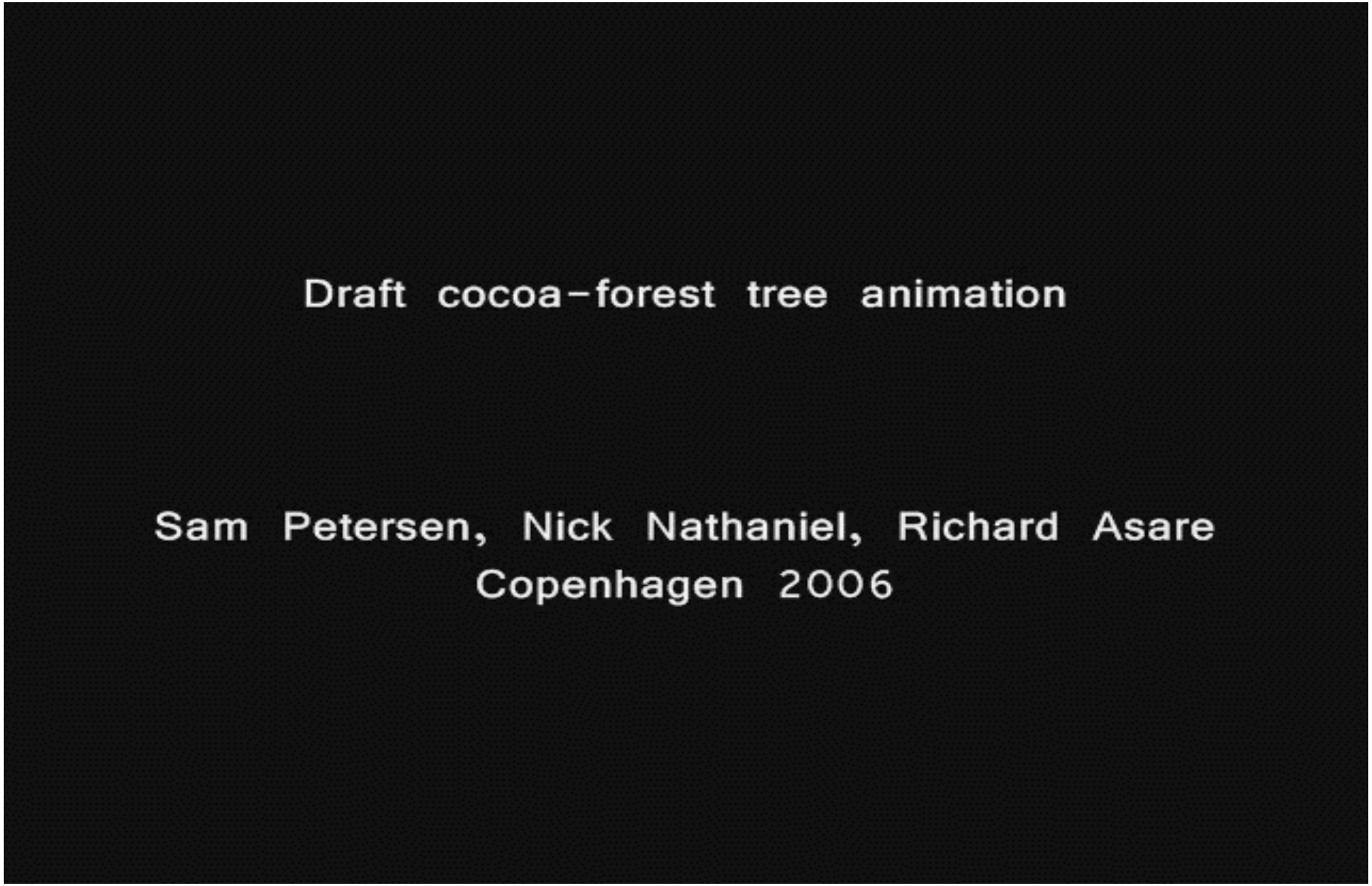
Different segments for cocoa systems in Ghana: Determining factors and important variables to consider in segmenting cocoa farmers

Rich K. Kofituo, Mustapha Dalaa, Richard Asare


Draft cocoa-forest tree animation
Sam Petersen, Nick Nathaniel, Richard Asare
Copenhagen 2006

Designing a cocoa agroforest

Initial stage: 0-3 yrs

- Food crops (e.g., plantain, cocoyam, maize, cassava, etc.) are planted first, followed by the cocoa, to provide key initial shade to the cocoa seedlings as well as fruits trees and valuable timber spp.

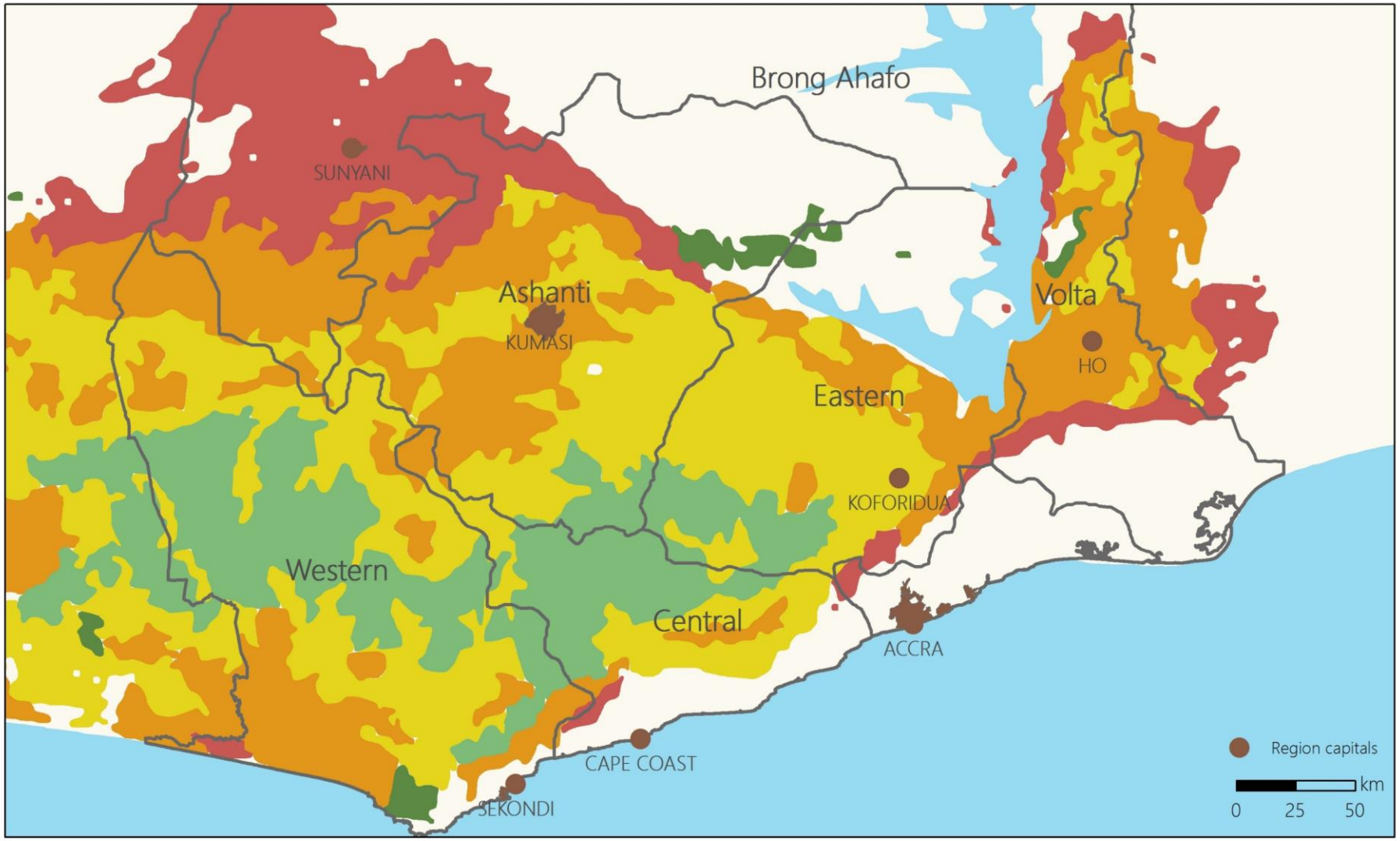
Growth stage: 4-16 yrs

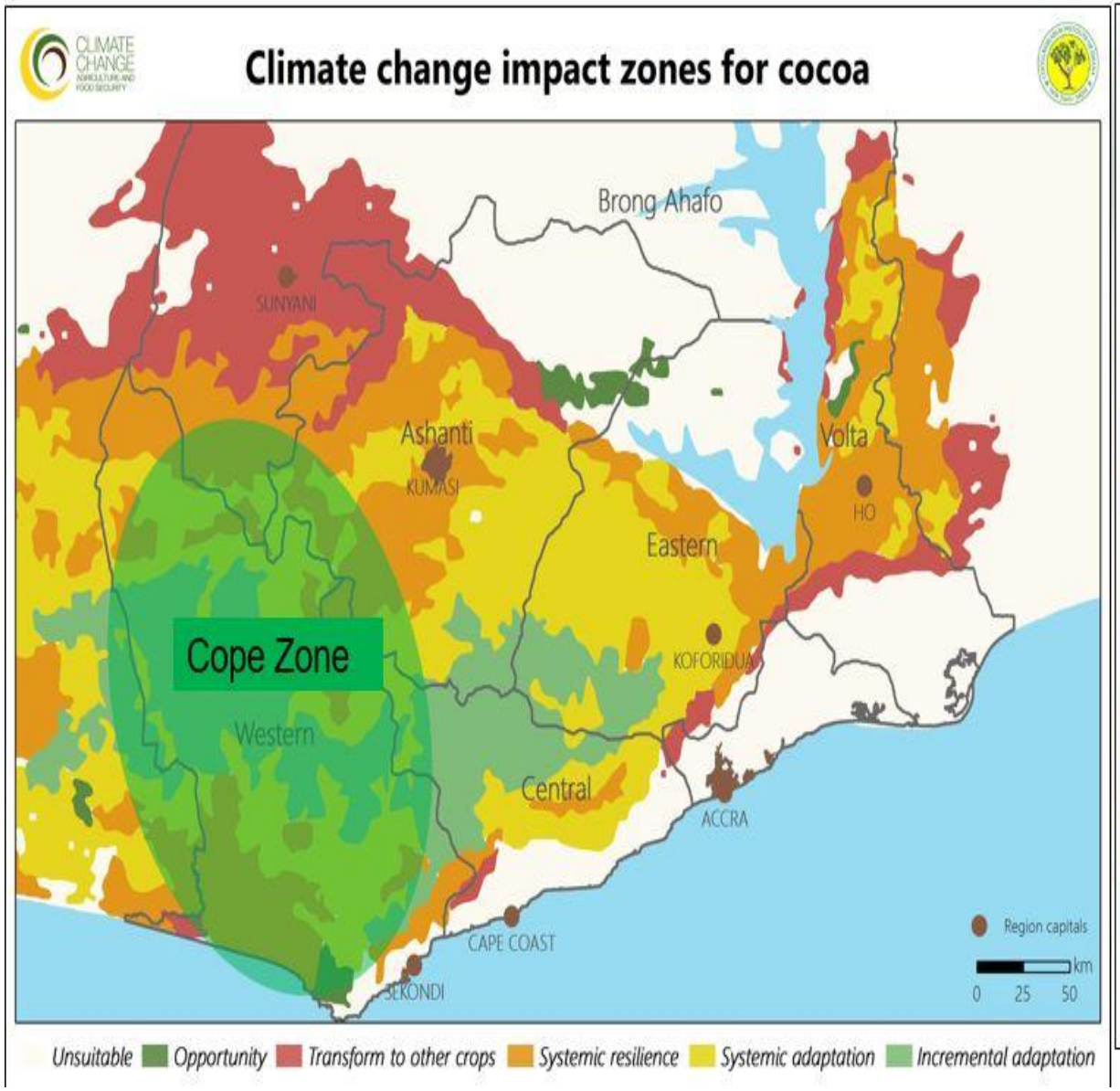
- Matured food crops are harvested, cocoa starts to give economic quantities
- fruit trees (*Persea americana, Elaeis guineensis, Carica papaya, Mangifera indica*, and *Citrus spp, etc.)* are managed along with the cocoa plus valuable timber spp.

Maturity stage: >16 yrs

- As cocoa matures into full production, shade trees are managed according to preferred priorities and the conditions within the farm for the farmer.

Climate change impact zones for cocoa

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Climate change impact zones for cocoa
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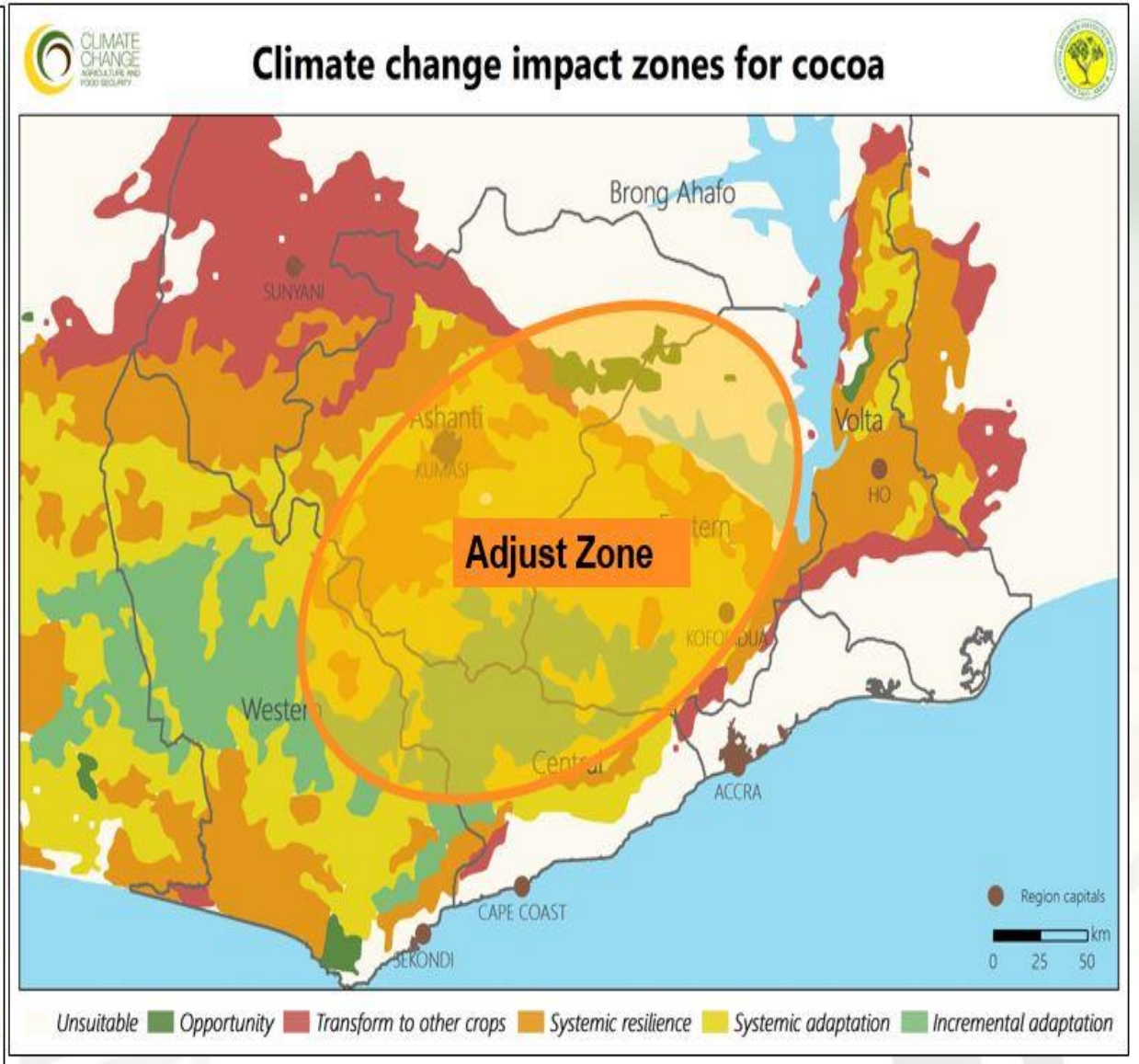
Transform to other crops
Systemic resilience
Systemic adaptation
Incremental adaptation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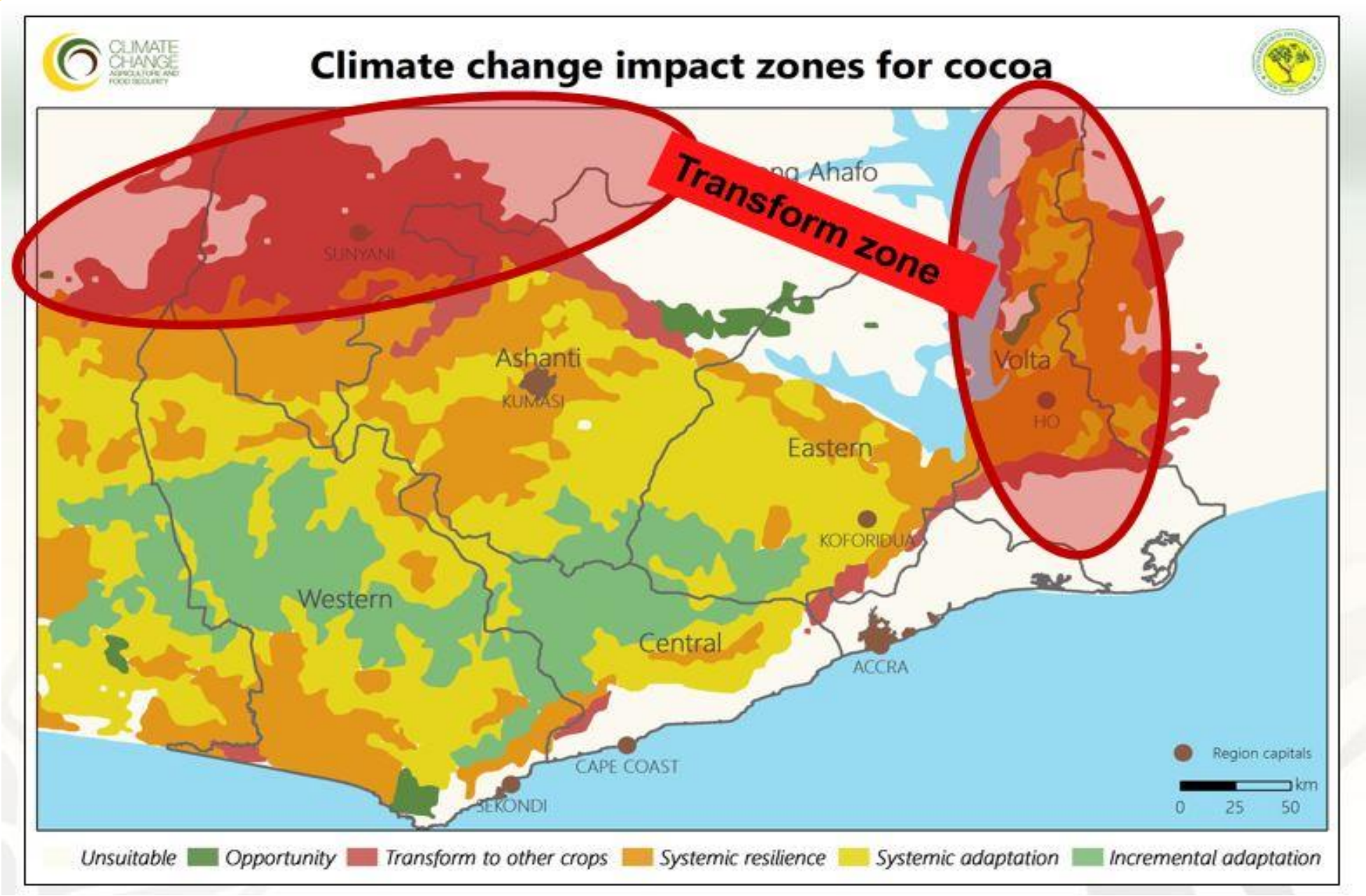
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Climate impact zones for cocoa landscape in Ghana

Cope zone

→ Little Change

- Focus on Good Agricultural Practices (GAPs)
- no-regret solutions

Adjust zone

→ Warmer and wetter + unknown:

- GAPs that address higher annual average temperature
- weak dry season
- higher annual precipitation
- No-regret solutions.

Transform zone

→ Too hot and dry

- Diversification and transition into other crops
- Emigrate to other regions
- Off farm employment

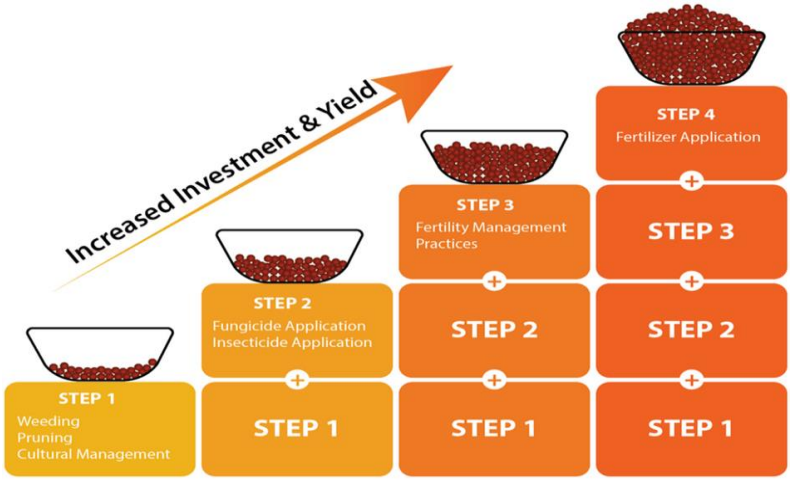
Scale-up of climate smart cocoa

Operationalizing climate smart cocoa

Timing

Moisture management

Spacing



Stepwise process

Farmer Segmentation

- The farmer segmentation approach in cocoa was developed by the IITA CCAFS research team in collaboration with partners.

- The approach combines quantitative and qualitative aspects to understanding the diversity of farmers within a community.

- The farmer segmentation process identifies differences (farmer socio-economic characteristics) and farmers' ability to invest (resource endowment) in Good Agricultural Practices (GAPS) and Climate Smart Cocoa (CSC).

Segmentation process

- The study employed semi-structured questionnaire (individual interviews of 270 farmers) and Focus group discussions and to collect qualitative and quantitative data respectively across the Cope, Adjust and Transformational climate impact Zones of Ghana.

- A stratified sampling technique was used in grouping farmers at each community into women and men (35 years and above) and youth (men and women) between 18 and 34 years to conduct the focus group discussions. This was to allow the women and youth groups to freely express themselves in the discussions.

- A cluster analysis was done using principal component analysis to identify socio-economic indicators that differentiated farmers.

Variables for farmer segmentation

Age of farmer

Educational level

Market orientation

Household size

No. of family farm labour

Labour hired in, Labour hired out

Variables for farmer segmentation

Total land of farmer

Total land available for cocoa farming

Total annual income of farmer

Total Livestock Unit

Cocoa Productivity

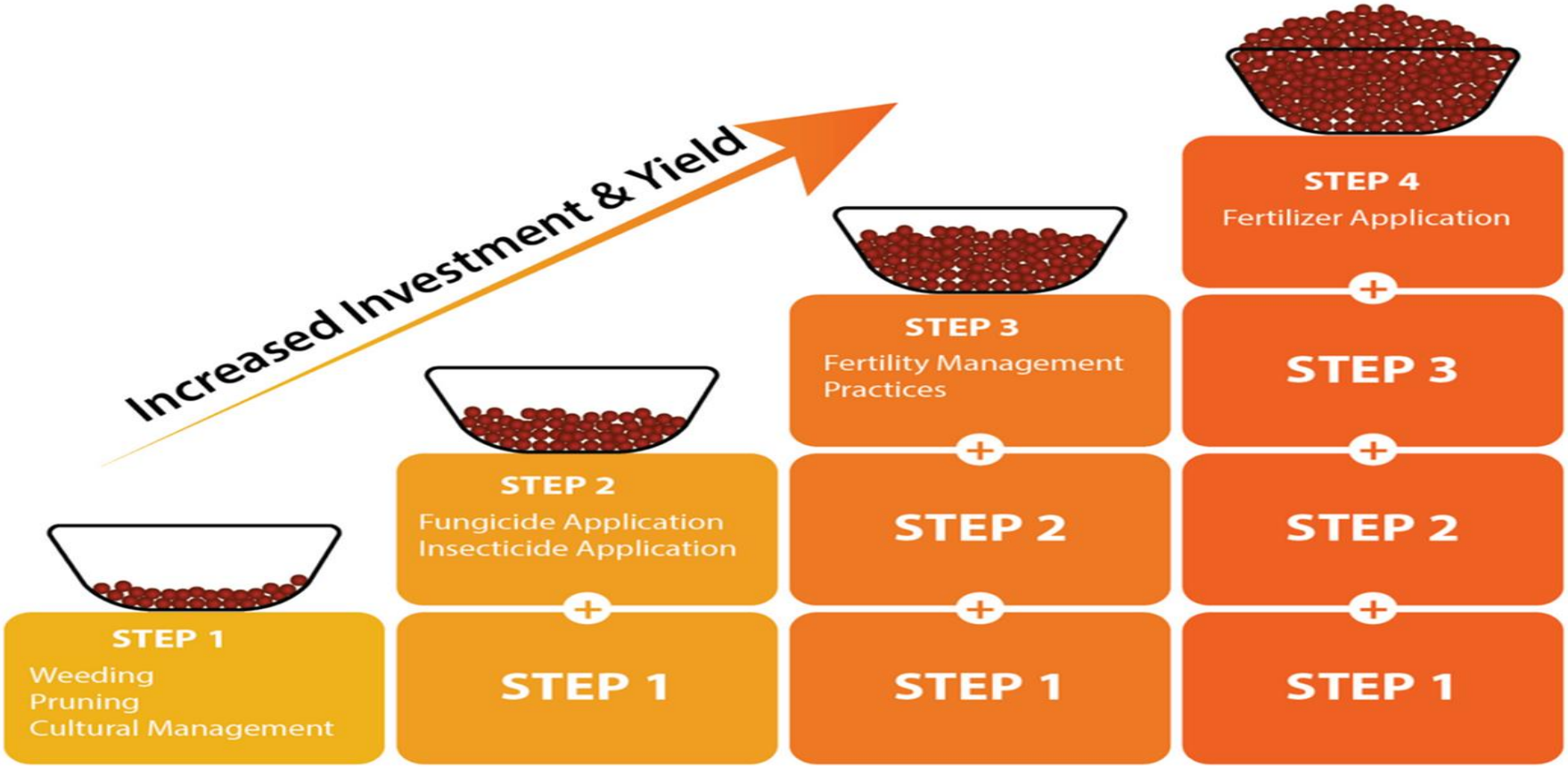
Cocoa Income

Cocoa Farmer typologies

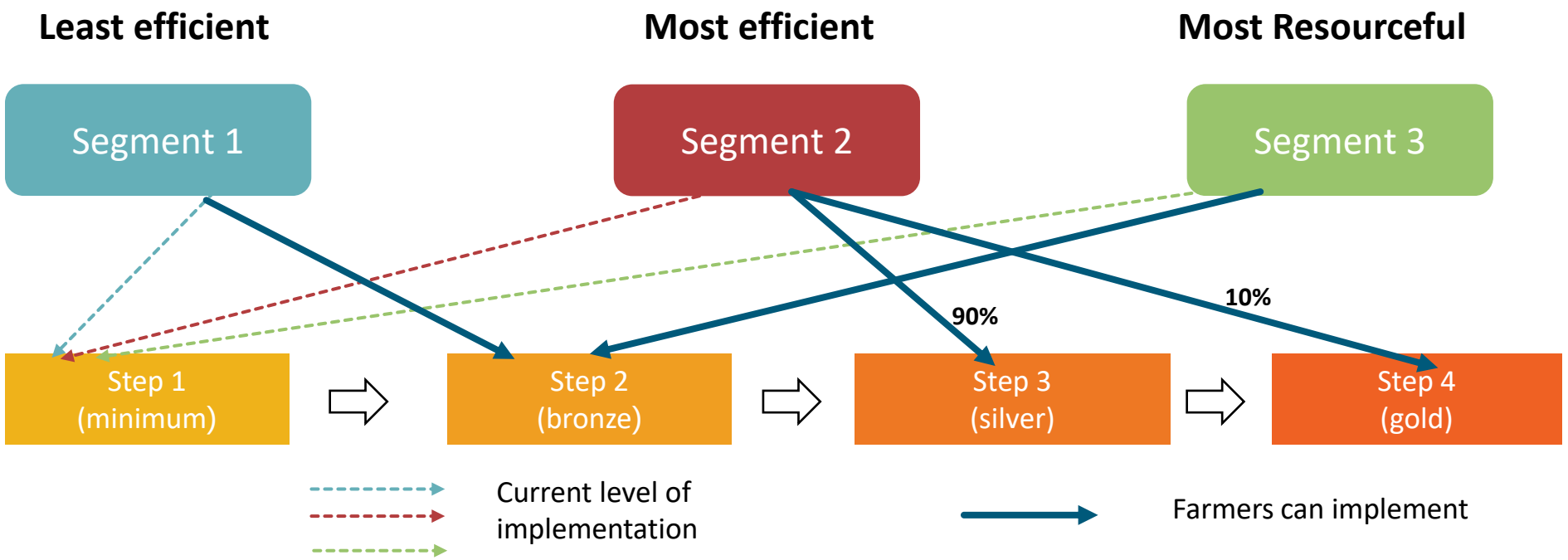
CLUSTER 1 (Least efficient)	CLUSTER 2 (Most efficient)	CLUSTER 3 (Most Resourceful)
• Least in cocoa productivity • Least in terms of cocoa income and total annual income • Provide highest sell out of labour	• Highest cocoa productivity level • Highest income from cocoa • Highest total annual income • Most diversified farmers (alternative crops and animals) • Average age of 32 • Lowest household size • Highest market orientation	• Oldest in Age • Highest household size • Biggest land size • Least educated

Climate Smart Cocoa: a Stepwise Approach

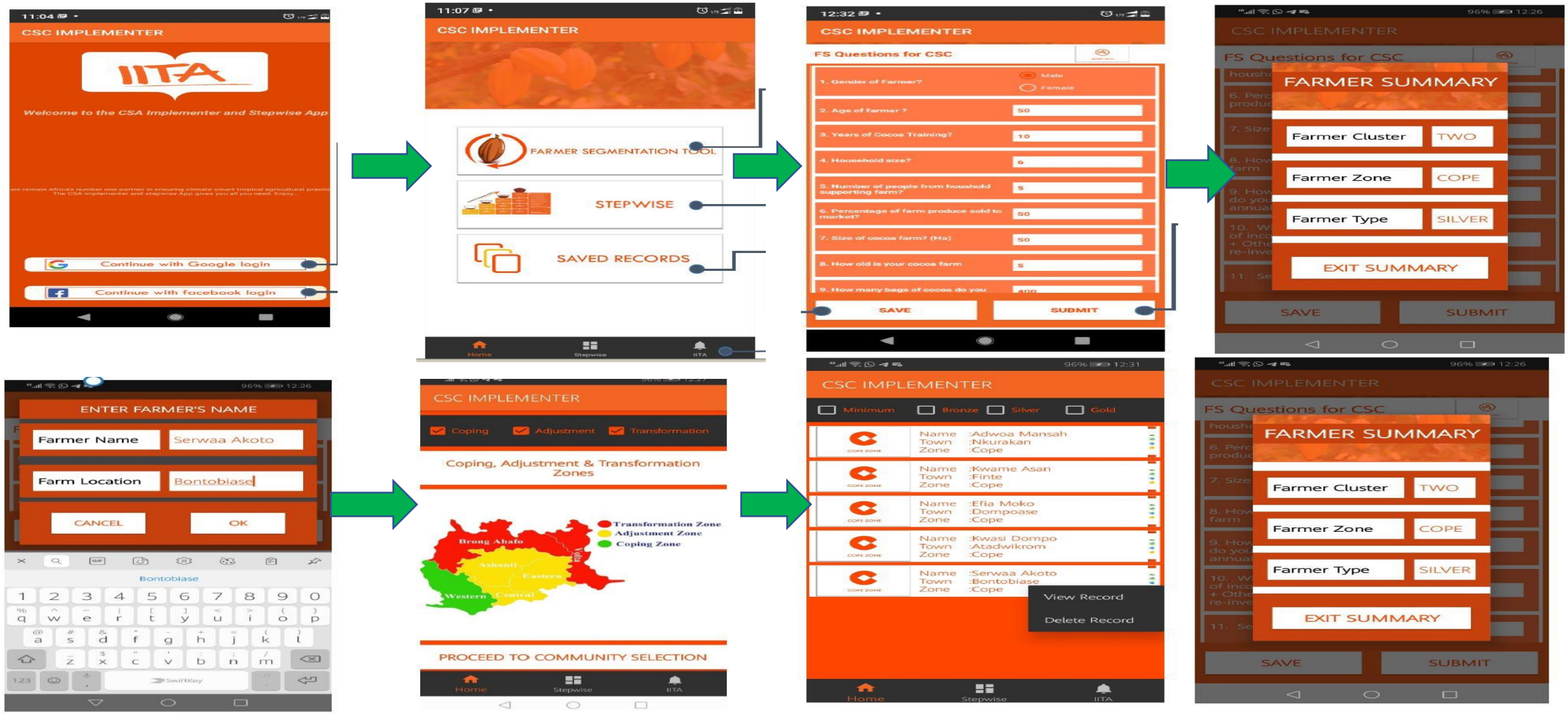
- In each climate change impact gradient, CSA packages at 4 different steps were developed: Minimum, Bronze, Silver and Gold
- Each CSA package and adoption level corresponds to a capacity of farm-level investments over time.



Mapping farmer typologies to CSC recommendations



Climate Smart Cocoa Implementer App



Key takeaways

- Cocoa farmer segmentation facilitates an easier adoption of Climate Smart Cocoa(CSC) practices
- Cocoa farmer segmentation is important to allow farmers to invest based on their resource endowment
- Cocoa farmer segmentation allow extension agents to train targeted farmers with tailor made recommendations
- A prototype of the Climate Smart Cocoa(CSC) Implementer App is available and will soon be uploaded on Google Play Store

Thank you