



FIG Working Week 2024

19-24 May

Accra, Ghana

Your World, Our World:
Resilient Environment
and Sustainable
Resource Management
for All

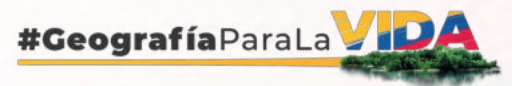


EFFECTS OF THE RISE IN SEA LEVEL, A PRODUCT OF GLOBAL WARMING, ON THE CADASTRAL AND POPULATION CONFORMATION OF THE COLOMBIAN CARIBBEAN.

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Dirección de
INVESTIGACIÓN
y Prospectiva



May 2024





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WHAT DO WE DO?
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Your World, Our World:
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We produce the official map and cartography of Colombia



We train and educate professionals in geographic information technologies



We are the Cadastral authority



We carry out geographical investigations



We carry out an inventory of the characteristics of the soils



We coordinate the Colombian Spatial Data Infrastructure (ICDE)



Research and Prospective technical direction

- Research Center recognized. SNCTeI .
- CIAF. More than 50 years of experience in research, development and training in geospatial technologies. 25.000 students from Colombia and the Latin American region.



R&D



Prospective



Training and qualification

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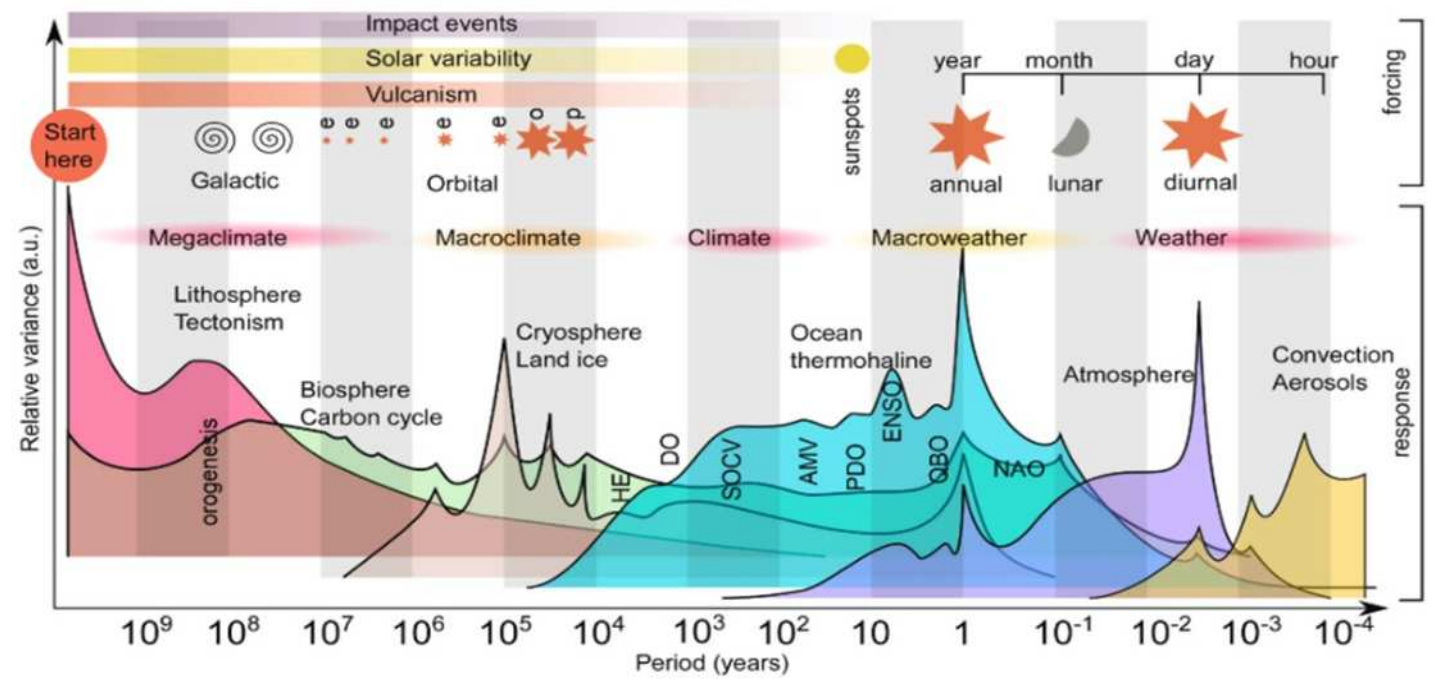


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(von der Heydt et al., 2021)

Climate change: Modification of atmospheric conditions that have prevailed over a period in a region, which is assessed by the change in averages of climatological variables. (Portilla, 2021)

Probability of an **EVENT (E)** originated from a **SOURCE (F)** generated by a **DETONATOR (D)**, in the **Space-Time (E-T)** of the Common Global System; with determined moments of Start, Development, and Conclusion (LIFE), as well as with a typical progression phase.

Hazard
 $H = f(F, D, E, E-T)$



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Aside from the rise in sea level, human interventions accelerate processes such as coastal erosion by constructing groin to preserve the main attraction of Caribbean tourism: the beach. The location of resorts and real estate speculation lead to projects that expand small sections of the beach and reduce nearby ones by altering the dynamics of beach erosion.

In Playa Salquero, Santa Marta, the groins have left multiple pieces of evidence of beach modification, and this human intervention continues to occur regularly.





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Analysis area

- Cartagena de Indias
- Manaure
- Sitio Nuevo
- Coveñas
- Ciénaga
- Santa Marta

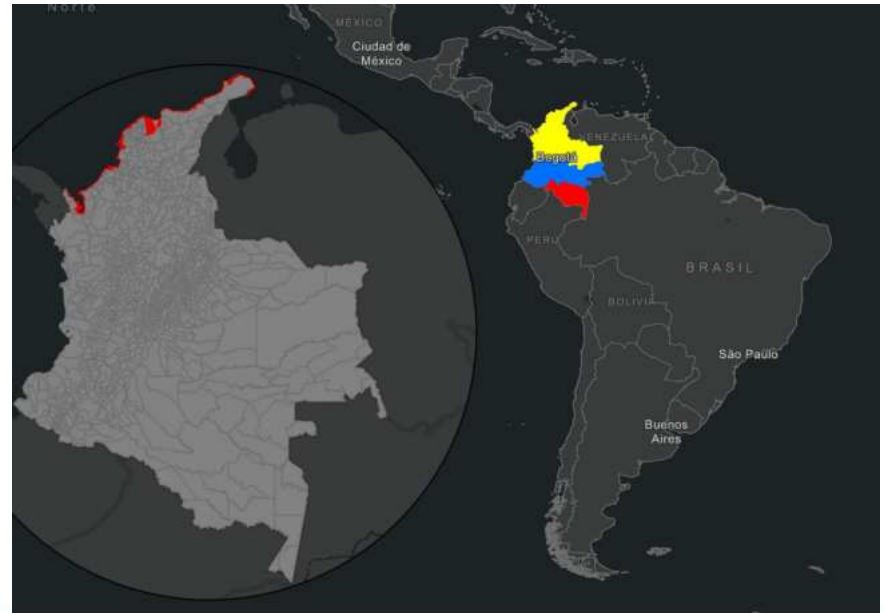
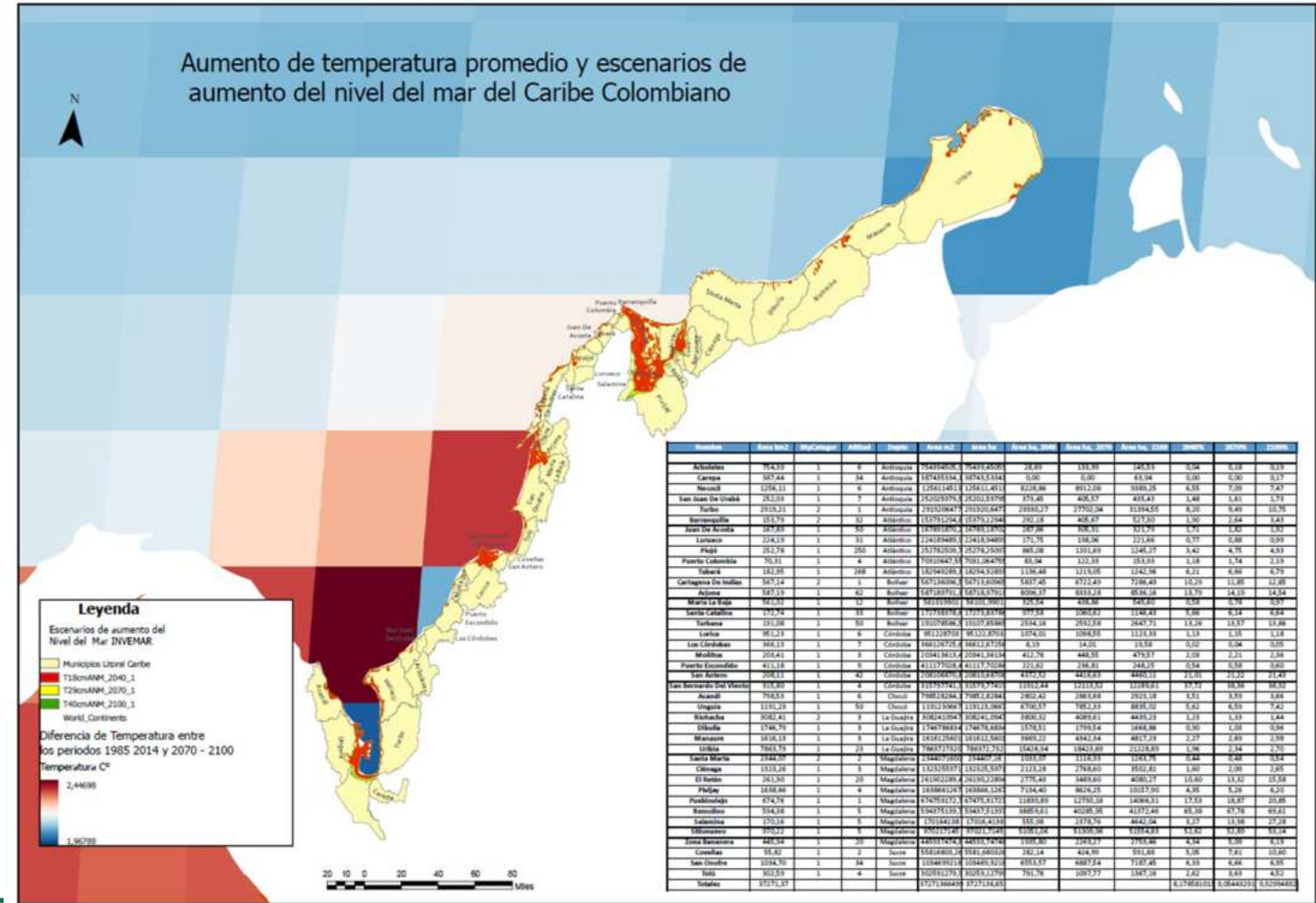




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Methodology



(Pabón, 2020)

Vulnerability Components

Economic: Property value and estimation of the value of homogeneous geoeconomic zones = 10%

Socio-economic: Socioeconomic stratum and absolute population = 30%

Physical: Location with respect to different Threat scenarios and number of floors of buildings = 10%

Environmental: Change in coverage near the coastline - Mangroves = 50%

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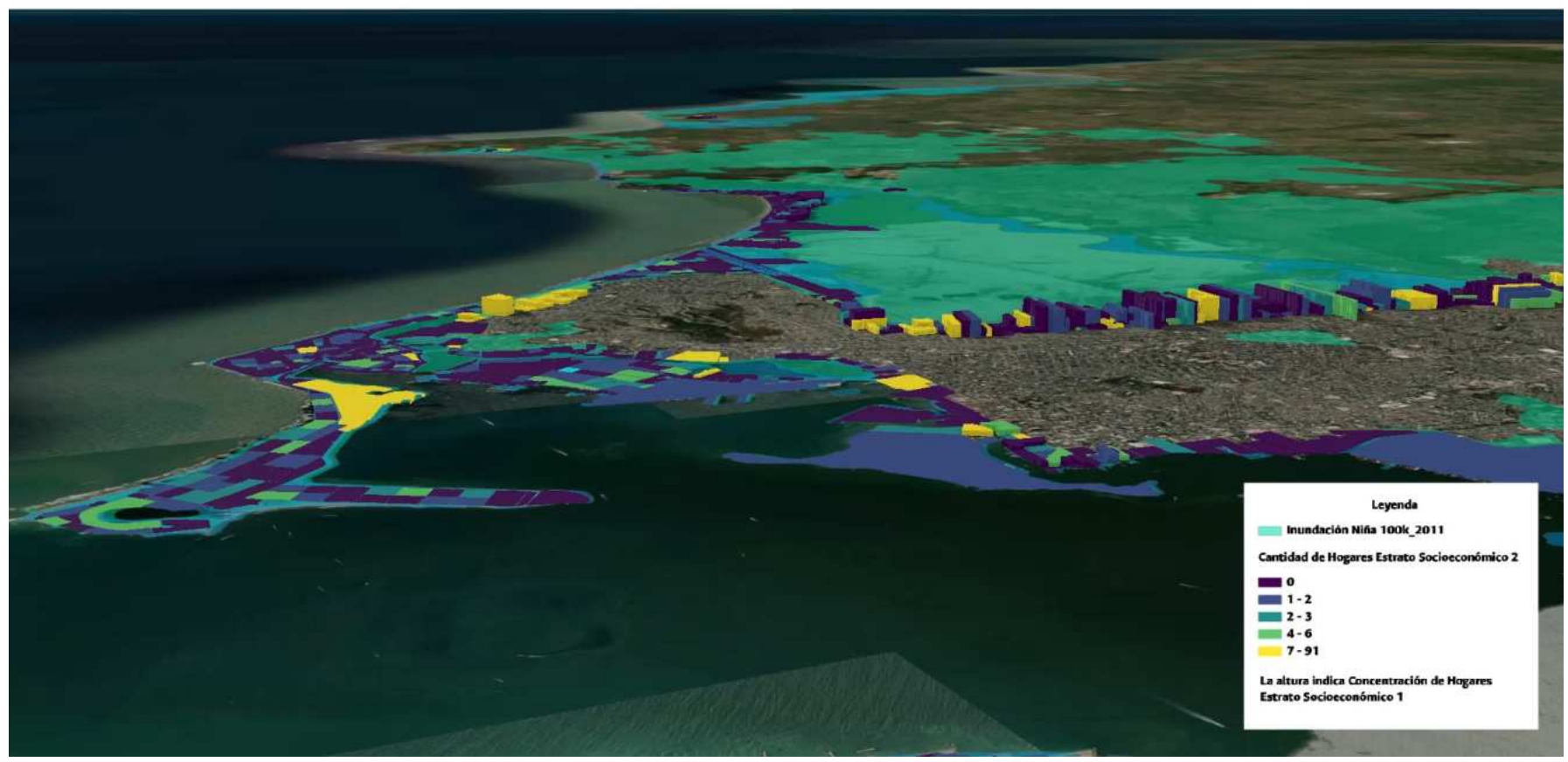
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Socioeconomic analysis



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Estimation of value exercise

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Urban Sector North Coveñas Ciénaga - La Caimanera Zone

In the image, we can visualize the 3 scenarios of sea level rise (SLR) (INVEMAR) and the urban properties in the northern area of the municipality of Coveñas, with mostly residential designation, an area bounded by the coastline and the marsh.

NOTE: 8.9% of the rural properties in the municipality of Coveñas would be affected by the sea level rise.



Área	km2	Porcentaje
Coveñas	56.51	0
18 cm ANM	2.91	5.5%
29 cm ANM	4.33	7.6%
40 cm ANM	6	10.6%

30% of the urban property area in Coveñas would be affected by the SLR primarily impacting the tourism sector.

1312 properties would be affected by the year 2100.

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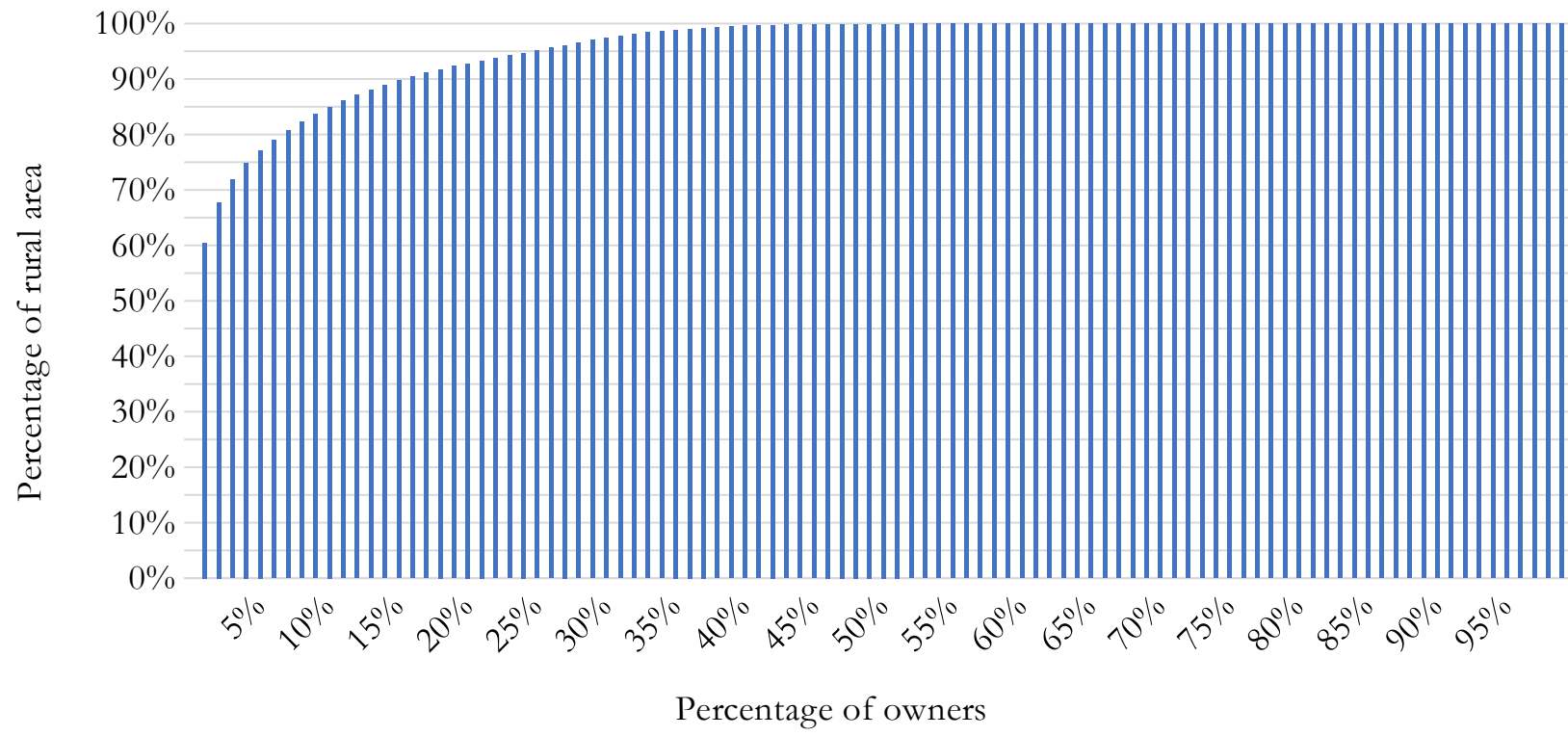
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Coveñas, Sucre



Municipal GINI: 0.9141
Number of Owners: 617

Percentile	Area
1%	30%
2%	38%
3%	44%
4%	49%
5%	53%
6%	57%
7%	60%
8%	63%
9%	65%
10%	68%

** (Project, Analysis of Inequalities with Territorial Focus in Colombia, IGAC 2024)





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Cartagena de Indias

Total properties: 166,480

Medium vulnerability: 5,830 properties

High vulnerability: 12,525 properties

Environmental conditions may lead to increased urbanization in the northwest of the city of Cartagena, as well as a probable acceleration of informality in areas such as Cerro de la Popa.



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CONCLUSIONS

- The updated multi-purpose cadastre base could be the first and essential measure of adaptability to climate change.
- To reduce these negative impacts it is necessary to incorporate a variety of actions in the different instruments and levels of territorial and sectoral planning. Thus, for example, in the long term, such a reduction would be achieved by incorporating, or complementing and strengthening specific actions in the Land Management Plan, in the Watershed Management Plans, in the Integrated Water Resource Management Plans, in the Disaster Risk Management Plans and in the sectoral plans, among others. At the level of the four-year administration plans, consider the execution of these actions and ensure that the goals are met as progress is made through the Annual Operational Plans.
- Vulnerability in the Caribbean coastal region in 2040 is high, where the main areas affected are urban areas with a history of extreme events and a population with little adaptive capacity, in addition to areas with little planning for these flooding events or heavy rainfall that would be intensified by ANM.

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SUSTAINABLE DEVELOPMENT GOALS

International Federation of Surveyors supports the Sustainable Development Goals

Commission

Commission's name

Serving Society for the Benefit of People and Planet



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