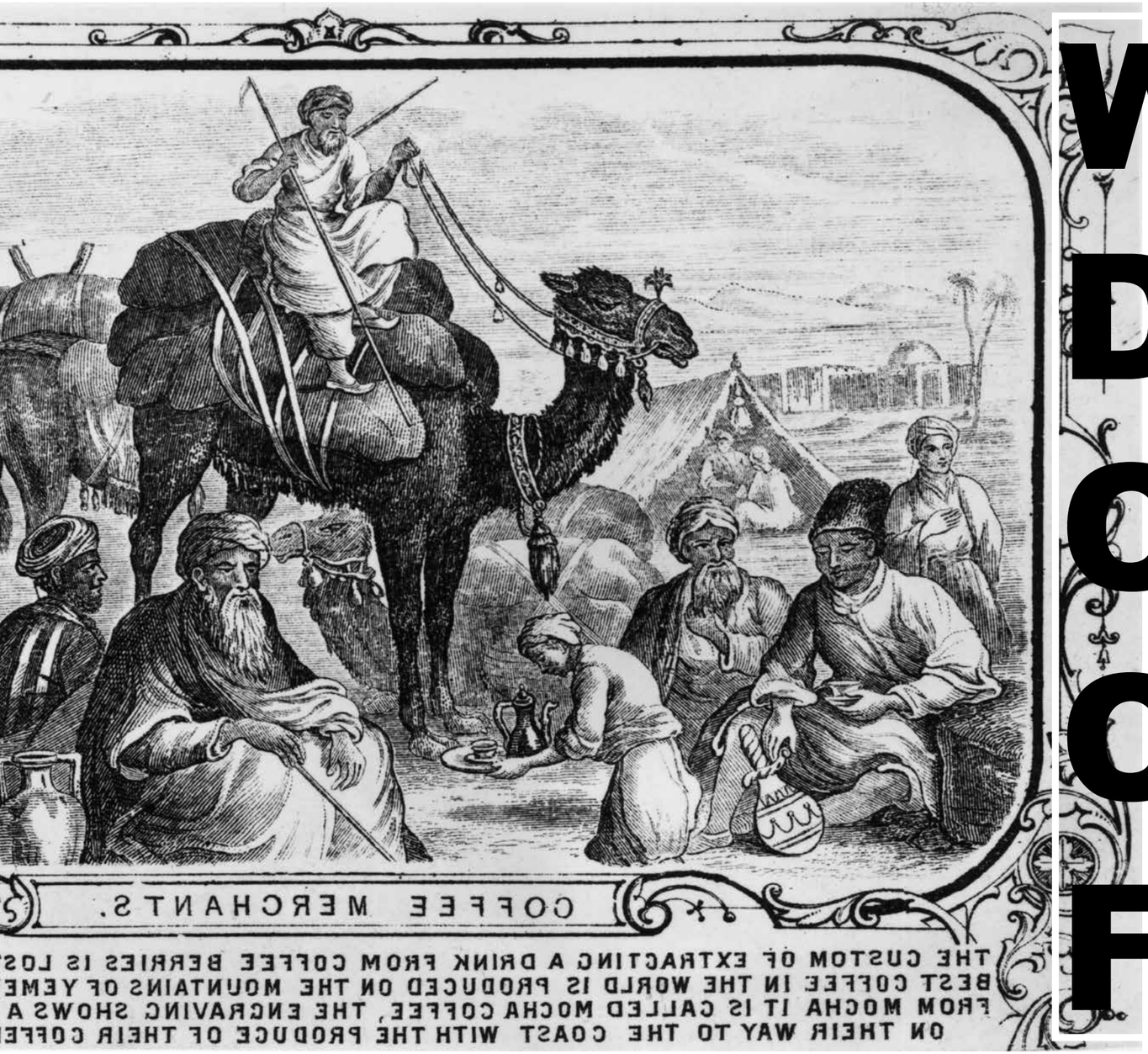
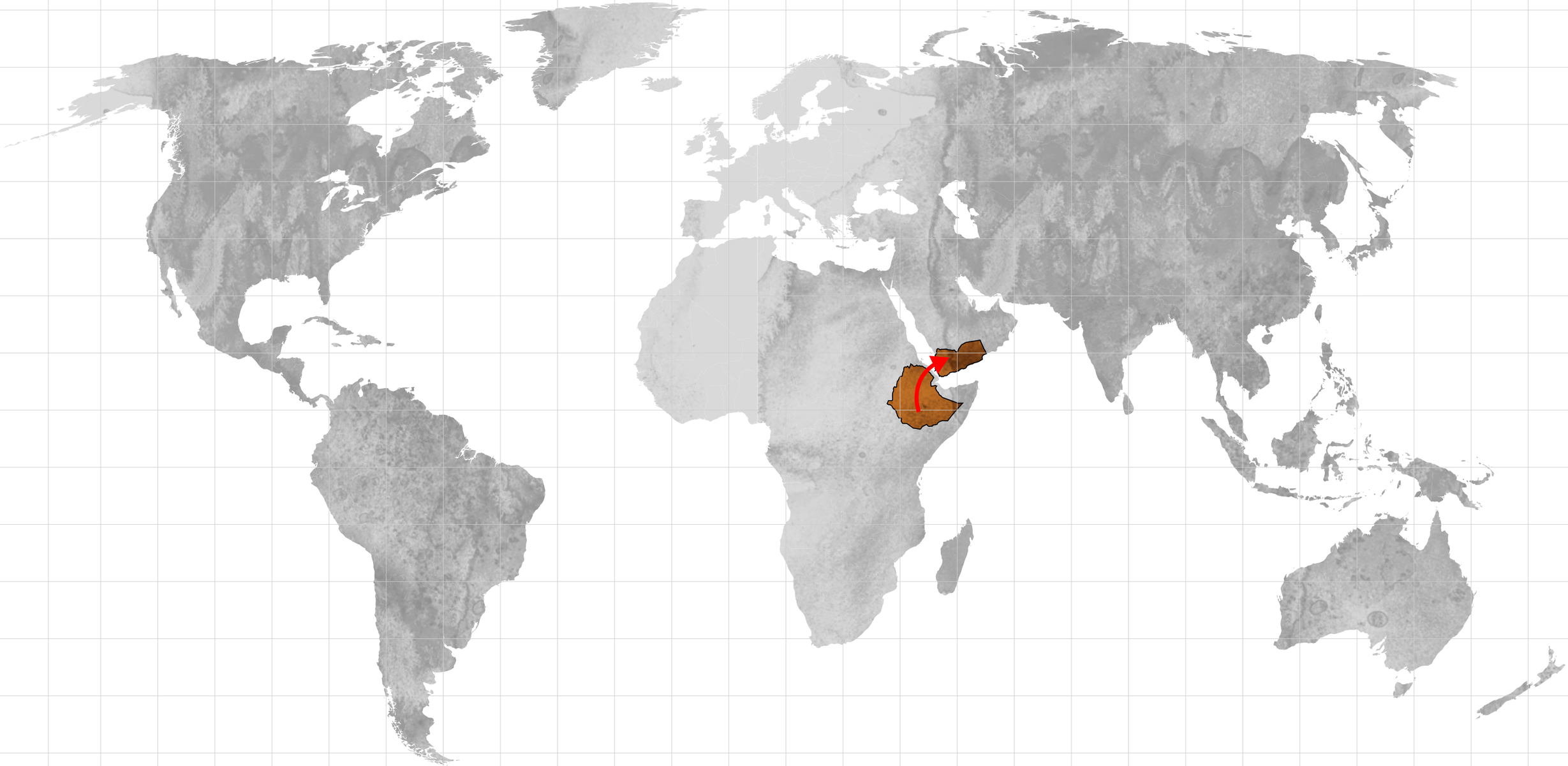
CAFFEA ARABICA

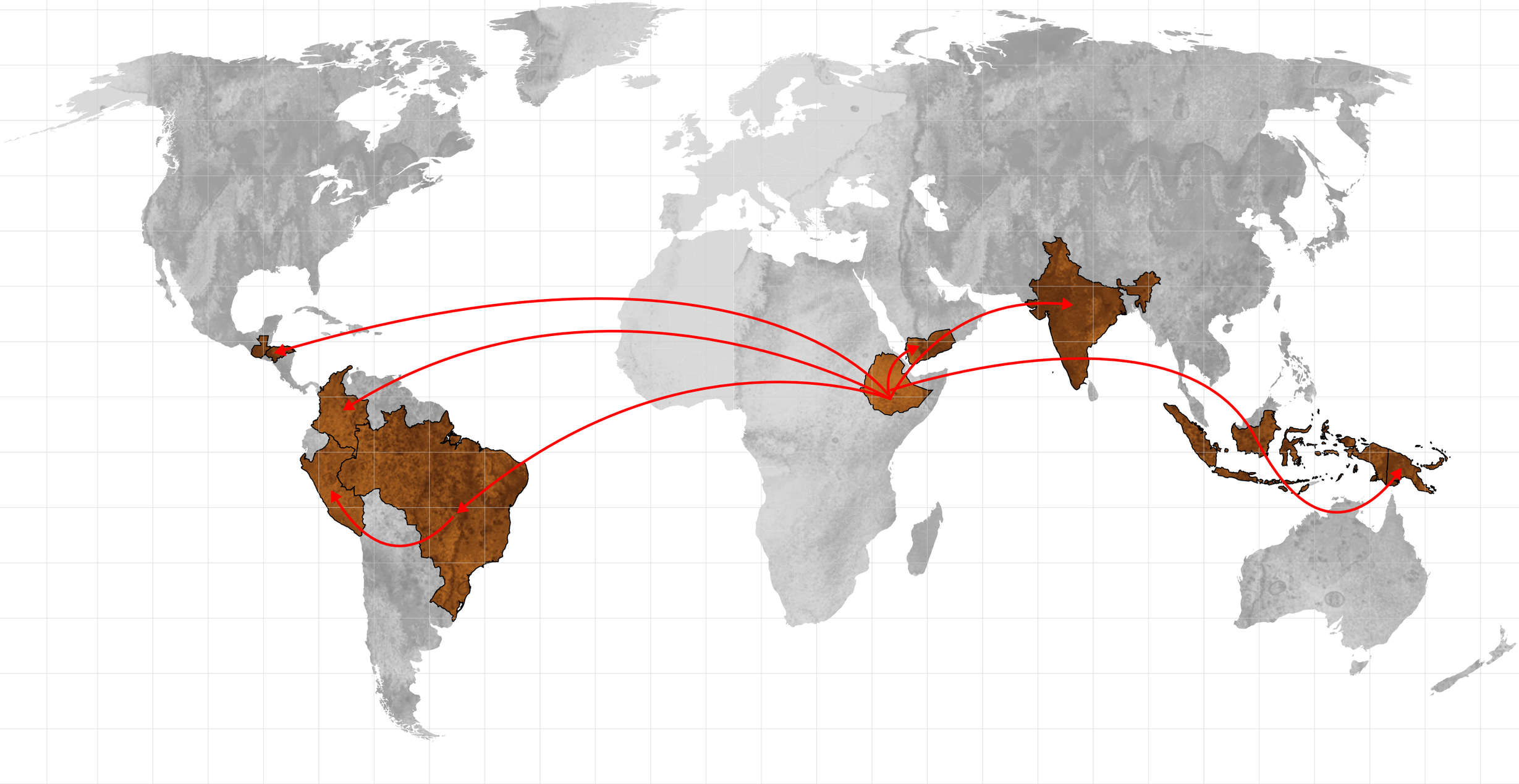


WHERE DOES COFFEE COME FROM??



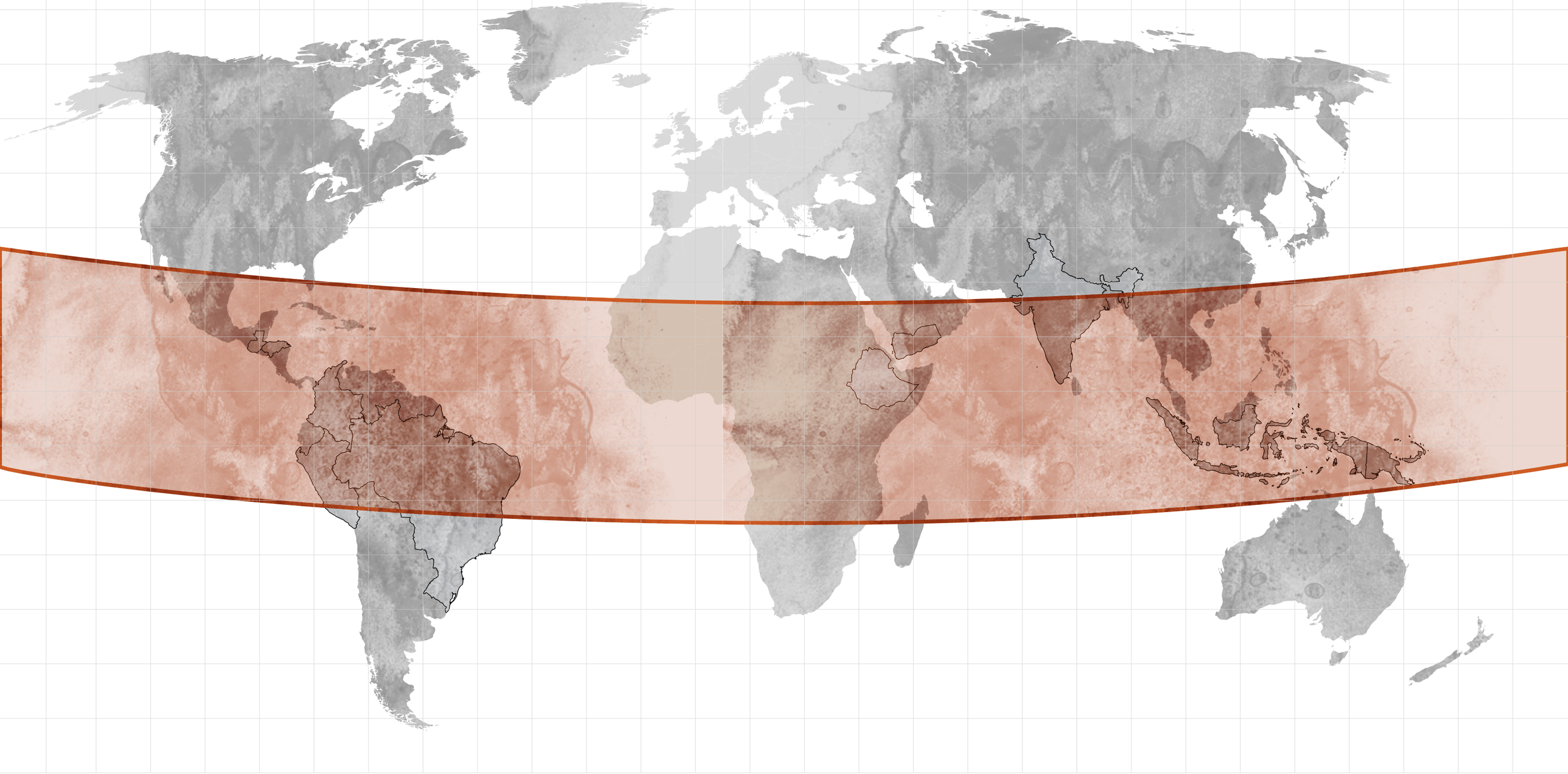
1st Migration

The first written record of coffee made from roasted coffee beans comes from Yemen Arab scholars, who wrote that it was useful in prolonging their working hours.



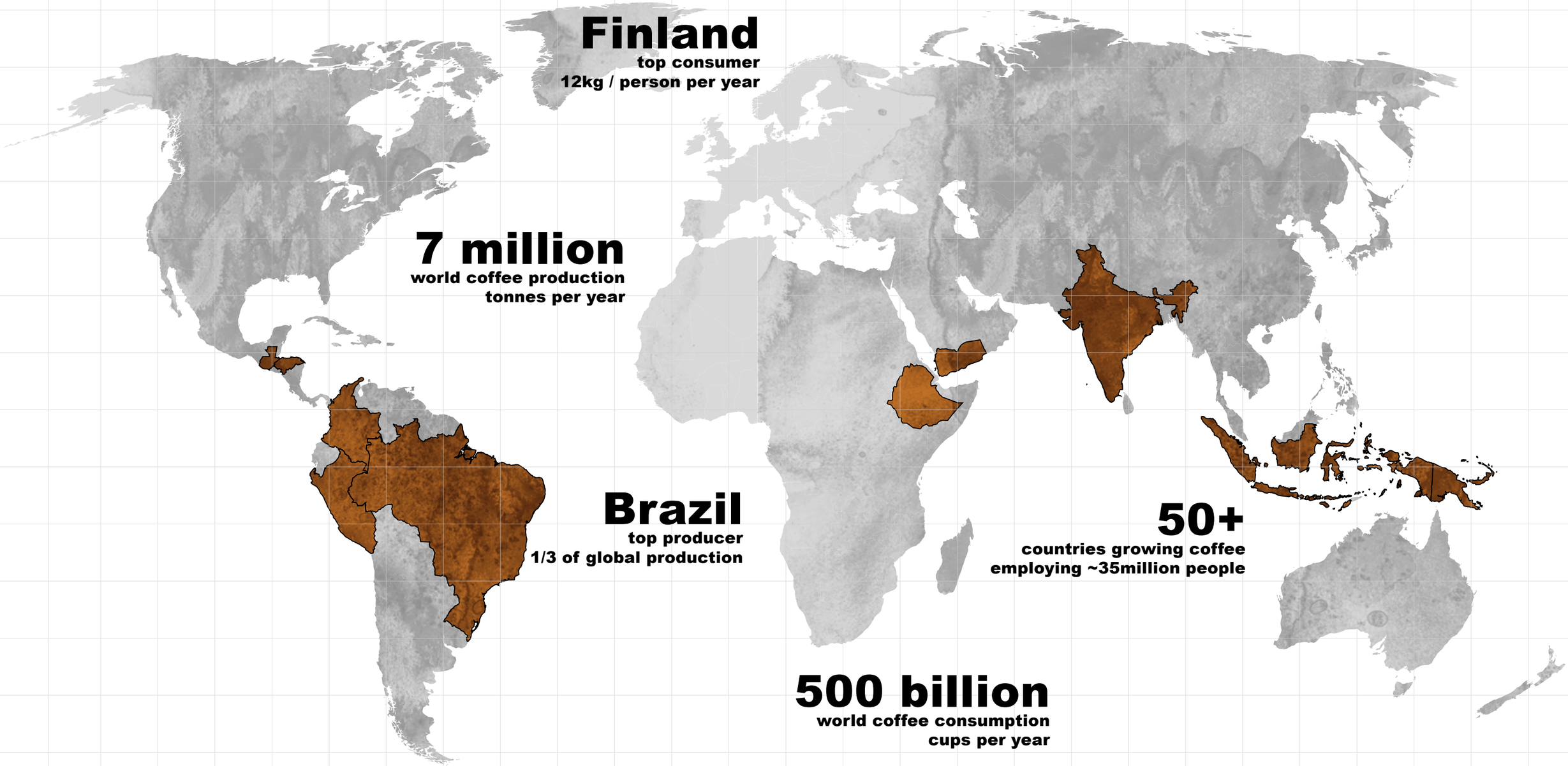
Worldwide MWWigration

Brazil // Guatemala // Colombia // Peru // India // Indonesia



Coffee Belt

Prime Coffee-Growing Regions from the belt roughly bounded by the tropics of cancer and capricorn. These areas offer perfect conditions for growing coffee beans.


Finland
top consumer
12kg / person per year
7 million
world coffee production
tonnes per year
Brazil
top producer
1/3 of global production
50+
countries growing coffee
employing ~35million people
500 billion
world coffee consumption
cups per year

ethiopia

genetic diversity

39% of Ethiopia's coffee is grown wild in forest and semi-forest, rather than in plantation monocultures

terroir

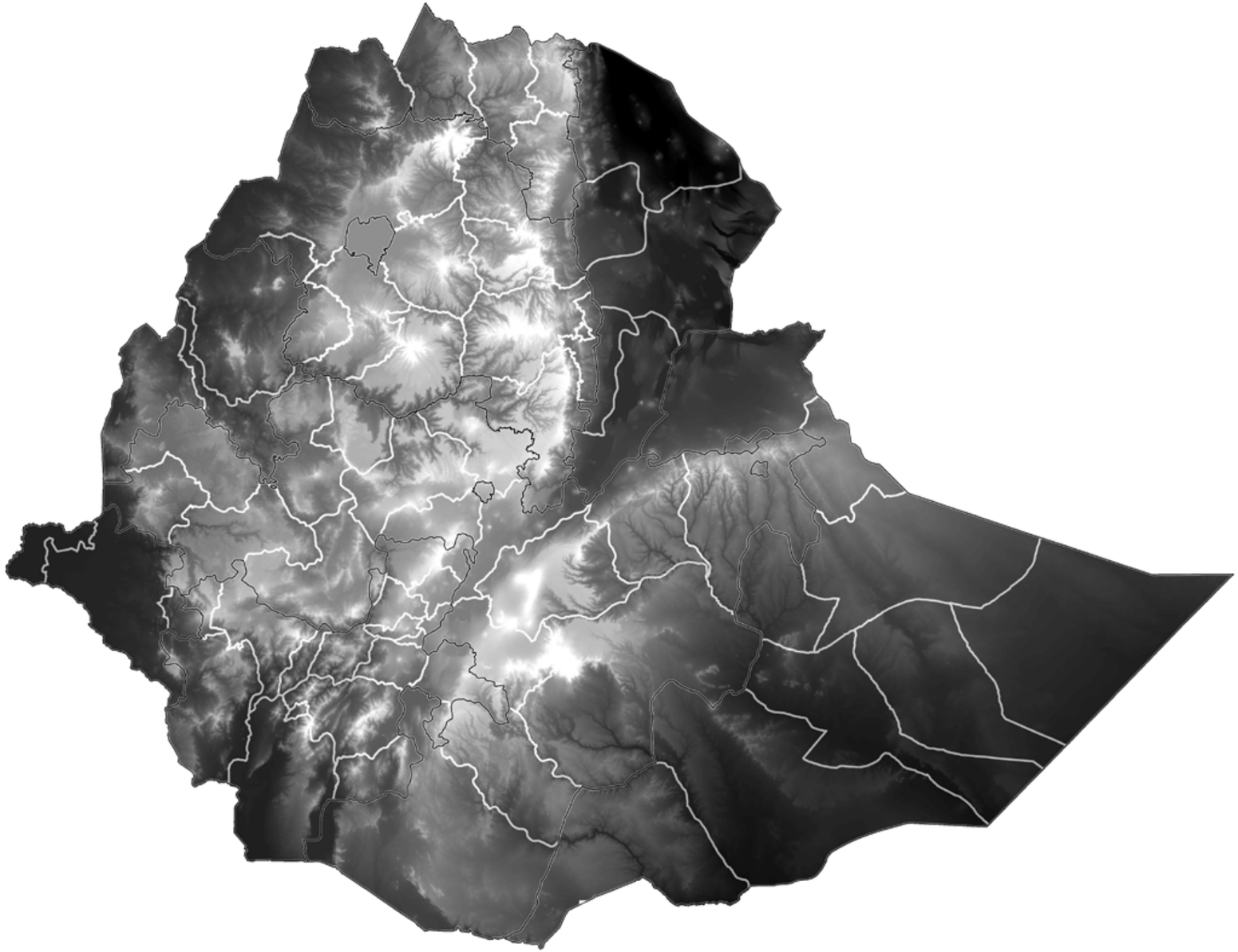
Harar, Sidamo, Yirgacheffe, and Limu regional crops are sold under trademark owned by Ethiopia

largest African coffee grower

$881m in export revenue (2016)
10% of annual government revenue

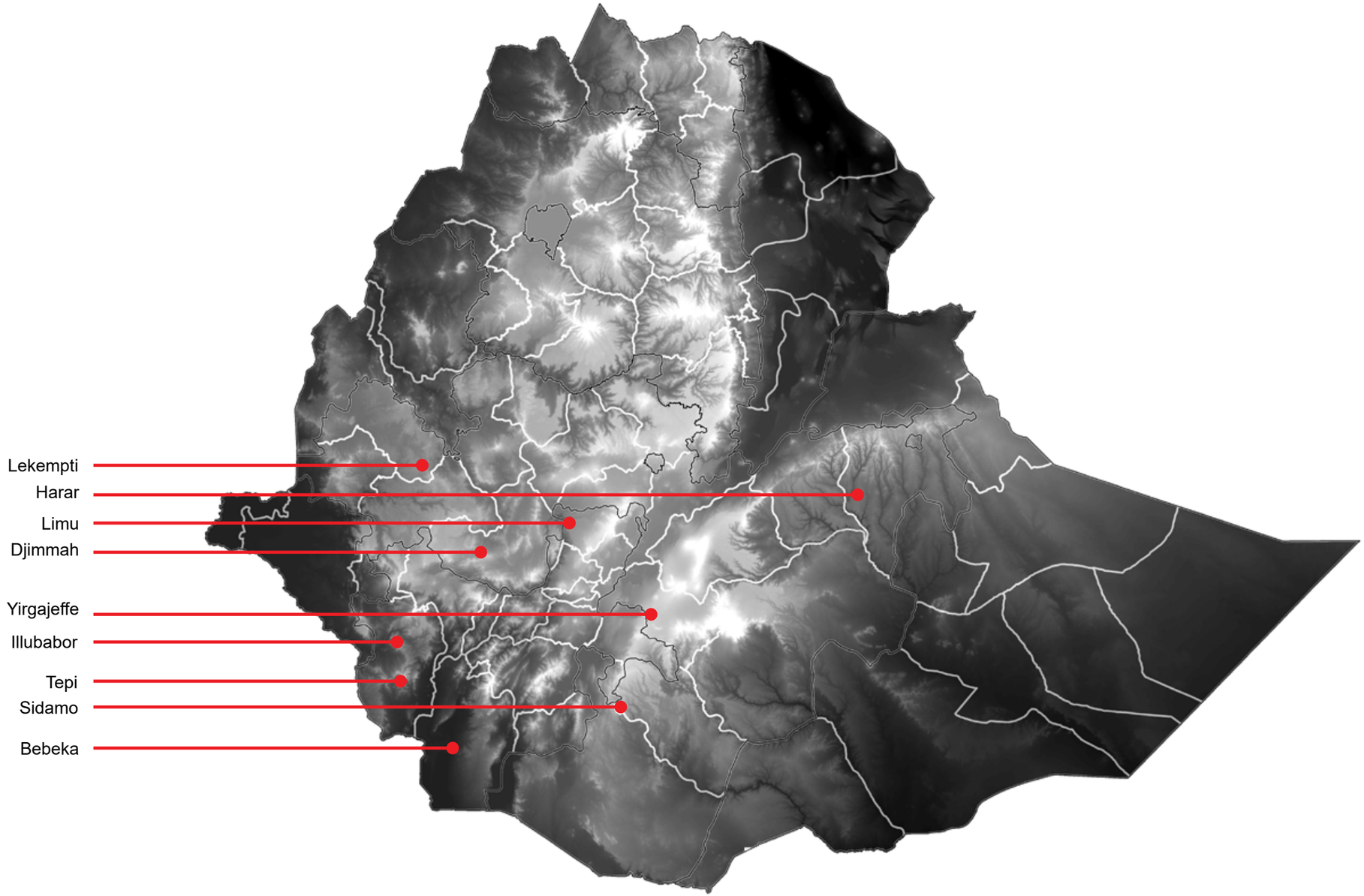
land use

4,600 sq. km total area use for cultivation

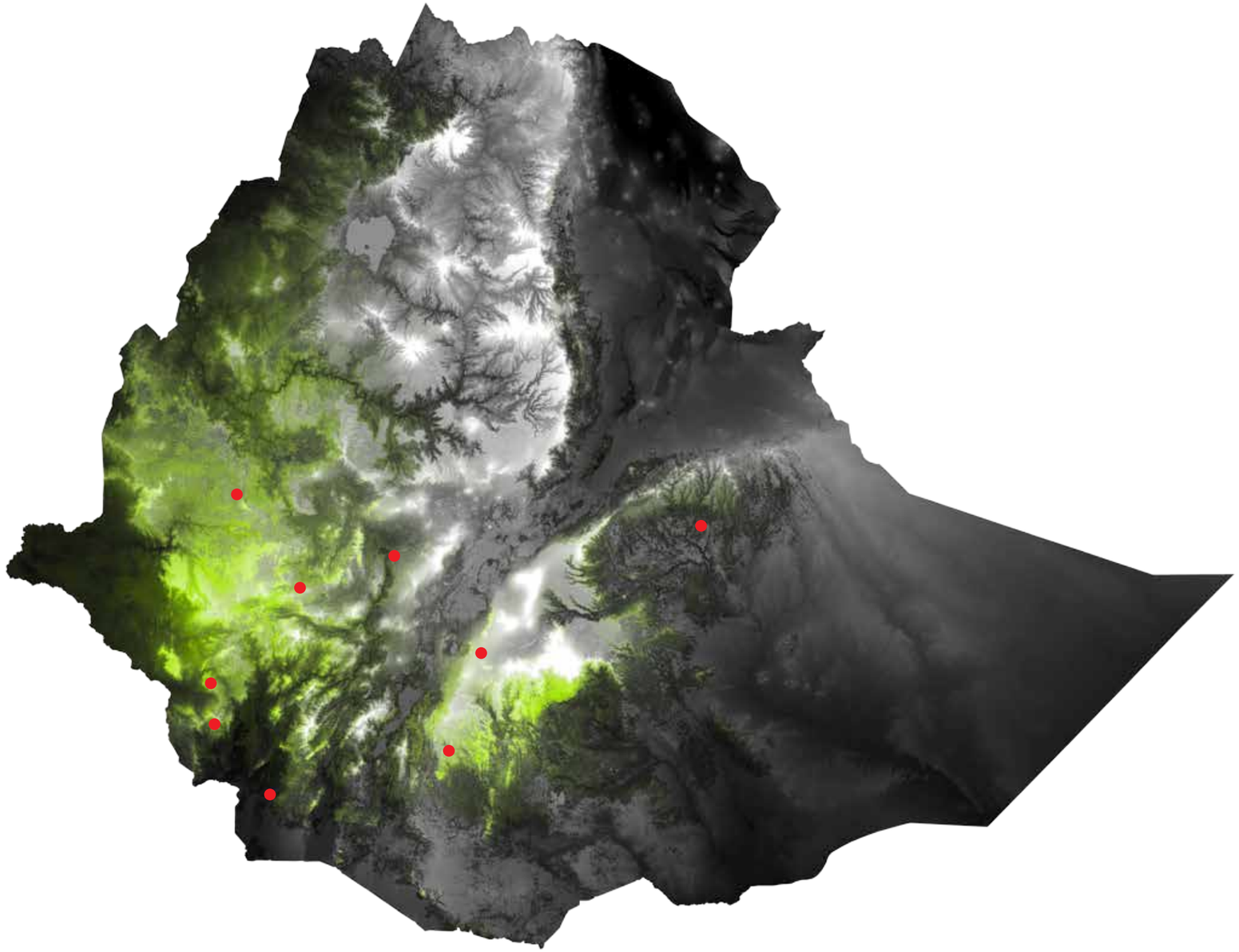


Ethiopia

National Regions (9) Regional Zones (68)

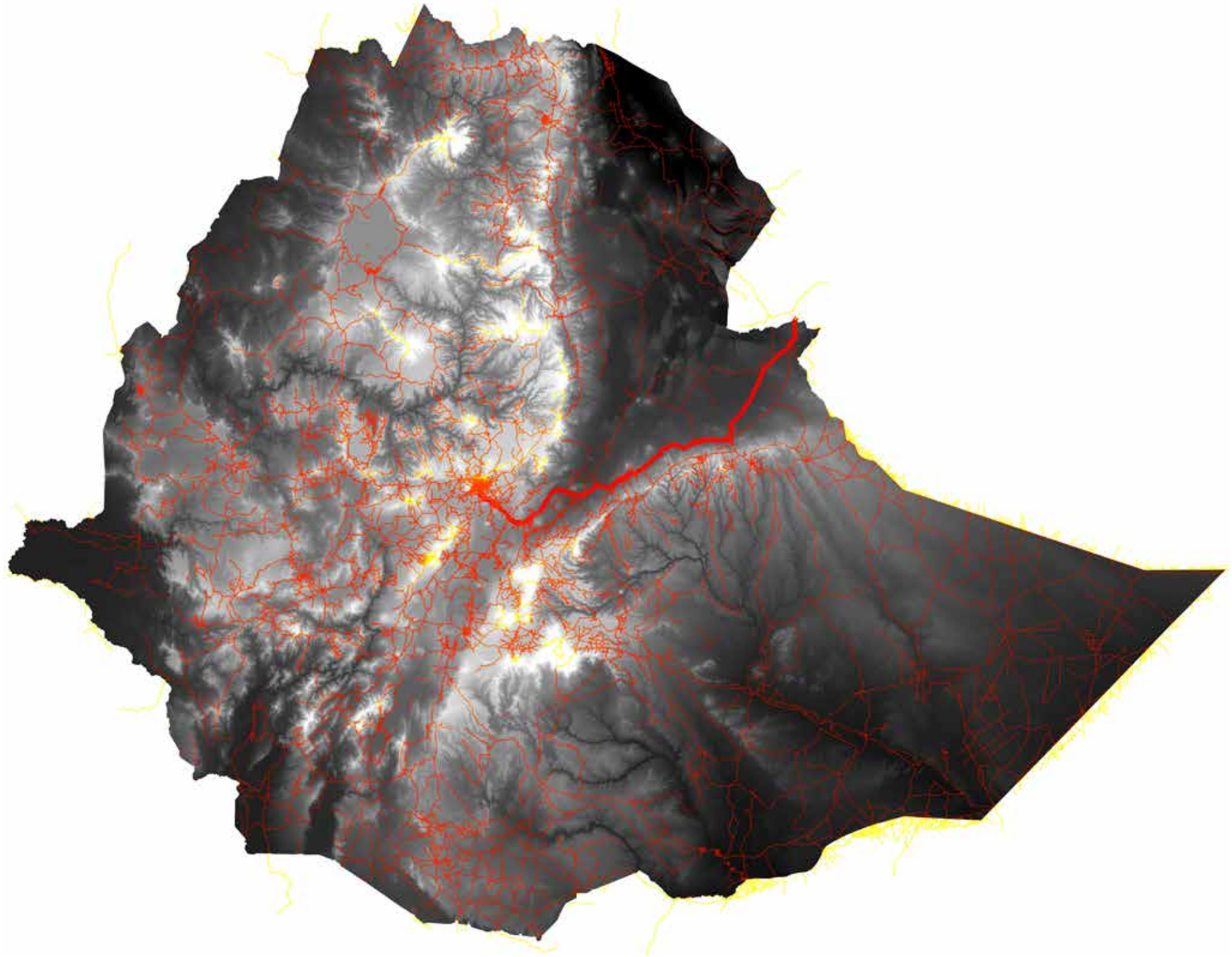


Coffee Regions



Habitat

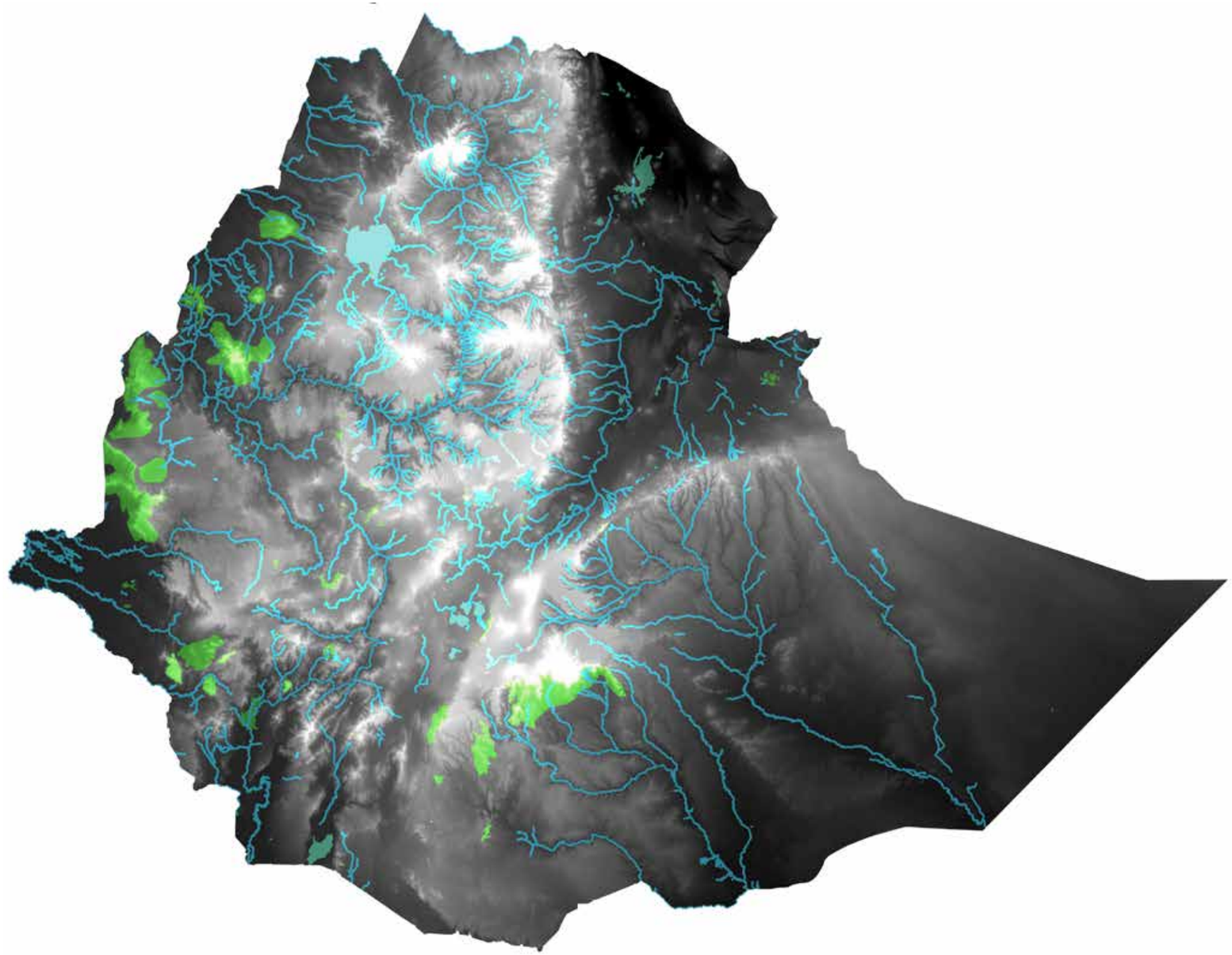
2016 Tree Cover



Circulation

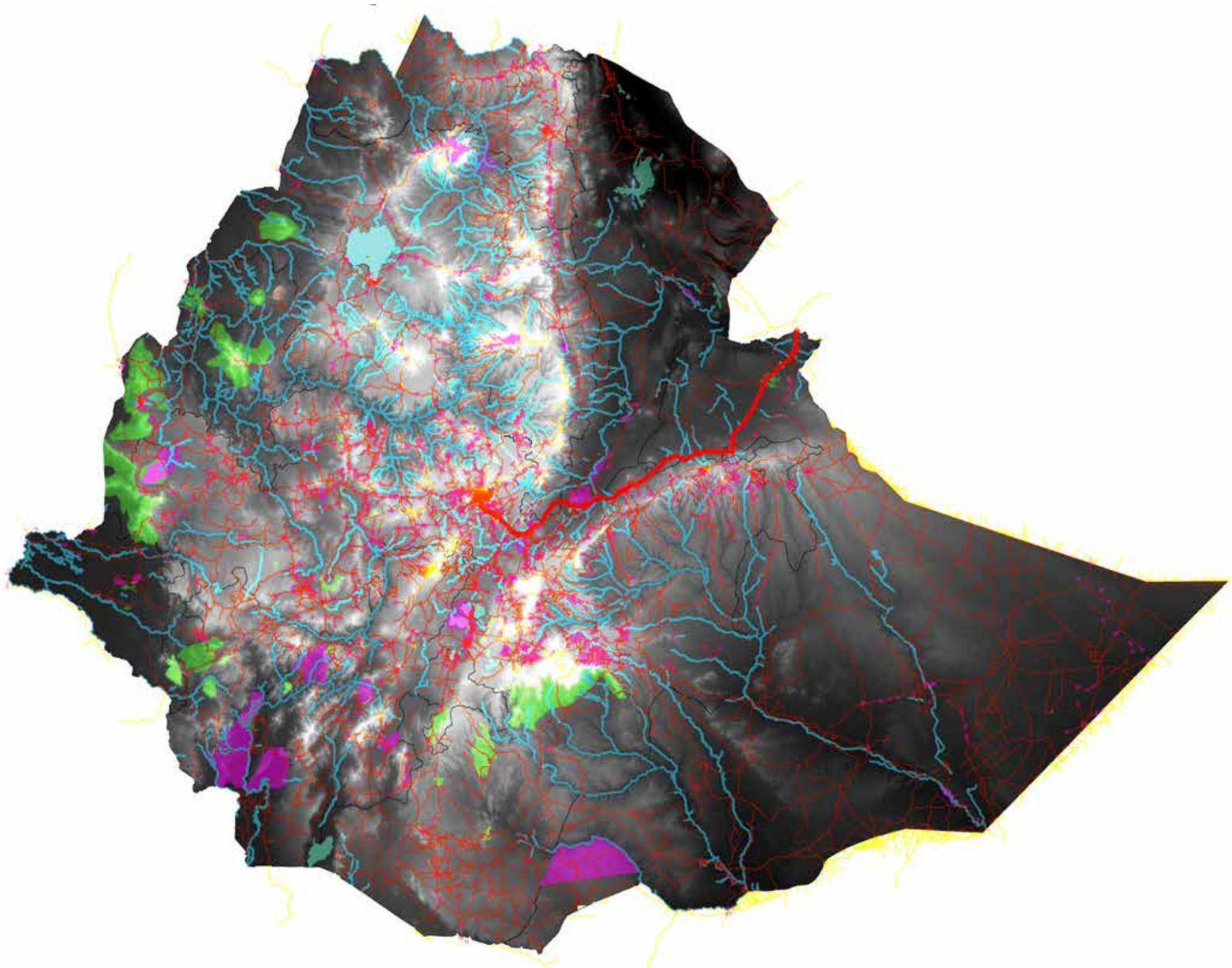
Roads

Railways



Land

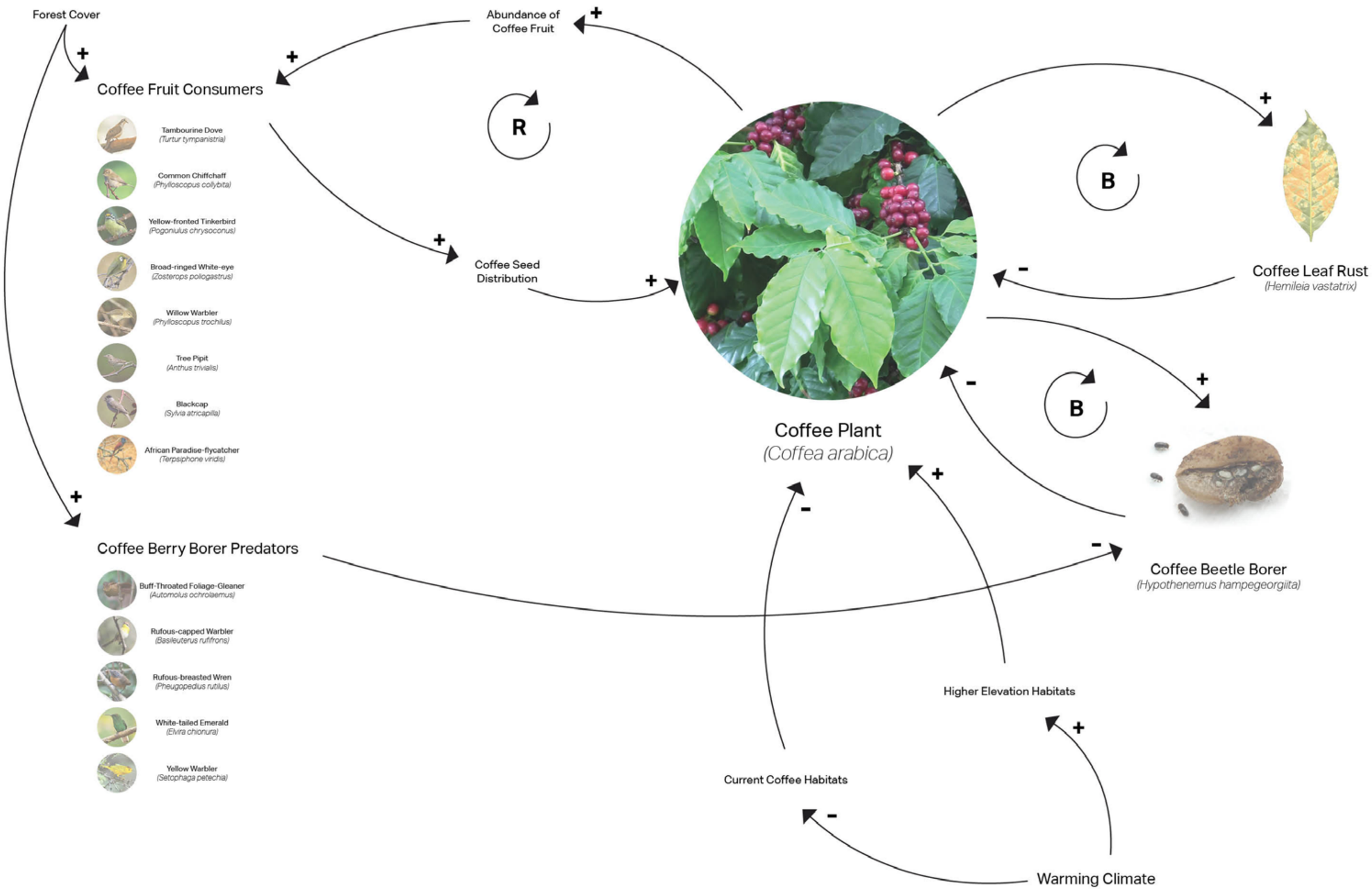
Waterways Natural



Ethiopia

Roads | Railways | Landuse | Buildings | Waterways | Natural

Coffee Plant as Agent


Forest Cover
+
Coffee Fruit Consumers
Tambourine Dove
(Turtur tympanistria)
Common Chiffchaff
(Phylloscopus collybita)
Yellow-fronted Tinkerbird
(Pogoniulus chrysoconus)
Broad-ringed White-eye
(Zosterops poliogastrus)
Willow Warbler
(Phylloscopus trochilus)
Tree Pipit
(Anthus trivialis)
Blackcap
(Sylvia atricapilla)
African Paradise-flycatcher
(Terpsiphone viridis)
+
Coffee Berry Borer Predators
Buff-Throated Foliage-Gleaner
(Automolus ochrolaemus)
Rufous-capped Warbler
(Basileuterus rufifrons)
Rufous-breasted Wren
(Pheugopedius rutilus)
White-tailed Emerald
(Elvira chionura)
Yellow Warbler
(Setophaga petechia)
+
Abundance of
Coffee Fruit
+
R
+
Coffee Seed
Distribution
+
Coffee Plant
(Coffea arabica)
+
B
Coffee Leaf Rust
(Hemileia vastatrix)
-
-
B
+
Coffee Beetle Borer
(Hypothenemus hampegeorgiita)
-
-
+
Higher Elevation Habitats
+
Current Coffee Habitats
-
Warming Climate

Coffee

Life span:	**100 years**
Fruiting begins:	**3-5 years**
Typical fruiting period:	**50-60 years**
Optimal fruiting temp:	**18-21 C**
Strained fruiting temp:	**22-28 C**
Damage to plant:	**29 C**
Requisite rainfall:	**1500-2500 cm (over 9 month season)**
Optimal habitat:	**Semi-forest, open understory**
Seed dispersal:	**Birds (long range) Wind (immediate range)**

Pests *(balancing agents)*

Coffee Borer Beetle

Arrival:	**8-32 weeks after flowering**
Lays eggs:	**2-3 days after contact** **35-50 eggs** **13 female : 1 male**
Lifespan:	**Female: 35-190 days** **Male: 35-40 days**
Movement:	**3-5 generations per plant** **strong coincidence w/ rainfall** **Only females mgirate**
Host's demise:	**1-3 months**

Coffee Leaf Rust (fungus)

Incubation period:	**1-2 days after contact w/ spores**
Optimal habitat:	**10-35 C** **free water**
Lifespan:	**3-5 months**
Dispersal:	**300,000-400,000 spores** **Wind (long range)** **Rain (short range)**

Birds *(feedback agents)*

Coffee Plant Fruit Consumers

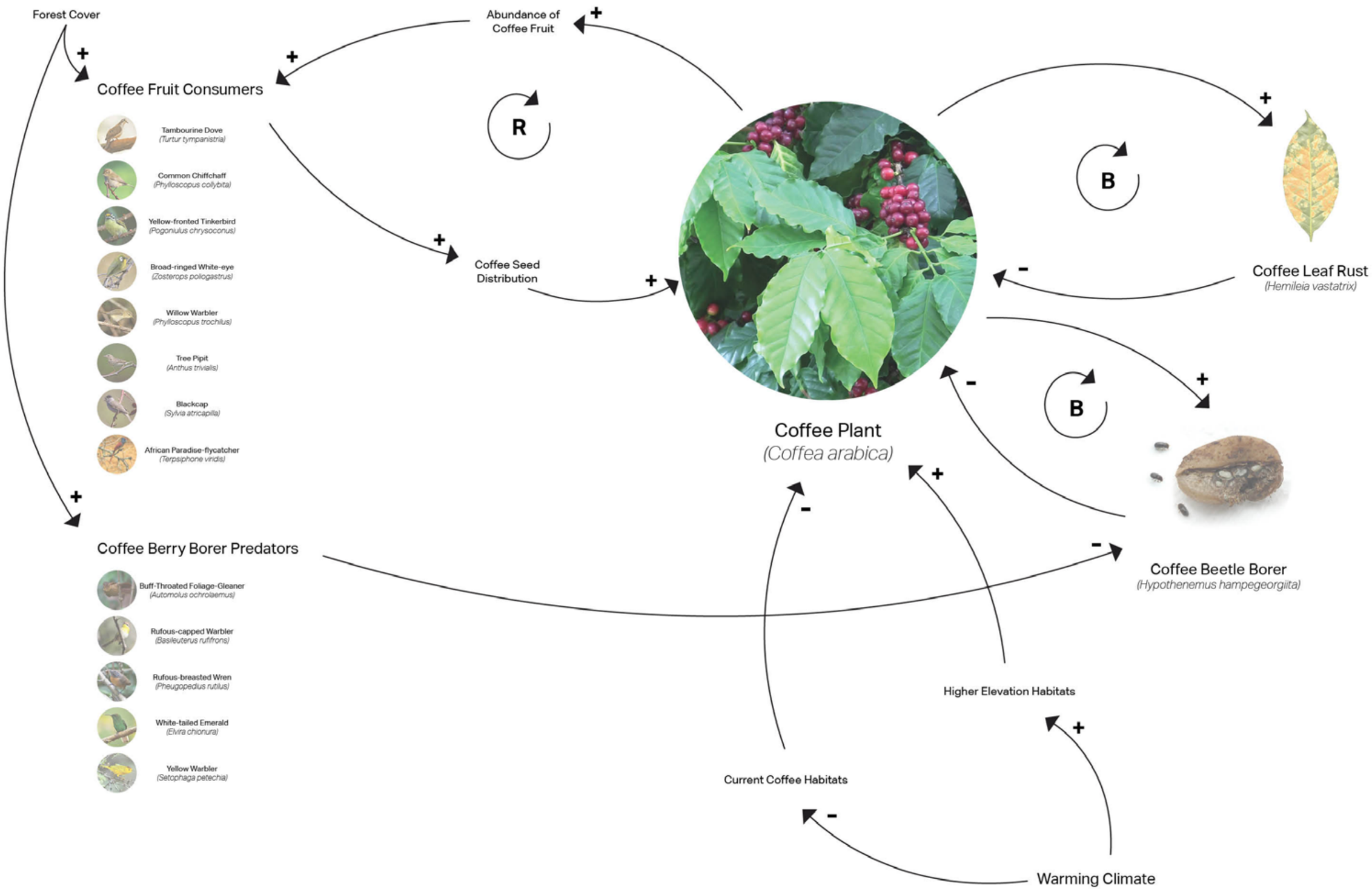
Borer Beetle Predators

Max range:

Frequency:

Optimal habitat: **Dense forest**
habitat range: **Forest, semi-forest, forest edge**

Percent reduction in pop: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-
-
B
+
Coffee Beetle Borer
(Hypothenemus hampegeorgiita)
-
-
+
Higher Elevation Habitats
+
Current Coffee Habitats
-
Warming Climate

FROM BEAN TO MUG

Plantation

PROCESSING

Distance from Field

DISTRIBUTION

Price of Coffee Beam

CAPITAL

field

collect

sort

weight

catalog

combine

rough wash

soft skinning

filter

fertilize

clean wash

dry

hard skinning

select

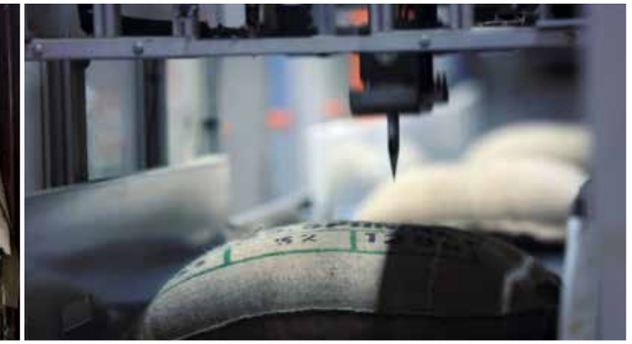
quality

pack

store

ship

receive



quality

roast

store

sell

drink

Plantation

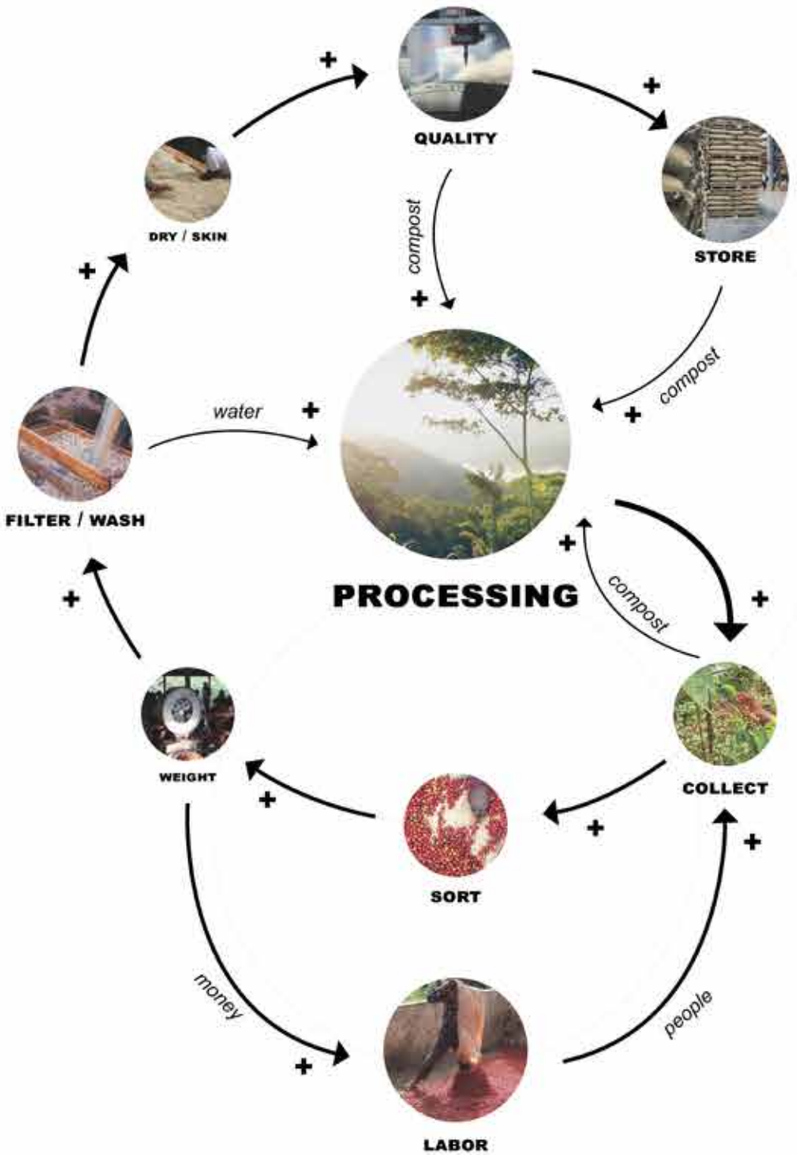
PROCESSING

Distance from Field

DISTRIBUTION

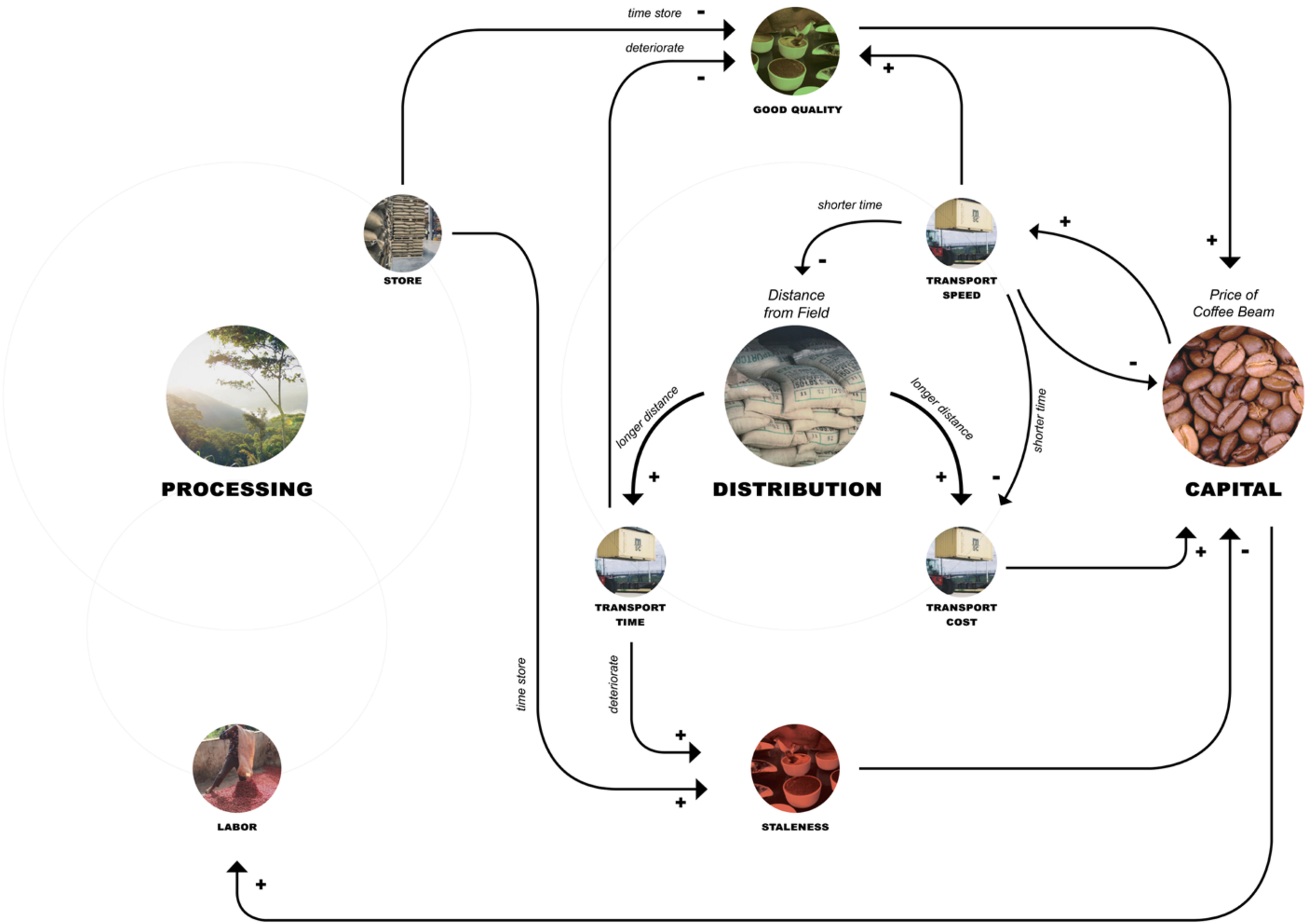
Price of Coffee Beam

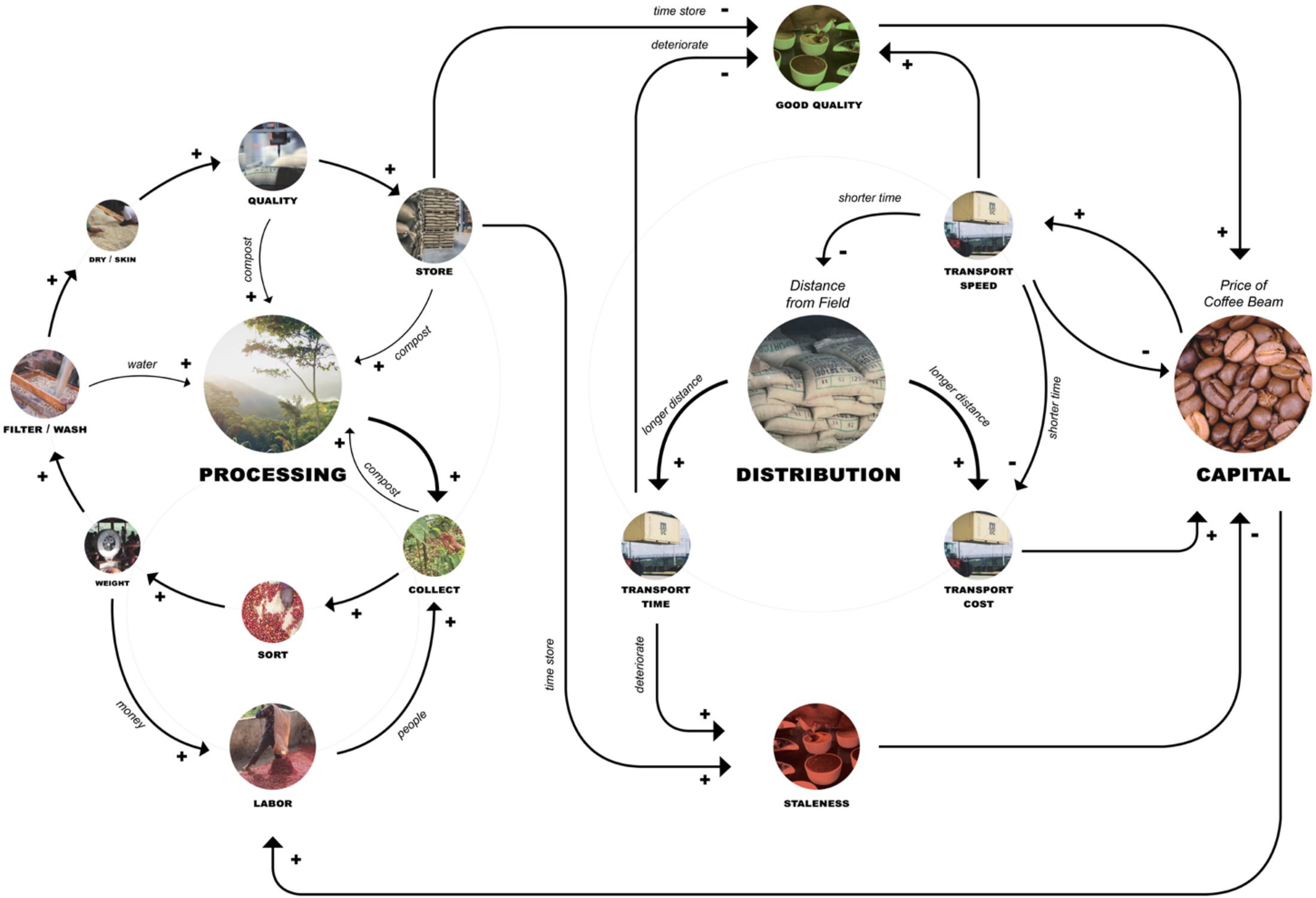
CAPITAL



DISTRIBUTION

CAPITAL


time store
-
deteriorate
-
GOOD QUALITY
+
STORE
shorter time
-
TRANSPORT SPEED
+
+
Distance from Field
Price of Coffee Beam
-
longer distance
+
longer distance
+
-
shorter time
PROCESSING
DISTRIBUTION
CAPITAL
TRANSPORT TIME
TRANSPORT COST
+
-
time store
deteriorate
+
+
STALENESS
LABOR
+


time store
deteriorate
GOOD QUALITY
QUALITY
STORE
DRY / SKIN
compost
compost
compost
water
FILTER / WASH
PROCESSING
WEIGHT
COLLECT
SORT
money
people
LABOR
shorter time
TRANSPORT SPEED
Distance from Field
Price of Coffee Beam
longer distance
longer distance
shorter time
DISTRIBUTION
CAPITAL
TRANSPORT TIME
TRANSPORT COST
time store
deteriorate
STALENESS