

# **LAND COVER TRENDS IN UGANDA**

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By:

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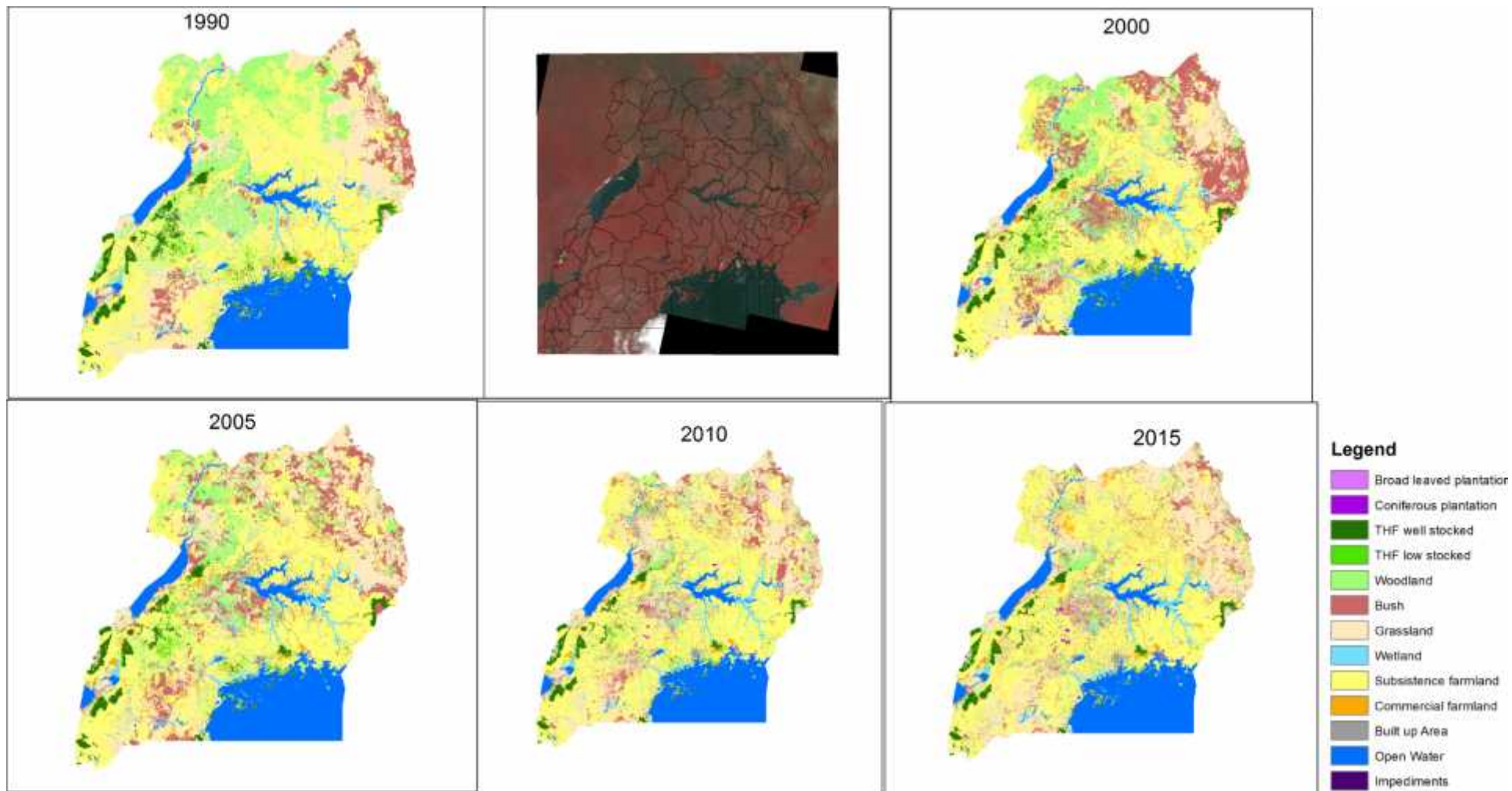
**National Forestry Authority- Uganda**

# Introduction to Land cover mapping

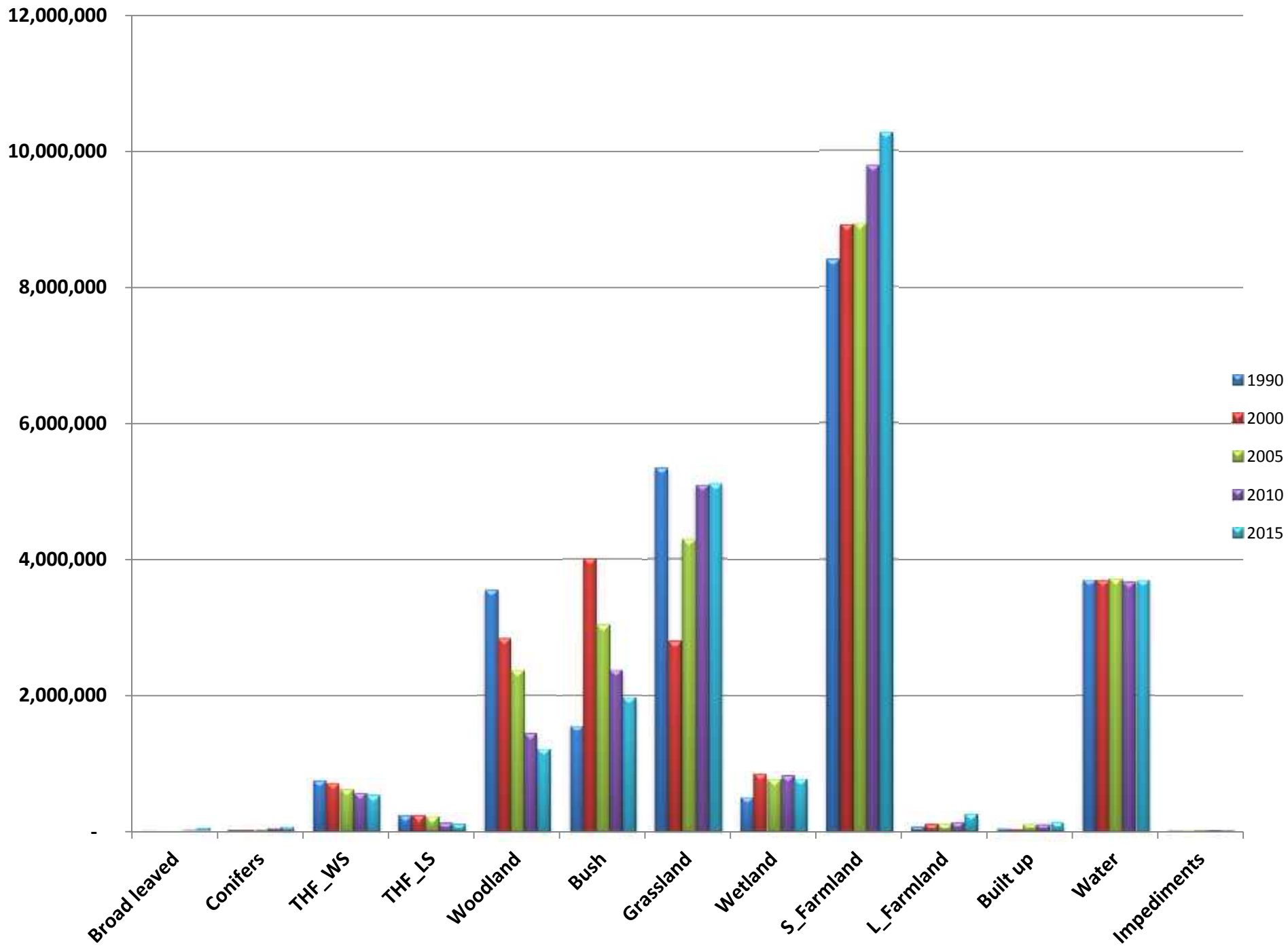
- Entails wall to wall mapping of land cover
- Classification used has 13 classes and the first five are forest classes
- Land cover statistics needed by NFA, FSSD, MWE, DEA, WD, UBOS, NPA, NEMA, REDD+, CCD, Parliament, LG, Academia, investors, infrastructure planners, conservationists, etc.
- Is activity data for REDD+ for determining FREL
- Produced by interpreting satellite images
- Epochs: 1990, 2000, 2005, 2010 and 2015

# Trends of land cover trends in the country

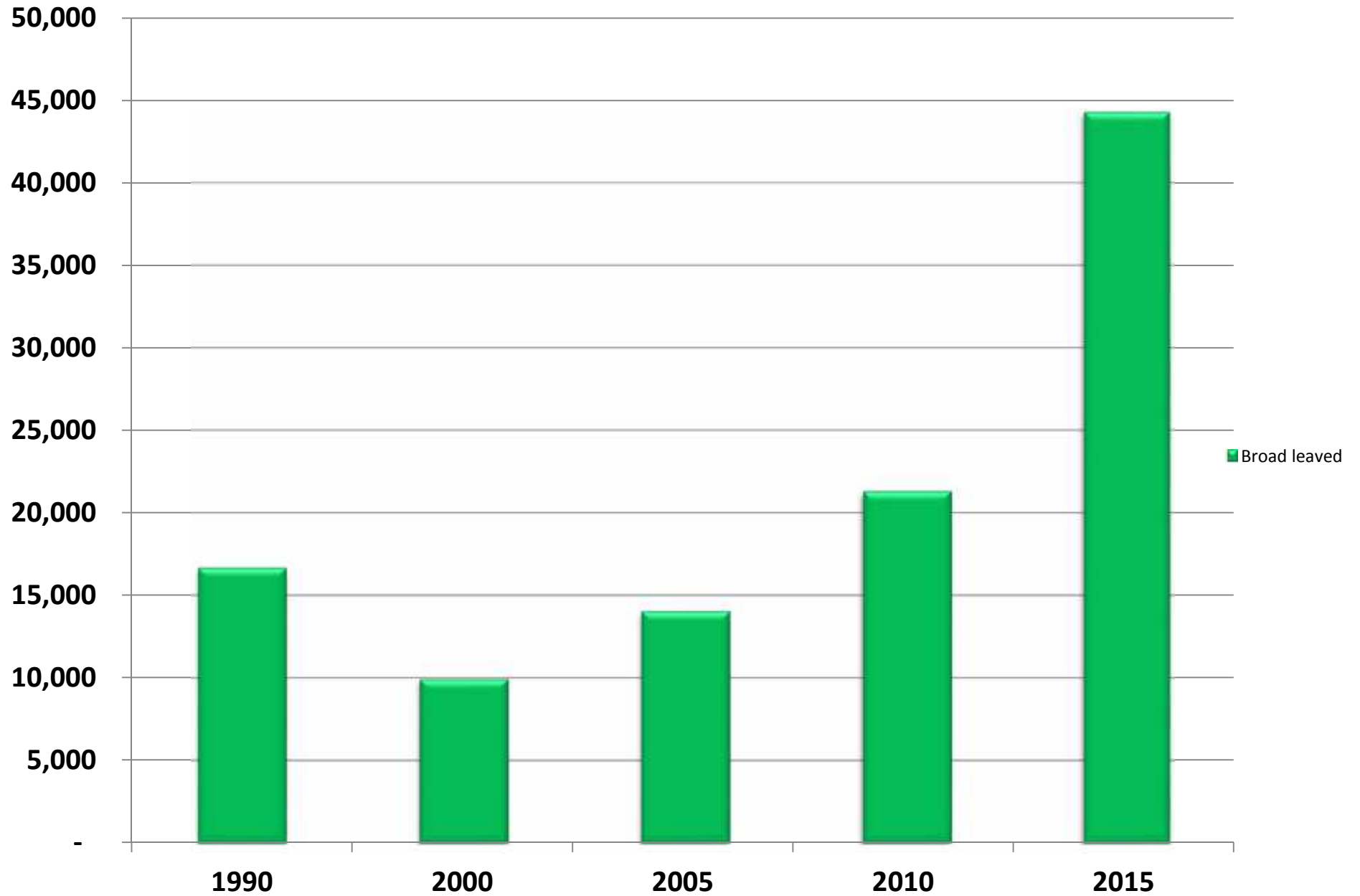
# Uganda's land cover 1990-2015



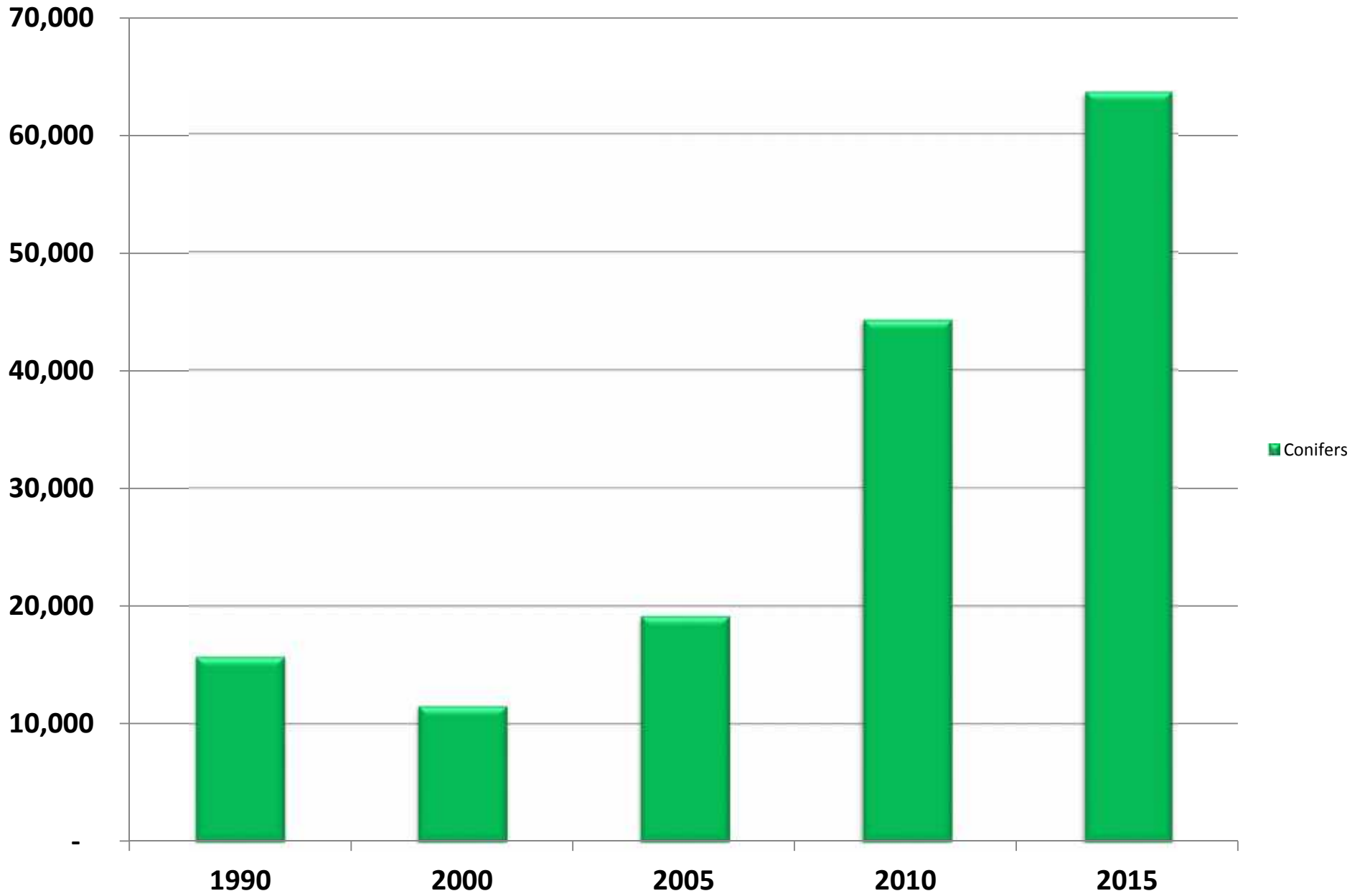
	1990	2000	2005	2010	2015
<b>Broadleaved</b>	16,634	9,856	13,988	21,261	44,298
<b>Conifers</b>	15,699	11,523	19,164	44,246	63,568
<b>THF Well Stocked</b>	743,154	703,999	614,264	563,693	529,186
<b>THF Low Stocked</b>	227,373	226,425	209,922	120,206	102,000
<b>Woodland</b>	3,544,793	2,834,194	2,364,297	1,444,910	1,214,478
<b>Bush</b>	1,557,185	4,007,711	3,035,877	2,377,605	1,972,325
<b>Grassland</b>	5,340,431	2,796,034	4,289,042	5,085,925	5,105,157
<b>Wetland</b>	502,091	838,018	751,364	808,677	760,346
<b>Subsistence Farmland</b>	8,405,204	8,913,924	8,936,373	9,787,857	10,274,975
<b>Large scale Farmland</b>	68,580	103,374	107,004	134,301	256,746
<b>Built up</b>	36,185	26,331	96,450	95,979	136,002



# Broad leaved

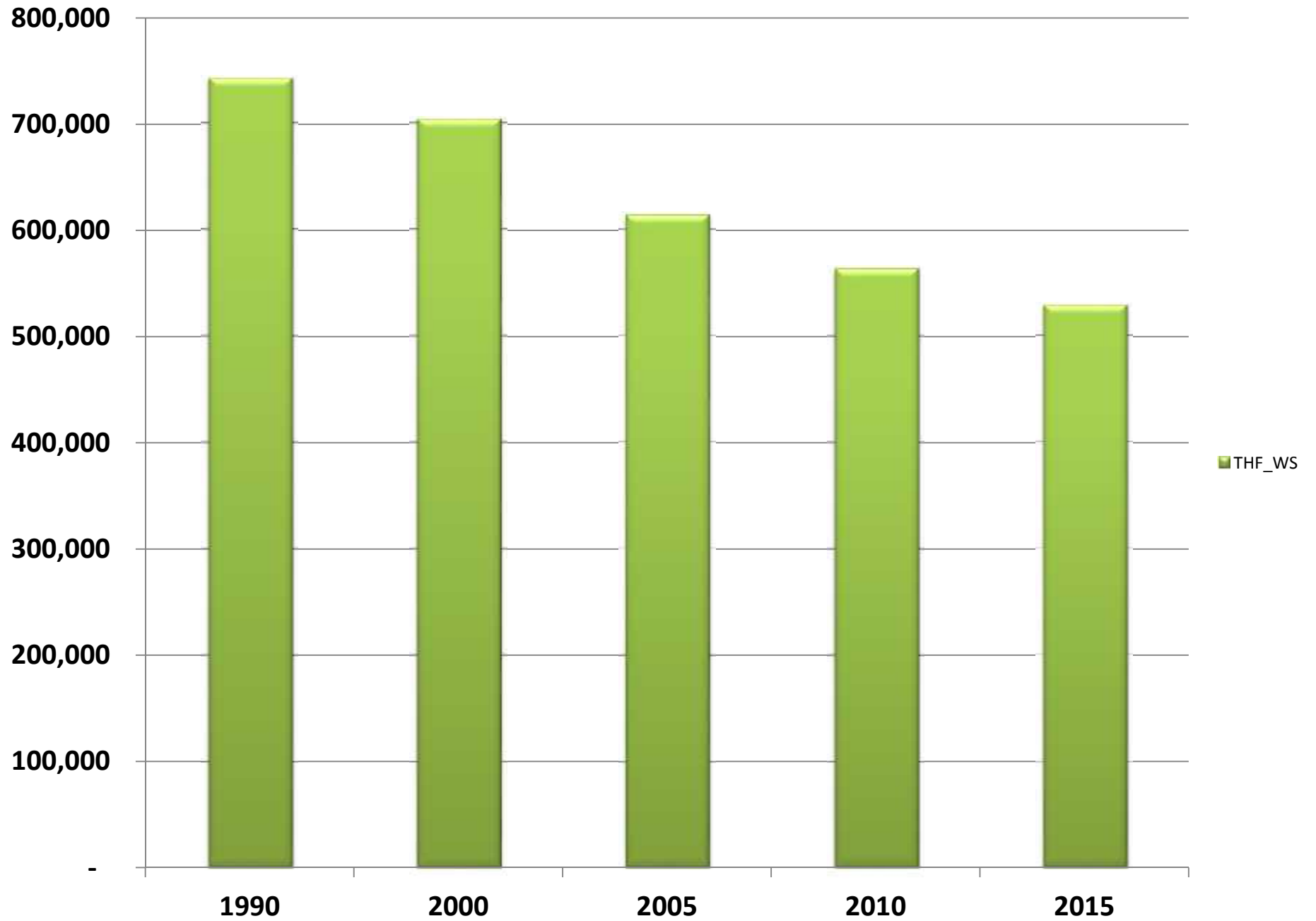


# Conifers

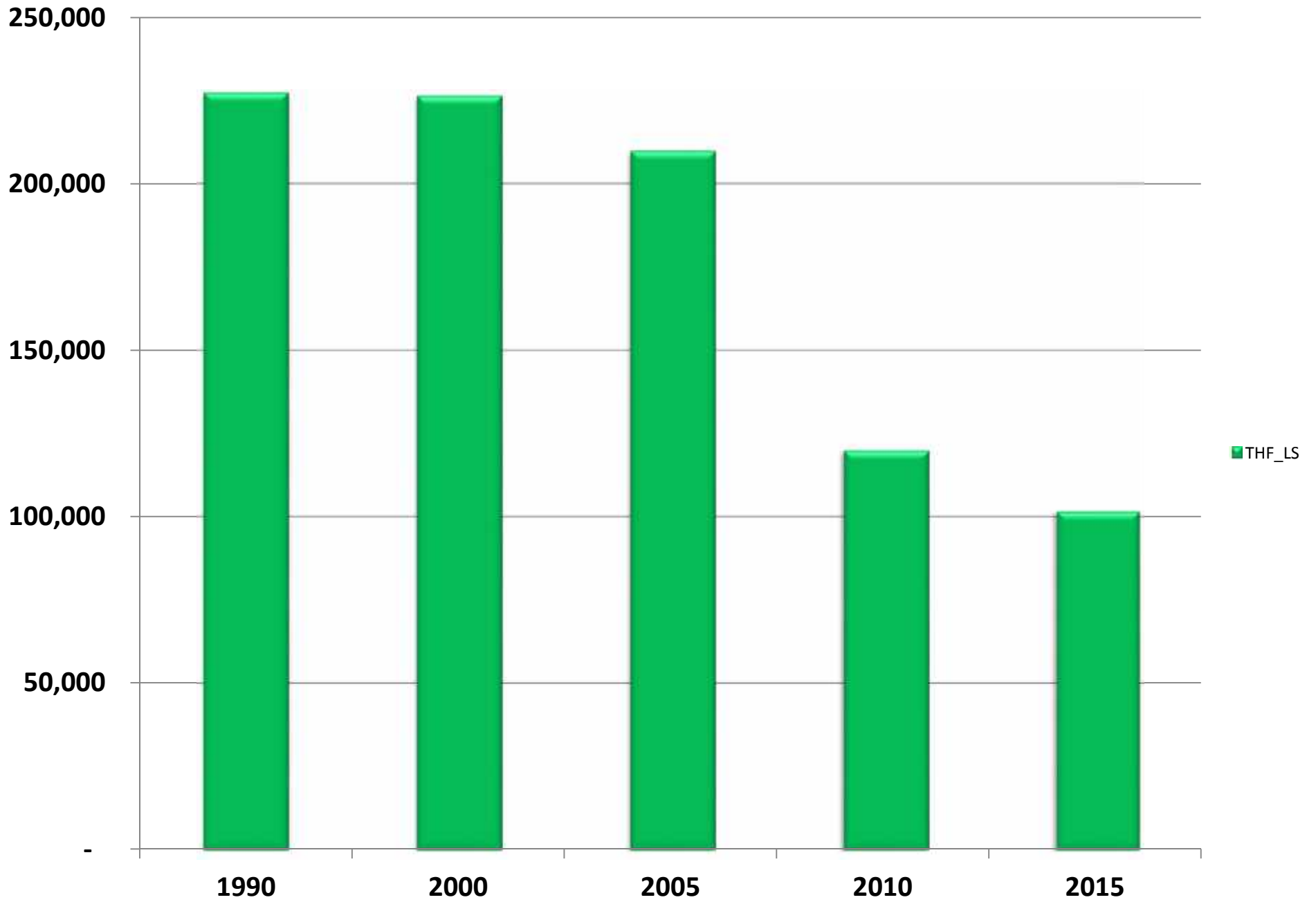




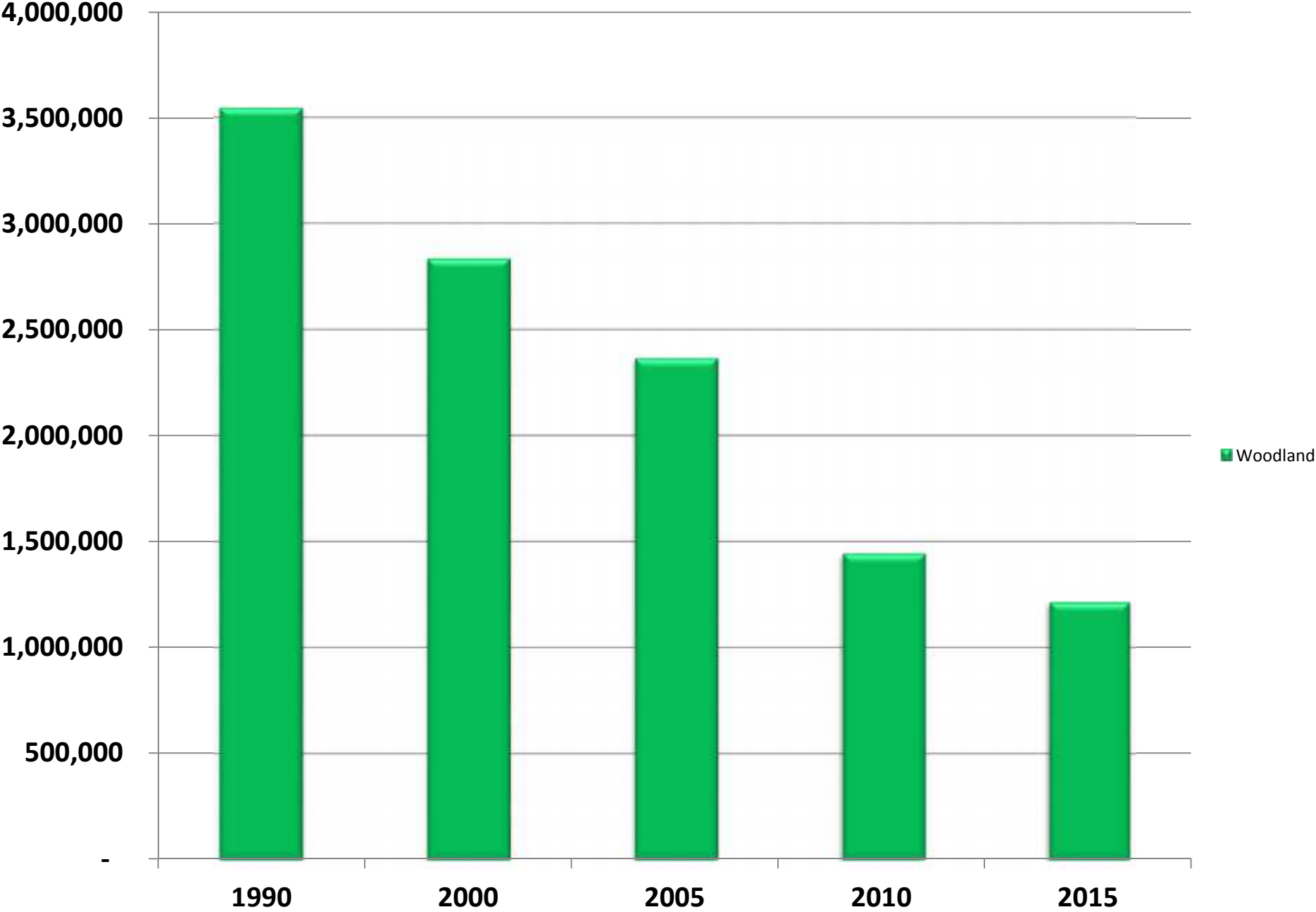
# Tropical High Forest Well Stocked



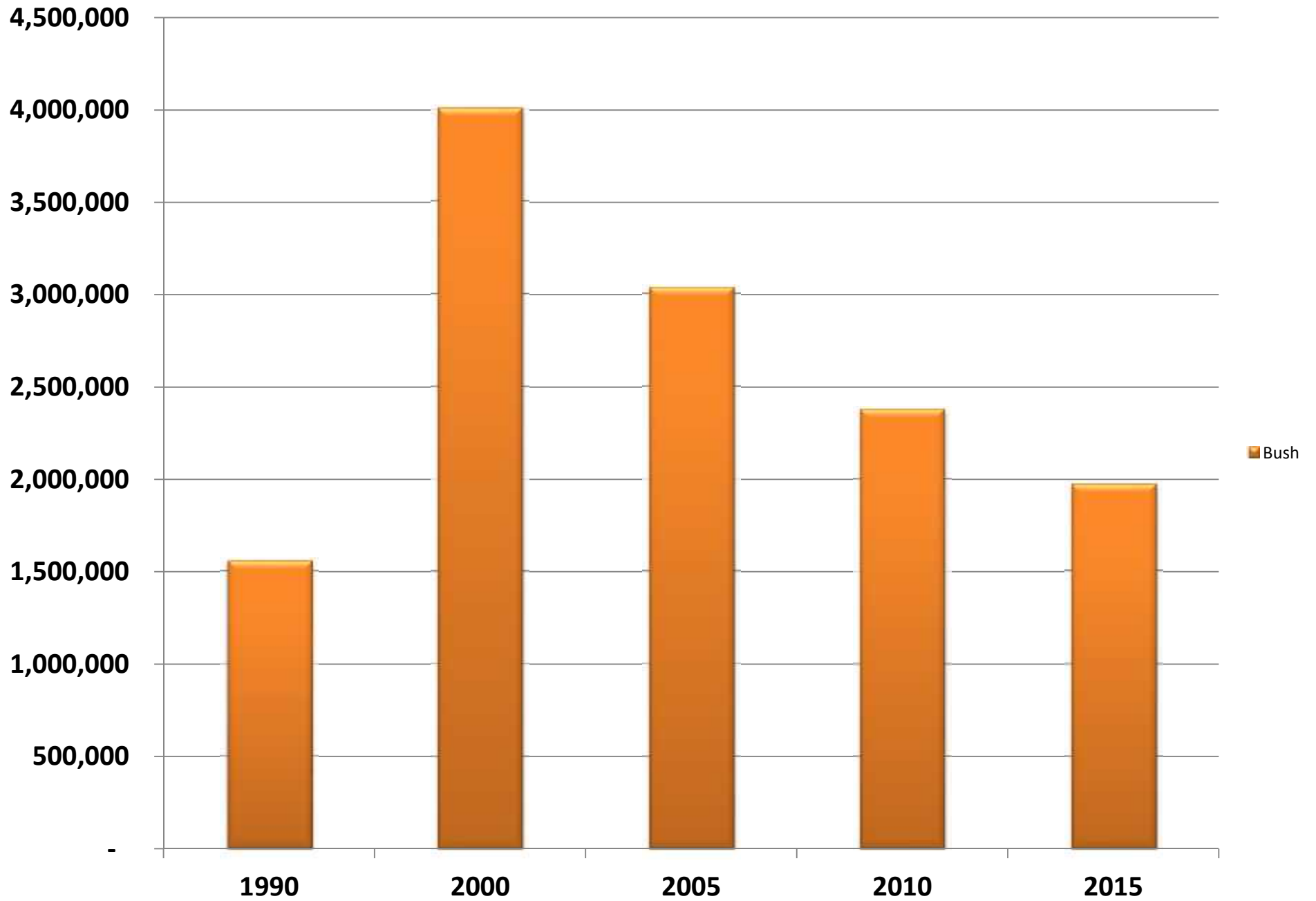
# Tropical High Forest - Low Stocked



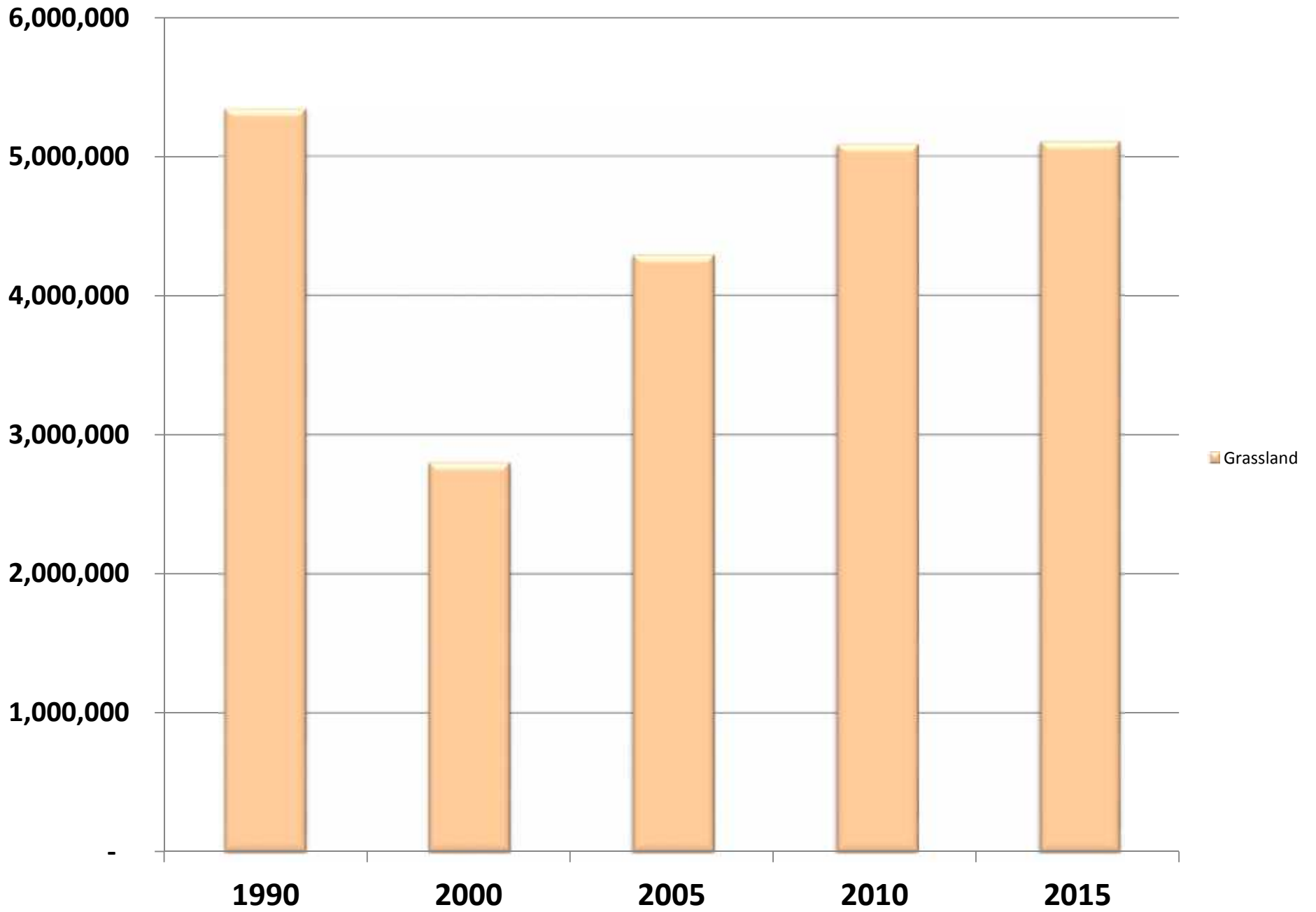
# Woodland



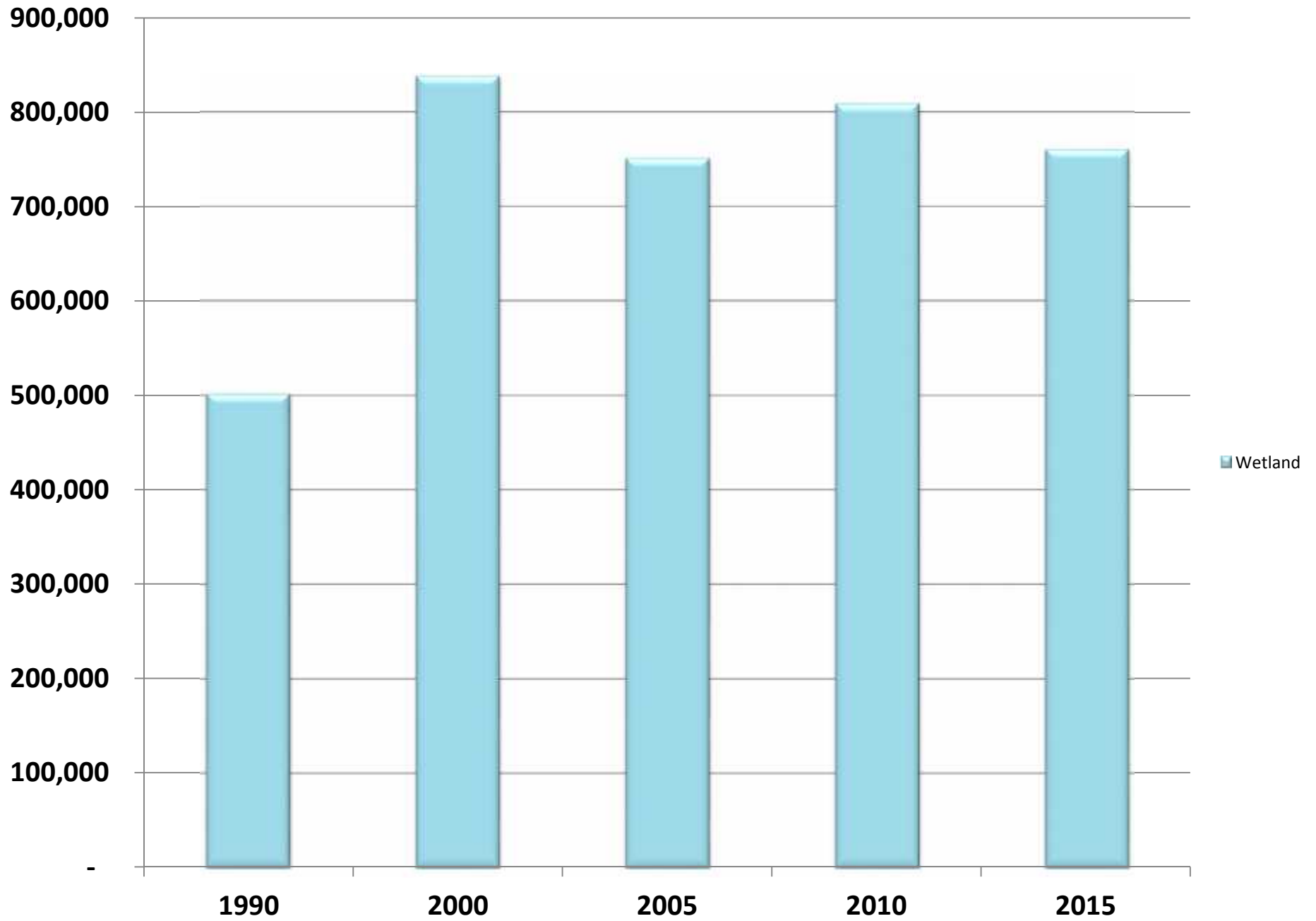
# Bush land



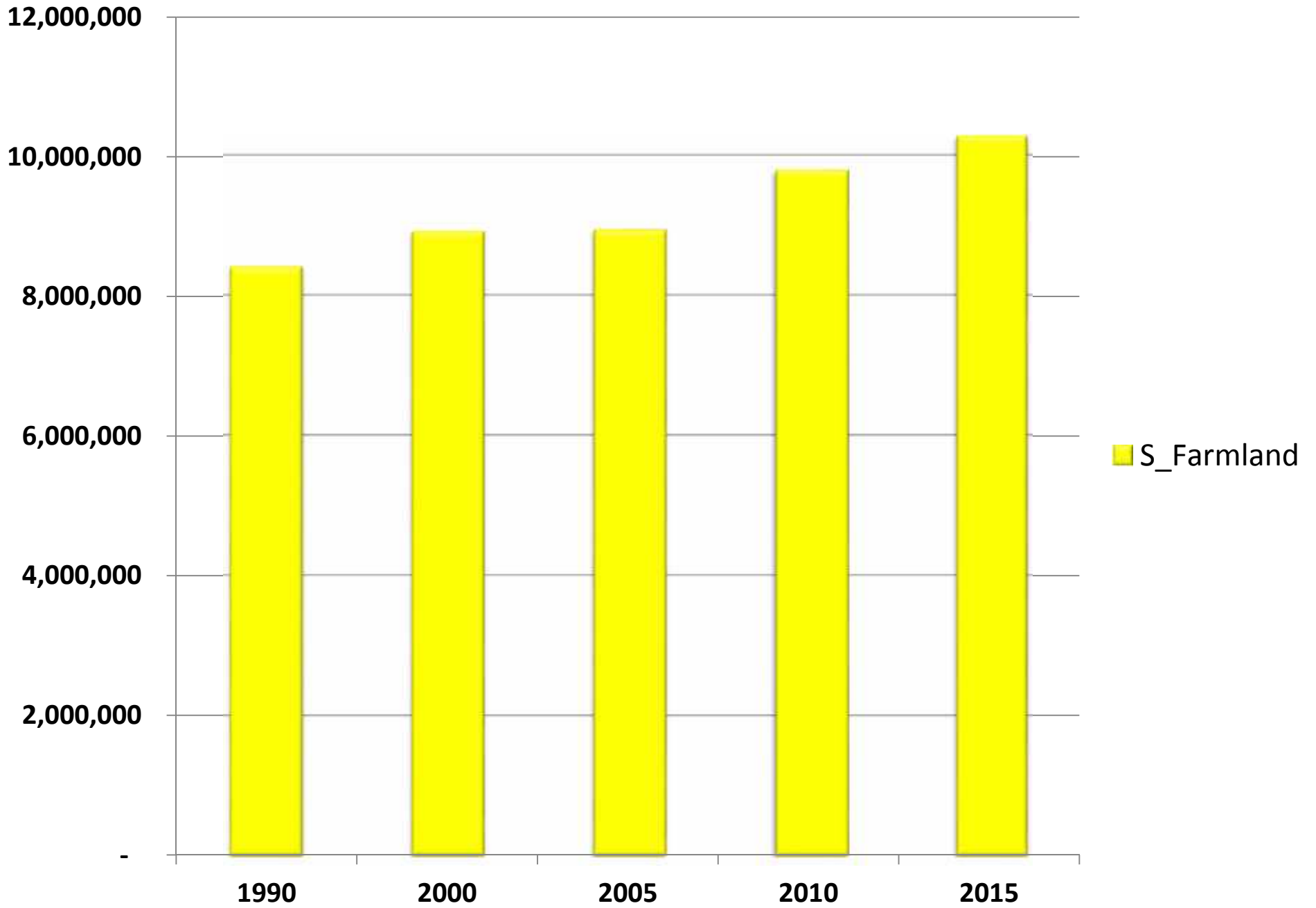
# Grassland



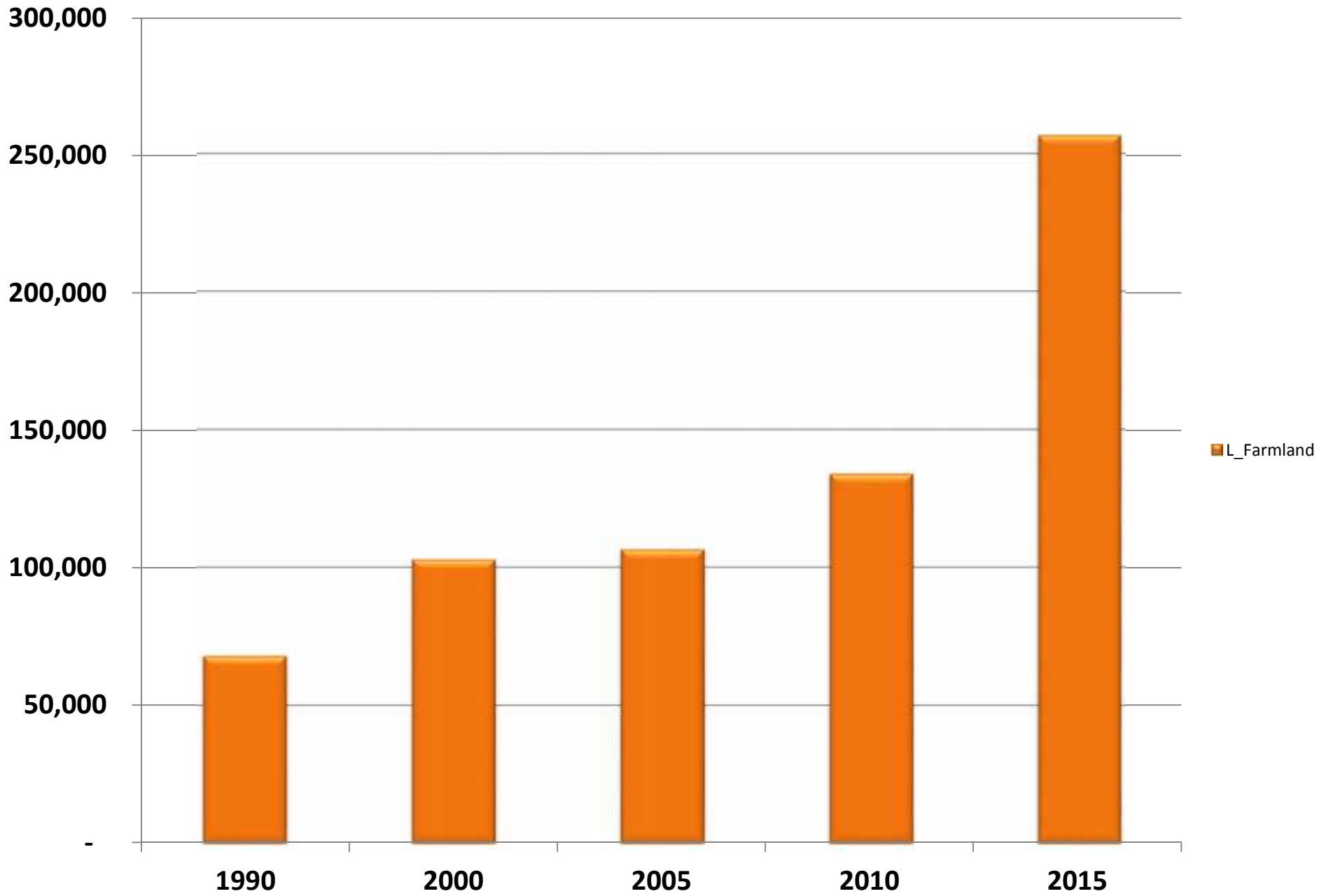
# Wetland



# Subsistence Farmland

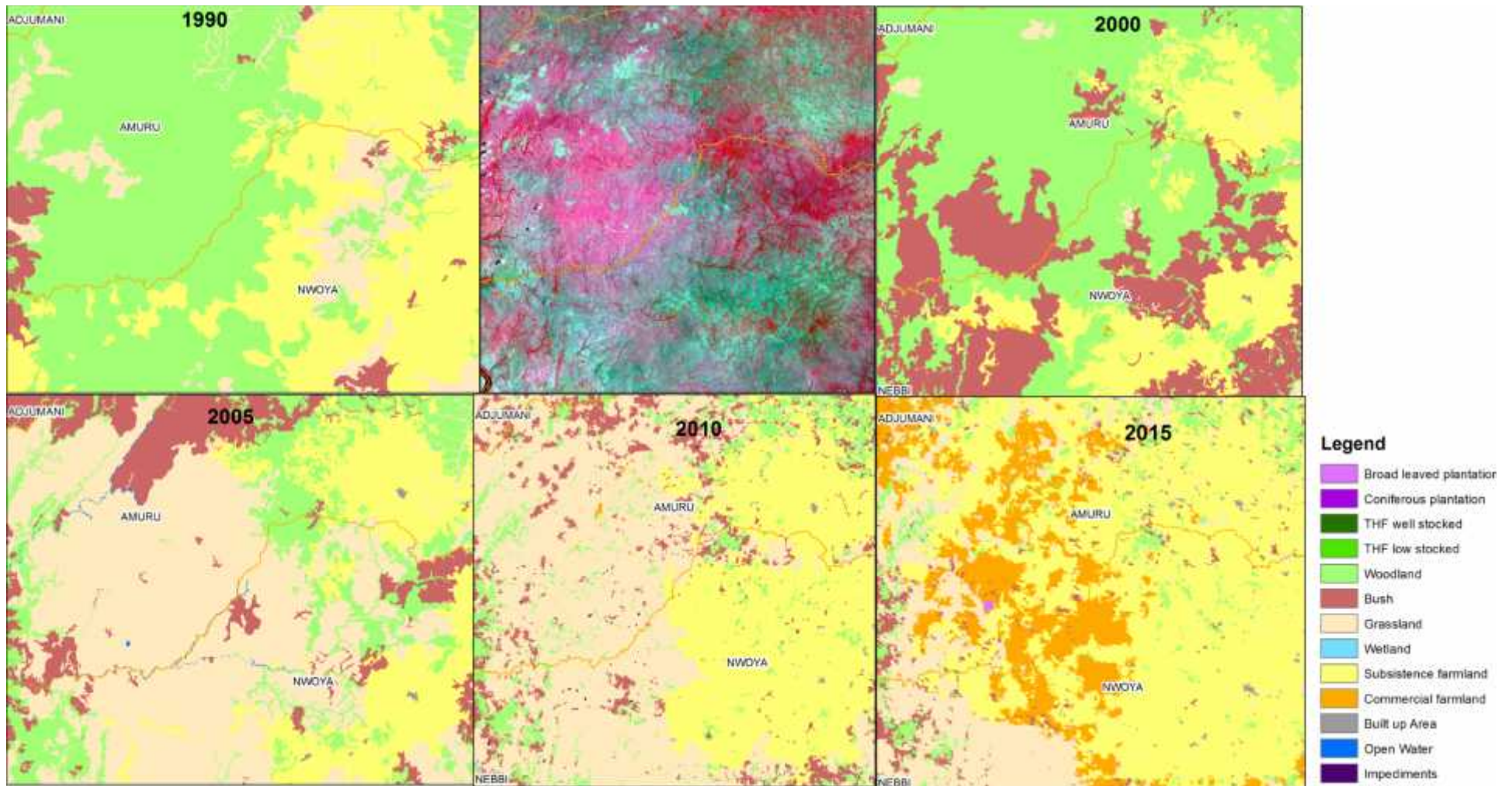


# Large Scale Farmland

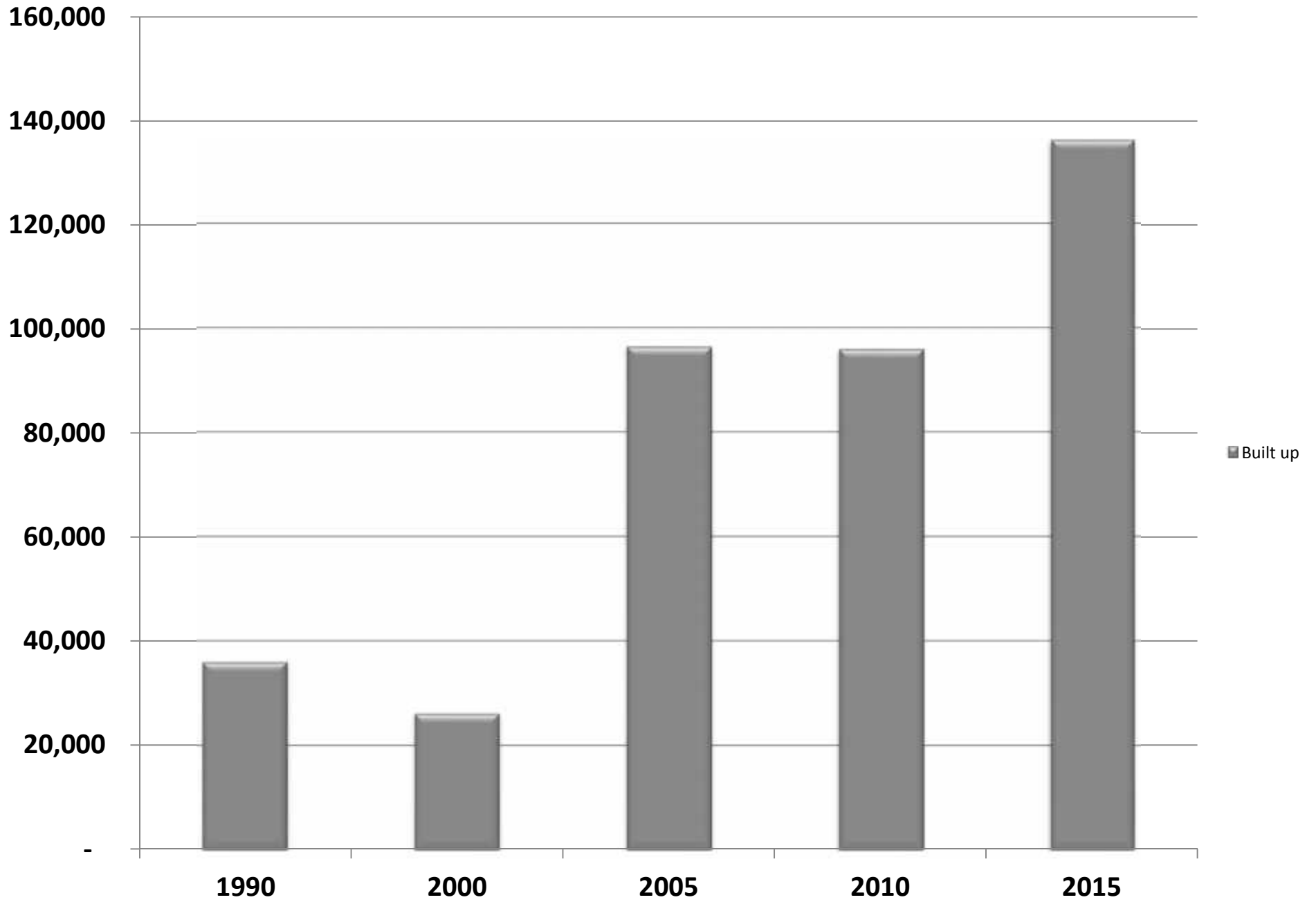




# Large Scale Farmland in Nwoya and Amuru

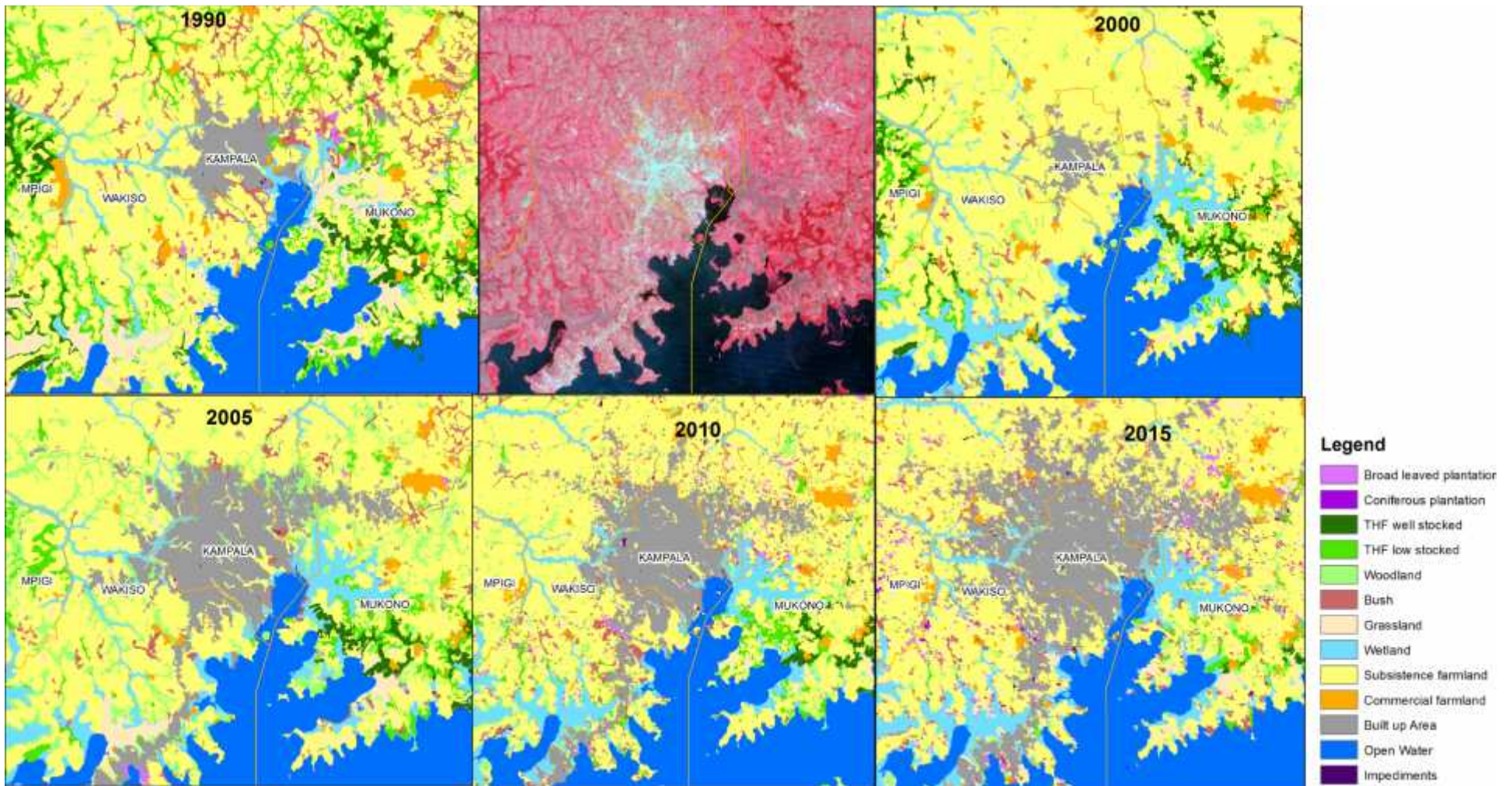


# Built up

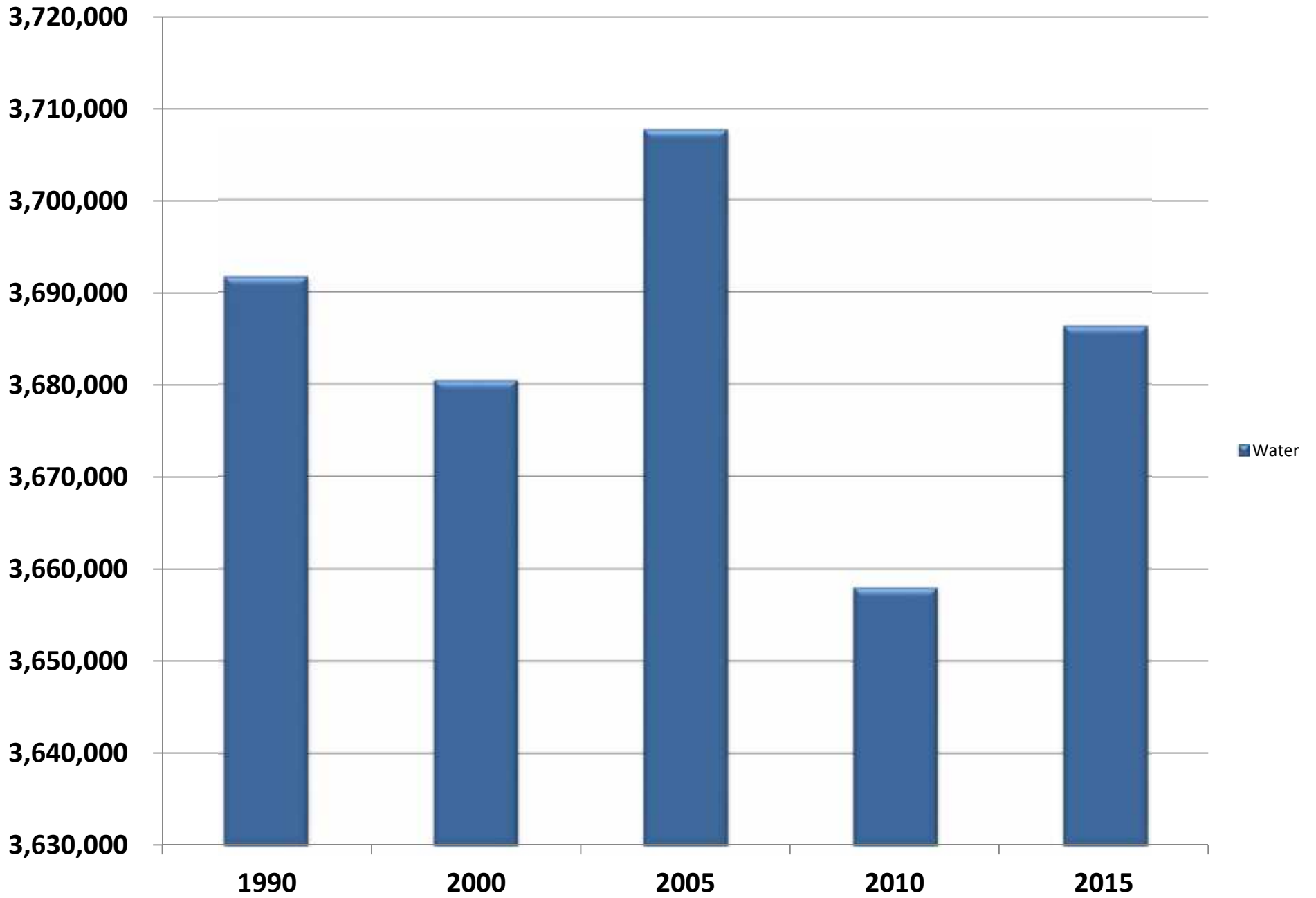




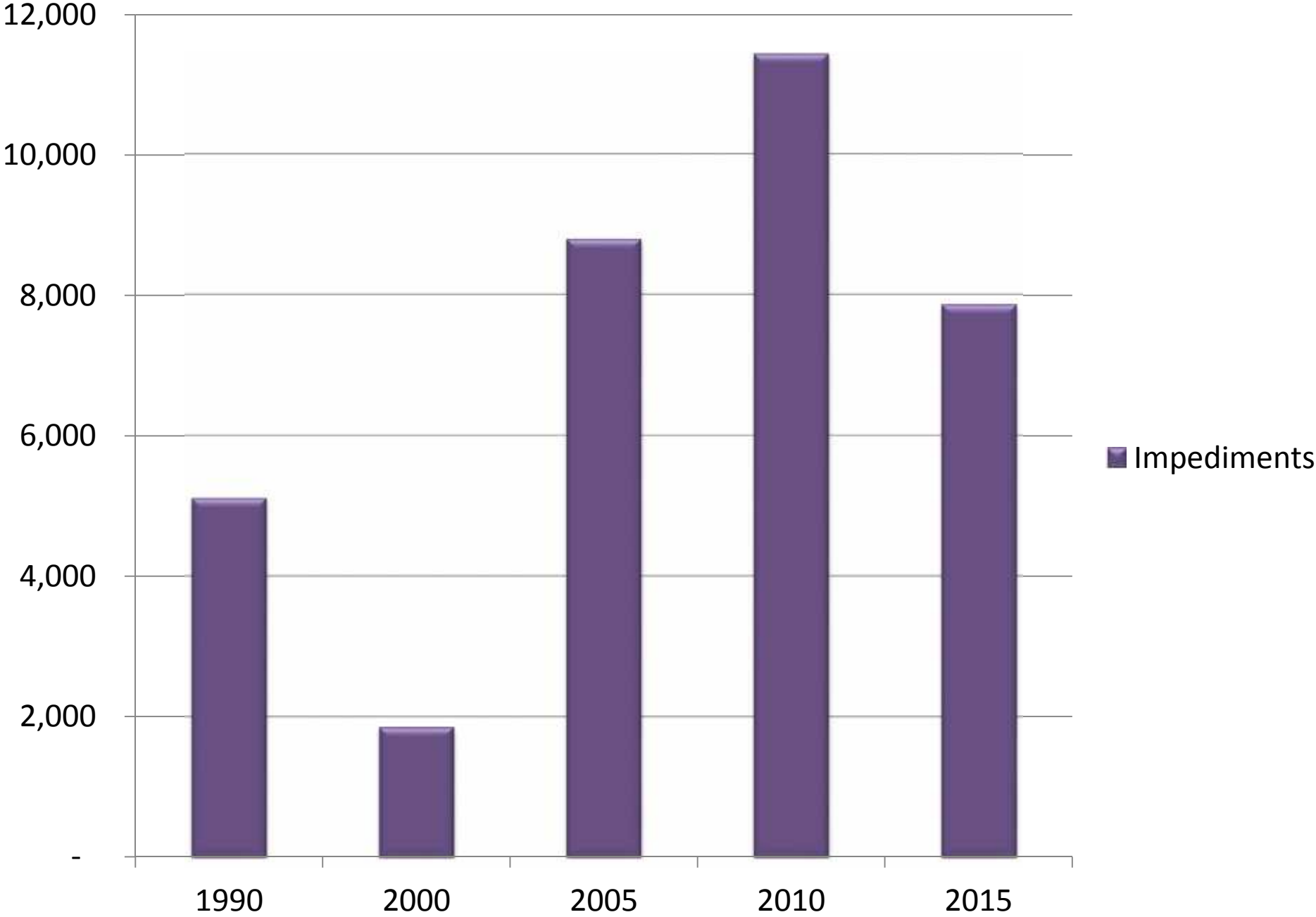
# Kampala



## Open Water



# Impediments



# Forest Trends

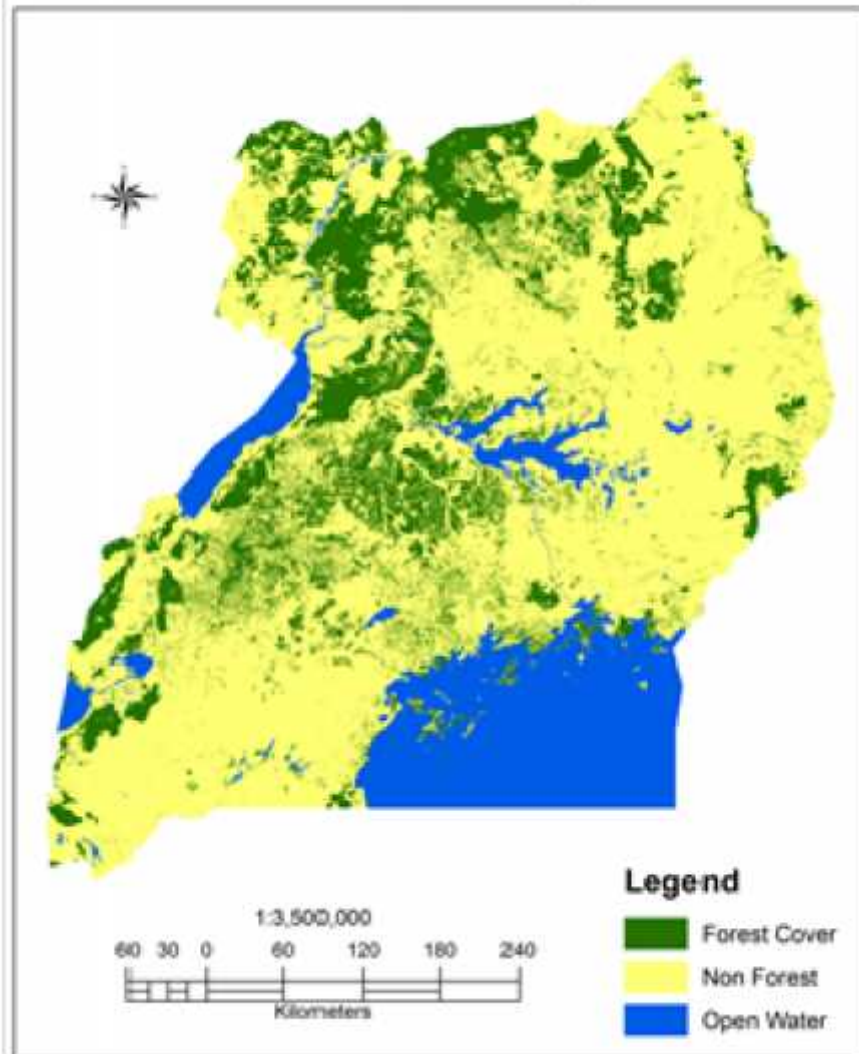
# Forests contribution to National Development

- Vision 2040 and NDC– restore forest cover from 10% to 24%, NDP II to restore to 20% by 2030
  - Forests are important in the water cycle, are indispensable partner for agriculture, a back bone of Uganda’s economy
  - Over 95% of people in Uganda depend on biomass energy. Firewood = 40m tonnes, Charcoal = 1m tonnes p.a
  - 500,000m<sup>3</sup> of wood consumed as sawn timber- 2million m<sup>3</sup> round wood
  - Electricity too expensive, mostly restricted to lighting. Cooking and boiling remains on wood

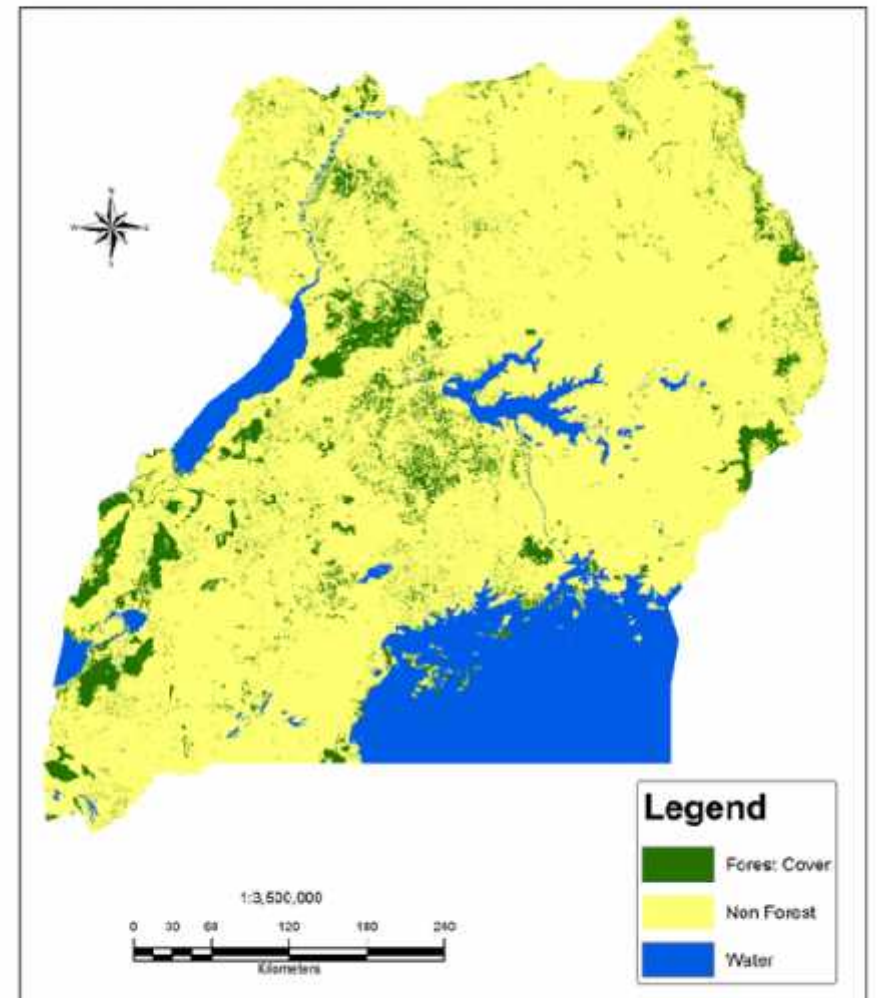


# Trend of forest cover in the country

Natural Forest Cover In Uganda 1990



Natural Forest Cover in Uganda by 2015

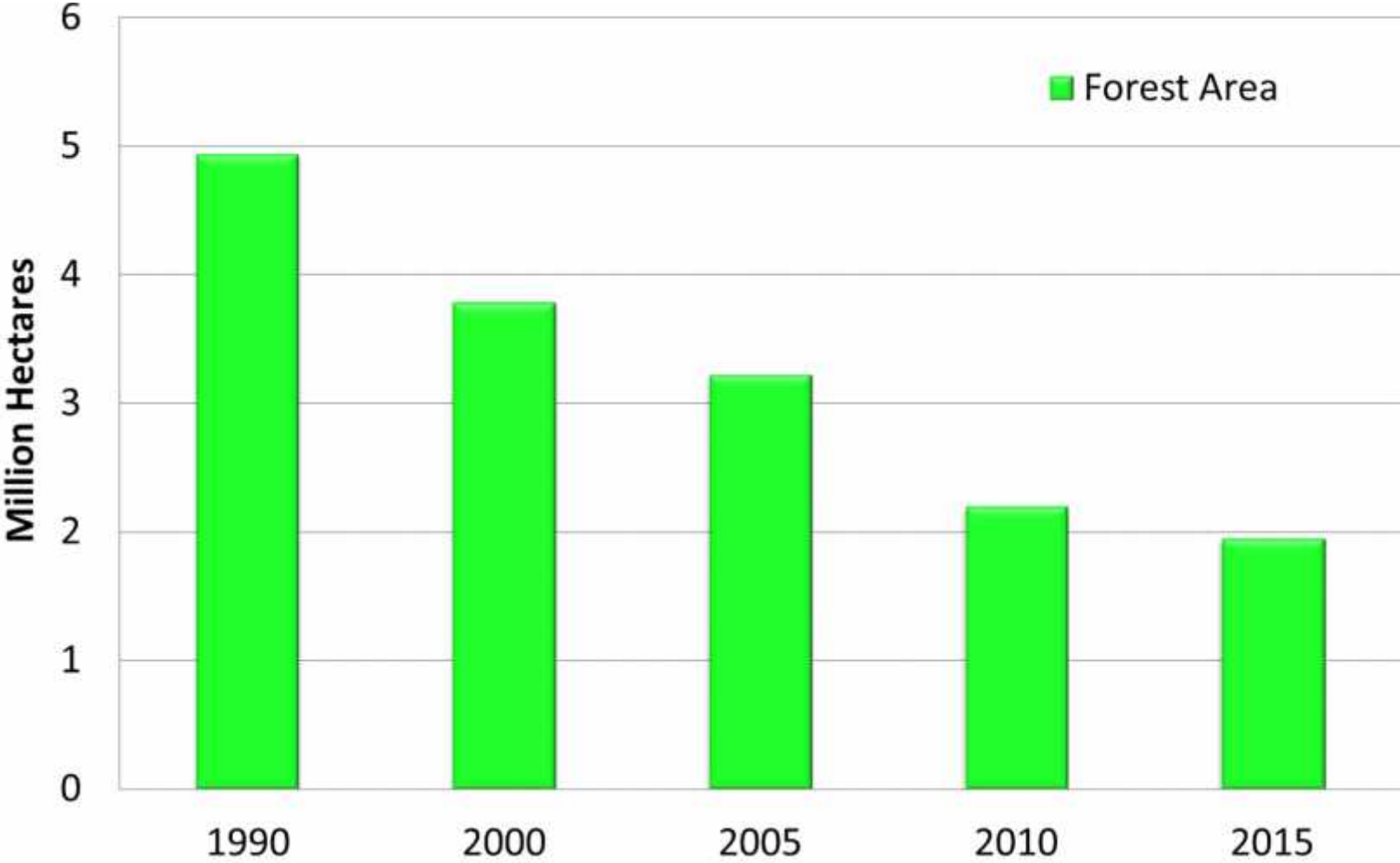




# Forest Cover Statistics

	1990	2000	2005	2010	2015
Forest_All	4,933,271	3,785,167	3,220,546	2,196,631	1,956,664
Forest_UWA	794,881	720,057	670,372	600,986	624,578
Forest_NFA	791,240	626,192	595,841	531,795	504,391
Forest_PVT	3,347,150	2,438,919	1,954,333	1,063,851	827,695
Forest_PAs	1,586,121	1,346,249	1,266,213	1,132,780	1,128,969

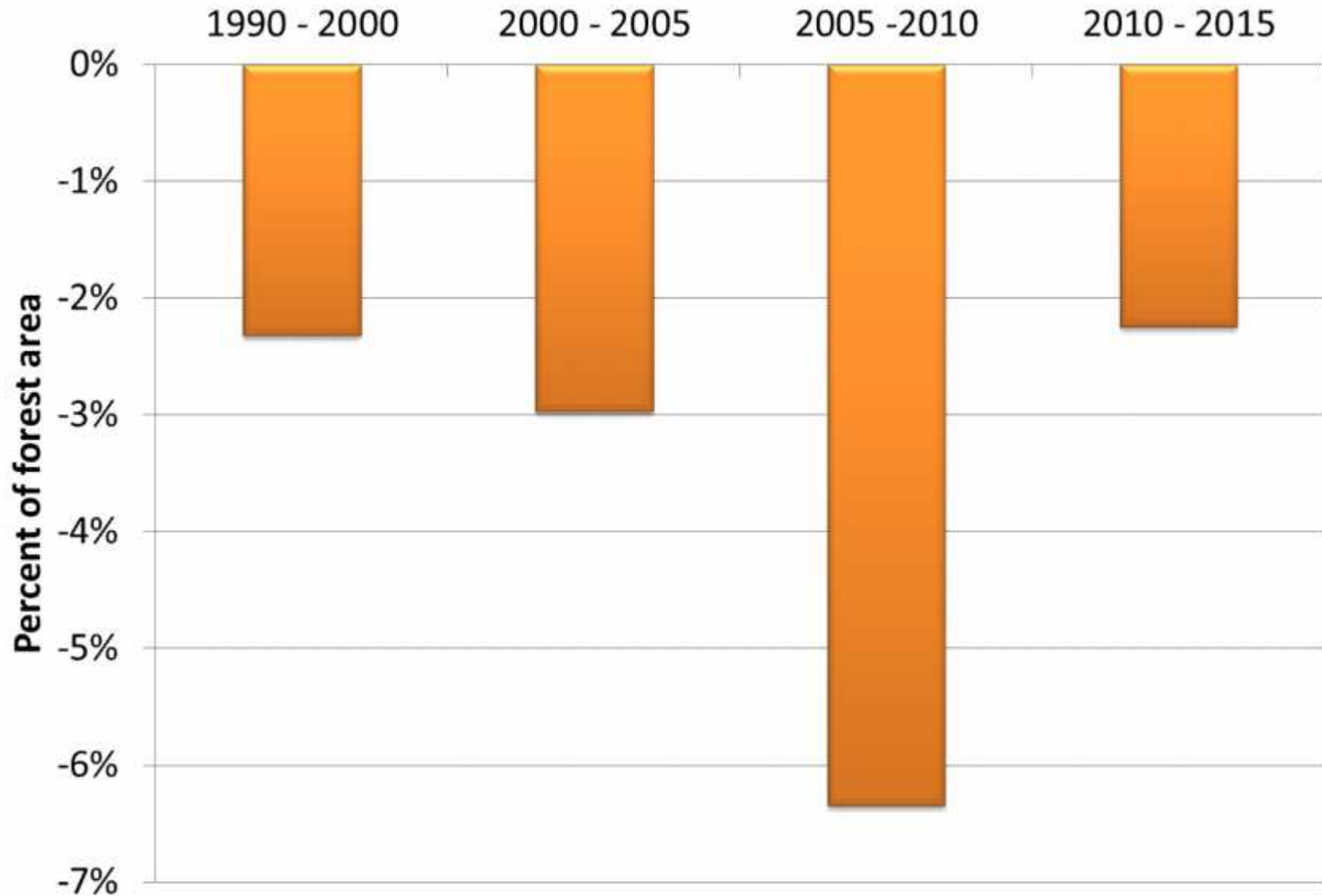
# Trend of forest cover over 25 years



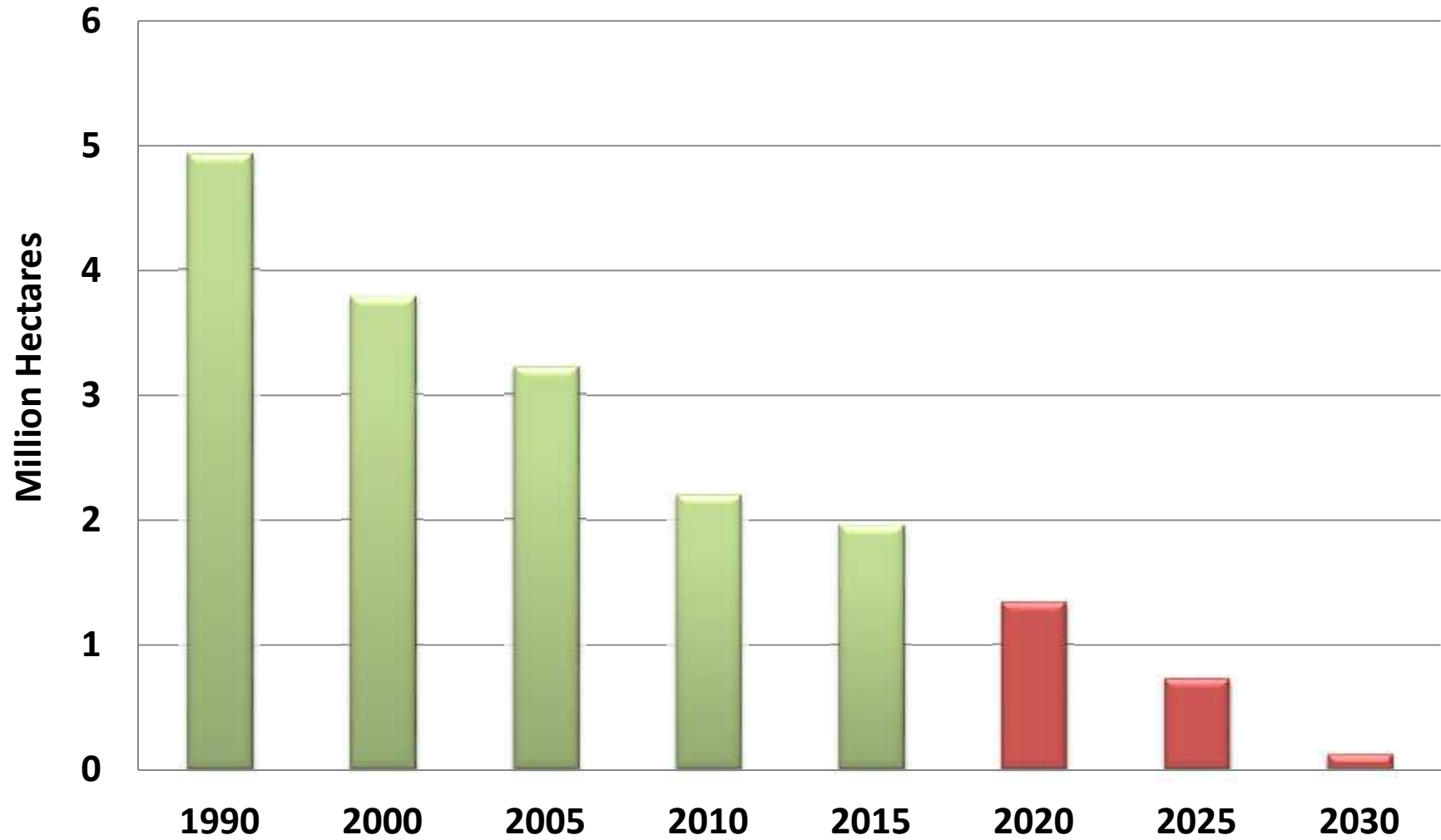
# Rate of Deforestation

	90to00	00to05	05to10	10to15
Forest_All	-2.3%	-3.0%	-6.4%	-2.2%
Forest_UWA	-0.9%	-1.4%	-2.1%	0.8%
Forest_NFA	-2.1%	-1.0%	-2.1%	-1.0%
Forest_PVT	-2.7%	-4.0%	-9.1%	-4.4%
forest_Pas	-1.5%	-1.2%	-2.1%	-0.1%

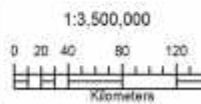
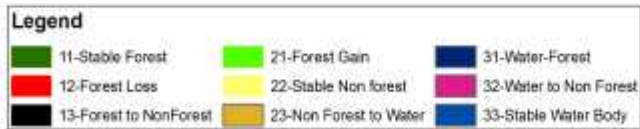
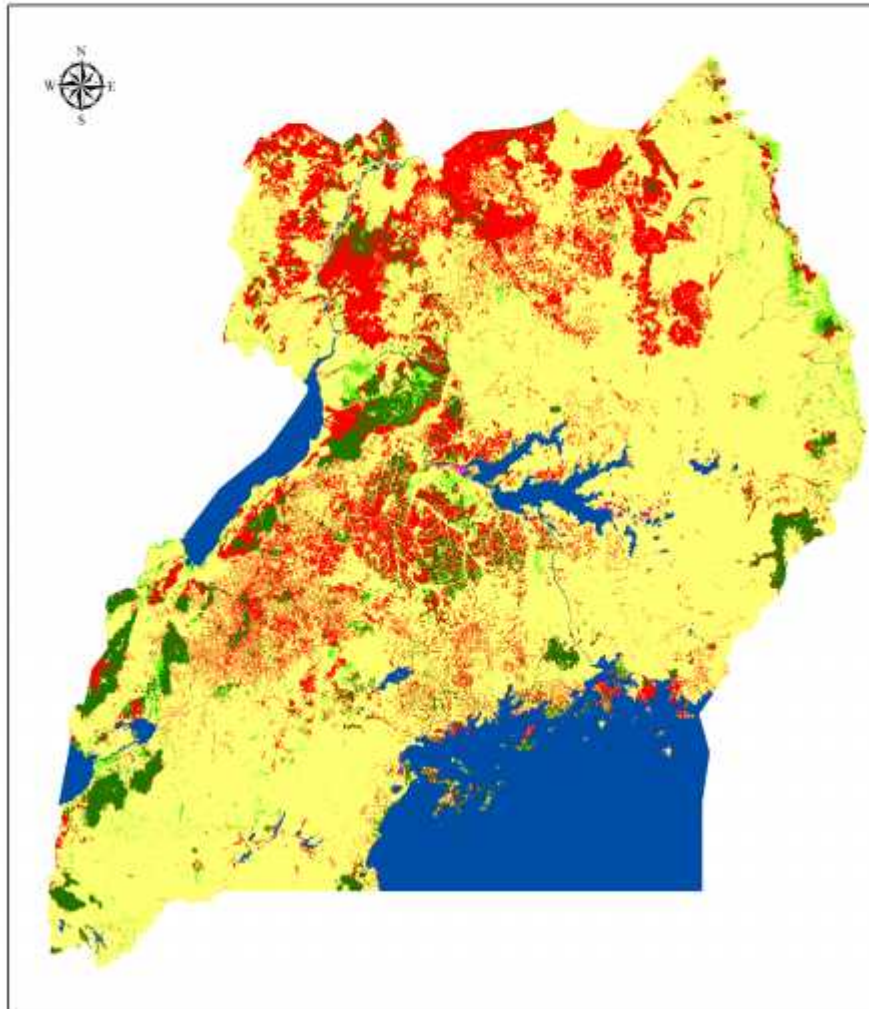
# Average annual deforestation rate (%)



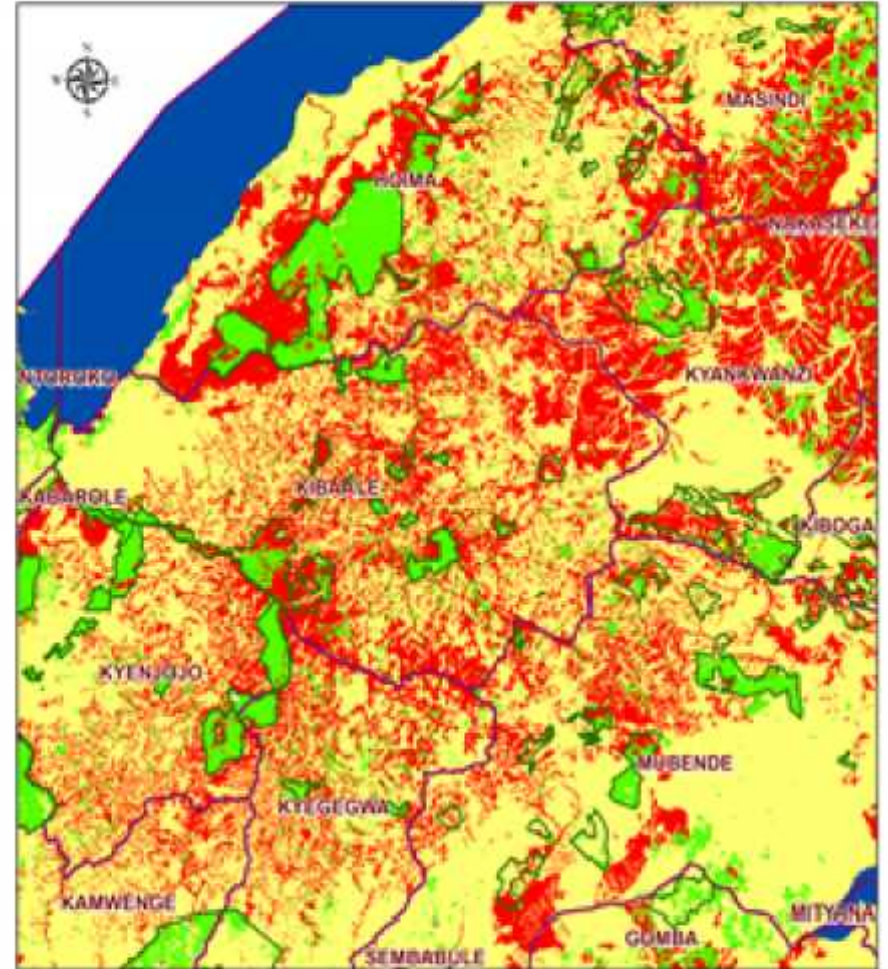
# Predicting the Future – Business as usual



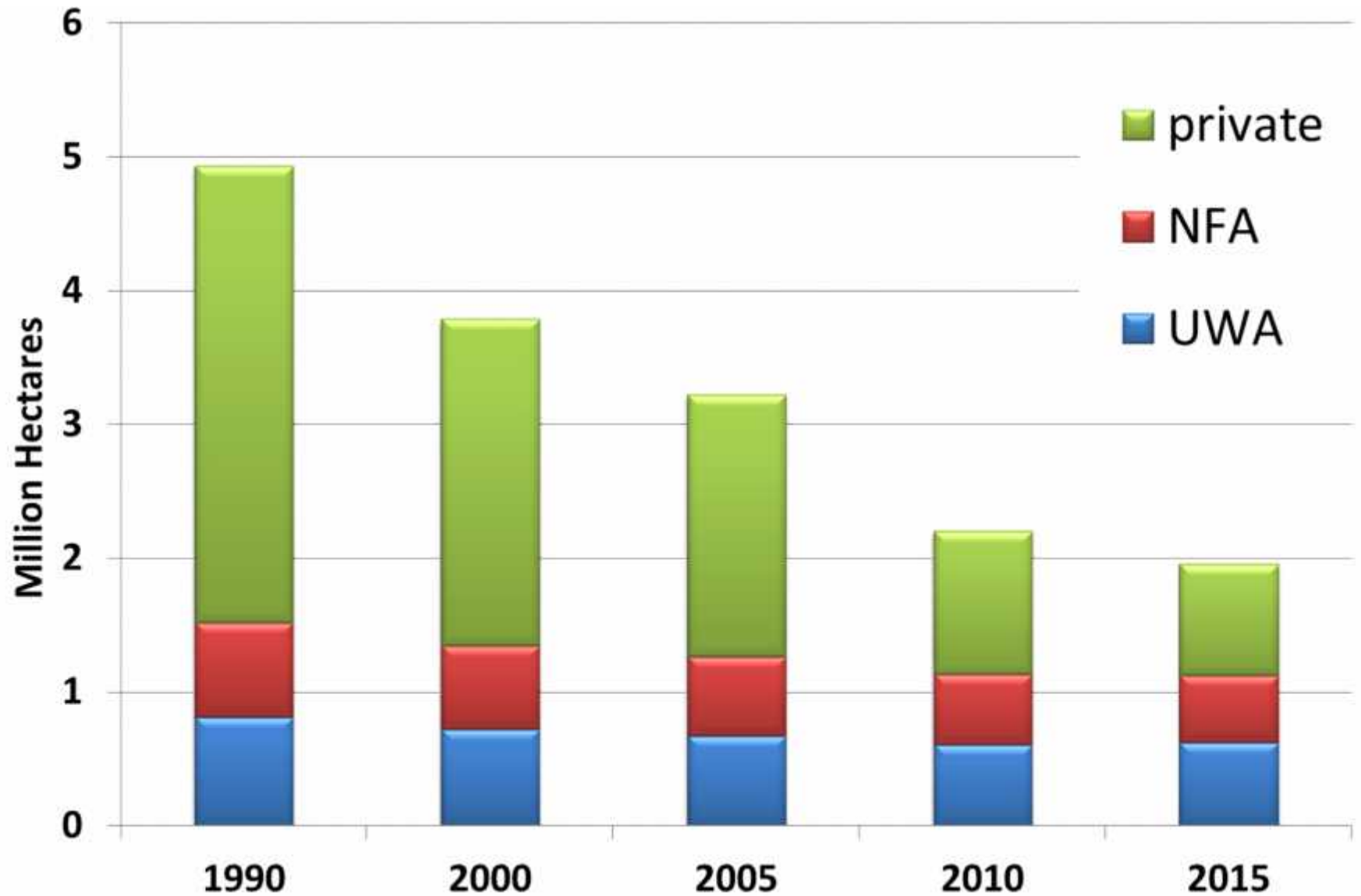
### Worst Natural Forest Cover Loss from 1990 to 2015



### Worst Deforestation and Degradation from 1990 to 2015



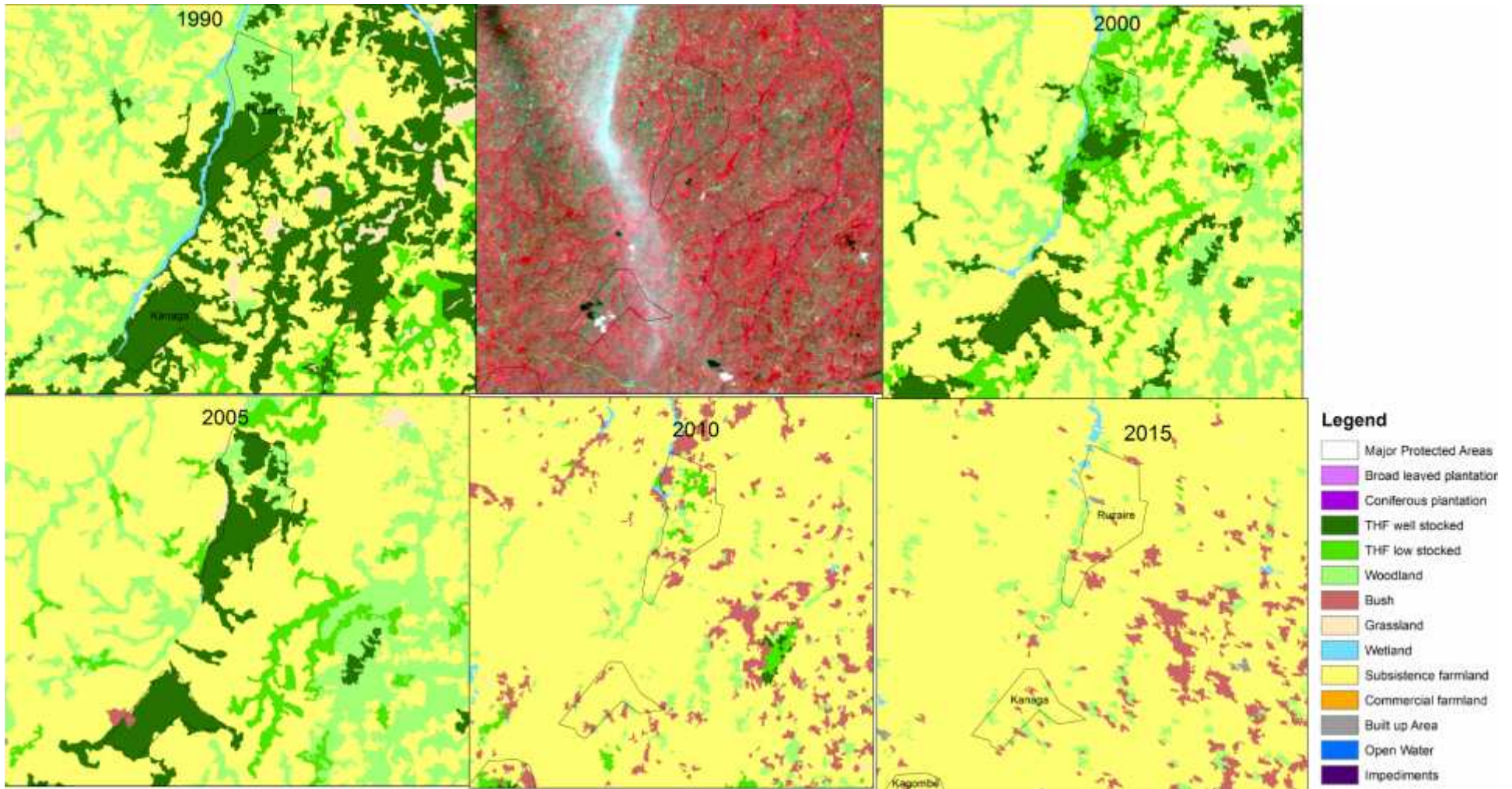
# Management and forest area change





# How it happened

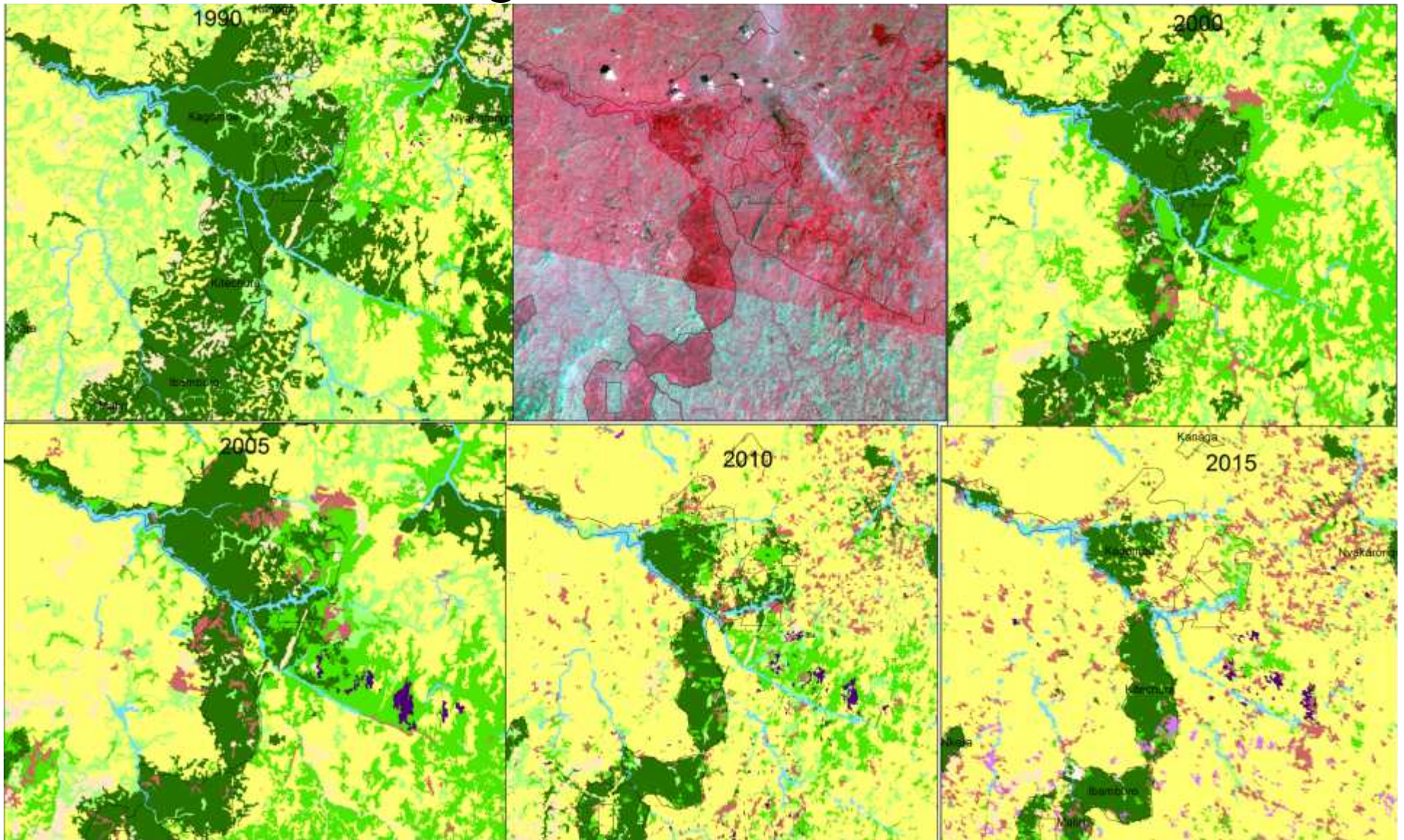
## Ruzaire-Kanaga CFRs





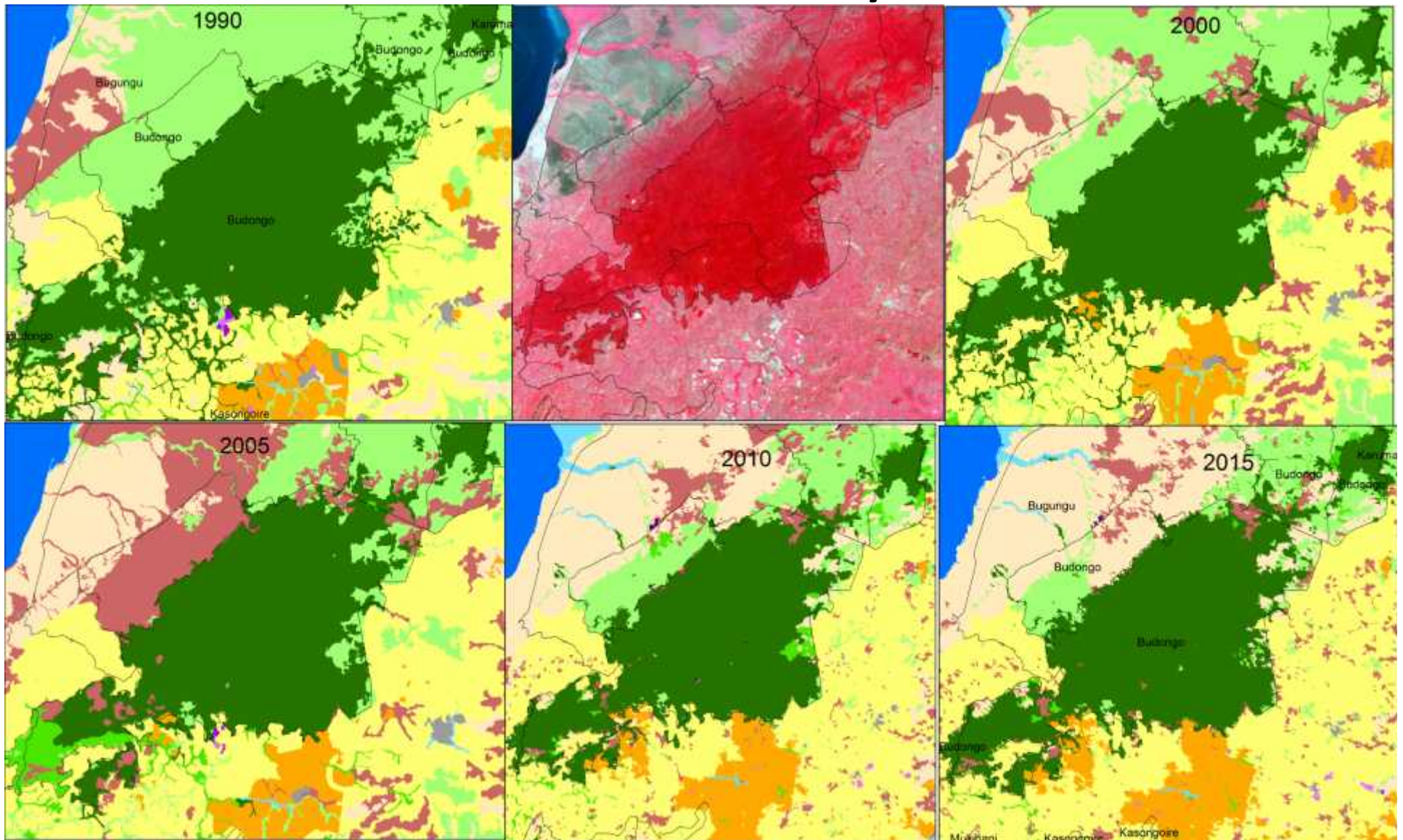
# Survival by protection

## Kagombe forest reserve



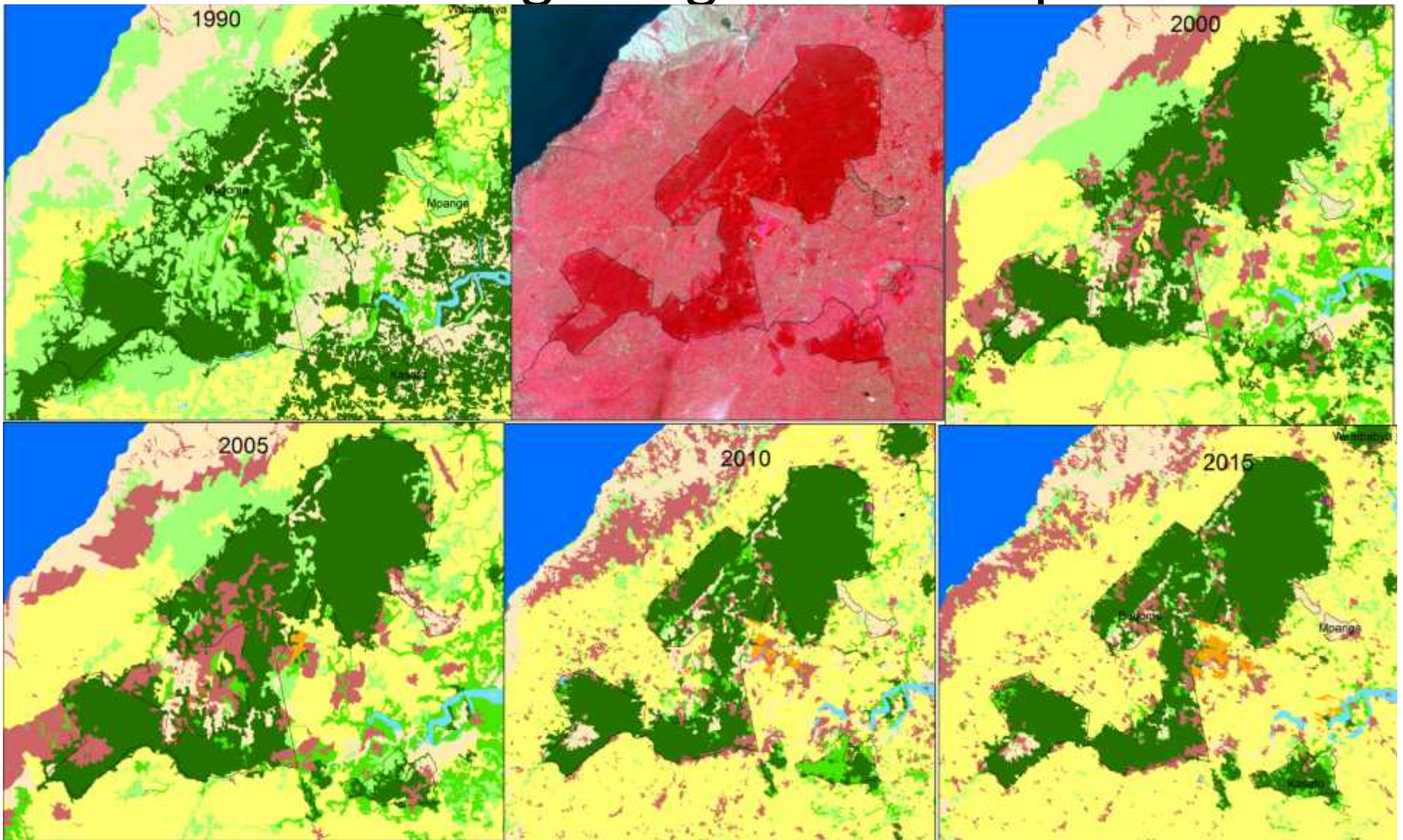


# Budongo Forest still remains, buffer forests destroyed



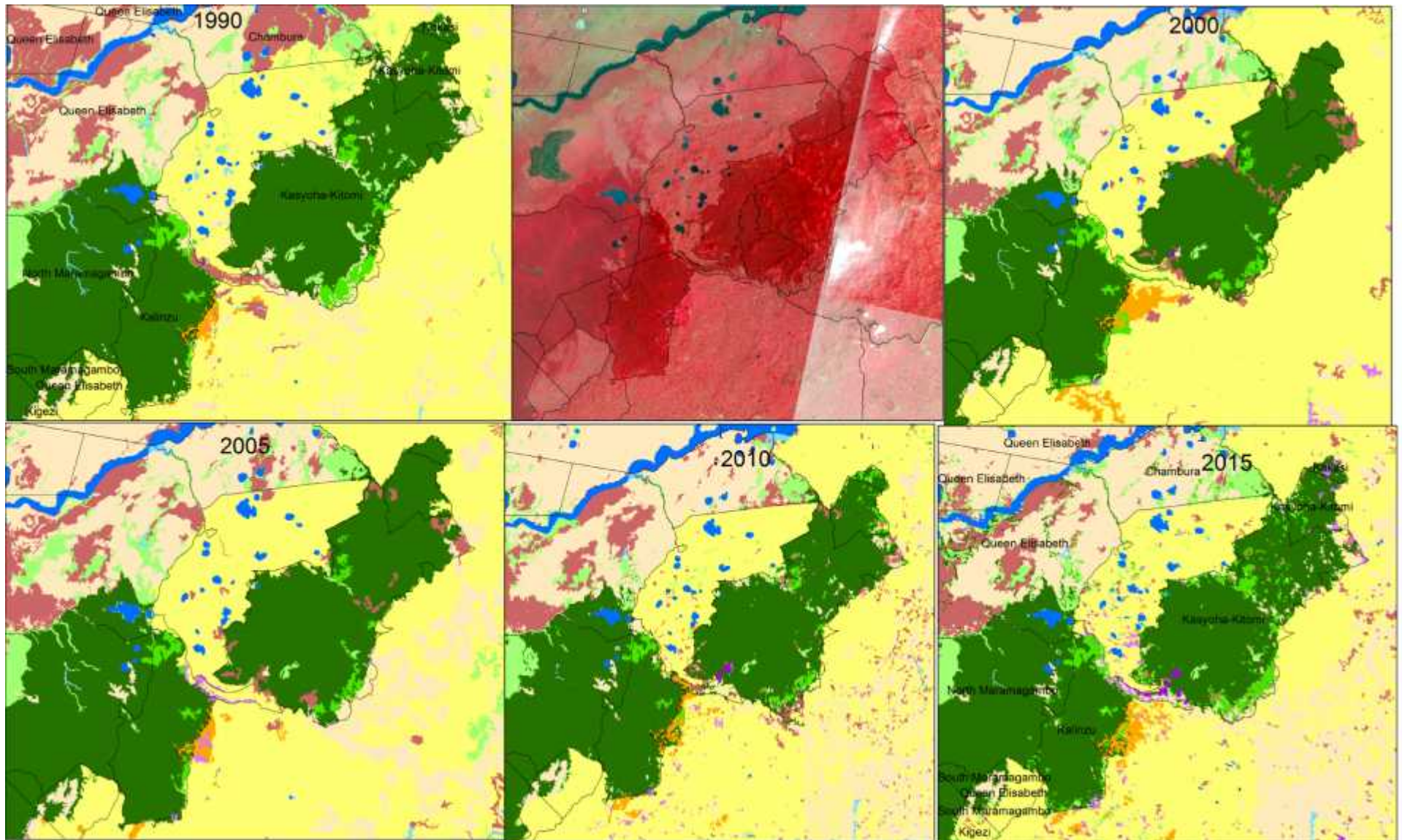


# Bugoma remains as island forest, corridor forests for migrating animals wiped out



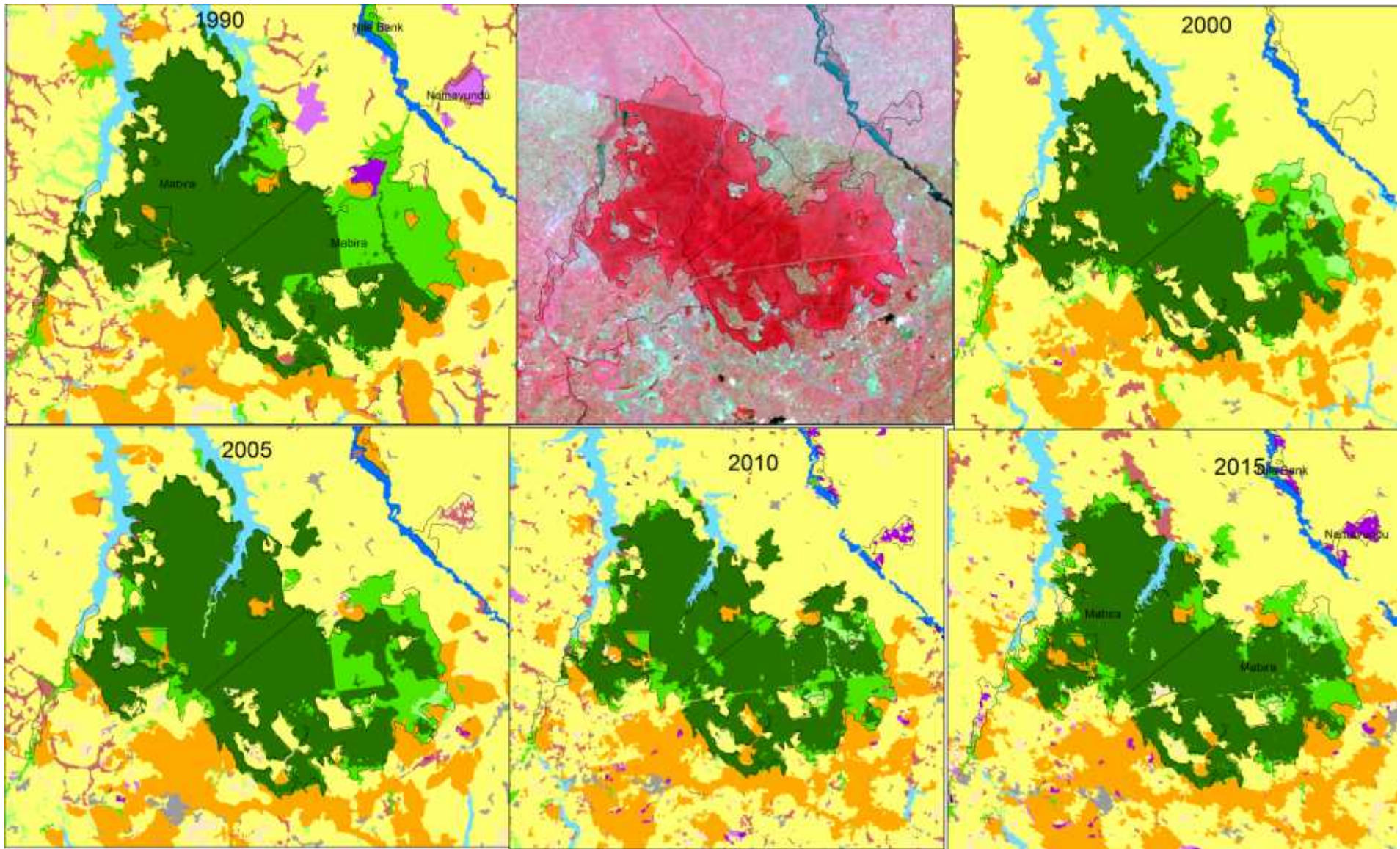


These forests have stayed for long despite lack of forests in the neighbourhood





# Mabira- A success story of forest restoration and conservation



# Drivers of DD

- a. Expansion of commercial and subsistence agricultural into forest lands and bush lands**
- b. Unsustainable harvesting of tree products, mainly for charcoal, firewood and timber**
- c. Expanding urban and rural human settlements and impacts of refuges**
- d. Free-grazing livestock**
- e. Wild fires**

# REDD+ Strategy Options

Option	Strategic Interventions
Strategic option 1: Climate smart agriculture	<ul style="list-style-type: none"> <li>♣ <b>SLM and agroforestry practices</b></li> <li>♣ Rainwater harvesting with collection tank and drip irrigation</li> <li>♣ Greenhouse cultivation of vegetables</li> </ul>
Strategic option 2: Livestock management	<ul style="list-style-type: none"> <li>♣ Fodder trees and stall-feeding</li> <li>♣ Change to exotic cattle varieties and crossbreeding</li> <li>♣ <b>Reduction of excess free-grazing traditional livestock</b></li> </ul>
Strategic option 3: Sustainable fuel wood and (commercial) charcoal use	<ul style="list-style-type: none"> <li>♣ <b>Small-holder and community bioenergy woodlots</b></li> <li>♣ <b>Small-holder and community poles and timber plantation</b></li> <li>♣ Improved charcoal kilns linked to bioenergy woodlots</li> </ul>

# Provisional: REDD+ Strategy Options

Option	Strategic Interventions
Strategic option 4: Large-scale commercial timber plantations	<ul style="list-style-type: none"> <li>♣ <b>Commercial eucalypt transmission pole and timber plantation</b></li> <li>♣ <b>Commercial pine pole and sawlog plantation</b></li> <li>♣ <b>Improved charcoal kilns linked to plantation sites</b></li> </ul>
Strategic option 5: Rehabilitation of natural forests in the landscape	<ul style="list-style-type: none"> <li>♣ <b>Area closures of deforested areas for natural forest regeneration</b></li> <li>♣ <b>Protected natural forest management (i.e. national parks and forest reserves)</b></li> <li>♣ <b>Devolution of forest management through PFM and similar set-ups</b></li> <li>♣ <b>Traditional/customary forest management practices</b></li> </ul>
Strategic option 6: Rural electrification and renewable energy solutions	<ul style="list-style-type: none"> <li>♣ <b>Small-scale hydropower plant</b></li> <li>♣ <b>Wood-fired biogas power plant</b></li> <li>♣ <b>Solar Photovoltaic power plant</b></li> </ul>



# Provisional: REDD+ Strategy Options

Option	Strategic Interventions
Strategic option 7: Energy efficient cooking stoves	<ul style="list-style-type: none"><li>♣ For fuelwood</li><li>♣ For charcoal</li><li>♣ For biogas</li></ul>
Strategic option 8: Integrated wildfire management	<ul style="list-style-type: none"><li><b>♣ In timber plantations</b></li><li><b>♣ On woodlands</b></li><li><b>♣ On bushlands</b></li><li><b>♣ On grasslands</b></li></ul>

# FRL Elements – Key Policy Implications

Element	Policy Issue
<p><b>Data (needs);</b>            Forest area, Carbon stocks,  <b>Soils carbon,</b>  <b>Climatic zones,</b>            Biomass energy extraction,  <b>Forest Fires</b></p>	<p><b>Entities, Roles, Responsibilities:</b>            NFA, UWA, Private Sector, WCS,  <b>NARO,</b>  <b>UNMA,</b>            MEMD,  <b>NASA-UWA-Forest owners</b></p>
<p><b>Scope;</b>             Deforestation,  <b>Conservation,</b>            Reforestation,</p>	<p><b>Participating Entities, Modalities, Roles, Responsibilities, Resources needed:</b>            NFA, Local Gvt, CSO  <b>UWA, NFA, Local Gvt, CSO</b>            Private Sector, NFA, Local Gvt, CSO</p>

# Current Efforts to Save Forests

- Boundary opening and marking with pillars, 1000km done, 9000 still remaining and not funded
- Legally removing encroachers from 60,000ha out of 150,000ha
- Restoring degraded area thru planting and natural regeneration
- 60 agreements made with communities for improved protection- 1 MoU with UWA
- 13,000ha of plantations out of 50,000ha established by NFA,
- 60,000ha out of 150,000ha established by private sector in CFRs
- Developing eco-tourist together in partnership with private sector

# Challenges

- Encroachment of CFRs
- Illegal issue of land titles in CFRs- at least 175
- Insufficient funding
- Halting of evictions order in 2006 of encroachers from CFRs was abused. No more.
- A small EPPF that is not subordinate to NFA and not well facilitated
- Over dependence of the population on charcoal and firewood

# Recommendations

- Official pronouncement to evict encroachers from CFRs
- Increase the man power in EPPU that is answerable to NFA. Preferred plan is to have a resident force.
- Need for gov't support for re-demarcation of 9,000 Km of external boundaries of CFRs
- Increase the role or CFM in forest management
- Increase investment in Commercial tree plantations to reduce pressure from natural forests
- Gov't should regulate growing and use of trees and forests on private land

# Conclusion

- Protected areas have helped conserve the only THFs remaining in the country
- Remaining THFs are in CFR and NP are managed under different mandates to supply different goods and services
- Plantation forests, commercial agriculture and built up areas are increasing
- Conservation and monitoring needs funding
- Environment protection has in several cases succumbed to drivers of deforestation and forest degradation

**Thanks for listening**