LANDSCAPE DEVELOPMENT SUITABILITY (LDS) MAPS

CLIMATE CHANGE IS IMPACTING OUR COMMUNITIES

IT'S IMPORTANT TO UNDERSTAND THE CURRENT AND FUTURE RISKS TO OUR INFRASTRUCTURE

TO PLAN AND TO ADAPT!

AN LDS MAP IS A NEW TOOL THAT COMBINES A LOT OF EXISTING INFORMATION

- SATELLITE AND AIR IMAGERY
- RESEARCH DATA
- FIELD INVESTIGATIONS
- CLIMATE CHANGE PROJECTIONS
- HAZARD MAPS
- TRADITIONAL AND LOCAL KNOWLEDGE

COAST · PERMAFROST · RIVERS · TERRAIN AND ELEVATION · LAND MOVEMENT

LDS MAP SHOWS:

- ✓ IMPACTS OF CLIMATE CHANGE
- ✓ CHANGES TO LAND AND ENVIRONMENT
- ✓ PROPOSED AND EXISTING LAND USE AND DEVELOPMENT

COMMUNITY INPUT IS VITAL

THE PEOPLE KNOW THE LAND

COAST

RIVERS

PERMAFROST

LAND MOVEMENT

STRONG WINDS

EARTHQUAKES

WILDFIRES

HEAVY SNOW FALL

BEDROCK

PERMAFROST

Colours are used to show the susceptibility of the land to change.
This information helps to plan infrastructure for different susceptibility levels.

LOW SUSCEPTIBILITY

Low susceptibility land is the best location for critical infrastructure

MODERATE SUSCEPTIBILITY

HIGH SUSCEPTIBILITY

There may be options for upgrading the land to a lower susceptibility level

AN LDS MAP HAS MANY USES:

- IDENTIFY AT-RISK AREAS
- PLAN FUTURE LAND-USE AND DEVELOPMENT
- MANAGE CURRENT INFRASTRUCTURE
- PROVIDE INFORMATION TO PEOPLE LIVING IN THE COMMUNITY
- SUGGEST UPGRADES TO INCREASE THE DEVELOPMENT SUITABILITY OF AN AREA
- PLAN UPDATES ON EXISTING INFRASTRUCTURE

WITH CAREFUL COMMUNITY PLANNING, WE CAN AVOID OR REDUCE NEGATIVE IMPACTS OF CLIMATE CHANGE

MAKE SURE THE MAP IS EASILY ACCESSIBLE

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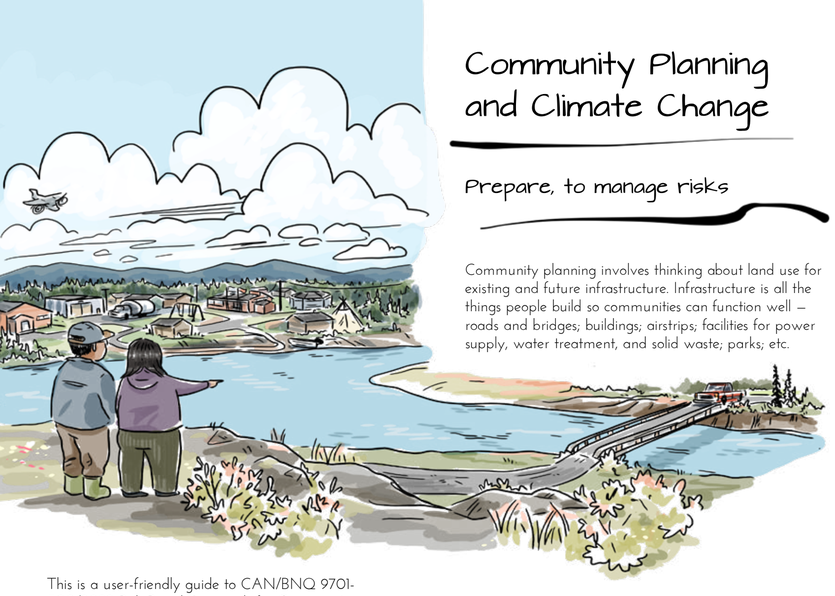

Community Planning and Climate Change

Prepare, to manage risks

Community planning involves thinking about land use for existing and future infrastructure. Infrastructure is all the things people build so communities can function well — roads and bridges; buildings; airstrips; facilities for power supply, water treatment, and solid waste; parks; etc.

This is a user-friendly guide to CAN/BNQ 9701-500/2022 Risk-Based Approach for Community Planning in Northern Regions.

This guide is intended for community planners, builders, developers, and decision makers. Community members may also find it useful to understand more about new construction in their community.

Learn about Landscape Development Suitability (LDS) maps and how to use them to reduce risk to community infrastructure from impacts of climate change.

Climate change has major impacts on northern lands. Warmer winters, longer summers, and changing rain and snow are causing unstable permafrost, unpredictable flooding, and other effects that can damage infrastructure.

We need to adapt — to adjust to current impacts and prepare for future risks from climate change. With careful community planning and with the help of tools such as LDS maps, we can avoid or reduce the negative impacts of climate change.

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Poster on the inside

2024

Landscape Development Suitability (LDS) Maps

A new tool for communities

An LDS map is a tool that communities can use when planning land use and infrastructure development. It shows what area is best suited for a given project.

The map will include information about terrain, ground and surface water, and various risk factors that may affect the landscape and anything built on it.

AN LDS MAP SHOWS:

* Current risks to infrastructure
* Impacts of climate change
* Proposed and existing land use and development

Communities need to know how and where climate change affects northern lands and infrastructure. We need to use this knowledge to plan new infrastructure and to manage existing infrastructure.

LDS - Combines Risks

The main hazards to look for

Lands at risk of **permafrost** thaw and related processes.

Areas that are at risk of **land movement**, such as landslides.

Coastal landscapes at risk from changing sea level, wave and ocean current action, shoreline erosion, storm surges, and sedimentation.

Lands near **rivers** that face risks such as flooding, ice-jams, river bank erosion, and sedimentation.

Other risk factors to consider for the LDS map include earthquakes, wildfires, increased snowfall, and strong winds.

Collect Information

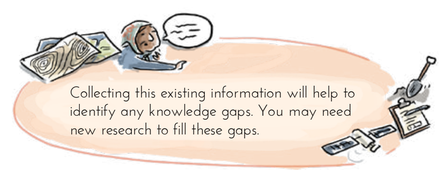
Consult many sources

An LDS map is based on many different sources of information. It is important to be thorough when gathering this information to come up with the best understanding of what lands are susceptible to the impacts of climate change, and how they are susceptible. Susceptibility means the likelihood that the lands will be negatively affected.

GATHER INFORMATION FROM:

* Existing hazard maps
* Research data sets
* Air and satellite imagery
* Field investigations
* Traditional and local knowledge

Use this information to evaluate what lands are susceptible, and in what ways.



Collecting this existing information will help to identify any knowledge gaps. You may need new research to fill these gaps.

Using the LDS Map

Plan infrastructure according to the most suitable areas

Once the LDS map exists, it will include all the relevant information about the land and any changes and risks to infrastructure. This information is used to show which areas of the community are susceptible to change.

USE THE MAP TO:

* Identify at-risk areas
* Plan future land use and development
* Manage current infrastructure
* Plan updates on existing infrastructure
* Suggest upgrades to increase the development suitability of an area

LDS maps should clearly show the susceptibility of different areas. A clear colour scheme,can help infrastructure planners find the best areas for development, and areas that may need upgrading.

Land Development Suitability

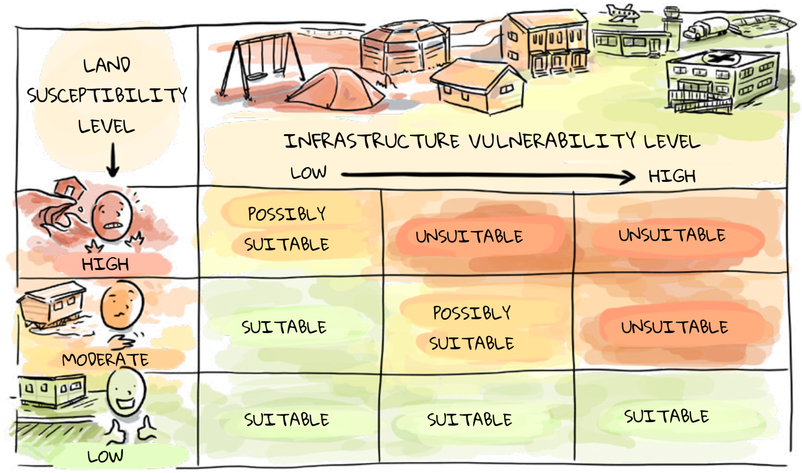
Consider the needs of different infrastructure

Different developments have different levels of vulnerability. Some require very stable ground, others can handle more changes or can be repaired more easily.

All types of infrastructure can be built on low susceptibility lands.

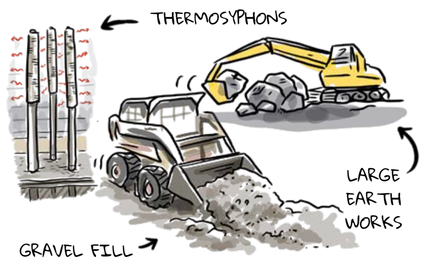
Only low or medium vulnerability infrastructure should be considered for moderately susceptible lands.

Highly susceptible lands should be a last resort for the construction of new infrastructure.



Land Susceptibility

Different for each community



The finished LDS map will tell you how susceptible different areas of your community are to the impacts of climate change.

Each community will have its own definition of high, moderate, and low susceptibility land, depending on what land is available. Land that one community considers a moderate susceptibility might be considered low susceptibility by another community.

It may be possible to upgrade high and moderate susceptibility lands to make them less susceptible to change, and more suitable for building. Upgrading will depend on the land and the infrastructure, but could include adding a gravel fill, installing thermosyphons, or doing significant earthworks.

Make Maps Available to the Community

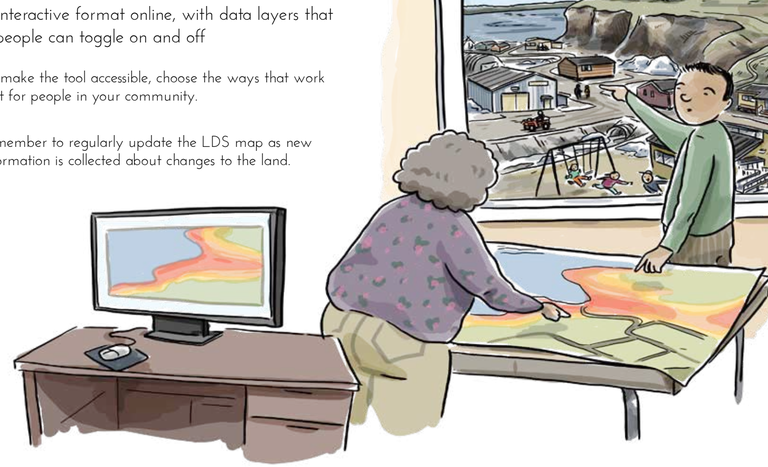
A useful tool is easy to access

An LDS map is most useful if community members can easily find it and use it. The final LDS map can be presented in many different ways.

* Physical map in a community space
* PDF file online
* Interactive format online, with data layers that people can toggle on and off

To make the tool accessible, choose the ways that work best for people in your community.

Remember to regularly update the LDS map as new information is collected about changes to the land.



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