

# Assessing South Africa's coastal climate change risk

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On behalf of:  
 Federal Ministry  
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# Background

- > **600 million** people (ca. **10%** of the world's population) live in coastal areas that are less than **10 meters** above sea level.
- Nearly **2.4 billion** people (ca. **40%** of the world's population) live within **100 km** of the coast.
- Ca. **40%** of South Africans are living within **60km** of the Oceans' coasts
- Ca. **10 million** people (about **20%**) of South African live in coastal areas
- Approximately **60%** of the South African economy depends on coastal natural resources and trade infrastructure such as ports.



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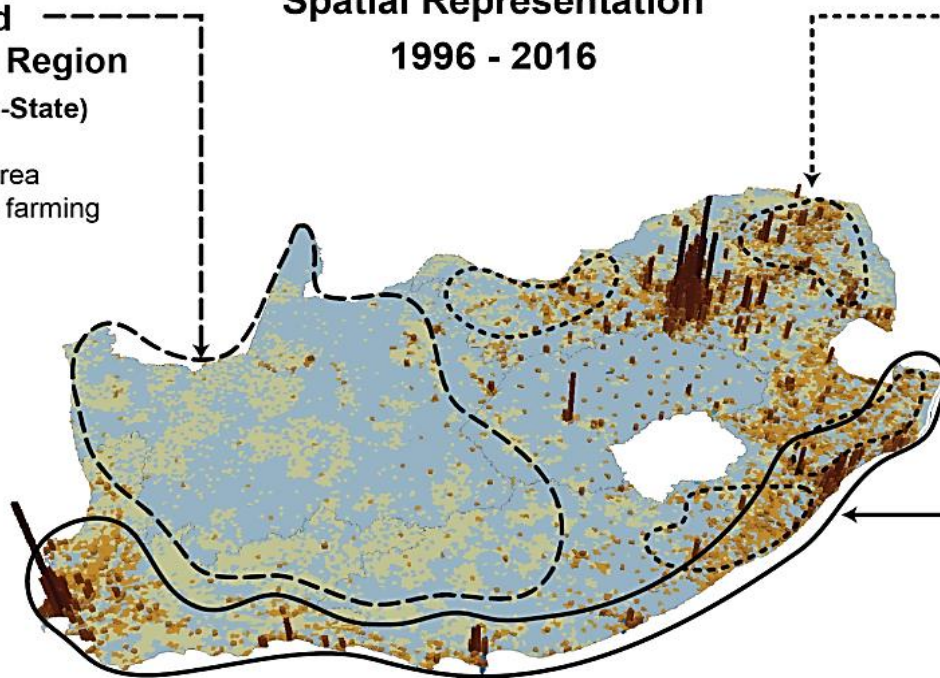
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# South Africa:

## Population Growth Spatial Representation

1996 - 2016



**Sparse Settled  
Western and Central Region**  
(Bigger Karoo and Free-State)

Sparsely populated area  
Arid and largely extensive farming

**Dense Rural Settlements**  
Home to 18% of South  
Africans

\*Former Homeland Areas  
(Apartheid Spatial Legacy)  
Still home to 6.75 million people  
(almost 13% of SA Population) 20%  
increase in service access between  
1996-2011, however no change in  
number of households living under  
minimum living level

**Densely Settled Coastal  
Corridor**  
(KwaZulu-Natal to Saldanha)

Home to 17.7 million people (almost  
32% of Population and 12% of land  
area)

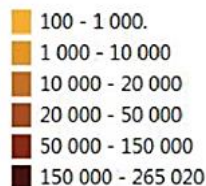
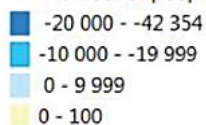
**Grew with 4.16 million people**  
1996-2016



### Cities and Towns

Home to 79 out of every 100  
South Africans while only  
constituting 6.9% of the  
country's total land area

Population Growth (1996 - 2016)  
Number of people per mesozone



Demographic change using CSIR Town Typology, 2018. See Annexure A



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# South Africa:

## Population Growth Spatial Representation 1996 - 2016

**Sparse Settled  
Western and Central Region**  
(Bigger Karoo and Free-State)

### Massive Growth:

Number of buildings in the coastal zone:

**2011: ca. 620,000**

**2016: ca. 1,060,000**

(increase of **71%** in 5 years !)

**Dense Rural Settlements**  
Home to 18% of South Africans

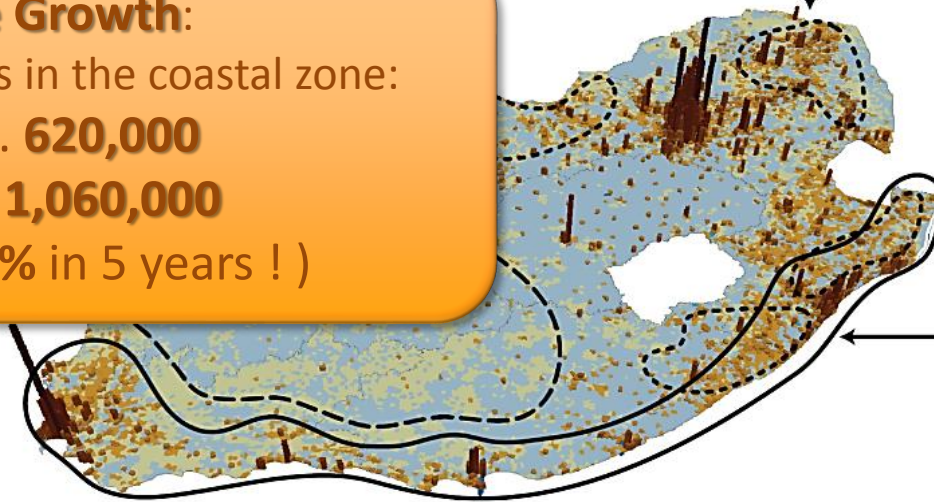
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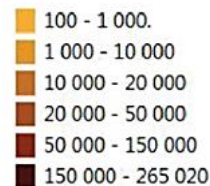
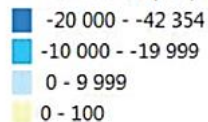
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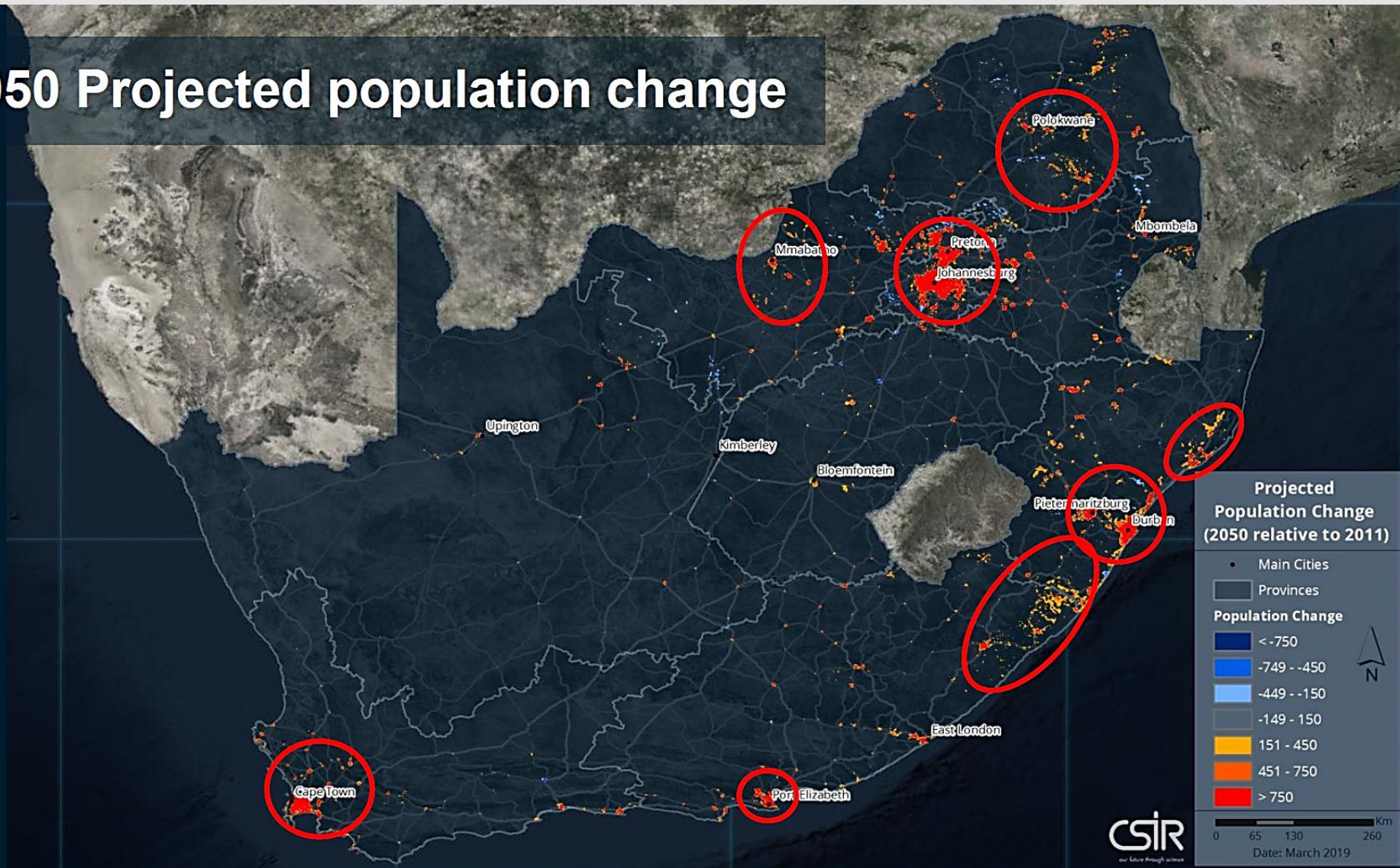


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# 2050 Projected population change



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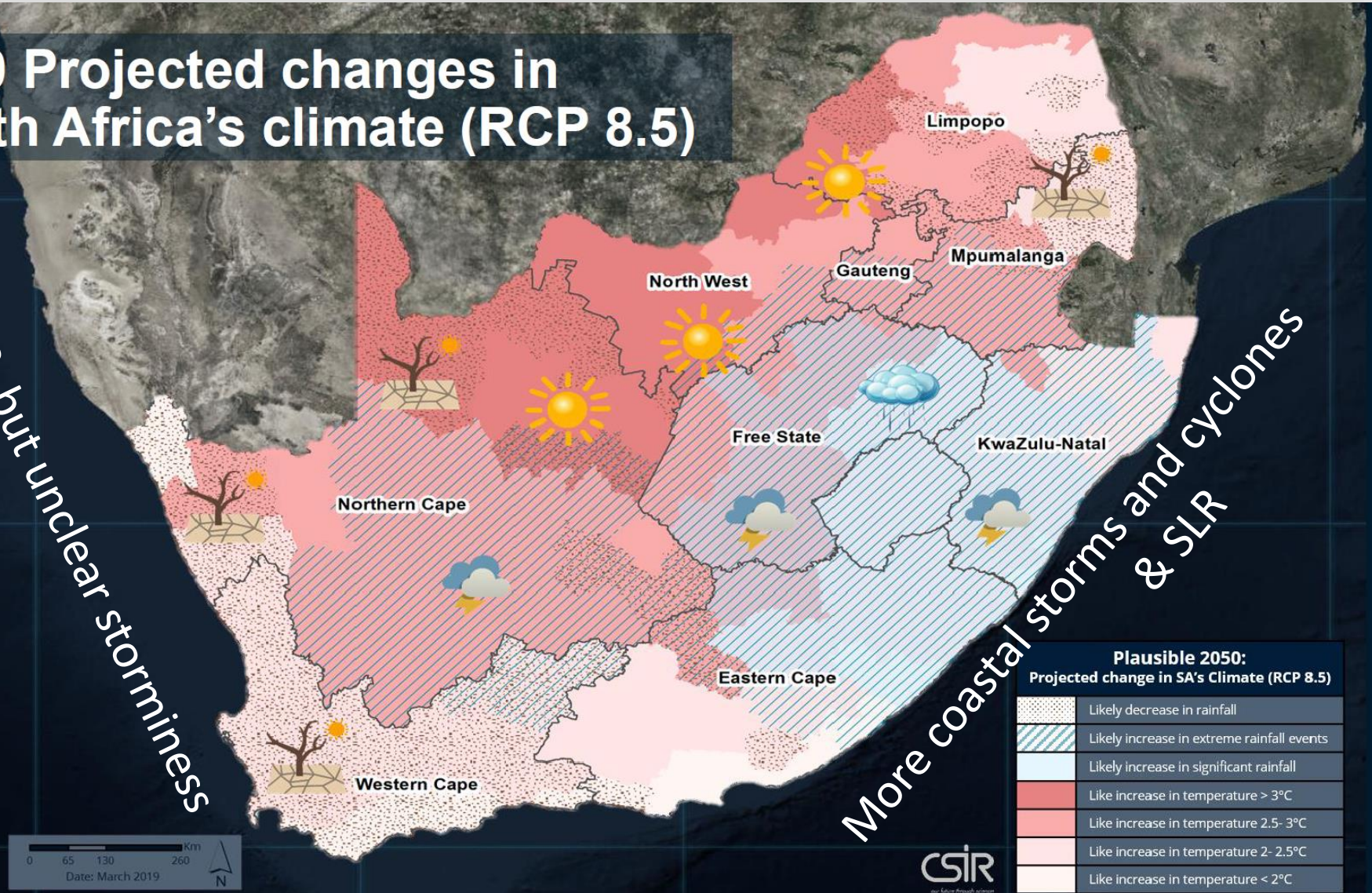
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# 2050 Projected changes in South Africa's climate (RCP 8.5)

SLR, but unclear storminess

More coastal storms and cyclones & SLR



Plausible 2050: Projected change in SA's Climate (RCP 8.5)	
	Likely decrease in rainfall
	Likely increase in extreme rainfall events
	Likely increase in significant rainfall
	Like increase in temperature > 3°C
	Like increase in temperature 2.5- 3°C
	Like increase in temperature 2- 2.5°C
	Like increase in temperature < 2°C



# Implications of CC and development trend

## On the downside:

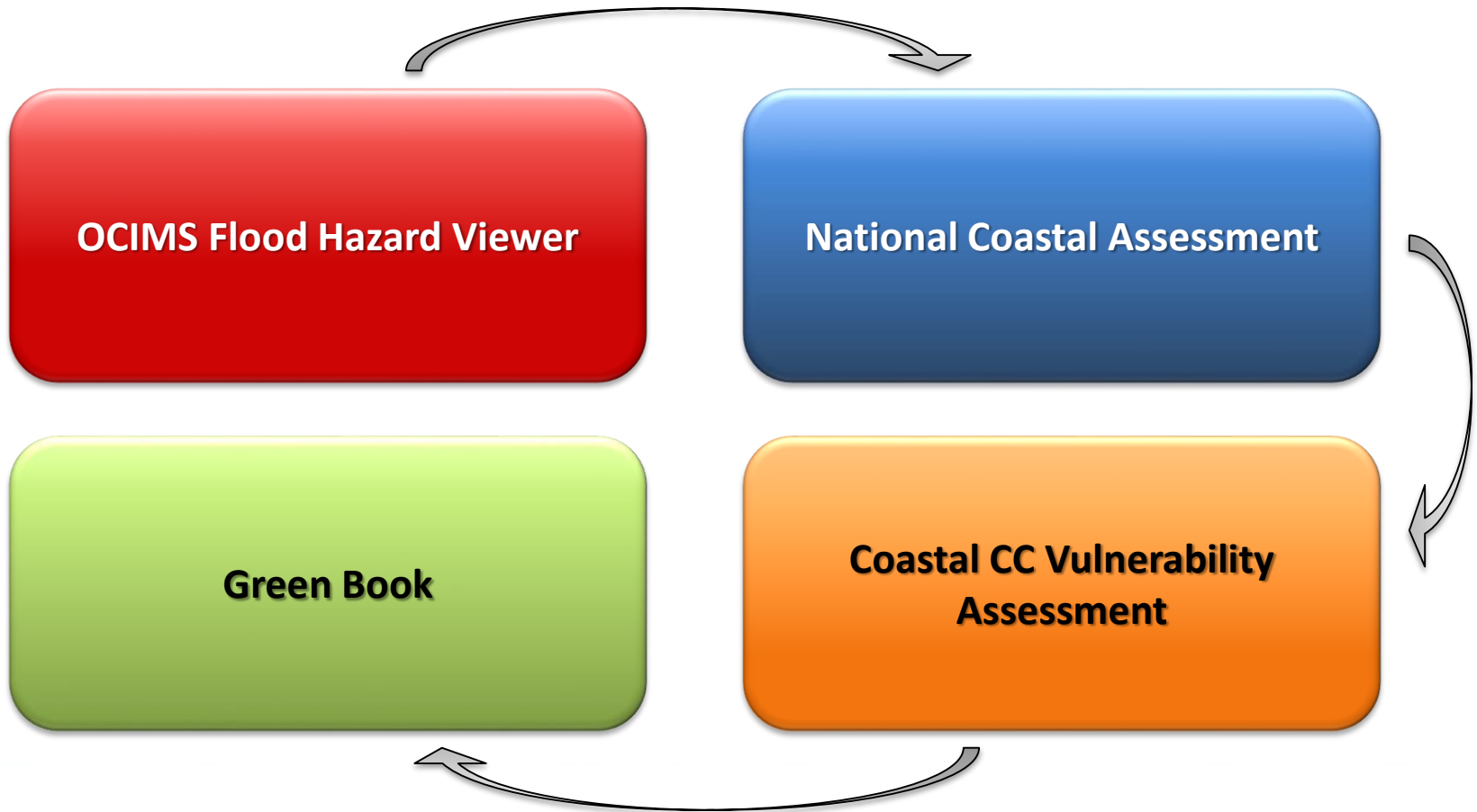
- More people at risk
- More infrastructure at risk
- Higher economic risk

## On the upside:

- Most growth is yet to happen → chance to adapt to future change,  
**if areas at risk are known.**



# THE RESPONSE: complementary projects to assess risk and to provide adaptation options





# OCIMS Flood Hazard Viewer

(DEA)

→ To inform the public of coastal flood risk

NATIONAL  
OCIMS

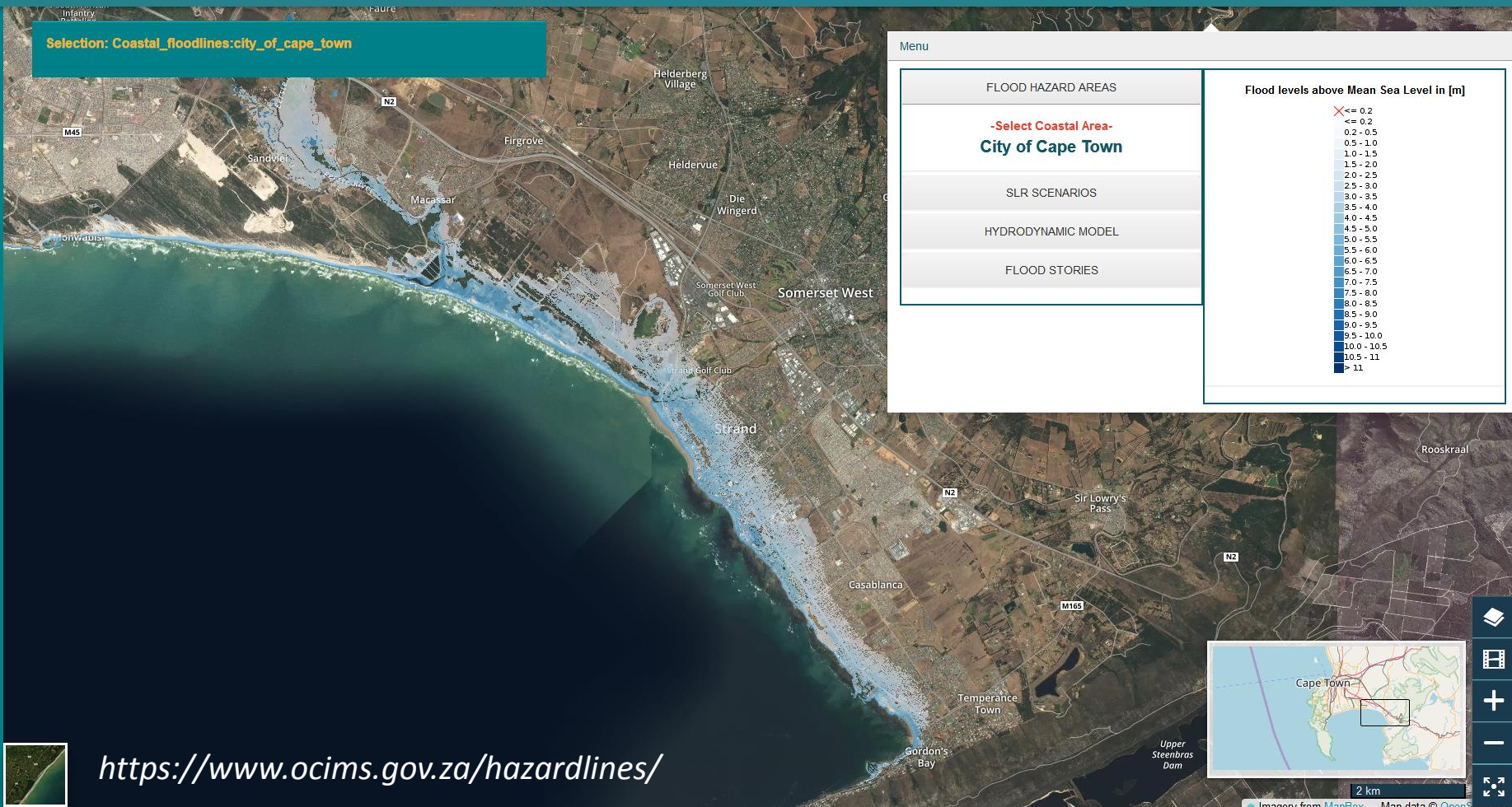
Coastal Flood Hazard

Search by location n...



Selection: Coastal\_floodlines:city\_of\_cape\_town

Water Level in [m]



Menu

- FLOOD HAZARD AREAS
  - Select Coastal Area-
  - City of Cape Town**
- SLR SCENARIOS
- HYDRODYNAMIC MODEL
- FLOOD STORIES

Flood levels above Mean Sea Level in [m]

- X <= 0.2
- <= 0.2
- 0.2 - 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- 2.0 - 2.5
- 2.5 - 3.0
- 3.0 - 3.5
- 3.5 - 4.0
- 4.0 - 4.5
- 4.5 - 5.0
- 5.0 - 5.5
- 5.5 - 6.0
- 6.0 - 6.5
- 6.5 - 7.0
- 7.0 - 7.5
- 7.5 - 8.0
- 8.0 - 8.5
- 8.5 - 9.0
- 9.0 - 9.5
- 9.5 - 10.0
- 10.0 - 10.5
- 10.5 - 11
- > 11

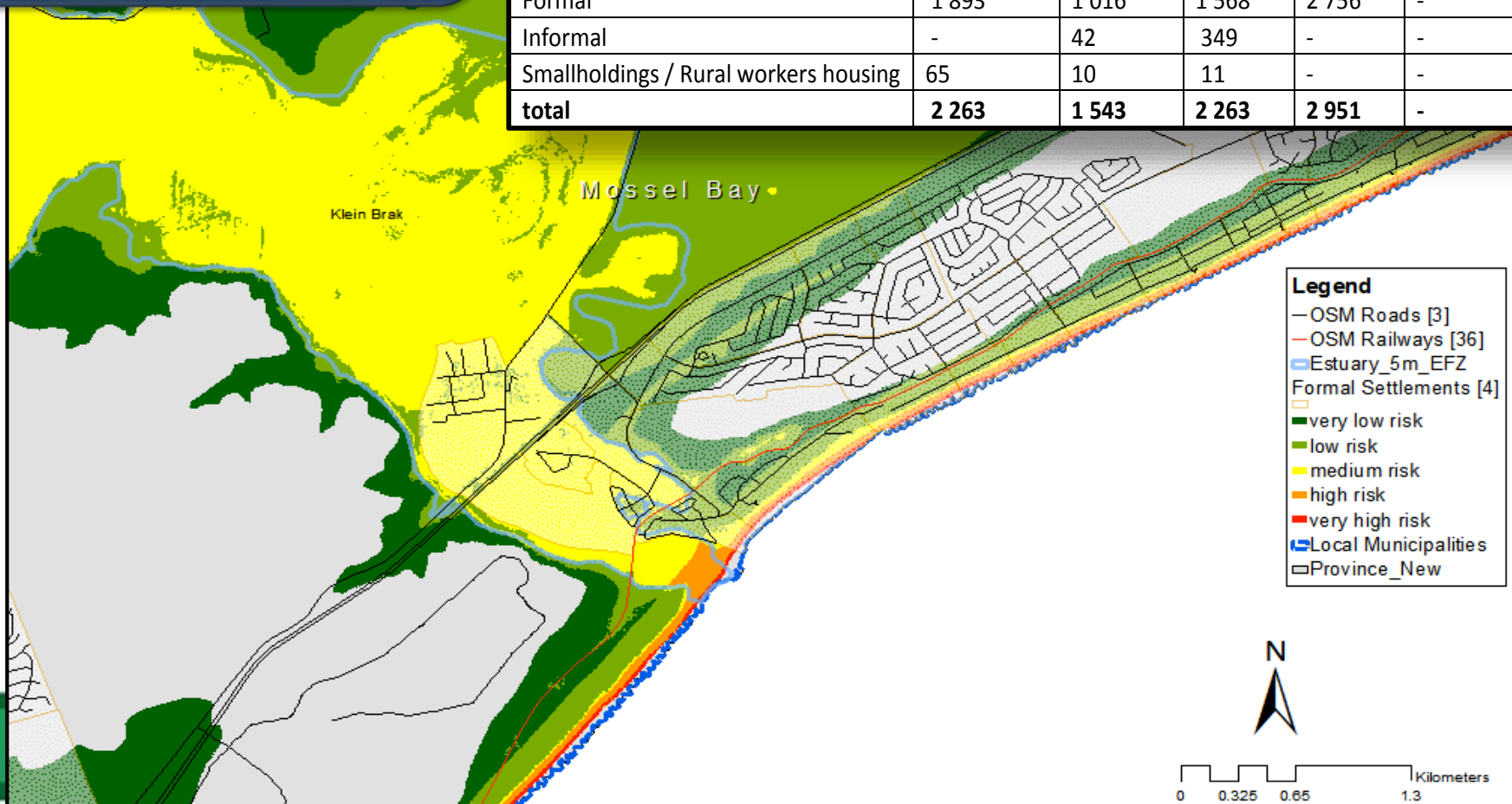


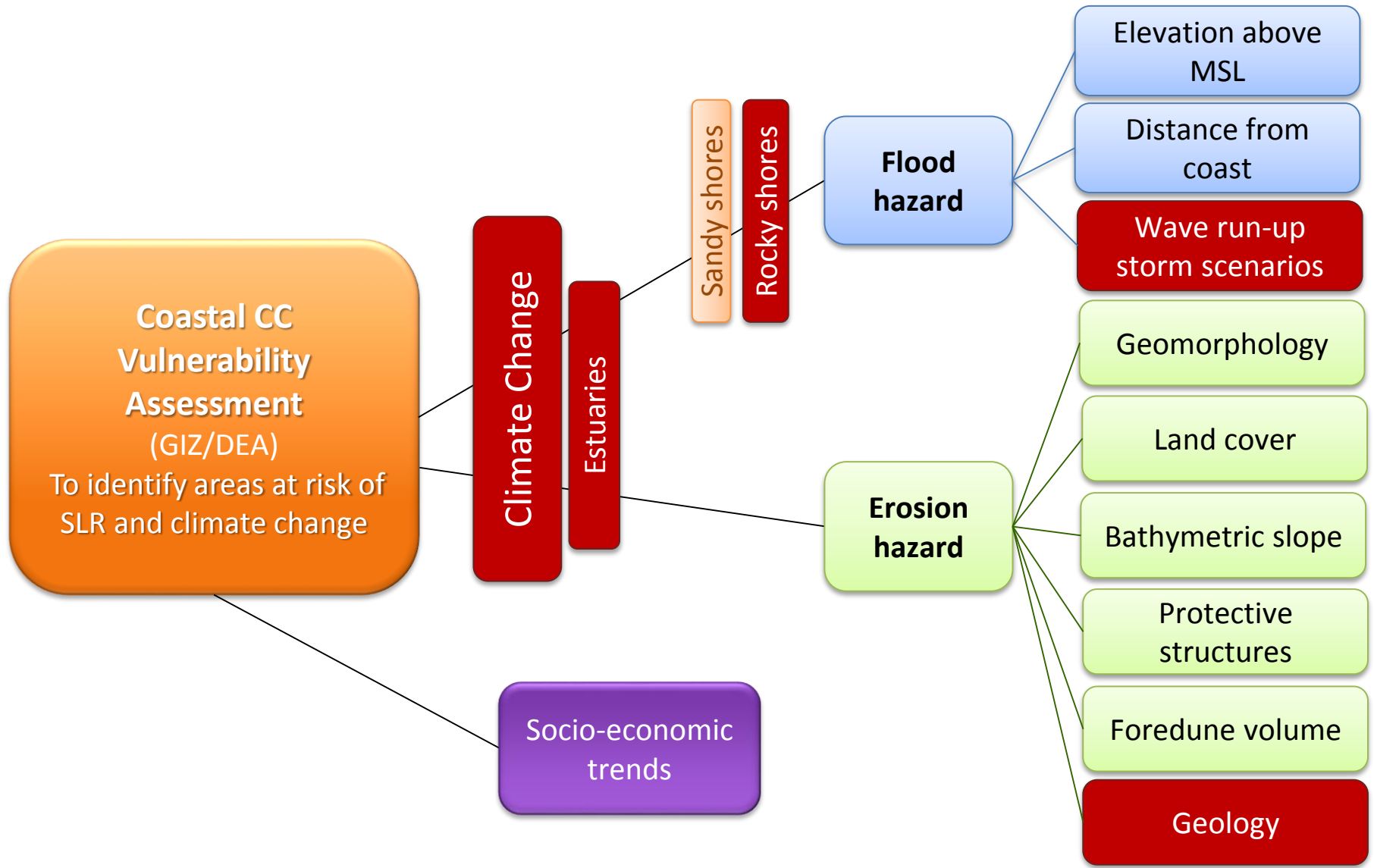
<https://www.ocims.gov.za/hazardlines/>

# National Coastal Assessment (DEA)

To assess the status quo of the coastal zone for integrated management now

Building type category	very low	low	medium	high	very high
Education	17	-	13	-	-
Commercial	104	152	276	193	-
Industrial	164	321	21	2	-
Institutions	1	-	22	-	-
Community services	19	2	3	-	-
Formal	1 893	1 016	1 568	2 756	-
Informal	-	42	349	-	-
Smallholdings / Rural workers housing	65	10	11	-	-
<b>total</b>	<b>2 263</b>	<b>1 543</b>	<b>2 263</b>	<b>2 951</b>	-





# Green Book

(CSIR/DEA etc.)

To assess climate risk at municipal level & provide CC adaptation options

<https://greenbook.co.za/>



## ADAPTATION ACTIONS

FILTERS

Search for an adaptation action

### HAZARDS & CLIMATE IMPACTS

- Coastal Flooding
- Inland Flooding
- Heat Stress
- Wildfire
- Increased Wind Speed
- Drought
- Groundwater Depletion
- Surface Water Depletion
- Biodiversity Loss

### PLANNING FUNCTION

### STRATEGY

### ABOUT THIS TOOL

### ADAPTATION SUPPORT

### CITATION



Determine urban edge



Identify all open spaces



Identify all key ecosystems and protected areas

Plan for an open space network in support of ecosystem services and quality of life by identifying and reclaiming land to defragment open space within the settlement.



Connect open spaces



Identify areas where vegetation coverage can be increased



Identify areas for vegetated windbreaks



Identify areas for designated firebreaks



Identify vulnerable heritage and cultural sites



Identify suitable areas for urban agriculture

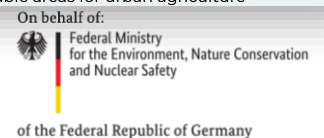


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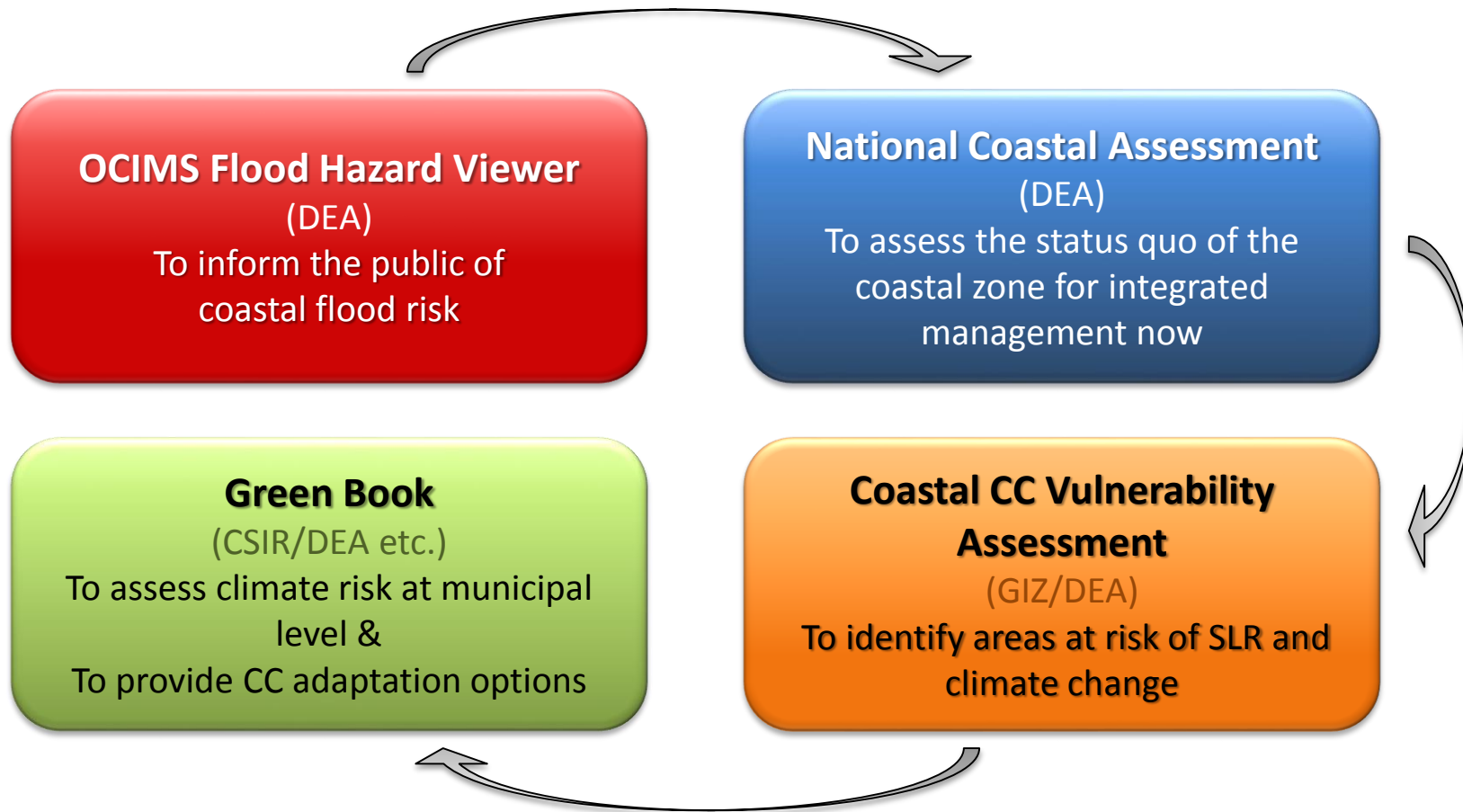
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# THE AIM: To tackle climate risk at all levels



# Thank you

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