

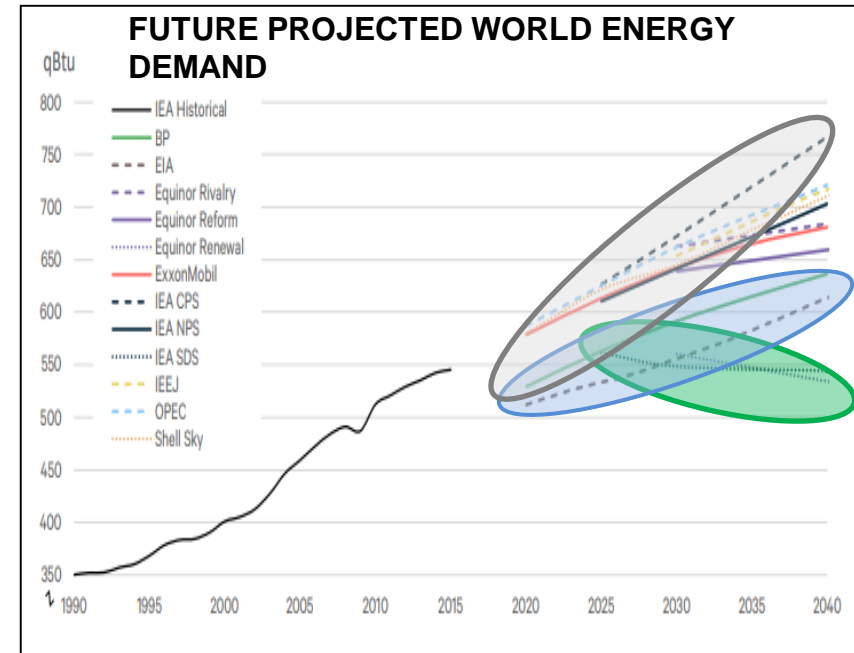
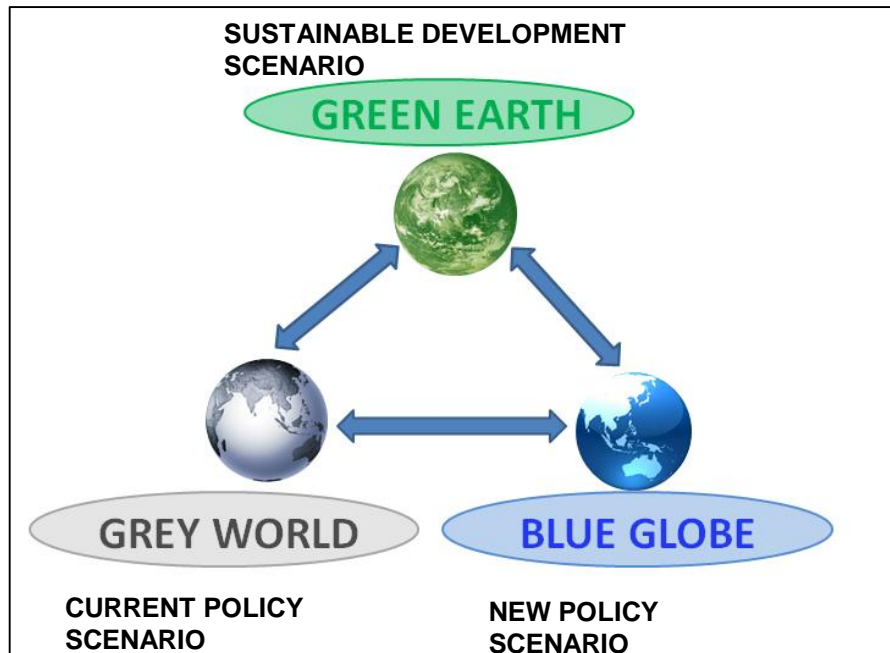


# **Downstream Coal Beneficiation Opportunities in Botswana: Alternative uses of Coal**

**FUTURE REGIONAL AND GLOBAL ENERGY DEMAND  
DRIVERS, SOURCES AND THE FUTURE OF COAL**

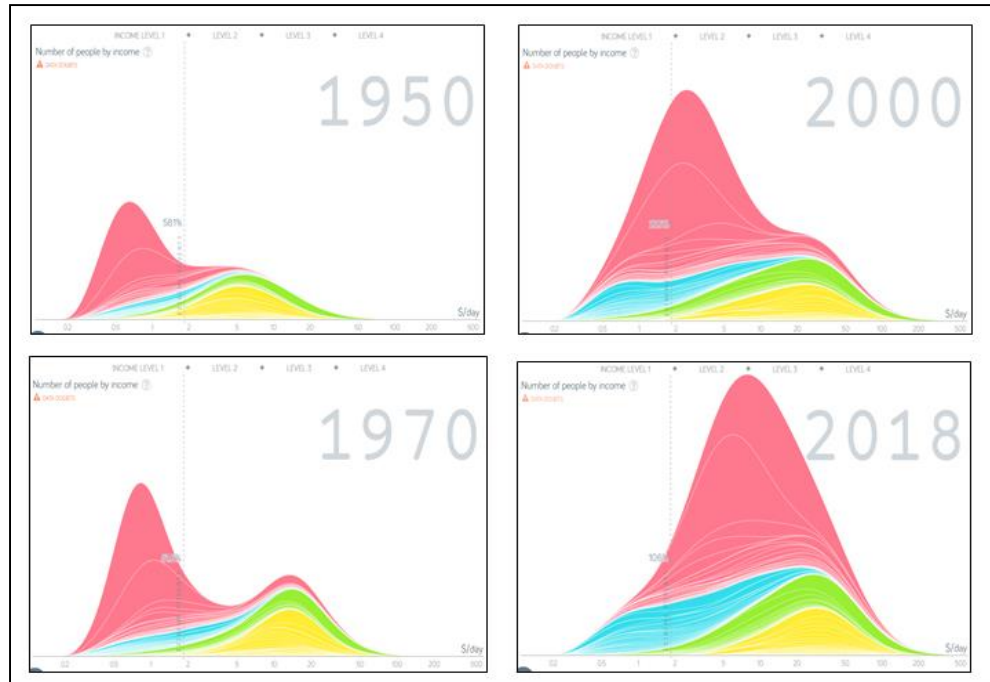
**Mike Blenkinsop**

# COAL, CLIMATE CHANGE AND THE PARIS AGREEMENT IMPLICATIONS

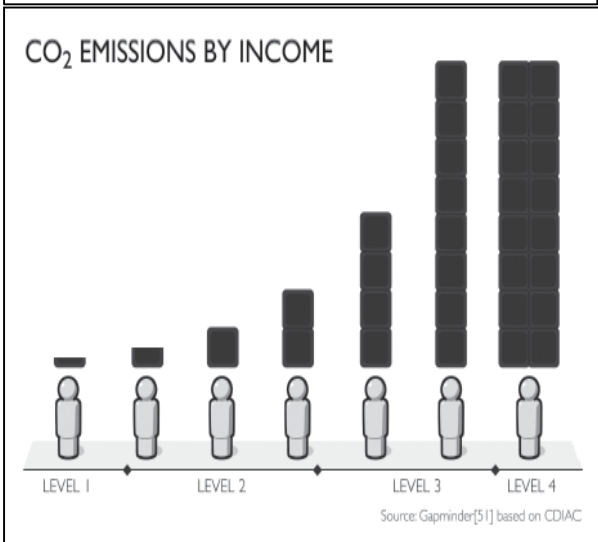


- **Global and regional energy demand will force us into one of three broad categories**
- **The Paris Agreement envisages a blue globe scenario with continued industrialisation but in a more carbon efficient manner**

# THE PRIMARY DRIVER OF GLOBAL ENERGY CONSUMPTION POVERTY ALLEVIATION



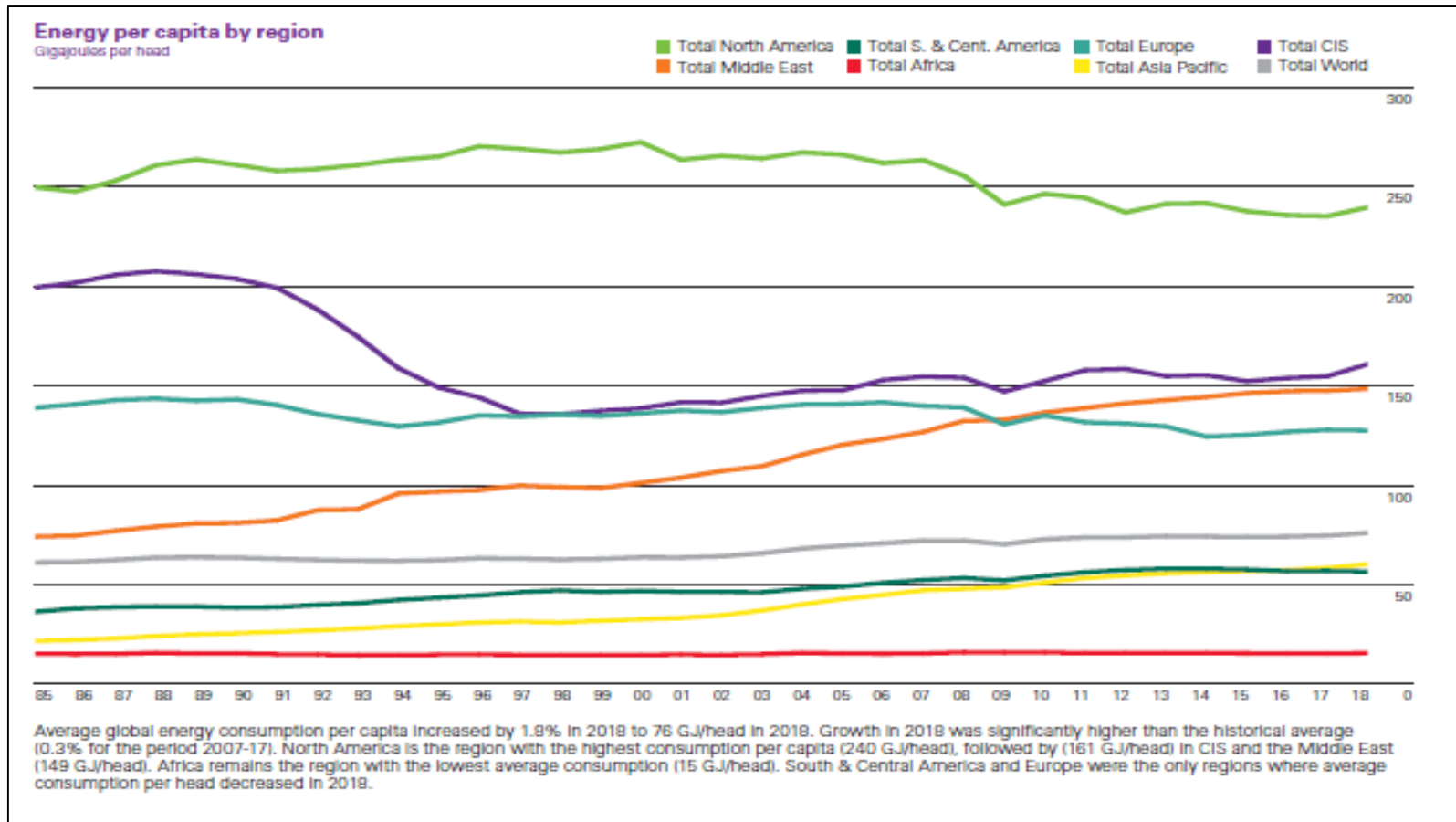
LEVEL 1 INCOME < \$1/DAY pp  
LEVEL 2 \$1/DAY pp < INCOME < \$8/DAY pp  
LEVEL 3 \$8/DAY pp < INCOME < \$32/DAY pp  
LEVEL 4 INCOME > \$32/DAY pp



- 50% of the world's energy is consumed by 14% of the world's population.
- Energy consumption increases approximately linearly with population growth but increases exponentially with wealth.
- The world's sustainability issue is therefore driven by consumption by the rich.

**Therefore, the single biggest driver of energy demand is poverty alleviation - Africa and Asia has the most poverty alleviation to achieve**

## REGIONAL ENERGY CONSUMPTION PER CAPITA



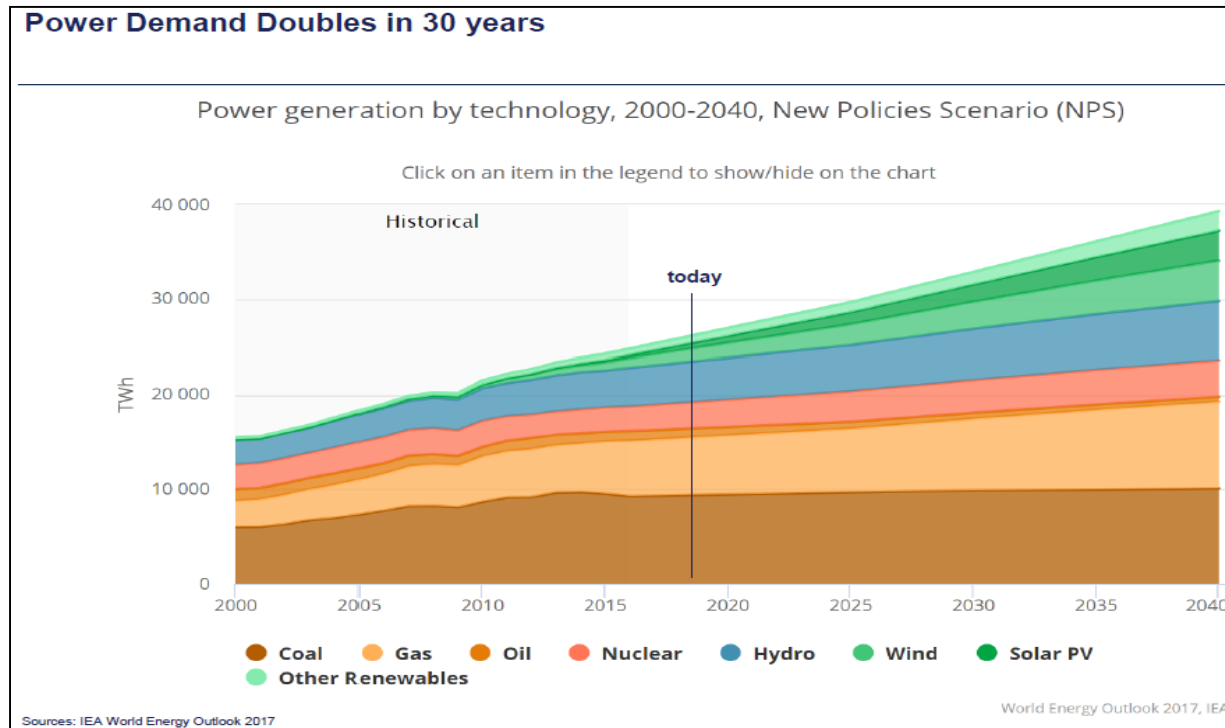
**North America consumes in excess of 10 times more energy per capita than Africa**

**Europe , CSI, and Middle east consume on average 7 times more energy per capita than Africa**

# COAL DEMAND FORECASTS

## THERE IS DEFINITELY A MARKET FOR BOTSWANA COAL

### POWER GENERATION BY TECHNOLOGY

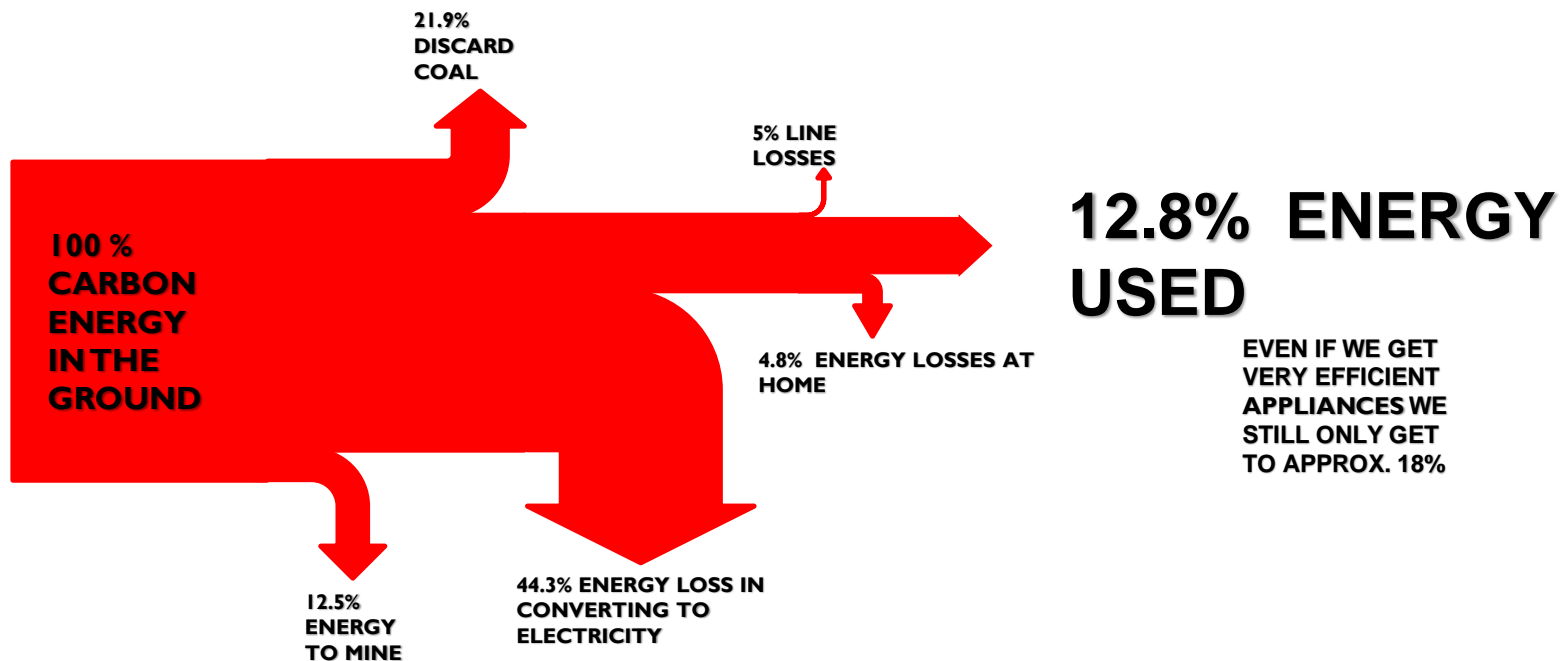


- **Power demand doubles in the next 30 years**
- **Fossil fuels in general and coal demand remains stable**
- **Coal supplies become limited by resource depletion and lack of investment**

## THE REQUIREMENT FOR A PARADIGM SHIFT

### SO HOW EFFICIENT ARE WE?

A CRADLE TO GRAVE ANALYSIS OF OUR DOMESTIC ELECTRICITY USAGE



**The climate change movement and the Paris Agreements to reduce emissions mean that we have to change the way we use coal and energy and there is low hanging fruit**

## THE REQUIREMENT FOR A PARADIGM SHIFT

- The lack of efficiency is why emissions are out of control
- We need to diversify the use of coal to significantly reduce emissions
- If Botswana seeks to monetize its coal resource it needs to seek both traditional and new markets
- This may require that coal and energy develop circular economies and or close corporate alliances to add value to the coal
- Initially the market may be a commodity based market however this will need to transform to a mixed commodity and beneficiated market over time
- There are many opportunities for this at several levels across the technology spectrum

**The climate change movement and the Paris Agreements to reduce emissions mean that we have to change the way we use coal and energy and there is low hanging fruit**

# THANK YOU



**SAFETY**



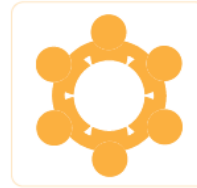
**PASSION**



**CARING**



**GROWTH**



**WORKING  
TOGETHER**



**EXCELLENCE**