

CLIMATE STUDIES SURINAME & ADAPTATION MEASURES

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Content

- ▣ Country Study Climate Change Suriname (1999)
- ▣ First National Communication (2005)
- ▣ National Action Plan (2007-...)
- ▣ Netherlands Country Assistance Program (NCAP-2) (2008)
- ▣ Adaptation measures

Country Study Climate Change Suriname (NCAP1)

- ▣ **Short introduction**

Objective:

to assess Suriname's ability to mitigate the impacts of climate change including that of the ASLR

- estimation of population at risk
- resources at risk
- implementation costs of the identified responses
- institutional capabilities necessary to carry out these responses

Results:
Tables and Maps

Scenarios:

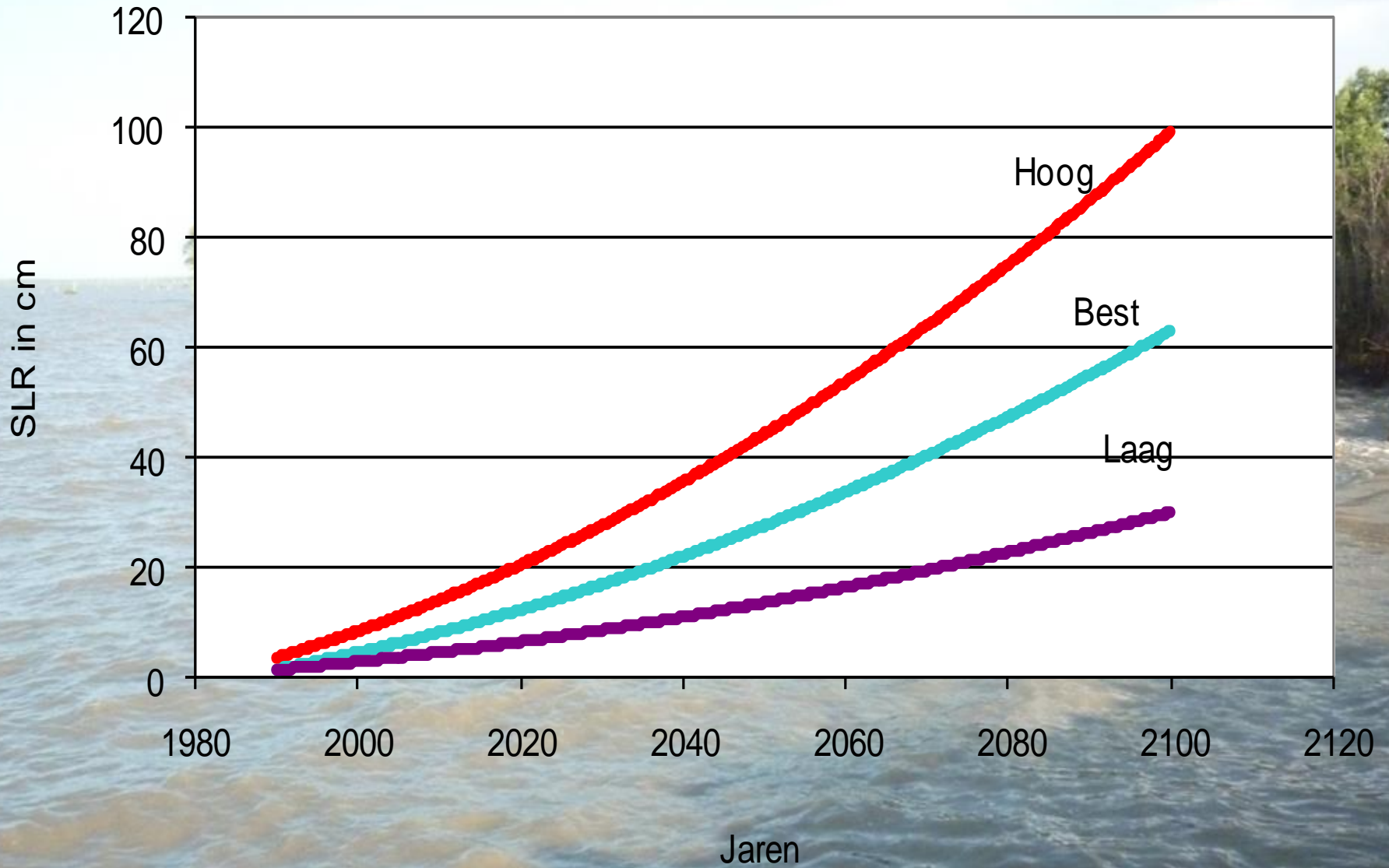
- 1: situation 1995, ASLR=0m no development
- 2: situation 1995, ASLR=0m, with development
- 3: situation 1995, ASLR=1m, no development
- 4: situation 1995, ASLR=1m, with development**

Determination of the **future profile** of the same sectors.
Data: guidelines of IPCC, expert judgments,
Hydrological Model, assumptions

Determination of the **present profile** by sectors:
Geomorphology, Ecology, Water resources, Agriculture
and Socio-Economics

Data: Satellite images, field measurements, maps, historical data, interviews,
expert judgment,

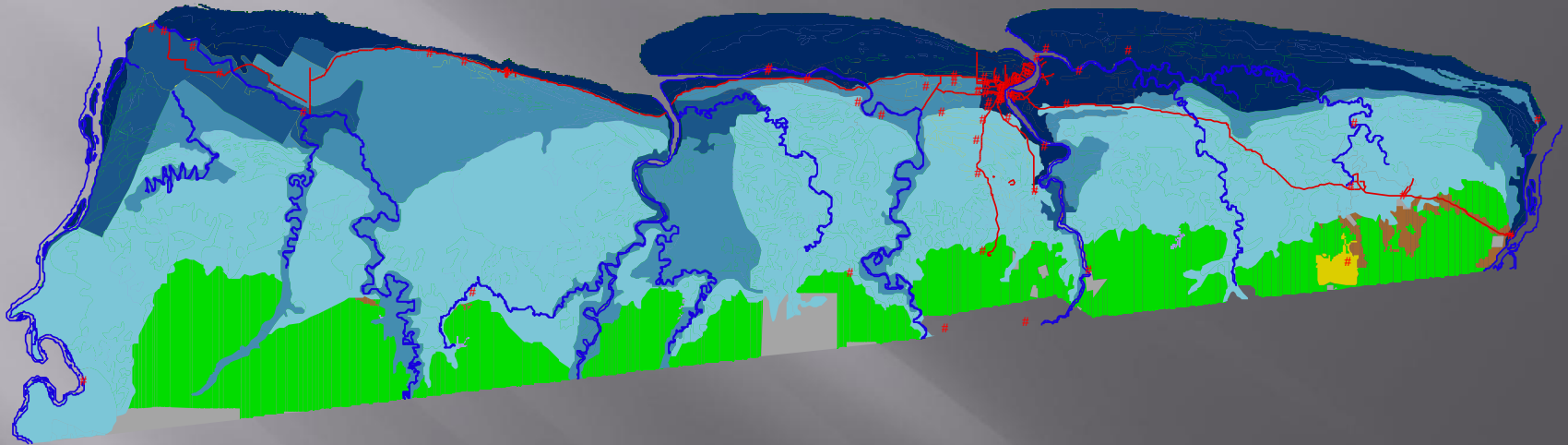
Sea-Level-Rise Scenario



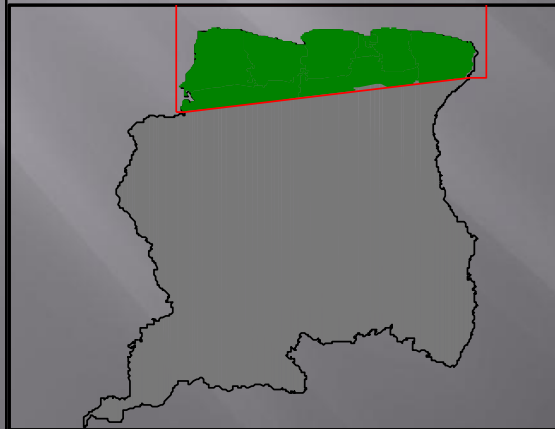
Vloed risico zones van het VA studie gebied bij ASL=1 m

Flood Risk Zones Total Coast

Scenario 2 : 1 meter Accelerated Sea Level Rise & 10% increase in annual rainfall



20 0 20 40 Kilometers



Landuse

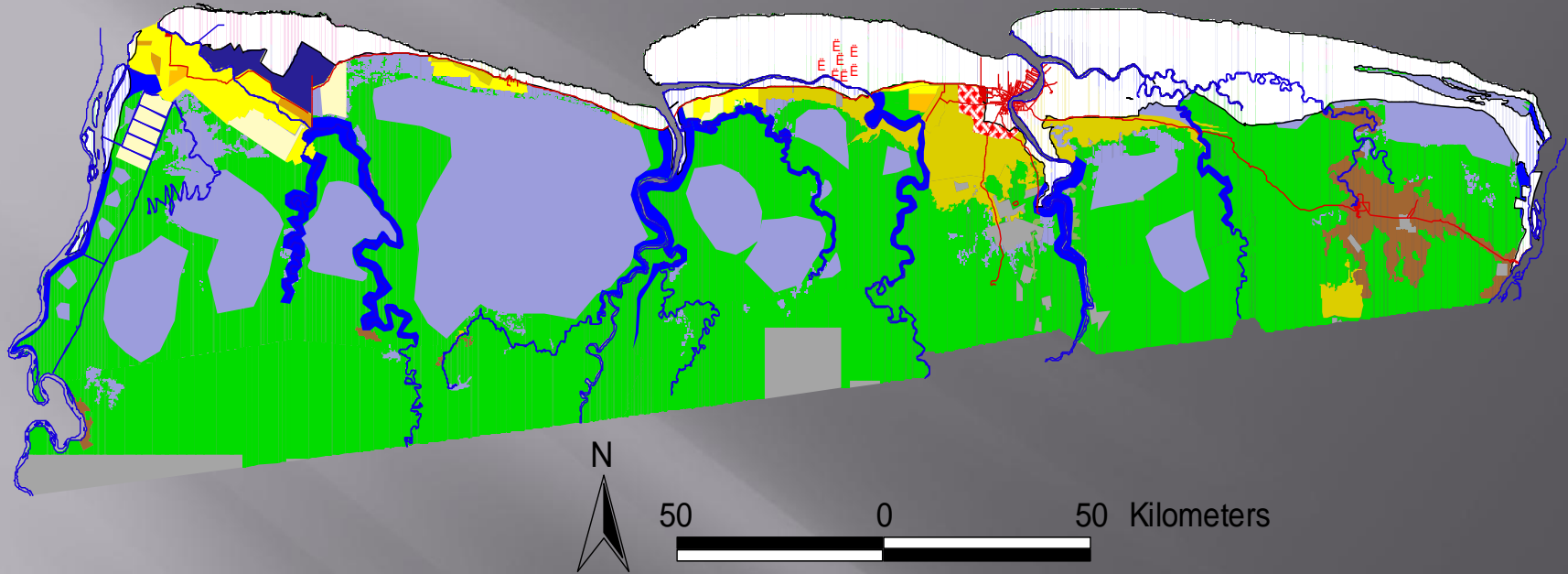
- Rice
- Banana Plantation
- Horticulture
- Mixed Agriculture
- Cultivated Land
- Aquaculture (lagoon / pond)
- Swamp
- Mangroves
- Forest
- Mining
- Urban Area

Flood Risk Zones

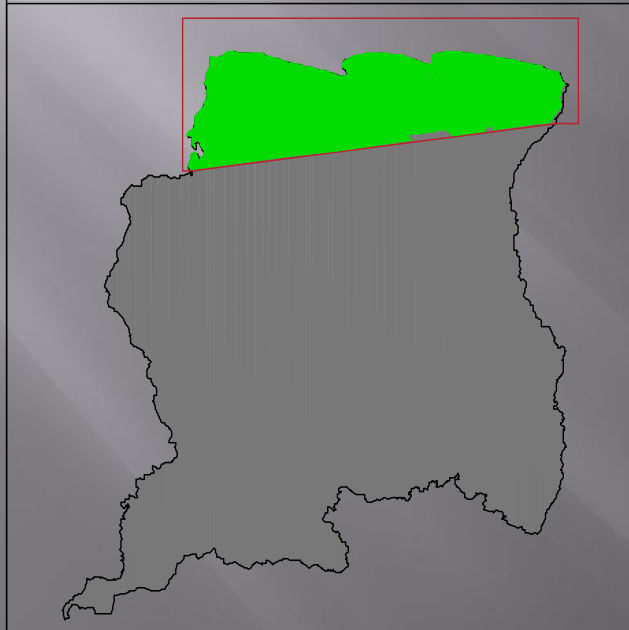
- area at loss
- intertidal area
- 1 / 10 years
- 1 / 100 years

- rivers
- main roads
- Settlement

















Land Use 2025 with development: ASLR = 1 meter



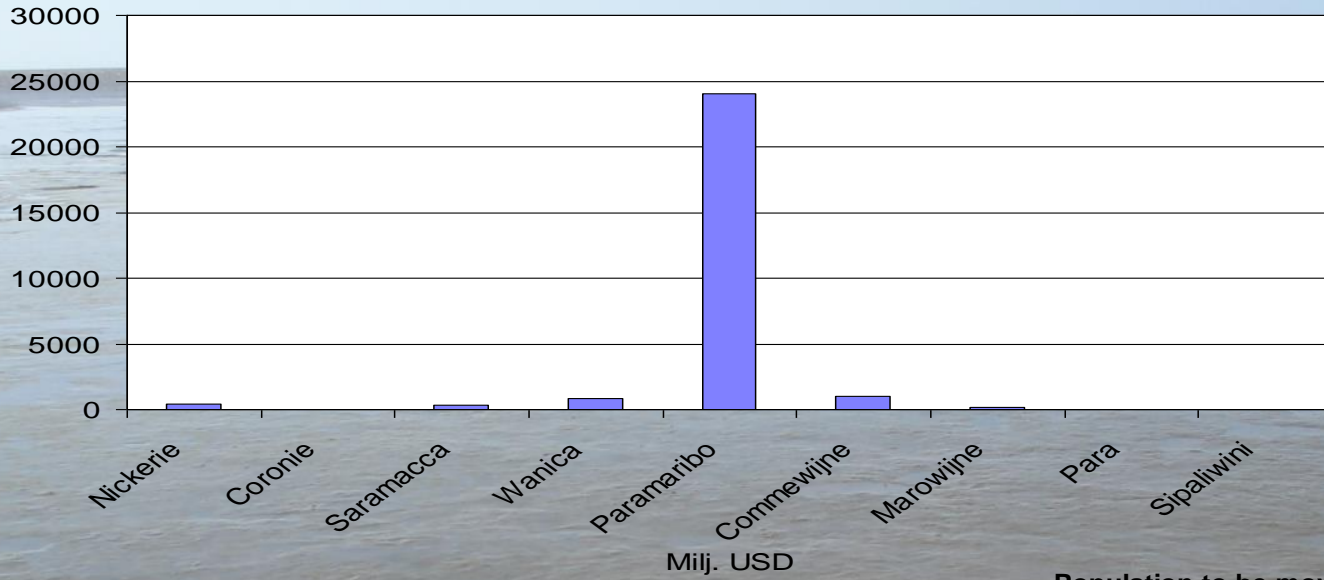
Country Study Climate Change Suriname



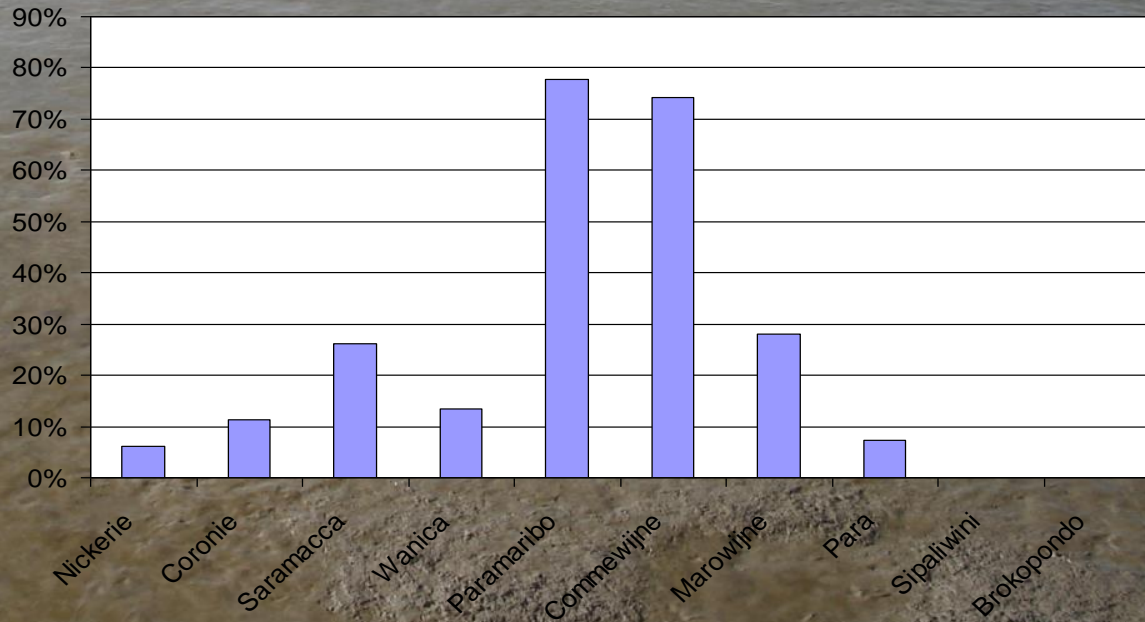
Landuse

- | | | | |
|---|----------------------|---|---------------------------|
|  | Rice |  | Rivers and channels |
|  | Banana Plantation |  | Paved road |
|  | Horticulture |  | Oil drilling |
|  | Mixed Agriculture | | |
|  | Shifting Cultivation | | |
|  | Lagoon/Pond | | |
|  | Open swamp |  | Area at loss dissolve.shp |
|  | Mangroves |  | Inundation |
|  | Swamp Forest |  | self defence |
|  | Mining |  | Expantion of rice area |
|  | Urban Area |  | Expantion of urban area |
|  | Grassland | | |
|  | Abandoned Plantation | | |

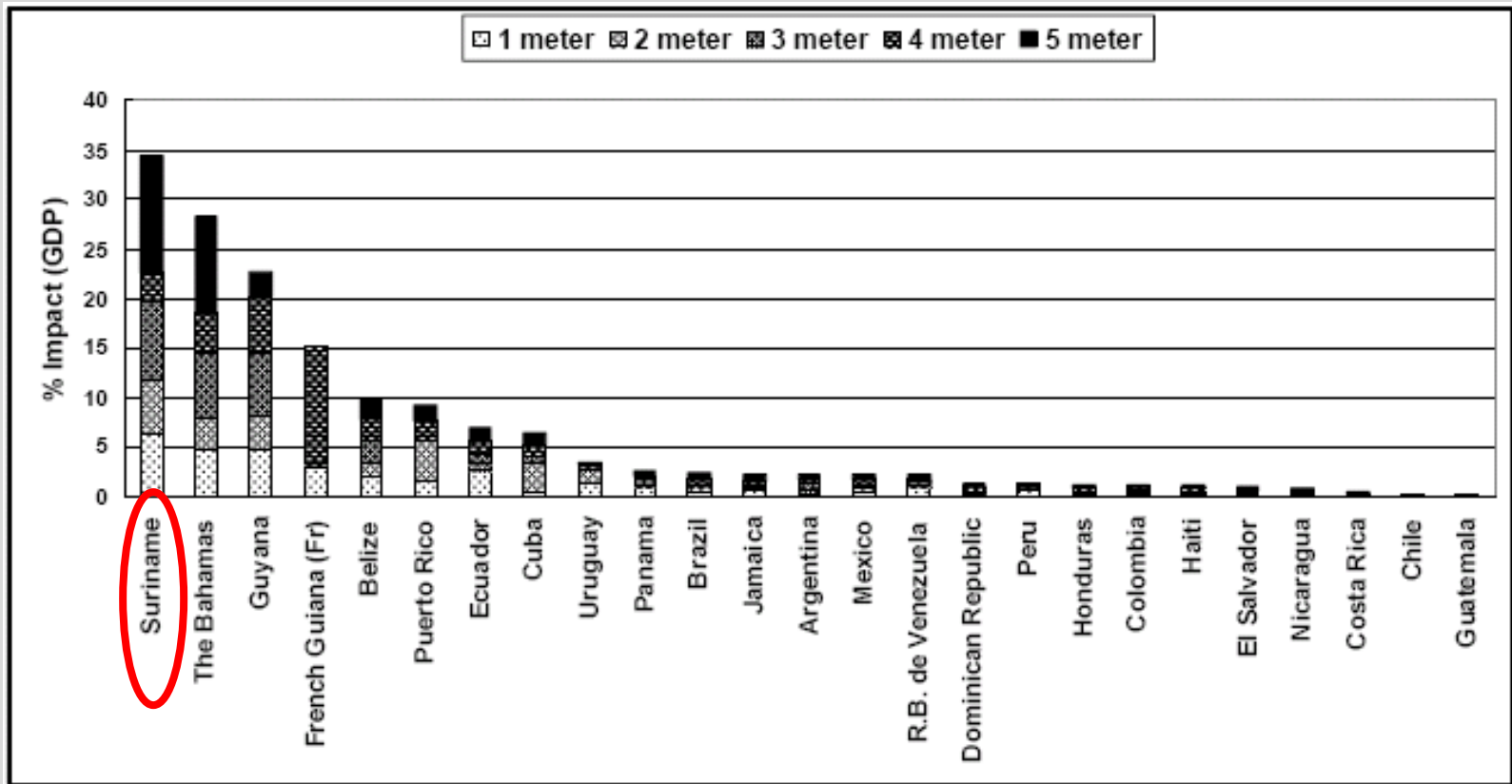
Capital values at loss in 2025 (ASLR=1.0 and development)



Population to be moved at ASLR=1.0m



GDP van Latijns Amerikaanse landen getroffen door zeeniveaustijging



First National Communication (2005)

Short introduction

Objective

- To prepare Initial National Communication in response to Suriname's commitments to the UFCCC.
- Second, Third, communications will soon follow

Specific tasks

- GHG inventory
- Identify emission abatement activities
- Assessing the vulnerability and identification of adaptation measures
- Identification of strategies for Awareness rising
- The identified recommendations to be included in the NAP

Mini hydropower at Gran-olo sula – Lower Tapanahony river - in construction



23 May 2009 - sn

National Action Plan (2007)

Short introduction

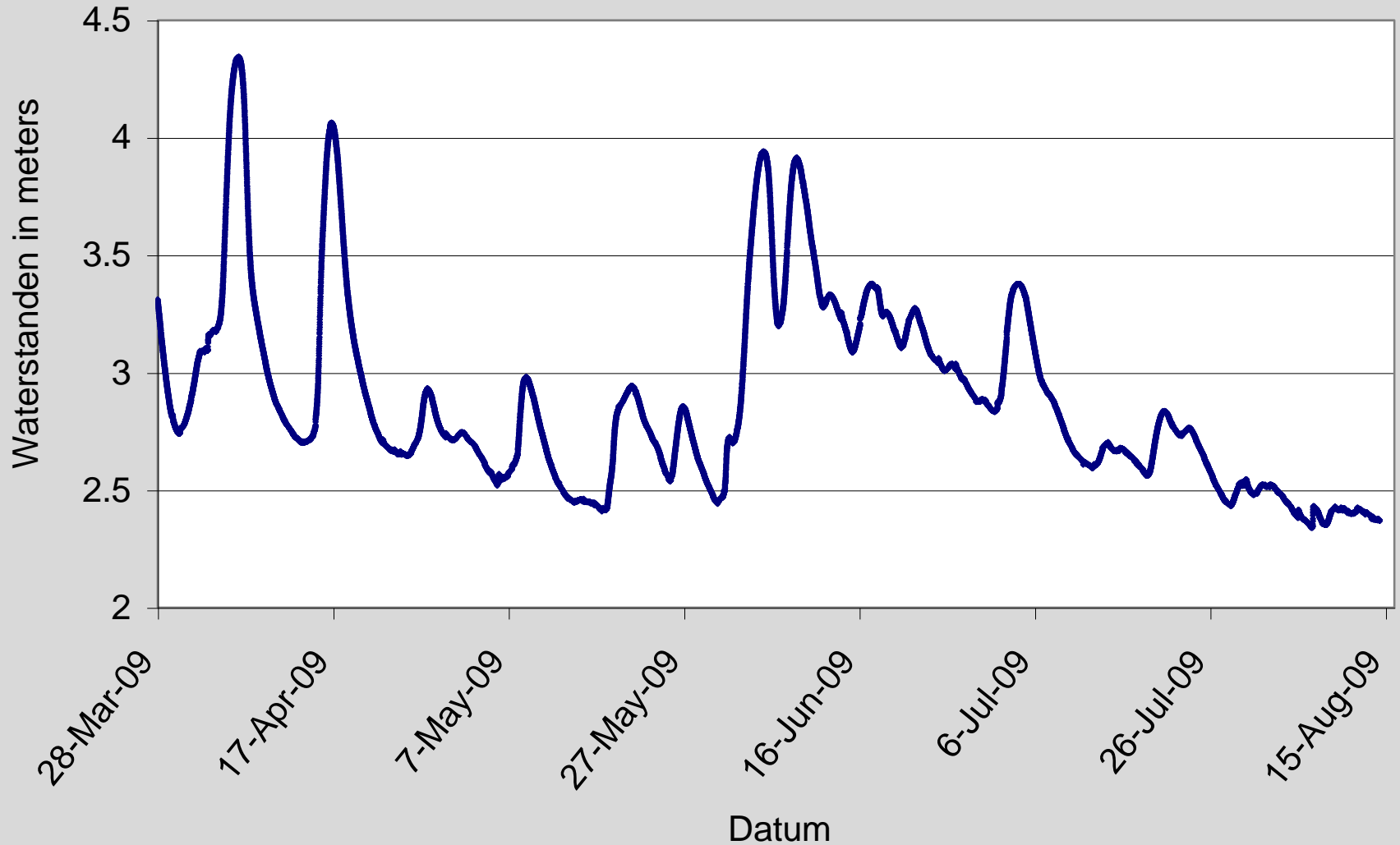
Objective of the NAP

- ▣ To create a framework for a better guidance and coordination and implementation of adaptation initiatives through participatory process and establishing synergies between other environmental related development program's

Urgency and need to act

- ▣ Climate change is here and will be with us for a long time to come.
- ▣ These changes will affect the natural cycles, including the hydrological cycle, resulting extreme hydrological events.
- ▣ Postponement or delay is not in favor. Note that every delay will enhance the vulnerability
- ▣ Best to start with “no-regret” adaptation measures.
- ▣ Please note: a second wave of Climate Change impacts will come.

Hydrograph van waterstandstation Astra te Djumu



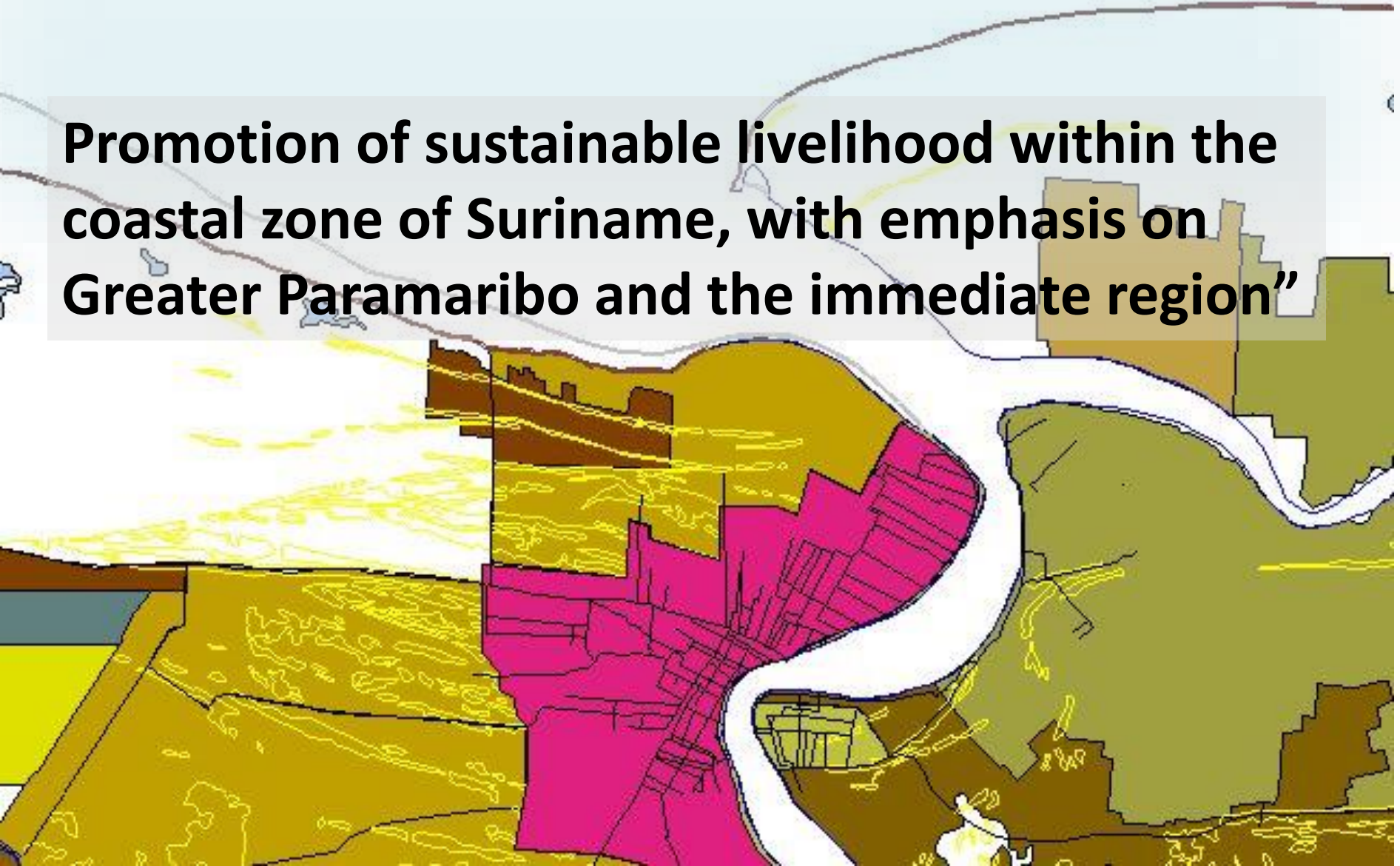
No	Project naam	Problemen	Hoofddoel(en)	Gebied
1	<i>Geïntegreerd kust- en rivier beheer</i>	<ul style="list-style-type: none"> • Inundatie vanwege aanhoudende erosie • Conflict van verschillende interessen 	Opstellen en uitvoeren van een <i>Plan voor Geïntegreerd Beheer van Kust- en Rivieroever</i> s ter bescherming van bedreigde woon- en economische gebieden tegen inundatie, kust- en rivieroever erosie, en zeespiegelstijging	Kust en rivier oevers
2	Regeneratie van mangrove	Degradatie van de kust a.g.v. erosie en mangrove kap	Ontwikkelen van technieken ter bescherming van de kust middels regeneratie van mangrove	Coronie, en Wanica
3	<i>Bescherming zoetwater</i>	Geen beleid op het gebied van duurzaam beheer en bescherming van waterbronnen	Opstellen van een Nationaal Water Beleid	Landelijk
4	<i>Volksgezondheid</i>	Grote kans op verslechtering van gezondheidstoestand a.g.v. klimaatverandering	Opzetten van een responssysteem voor het voorkomen van ziekteverspreiding en het opzetten van een systeem voor rampenbestrijding	Landelijk
5	<i>Agrarische productie</i>	Mogelijke negatieve effect op de voedselzekerheid en veiligheid.	Onderzoek naar alternatieve systemen voor productie en identificatie van maatregelen voor bescherming	Landelijk
6	<i>Energie</i>	Negatieve impact van klimaatverandering op energie voorziening in Suriname; geen alternatief voor huidige energie systeem	Onderzoek bevorderen naar mogelijkheden voor vervanging van conventionele energie bronnen	Landelijk
7	<i>Bewustwording en educatie</i>	Onvoldoende kennis van klimaatverandering en bedreigingen bij bevolking en beleidskamers.	1) - Ontwerpen en uitvoeren van een bewustwordingscampagne; 2)- Incorporeren van klimaatveranderingen en de effecten in het onderwijscurriculum	Landelijk
8	<i>Wetenschappelijk onderzoek en observatie</i>	Geen adequate observatie netwerk voor verschillende sectoren	Capaciteits- en institutionele versterking ten behoeve van wetenschappelijk onderzoek en observaties rond klimaatverandering	Landelijk
9	<i>Capaciteitsversterking</i>	Te kort aan nodige capaciteiten	Opzetten van D8een procedure voor kustmanagement plan	Kust zone
10	<i>Financiering Nationaal Actie Plan</i>	Zeer beperkte middelen om het NAP programma uit te voeren	Ontwikkelen van Capaciteit om fondsen aan te trekken	Landelijk

Netherlands Country Assistance Program, Phase 2 (NCAP-2)

Short introduction

Objective

Promotion of sustainable livelihood within the coastal zone of Suriname, with emphasis on Greater Paramaribo and the immediate region”



SPECIFIC TASKS

- Describe and update the present coastal profile
- Describe and update the vulnerability profile
- Elaborate adaptation measures and appropriate programs
- Determine the impact assessment of the implementation of the new adaptation measures

Adaptation inevitable

- ▣ Existing commitments to reduce GHG emissions are insufficient to halt present climate change. Thus adaptation is inevitable.
- ▣ A range of adaptation measures are presented; see NAP
- ▣ A society-wide movement for adaptation is required.
- ▣ A combination of approaches, ranging from engineering types to societal processes, will be required.
- ▣ This means a combined top-down / bottom-up approach should be adopted.

Adaptation measures

- **Retreat, accommodate and protect**
- **Combination of these three options is the mixed feasible**
 - Increased the robustness of infrastructural designs and long-term investments
 - Increase flexibility of vulnerable managed systems.
 - Enhance adaptability of vulnerable natural systems
 - Stop all development in the northern part of Paramaribo
 - Reversing mal actions and or maladaptive trends
 - Improving societal awareness, preparedness and warnings.
 - Enhancing the level of research works

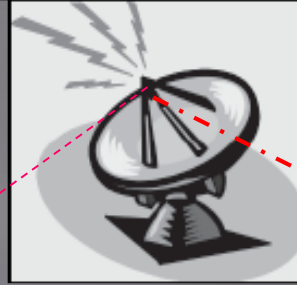
Recommendation

- ▣ Based on the afore-mentioned we recommend to go for the adaptation measures as proposed, starting with:
 - Create awareness among the inhabitants
 - Stop constructing defense works
 - stop issuing land in the threatened zones
 - Withdraw the not used and abandoned land
 - Protect all remaining mangrove forest
 - Implement monitoring system
 -

Adaptation measure at Weg naar Zee

Thank you for your attention





Communication

- RS-232
- SDI 12 interface



Real time data

Memory for data

Capacity of about 30,000 measured Values

Time interval is at users choice, from 1 min to 24 hours



Is dit een adaptatie maatregel?



8 jan 2007



14 mei 2008



31 juli 2009

De verschillende groeistadia van één en hetzelfde
Parwaplant (*Avicennia germinans*) bij de monding
zoetwaterkanaal te district Coronie

