The Impact of Climate Change on Coffee Production and the Role of the ICO

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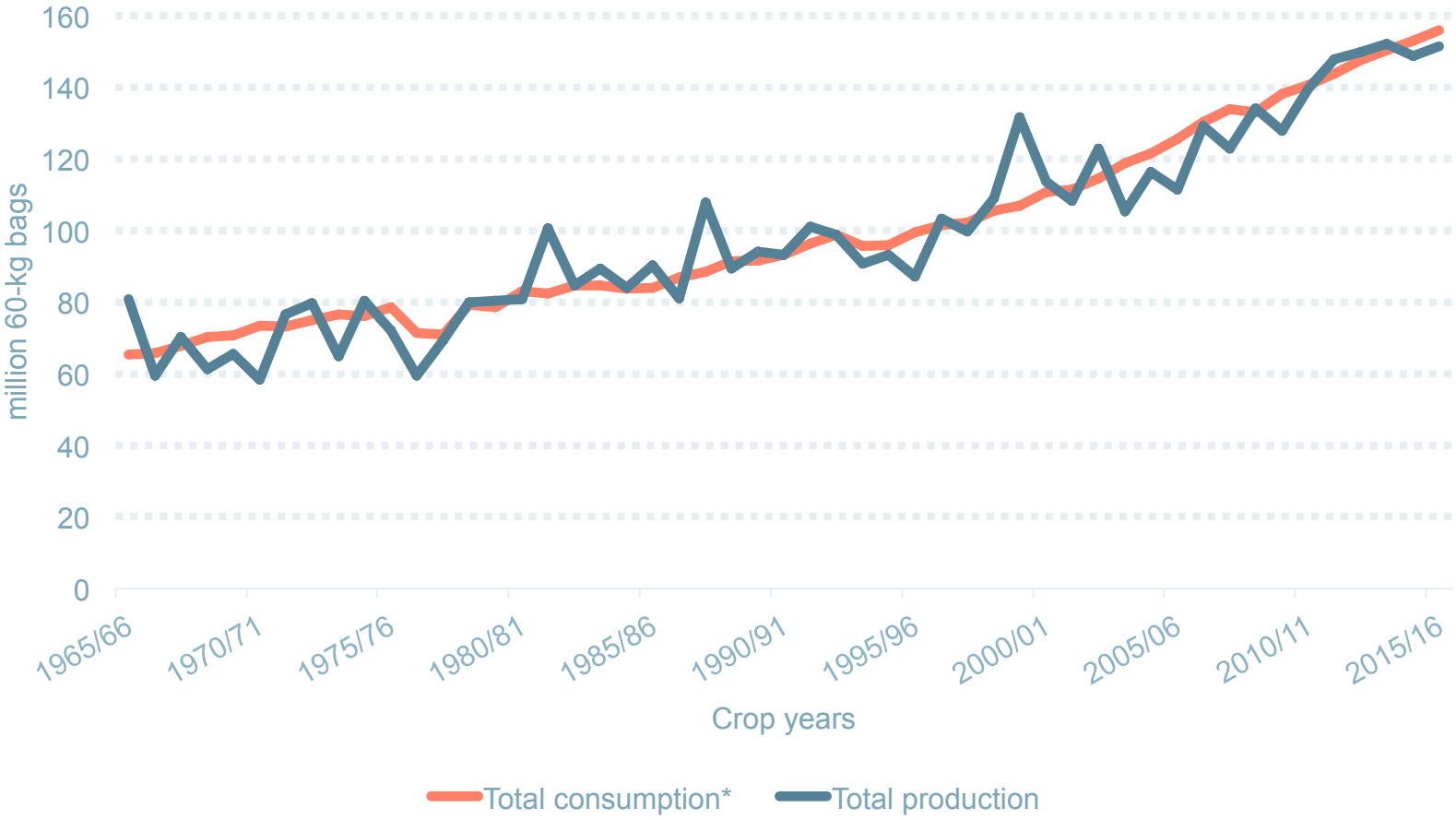
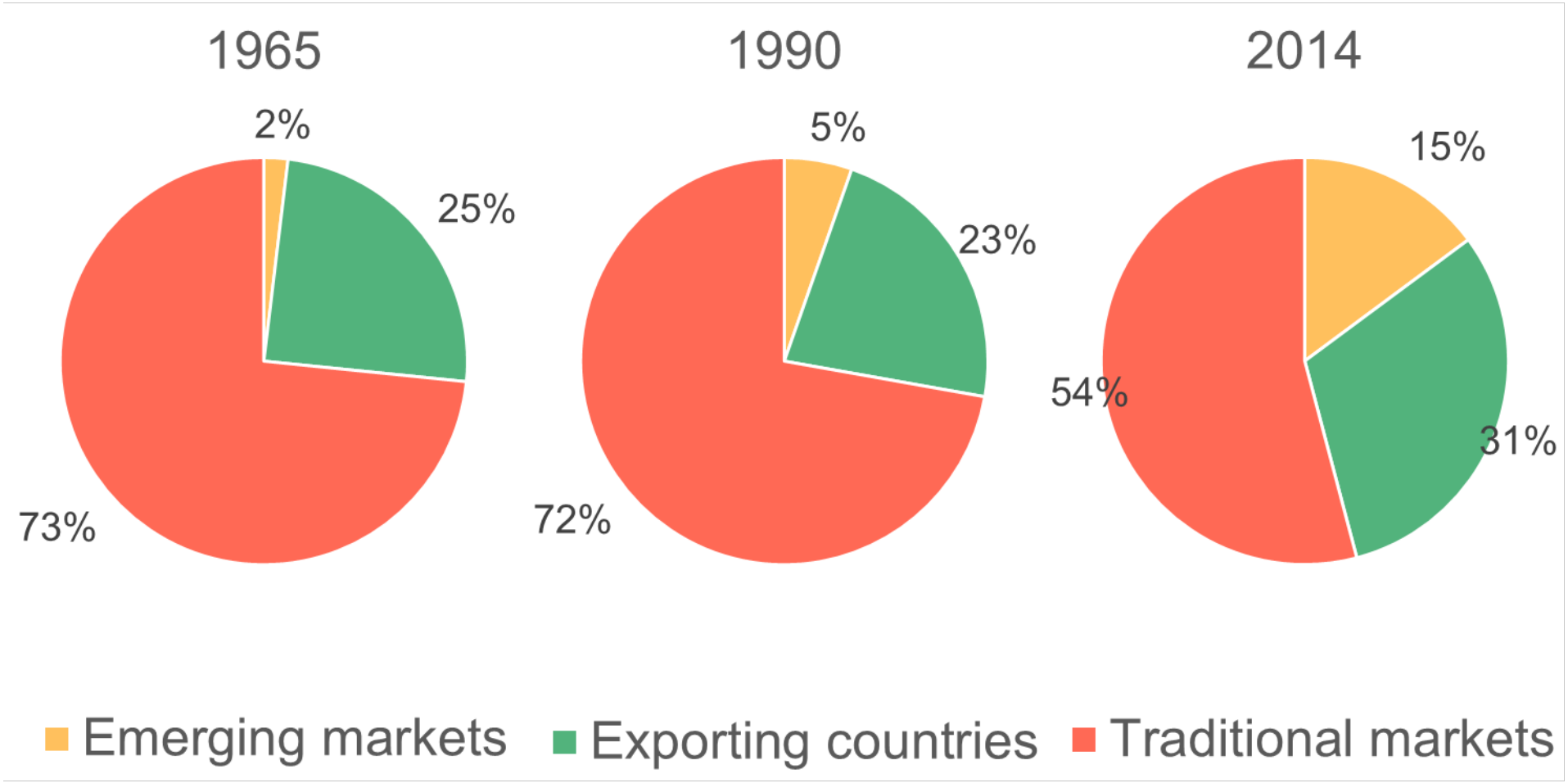
GLOBAL DEMAND/SUPPLY BALANCE



*Consumption for importing countries on coffee year basis

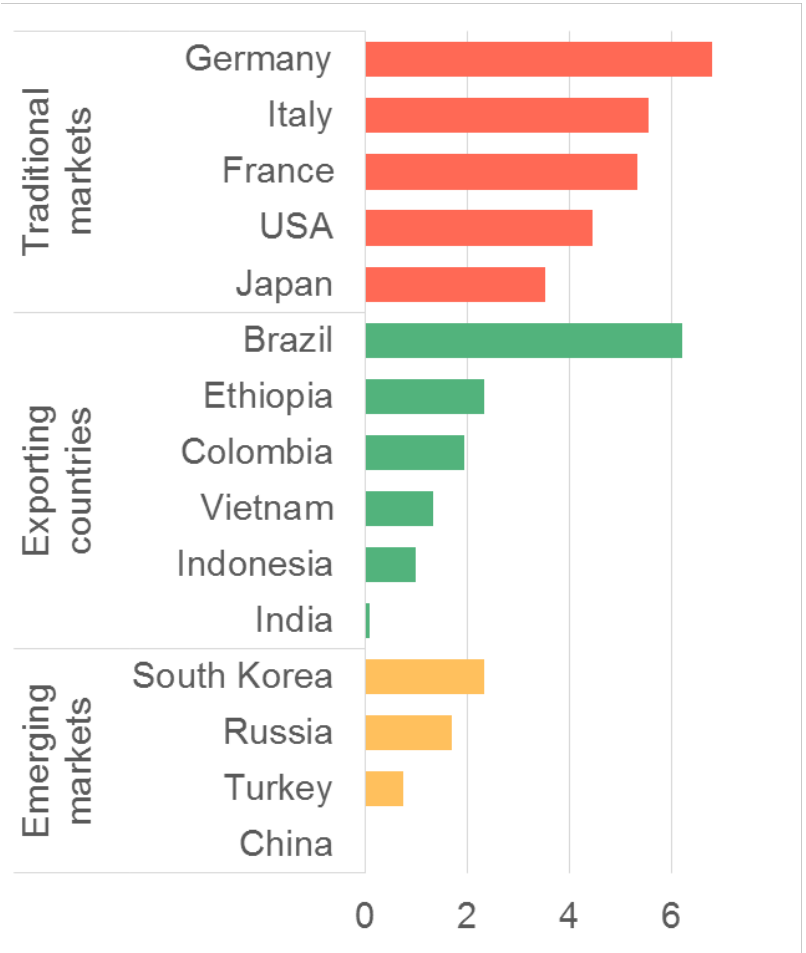
CHANGE IN WORLD SHARES OF CONSUMPTION



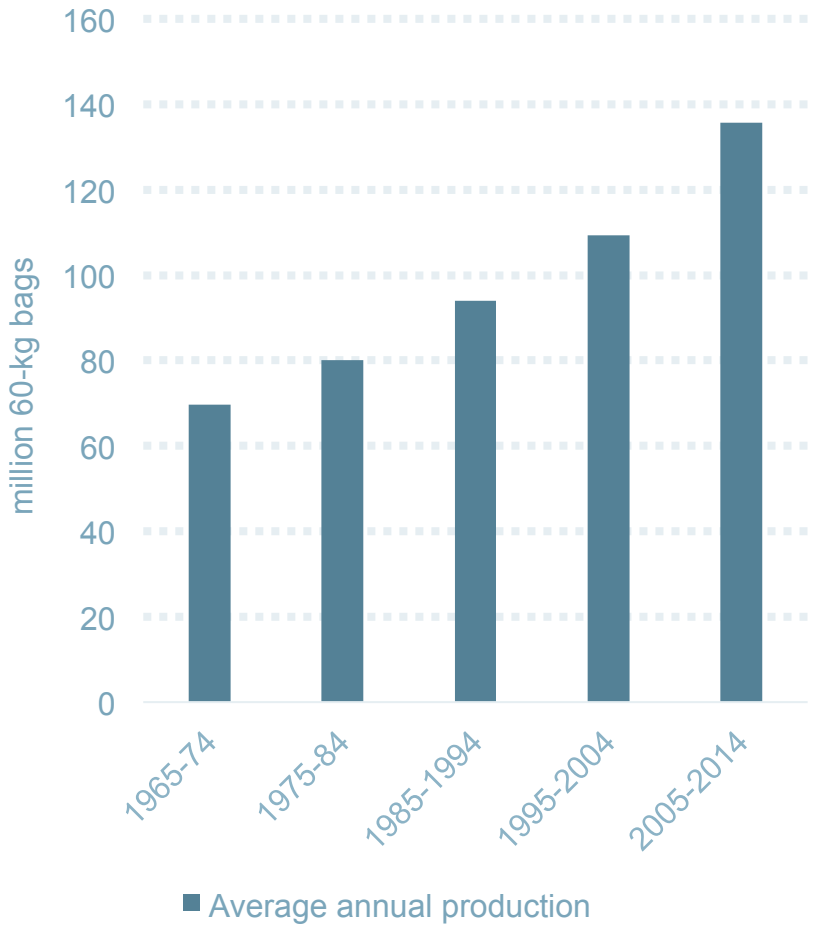
Source: ICO

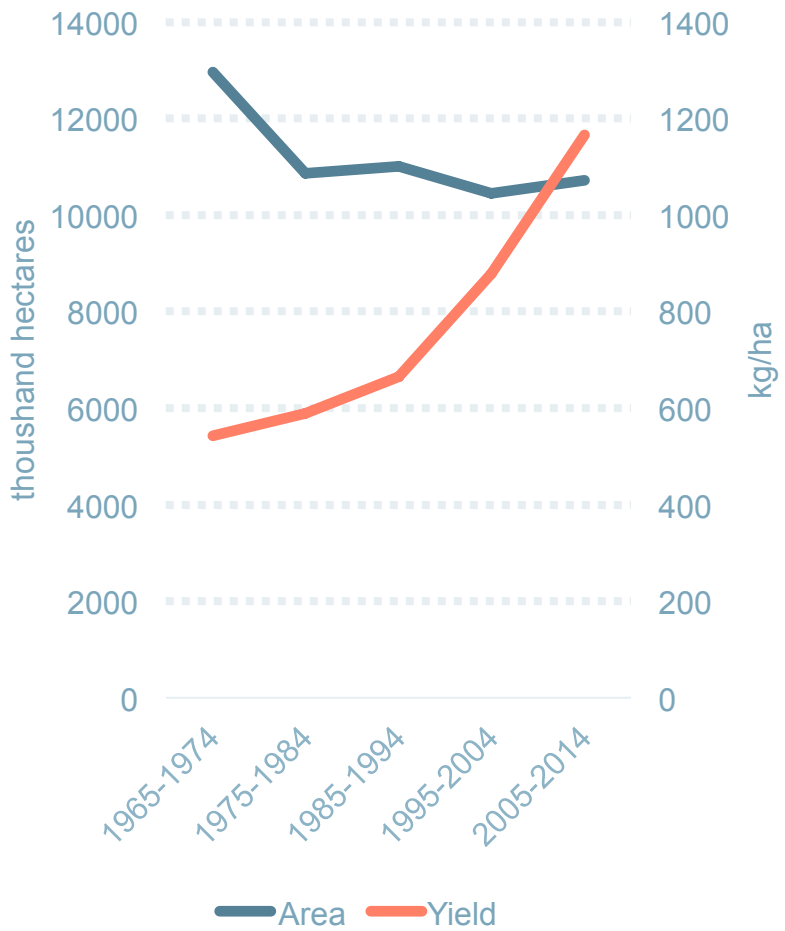
POTENTIAL FOR FURTHER GROWTH IN DEMAND

- Large potential for further growth in exporting countries and emerging markets
- Per capita rates still well below those in traditional markets
- Particularly in countries with large populations (China, India, Indonesia)
- Brazil as the model for other countries to emulate

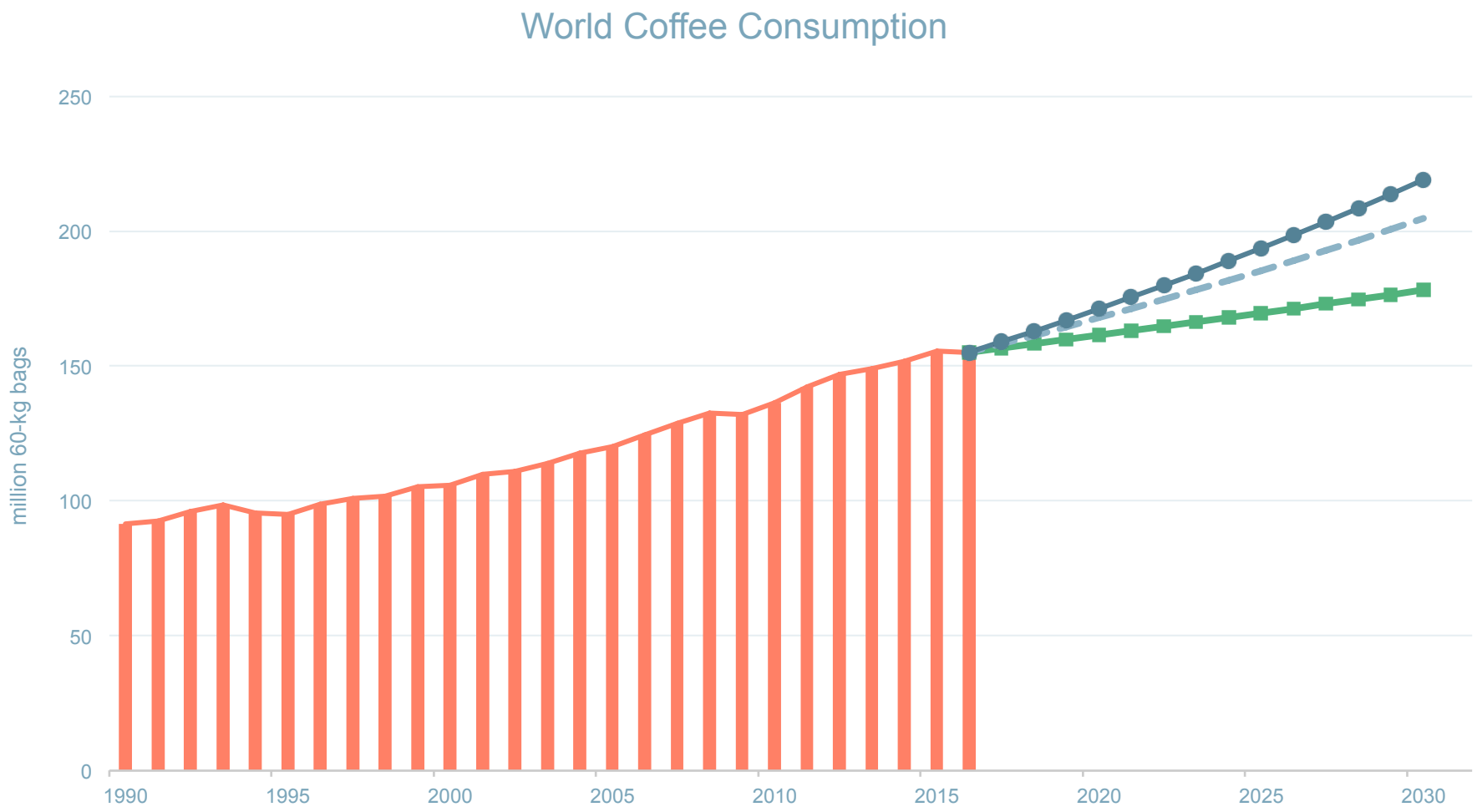


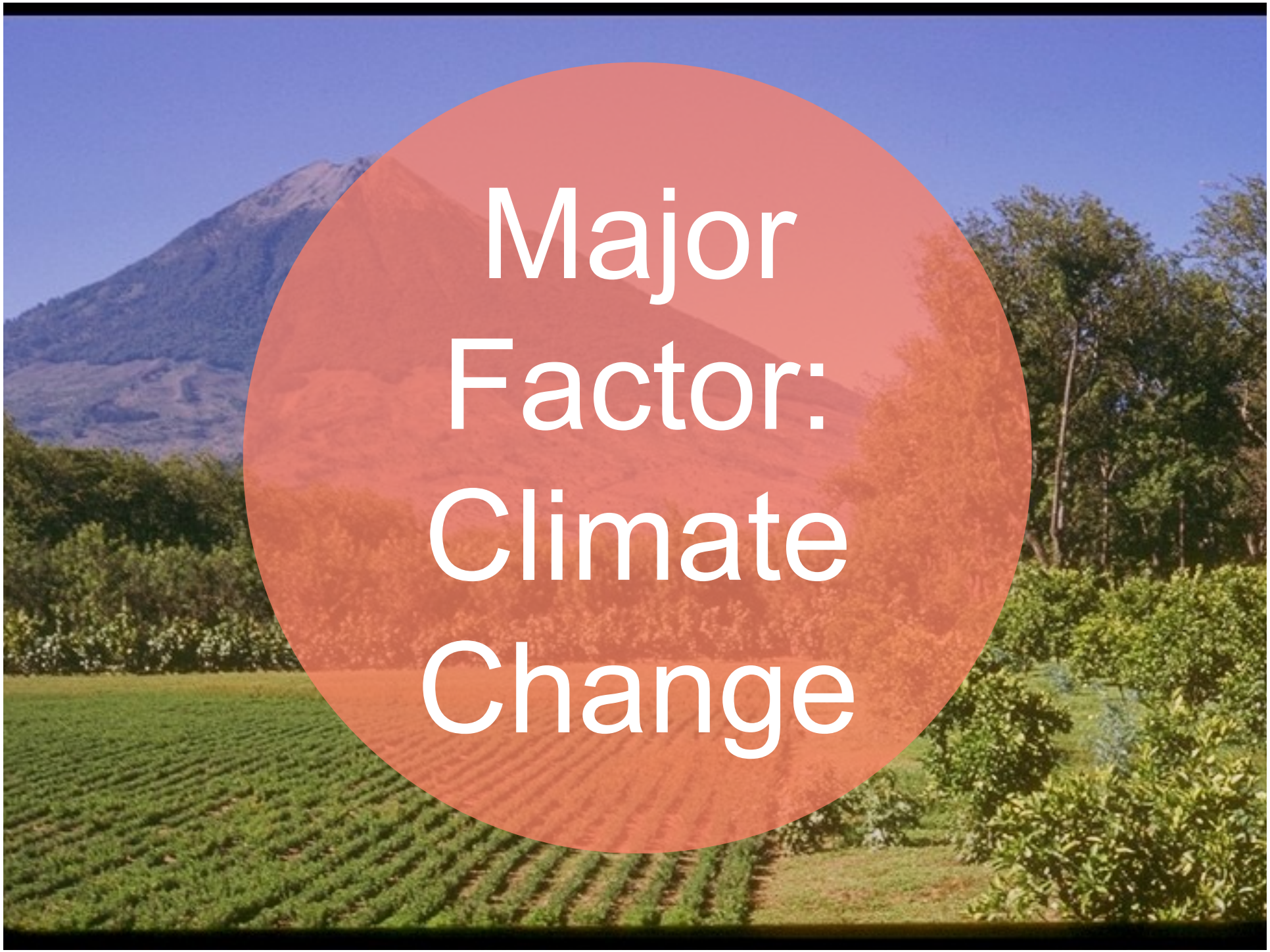
WILL POSITIVE SUPPLY TREND CONTINUE?





SUPPLY GAP IN 2030?




Major
Factor:
Climate
Change

IMPACT OF CLIMATE CHANGE ON COFFEE PRODUCTION

- Global warming affects coffee production via two pathways

  1. Higher temperatures & changes in rainfall patterns make regions unsuitable for production

  2. Changes in climatic conditions facilitate spread of pests and diseases (e.g. Coffee Leaf Rust

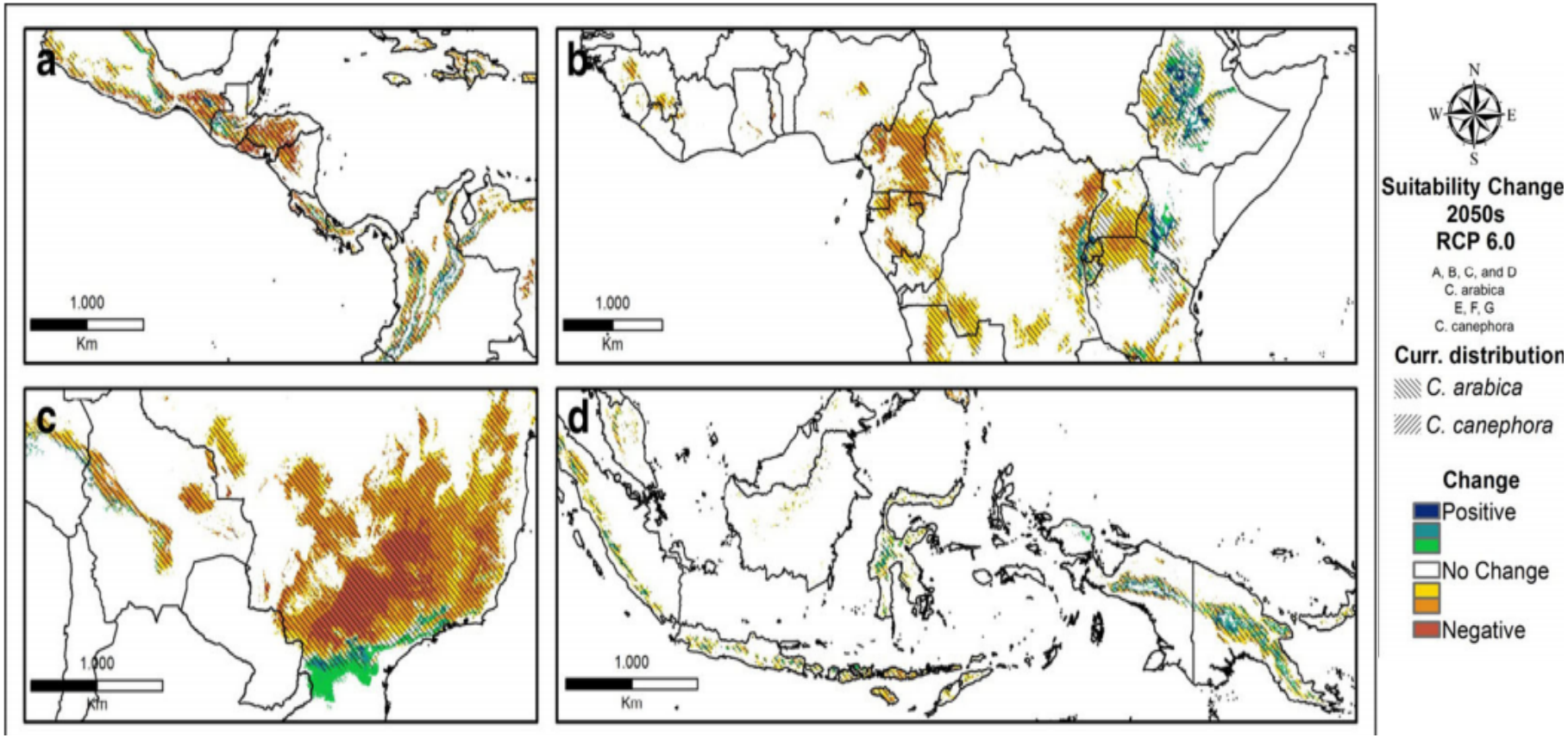
IMPACT OF CLIMATE CHANGE ON COFFEE PRODUCTION

- Both Arabica and Robusta are negatively affected by climate change
- Arabica shows lower yields and worse quality due to higher mean temperatures
- Robusta is affected by extreme weather events (especially droughts) in current production areas

CLIMATE CHANGE IMPACT ON LAND SUITABILITY

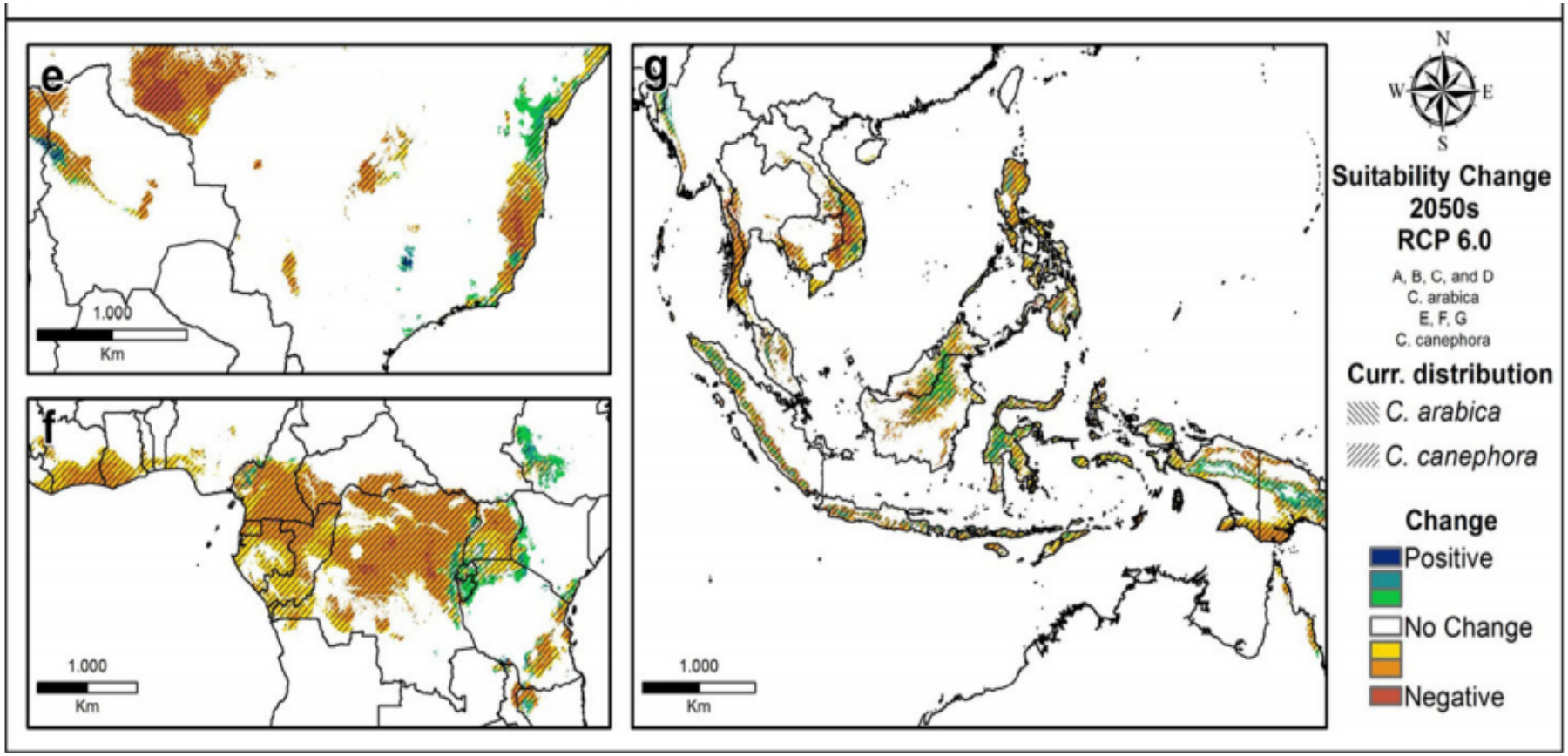
- Studies project loss in suitability using IPCC emission scenarios (RPC 2.6/ RPC 6.0/ RPC 8.5)
- Across scenarios, models predict that 50% of current coffee area will become unsuitable for production
- Visualisation of results disaggregated by coffee species

SUITABILITY OF CURRENT ARABICA AREA IN 2050



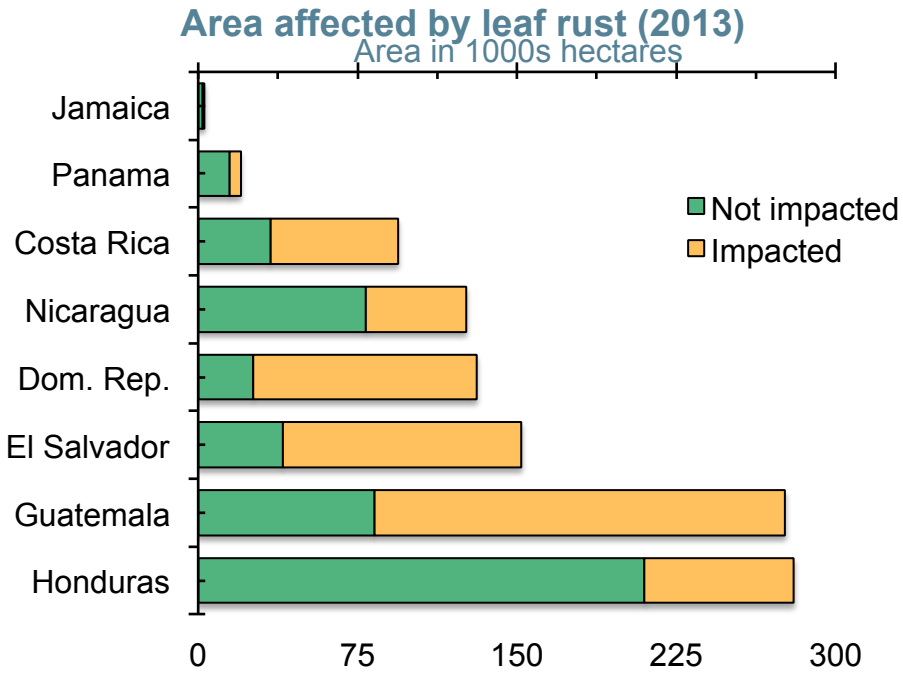
Source: Bunn et al. 2015

SUITABILITY OF CURRENT ROBUSTA AREA IN 2050



Source: Bunn et al. 2015

EXTREME WEATHER VARIABILITY LED TO LARGEST OUTBREAK OF COFFEE LEAF RUST IN MESOAMERICA DURING 2013



Causes:

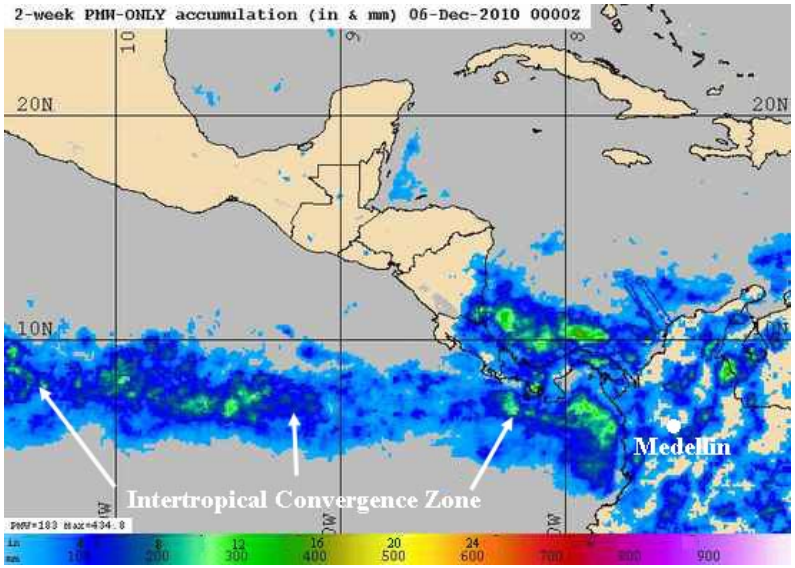
Rain and temperature variability

Humidity: ideal conditions for spores

Impacts:

- >50% area was impacted by coffee leaf rust
- Estimated 375,000 jobs lost
- US$500 mlns in economic loss

HEAVY RAINFALL DURING 2007-10 IN COLOMBIA LED TO INFRASTRUCTURE DAMAGE AND A COFFEE LEAF RUST OUTBREAK



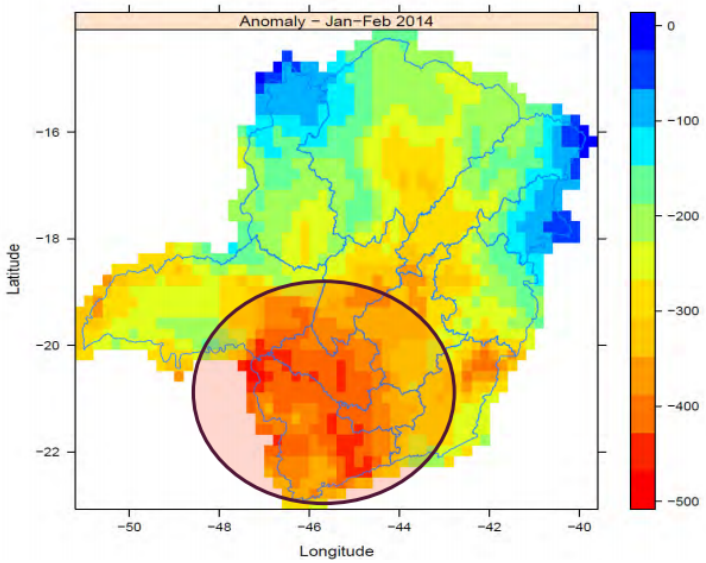
Causes:

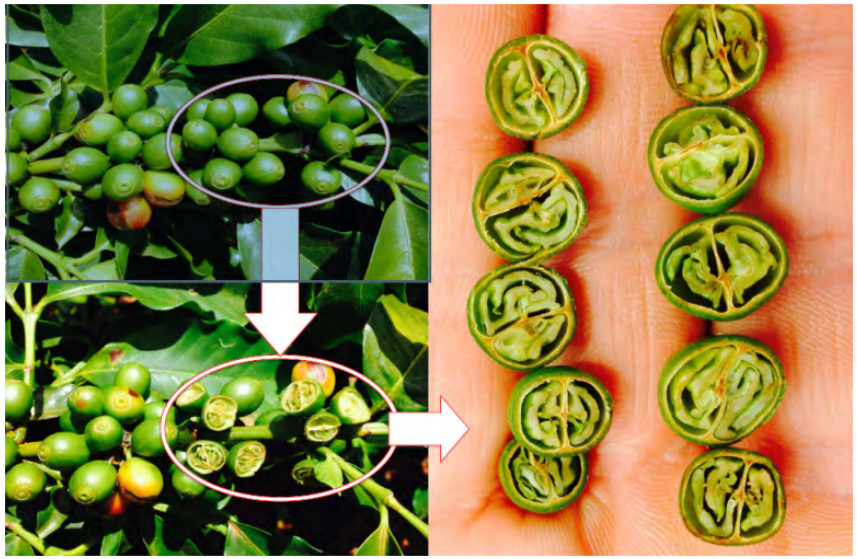
- Rainfall: 40% more than average
- Decreased sunshine hours by 15-30%
- Cooling temperatures by 0.8°C

Impacts:

- Significant infrastructure damage
- Coffee leaf rust outbreak
- 95% of farmers affected; US$500 mln in relief

BRAZIL'S 2014 DROUGHT LIKELY MORE INTENSE DUE TO CLIMATE CHANGE – DROUGHT HAS A HIGHER BASE TEMPERATURE





Causes:

- Rain deficit of ~500 mm in Minas Gerais
- Drought combined with high temperatures
- Reg. warming caused by land-use change

Impacts:

- Much of state's coffee in hardest hit zones
- Coffee berries not filling
- 2014: no data on jobs and economic loss

MITIGATION ACTIONS CAN BUFFER IMPACT OF CLIMATE CHANGE…

- Agronomic techniques and genomic research provide solutions:
  - Shade trees, mulching
  - Irrigation where appropriate
  - Development & dissemination of coffee varieties with tolerance to climate stress

…BUT CHALLENGES REMAIN…

- Coffee is a perennial (tree) crop → lead times for adaptation measures (e.g. breeding & replanting) are very long
- Adaptation at farm level requires investment, but producers have limited access to finance

…WHILE MIGRATION IS NOT A PANACEA EITHER

- Moving production into higher elevations
  - Scope varies between countries (e.g. Ethiopia could have a net gain of 400% in production area, but many others would lose)
  - Negative consequences of changes in land use patterns need to be considered

ROLE OF THE ICO

MISSION: Promote a sustainable world coffee sector

5-YEAR ACTION PLAN:

1. Disseminate world-class data and analytics to inform decision makers
2. Provide forum for discussion of coffee matters among & between public and private sectors
3. Enable sector development projects and promote consumption through public-private partnerships

ROLE OF THE ICO

Disseminate world-class data and analytics to inform decision makers

- ICC 103-6 Rev. 1 “Climate change and coffee”,
- ICC 114-7 “Guide for Financing Climate-Related Activities in the Coffee Sector”
- SC 75 “Recent studies on the impact of climate change on coffee production”

ROLE OF THE ICO

Provide forum for discussion of coffee matters among & between public and private sectors

- ‘Climate change, time for action’ session (2014)
- Submissions to UN Framework Convention on Climate Change and FAO/GACSA
- Exchanges of information on national coffee policies
- Consultative Forum on Coffee Sector Finance

ROLE OF THE ICO

Enable sector development projects and promote consumption through public-private partnerships

- Work with private sector/civil society initiatives:
  - Global Coffee Platform
  - World Coffee Research
  - Coffee Global Adaptation Plan
  - Coffee & Climate
  - etc.

CONCLUSIONS

- Coffee sector faced with challenge to meet future demand amid negative impact of climate change
- Solutions for mitigation are being developed, but dissemination needs to be accelerated
- Migration should be driven by market forces, while negative impact of land use change must be minimized
- Role for governments to strengthen institutions for research and technology transfer to farmers
- ICO has important role to play in providing and exchanging information; international advocacy; and bringing together public sector with private and civil society initiatives

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Thank you