

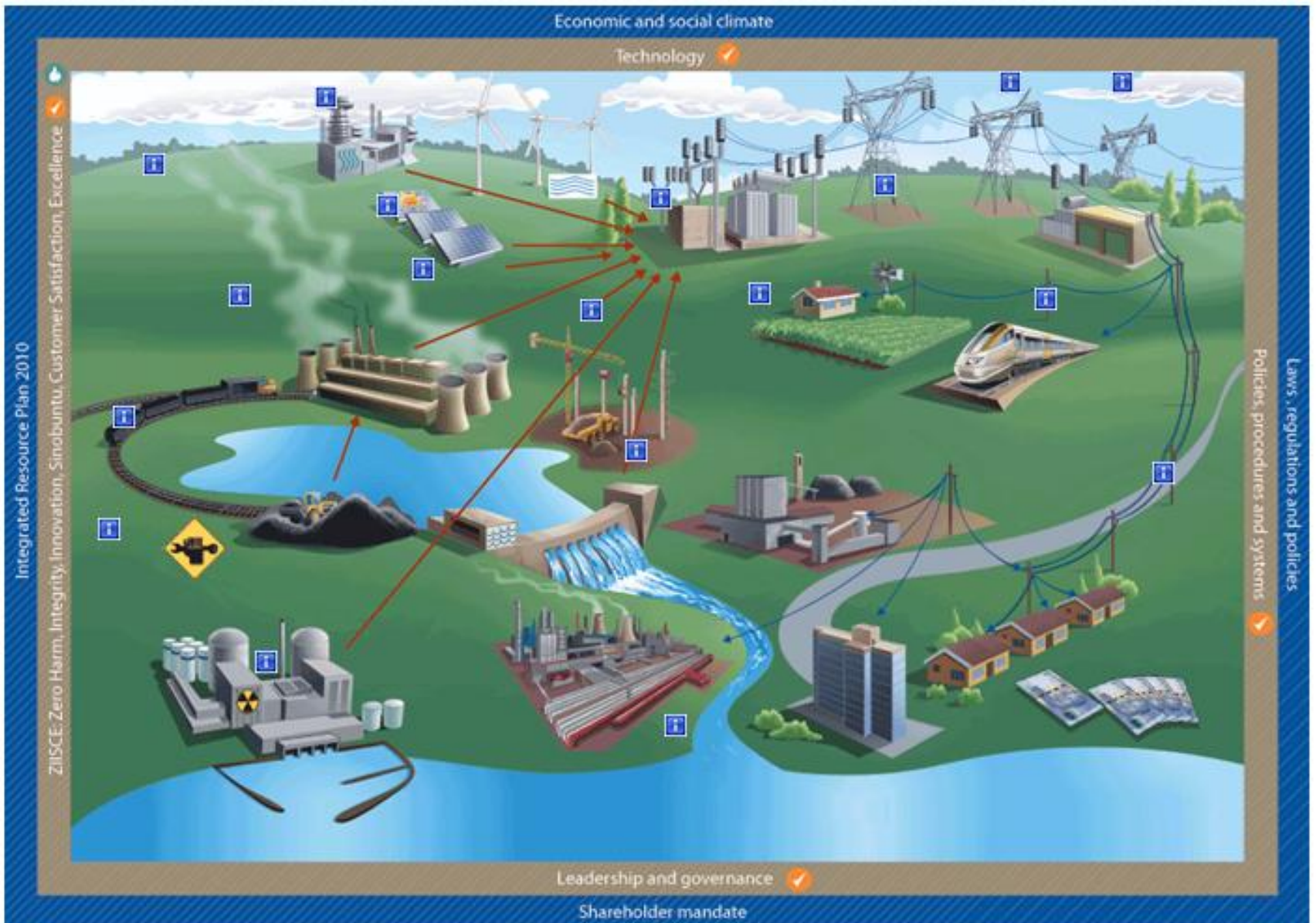


Climate-Energy Security Nexus: Addressing this at an operational level

3rd Climate-Energy Security Nexus Forum

Paris, 25 October 2013

Eskom's Business Model



Generation:

- cooling efficiency (including heat sinks for nuclear reactors), turbine performance (a 5.56°C increase in ambient temperature can reduce output by 3-4%), water availability, coal mining, transport (including import terminals for coal and LNG), stockpiles and handling, ash dam management, groundwater and water pollution control, maintenance scheduling, hydropower production, biomass availability, relocation of coastal assets

Transmission:

- routing (demand and load centres and generation options), temperature-related equipment failures (transformers), increased efficiency losses and sagging of lines, insulator pollution and faults (reduced rainfall, increased fires, fog and mist), conductor clashing, lightning strikes, fibre optics, tower risk, snow and ice loading, time and risks of repairing faults in inclement weather, relocation of coastal assets

Distribution:

- similar to Transmission but including potential flooding of underground transformers and the impact of soil resistivity on underground cables

Example of Droerivier Proteus Line, WC



Ice Monitoring Station installed in 2013

Climatic or Environmental Monitoring

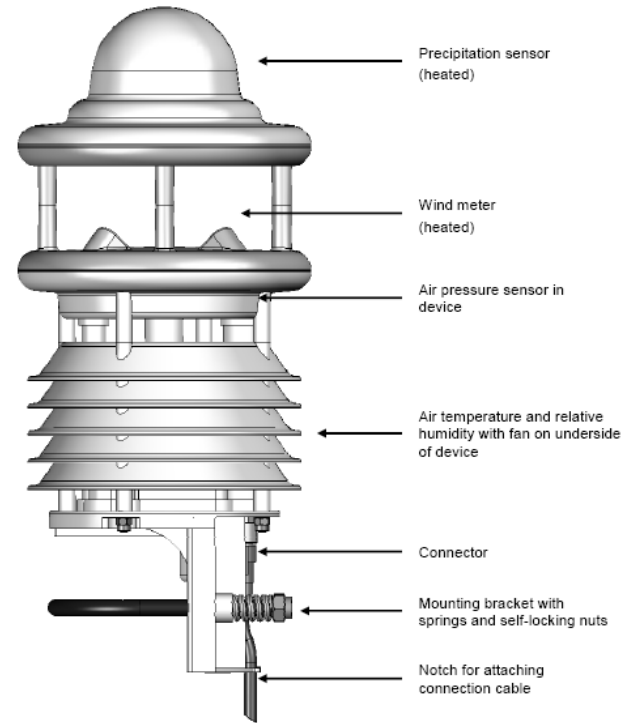
- Air temperature and Humidity
- Air Pressure
- Precipitation
- Air Density
- Wind speed and direction
- UV Radiation

Leakage Current Monitoring

- I-Highest recordings (1-500mA) sampled at 2 kHz

Visual Monitoring of Ice and Snow Deposits

- 5 X Vivotek - Fixed Camera, 1 Low Lux



- Drivers: business risk (supply and demand), resource scarcity, changing cost profiles, compliance (incl legislation and standards), stakeholder engagement
- Strategy: although climate change policies (and strategies) were adopted, including the need to address vulnerability, adaptation issues only started to receive serious attention since 2010 – separate strategy approved by Board in February 2013
- Informational Requirements: mitigation is a more natural fit for the engineering fraternity – requires a great deal of synthesis in order to provide climate change information on which engineers can act – high levels of uncertainty; even retrospective analysis of weather-related impacts has been problematic – high number of variables
- Cross-cutting nature: terminology and also different areas of the business want to approach the issue from different angles AND where to prioritise?
- Five initiatives were identified in our strategy...

- South African National Climate Change Response (NCCR) White Paper was adopted in 2011. The NCCR identified water, agriculture, health, biodiversity, human settlements (urban, rural and coastal) and disaster risk reduction and management as areas to be addressed.
- The Long Term Adaptation Scenario Research Flagship Programme (LTAS) aims to develop national and sub-national adaptation scenarios for South Africa under plausible future climate conditions and development pathways - requires the projection of climate change impacts for key sectors and an evaluation of their socio-economic implications, in the context of development needs and aspirations of these sectors.
- During its first phase (completed in June 2013) the LTAS process developed a consensus view of climate change trends and projections, summarized key impacts and identified potential response options in the so-called primary sectors (this did not include human settlements).
- The second phase is underway and Eskom is working with the LTAS to conceptualize the energy and infrastructure “scenarios scape” with activities planned from January 2014.
- In all “scenario scapes” the extent to which the regional and international context might influence the national response is always highlighted.



Thank You

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