

Forests and Society

- Objectives
 - Dependence of humans on forests
 - Current state of the world's forests (FAO Global Forest Resource Assessment 2010)
 - Distribution of forests & forest resources across the globe
 - Current trends & analyses
 - Forest Resources and Uses in Hawaii
 - **First:** questions, comments, things you learned, etc. from reading assignments

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- Human dependence on forests
 - Humans have always depended on forests & forest resources
 - *“Forests are the evolutionary vessel in which were distilled the origins of the most remarkable of all animals: Homo sapiens. Forests were the habitat of our earliest evolutionary ancestors and have remained an important part of the environment of ... the human family tree. The rise and fall of empires, the conquest of nations, and the political, economic, and military power of human societies have been intimately related to the accessibility of forests and/or forest products for most of recent history. Modern humans ... still are – and always will remain – dependent on forests for a wide variety of the necessities and pleasures of life as we know it.”* (J.P. Kimmins 2004)

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- Human dependence on forests
= Large human impacts on forests



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- Development of Forestry

Table 2-1 Stages in the Development of Forestry

	Stage of Development	Result
Preforestry	Exploitation	Resource depletion
Forestry stage 1	Administrative forestry	Failure to achieve conservation and sustainability goals
Forestry stage 2	Ecologically based forestry	Sustained production of timber and other conventional forest products
Forestry stage 3	Social forestry	Ecologically based forestry that sustains a wide range of forest conditions and values desired by society

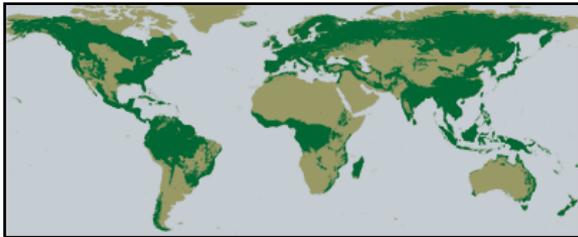
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- Development of Forestry
 - Forests are difficult to manage sustainably
 - ***Forest ecology provides the essential basis for successful and sustainable forest management***

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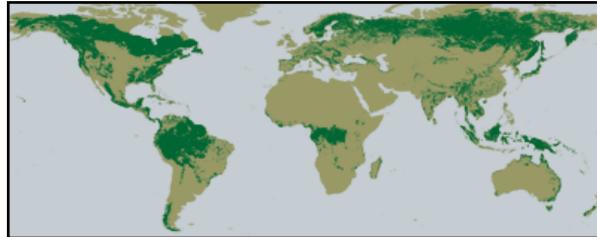
- ~60% of the Earth's pre-human land surface was forested
- ~30% of current land surface is forested
 - 0.62 ha (1.5 acres) per person
- ~22% of original forest classified as “Frontier Forests”

Original Forest Extent



(55-65% of land surface)

Current Forest Extent



(33% of land surface;
~54% of original forest)

Frontier Forest Extent



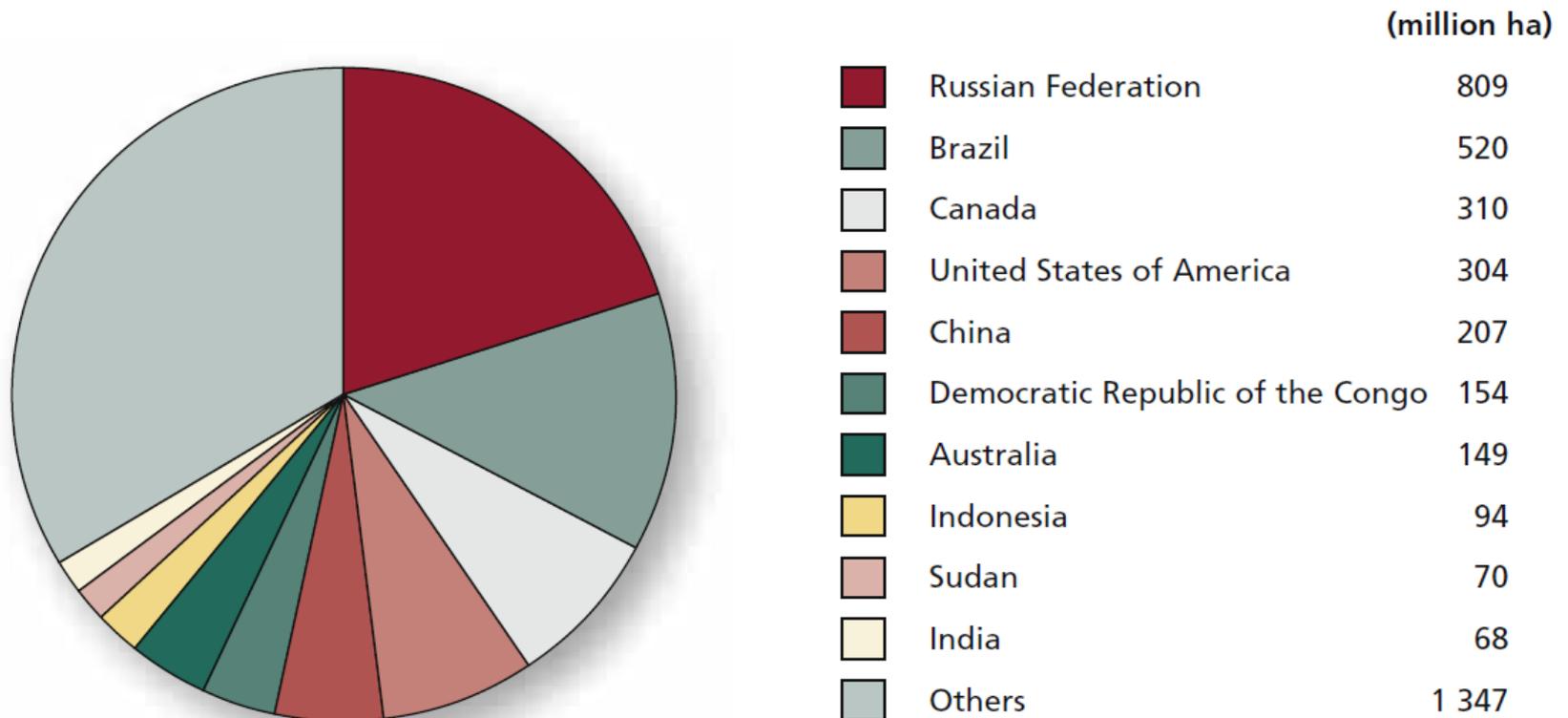
(22% of original forest)

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- Forest coverage

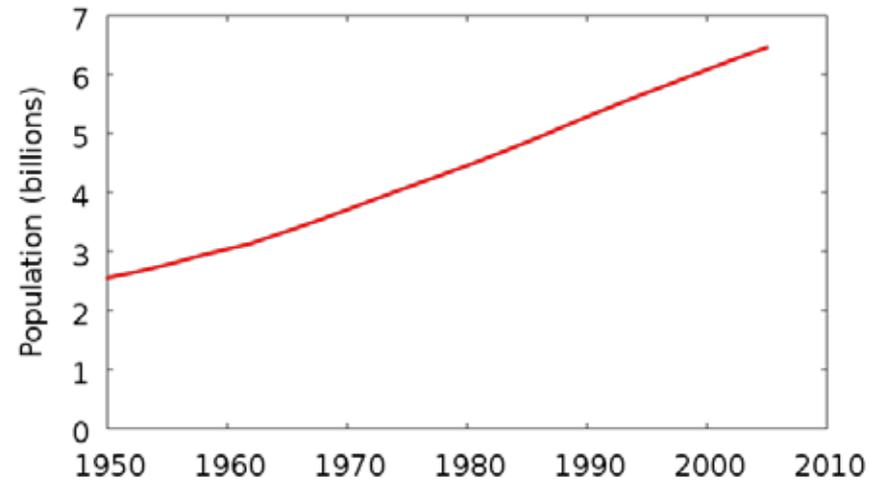
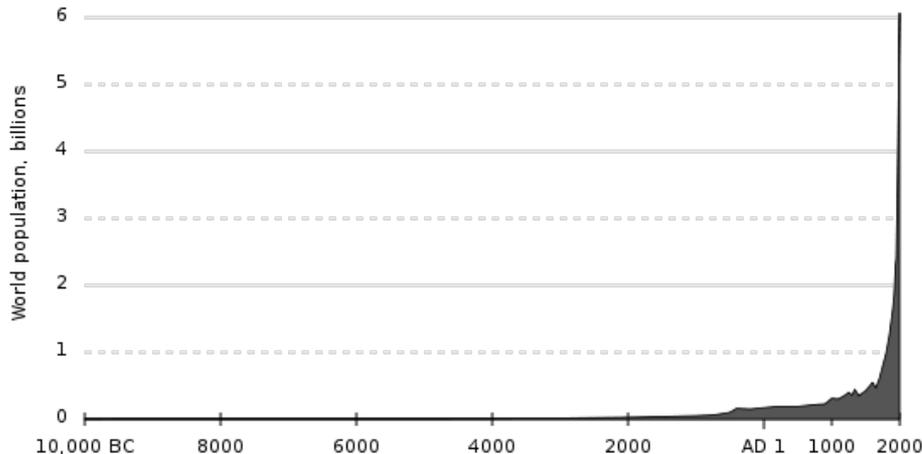
FIGURE 2.2

Ten countries with the largest forest area, 2010



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- What has been the primary cause of the reduction of forest area, and ensuing shortages/limitations in forest resources?
 - Human population growth
 - Increasing per capita resource consumption

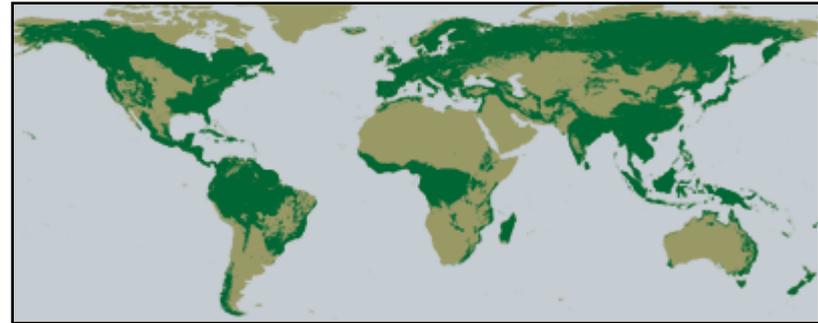


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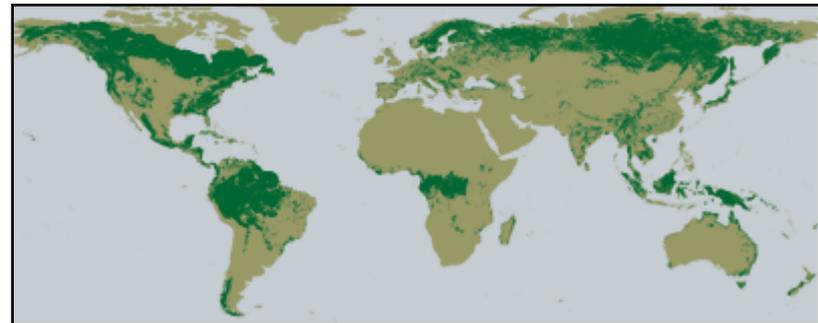
- Population centers vs. Forest cover



Original Forest Extent



Current Forest Extent

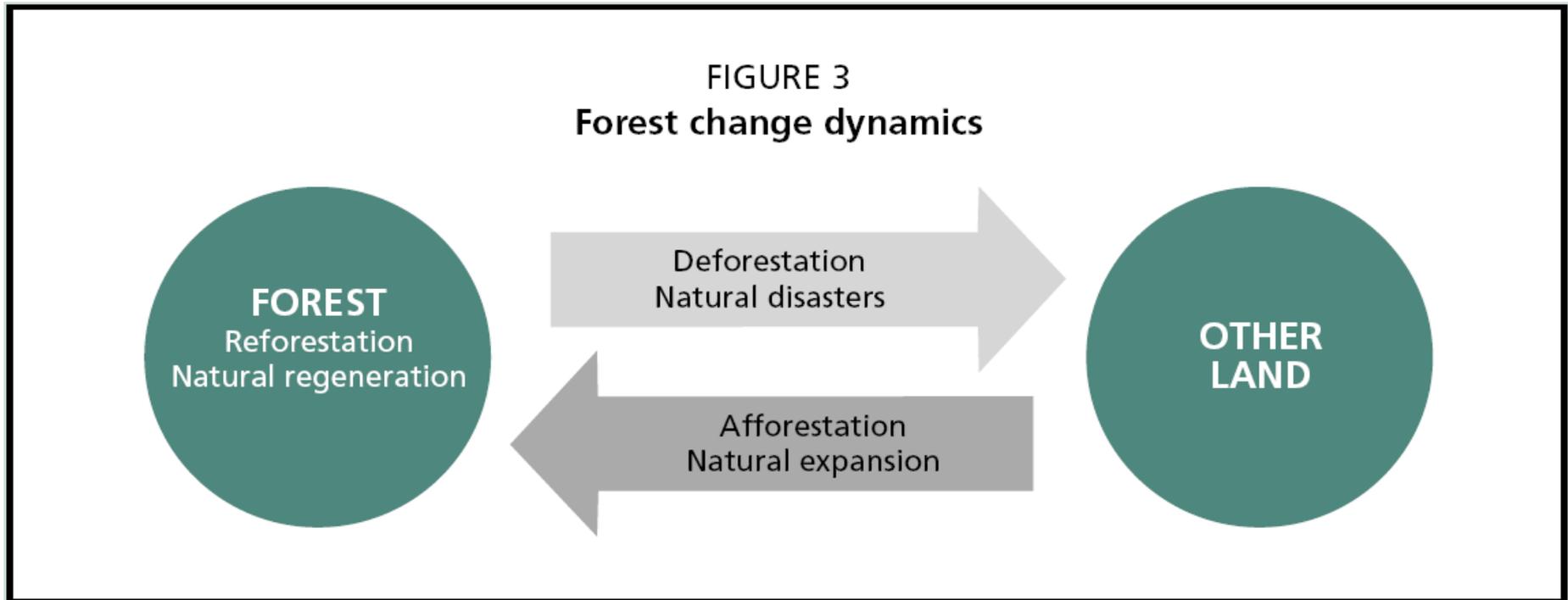


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- What additional factors currently result in simultaneous: (1) continued loss of forest cover; and (2) decreased ability of forests to provide a full suite of goods and services?
 - 1) Habitat loss / destruction
 - 2) Global Change Biology

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- Deforestation



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- Deforestation

FIGURE 4
Annual change in forest area by region, 1990–2010

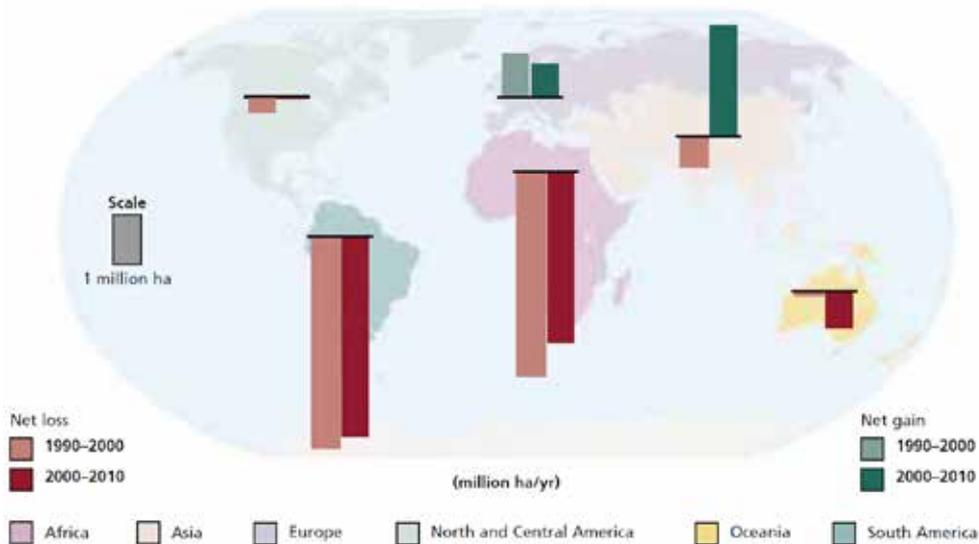
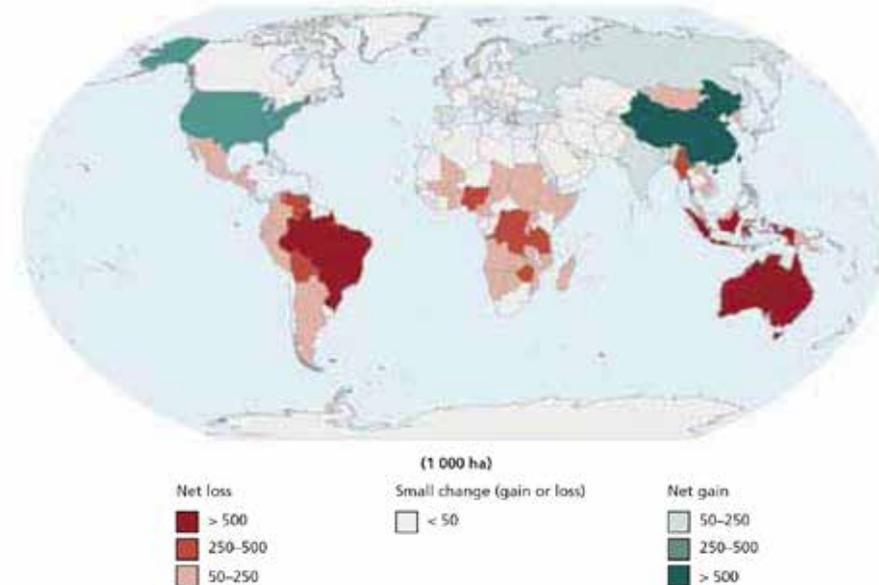


FIGURE 5
Annual change in forest area by country, 2005–2010



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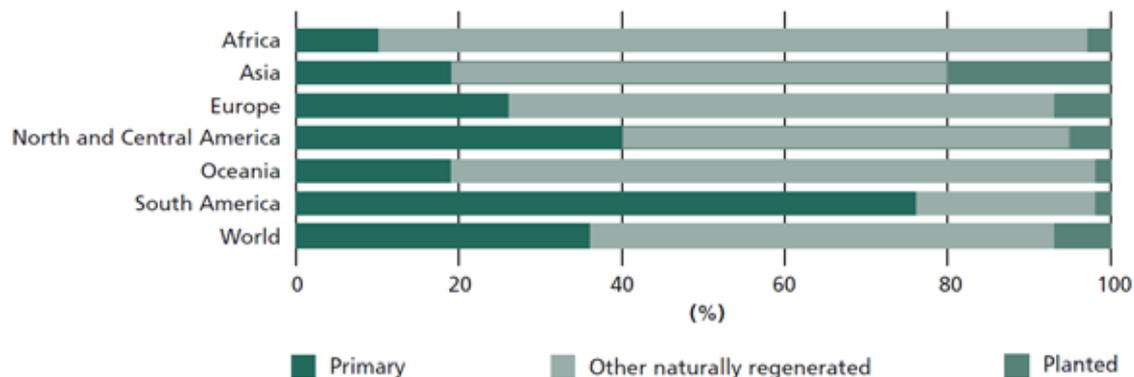
- Existing forests globally

Characteristics of the world's forests, 2010 (%)



FIGURE 7

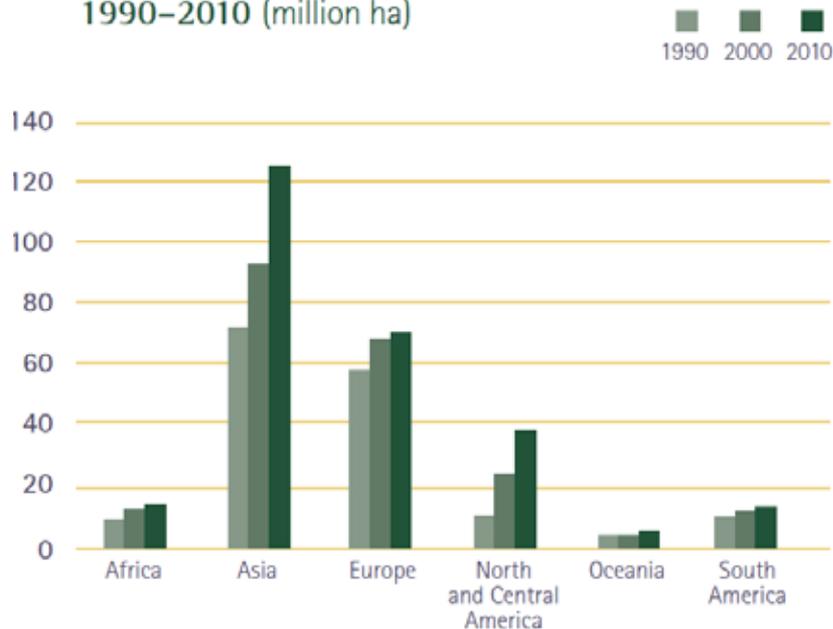
Characteristics of the world's forests, 2010



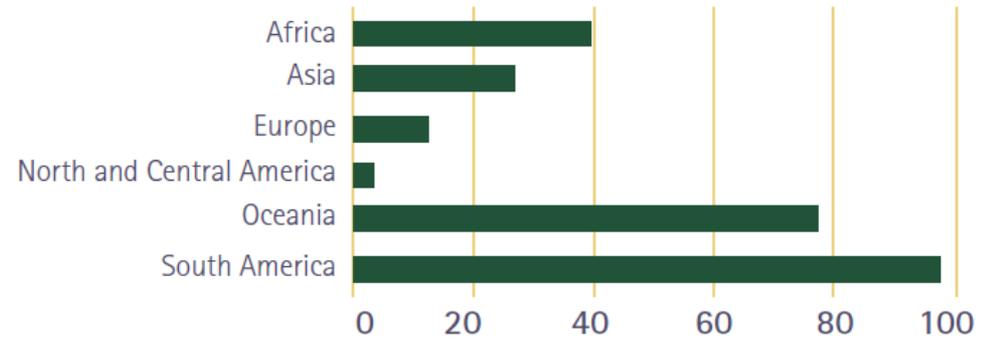
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- Forest plantations (Planted Forests)

Changes in area of planted forest, 1990–2010 (million ha)



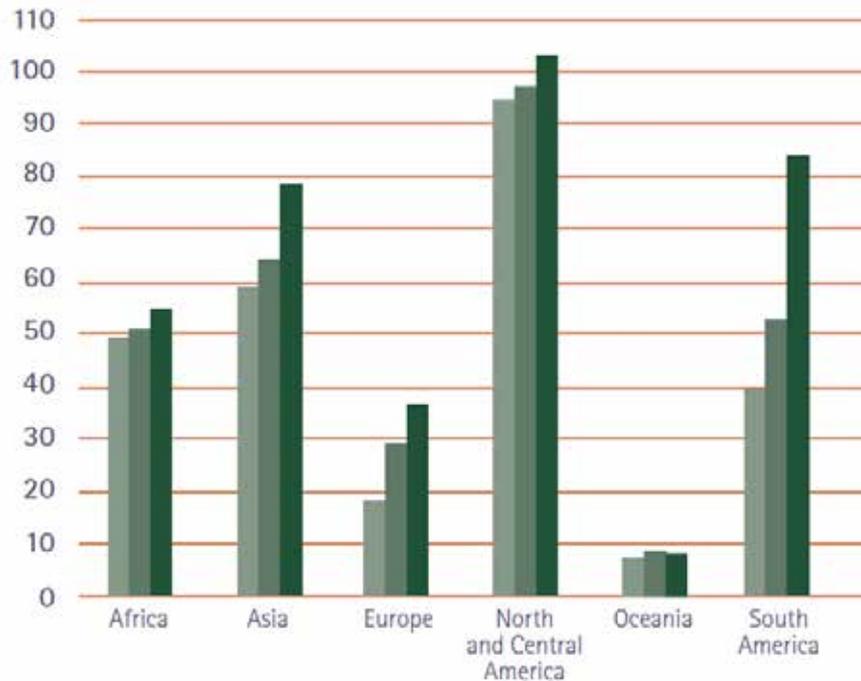
Proportion of planted forests consisting of introduced species, 2010 (%)



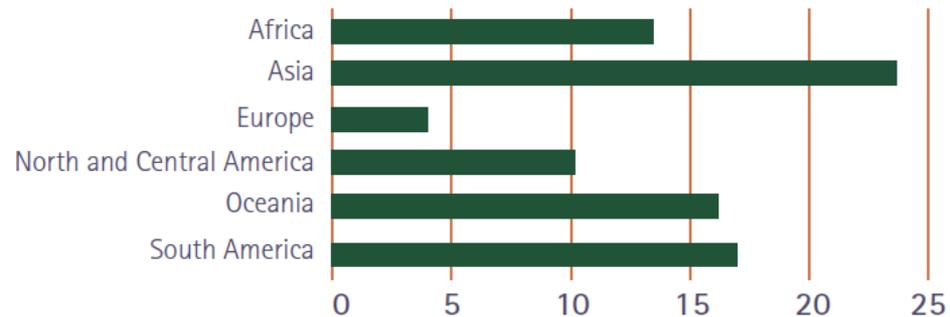
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- Forest conservation for biological diversity

Forests designated for conservation of biological diversity, 1990–2010 (million ha)



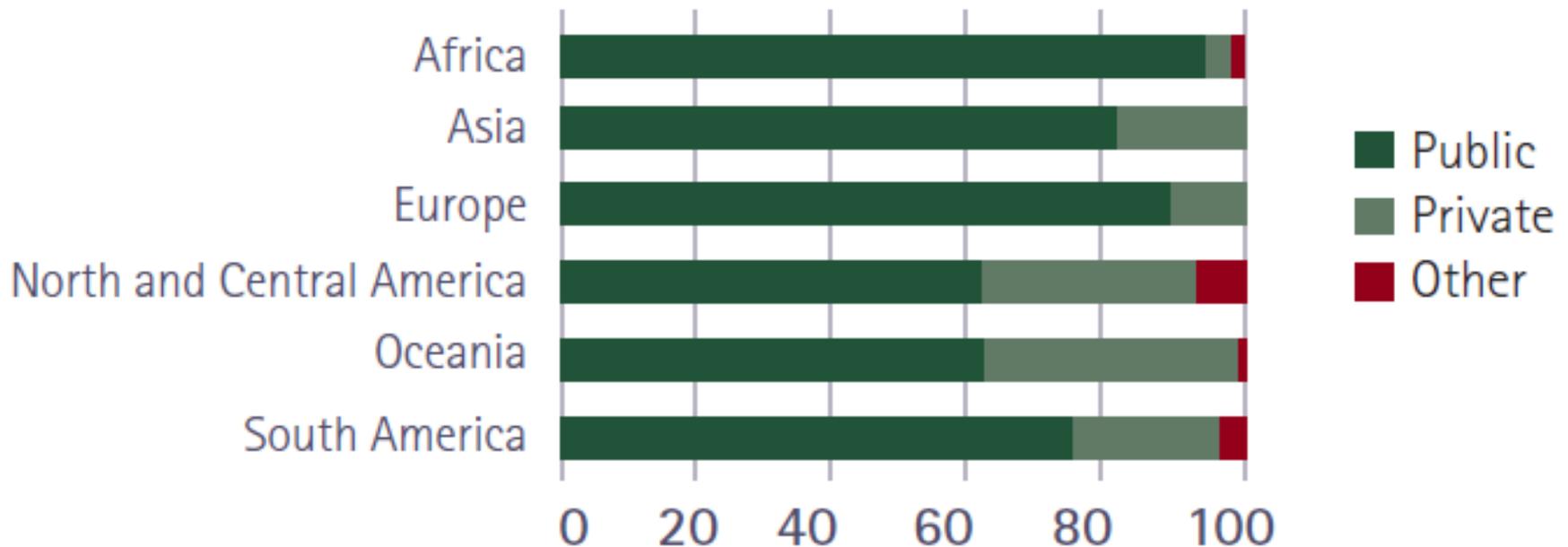
Proportion of forest area in legally protected areas, 2010 (%)



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- Forest Ownership

Forest ownership patterns, 2005 (%)

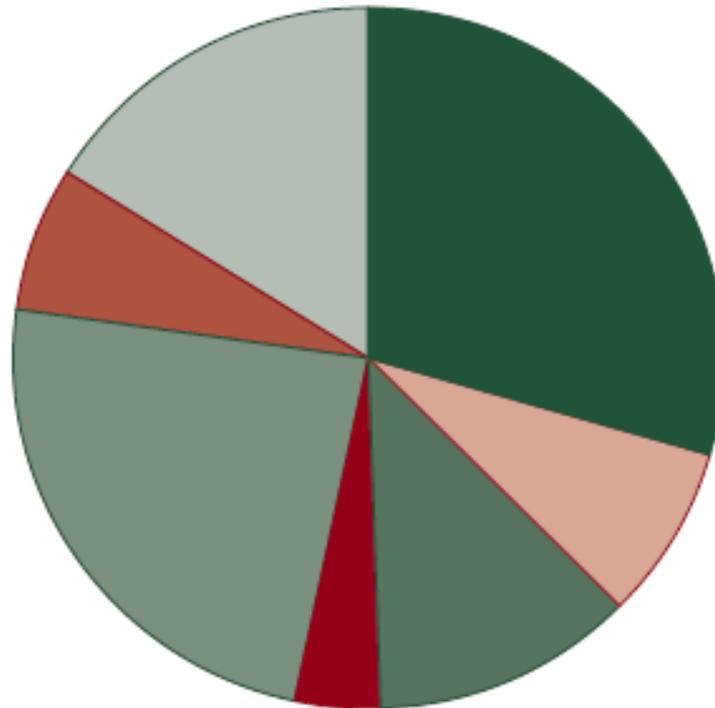


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- Forest management

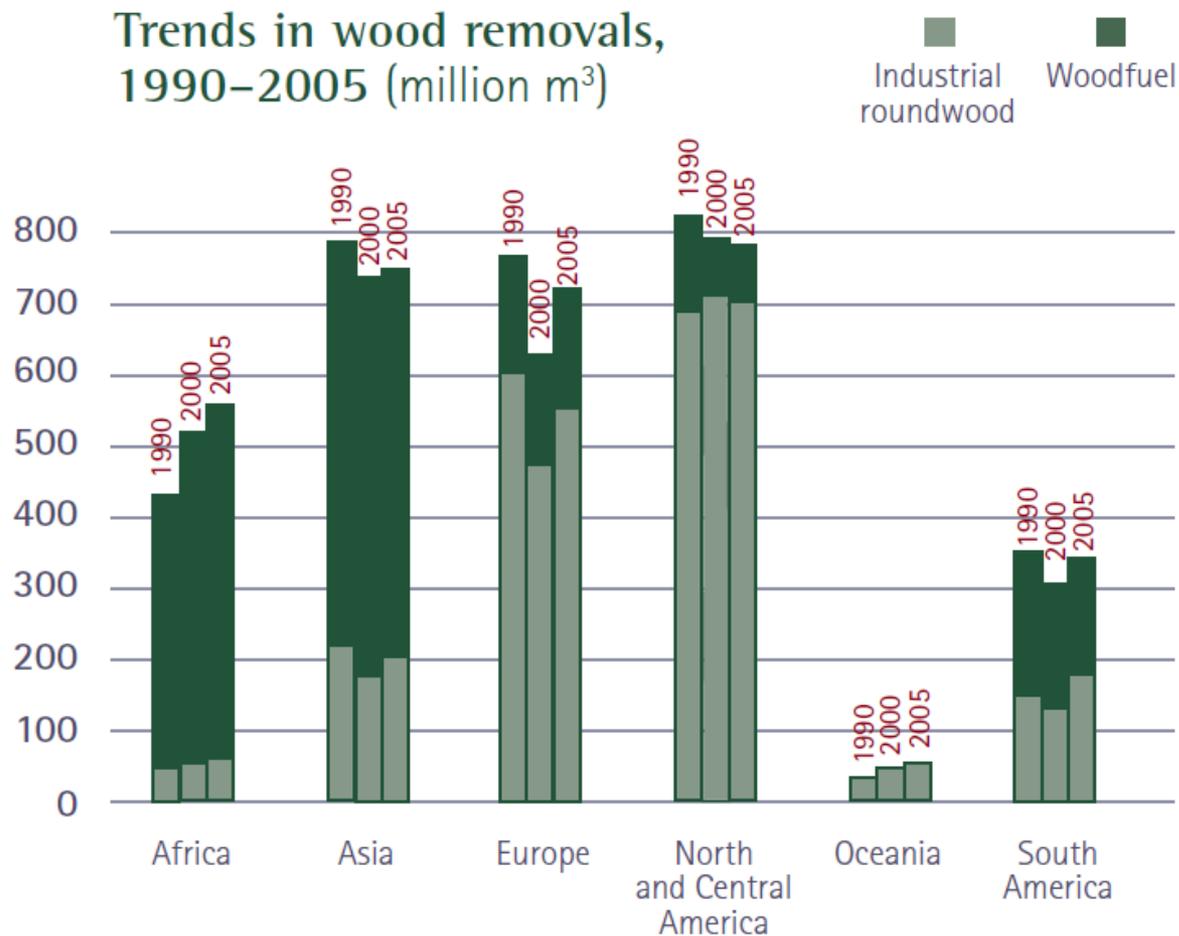
Designated functions of the world's forests, 2010 (%)

Production	30	■
Protection	8	■
Conservation	12	■
Social services	4	■
Multiple use	24	■
Other	7	■
Unkown	16	■



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- Forest resource extraction



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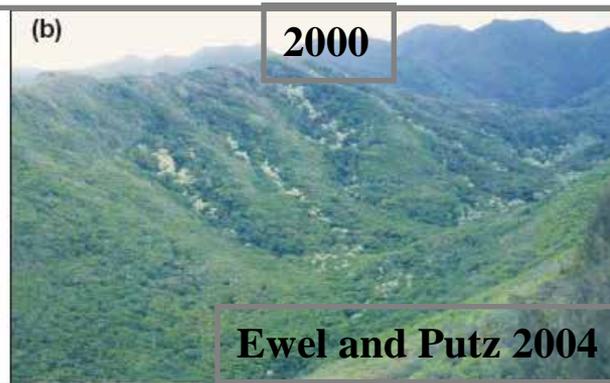
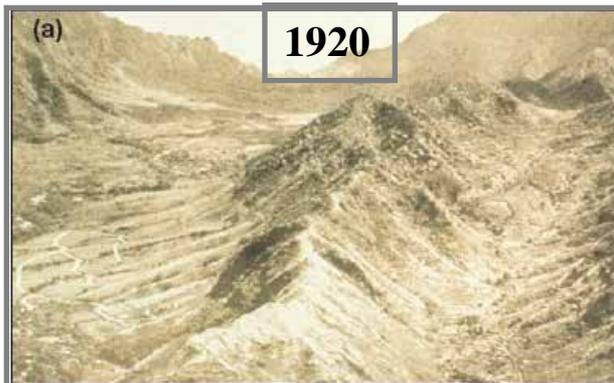
- Other highlights
 - Only ~40% of global forests have a written management plan
 - Missing information from 20% of forested area globally
 - No management Plan = Unsustainable management
 - ~10 million people employed in forest conservation & management (10% decrease from 1990)
 - Technological advances (mechanization)
 - Increased labor productivity

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- Other highlights
 - Area of forests impacted by pests, diseases, invasive species & natural disasters is increasing by ~2-3% annually
 - Much of this is a direct result of and/or being exacerbated by climate change
 - >11 million ha of forest in U.S. and Canada attacked by pine bark beetles from 2000-2010
 - Forest fires are grossly underreported globally, but are increasing in size, frequency, and intensity

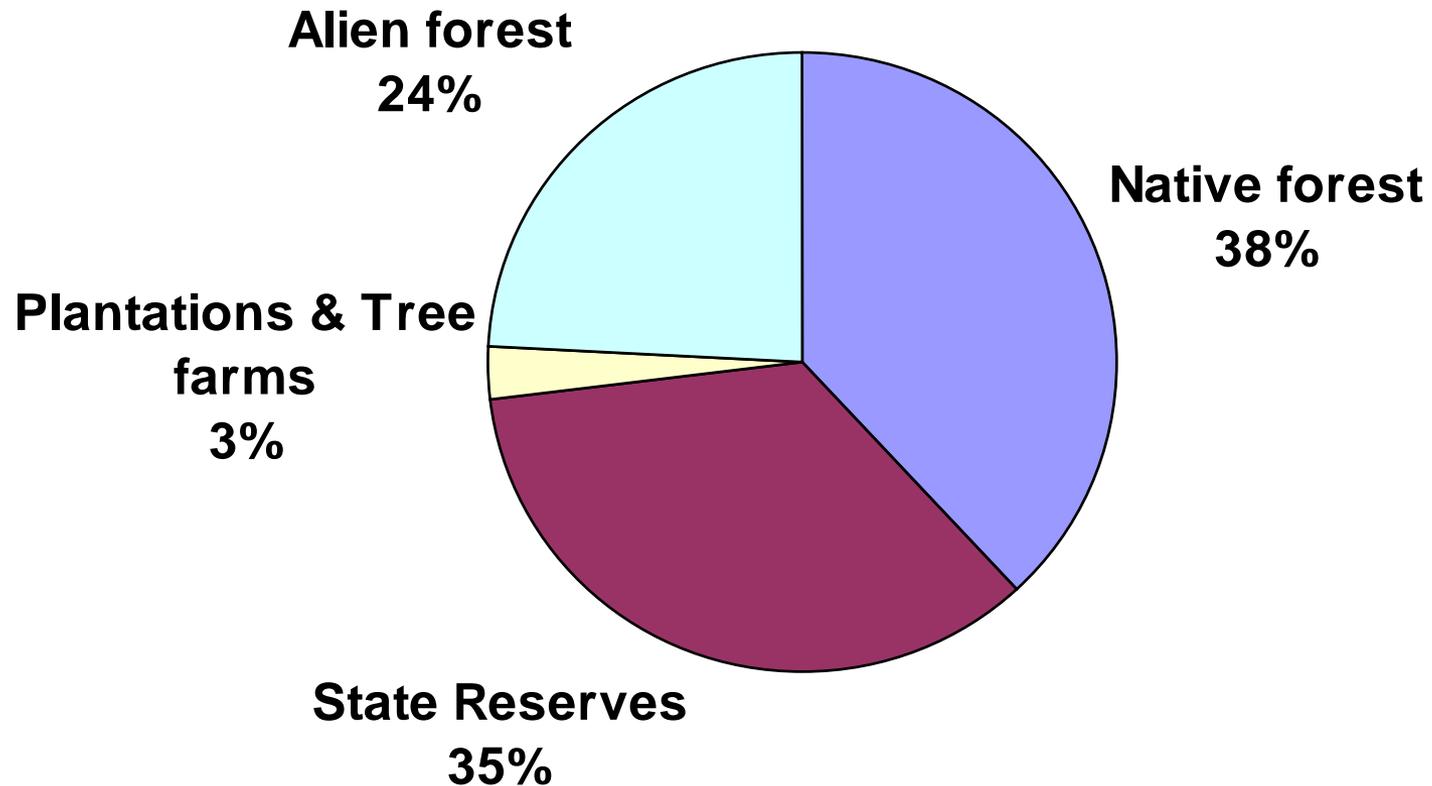
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- Hawai'i
 - Primary forest land uses



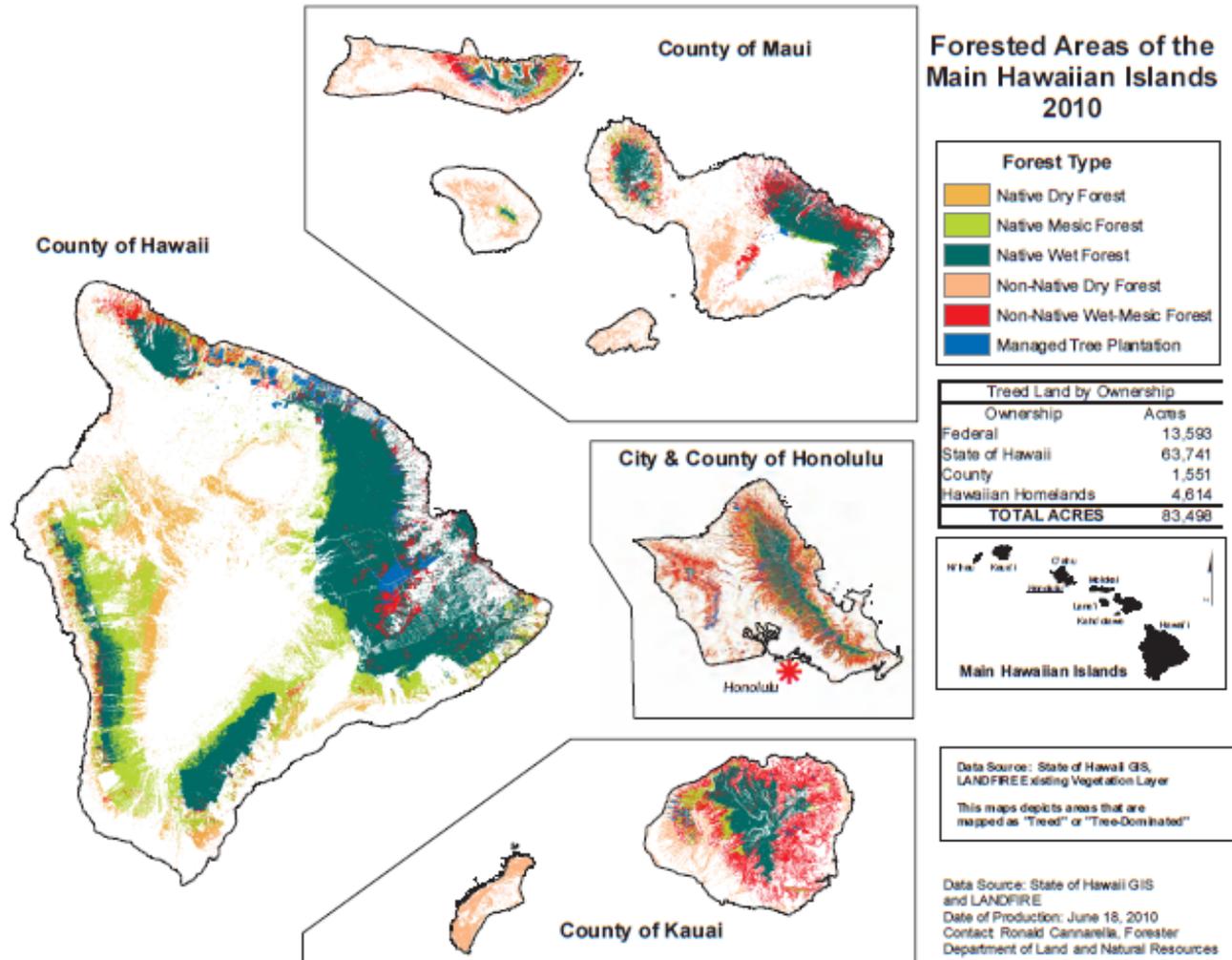
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- Current Forested Lands in Hawai'i



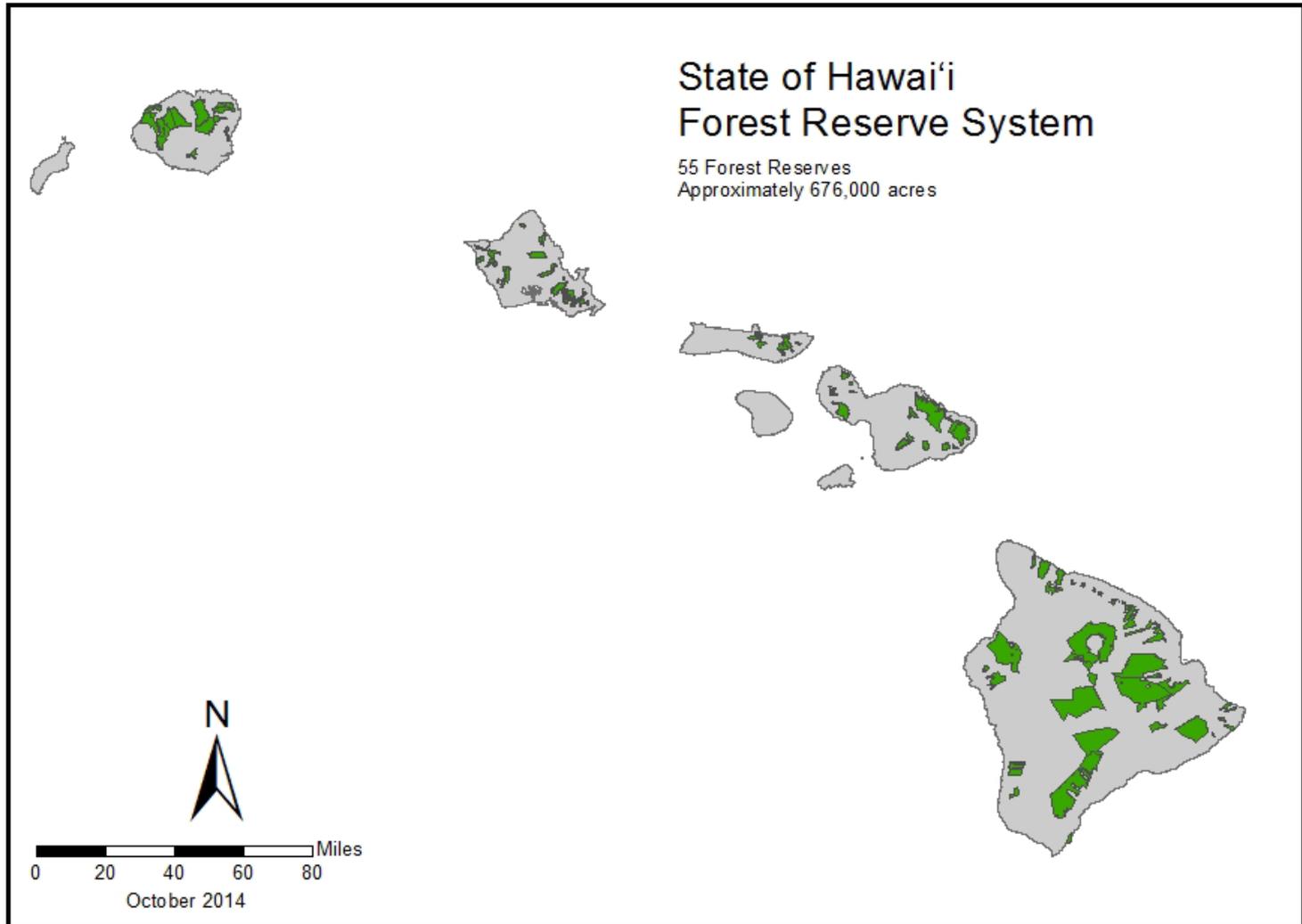
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- Current Forested Land in Hawai'i: Distribution



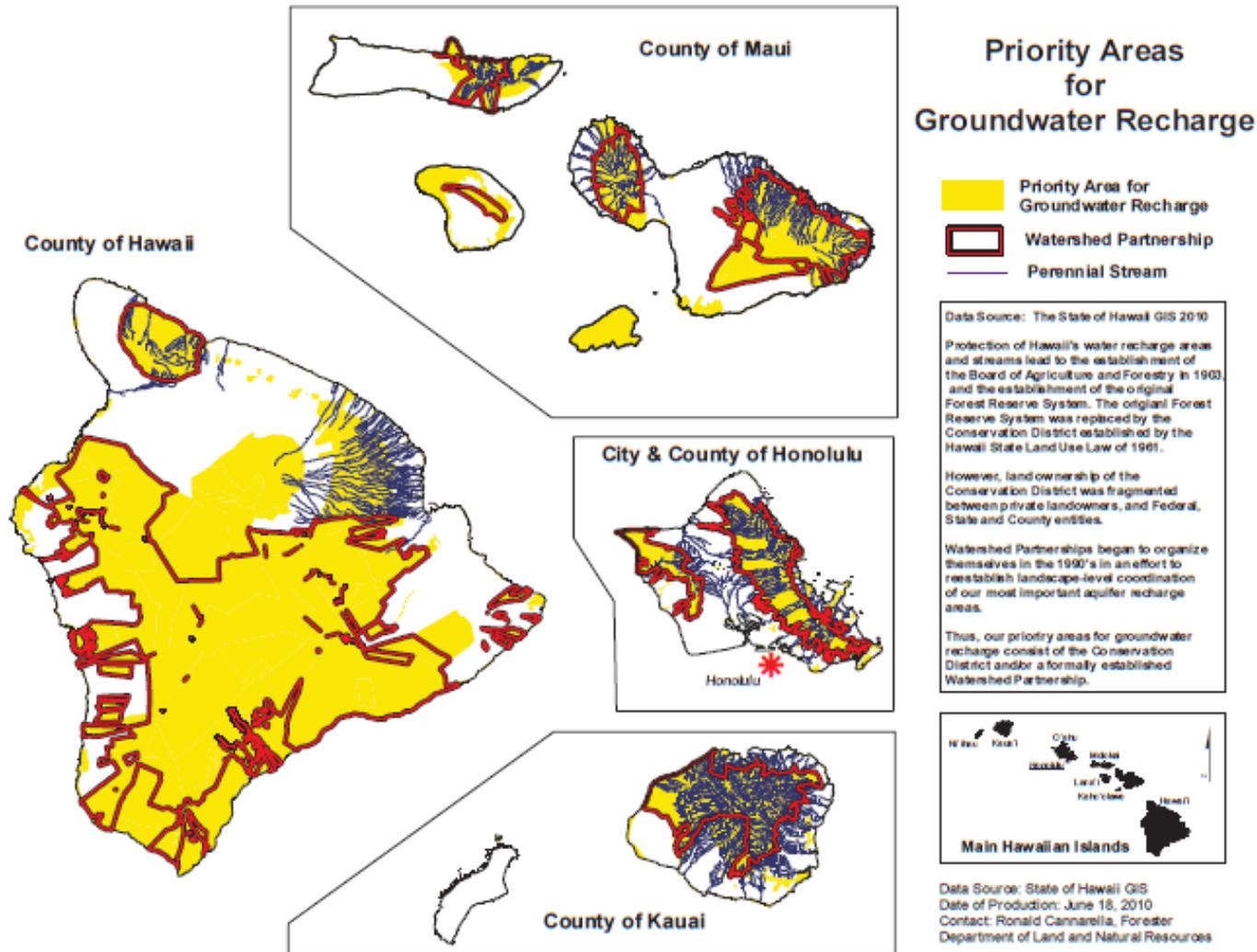
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- Current Forested Land in Hawai'i: Watersheds



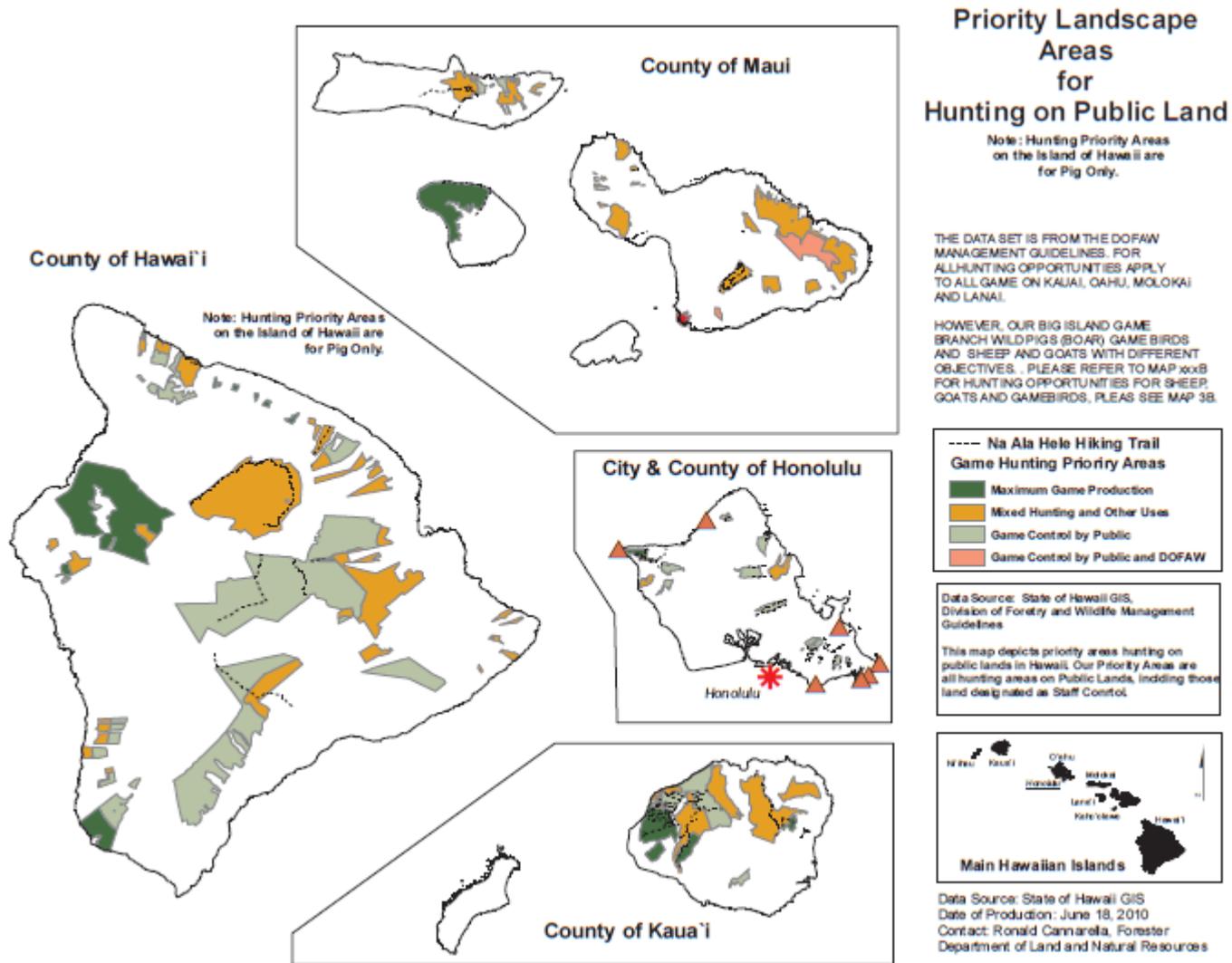
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- Current Forested Land in Hawai'i: Watersheds



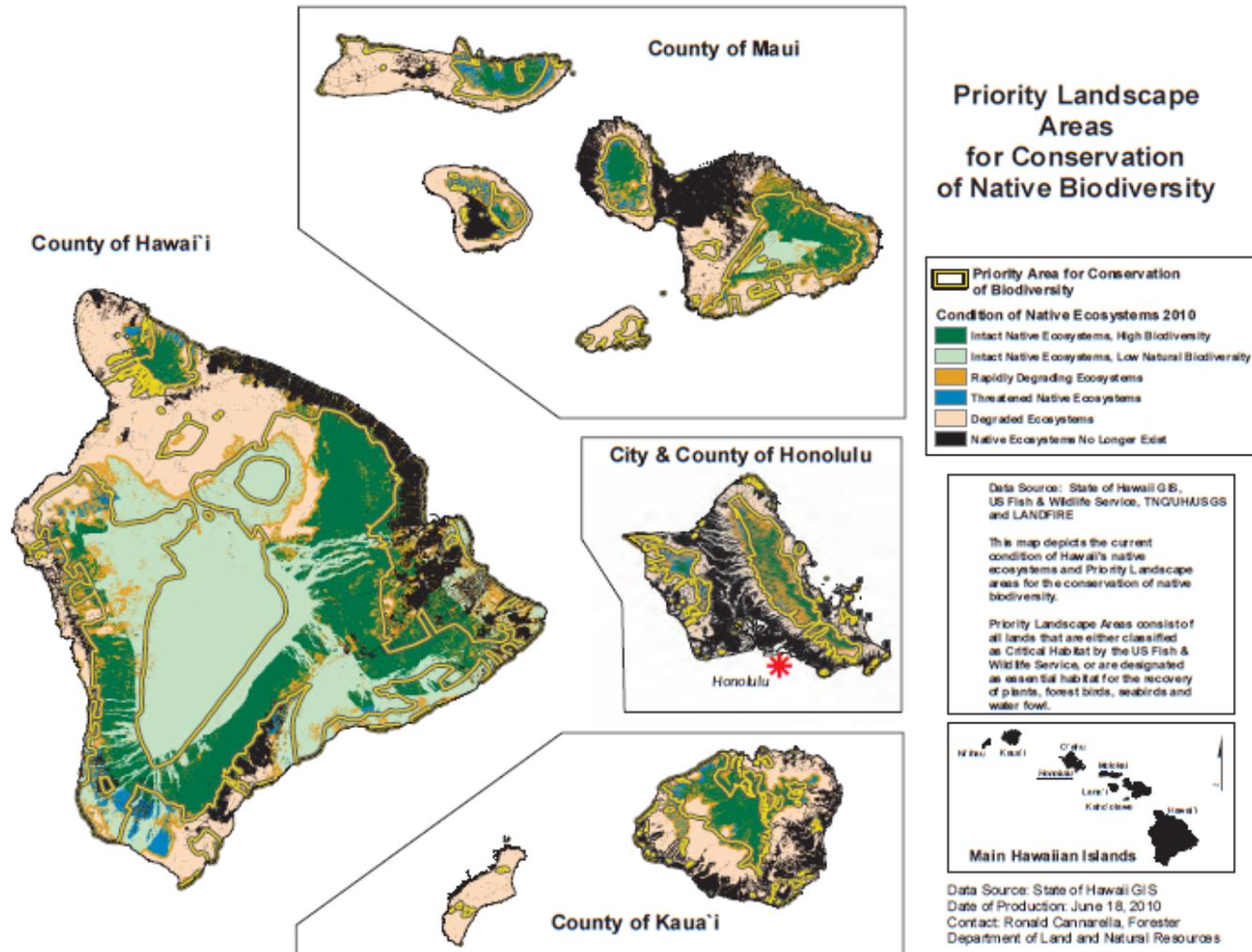
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- Current Forested Land in Hawai'i: Recreation



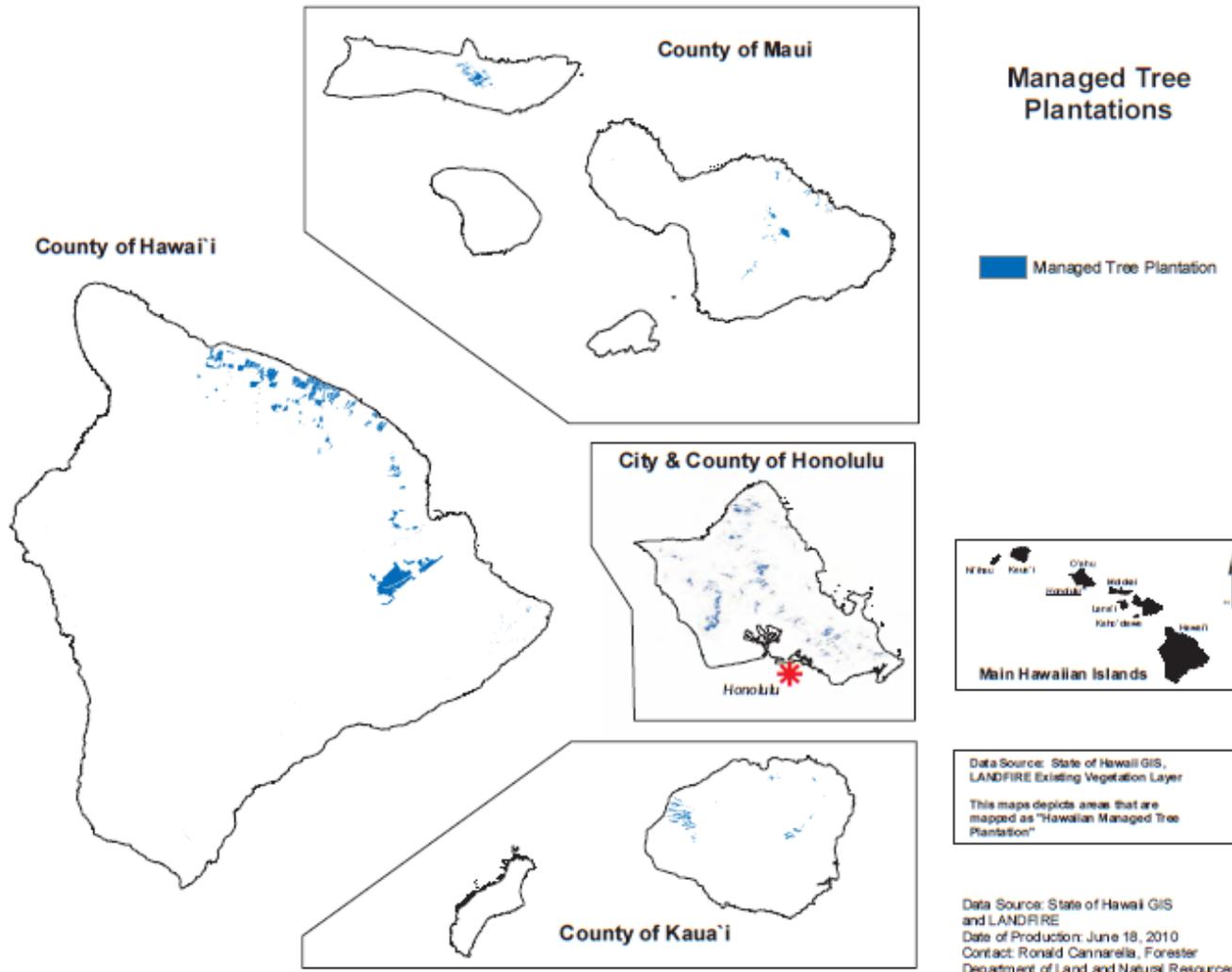
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- Current Forested Land in Hawai'i: Conservation



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- Current Forested Land in Hawai'i: Plantations



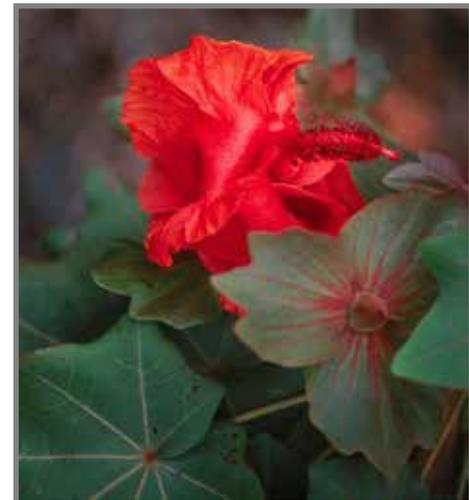
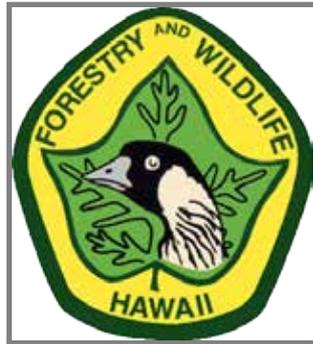
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- Hawai'i Forest History
 - Trend and history of forest uses



Forests and Society

- Hawai'i Forest History
 - Trend and history of forest uses



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- Hawai'i Forests
 - Non-industrial private tree farming in Hawai'i



Forests and Society

- Hawai'i Forests
 - Management/Sustainability Challenges

