environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

energy
Department:
Energy
REPUBLIC OF SOUTH AFRICA

public enterprises
Department:
Public Enterprises
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iGas

Eskom

TRANSNET

Development of a Strategic Environmental Assessment for the Identification of Energy Corridors, as well as Assessment and Management of a Gas Pipeline Network for South Africa

Environmental Constraints Mapping Process

13 August 2017

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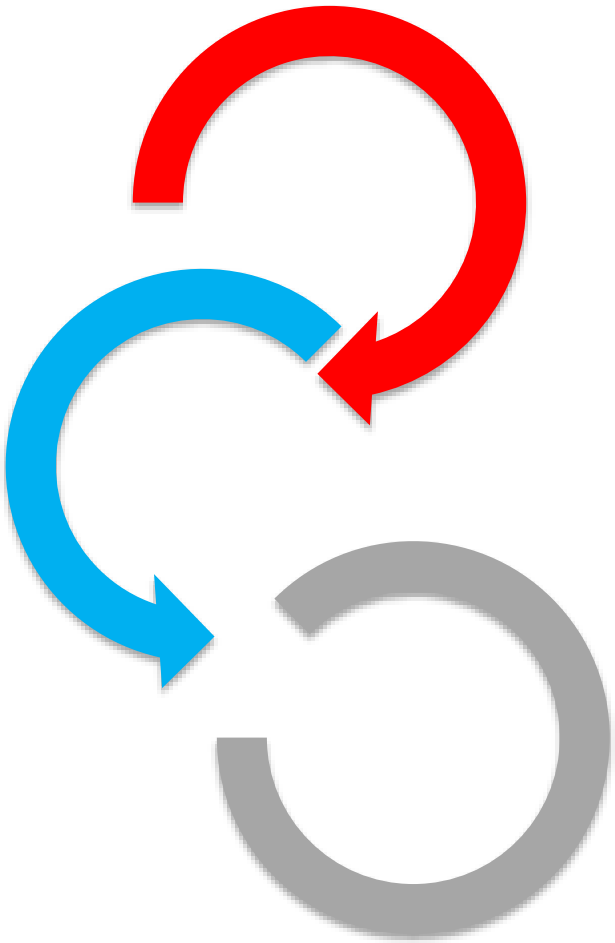
Presented by: Fahiema Daniels (SANBI)
Email: f.daniels@sanbi.org.za

Process



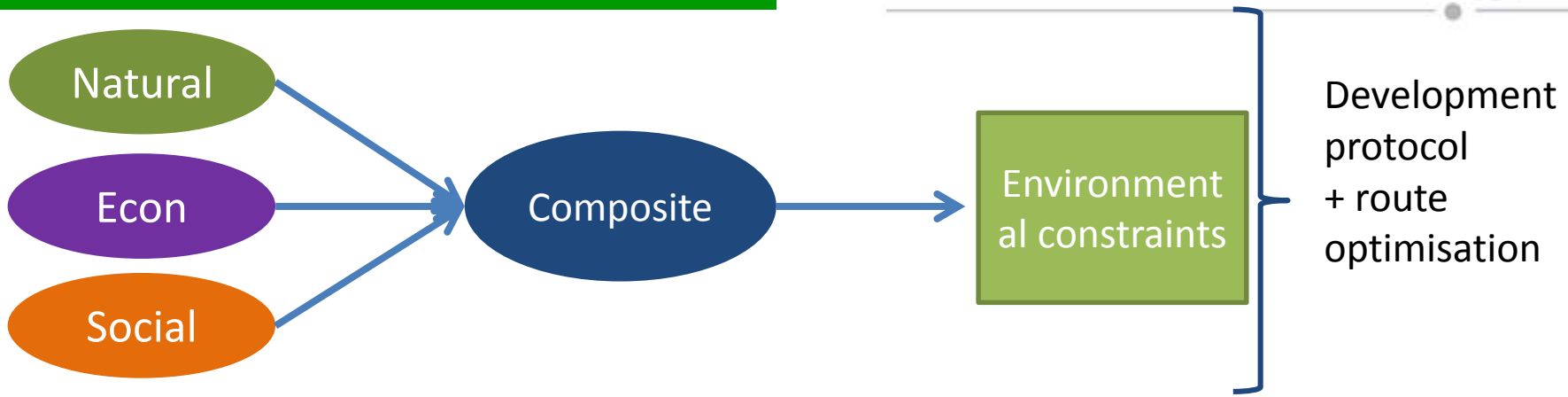
Environmental Constraints mapping

Engineering constraints

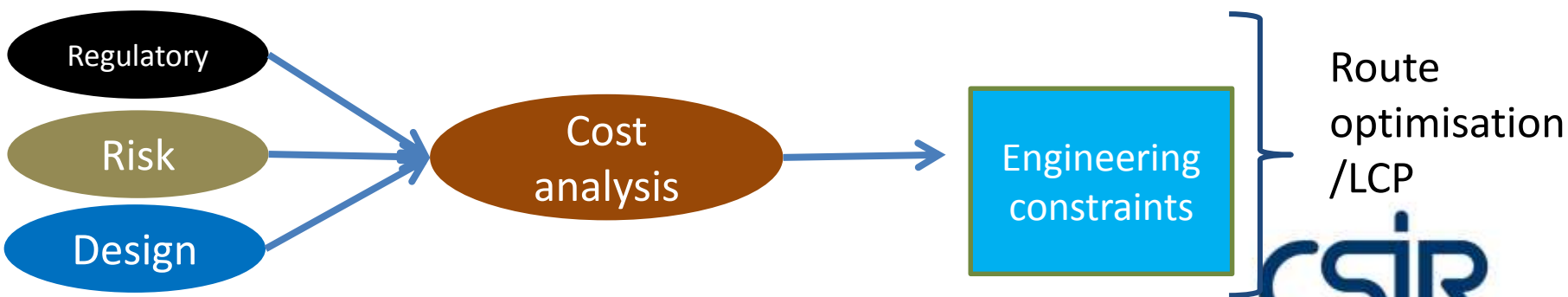
Refining of corridors

Constraints framework

Impact of EGI/Gas pipelines on Environment



Impact of Environment on EGI/Gas Pipeline



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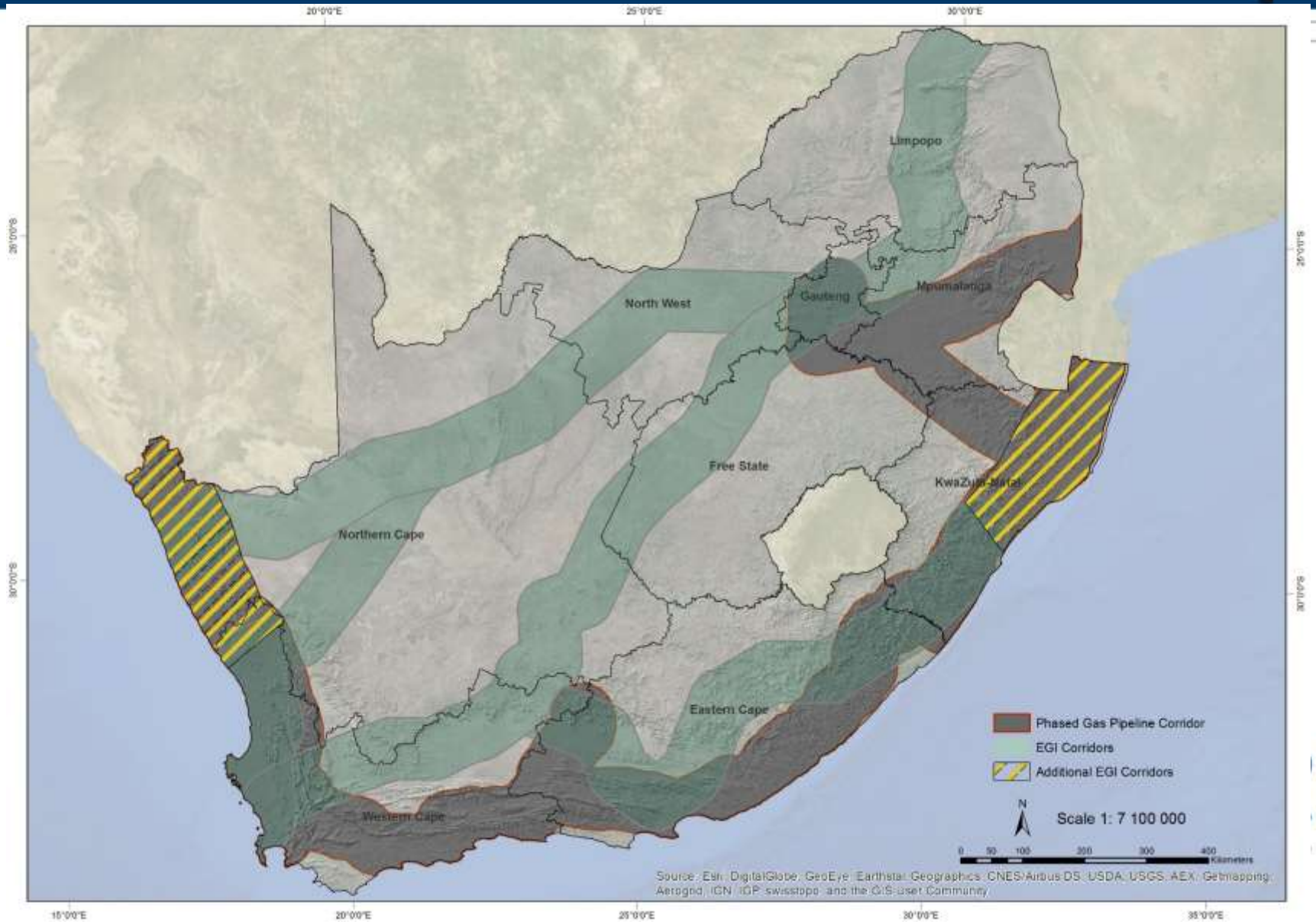
Constraints Matrix

Constraint	Environmental	Engineering
Very High	Area is rated as being extremely sensitivity to development. As a result the area will either have very high conservation or socio-economic value	The lifetime cost associated with development in this area is greater than 175% the baseline lifetime cost index.
High	Area is rated as being highly sensitivity to development. As a result the area will either have high conservation or socio-economic value	The lifetime cost associated with development in this area is between 150% and 175% the baseline lifetime cost index.
Medium	Area is rated as being of medium sensitivity to development. As a result the area will either have medium conservation or socio-economic value	The lifetime cost associated with development in this area is between 120% and 150% the baseline lifetime cost index.
Low	Ares is considered to have low levels of sensitivity in the context of Gas or EGI development	The lifetime costs associated with development in this area is less than 120% times the baseline lifetime cost index.

Preliminary Gas and EGI corridors



EGI impacts on Env constraints

Natural

Protected Areas

- National Parks
- Prov NRs
- Contract NRs
- Forest Act PAs
- Special NRs
- MCAs
- PEs
- PA expansion*
- PA buffers*

Terrestrial

- Natural Forest
- Thicket
- Thr spp localities
- CBAs
- Threatened Ecos

Freshwater

- All wetlands
- Rivers*
- Dams
- Estuaries

Degradation

- Eroded areas
- Soil erodibility

Avifauna

- IBAs*
- nb areas – large birds
- Bat roosts
- Bat ecoregions

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Environmental Constraints

Production Landscape

- Commercial Forestry
- Forestry expansion
- Sugar cane fields*
- Irrigation pivots > 500m
- Other agriculture fields*

Cultural Landscape

- Heritage Sites*
- Landscape integrity*

Urban and settlements

- Rural Settlement*
- Urban areas
- Urban Expansion*

Infrastructure and Industrial

- Square Km Array
- Industrial areas*
- Industrial expansion*
- Roads
- Railways
- Pipelines

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Protected Areas

	GAS	EGI
Marine Protected Areas	NA	Very high
National Parks and Nature reserves	Very high	Very high
World Heritage Sites (Core)	Very high	Very high
Mountain Catchment Areas	High	Medium
Protected Environments	High	Medium
Forest Nature Reserve and wilderness areas	Very high	Very high
Special Nature Reserve	Very high	Very high
10 km buffer around National Parks	High	Medium
5km buffer around Provincial Nature Reserves	NA	Medium
1km buffer around Local Nature Reserves	NA	Medium
1km buffer around Special Nature Reserves	NA	Medium
Buffer around World Heritage Sites	High	Medium
5 km buffer around protected forests	NA	Medium

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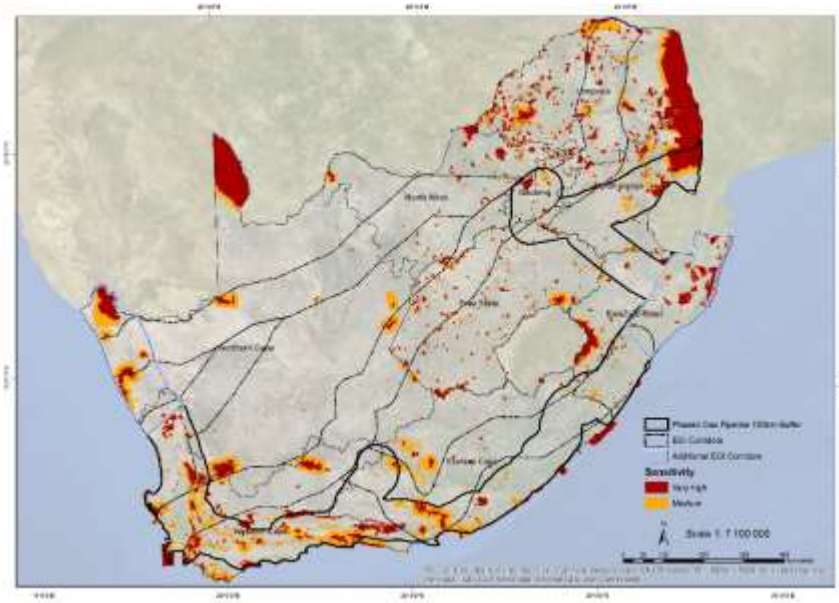
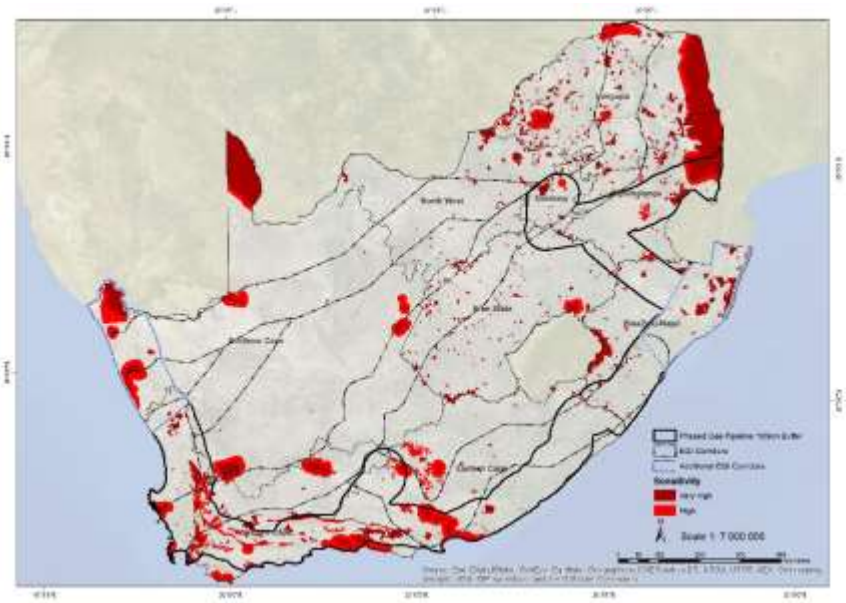
Protected Areas

EGI



GAS



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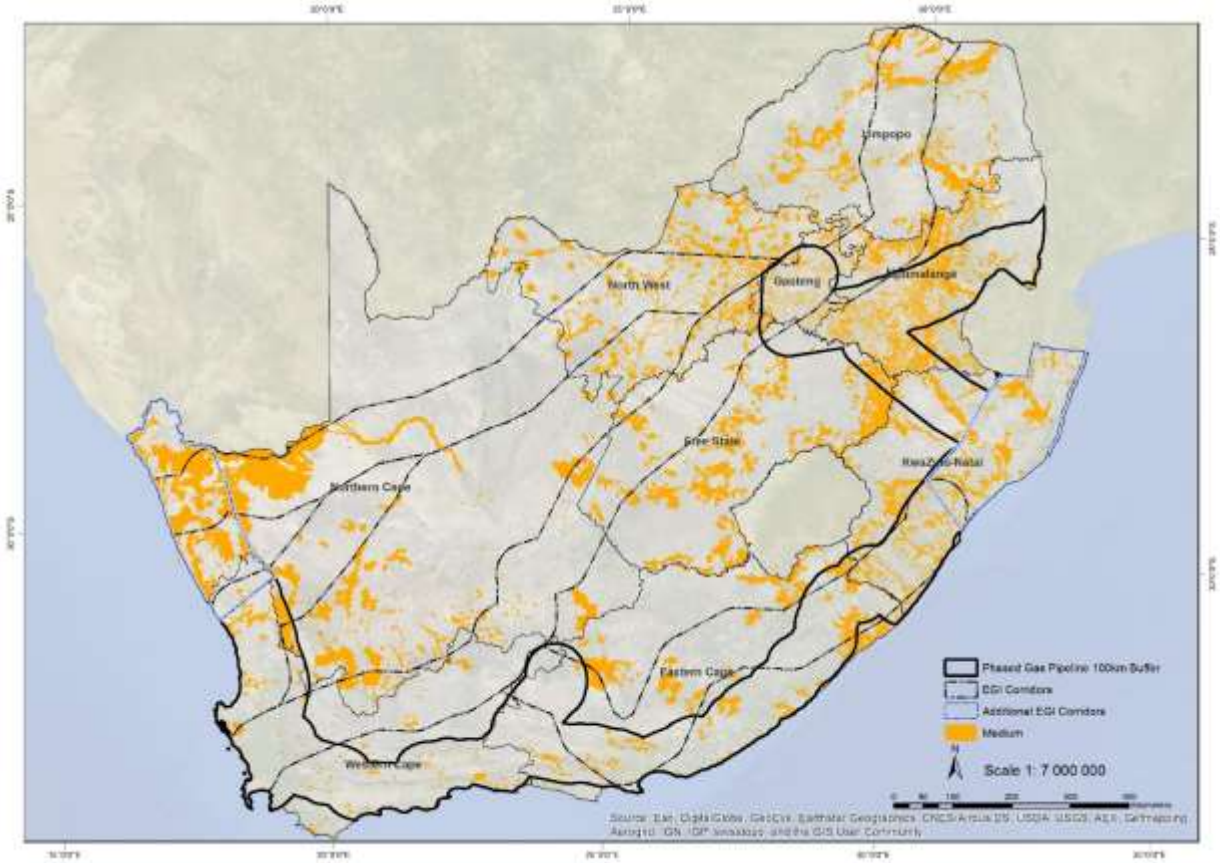
National Protected Area Expansion

Protected area expansion priorities

EGI & GAS



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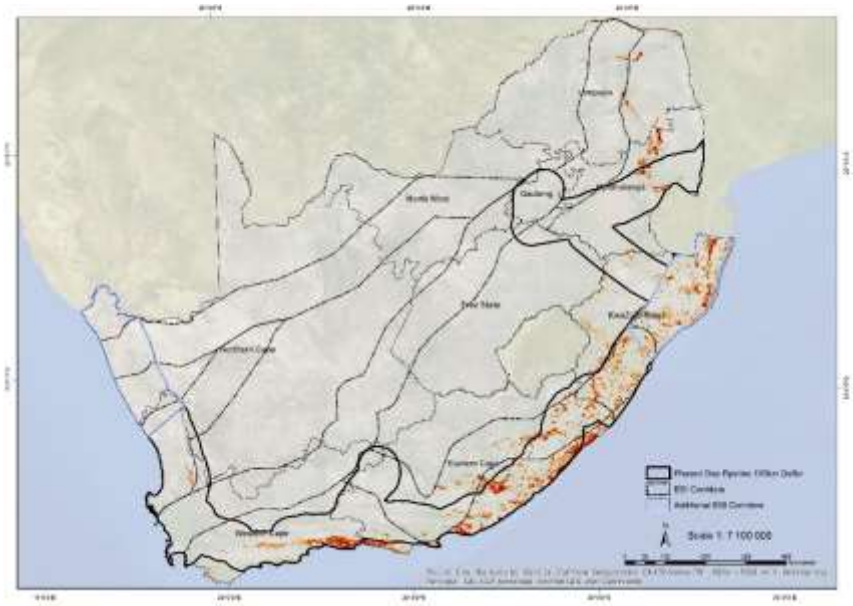
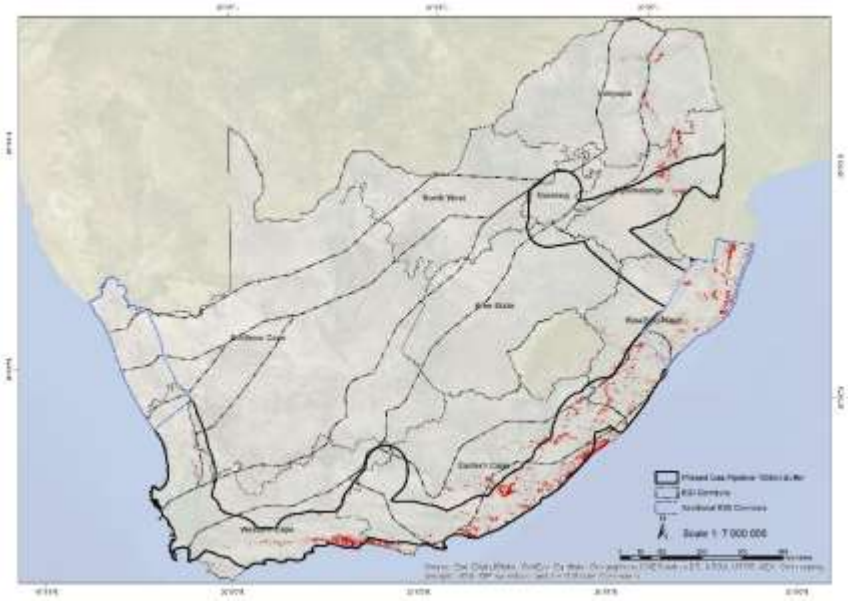
Natural Forests

	GAS	EGI
National forest inventory	Very high	Very high
Forests - Plantations	NA	NA

EGI



GAS



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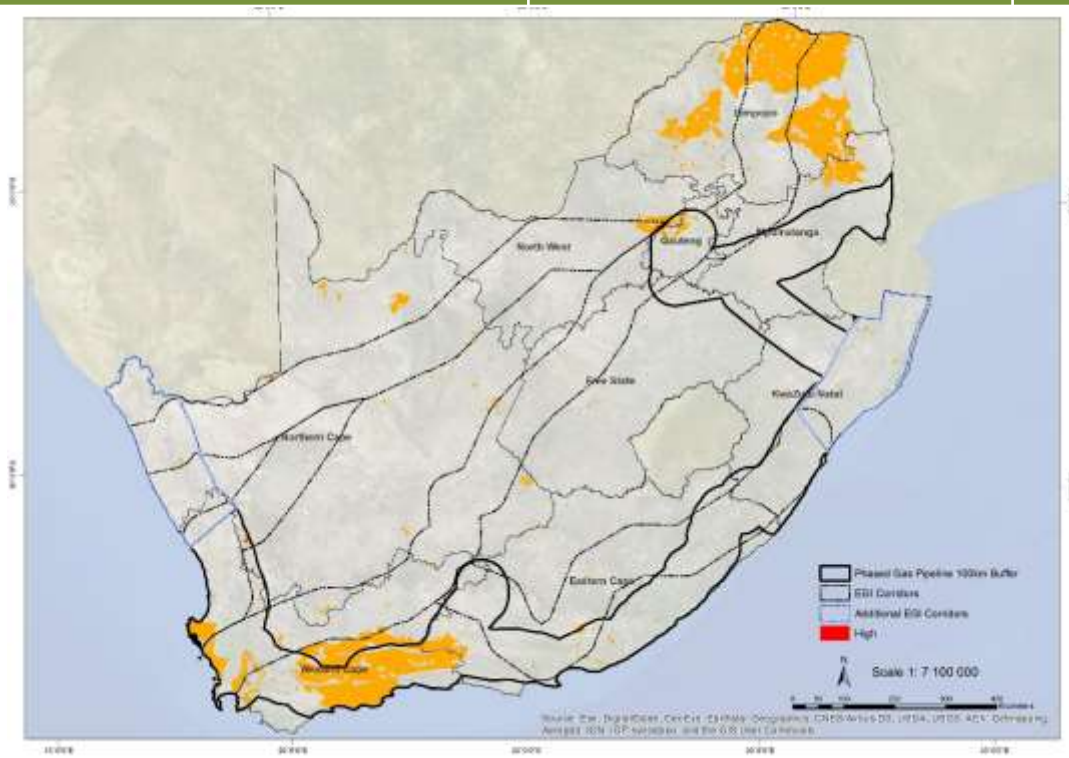
Conservation Areas

	GAS	EGI
Non core areas around biosphere	NA	Medium
1 km Buffer around National Botanical gardens	NA	Medium
5km Buffer around Ramsar Sites	NA	Medium

EGI



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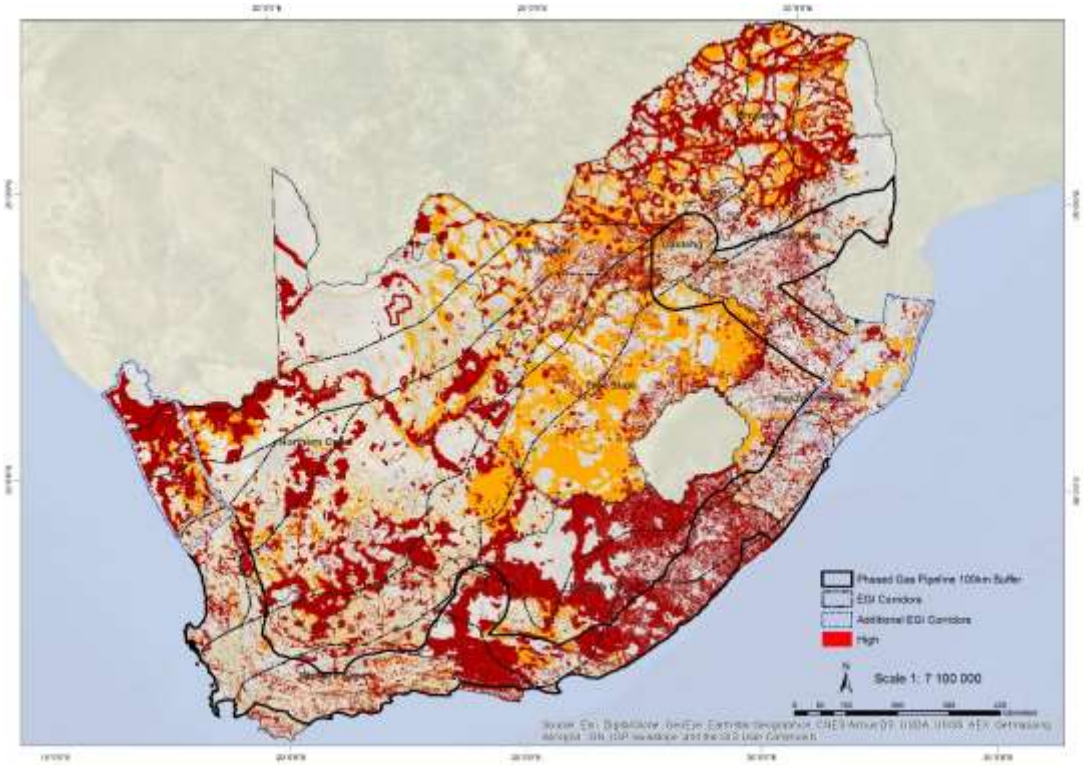
Critical Biodiversity Areas

	GAS	EGI
Critical Biodiversity Areas	Very high	Very high
Ecological Support Areas	Medium	Medium
Other Natural Areas	Low	Low

EGI and Gas



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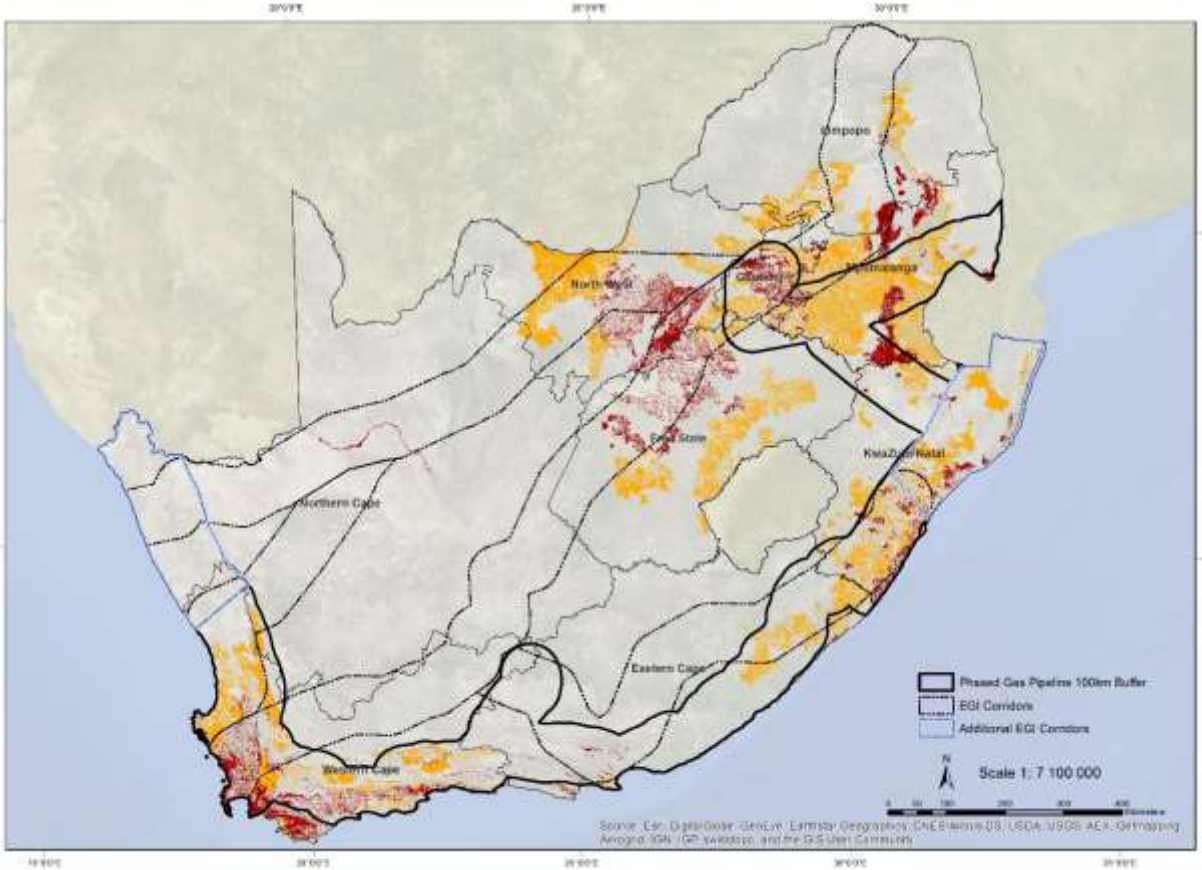
Threatened ecosystems

	GAS	EGI
Critically endangered	Very high	Very high
Endangered	High	High
Vulnerable	Medium	Medium

EGI & GAS



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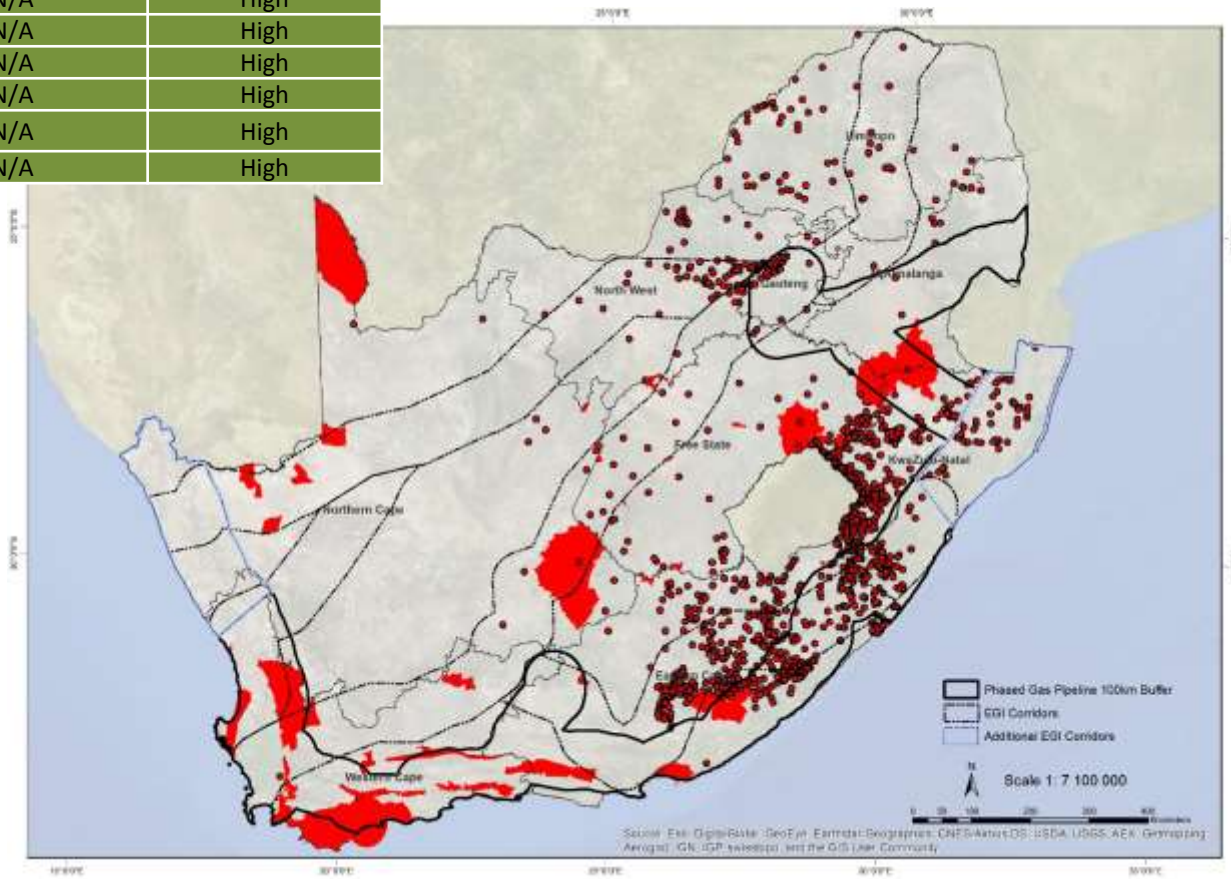
Birds

	GAS	EGI
Priority colonies	N/A	High
Transkei vulture IBA	N/A	High
Amur nests	N/A	High
Bearded vulture nest	N/A	High
FlywayVerloernvlei	N/A	High
IBA exclusion	N/A	High
Lesser Kestel	N/A	High
Potberg Cape Vulture	N/A	High
Saldanha Flyway	N/A	High
VULPRO cape vulture colonies	N/A	High
VULPRO cape vulture roosts	N/A	High
VULPRO cape vulture restaurants	N/A	High
NMMU cape vulture roost sites	N/A	High
Bearded vulture collision risk model	N/A	High

EGI only



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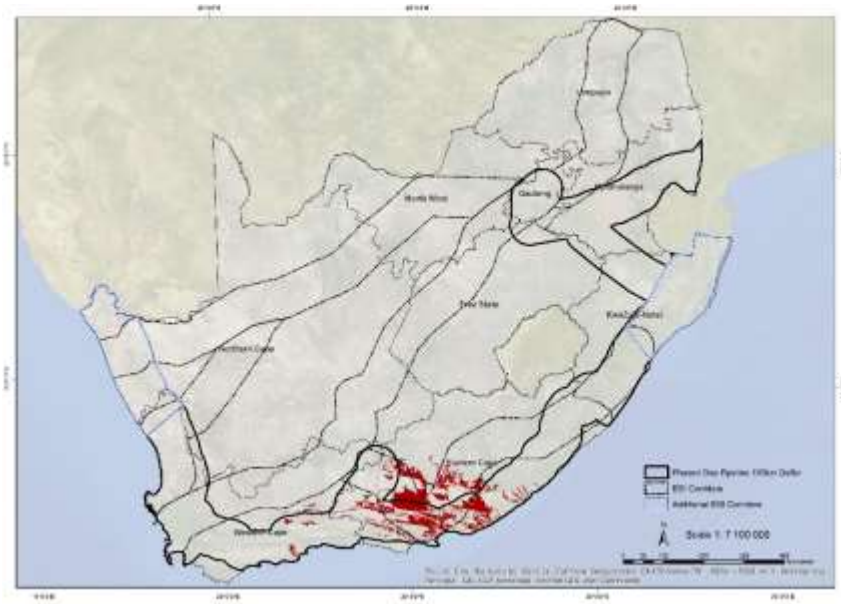
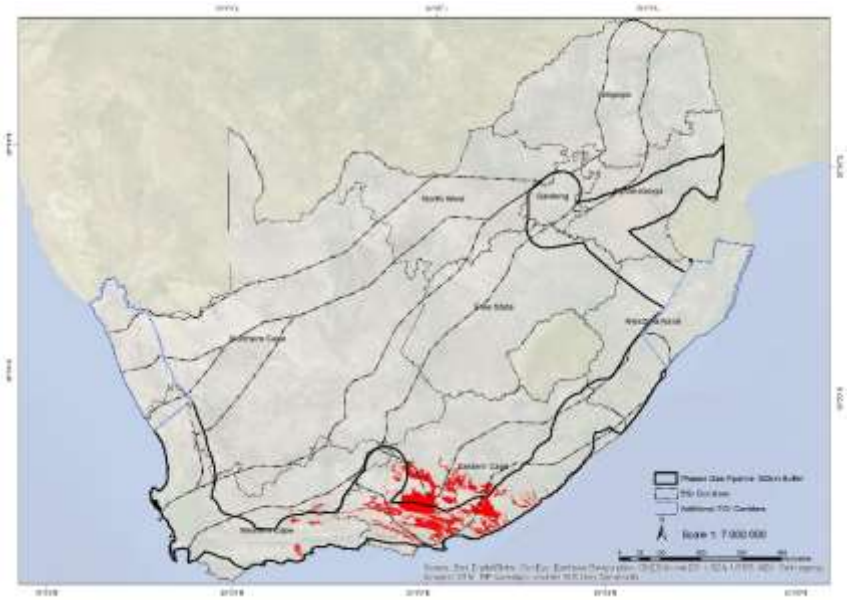
Thicket Vegetation

	GAS	EGI
Thicket vegetation	High	Very high

EGI



GAS



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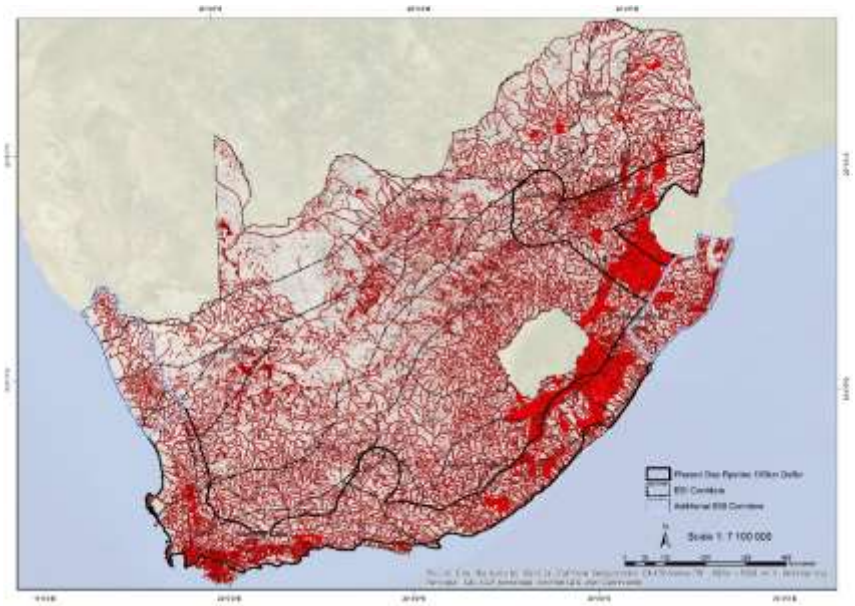
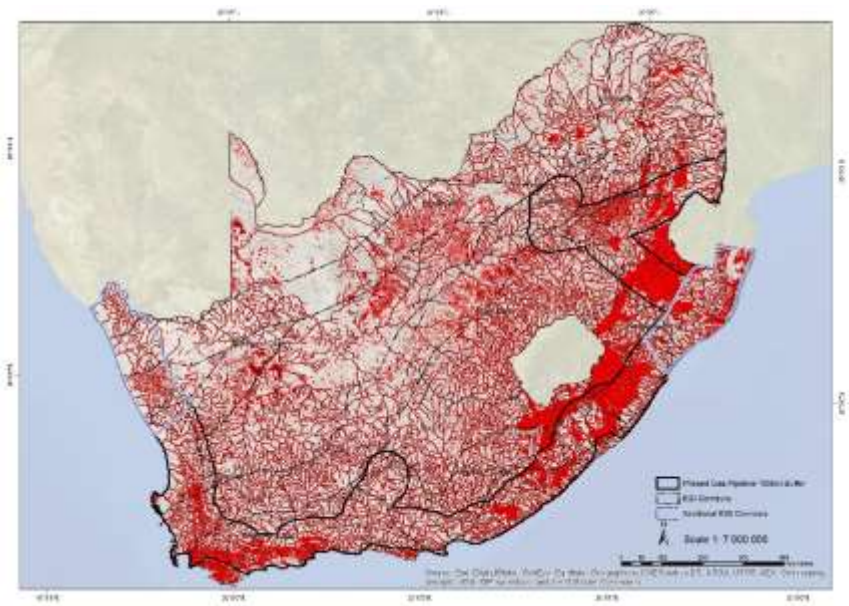
Rivers, Wetlands, Estuaries & SWSAs

	GAS	EGI
Rivers (including 32m buffer)	Very high	Very high
Wetlands (including 500m buffer)	Very high	Very high
Estuaries (including flood plain)	Very high	Low
Strategic water source areas	High	High

EGI



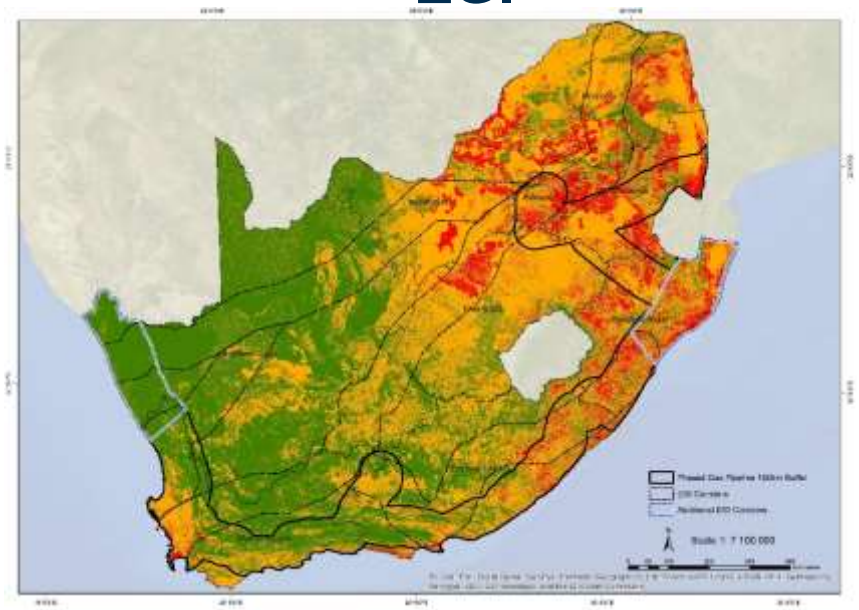
GAS



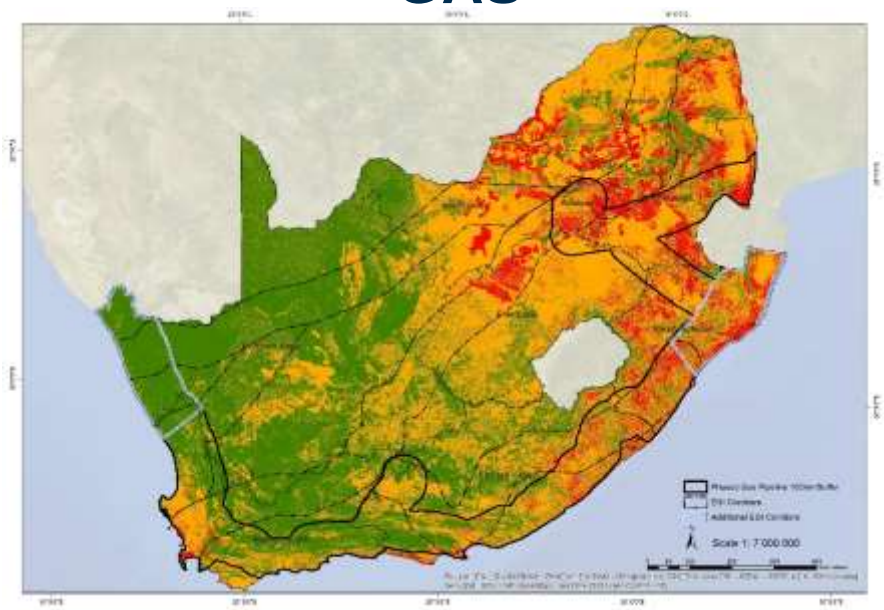
Agriculture- Land Capability

	GAS	EGI
Land capability features with values ranging from 11-15	Very high	Very high
Land capability features with values ranging from 9-10	High	High
Land capability features class 6 to 8	Medium	Medium
Land capability features class 1 to 5	Low	Low

EGI



GAS



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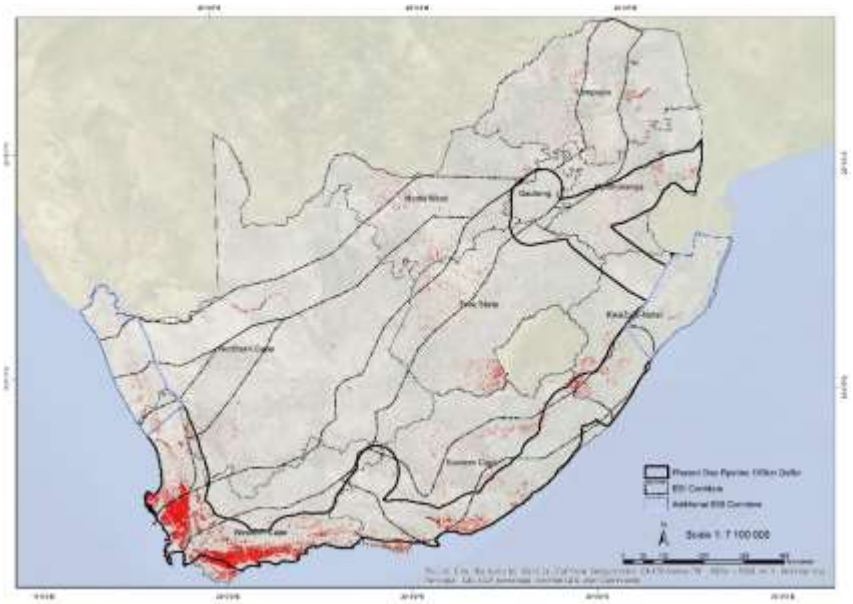
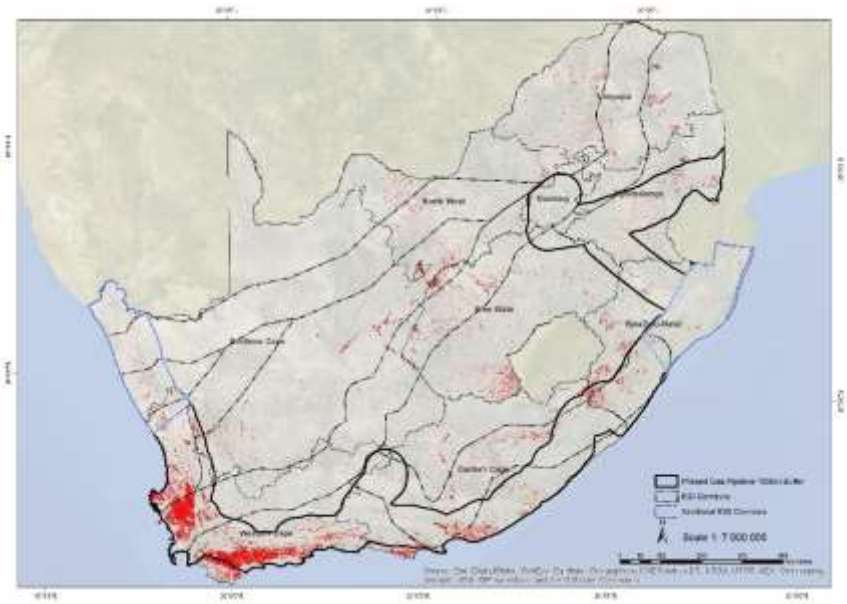
Agriculture- Field Crop Boundaries

	GAS	EGI
Irrigated Areas	Very high	Very high
Shade net	Very high	NA
Viticulture	Very high	Very high
Horticulture	Very high	Very high
Other cultivated areas	High	High

EGI



GAS



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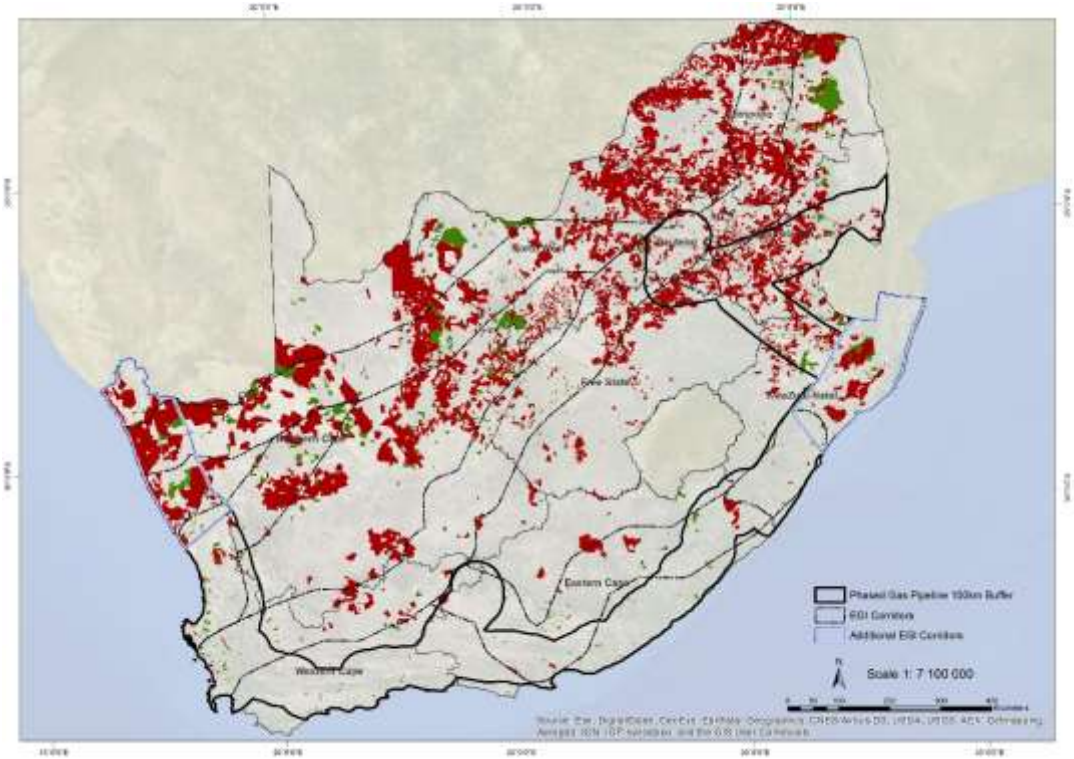
Mining

	GAS	EGI
Abandoned mines	Low	Low
Active mines	Very high	Very high
Prospecting rights	Very high	Very high
Mining rights	Very high	NA

EGI and GAS



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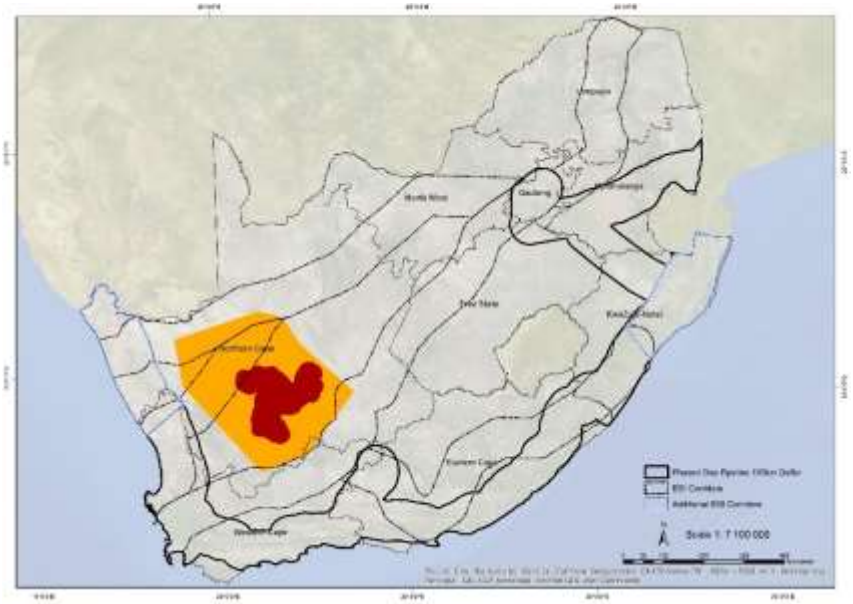
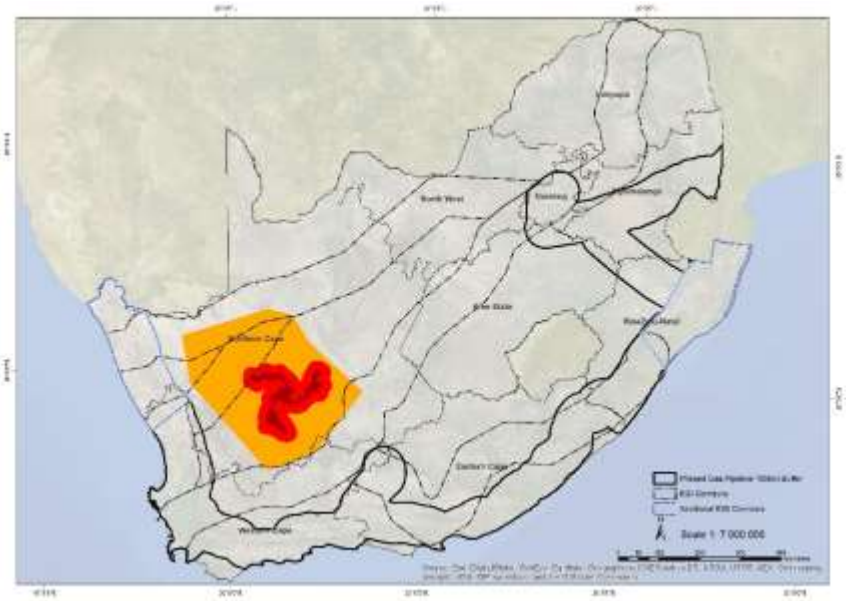
SKA and KCAAA

	GAS	EGI
Karoo Central Astronomy Advantage Area	Medium	Medium
Square Kilometre Array (SKA) study area	Very high(high 20km buffer)	Very high (very high 20km buffer)

EGI



GAS



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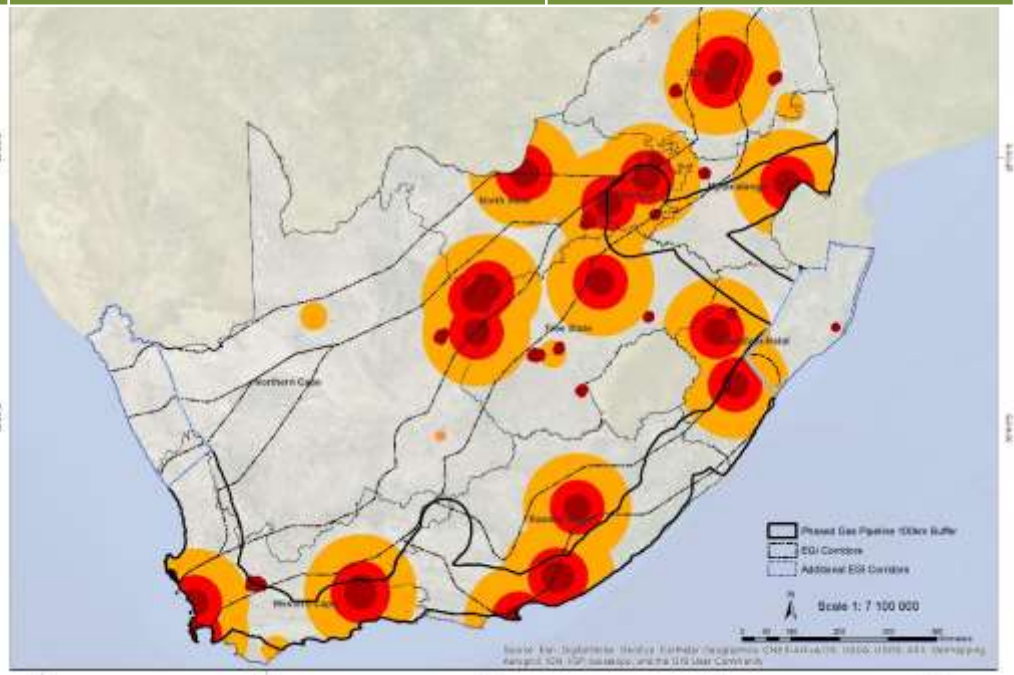
Defence

	GAS	EGI
Forward Airfield	Very high (10km M)	Very high (10km M)
Air Force Bases	Very high (28km M)	Very high (28km M)
Operational Military Bases	Very high	Very high
Military Training Areas	Very high	Very high
Bombing Ranges	Very high (28-56km H)	Very high (28-56km H
Border posts	Very high	Very high
All Other DoD features (Including Naval Bases, Housing, Offices ect)	Very high	Very high

EGI and GAS



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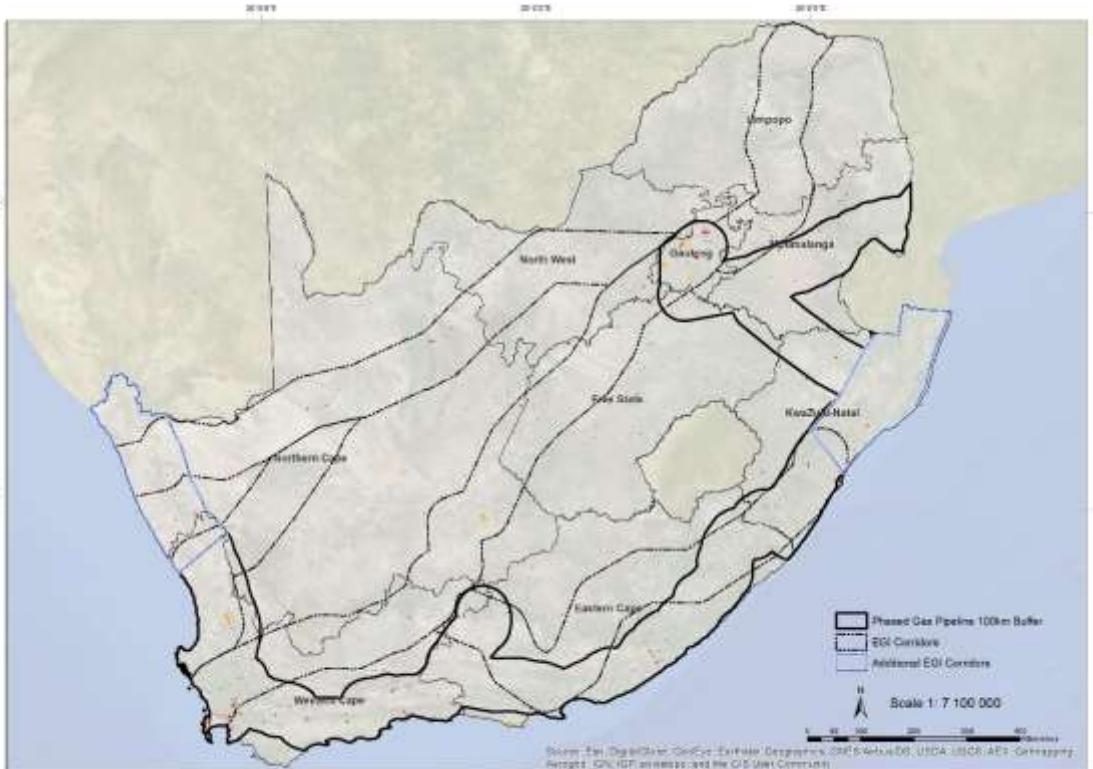
Heritage

	Gas	Gas buffer	EGI	EGI buffer
Grade I sites	Very high	1km	Very high	1km
Grade ll sites	Very high	1km	Very high	1km
Grade llla sites	High	150m	High	150m
Grade lllb sites	High	50m	High	50m
Grade lllc sites	High	30m	High	30m
Battlefields (Grade IIIb)	Very high	5 km	Very high	5 km
Other heritage sites	Very high	1 km	Very high	1 km

EGI and Gas



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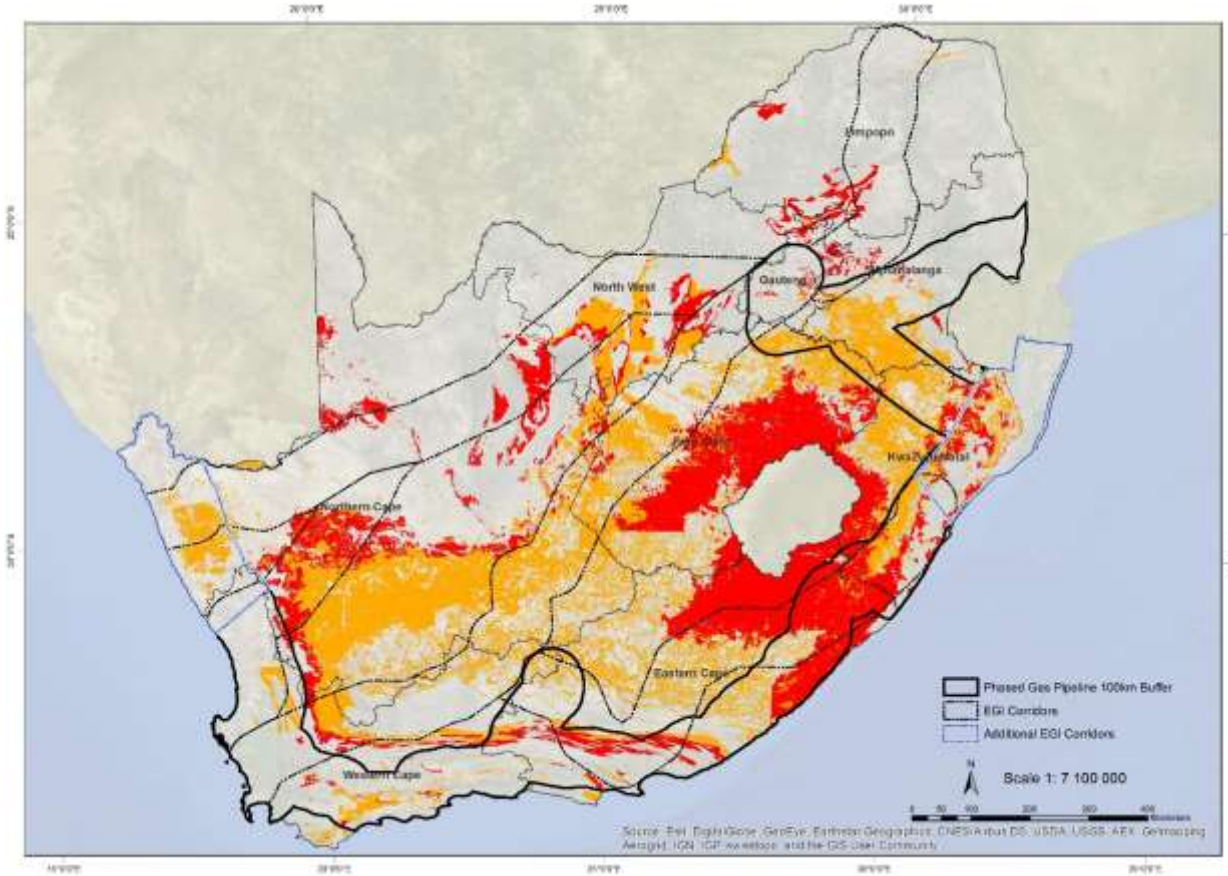
Palaeontology

	GAS	EGI
Paleontological heritage resources - High sensitivity areas (*)	High	High
Paleontological heritage resources - Medium sensitivity areas (**)	Medium	Medium

EGI and GAS



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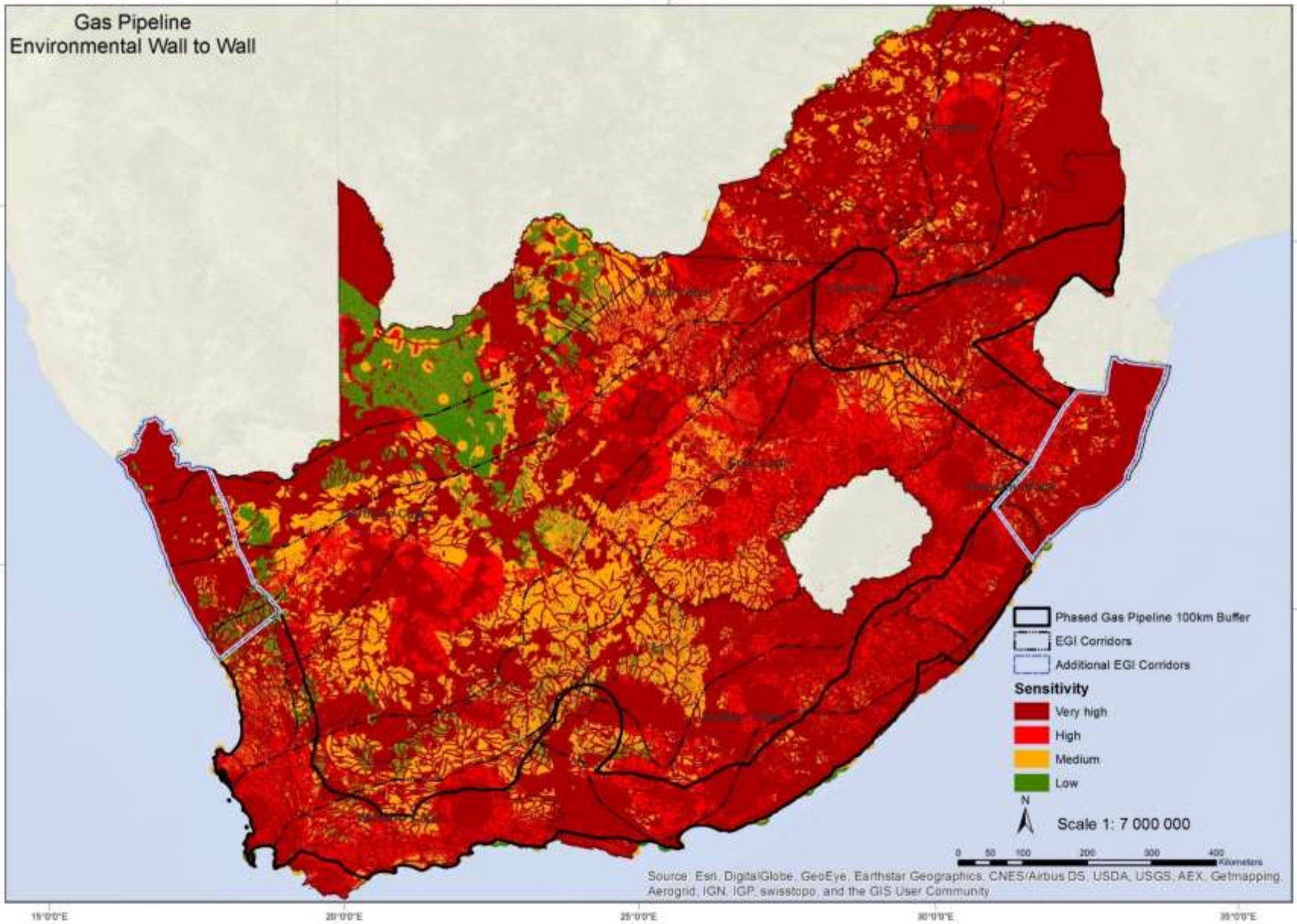
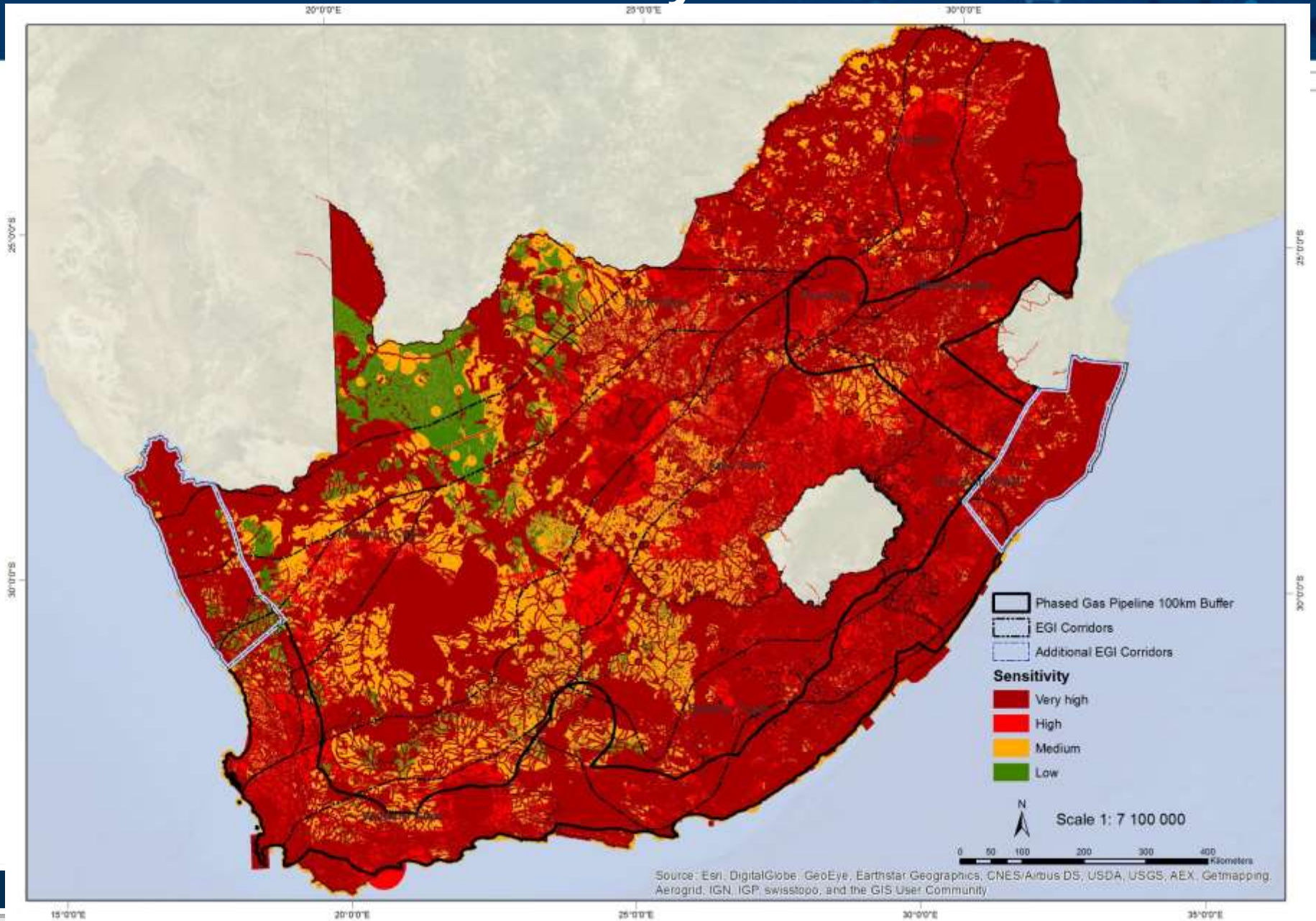
Wall to Wall Gas Constraints



Wall to Wall Electricity Grid Infrastructure



Additional Data Included

- Species of special concern*
- Visual*
- Major dams
- Airports
- Roads
- Coastlines
- Bats
- Airports

Engineering constraints

Industry

- SKA
- Forestry
- Urban/ settlement
- WULAs
- Mining

Natural Env

- Rivers & wetlands
- Agriculture fields
- Thicket
- Dams & estuaries
- Slope

Specific EGI data

- High fire
- High wind
- High snow
- Pollution
- Flooding
- Eroded areas

Specific for Gas

- Geotechnical
- Fault lines and seismic data
- Other data sets

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Way forward

- Refine and collect additional data (e.g. SAHRA, etc)
- Engage with sector to improve sensitivity of data sets
- Engineering constraints

- Specialist/ sector input

- Least cost pathway for influencing corridor refinement

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Thank you for your participation to this first ERG/PSC meeting

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