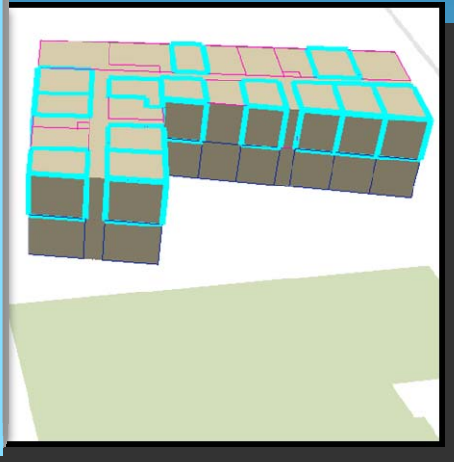
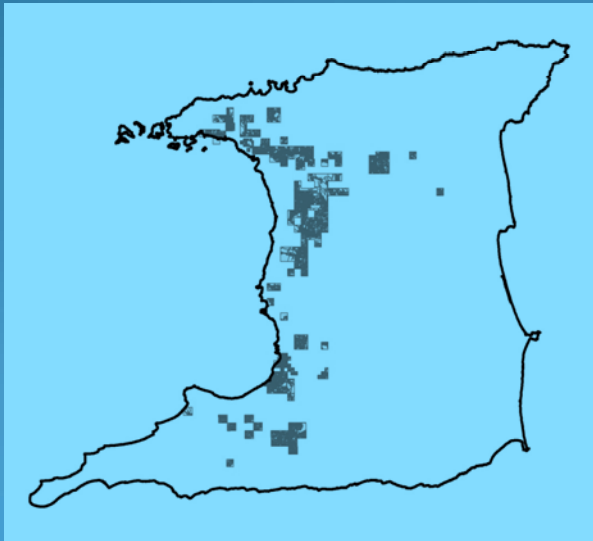


An Analysis of the Necessity for 3D Cadastres with Reference to Trinidad and Tobago

Charisse GRIFFITH-CHARLES and
Michael SUTHERLAND,
Trinidad and Tobago



CBA for Trinidad and Tobago

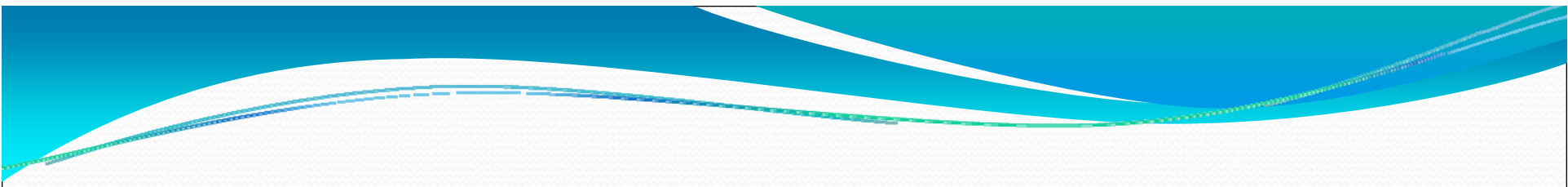
- **COST-BENEFIT ANALYSIS**
- **3D CADASTRES: INTERNATIONAL STATUS**
- **CADASTRE IN TRINIDAD AND TOBAGO**
- **METHODOLOGY FOR THE CBA**
- **DATA**
- **ANALYSIS**
- **CONCLUSION**



COST-BENEFIT ANALYSIS

- General CBA theory
- CBA in Developing Countries
- CBA in Cadastres and 3D Cadastres





General CBA Theory

- Making best guesses in relation to uncertain futures;
- Tradeoffs in relation to uncertain futures;
- Assuming that everything can be traded for something else;
- Distortions of perceptions of the future based upon the assumption that costs and benefits will occur simultaneously;
- Exaggerated costs or benefits;
- Subjective biases.

CBA in Cadastres

Quantifiable benefits

Economic -.

- The increase in tenure security leads to increases in land transactions which is reflected in and can be quantified by the change in GDP
- Increases in transactions provide increases in transaction taxes to the state
- The system provides for increased ability to recover outstanding land taxes
- The system provides for increases in land values and therefore the opportunity for increases in income from raised levels of land taxation



CBA in Cadastres

Quantifiable benefits

Social –

- Lowered levels of land conflict provide savings to court costs
- Increase in security of tenure encourages entrepreneurial activity
- Increased ability to access credit for development results in lowered levels of poverty and lowered social support bills



CBA in Cadastres

Quantifiable benefits

Environmental –

- Decreased costly environmental impacts such as flooding, degradation, and deforestation caused by informal occupation



CBA in Cadastres

Non-quantifiable benefits :

Economic

- Establishment or improvement of a land market



CBA in Cadastres

Non-quantifiable benefits :

Social

- Increase in level of well being of citizens as a result of security of tenure and lowered conflict
- Improved decision making and planning made possible by the presence of the database
- Establishment of legislation to regulate and revise land policy



CBA in Cadastres

Non-quantifiable benefits :

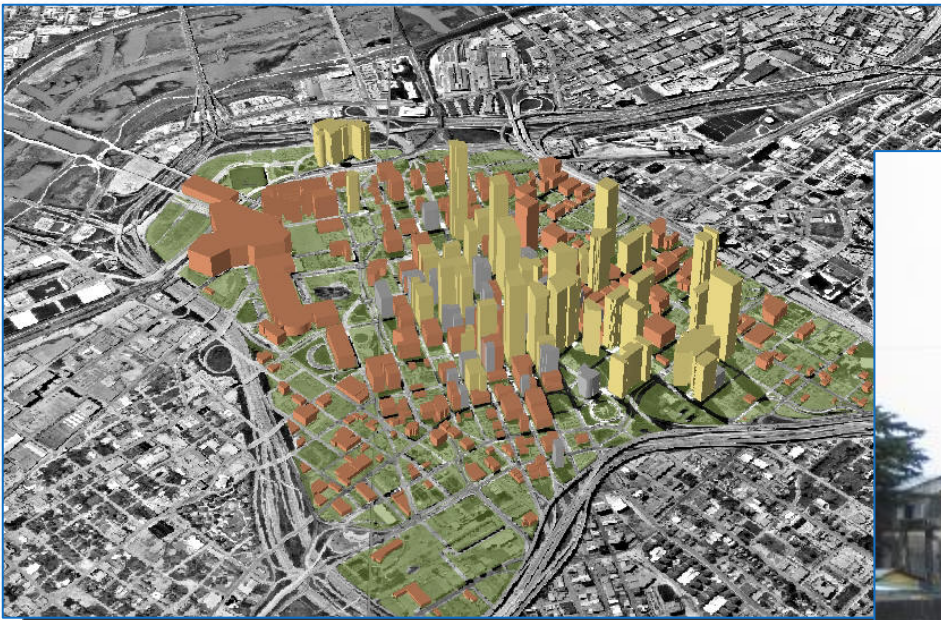
Environmental

- Preservation of habitats that were vulnerable to informal occupation, degradation



3D CADASTRES: INTERNATIONAL STATUS

Technical – Developed world



Credit – University of Texas, Dallas

Feasibility – Developing world

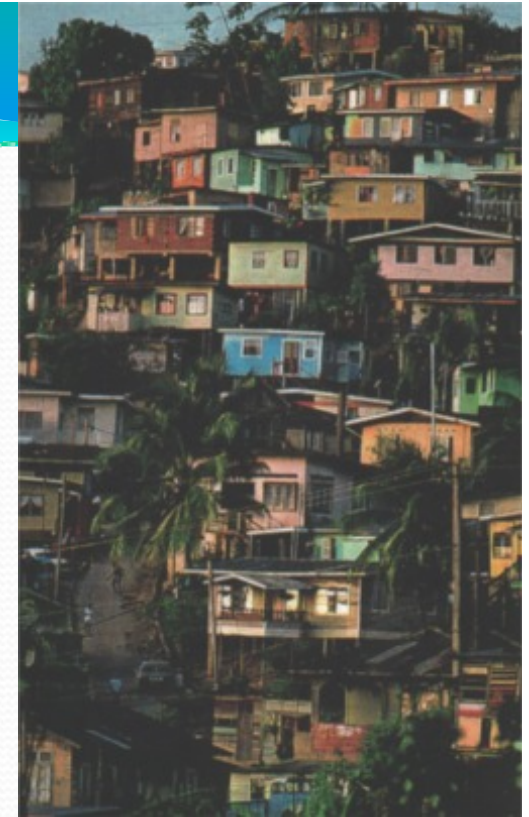


Credit – Worldpress

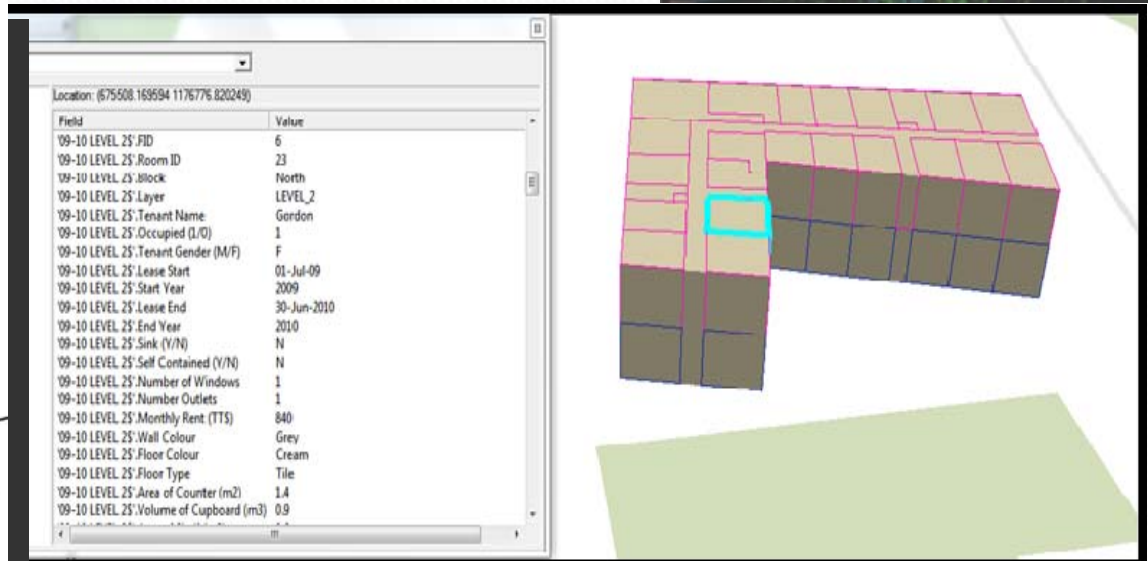
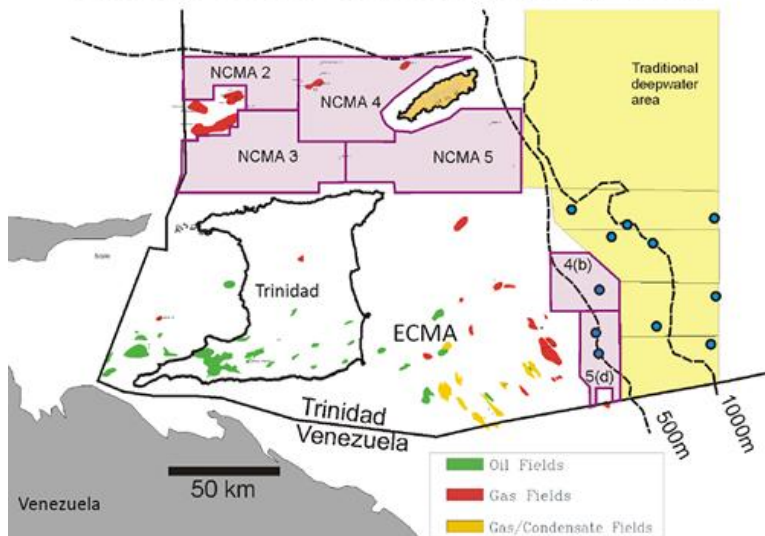
CADASTRE IN TRINIDAD AND TOBAGO

3D cadastre-related issues

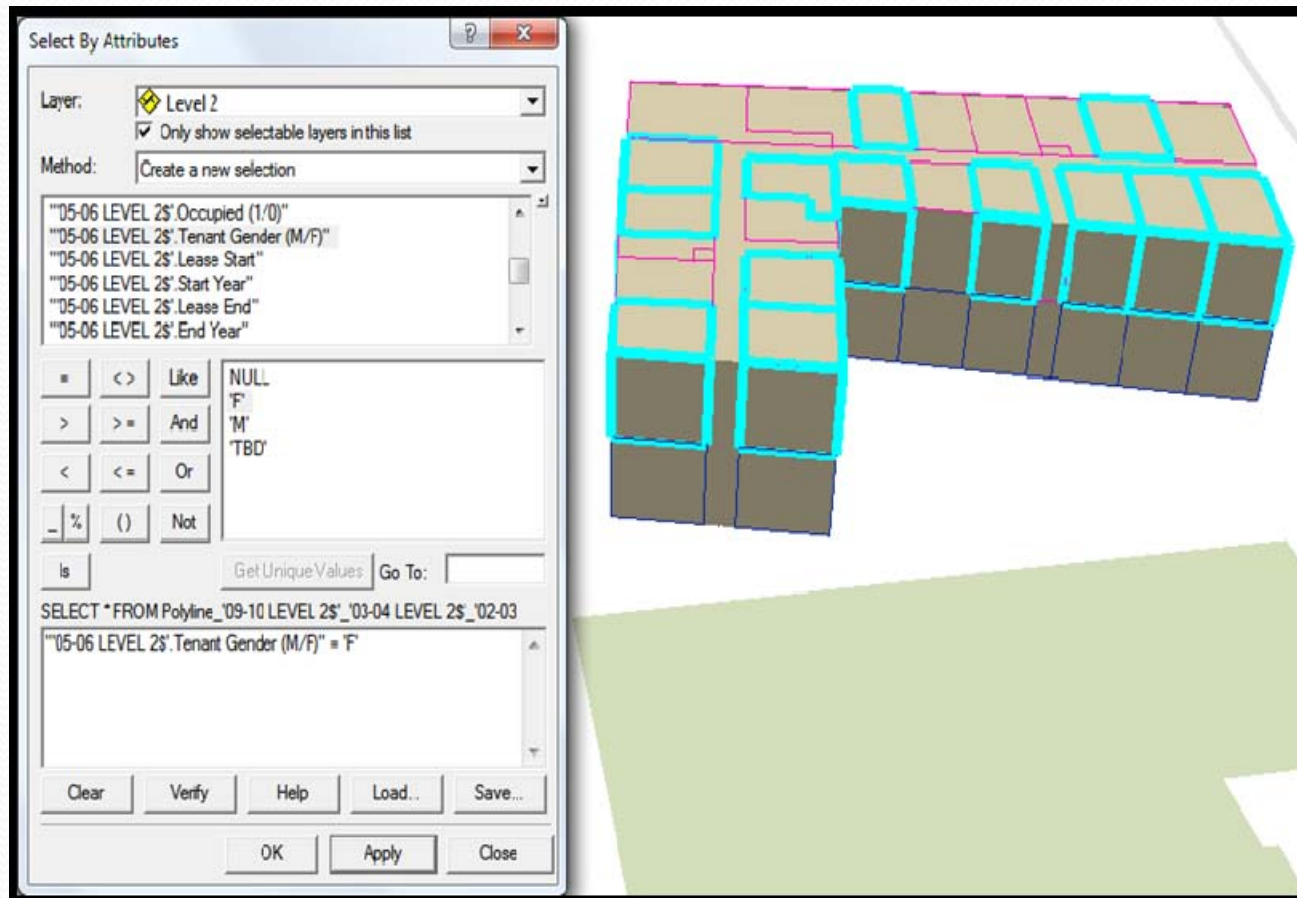
- Strata titles
- Mineral rights
- Other Issues



Shallow water opportunities (2009)



CADASTRE IN TRINIDAD AND TOBAGO



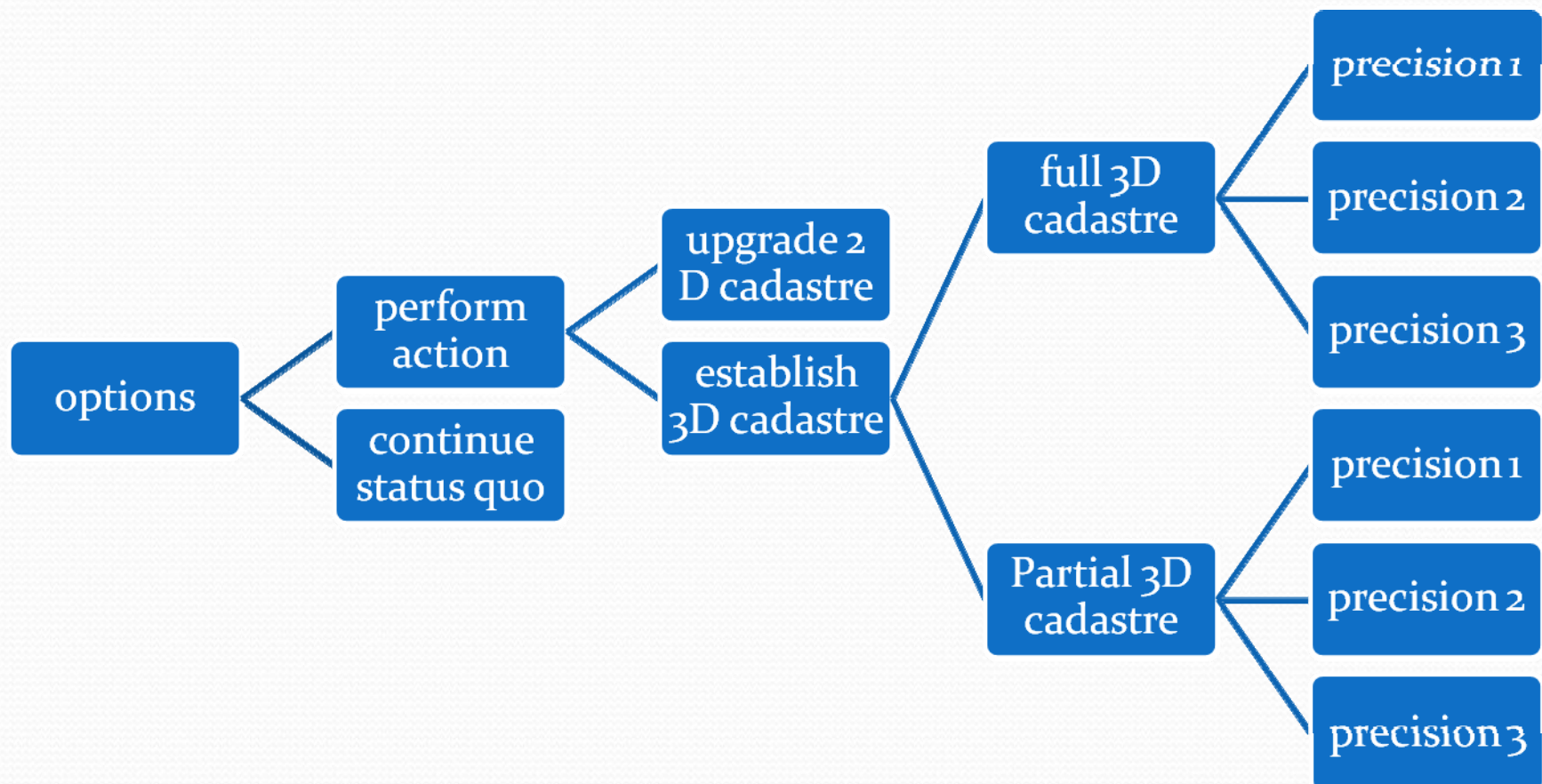
METHODOLOGY FOR THE CBA

- Alternatives
- Cost perspective
- Defining the variables
- Data Acquisition
- Monetisation

Methodology for the CBA

- Determine the alternatives that will be focused on in the analysis
- Determine from whose perspectives the costs and benefit will be defined
- List the benefits, costs and the units to be used to quantify them
- Determine the relevant quantities
- Monetise the costs and benefits using specified computations
- Reduce benefits and costs to present values for comparison
- Test the result with a sensitivity analysis
- Recommend based on the results and an understanding of the issue

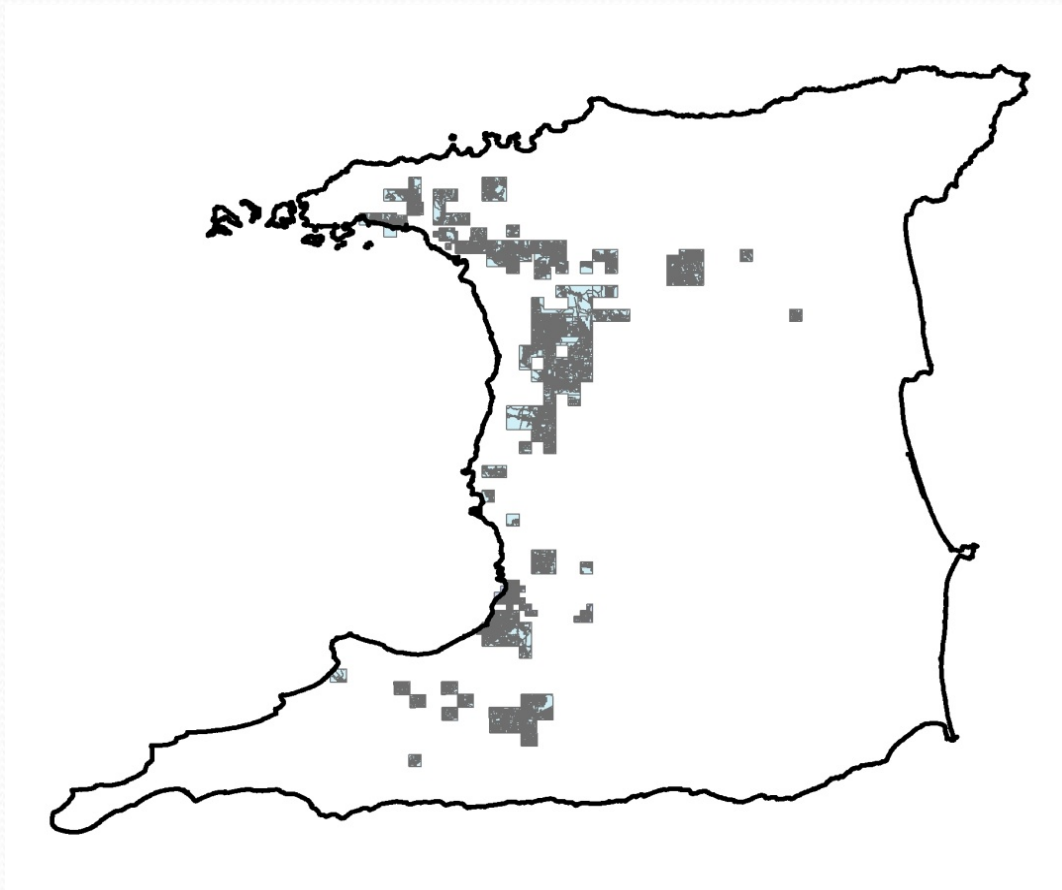
Alternatives

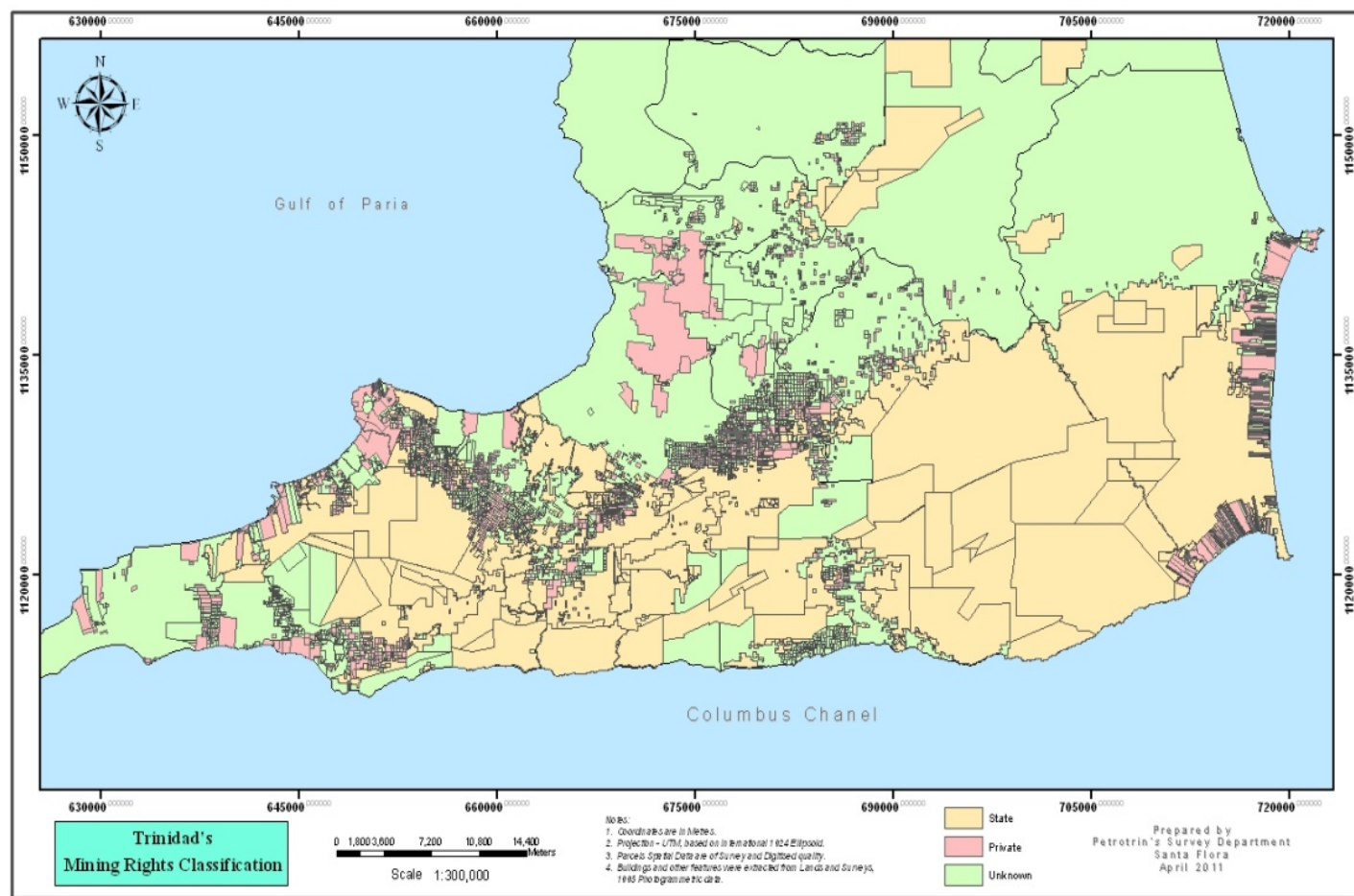


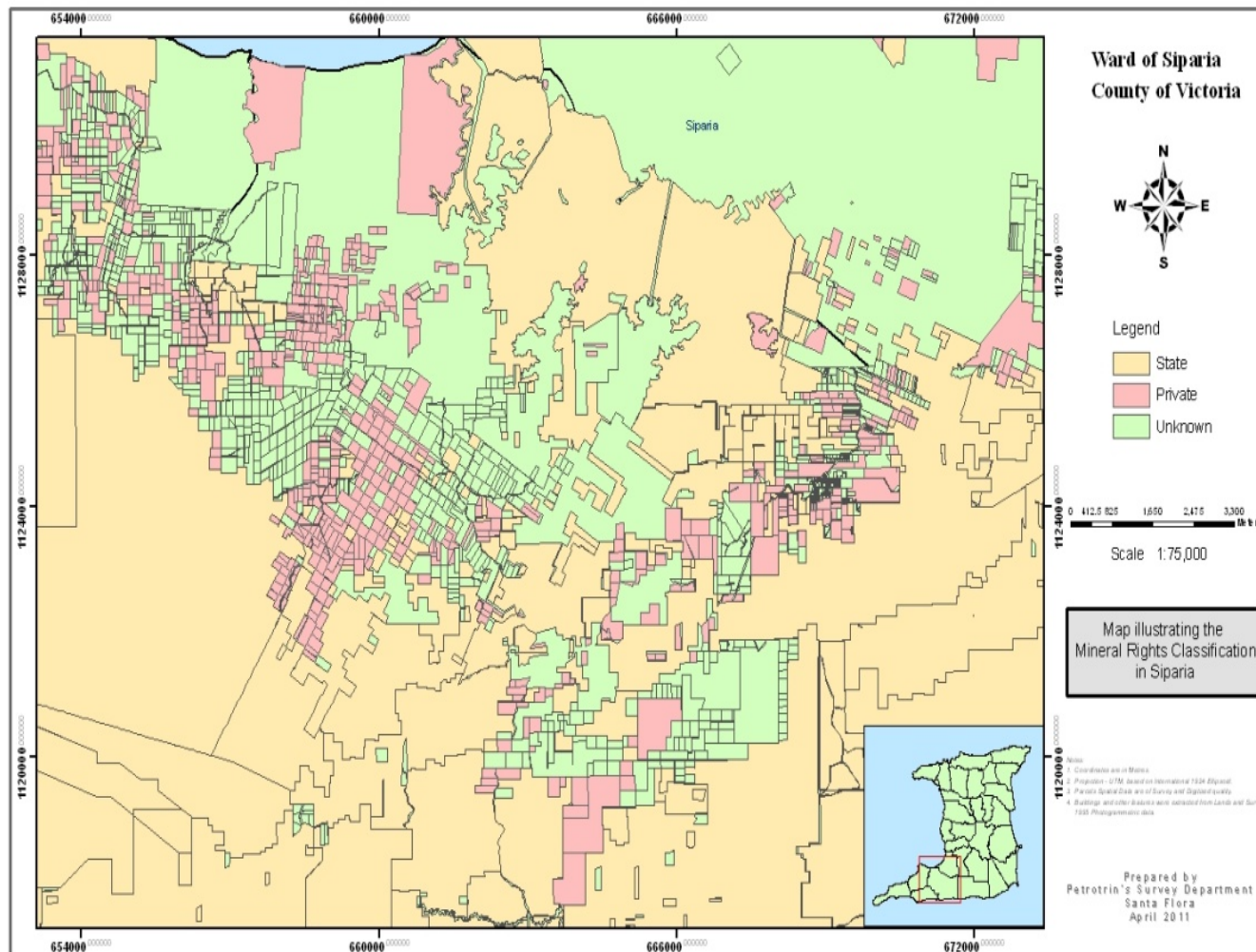
Defining the Variables

		Impact Type	Variable
Financially quantifiable	costs	economic	Acquisition of boundary data, maintenance costs, capacity building for institutions, creation of legislation
		Social	Social welfare benefits for loss of access to land
		environmental	Increases in costs of flooding etc due to development.
	benefits	economic	Increase in GDP real estate, transaction taxes, recovered and increased land taxes
		Social	Decrease in court costs, increases in small businesses
		environmental	Decreases in costs of flooding, degradation, deforestation
Non-Financially quantifiable and intangible	costs	economic	Loss of opportunities to engage in informal land market activity
		Social	Dispossession from land
		environmental	Increases in development and loss of habitats,
	benefits	economic	Improvement in land market
		Social	Increase in well being, perceptions of tenure security
		environmental	Improved decision making

Monetisation







*current exchange rate is US\$ 1 ≈ TT\$ 6.30

DATA

Items	costs (Actual)(TT\$)*	Costs (NPV) (TT\$)	benefits (Actual) (TT\$)	Benefits (NPV) (TT\$)
acquisition of boundary data	2,998,800,000	2,998,800,000		
maintenance over 5 years (NPV)	2,400,000	1,880,462		
training (2011)	50,000	50,000		
amendments to legislation	500,000	500,000		
Mortgages/credit access			3,869,526,160	3,031,874,998
increase in real estate transaction taxes			3,600,000	3,600,000
increase in real estate property taxes x 5 years			162,500,000	127,323,002
Total	3,001,750,000	2,999,350,000	4,035,626,160	3,162,798,000
benefit			1,033,876,160	163,448,000

ANALYSIS



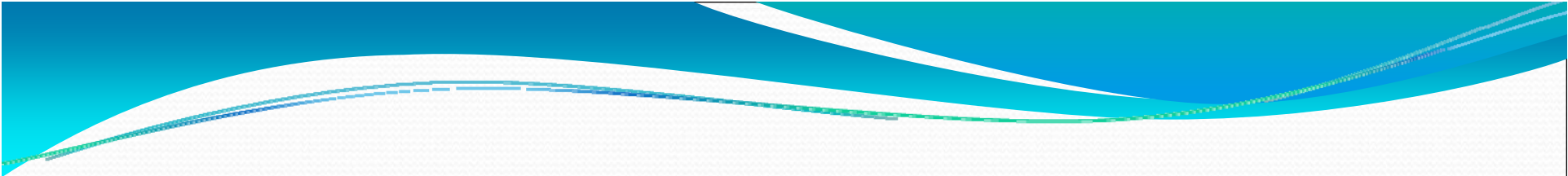
COSTS
TT\$163,448,000

BENEFITS
TT\$1,033,876,160

QUANTITATIVELY

CONCLUSION

- **COST-BENEFIT ANALYSIS**
 - Determine, analyse and compare different options
- **DECISION MAKING**
 - Non-quantifiable costs and benefits
 - Social value of 3D cadastre supports implementation regardless of the outcome of the quantitative analyses



The End

To be
continued...