

# What to adapt for?

## Climate change risk profiles for South African cities

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### WHAT TO ADAPT FOR?

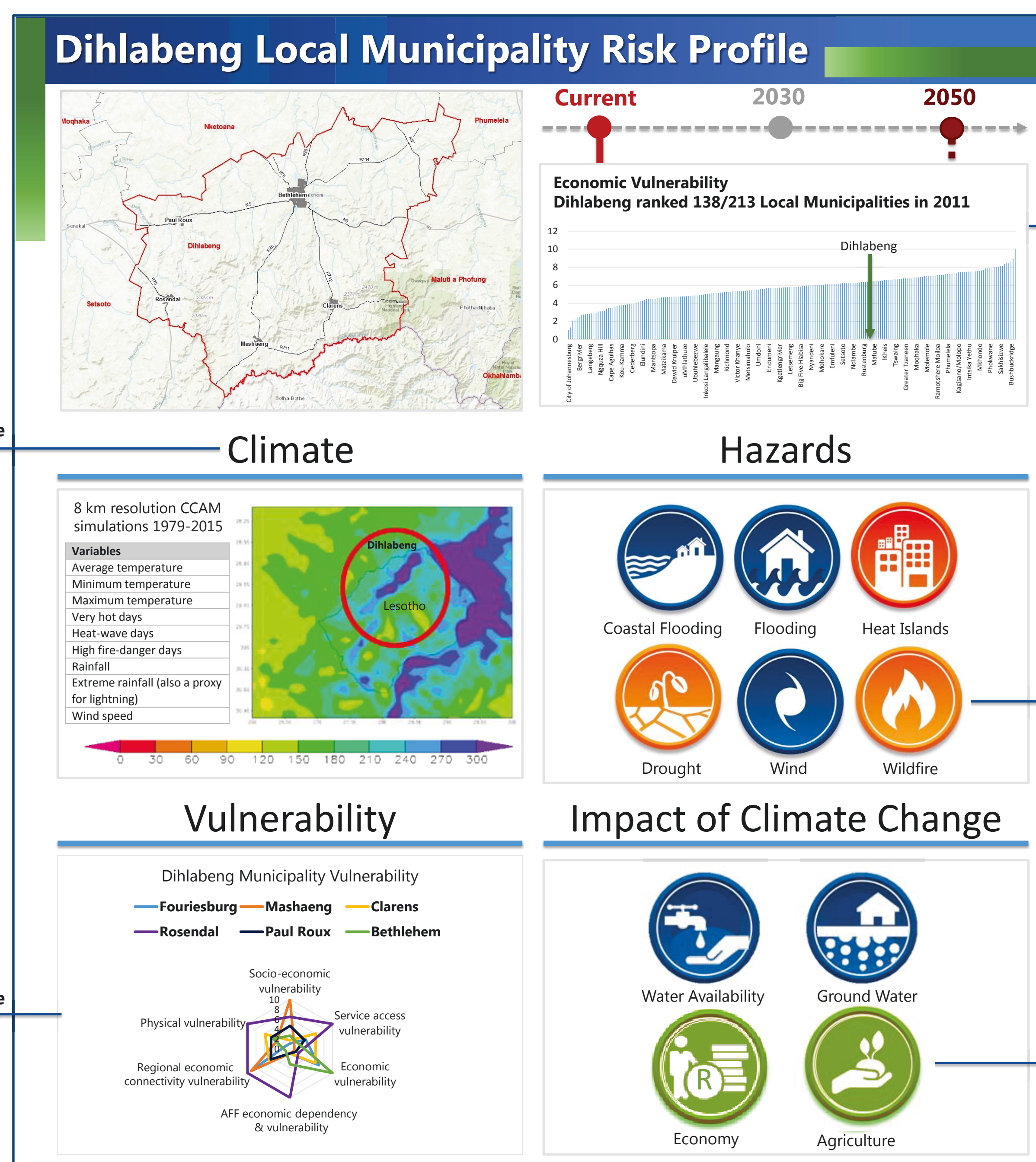
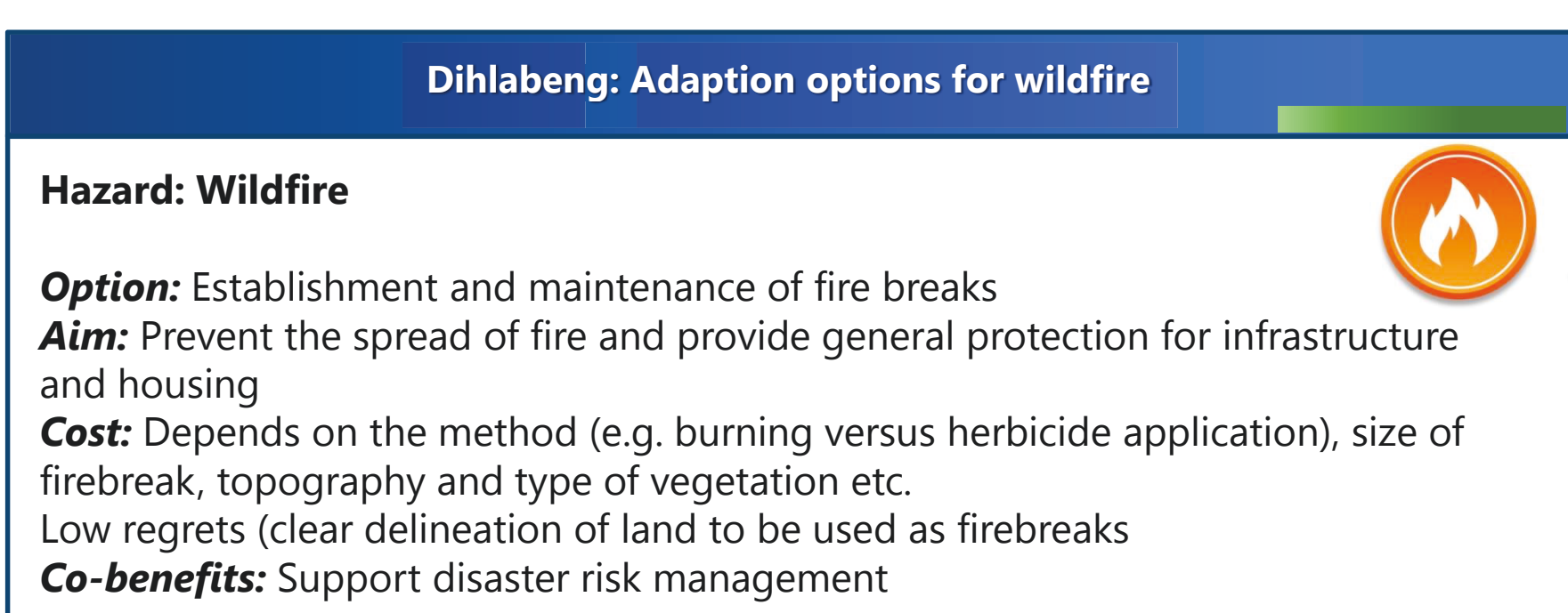
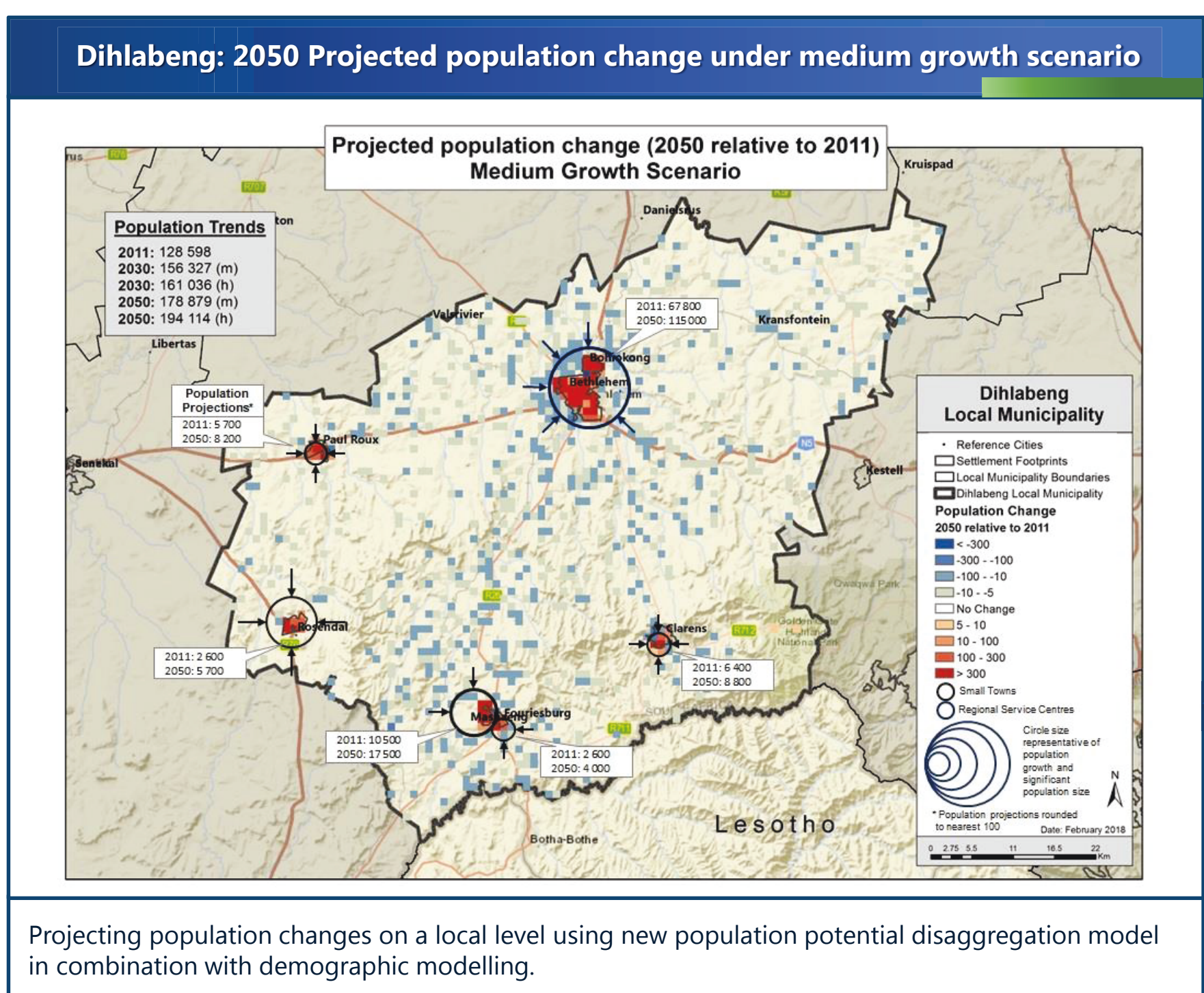
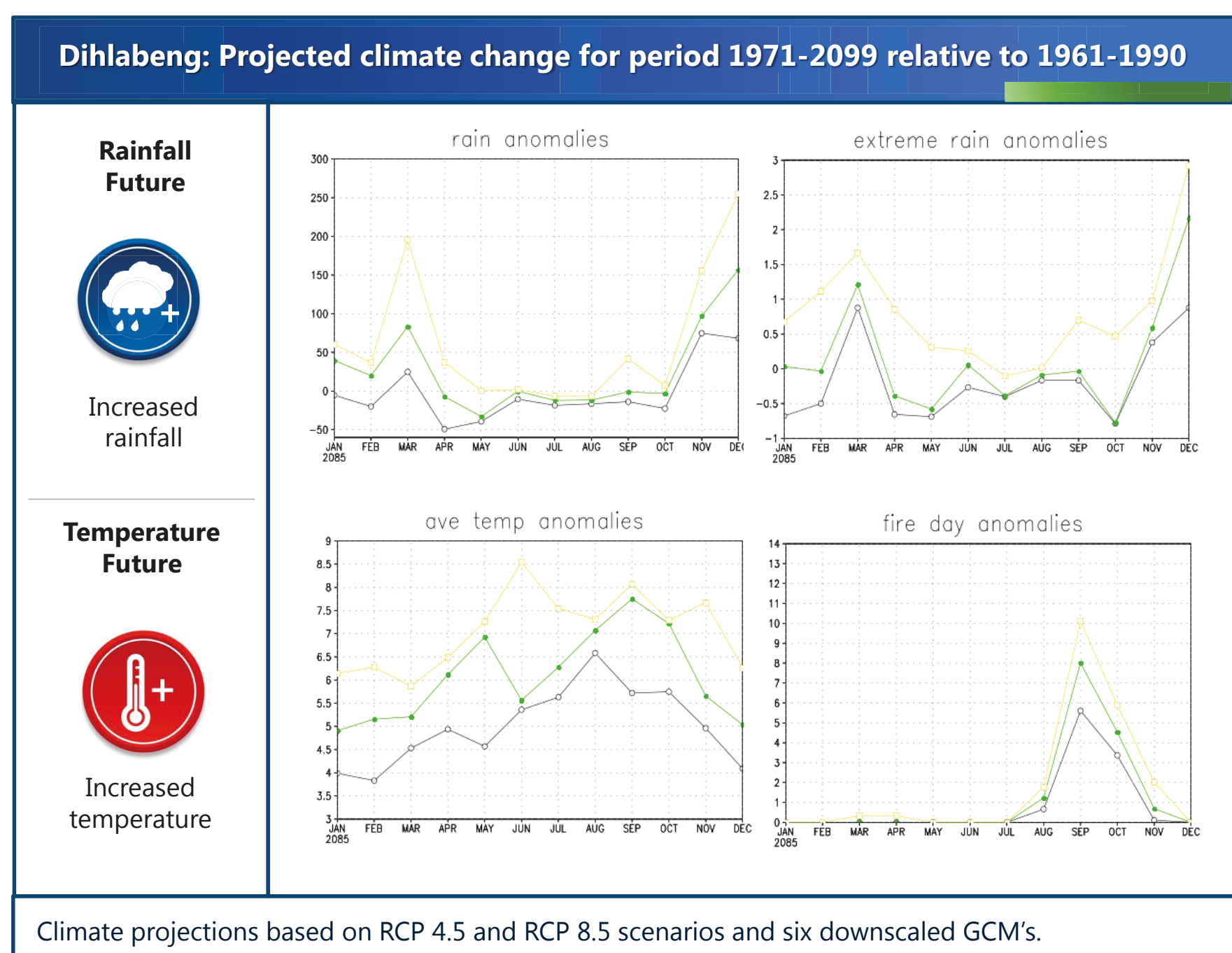
- Climate change adaptation has increasingly been included in national policies because of the far-reaching effects climatic changes have on places and people.
- To build resilient settlements, national policies need to be translated into context-specific climate change adaptation measures that are integrated into local spatial planning and land use management practices.
- Urban planning plays a critical role in anticipating change and to plan for and adapt to these anticipated changes. Urban planning and adaptation have in common that they both intervene in space, promote change and transformation, and are concerned with the future.
- Many municipalities in South Africa, as in many other countries, do not have the capacity or the resources to develop adaptation strategies. Furthermore, the lack of scientifically-backed risk and vulnerability assessments weaken the urgency to prioritise and act.
- This project attempts to address the barriers experienced by local governments by developing detailed risk and vulnerability profiles based on climate change projections, and then linking adaptation options to these.

### AIM OF THE GREEN BOOK RISK PROFILES

- The Green Book project was conceptualised to propose adaptation options linked to the climate change risk profile of every settlement in South Africa.
- Compiling the risk profiles has advanced our scientific understanding of climate change and its impacts, the geographical location and exposure of settlements to future hazards, and future settlement vulnerability. The risk profiles and adaptation options aim to:
  - Assist municipalities to adapt urban planning and development practices in line with local and global climate change commitments, objectives and goals;
  - Influence policy development at the urban planning/climate change adaptation nexus; and
  - Identify priorities for mainstreaming climate change adaptation into development planning.
- The team consists of approximately 50 researchers from disciplines such as urban planning, geo-informatics, geography, climatology, ecology, hydrology, anthropology, architecture, disaster risk reduction, economics, statistics, and botany.
- This research is funded by the IDRC and the CSIR (2016-2019). Our two partners include the National Disaster Management Centre (NDMC) and the African Institute for Inclusive Growth (AIIG).

### THE SCIENCE BEHIND THE RISK PROFILES

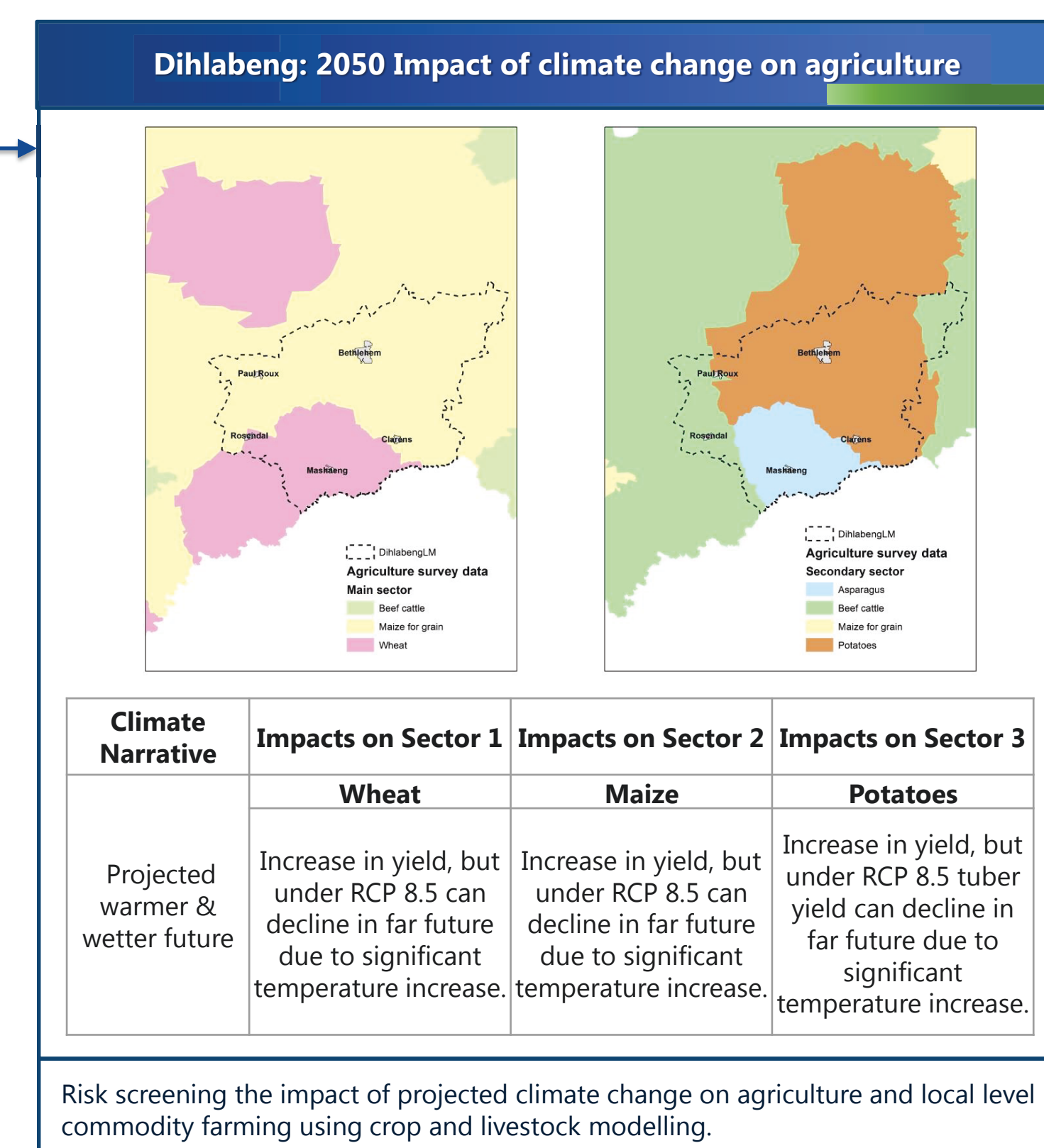
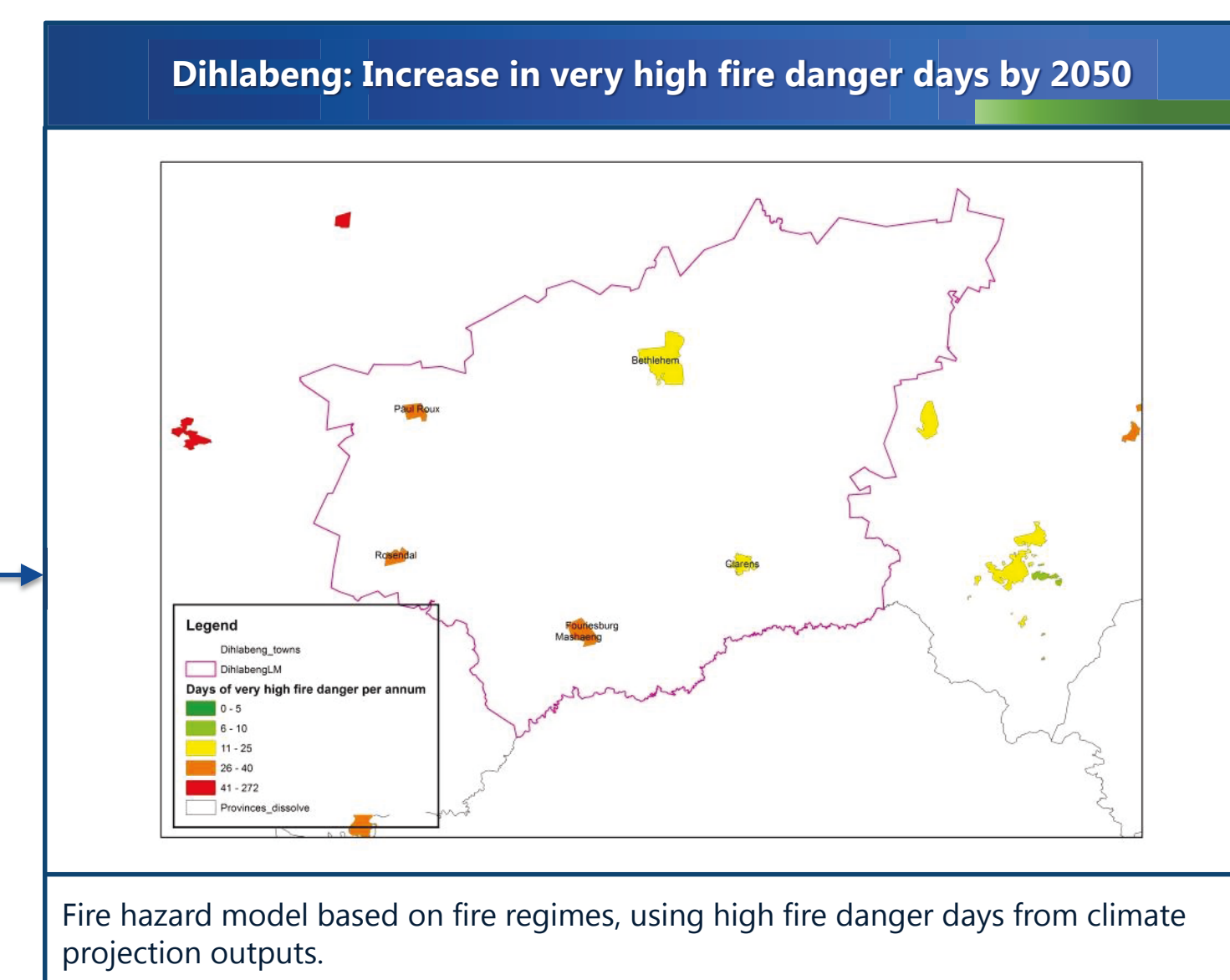
- The risk profiles are made up of:
- Climate change projections downscaled to 8x8 km over South Africa.
  - The impact of climate change on key sectors such as water resources, agriculture and the economy.
  - A geographical analysis of the exposure to hydro-meteorological hazards (flooding, coastal flooding, drought, wild fires) for all settlements in the country for a 2030 and 2050 future.
  - Socio-economic vulnerability indicators and settlement growth modelling (also for a 2030 and 2050 future), as well as the coping capacity of municipalities and their residents.
- The profiles not only consider the current static risk of settlements but are forward looking (2030/2050) to include population growth projections, hazard footprints and the impacts of climate change on key resources.
  - As a final step in the project, local planning adaptation options are linked to each risk profile, to be integrated into local planning practices by municipalities.
  - This poster features the scientific evidence underpinning local adaptation.



**Vulnerability indices for 213 local municipalities showing 2011 trend relative to 1996**

MUNICIPALITY	Socio-Economic Vulnerability Index	Trend	Economic Vulnerability Index	Trend	Physical Vulnerability Index	Trend	Environmental Vulnerability Index	Trend
City of Cape Town	1.19	↗	1.31	↗	4.25	↗	4.57	↗
City of Johannesburg	1.10	↘	1.00	↘	3.73	↘	1.28	↘
City of Matlosana	3.22	↘	7.25	↘	3.45	↘	1.03	↘
City of Mombela	3.53	↘	5.32	↘	1.96	↘	2.97	↘
City of Tshwane	1.00	↘	2.74	↘	4.00	↘	1.66	↘
Dihlabeng	3.61	↘	6.27	↘	3.87	↘	1.31	↘
Dikgatlong	6.44	↘	7.37	↘	4.02	↘	1.00	↘
Nelson Mandela Bay	2.66	↘	5.70	↘	2.21	↘	1.17	↘
213 Local Municipalities	-	-	-	-	-	-	-	-

Multi-criteria analysis for composite indicator development, profiling vulnerable local municipalities.



### Adaptation Options

