

# Myanmar Agro-ecological Atlas

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Facilitated by the  
National Economic and Social Advisory Council  
and the  
Settlements and Land Records Department  
Ministry of Agriculture & Irrigation



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WorldClim

***Please notify errors and omissions to:***

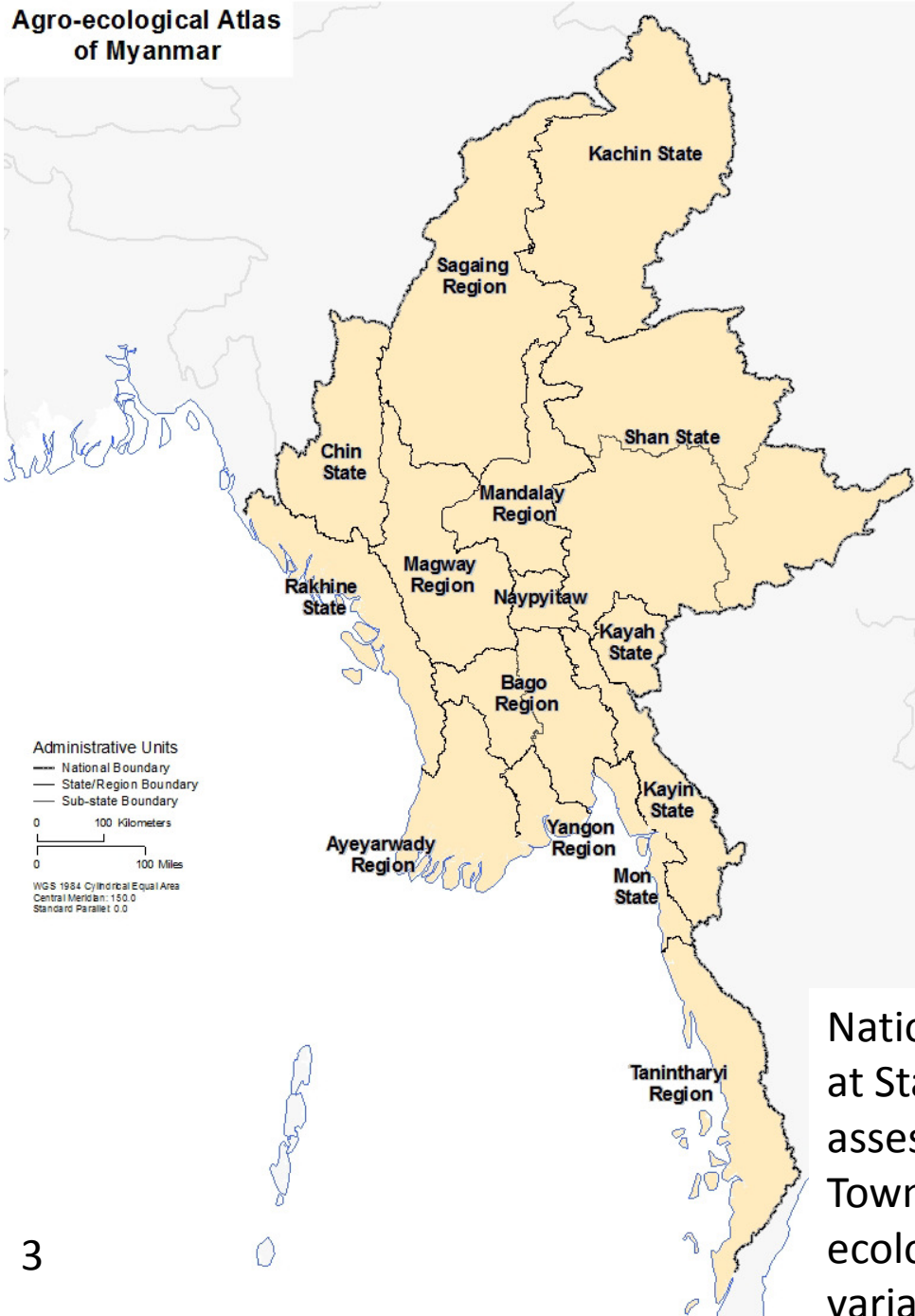
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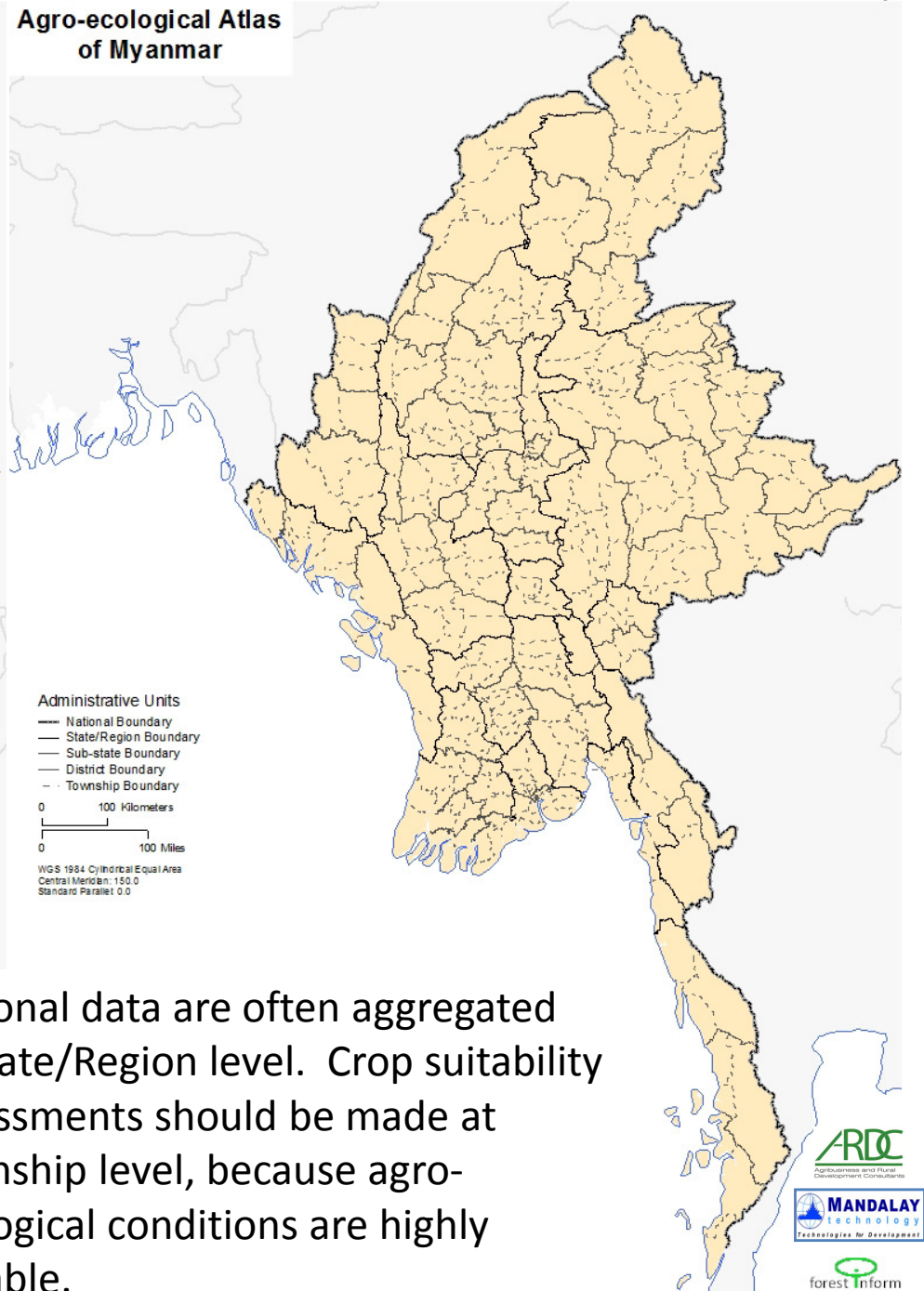
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02 States and Regions



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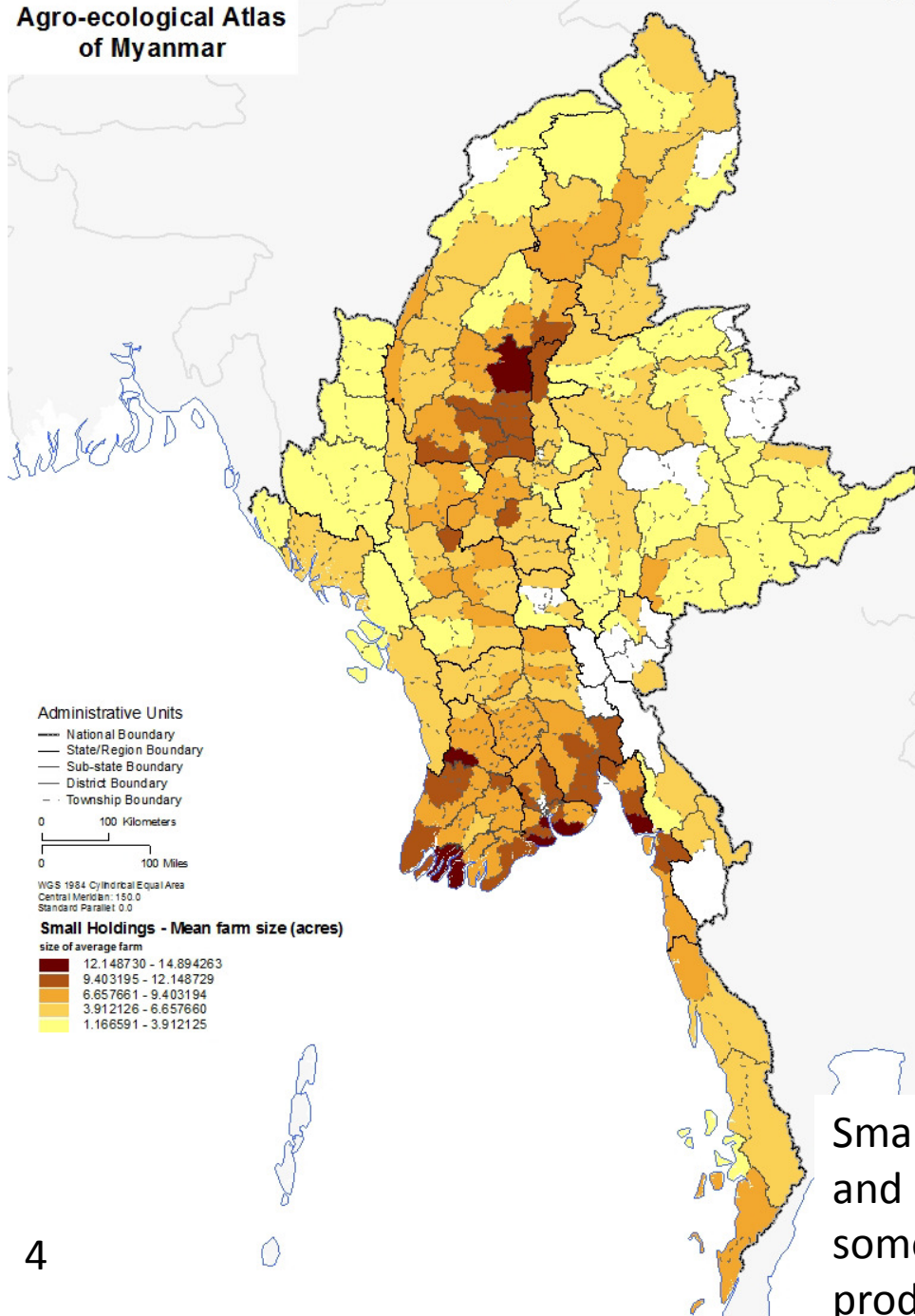
03 Districts and Townships



National data are often aggregated at State/Region level. Crop suitability assessments should be made at Township level, because agro-ecological conditions are highly variable.

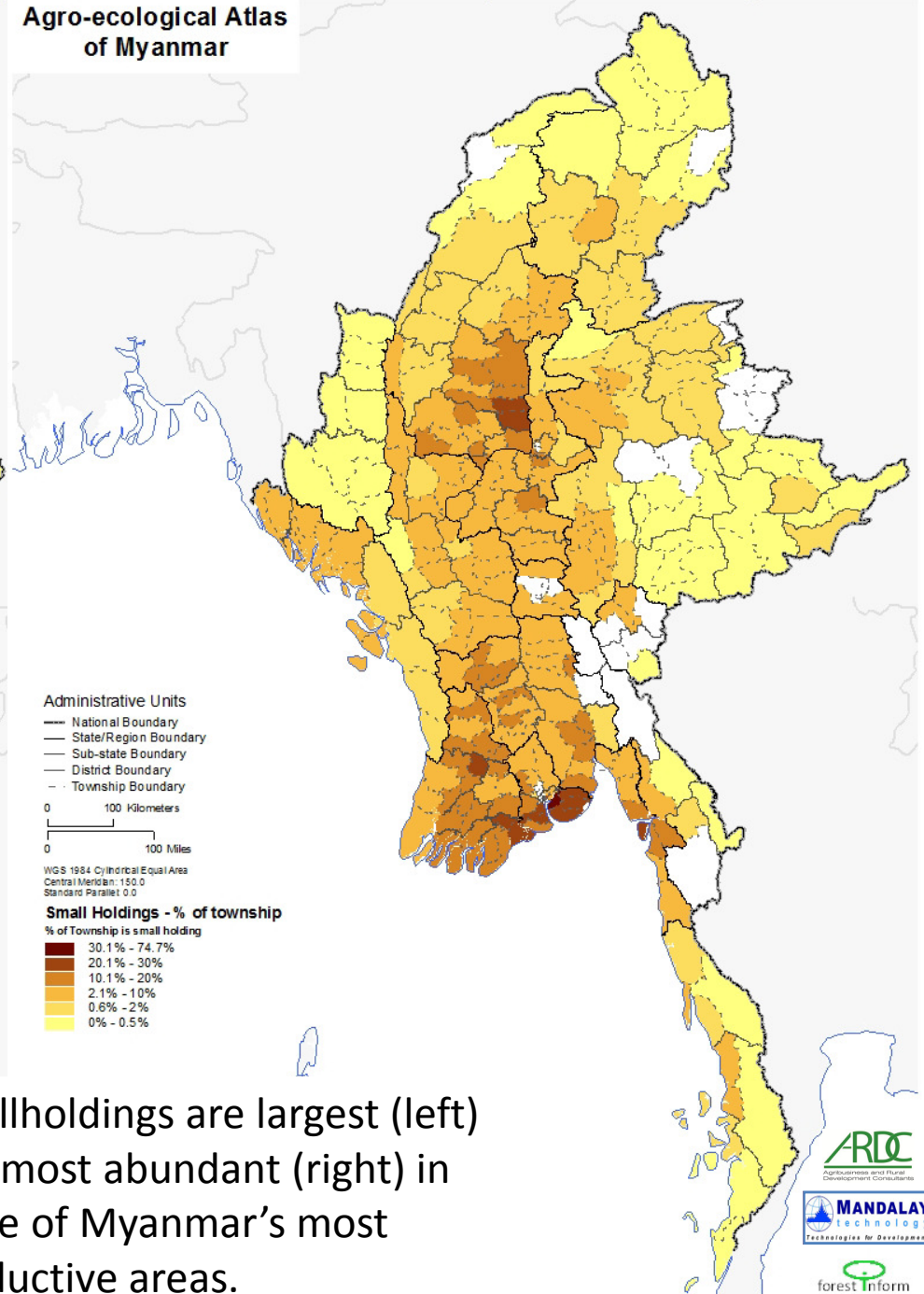
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38 Township Census 2010 Mean Small Holding Size (ac)



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39 Township Census 2010 Small Holdings % of Total Area

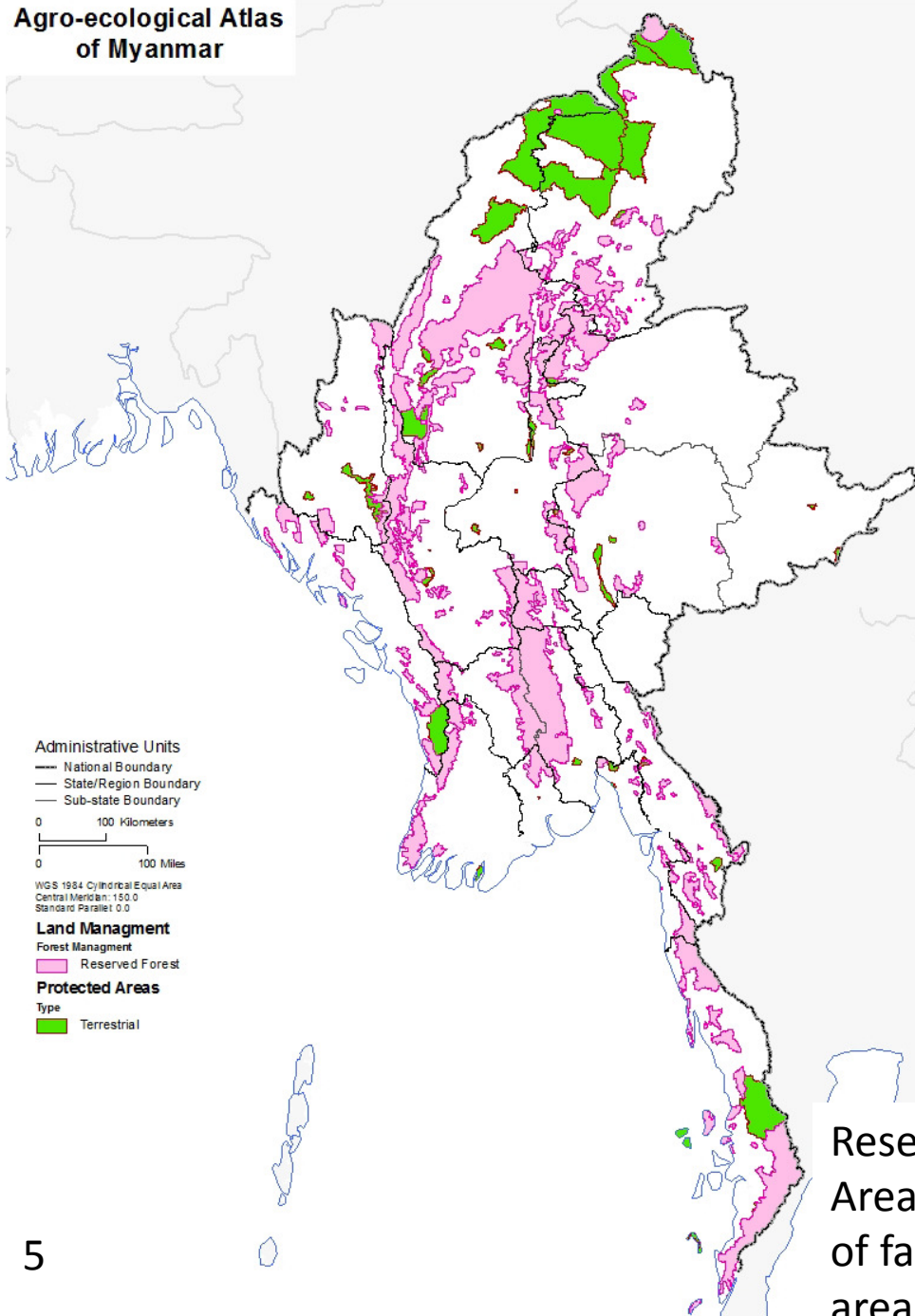


Smallholdings are largest (left) and most abundant (right) in some of Myanmar's most productive areas.



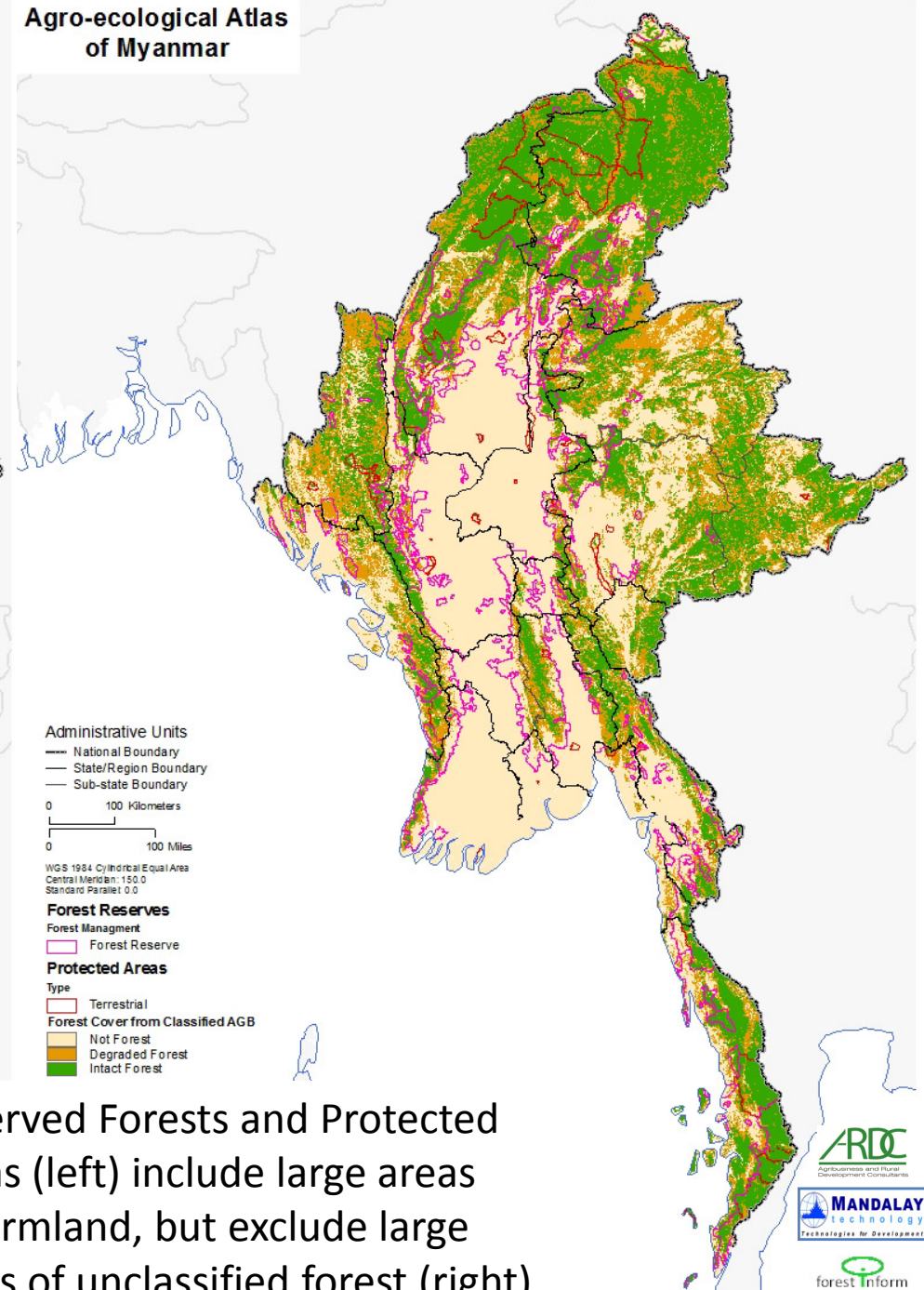
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04 Reserved Forests and Nature Reserves



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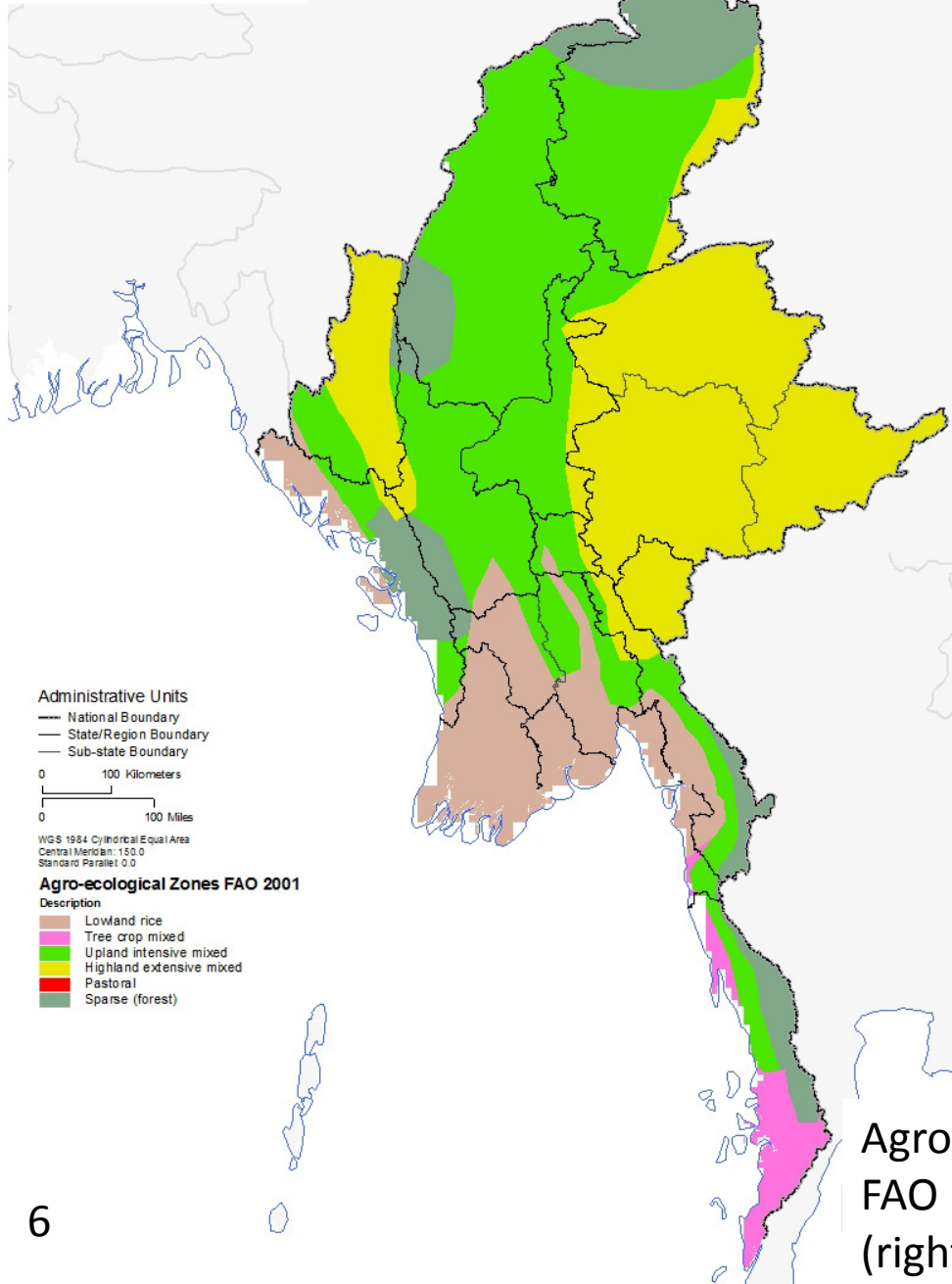
05 Reserved Forests, Nature Reserves and Forest Cover



Reserved Forests and Protected Areas (left) include large areas of farmland, but exclude large areas of unclassified forest (right).

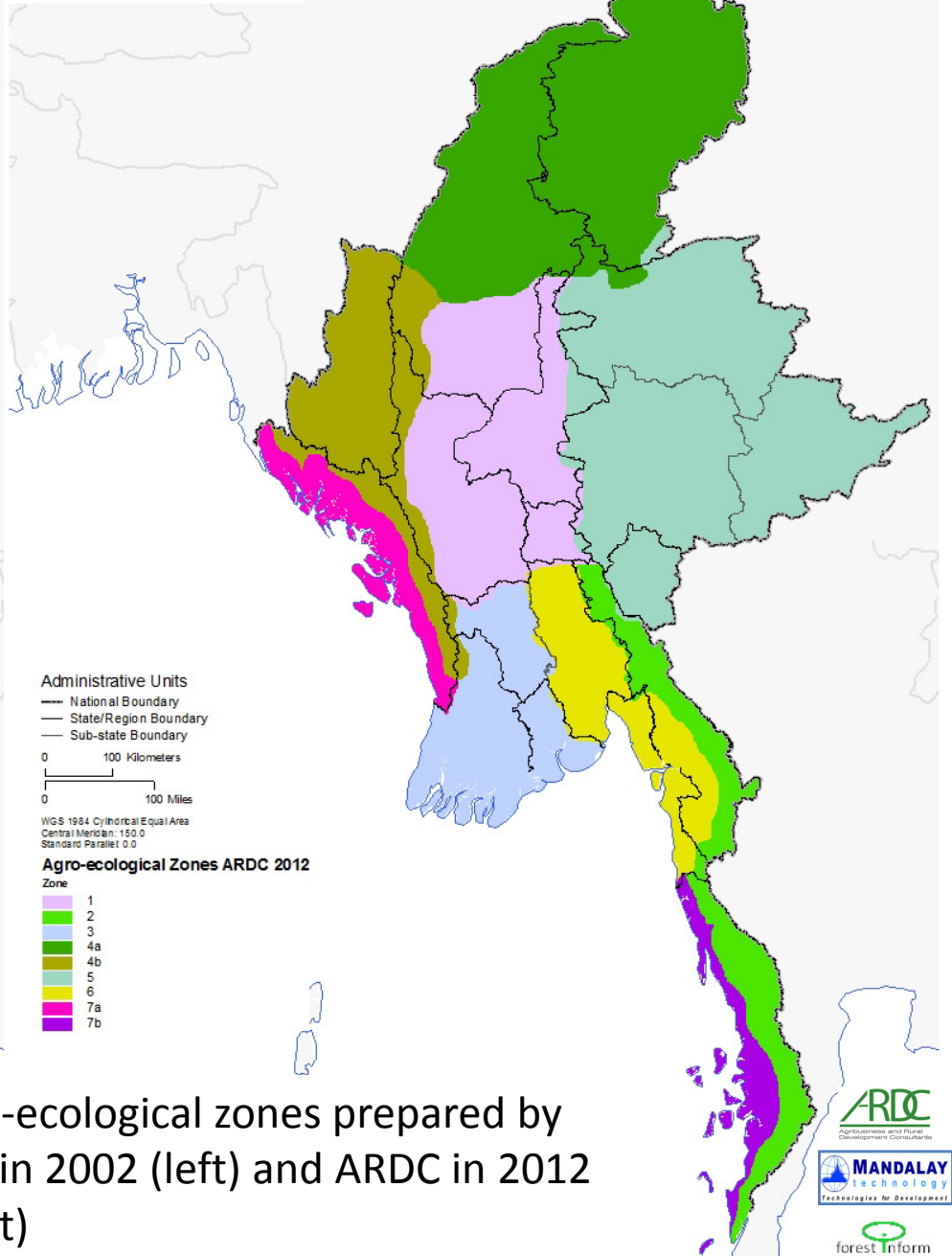
06 Agro-ecological Zones (FAO 2001)

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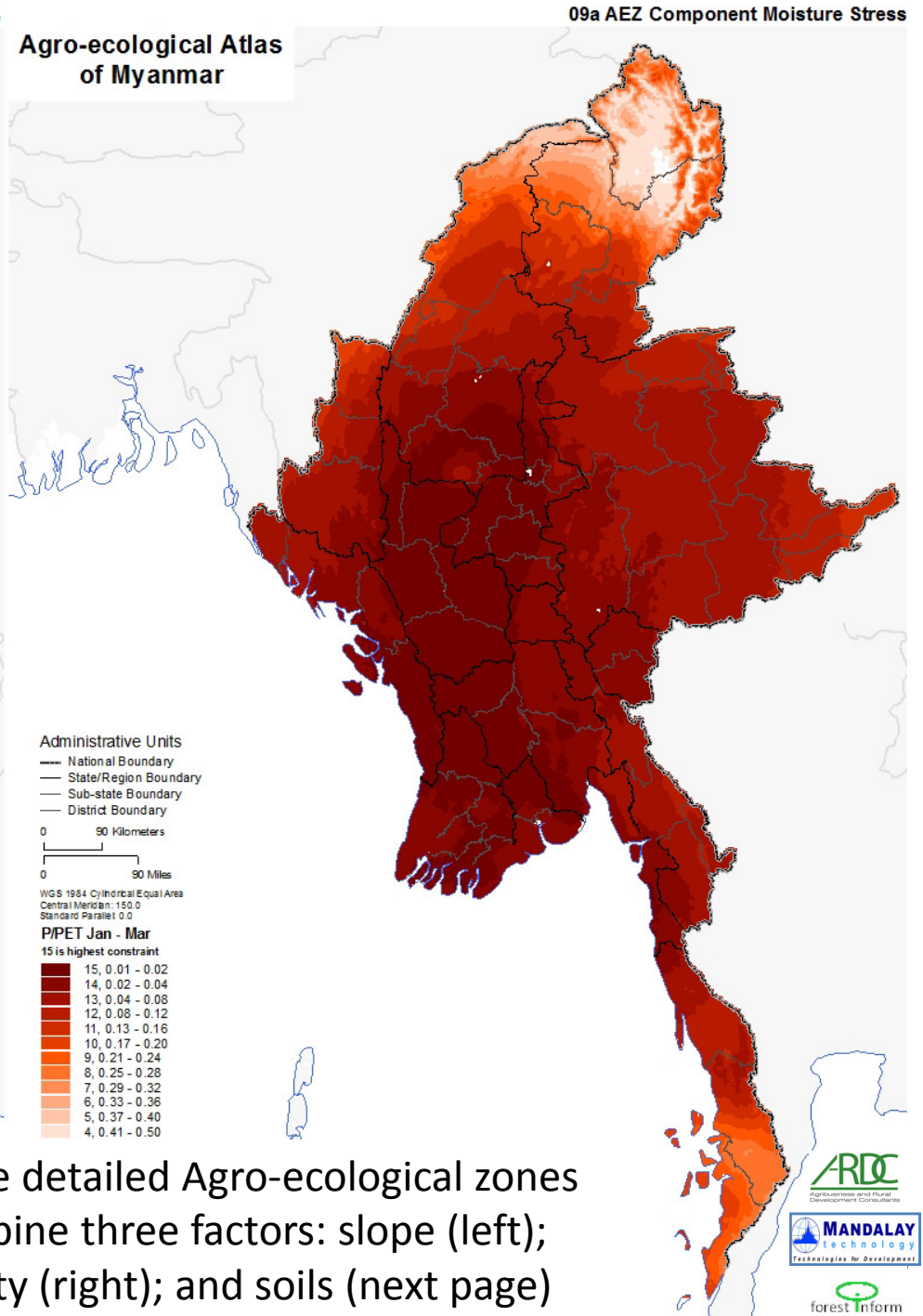
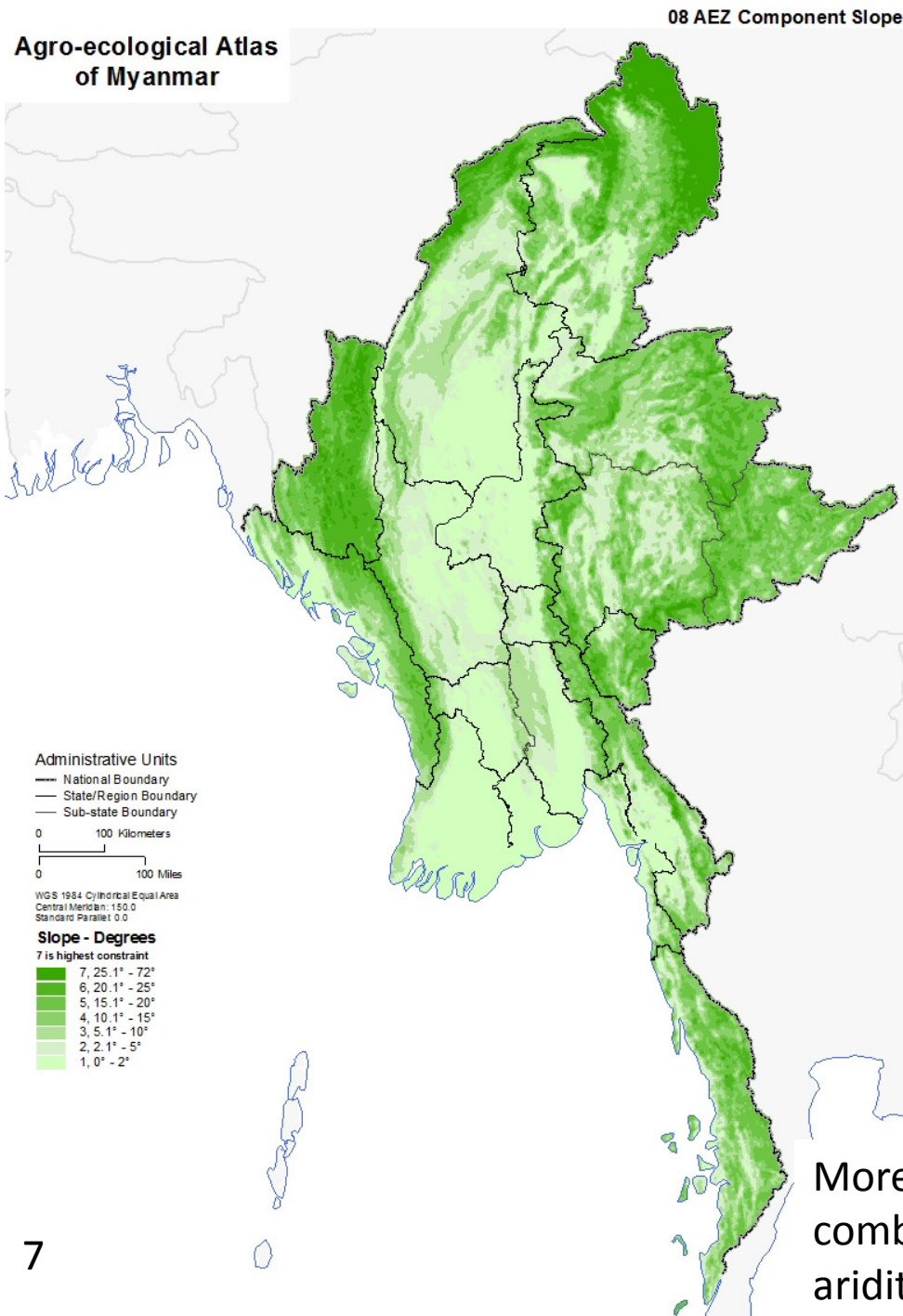
07 Agro-ecological Zones (ARDC 2012)

### Agro-ecological Atlas of Myanmar



Agro-ecological zones prepared by FAO in 2002 (left) and ARDC in 2012 (right)

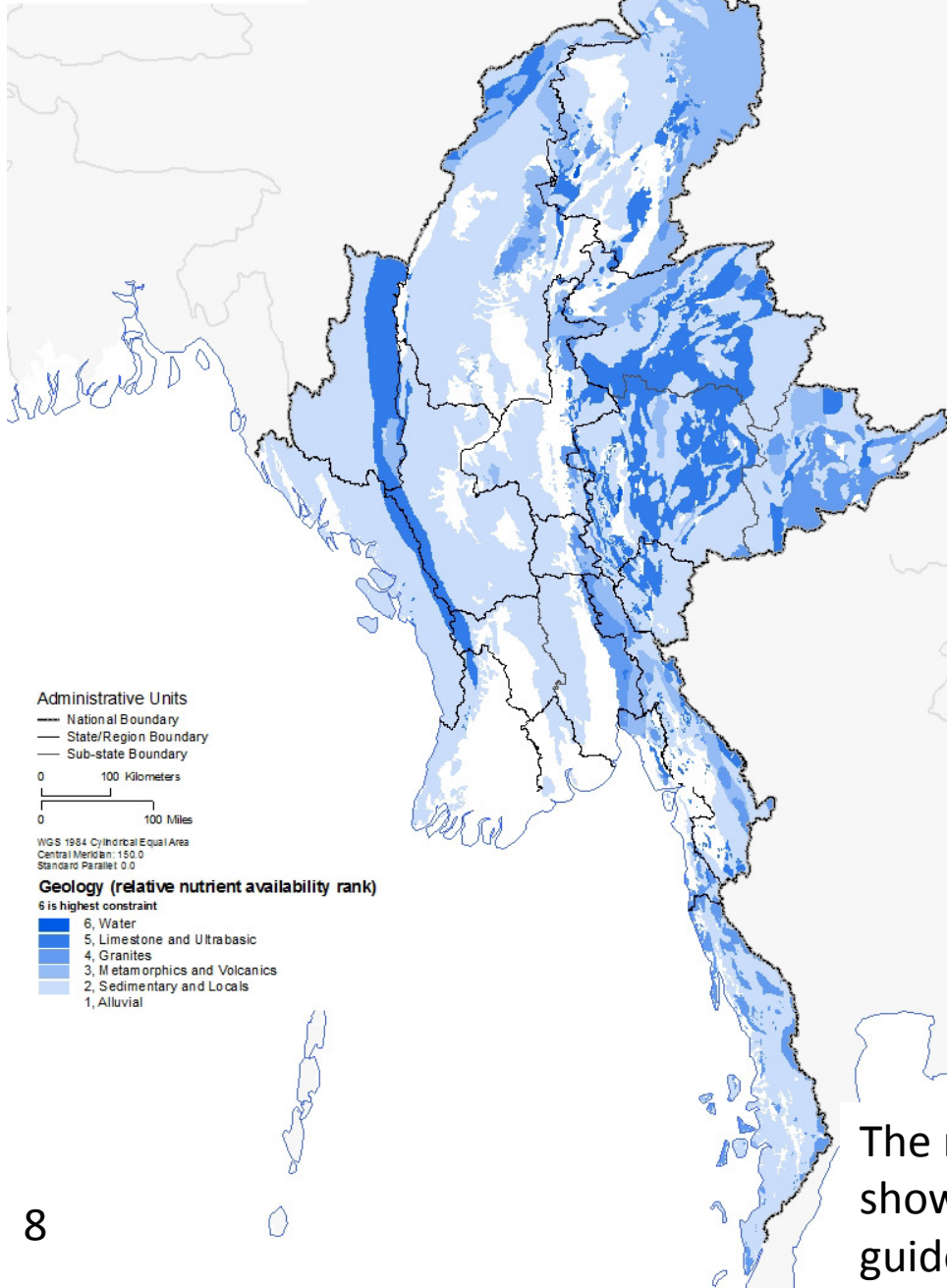




More detailed Agro-ecological zones combine three factors: slope (left); aridity (right); and soils (next page)

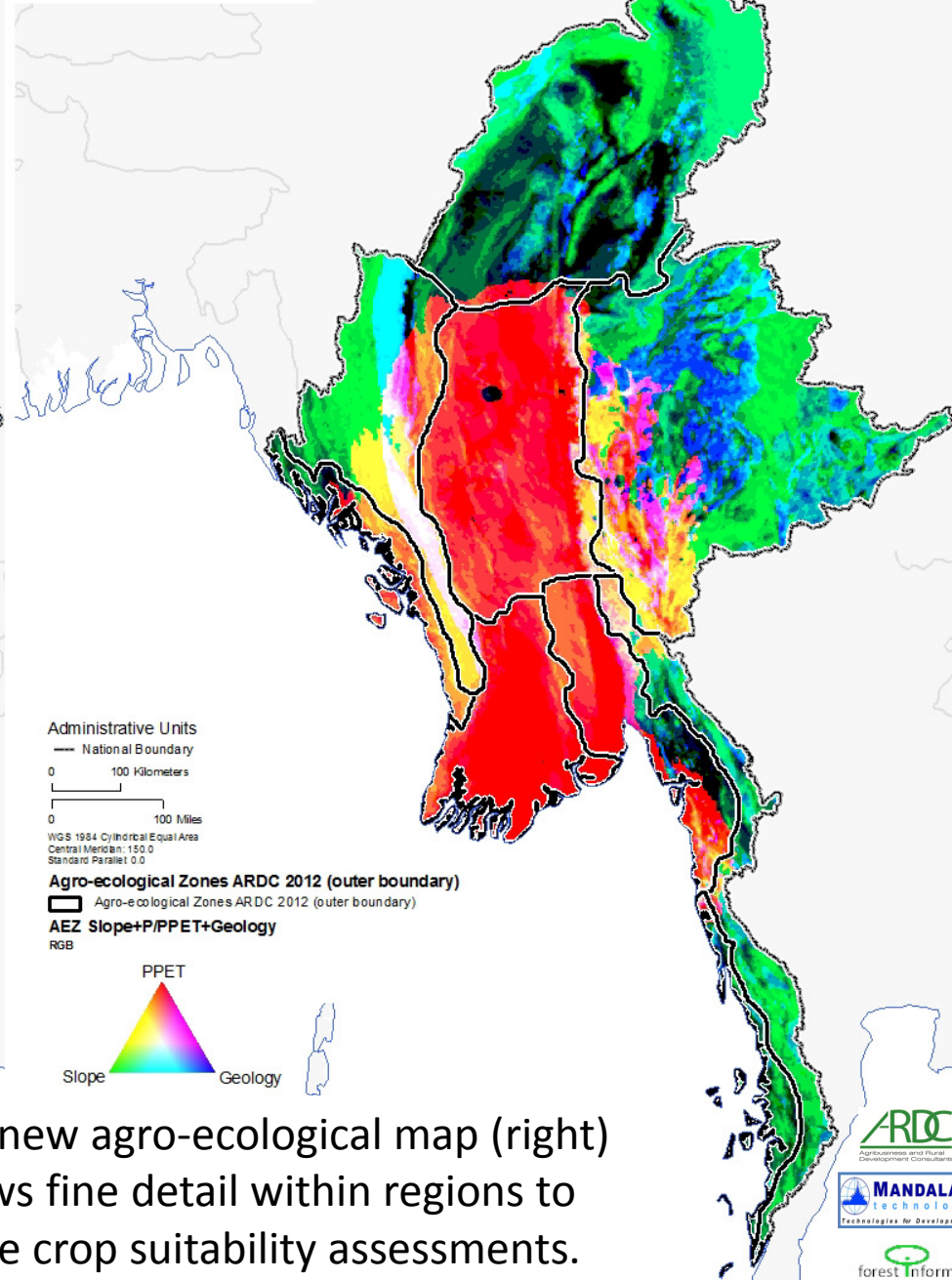
10 AEZ Component Nutrient Availability

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11 AEZ Integrating Three Components

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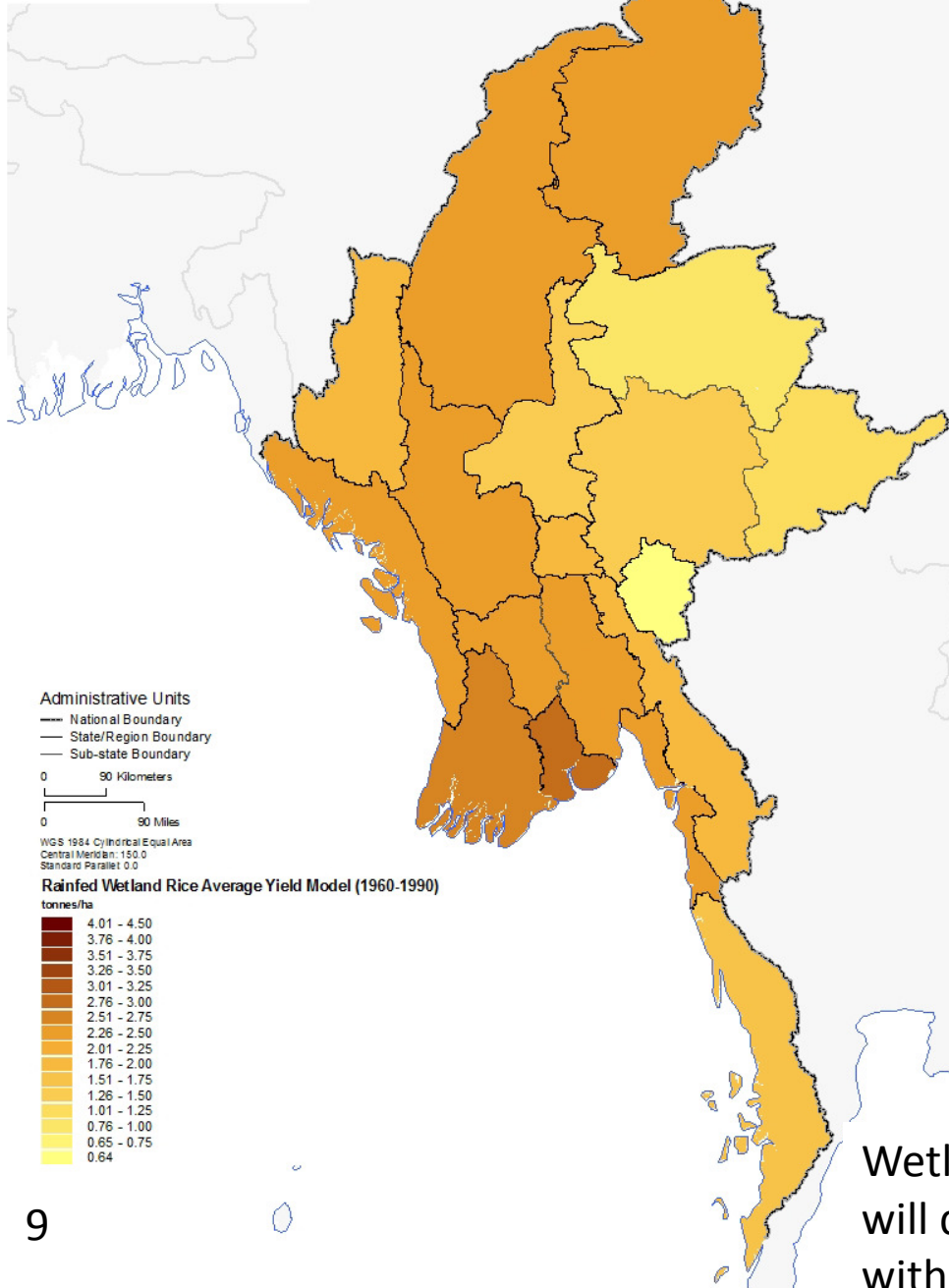
The new agro-ecological map (right) shows fine detail within regions to guide crop suitability assessments.





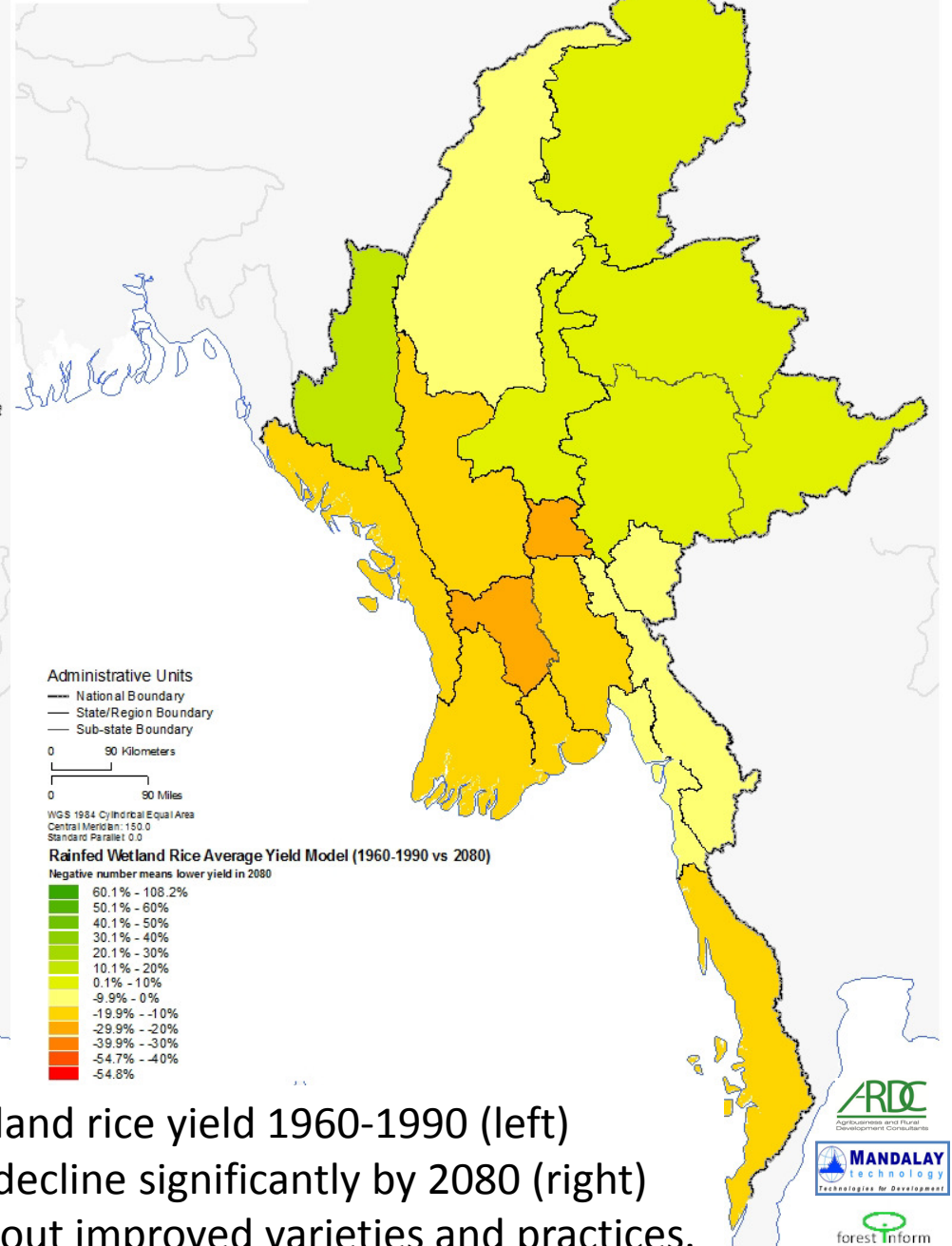
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16a Rainfed Wetland Rice Average Yield Model (1960-1990)



# Agro-ecological Atlas of Myanmar

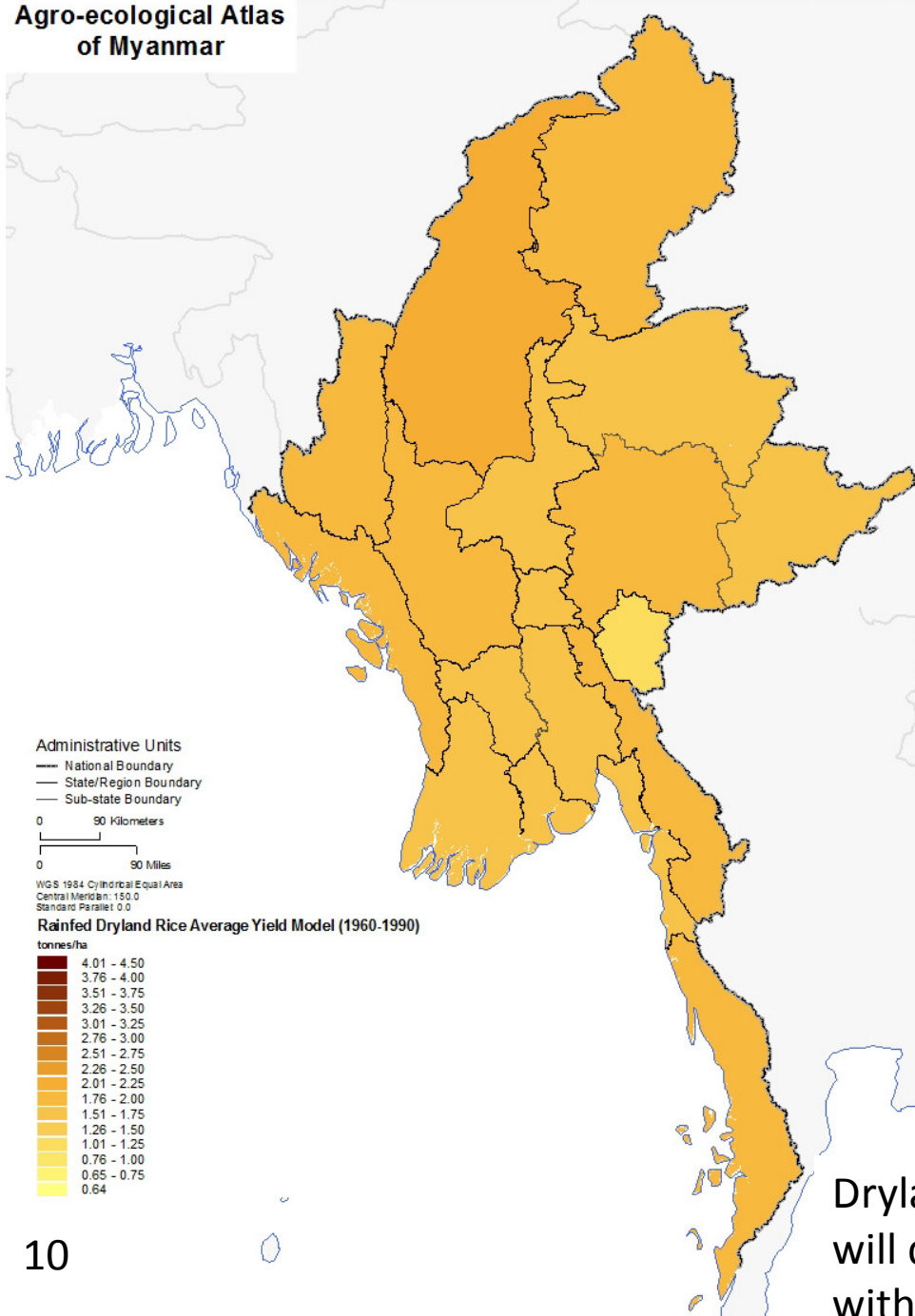
17a Rainfed Wetland Rice Average Yield Model (1960-1990 vs 2080)



Wetland rice yield 1960-1990 (left) will decline significantly by 2080 (right) without improved varieties and practices.

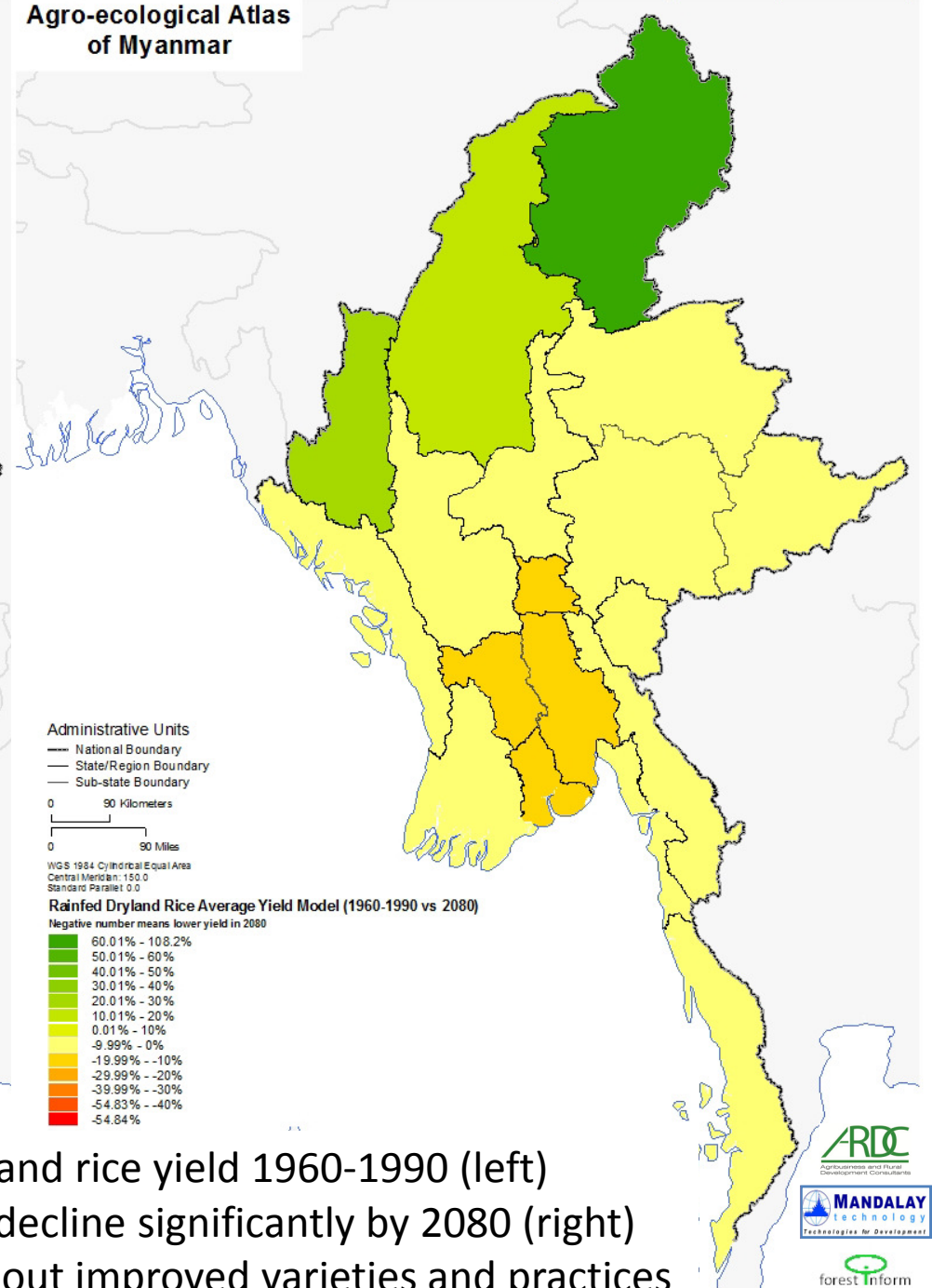
# Agro-ecological Atlas of Myanmar

18a Rainfed Dryland Rice Average Yield Model (1960-1990)

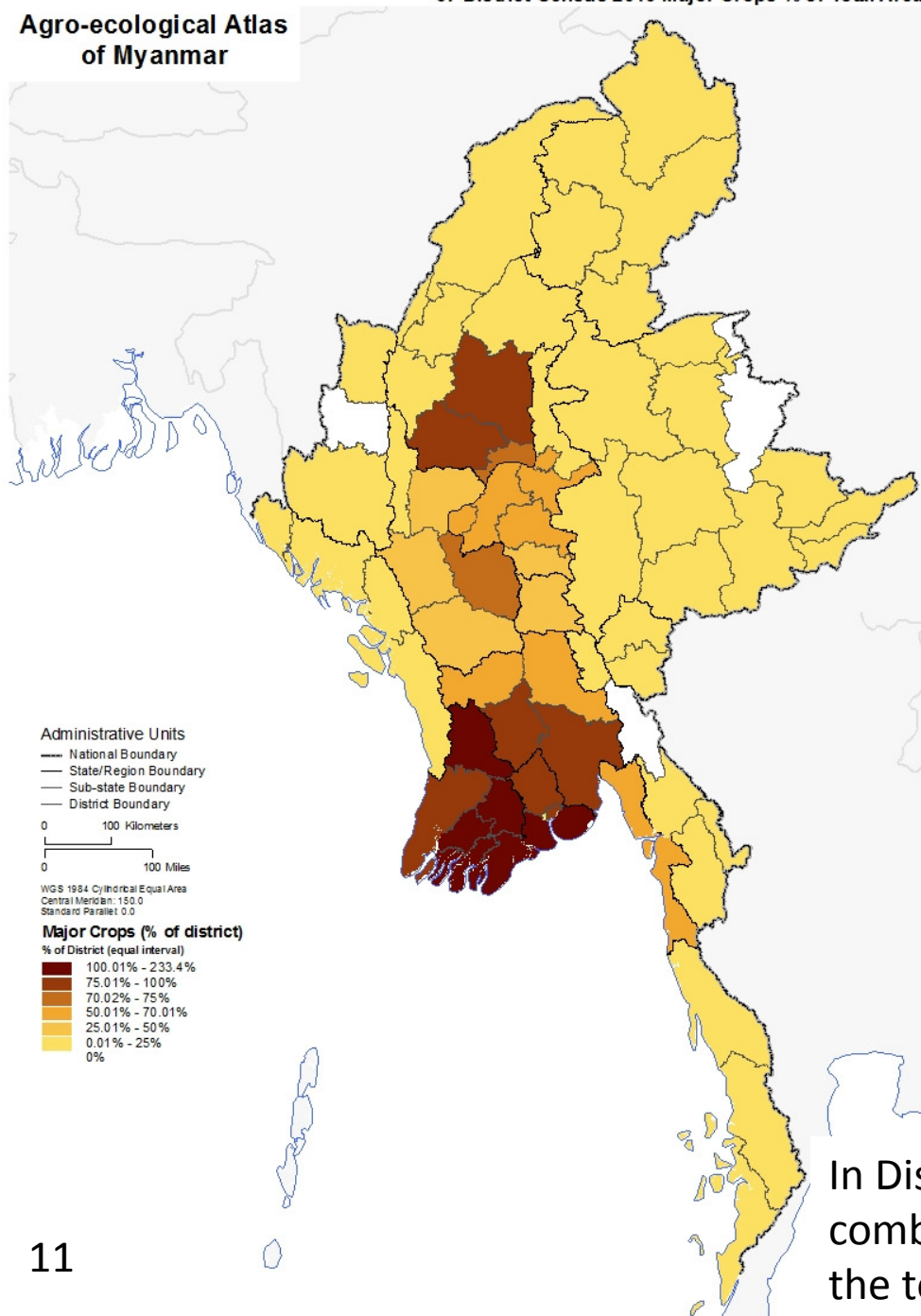


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19a Rainfed Dryland Rice Average Yield Model (1960-1990 vs 2080)



Dryland rice yield 1960-1990 (left) will decline significantly by 2080 (right) without improved varieties and practices



## Recommendations for additional maps in the Agro-ecological Atlas:

1. Identify farmed land outside surveyed and titled “Kwin Map” land
2. Include Township data on planted area and crop yield.
3. Identify current crops in commercial cropping areas.
4. Identify new areas suitable for current crops.
5. Assess impacts of climate change on rice yield with improved varieties and practices.

In Districts that practice double cropping, combined cropping area can be greater than the total area of land in the District.



| Map Theme                                   | Reference   |
|---|---|
| Agro-ecological zones (2002)                | Fischer, G., H. van Velthuis, M. Shah and F. Nachtergaele, 2002. Global Agro-ecological Assessment for Agriculture in the 21st Century: Methodology and Results. IIASA, Austria and FAO, Rome.  |
| Agro-ecological zones (2012)                | Agribusiness and Rural Development Consultants (ARDC), 2012. Study on Variations in Support Activities in Different Agro-ecological Zones and Socio-economic Situation of Myanmar.  |
| Modeled rice yield                          | IIASA/FAO, 2012. Global Agro-ecological Zones (GAEZ v3.0). IIASA, Laxenburg, Austria and FAO, Rome, Italy.  |
| Moisture stress                             | PET (Jan-Mar) from MODIS Global Evapotranspiration Project (MOD16), 2013. University of Montana: NTSG - Numerical Terradynamic Simulation Group. Accessed from <a href="http://www.ntsug.umt.edu/project/et">www.ntsug.umt.edu/project/et</a>   |
| Moisture stress                             | Precipitation (Jan-Mar) from Hijmans, R.J., S.E. Cameron, J.L. Parra, P.G. Jones and A. Jarvis, 2005. Very high resolution interpolated climate surfaces for global land areas. International Journal of Climatology 25: 1965-1978. Data accessed at <a href="http://www.worldclim.org">http://www.worldclim.org</a>  |
| Nutrient availability                       | Digital Agricultural Atlas of Myanmar, 2001. Geology of the Union of Myanmar. Compiled through screen digitizing by Suntac Technologies, Inc.   |
| Paddy rice sufficiency (State/Region level) | Chun Hlaing Win, 2013. Distribution of agricultural lands under paddy in different regions. Annex Table 1: Paddy sufficiency situation in Myanmar, 2010. pp. 23-46 in J. G. Castano (ed.). Thematic Papers on Myanmar Census of Agriculture 2010. Naypyitaw, Myanmar: Republic of the Union of Myanmar, Ministry of Agriculture and Irrigation, Settlement and Land Records Department. |

| Map Theme                                       | Reference   |
|---|---|
| Protected Area boundaries                       | Myanmar Protected Areas digital data assembled by the Wildlife Conservation Society, 2013   |
| Reported crop production (District level)       | Settlement and Land Records Department (SLRD), 2013. Selected Tables by Location of the Parcels pp. 169-189 in Report on Myanmar Census of Agriculture 2010. Naypyitaw, Myanmar: Republic of the Union of Myanmar, Ministry of Agriculture and Irrigation, Settlement and Land Records Department.                        |
| Reserved Forest boundaries                      | Myanmar National 1:250,000 Scale Topographic Map images assembled by Landmine Mapper accessed at <a href="http://www.mekongmaps.com">http://www.mekongmaps.com</a>  |
| Slope   | Created from SRTM data: Jarvis, A., H.I. Reuter, A. Nelson, E. Guevara, 2008, Hole-filled SRTM for the globe Version 4, available from the CGIAR-CSI SRTM 90m Database at <a href="http://srtm.csi.cgiar.org">http://srtm.csi.cgiar.org</a>   |
| Smallholdings (Township level)                  | Settlement and Land Records Department (SLRD), 2013. Annex III. Computed standard errors and coefficients of variation pp. 241-256 in Report on Myanmar Census of Agriculture 2010. Naypyitaw, Myanmar: Republic of the Union of Myanmar, Ministry of Agriculture and Irrigation, Settlement and Land Records Department. |
| State, Region, District and Township boundaries | Myanmar Information Management Unit (MIMU) accessed August 2013 at <a href="http://www.themimu.info">http://www.themimu.info</a>  |