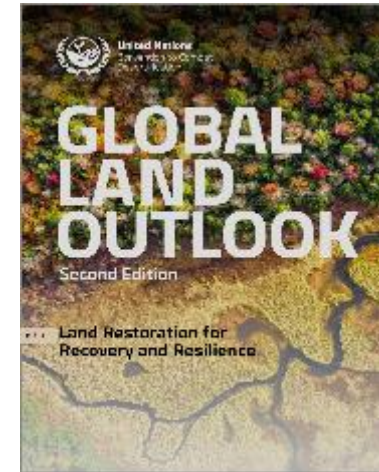


# GLOBAL LAND OUTLOOK AND PROTECTING OUR WORLD

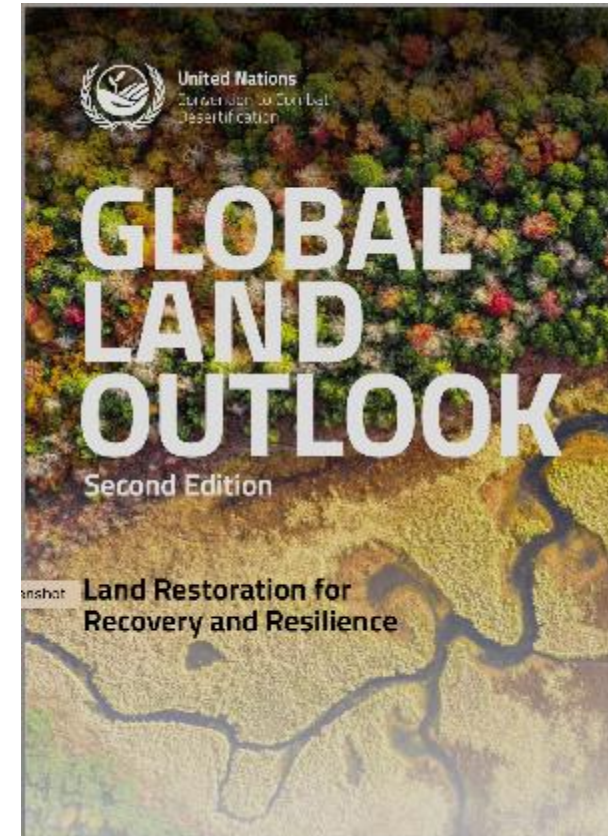
by  
**CLARISSA AUGUSTINUS**



International Federation of Surveyors Working Week 2023  
'Protecting Our World Conquering New Frontiers'  
*Orlando, USA, 28 May-1 June 2023*

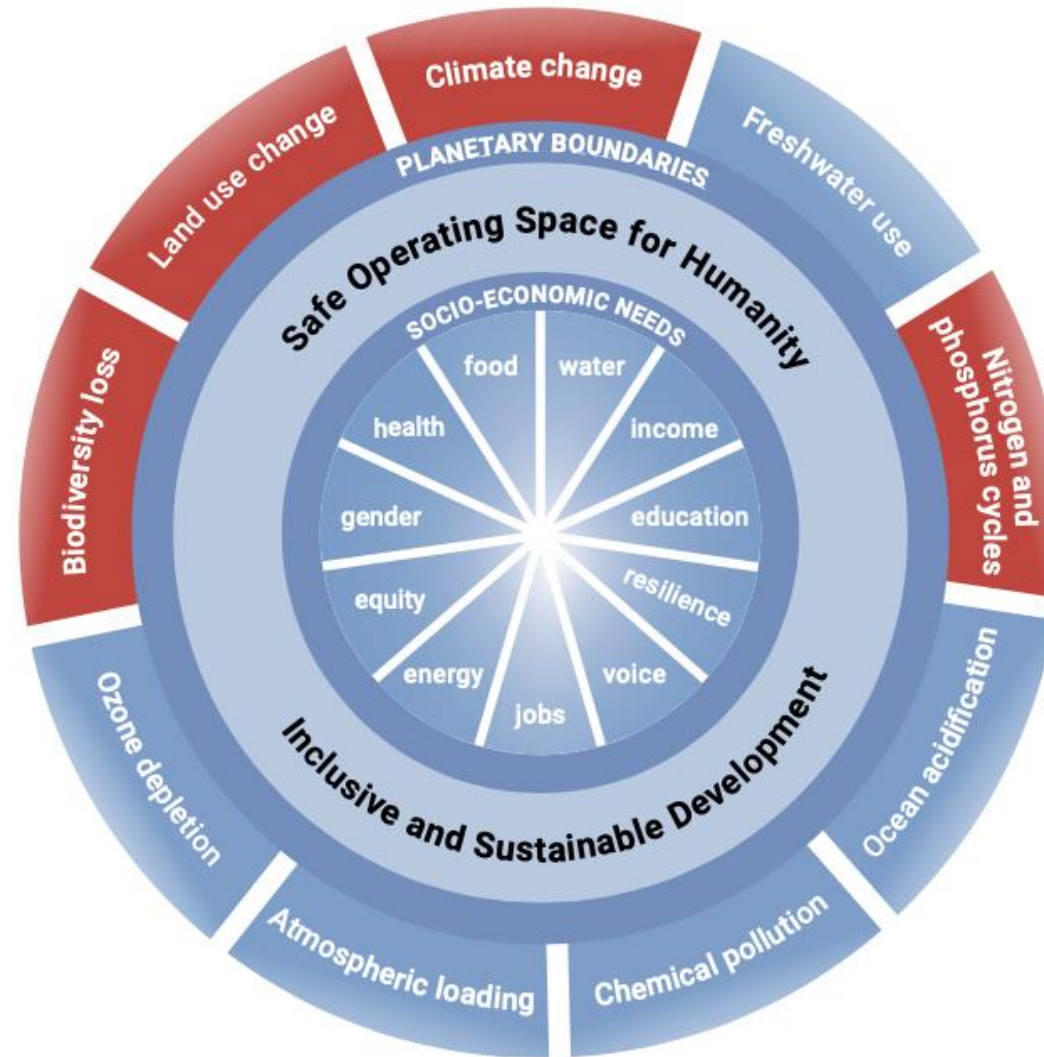
# BACKGROUND

- FIG & Climate history
  - The Surveyors Role in Monitoring, Mitigating, and Adapting to Climate Change, FIG Publication no. 65 (2014)
  - FIG and the Sustainable Development Goals (2019-2022) report
  - Commission reports & Statements on SDGs (2019-2022)
- Land degradation
  - Key global trends & numbers
  - Link to land tenure & land administration
  - Scenarios until 2050
- What is at stake for Latin America & Sub-Saharan Africa?
- Surveyors & land restoration



<https://www.unccd.int/resources/global-land-outlook/glo2>

# NINE PLANETARY BOUNDARIES (UNCCD)



Land Use Change accounts for 13-21% of global emissions annually (IPCC)



# LAND DEGRADATION

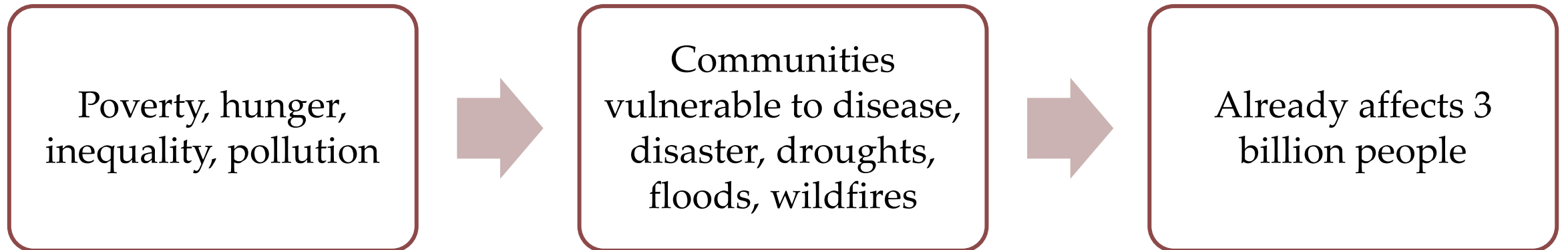
**WHAT IS IT?** Land degradation is the result of human-induced actions which exploit land, causing its utility, biodiversity, soil fertility, & overall health to decline.



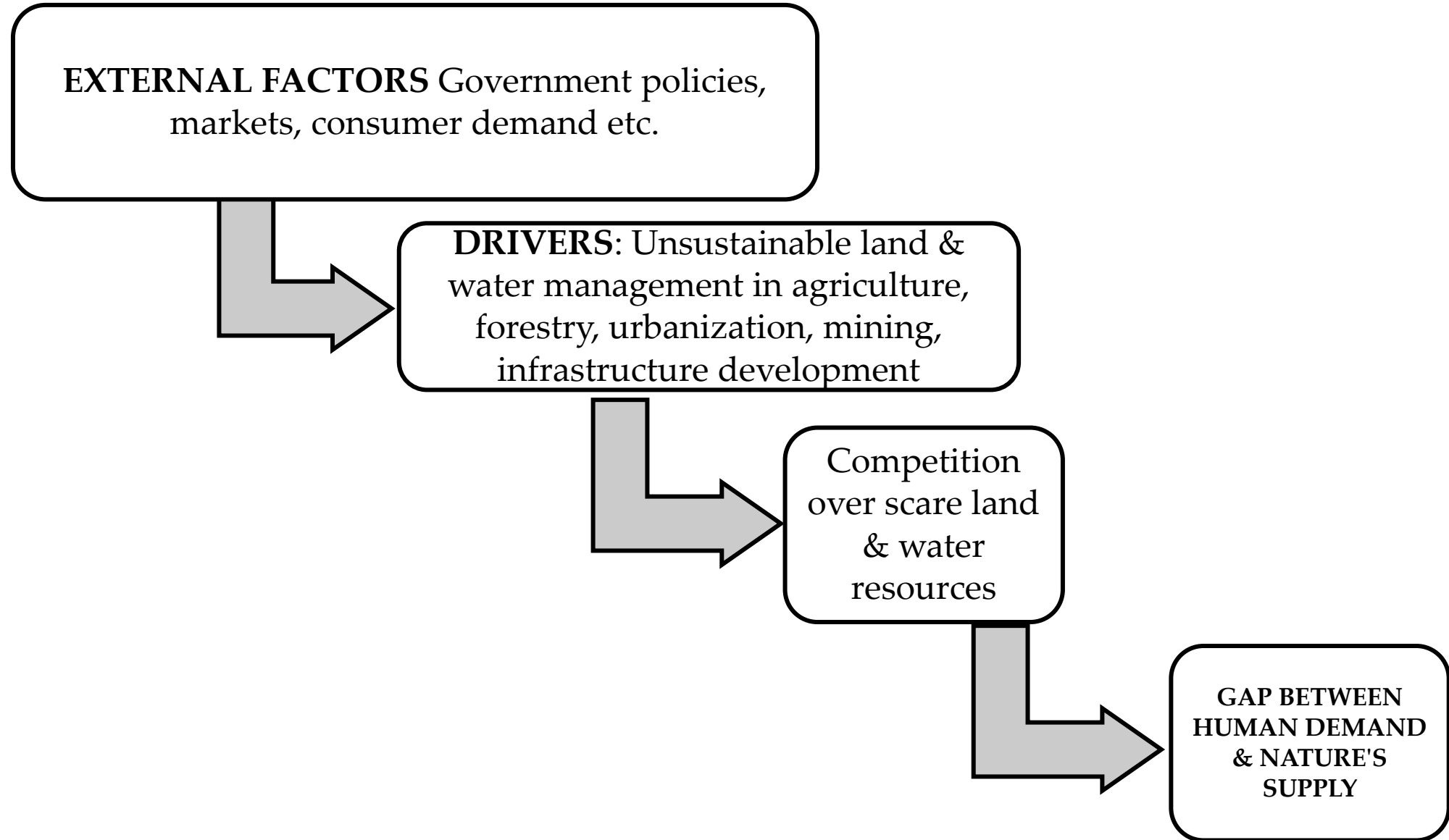
**WHY IS IT A PROBLEM?** Ensuring food security for a growing global population requires healthy land & ecosystems. Amount of land affected is growing rapidly.

# LAND DEGRADATION NUMBERS

- 20-40% degraded
  - Net loss of natural & semi-natural areas
  - Soil Organic Carbon loss due to desertification, cropland expansion & urbanization
  - Decline in productivity across all ecosystems
- Agriculture – 40% global land area
- USD 44 trillion reliant on natural capital



# DRIVERS OF LAND DEGRADATION







# AREAS MOST AT RISK

- Areas most at risk of degradation on the planet
  - Land cover changes in natural & semi-natural areas
  - Expansion of deserts, croplands & urban area
  - Productivity across all ecosystems, particularly grassland
- Land governance

**Definition: land governance** is about the rules, processes, and structures through which decisions are made about access to land, ownership, and use; the way these decisions are implemented and enforced; and how competing interests are managed. (UNCCD GLO2).

*Drought impact on grasslands & wildlife*



*Cattle in nature reserve*



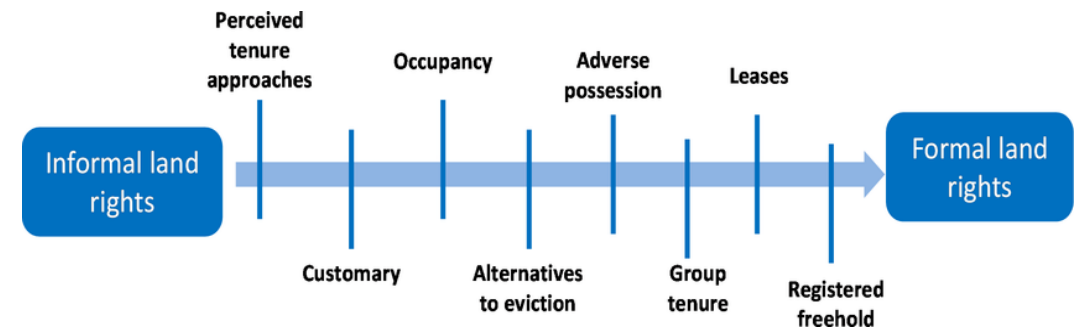
# LAND DEGRADATION & TENURE

**Land tenure** is about the relationships among people with respect to land. Rules define access rights as well as responsibilities and restrictions related to use, control and transfer of land. Land ownership is only one type of tenure (UNCCD GLO2).

- Tenure security is needed to avoid, reduce land degradation & restore the land over years
- World Bank – "the Quality of Land Administration.. curbs the rate of land degradation.. functional land administration play(s) a role in preserving natural resources." (World Bank)

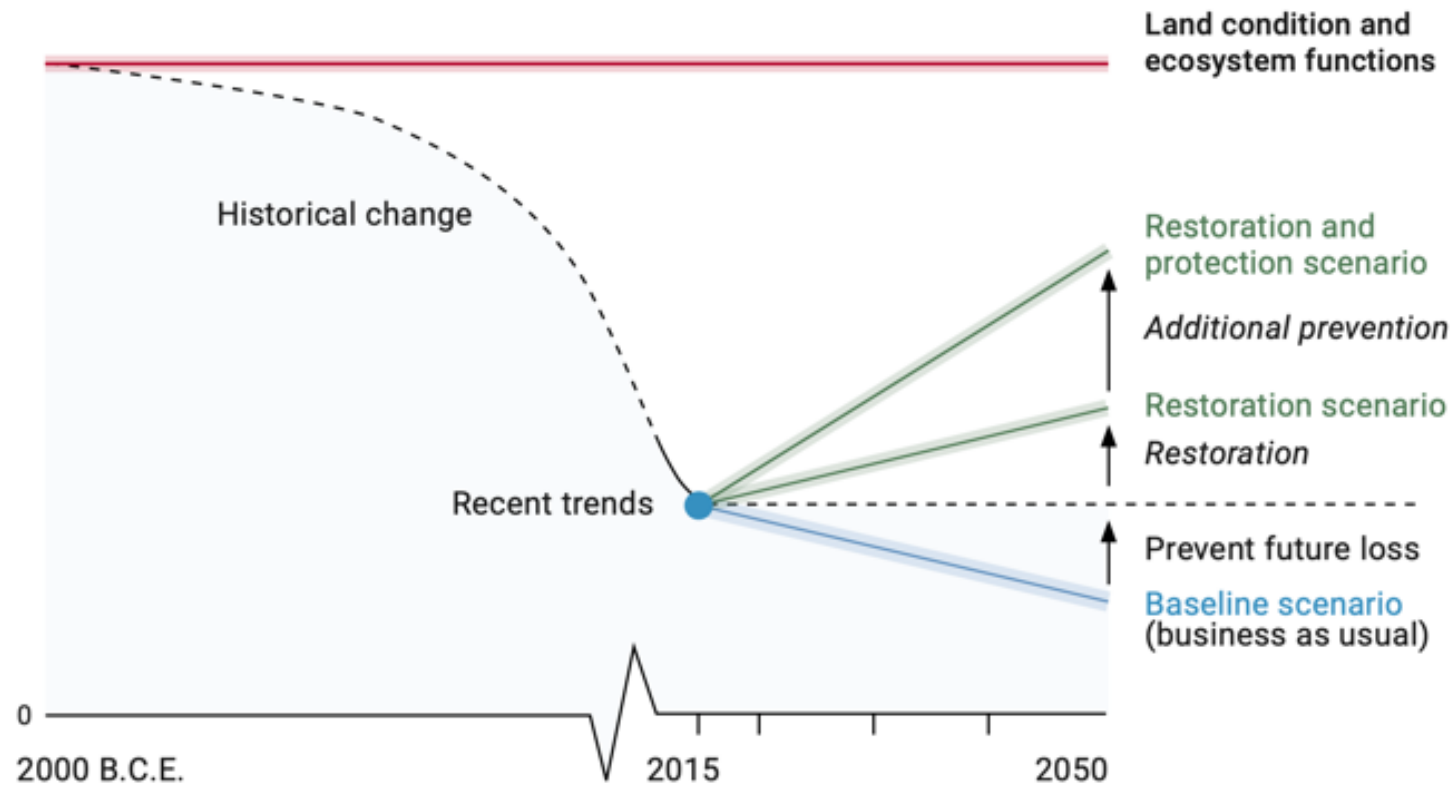
# LAND TENURE GAP

- Countries with few land records – 4 billion out of 6 billion land tenures outside government systems (de Vries et al. 2016)
- Almost 500 million smallholder farmers (UNCCD GLO2).
- Up to 500 million pastoralists (UNCCD GLO2)
- Indigenous people –25% of planet (UNCCD GLO2).



# THREE SCENARIOS

**FIGURE 3.2** Three scenarios for future land health

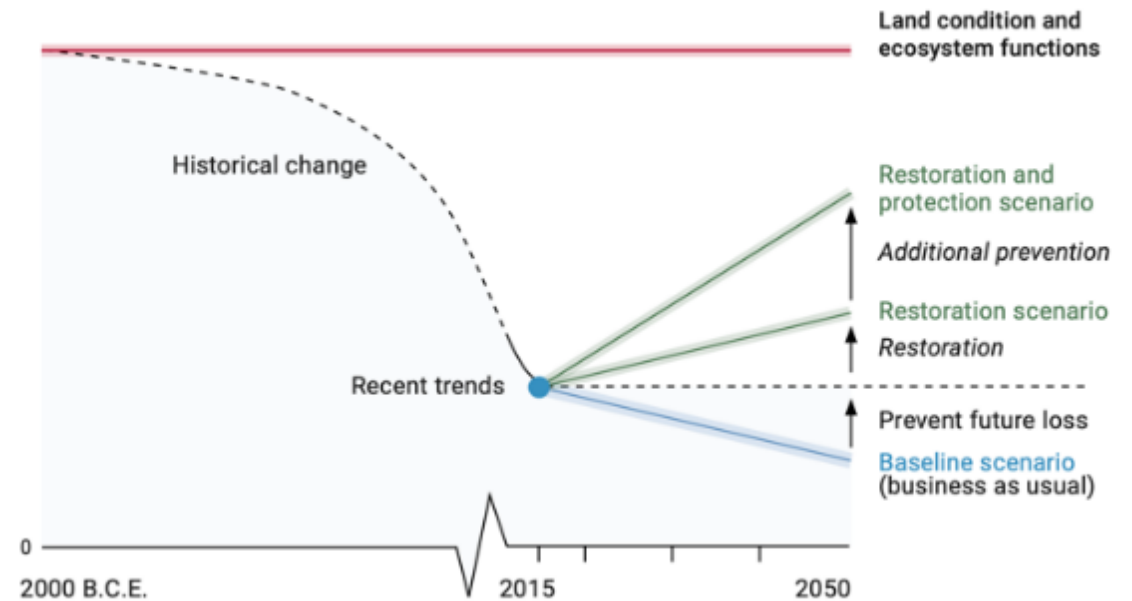


Source: PBL, 2021.

# SCENARIO 1. BASELINE: BUSINESS AS USUAL

- Current trends in land & natural resource degradation continue
- To 2050
- No efforts to protect or restore
- Continued global decline in land conditions & most ecosystem functions
- Demand for food, feed, fiber, bioenergy continues to rise
- 16M Sq.Km. show continued degradation
- Agricultural yields slow
- Nature & biodiversity continue decline
- Demand for food – agricultural area expansion & further intensification
- Further loss of 3M Sq.Km
- Mainly Latin America & Sub—Saharan Africa

FIGURE 3.2 Three scenarios for future land health



Source: PBL, 2021.



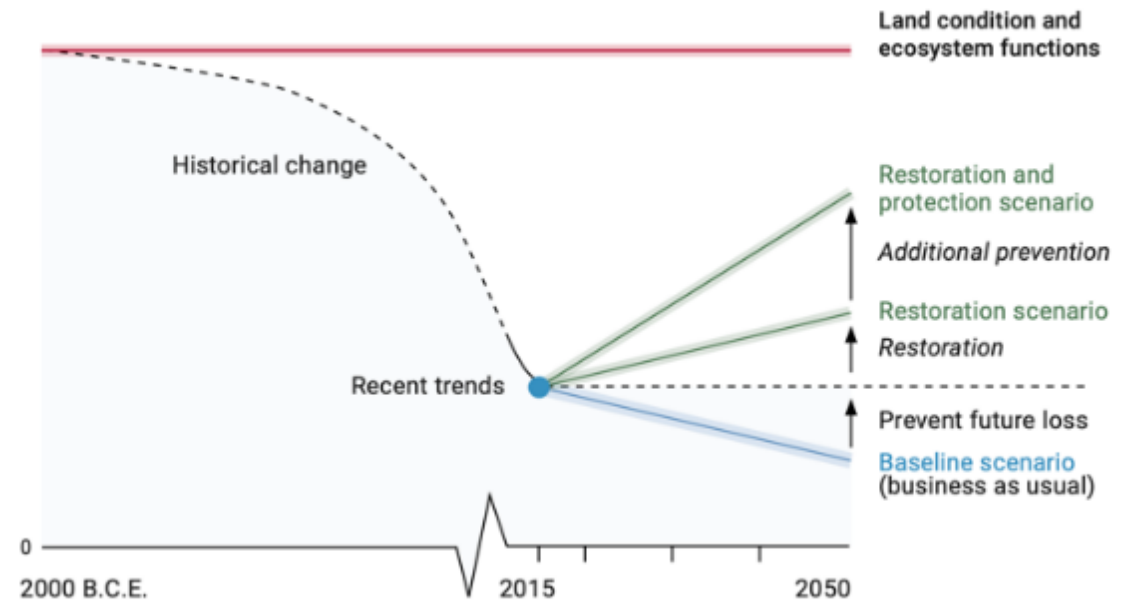
# DEFINITION: LAND RESTORATION

**Land restoration** is a continuum of activities that avoid, reduce, and reverse land degradation with the explicit objective of meeting human needs and improving biosphere stewardship (UN Decade on Ecosystem Restoration)

# SCENARIO 2. RESTORATION

- 35% of global land restored
- Restoration measures
  - Conservation agriculture
  - Agroforestry & silvopasture
  - Improved grazing management
  - Forest plantations
  - Assisted natural regeneration
  - Cross-slope barriers to prevent soil erosion
- S. America & Sub-Saharan Africa largest restoration potential
- Crop yields increase
- 11% biodiversity loss averted

FIGURE 3.2 Three scenarios for future land health

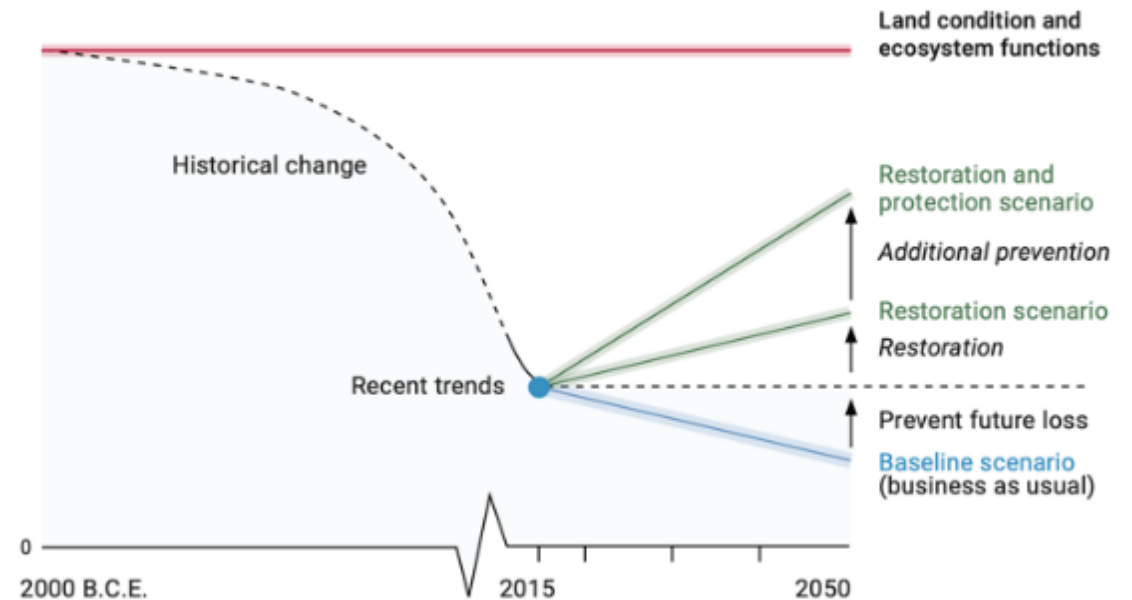


Source: PBL, 2021.

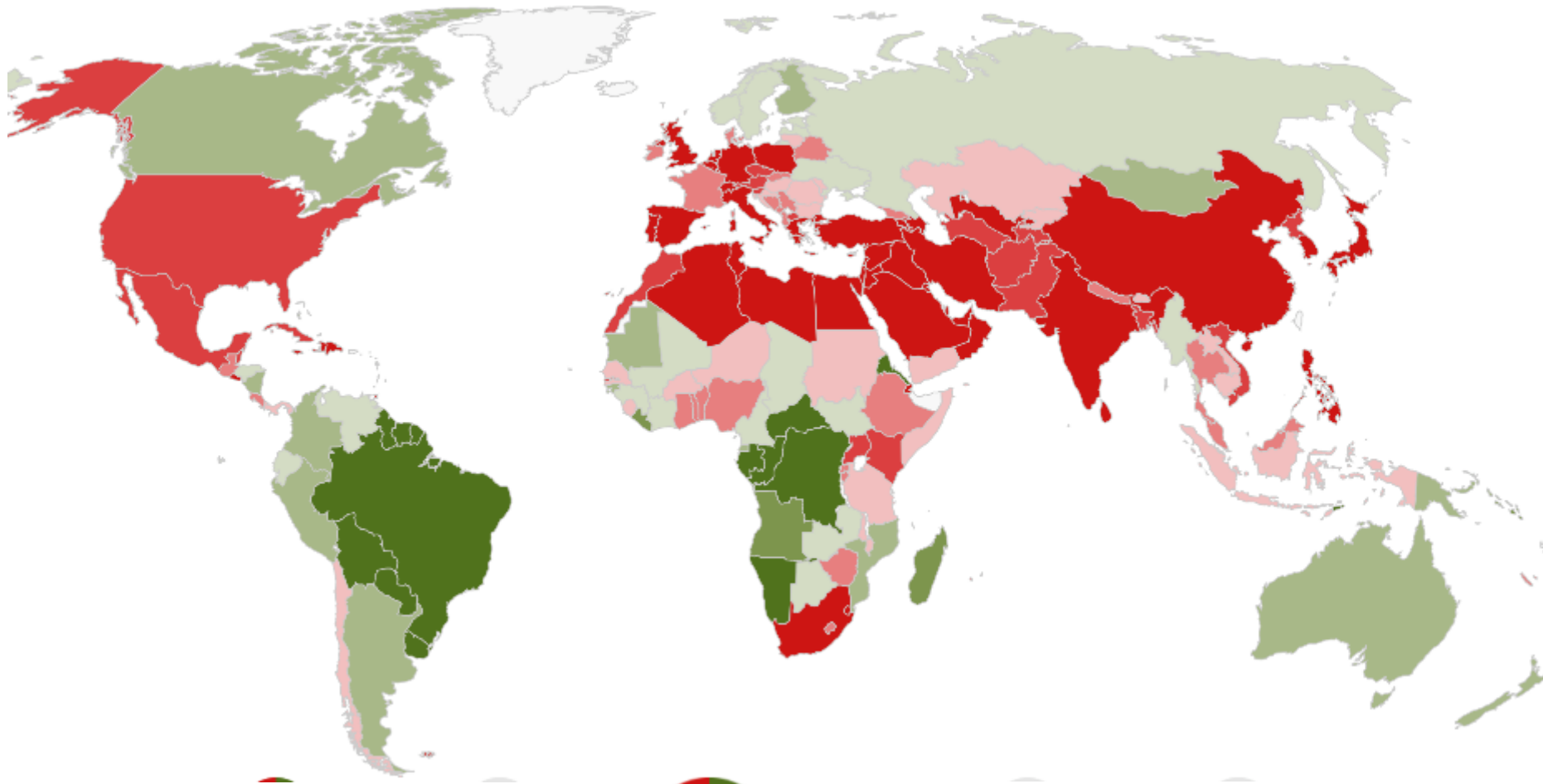
# SCENARIO 3. RESTORATION & PROTECTION

- Based on restoration scenario
- Plus protection measures
- Limit the expansion of agriculture
- Additional 4M Sq.Km. of natural areas
- Most new protected areas
  - South America
  - Sub-Saharan Africa
- Impact on hundreds of millions of vulnerable people
- Population movements
  - Urban areas safety valves for the planet
- Global Biodiversity Framework (2022) 30 x 30
- Europe footprint at least 40%

FIGURE 3.2 Three scenarios for future land health



Source: PBL, 2021.



(Global Footprint network,  
York University, Footprint  
Data Foundation)



ECOLOGICAL  
DEFICIT/RESERVE

**BIOCAPACITY DEBTORS**  
*FOOTPRINT GREATER THAN BIOCAPACITY*



>150%



100% - 150%



50% - 100%



50% - 0%



# WHAT IS AT STAKE FOR LATIN AMERICA & SUB-SAHARAN AFRICA

- Critical path of the sustainability of the planet
- In the business-as-usual scenario by 2050
  - Sub-Saharan Africa – the region worst affected by land degradation & further loss of natural areas
  - Latin America - the greatest loss of natural areas
- In the restoration scenario greatest potential for land restoration
- In the restoration and protection scenario many of the new protected areas located in these 2 regions
- Latin America & Sub-Saharan Africa in the critical path when protecting the planet

# ACHIEVING LAND RESTORATION

- Link land use, tenure & governance to:
  - Address degradation drivers
  - Support protected area expansion
  - Do sustainable land & water management for agriculture
  - Reverse degradation
  - Risk manage land use & competition
- What should the land profession do to support land restoration?



# LAND RESTORATION WORK FOR SURVEYORS

## LAND & WATER MONITORING & MEASUREMENT

- Coordinate & implement land aspects of national climate plans
- Manage land use change causing carbon & biodiversity loss (e.g. limit agricultural expansion into natural areas)
- Strengthen land systems for tenure security & spatial planning & land use controls
- Improve geo-spatial data (collection, management)
- Strengthen valuation systems to support land market
- Address land governance issues against the background of what earth systems science is showing us about global to local impacts
- Manage competition over land & natural resources (e.g. forest boundary demarcation)
- Sea level rise & coastal zone management
- Natural disasters & building back better
- Capacity development to adapt existing skills for new land and climate purposes

**LAND USE CHANGE**

**BIODIVERSITY LOSS**

***SURVEYORS CONTRIBUTION TO SOLUTIONS***

Geospatial data & mapping; Monitoring & measurement; Linking national land systems to national climate plans; Land information linking land tenure & land use; Spatial planning; Boundary demarcation; FFP land administration & management; Valuation for risk management, carbon offsets, compensation, property markets; Land governance; Land consolidation & readjustment

**SEA LEVEL RISE**

**LAND DEGRADATION**



# CONCLUSIONS

- Surveyors are in the critical path of the sustainability of the planet
- Contribute to FIG's Climate Compass Task Force work over next 4 years
- 2 climate sessions to follow