7 interviews with former or current (2009) representatives of the Cree Nation of Mistissini;
- 4 interviews with former or current (2009) Cree employment coordinators;
- 5 interviews with representatives of former or current (2009) Cree, non-Cree and non-indigenous service companies.

These findings are complemented by comments gathered during consultations for the proposed new project.

29.5.1 Description of anticipated/experienced positive impacts - Indigenous and non-Indigenous communities

Tables 29.3 and 29.4 present the positive and adverse impacts observed during the previous operation, as well as those anticipated by the new project, as expressed by members of the Indigenous and non-Indigenous communities. This portrait is not exhaustive, and the reader is invited to consult Chapter 4 for a complete list of comments gathered during Troilus' consultation activities. In addition, a summary of how this information was integrated into the assessment of each VC is presented in the corresponding chapters.

The concerns have been grouped into three main categories covering all the VCs identified in Table 29.1: 1) Environment, 2) Economic conditions, and 3) Socio-health conditions. A brief description of each category is given below:

- **Environmental conditions:** Environmental conditions refer to the elements and factors present in an ecosystem or specific location that influence the life and functioning of organisms. They include components such as fauna, flora, air and water quality, as well as soil composition;
- **Economic conditions:** Economic conditions refer to all the factors that influence the financial health of a country or region, such as employment levels, price stability and household purchasing power. They also reflect the vitality of the labor market, the capacity of companies to produce and invest, and the confidence of consumers and investors. These conditions determine the ease or difficulty with which an economy can grow, create employment opportunities, and maintain an acceptable standard of living for its citizens;

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- Social and health conditions:** Social and health conditions play a crucial role in the overall health of populations, being influenced by factors such as income levels, education, access to healthcare, and housing conditions. A favorable socio-economic environment favors better prevention, equitable access to healthcare services and improved quality of life, while social inequalities can lead to health disparities, increasing vulnerability to disease and reducing life expectancy. Thus, improving social and health conditions requires an integrated approach, combining social, economic and health policies to reduce inequalities and promote sustainable well-being for all.

Table 29.2 Summary of adverse and positive impacts expressed by members of the Cree communities of Oujé-Bougoumou and Mistissini

Element	Adverse impacts	Positive impacts
Environment	<p>Most of the Troilus mine's impacts occurred on trapline M34, where the mine is located. The late tallyman's camp had to be moved three times, and its current location is still a source of dissatisfaction for family members. Family members say they are affected by dust from the ore stockpile and odors from the landfill. They are also concerned about their safety, as their camp is located just over a kilometer from the Orca explosives plant.</p> <p>The other traplines were mainly affected by the presence of the Troilus access road and the noise associated with mining operations. According to family members at trapline M40, mine noise can be heard within a 20-kilometre radius and has an impact on the animal population. There are fewer moose and caribou on their trapline. Family members of trapline M39A have also observed that there are fewer moose in the area, but they believe this may be mainly related to ongoing forestry activities on their trapline. It may also be related to increased hunting pressure on the moose population resulting from logging due to increased accessibility of the territory.</p> <p>Overall, affected families are concerned about the environmental impacts of the mine, and in particular about wastewater treatment and the impact of the mine on water bodies in the vicinity of the mine. They have also observed large quantities of dust generated by mining activities and wonder whether this could have an impact on the environment.</p>	<p>According to several users, the reclamation of the mine site has been exemplary for most of the work.</p> <p>According to a land user who worked on the former operation as well as the reclamation of the mine site, many lessons were learned during both the operation and reclamation phases, enabling us to better identify potential impacts and address them at source.</p>
Economic conditions	<p>Contract opportunities arising from the Troilus mine tended to go to the Cree Nation of Mistissini and their companies; small businesses tended to be neglected. Very little information was passed on to private companies and Indigenous communities. One respondent felt that the tendering process should be more open and transparent, and that small businesses should be able to participate.</p>	<p>The long-term employment opportunities offered by Troilus have generated a number of economic benefits for the Mistissini community. As a number of current and former Cree mine workers have stated, one of the main economic benefits of their employment at Troilus was its long-term nature, which gave them a sense of security and enabled them to plan and</p>

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Element	Adverse impacts	Positive impacts
		<p>obtain loans for major purchases, such as building a private home or purchasing vehicles.</p> <p>Many Mistissini community representatives stated that the Troilus mine opened at a time when the community's general economic situation was stagnant and employment opportunities were limited.</p> <p>Of the 40 current and former Cree workers interviewed for the study, 14 were members of affected families, and most felt that Inmet had met its obligations in terms of priority employment for members of affected families.</p> <p>Many current and former Cree workers at Troilus were convinced that their work experience at the mine would have a positive impact on their chances of finding employment. This was confirmed by a former Cree employment coordinator who now works for Cree Human Resources Development (CHRD) and has been observing the evolution of the situation. Troilus workers with experience at the Troilus mine were well regarded by employers, including non-indigenous employers.</p> <p>Many young Cree workers used Troilus as a springboard in their careers. According to the head of the Regional Youth Council, some young Cree workers are still willing to start at the bottom and work their way up from there. Many are now interested in setting up their own businesses.</p>
Health and social conditions	A negative aspect of the mine, linked to the increase in individual income, is the rise in drug addiction. This impact is common to all projects that increase income levels. On the whole, Troilus has brought more good than harm.	<p>Representatives of community associations such as the council of elders, the women's association and the Regional Youth Council met during the study had difficulty identifying the impact Troilus may have had on community life. The mine site is located far from the community, and Troilus' information activities were rarely discussed within the community.</p> <p>According to several Mistissini representatives, the fact that many Cree workers had acquired valuable skills and work experience, and that they were proud of what they had accomplished at Troilus, represented an important social benefit for the community.</p> <p>In social terms, Troilus has had a major positive impact. People have gained valuable experience, and some have</p>

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Element	Adverse impacts	Positive impacts
		<p>chosen to move on, and Troilus has been a springboard for them.</p> <p>It would seem that there are fewer social or family problems caused by a mine like Troilus than by the construction of a hydroelectric power station like Eastmain 1.</p>

Table 29.4 Summary of adverse and positive impacts expressed by members of the Jamesian communities of Chapais and Chibougamau

Element	Adverse impact	Positive impact
Environment	<p>Stakeholders expressed concerns about noise and vibrations caused by transportation. Cracks in house foundations have been caused by vibrations from existing traffic.</p> <p>Stakeholders expressed concerns about dust from the mine and the addition of dust by haulage. They suggested using a bypass route to avoid towns and taking measures to reduce emissions, such as road cleaning.</p>	<p>An exemplary post-closure restoration site. Public opinion remains favorable.</p>
Economic conditions	<p>The economic benefits of other mining projects are limited for the communities of Chapais and Chibougamau. Once social acceptability has been achieved, some mining companies have stopped considering the concerns of their stakeholders, and offices outside the region do not favor local businesses. There is a desire for the situation to improve thanks to the local presence of people with decision-making powers, including the mining manager, within the company. Their presence in the community is an essential condition for forging strong ties with local businesses.</p> <p>When the previous mine opened, some local businesses took advantage of the opportunity to raise their prices. We hope this will not happen again, so that they remain competitive for the current project.</p>	<p>The community investments made by Troilus to date are higher than those of some mines currently in operation.</p>
Social and health conditions	<p>Risk of increased homelessness due to rising housing costs.</p> <p>Discrimination against new arrivals (immigrants) in communities.</p>	<p>Families accompanying mining workers will be able to take jobs in other fields and contribute to the vitality of communities, including health care.</p> <p>The arrival of new citizens is perceived as beneficial for the community, with positive spin-offs and few adverse impacts.</p>

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29.5.2 Consideration of Recommendations

The recommendations made during Troilus' mobilization activities are an essential component of the proposed mitigation measures. They reflect the communities' expectations of how the project should proceed, to ensure an optimal contribution to local sustainability.

Tables 29.5 and 29.6 do not constitute an exhaustive list but provide an overview of the main issues and how Troilus plans to address them to minimize adverse impacts and maximize positive ones.

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Table 29.5 Oujé-Bougoumou and Mistissini Cree communities' recommendations and proposed mitigation measures

Component	Recommendation	Proposed mitigation measure
Environment	Reproduce the natural flow of Bibou Creek.	Bibou Creek will be designed to replicate the natural flow of certain segments, such as pools, meanders, waterfalls, etc.
	Design of Bibou Creek to promote iron dissolution (levels, oxygenation).	Measures will be put in place to promote water oxygenation in Bibou Creek wherever possible. Land users will continue to be involved in the design of the proposed Bibou Creek bypass.
	Ensure fish passage when designing the Bibou Creek diversion.	The entire length of Bibou Creek has been designed to allow for fish passage.
	Provide measures to reduce dust emissions from the ore stockpile and tailings storage facility (TSF).	A number of mitigation measures are planned to reduce the impact of dust emissions from all sources: installation of a dome covering the ore pile Installation of covered conveyors Application of dust suppressants on mine site roads Producing a thickened residue that is less susceptible to wind erosion Application of a dust management and monitoring program, including watering of dust-generating surfaces such as the TSF.
	Avoid the use of cyanides in the process.	No use of cyanides is planned for the proposed project.
	Continue water management workshops.	Troilus will continue to conduct workshops with land users to ensure they are included in the project design.
	Provide passageways on the site for the movement of large wildlife during closure.	This aspect will be incorporated into the project closure plan.
	Restore the site with native vegetation attractive to moose and other wildlife.	This aspect will be incorporated into the project closure plan.
Economic conditions	Prioritize local hiring;	Prioritizing the hiring of local personnel will be a condition to be met by the proponent.
	Impact of work shifts on Cree cultural activities.	Troilus will offer shifts that allow Cree employees to practice their traditional activities. According to comments received, Cree workers would prefer 14/14 schedules.
	In the hiring process, there is reportedly preferential treatment or discrimination against applicants or potential workers based on gender, race or background.	A Cree employment coordinator, the Cree liaison officer in partnership with the Human Resources department, will ensure that no discrimination takes place on the basis of race, gender or any other factor. The monitoring committee set up with the Cree communities will assess the effectiveness of the measures put in place and ensure that they are effective,

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Component	Recommendation	Proposed mitigation measure
		and if necessary propose additional measures.
	Reduce impacts on recreational tourism activities in Réserve faunique Assinica (e.g. light pollution -vs future dark sky reserve status).	Troilus actively collaborates and communicates its activities with the Nibiischii Corporation, which manages the Assinica reserve, and will continue this collaboration and communication to ensure that the mine's impact on tourist activities in the area is minimal.
Social and health conditions	Some Cree workers felt it was regrettable that members of their community were not aware of what was happening at Troilus. Some workers felt that they had accomplished a great deal at Troilus and would like their community to be aware of their achievements.	As part of the information sessions held in Cree communities, Troilus will communicate the achievements of Cree workers, such as the completion of projects, promotions and training.
	Some groups would like to receive more information and be more involved in mining operations, as was the case at the start of the mine. They thought it would be a good idea to hold an annual meeting with mine management. They would like to know more about the environmental aspects of the mine operation and how they are managed.	Information sessions open to the general public will be offered, and everyone will be invited to attend. In addition, some seats on the monitoring committee may be filled by individuals wishing to be more involved in the environmental and social aspects of the project.
	Addressing the racism experience of past operations.	This aspect will be monitored by the monitoring committee set up with the Cree communities to ensure that the mitigation measures implemented by Troilus are effective, failing which additional measures will be proposed.
	Difficulty of long work rotations for family life, particularly for spouses.	This aspect will be monitored by the follow-up committee set up with the Cree communities to ensure that the mitigation measures implemented by Troilus are effective, failing which additional measures will be proposed.

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Table 29.6 Recommendations of the Jamesian communities of Chapais and Chibougamau and proposed mitigation measures

Components	Recommendation	Proposed mitigation measure
Environment	Consider a waste management partnership (garbage, recycling, composting) to take advantage of municipal capacities and contribute to their operating costs.	Troilus plans to use the remaining capacity of its in-trench landfill and then send residual materials generated by the project to the Chibougamau landfill. This will also be evaluated for composting waste.
	Consider the use of resources from local communities as part of a circular economy (e.g. ash from the cogeneration plant for site revegetation).	Troilus collaborated with local communities to verify the possibilities of using by-products generated by local businesses, such as the use of wood waste for restoration practices.
	Using a bypass route to avoid towns and taking measures to reduce emissions, such as road cleaning	Use transportation routes that bypass city centers. The impacts of transportation will be one of the points monitored by the monitoring committee to be set up.
Economic conditions	Encourage out-of-town workers to relocate to surrounding communities and ensure that existing residents have equal access to project incentives.	Troilus will encourage the relocation of its workers to the surrounding communities by applying the following measures: Work schedules that favor local workers such as 7/7, 4/3. The project does not involve fly in/fly out (FIFO) directly to the site. Benefits will be offered to workers who settle in the communities.
	To prevent the arrival of new workers from increasing the cost of housing.	Although the project is expected to result in an increase in the number of residents in the surrounding communities, Troilus is working with the municipalities concerned to ensure that the flow of new arrivals remains within the reception capacity. A monitoring committee will be set up to ensure the effectiveness of the measures implemented by Troilus; if necessary, further action will be taken.
	Ensure that the project does not impact tourism activities in the Assinica reserve.	Troilus actively collaborates and communicates its activities with the Nibiischii Corporation, which manages the Assinica reserve, and will continue this collaboration and communication to ensure that the mine's impacts on tourism activities in the area are minimal.
	Ensure spin-offs in surrounding communities, including contracts and local procurement.	Since acquiring the Troilus site in 2018, Troilus has averaged 60% of all spending in the surrounding communities. Ongoing benefits will be ensured with the application of a local sourcing policy, and economic

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Components	Recommendation	Proposed mitigation measure
		benefits will be communicated annually to the communities concerned to ensure they persist over time.
	Preparing an annual list of local suppliers with a breakdown (%) of expenditure could be beneficial to all. Information on upcoming contracts would also be welcome, to help local companies bid on tenders.	The monitoring committee to be set up will ensure that the measures Troilus has put in place to increase its spending in the surrounding communities are effectively communicated. Troilus will continue to work actively with its local suppliers.
	Use a shuttle service for employees.	Troilus offers a shuttle service that will establish pick-up points in local communities to the mine site.
	Support and promote local and regional educational communities.	Troilus actively collaborates with educational organizations in the region, and agreements are planned with the Centre de formation professionnelle de la Baie-James (CFP Baie-James) and with Apatsiwiin skills development (ASD) to set up training cohorts.
Social and health conditions	Mining companies should start thinking about international recruitment. It would be beneficial for immigrants to come directly to the region to develop their social circle, rather than transiting through Montreal or Quebec City, which often causes them to return to the major centers after a few years. The African community is increasingly present in the region.	All employees hired by Troilus will undergo training to raise awareness of cultural differences and will offer support so that workers can integrate the host environment effectively. This will be monitored by a follow-up committee.
	The work schedule that will be determined will influence the workers' interest in settling in the region.	Troilus proposes work schedules that will encourage workers to settle in the region, such as 7/7 and 4/3 for executives.
	Ensuring the availability of housing for new workers.	Troilus will continue to work with the municipalities of Chibougamau and Chapais to ensure that the arrival of new workers does not have an adverse impact on existing residents. The follow-up committee that will be set up will ensure that the measures put in place by Troilus are effective, failing which additional measures will be applied.
	Offer working conditions that encourage civic engagement and volunteer involvement in communities.	Troilus will communicate to its employees through a newsletter about volunteer activities and opportunities in the communities. Troilus employees will be encouraged to get involved in community activities as volunteers.
	Set up a monitoring committee to check the adequacy of measures	Troilus undertakes to set up a follow-up committee with the community.

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Components	Recommendation	Proposed mitigation measure
	for women, non-binary people and other minority groups.	
	Offer working conditions that accommodate women, seniors, part-time work, health limitations, etc.	Troilus proposes to set up a fixed office in Chibougamau where certain positions that do not require a permanent presence on site can be filled by people such as single parents, seniors, people with disabilities and people seeking part-time employment.
	Drug and alcohol prevention	A drug and alcohol awareness and prevention program will be mandatory for all employees hired by Troilus. An assistance program for employees with addiction problems will be offered. The mine site is and will remain a zero-tolerance site where no drugs or alcohol will be allowed. The follow-up committee will monitor the effectiveness of the measures applied and propose additional measures if necessary.
	Avoiding excessive pressure on social services	Troilus will work with health and social services to ensure that the influx of new workers does not exceed the capacity of existing services. Troilus plans to invest in the communities affected by the project to ensure that social services are sufficiently equipped to continue offering quality services. The monitoring committee to be set up will ensure that the measures put in place by Troilus are effective, failing which additional measures will be applied.
	Avoiding excessive pressure on social services	Troilus will provide a nurse on site, available 24 hours a day, with access to a doctor dedicated to the project, to reduce pressure on local health services in the affected communities. A monitoring committee will be set up to assess the effectiveness of the measures put in place; if these prove insufficient, additional actions will be deployed.

29.6 Principle 4 - Application of the precautionary principle, taking into account uncertainty and the risk of irreversible damage

The proposed new Troilus mining project benefits from a history of previous operations at the Troilus mine site, which considerably reduces uncertainties about anticipated adverse impacts and the

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effectiveness of proposed mitigation measures. The new project can rely on the following six factors to reduce uncertainty in relation to the proposed mitigation measures, as well as to reduce or even eliminate certain potential adverse impacts, while maximizing the positive impacts of the project through lessons learned.

Specifically, Troilus relies on the following elements to ensure that the project contributes to the sustainability of the host environment:

- **Previous operational experience:** The former Troilus mine has been in operation for several years, providing in-depth knowledge of the site, its geological characteristics, environmental impacts and positive spin-offs. This experience provides a solid basis for anticipating and better managing mining-related risks. This experience also enables the team to apply best practices that have proven effective, and to improve and address those that have not;
- **Past environmental monitoring data:** Past operations have generated a significant amount of environmental data. This data was used to conduct the ESIA for the current project, facilitating the identification and assessment of potential adverse impacts;
- **Existing mitigation measures:** Lessons learned from historical operations have enabled the development and application of proven mitigation measures, such as water management, site restoration and maximization of economic benefits, reducing uncertainty about the project's ability to limit its adverse impacts and maximize its positive impacts;
- **Monitoring the effectiveness of remediation practices:** Knowledge of the remediation practices applied during previous closures enables us to optimize remediation strategies, thereby minimizing long-term environmental risks;
- **Experience of the operating team and surrounding communities:** Thanks to past experience, rigorous protocols have been put in place to quickly detect any unexpected adverse impacts, enabling operations to be adapted to reduce them. The surrounding communities have lived through the impacts of the first operation and are familiar with mining. They know what to expect and will be able to take advantage of the economic and social opportunities offered by the mining project. By actively participating in community initiatives and collaborating with mining operators, they will be able to benefit from training, employment and local development projects, thereby promoting sustainable growth and an improved living environment for all;
- **Community and regulatory engagement:** The lessons of the past have also enabled us to establish a more effective dialogue with local communities and authorities, reinforcing regulatory compliance and transparency, which helps to reduce social and regulatory uncertainty.

In summary, the historical operation of the Troilus mine has provided invaluable knowledge to develop strategies to minimize and manage the potential adverse impacts of the new project, which overall reduces the uncertainties associated with its potential environmental and social impacts.

29.7 Canada's ability to meet its environmental obligations and climate change commitments

In accordance with Section 13 of the Guidelines and Section 22(1)(i) of the IAA, this section describes the mechanisms by which the project will support Canada's efforts to meet its domestic and international environmental obligations and climate change commitments.

The Troilus Mine project incorporates a holistic approach to environmental, social and climate planning, aligned with the objectives of Canada's Nature Strategy 2030 (Environment and Climate Change Canada [ECCC], 2024) and carbon neutrality targets to 2050. This approach is also based on the principles of sustainable development and responsible resource management, as described in the Sustainable Development Act (RLRQ, c. D-8.1.1).

The assessment of the project's impacts has made it possible to establish several measures for the protection and restoration of natural environments that will be put in place, including :

- Integrated planning of environmental and social components from the earliest stages of the project;
- Valuing and integrating Indigenous and scientific knowledge, particularly that provided by the communities of Oujé-Bougoumou and Mistissini, into ecological assessments and mitigation measures;
- A GBA+, to assess the differential impacts of the project on different social groups (chapters 22, 24 and 25 of the ESIA);
- The implementation of compensatory measures for wetland and water-related losses, presented in Chapter 26 of the ESIA, based on federal recovery strategies for species at risk;
- The implementation of ecological restoration activities at the end of the project's life, to help restore ecological connectivity and the resilience of disturbed ecosystems.

To meet Canada's climate commitments, the project aims to achieve carbon neutrality by 2050. Several concrete actions have been integrated to this end:

- Reducing greenhouse gas (GHG) emissions at source by optimizing processes, improving the energy efficiency of equipment and modernizing the machinery fleet;
- Partial electrification of infrastructures and use of low-carbon fuels;
- Rigorous monitoring of emissions throughout the project life cycle, including construction, operation, closure and post-closure phases;
- The offsetting of residual emissions through the purchase of certified carbon credits, allowing the project's residual footprint to be neutralized beyond 2050, while supporting national reduction efforts.

The project also takes into account the risks associated with climate change (extreme heat, heavy precipitation, fires) in the design of its infrastructure. Prospective climate scenarios (SSP2-4.5 and SSP5-8.5 from CMIP6) were used to guide adaptation measures, in accordance with *International Organization for Standardization* (ISO) standards ISO 14090 and 14091.

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29.8 References

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