

IFC Climate Risk Management Tools

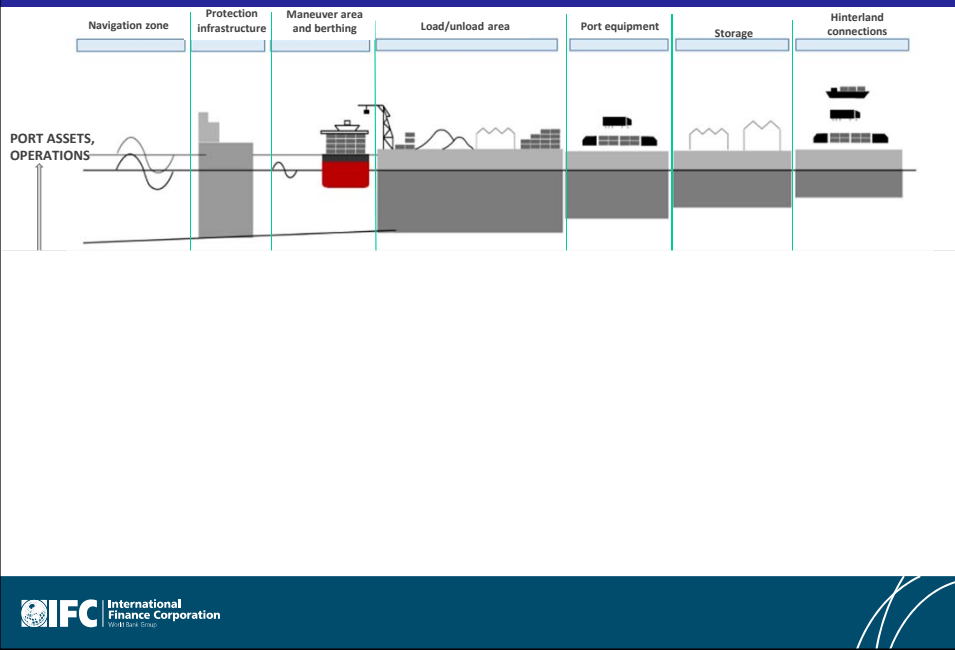
IAIA
Washington DC, May 7, 2018

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International Finance Corporation

IFC's Climate Resilience Management Tools

- Tailored to project investment/management needs: understanding of the change in climate related risks and change in impacts
- Developed with the support of IFC-Canada Climate Change Program
- Sectors, so far: forestry, pulp and paper, insurance, ports and waterways, roads, airports
- Focus on sector-specific risks; material to investments (financial, environmental underperformance related to climate change related impacts)
- Best available climate information for the required level of analyses and purpose (NCAR) + near-shore marine indicators (IH Cantabria)
- Timeframes relevant for investments, global coverage
- Granular enough for specific project assessment and understanding of risk profile change (but not meant to replace high resolution risk assessment)
- Can help identify opportunities or changing demand/supply

Ports' climate resilience tool: assets, climate drivers, thresholds



The screenshot shows the "Climate Risk Management" web application interface. The top navigation bar includes the IFC logo and the text "International Finance Corporation World Bank Group". The main title is "Climate Risk Management v2.2".

The interface is divided into two main sections:

- LOCATION:** A world map showing the continents of North America, Europe, Asia, Africa, and South America. The map is interactive, with zoom in (+) and zoom out (-) buttons on the right side.
- PROJECT INFORMATION:** A form for entering project details.
 - Project General Information:**
 - Project Title:
 - Sector:
 - Select Country*:
 - Baseline Year*:
 - Type of airport*:**
 - Type of investment:**
 - Latitude (°)*:
 - Longitude (°)*:

At the bottom, there are checkboxes for "Project Characteristics":

- Coastal Airport?
- Existence of coastal protection structures?
- Located near sandy deserts?
- Influenced by delta subsidence?

Coastal Report Existence of coastal protection structures Located near sandy dunes Influenced by sea subsidence

Elevation of the terminal building (m) *
 Area of terminal building (m²) *
 Height of the terminal building (m) *

Runways:

Select Runway: **Runway 1**
 Length (m):
 Width (m):
 MSL Elevatio...:
 Exposed to the coast?

Observations of Historical Events

Airport presents significant low points susceptible to flooding ?

Closing events days (leave blank if you don't know):

Due to snow:
 Due to heavy precipitation:

Financial Information

Initial Investment (MUSD) *
 Annual Operational Cost (MUSD) *
 Annual Expected Revenue (MUSD) *

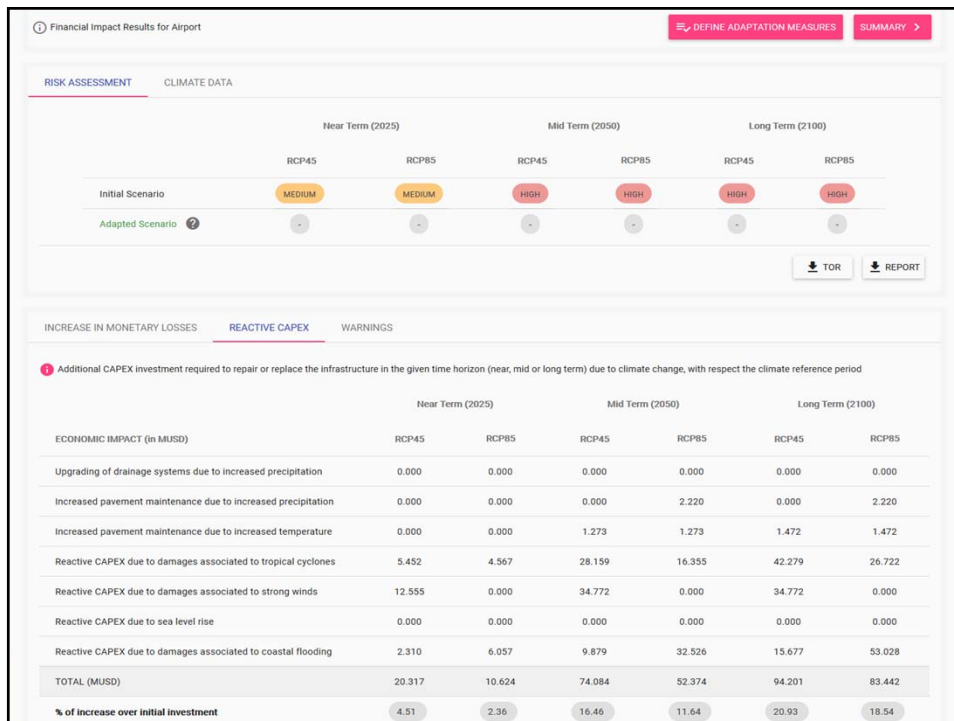
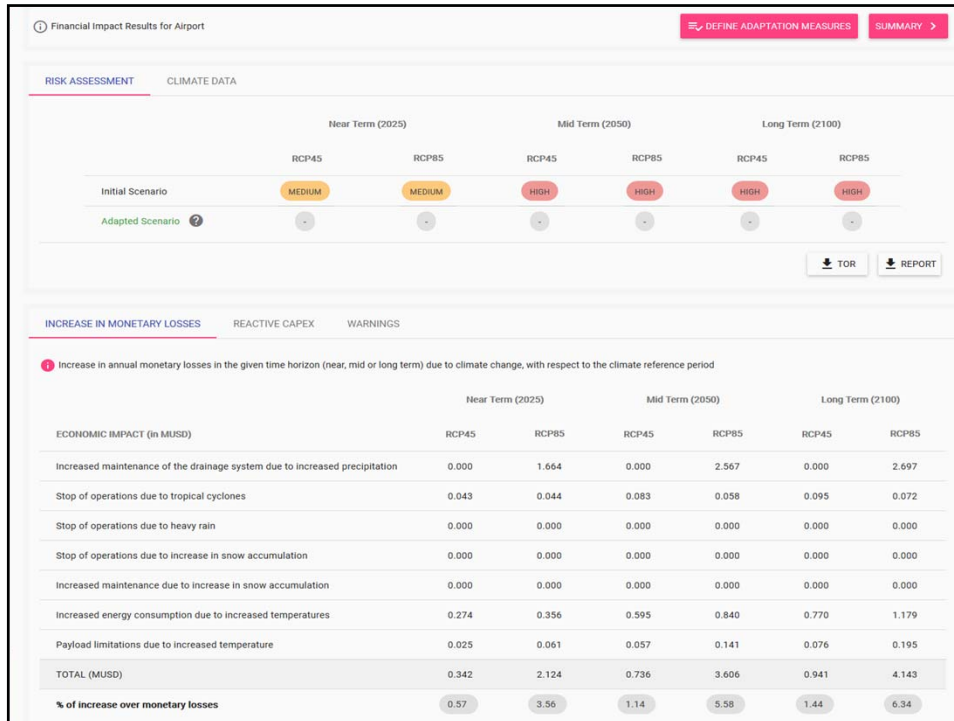
Discount Rate(%) *
 Average occupancy (%) *
 Growth Rate (%) *

All required fields (*) must be completed

Climate data

RISK ASSESSMENT CLIMATE DATA

	Current	Near Term (2025)		Mid Term (2050)		Long Term (2100)	
		RCP45	RCP85	RCP45	RCP85	RCP45	RCP85
Cooling degree days (days/year)	4,798.22	5089.29 (6.07%)	5175.72 (7.87%)	5444.36 (13.47%)	5776.67 (20.39%)	5723.71 (19.29%)	6584.86 (37.24%)
Absolute change in annual mean temperature(°)		0.49 (0.97%)	0.58 (2.36%)	0.94 (2.32%)	1.42 (5.69%)	1.35 (3.33%)	2.72 (10.19%)
Hottest temperature in the period (°C)	28.84	29.12 (0.97%)	29.52 (2.36%)	29.51 (2.32%)	30.48 (5.69%)	29.80 (3.33%)	31.78 (10.19%)
Extreme precipitation (mm)	49.82	39.99 (-19.73%)	50.37 (1.10%)	42.82 (-14.05%)	47.03 (-5.60%)	42.26 (-15.17%)	32.05 (-35.67%)
Monthly mean precipitation (mm/month)	138.71	139.21 (0.36%)	133.25 (-3.94%)	137.75 (-0.69%)	144.59 (4.24%)	136.59 (-1.53%)	136.14 (-1.85%)
Mean annual SPEI	0.01	-0.21 (-2200.00%)	-0.19 (-2000.00%)	-0.39 (-4000.00%)	-0.58 (-5900.00%)	-0.46 (-4700.00%)	-1.24 (-12500.00%)
Number of windy days (days/year)	86.76	89.73 (3.42%)	97.18 (12.01%)	88.17 (1.63%)	97.60 (12.49%)	87.92 (1.34%)	84.65 (-2.43%)
Number of very windy days (days/year)	9.72	10.25 (5.45%)	9.53 (-1.95%)	9.00 (-7.41%)	8.87 (-8.74%)	7.52 (-22.65%)	6.92 (-28.81%)
Number of high wind days (days/year)	0.00	0.00 (0%)	0.00 (0%)	0.00 (0%)	0.00 (0%)	0.00 (0%)	0.00 (0%)
Number of extreme wind days (days/year)	0.00	0.00 (0%)	0.00 (0%)	0.00 (0%)	0.00 (0%)	0.00 (0%)	0.00 (0%)
Frequency of cat1 TC (TCs/year)	0.17	0.19 (11.76%)	0.19 (11.76%)	0.20 (17.65%)	0.18 (5.88%)	0.20 (17.65%)	0.23 (35.29%)
Frequency of cat2 TC (TCs/year)	0.04	0.05 (25.00%)	0.05 (25.00%)	0.06 (50.00%)	0.05 (25.00%)	0.06 (50.00%)	0.07 (75.00%)
Frequency of cat3 TC (TCs/year)	0.01	0.01 (0%)	0.01 (0%)	0.02 (100.00%)	0.01 (0%)	0.02 (100.00%)	0.02 (100.00%)
Frequency of cat4 TC (TCs/year)	0.00	0.00 (0%)	0.00 (0%)	0.00 (0%)	0.00 (0%)	0.00 (0%)	0.00 (0%)
Frequency of cat5 TC (TCs/year)	0.00	0.00 (0%)	0.00 (0%)	0.00 (0%)	0.00 (0%)	0.00 (0%)	0.00 (0%)
Sea Level Rise (m)	0.11	0.11	0.12	0.26	0.28	0.53	0.70
10-year max TWL (m)	1.41	1.52 (7.80%)	1.69 (19.86%)	1.53 (8.51%)	1.94 (37.59%)	1.67 (18.44%)	2.11 (49.65%)
		1.60	1.77	1.61	2.02	1.75	2.19



Define Measures for Airport IMPLEMENT MEASURES [GUIDE](#)

NEAR TERM MEASURES (2025) MID TERM MEASURES (2050) LONG TERM MEASURES (2100)

Measures to be applied in the near term (to implement between 2017 and 2025). Those measures that address impacts that do not cause any damage will not be applied.

RCP45 **RCP85**

<input checked="" type="checkbox"/>	Name	Effectiveness	CAPEX(%)	OPEX(%)	Optimal Year	Implementation Year	
<input checked="" type="checkbox"/>	Upscale drainage system	2	1	0	2018	2018	📄
<input checked="" type="checkbox"/>	Underground storm water storage tanks and basins	2	0.5	0.5	2018	2018	📄
<input checked="" type="checkbox"/>	Design facilities for higher wind loads	2	1	0	2019	2019	📄
<input checked="" type="checkbox"/>	New runway construction	3	5	0	2025	2025	📄
<input checked="" type="checkbox"/>	Early warning system	2	0.1	5	2018	2018	📄
<input checked="" type="checkbox"/>	Adaptation of ILS category	3	0	0.5	2018	2018	📄
<input checked="" type="checkbox"/>	Pavement replacement	2	2	0	2025	2025	📄
<input checked="" type="checkbox"/>	De-icing facilities	1	0.5	1	2025	2025	📄
<input checked="" type="checkbox"/>	Snow and Ice removal equipment	1	0.2	0.5	2025	2025	📄
<input checked="" type="checkbox"/>	Upgrade energy efficiencies of cooling systems	1	2	-2	2025	2025	📄
<input checked="" type="checkbox"/>	Isolation of buildings	3	5	-1	2025	2025	📄
<input checked="" type="checkbox"/>	Renewable energies	2	5	-5	2025	2025	📄
<input checked="" type="checkbox"/>	Longer runways	2	0.5	0.1	2025	2025	📄

Financial Impact Results for Airport DEFINE ADAPTATION MEASURES [SUMMARY](#)

RISK ASSESSMENT CLIMATE DATA

	Near Term (2025)		Mid Term (2050)		Long Term (2100)	
	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85
Initial Scenario	MEDIUM	MEDIUM	HIGH	HIGH	HIGH	HIGH
Adapted Scenario ?	LOW	LOW	LOW	LOW	LOW	LOW

[TOR](#) [REPORT](#)

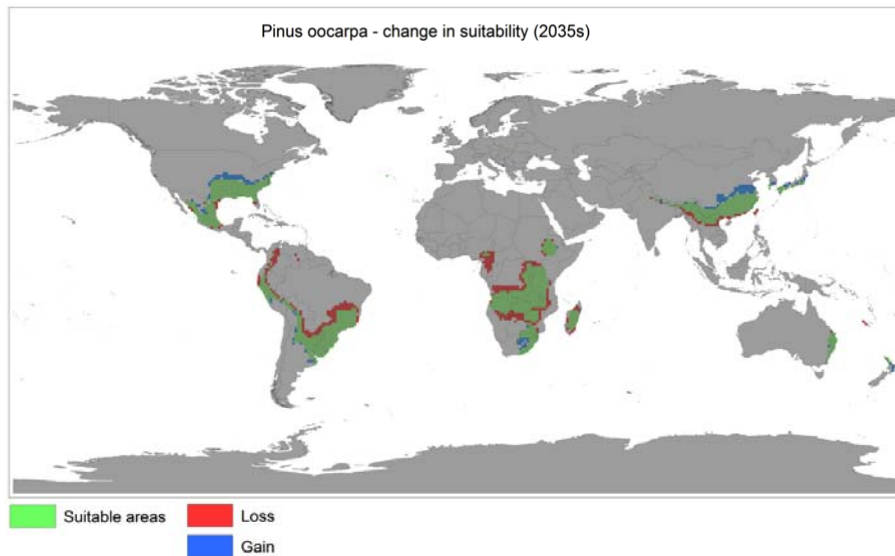
INCREASE IN MONETARY LOSSES **REACTIVE CAPEX** WARNINGS

1 Additional CAPEX investment required to repair or replace the infrastructure in the given time horizon (near, mid or long term) due to climate change, with respect the climate reference period

ECONOMIC IMPACT (in MUSD)	Near Term (2025)		Mid Term (2050)		Long Term (2100)	
	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85
Upgrading of drainage systems due to increased precipitation	0.000	0.000	0.000	0.000	0.000	0.000
Increased pavement maintenance due to increased precipitation	0.000	0.000	0.000	2.220 (1.110)	0.000	2.220 (1.110)
Increased pavement maintenance due to increased temperature	0.000	0.000	1.273 (0.636)	1.273 (0.636)	1.472 (0.736)	1.472 (0.736)
Reactive CAPEX due to damages associated to tropical cyclones	5.452 (0.273)	4.567 (0.995)	28.159 (1.408)	16.355 (4.086)	42.279 (2.114)	26.722 (4.820)
Reactive CAPEX due to damages associated to strong winds	12.555 (1.255)	0.000	34.772 (3.477)	0.000	34.772 (3.477)	0.000
Reactive CAPEX due to sea level rise	0.000	0.000	0.000	0.000	0.000	0.000
Reactive CAPEX due to damages associated to coastal flooding	2.310 (0.530)	6.057 (0.625)	9.879 (1.301)	32.526 (2.484)	15.677 (1.888)	53.028 (3.509)
TOTAL (MUSD)	20.317 (2.059)	10.624 (1.620)	74.084 (6.823)	52.374 (8.316)	94.201 (8.215)	83.442 (10.175)
% of increase over initial investment	4.51 (0.46)	2.36 (0.36)	16.46 (1.52)	11.64 (1.85)	20.93 (1.83)	18.54 (2.26)

*(values in adapted scenario)

Opportunities: forestry example, change in suitability for main plantation species



Thank you!

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