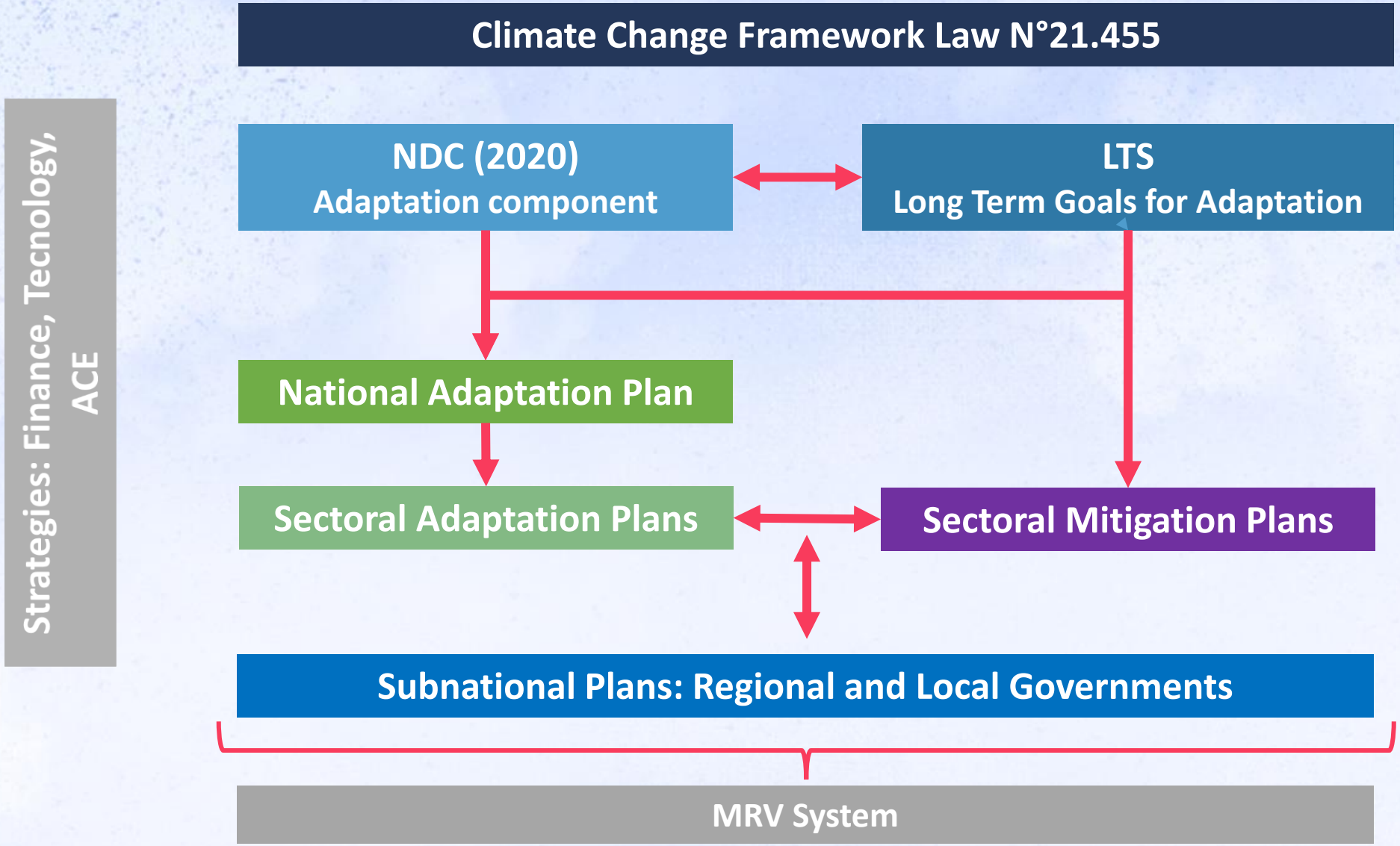
Measuring progress in implementing adaptation policies in CHILE

Ministry of Environment

National context on adaptation

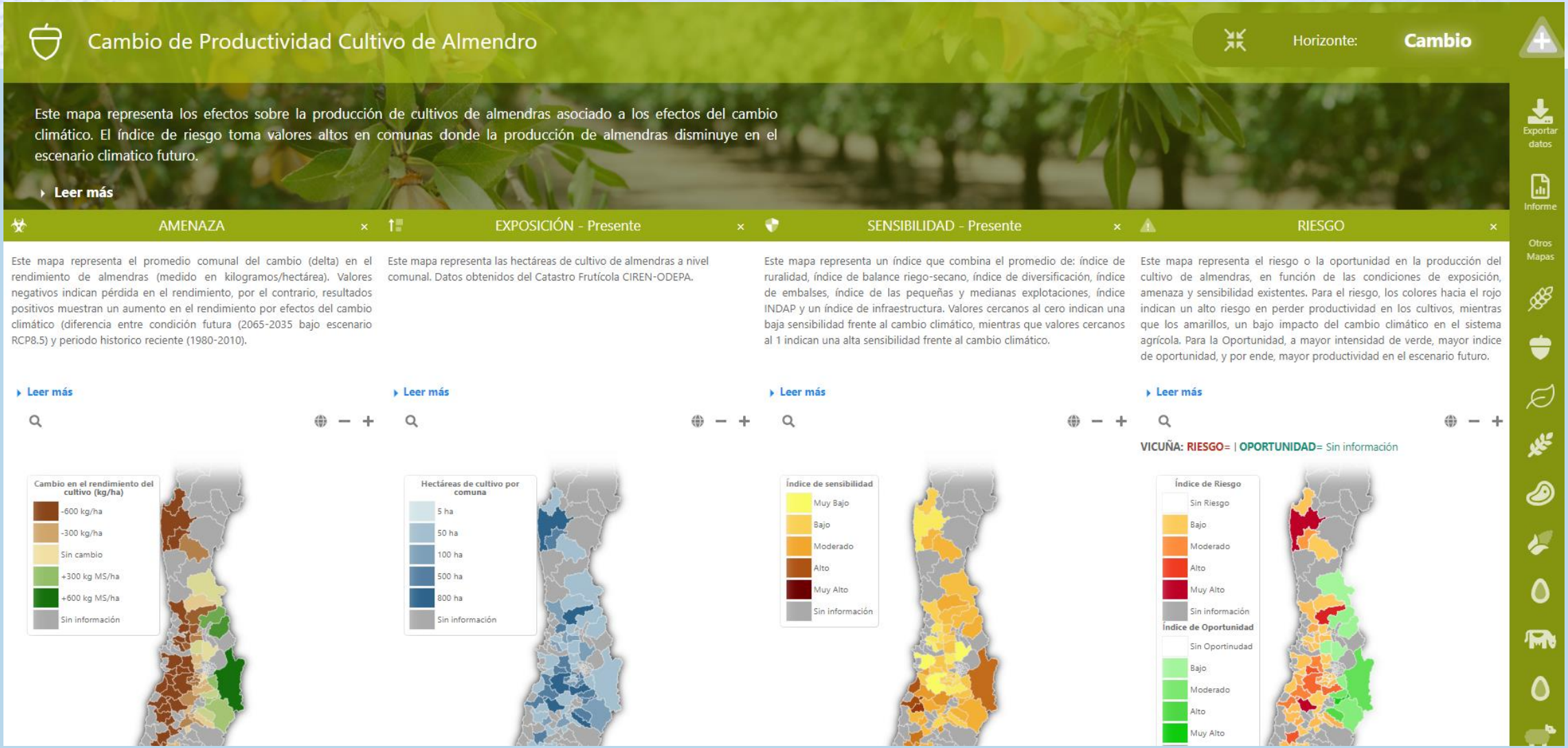


Adaptation Priority Sectors:
Agriculture and forestry; biodiversity; fisheries and aquaculture; health; infraestructura; cities; energy; tourism; water resources; mining; coastal areas; transport

CLIMATE RISK ATLAS: ARClim

https://arclim.mma.gob.cl/

Projections at local scale. Observed 1985-2010,
Future 2035-2065, RCP8.5.
52 Impact Chains, 11 sectors.



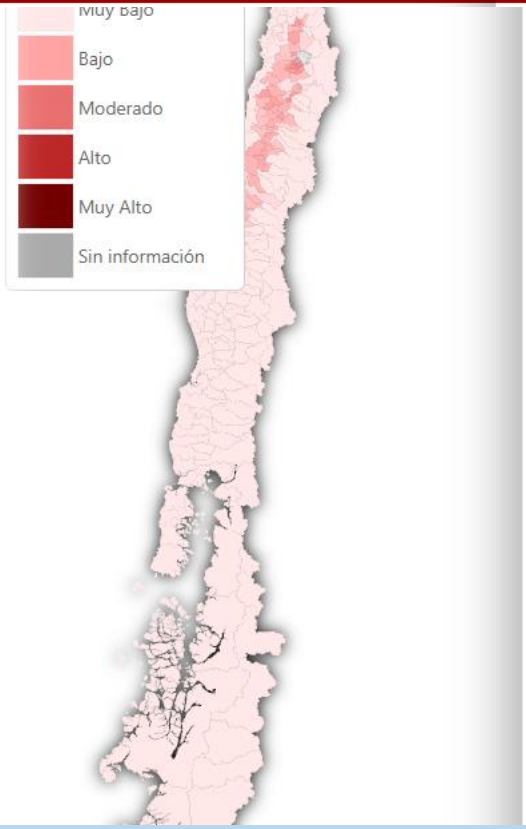
Incendios en Bosques Nativos

Horizonte: Histórico Futuro **Cambio**

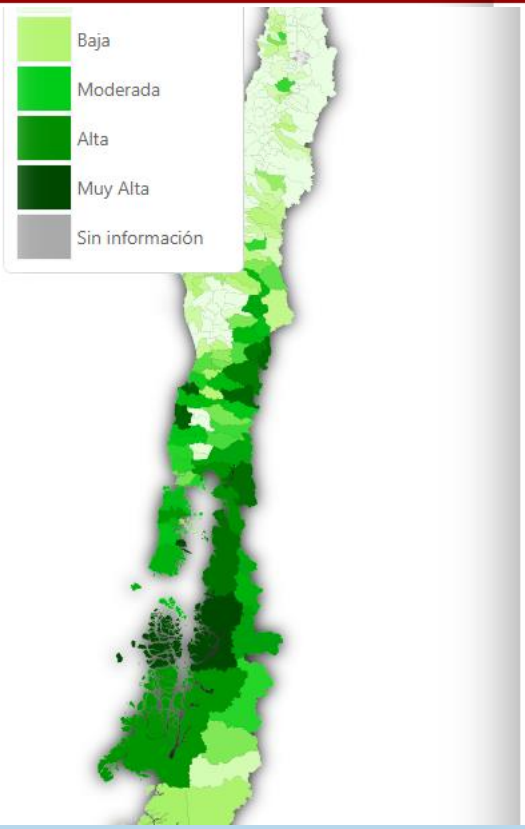
Los mapas representan la cadena de impacto y el riesgo a incendios en los bosques nativos a nivel comunal y cobertura nacional, para condiciones históricas y futuras junto a su cambio. Los incendios forestales ocurren con mayor frecuencia en el periodo estival y en particular en los periodos de más calor. El riesgo se calcula a partir de datos de: la cobertura de bosques nativos, la probabilidad de ocurrencia de incendios y las amenazas expresadas en las olas de calor.

Leer más

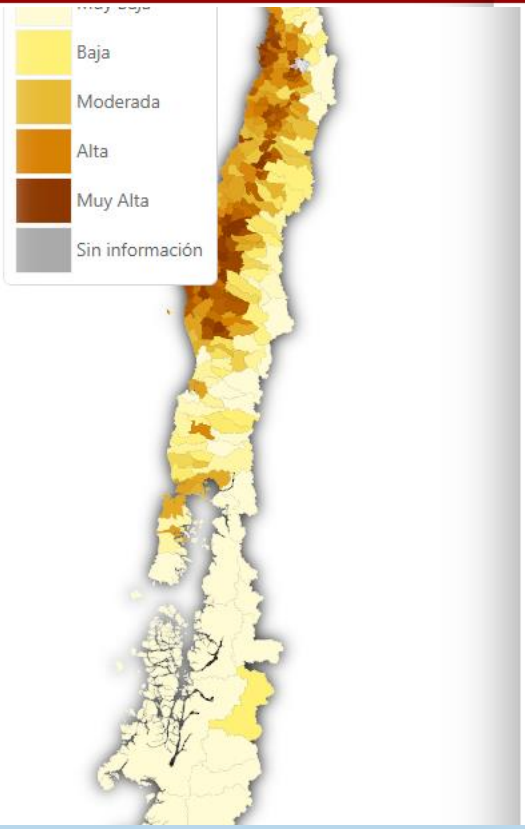
AMENAZA - Cambio



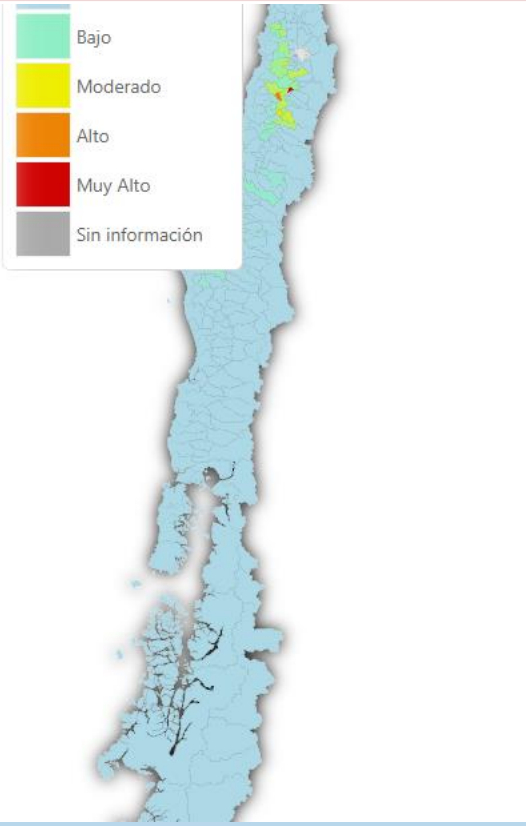
EXPOSICIÓN



SENSIBILIDAD



RIESGO - Cambio



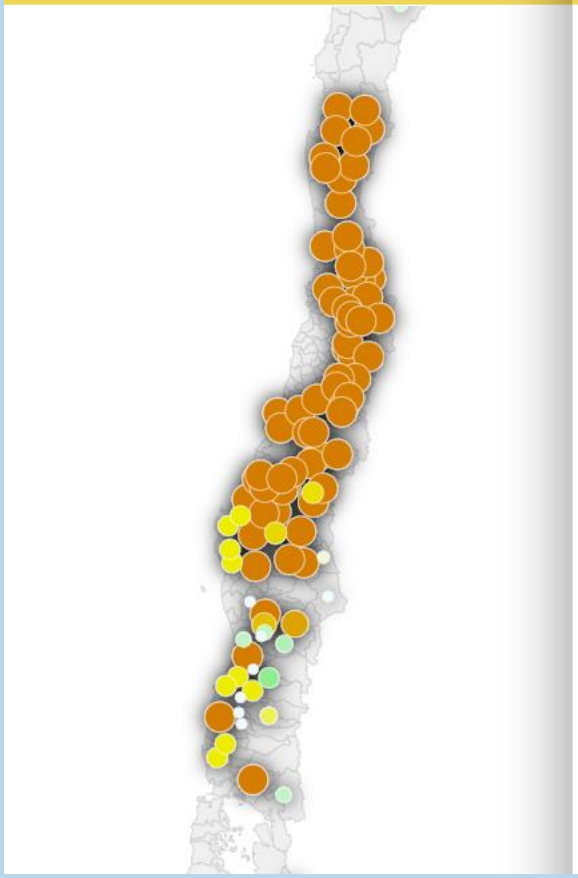
Sequías Hidrológicas

Horizonte: Histórico Futuro **Cambio**

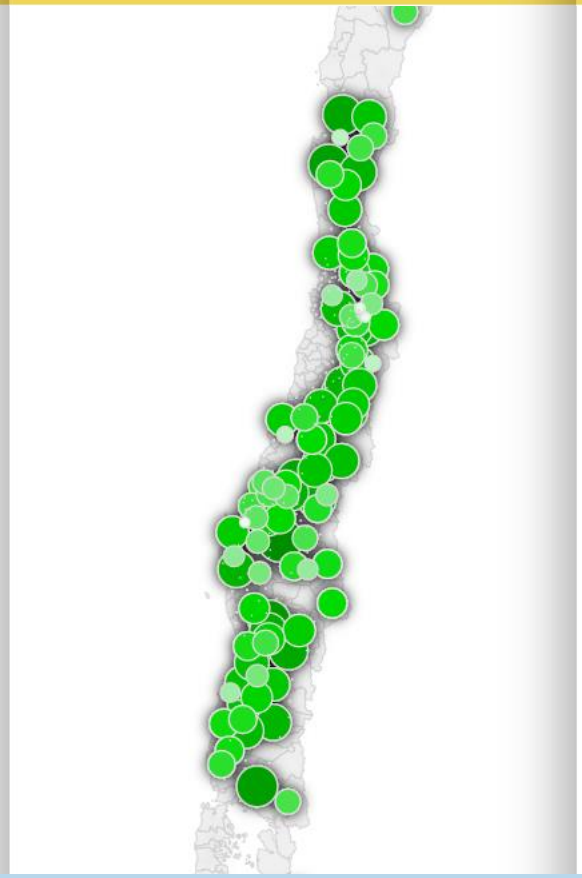
Estos mapas muestran los efectos adversos de sequías hidrológicas en distintas comunas del país, considerando puntos específicos a lo largo del principal cauce dentro de la comuna. La sequía hidrológica contempla un aumento de la frecuencia de los caudales bajos y la disminución en la magnitud de los caudales extremos bajos.

Leer más

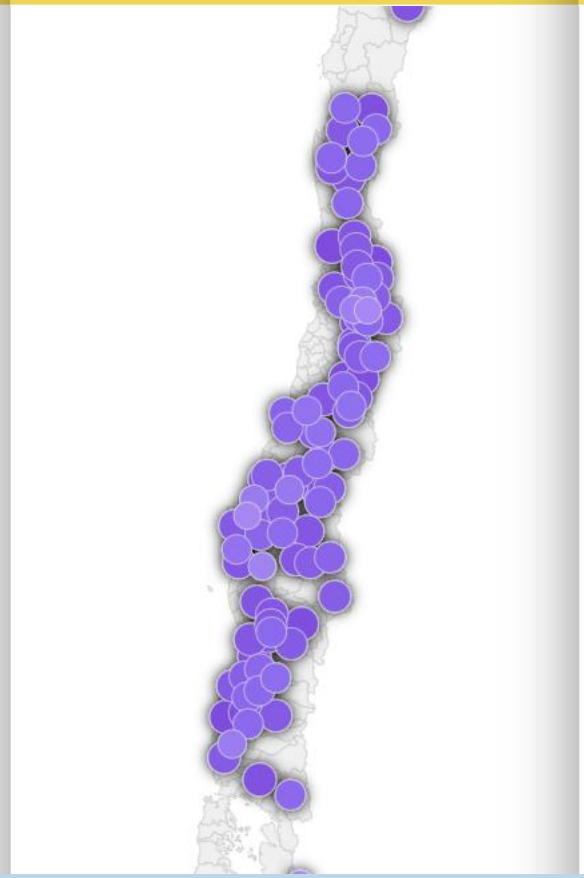
AMENAZA - Cambio



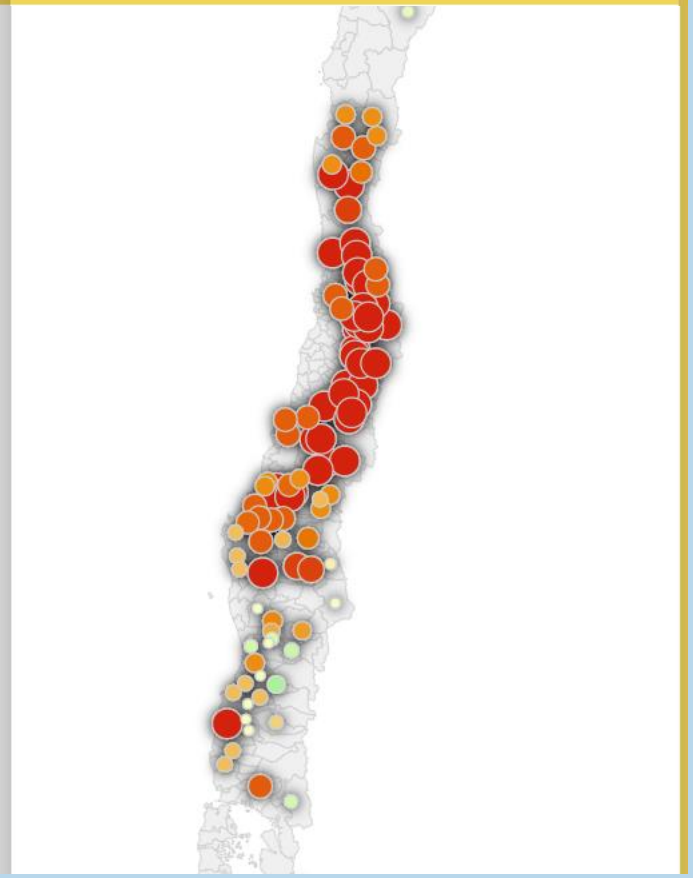
EXPOSICIÓN



SENSIBILIDAD

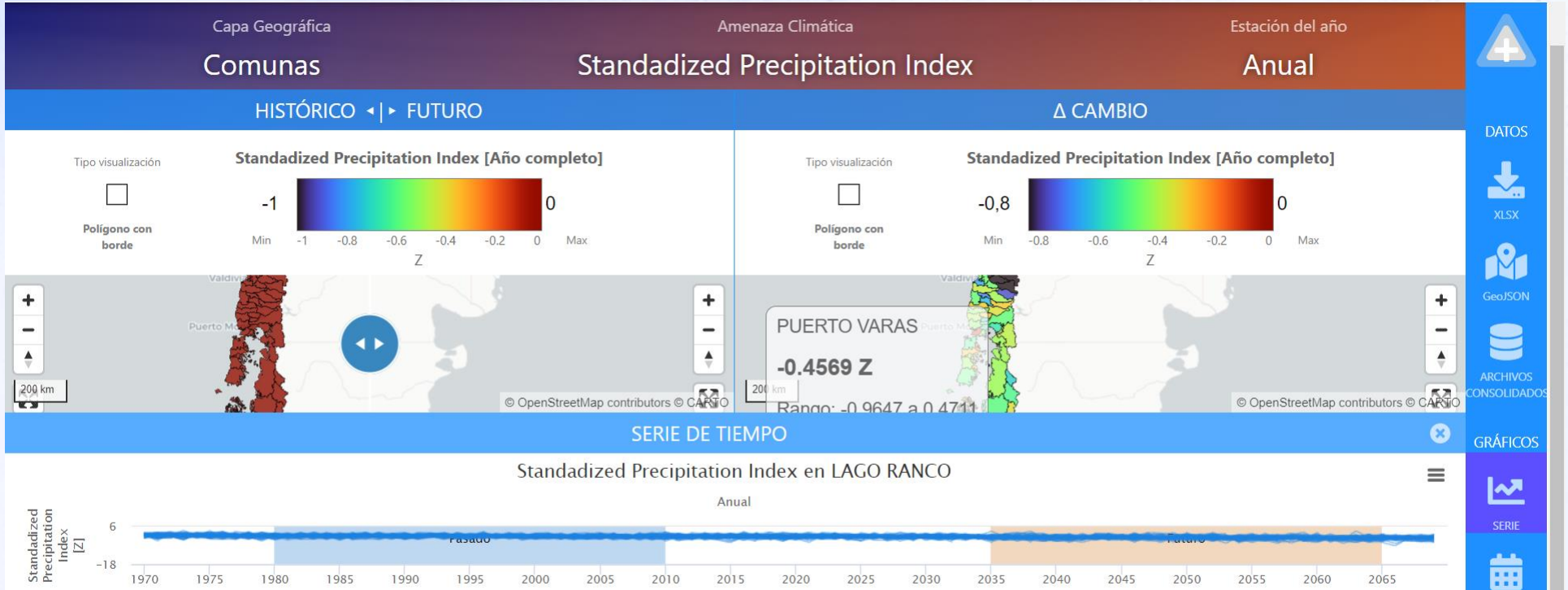


RIESGO - Cambio



CLIMATE database

- ✓ **Data used:** Maximum temperature, Average temperature, Heat waves, Fires, Winds, Humidity, Precipitation, Dryness, Frost days, Cold nights, Accumulated snow, Maximum snowfall, etc.
  - Daily data of 30 years high resolution (5x5 km), from 1980 to 2010.
  - Daily projections future period: 2035 to 2065.
- ✓ 25 high-resolution corrected **global climate models** for Chile (based on IPCC projections)



Science led and science base work

- ✓ **93 experts**.
- ✓ Permanent **coordination** with MMA, review with sectoral ministries and **training**.
- ✓ **12 TeraBytes of data** (3,000,000 photos or 6,000 hours of video or 78 million pages of documents)

ARClim is a project of the Ministry of the Environment of the Government of Chile supported by the Global Program for the Evaluation and Management of Risks for Adaptation to Climate Change (Loss and Damage) commissioned by the Federal Ministry of Economic Cooperation and Development (BMZ) and developed by the Climate and Resilience Research Center (CR2) and the Global Change Center (CCG-Universidad Católica de Chile) with the collaboration of various national and international institutions.

Indicators study for m&e of adaptation

- ✓ **11 sector indexes of climate risk**.
- ✓ 21 intersectoral vulnerability indicators.
- ✓ **Identify methodologies and required data for M&E of adaptation.**
- ✓ Define governance for data collection of indicators.
- ✓ **Roadmap with conceptual framework of indicators for M&E of adaptation.**

Global Change Center (CCG)

Chile, 2022

ONU programa para el medio ambiente 50 1972-2022

gef

AMBICIÓN CLIMÁTICA Y TRANSPARENCIA

UNEP DTU PARTNERSHIP

Indicators study for m&e of adaptation

- **IMPLEMENTATION INDICATORS: used to measure progress in the implementation of the policies and their measures.**

  Ex.: Annual budget for port protection works.

- **PROGRESS INDICATORS: impact of adaptation measures on reducing sensitivity or exposure or increasing adaptative capacity.**

  Ex.: Percentage of port area protected from storm surges.

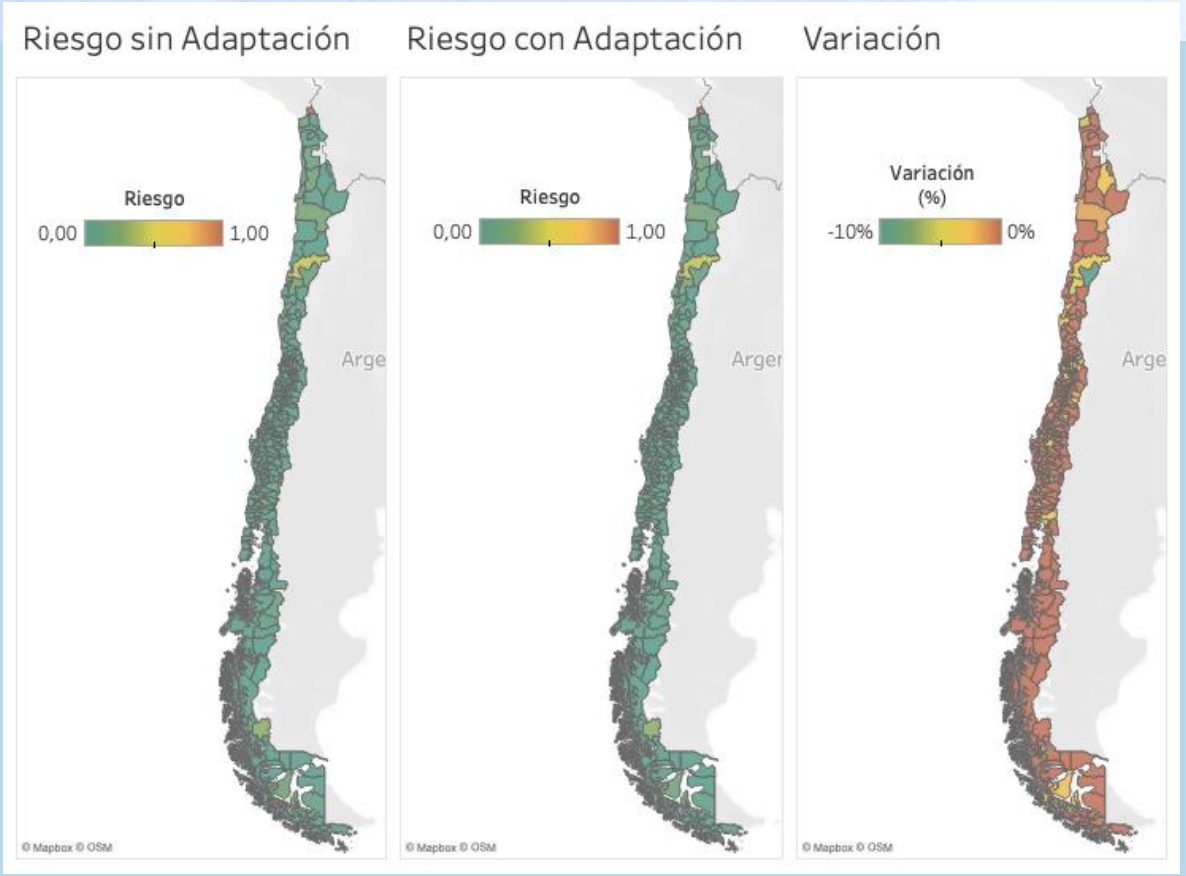
- **RESULT INDICATORS: do not necessarily refer to a specific adaptation measure, but instead indicate how climate risk changes as a result of the adaptation process.**

  Ex.: Changes in port downtime due to storm surge, compared to 2020 (days/year)

INDEX FOR HEALTH SECTOR: INCREASED MORBIDITY DUE TO INCREASED TEMPERATURES AND HEAT WAVES

$$R = \frac{\Delta cases}{\max(\Delta cases)} \cdot (1 - k \cdot AC)$$

- HAZZARD Change in the annual average daily maximum temperature 2035-2064, RCP8.5 scenario / 1980-2010 period
- EXPOSURE population projected 2050
- SENSITIVITY Historical incidence rate per 1,000 inhabitants, summer
- ADAPTATIVE CAPACITY full-time days of doctors, primary health, per 10,000 inhabitants
- RISK Morbidity due to heat
- FACTOR k: 0.1



Intersectoral indicators examples

Terrestrial and marine Ecosystems

- Area with implemented restoration plan, at regional level
- Marine protected area at national level

Basic resources Water and soil

- Water scarcity index
- Desertification, soil degradation and drought index

Society

- Food insecurity
- Urban green space

CLIMATE CHANGE FRAMEWORK LAW

- NAP, SECTORAL PLANS, SUB-NATIONAL PLANS
- MEANS OF IMPLEMENTATION
- CLIMATE ADAPTATION PLATFORM (ARClim +)
- NATIONAL ACTION REPORT ON CLIMATE CHANGE

Conclusions

GAPS

- Closing gaps in **adaptive capacity indicators** and **gender-sensitive indicators** (improve sectoral impact chains).
- Move towards **multi-sectoral measurements,** defining goals, methodologies and common resources (e.g., inclusion of Nature based Solutions)

M&E Challenges

- Generate a transition **from indicators to an adaptation M&E system** (e.g., improve links between indicators and public policies; incorporate different types of indicators; continuous learning and process improvement; etc.).
- Put **stakeholders at the center of indicator development** (ex.: private and civil society). Stablish **governance** and a **common roadmap** for sustainability, legitimacy and transparency of the M&E system.

Thank you.

Ministerio del Medio Ambiente

Gobierno de Chile