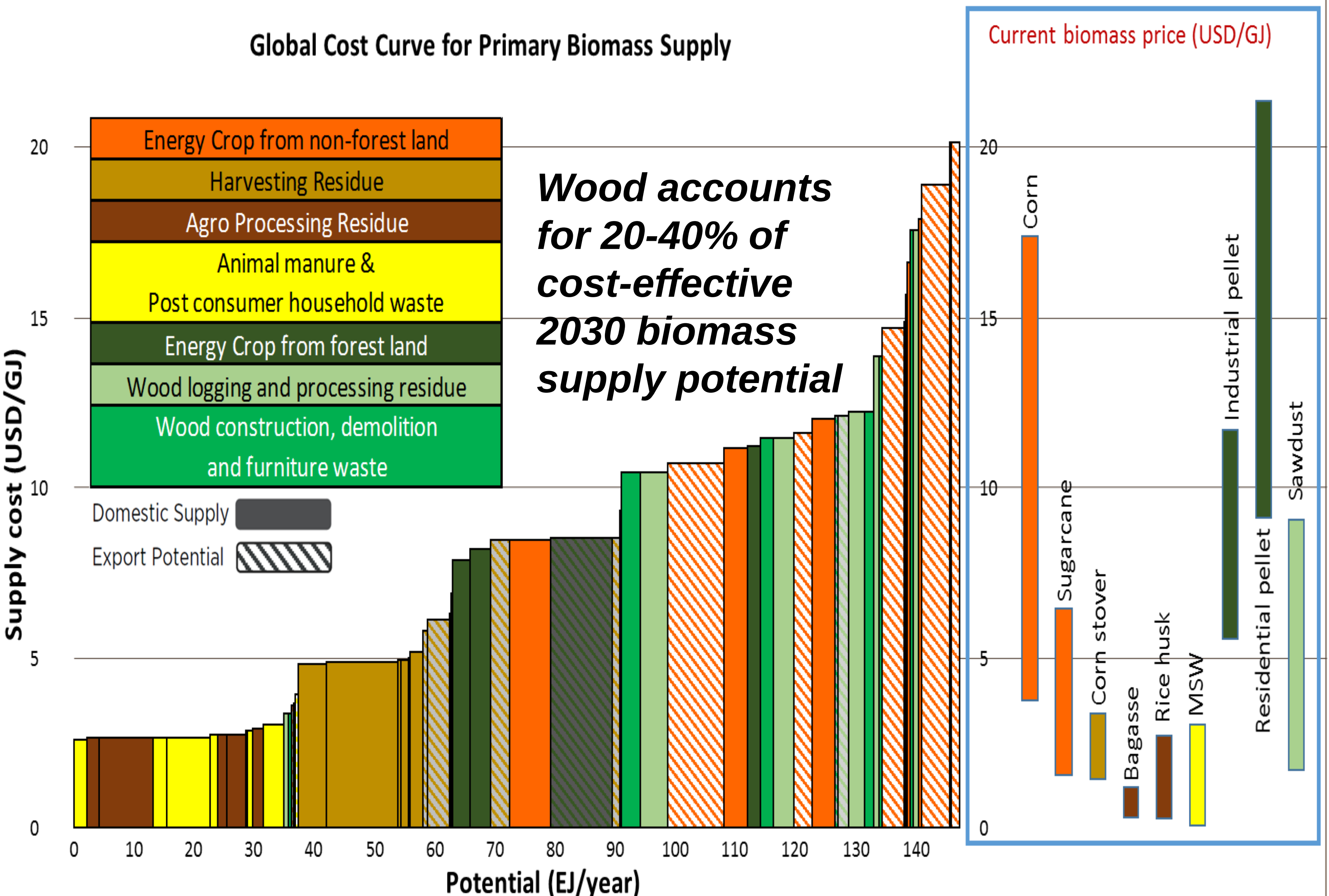
Global Demand for Solid Biomass: Sustainable Ways to Meet Growing Needs

Expert Workshop
on Sustainable
Wood Energy
Value Chains
Frankfurt am Main
1-2 March 2016

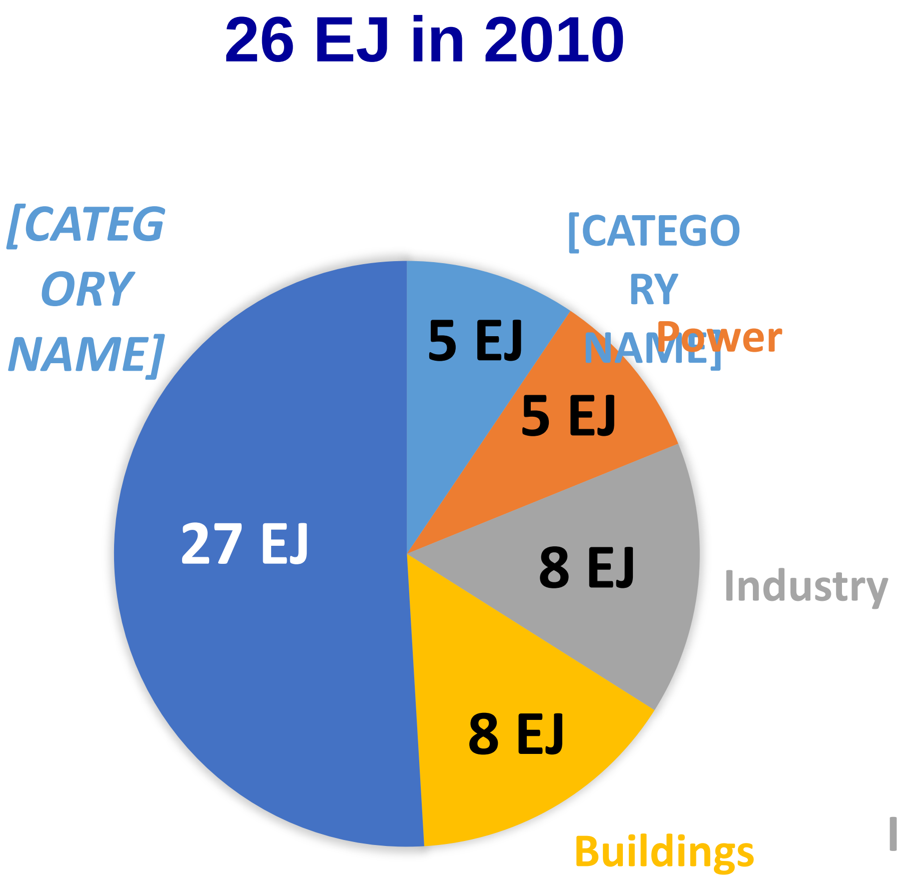
Jeff Skeer, IRENA
Innovation and
Technology Centre

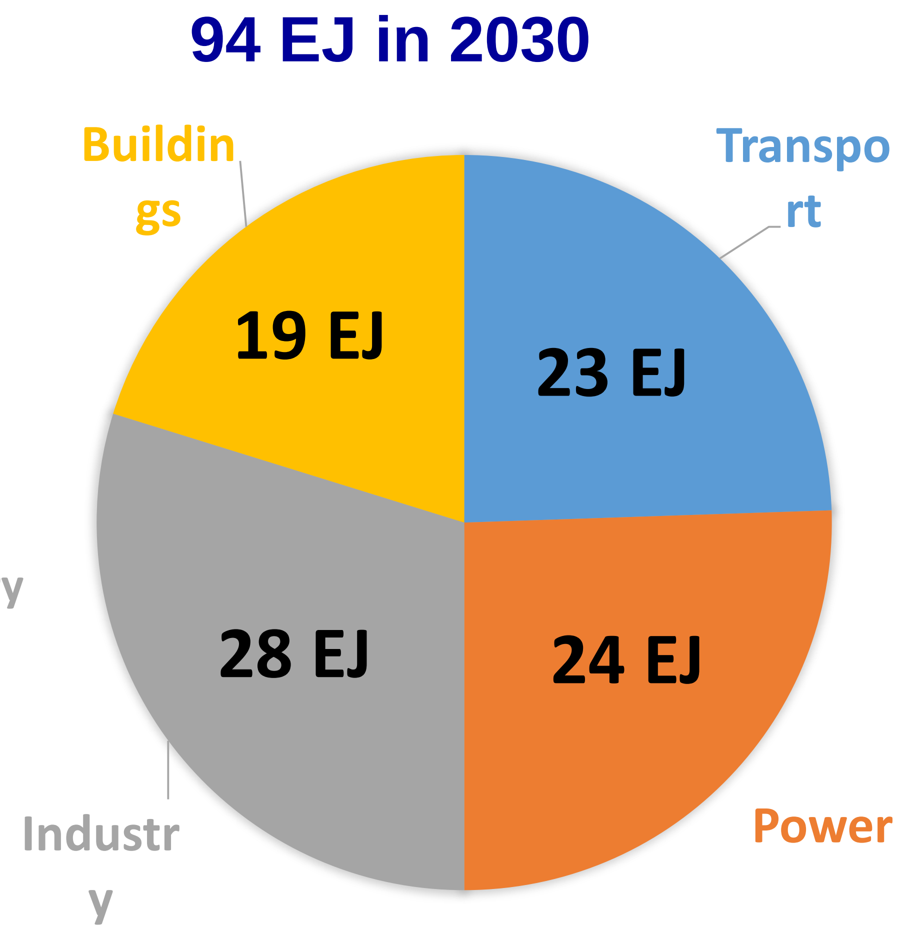
Biomass Supply Curve (REmap 2030)



Wood accounts for 20-40% of cost-effective 2030 biomass supply potential

Modern Biomass May More than Triple



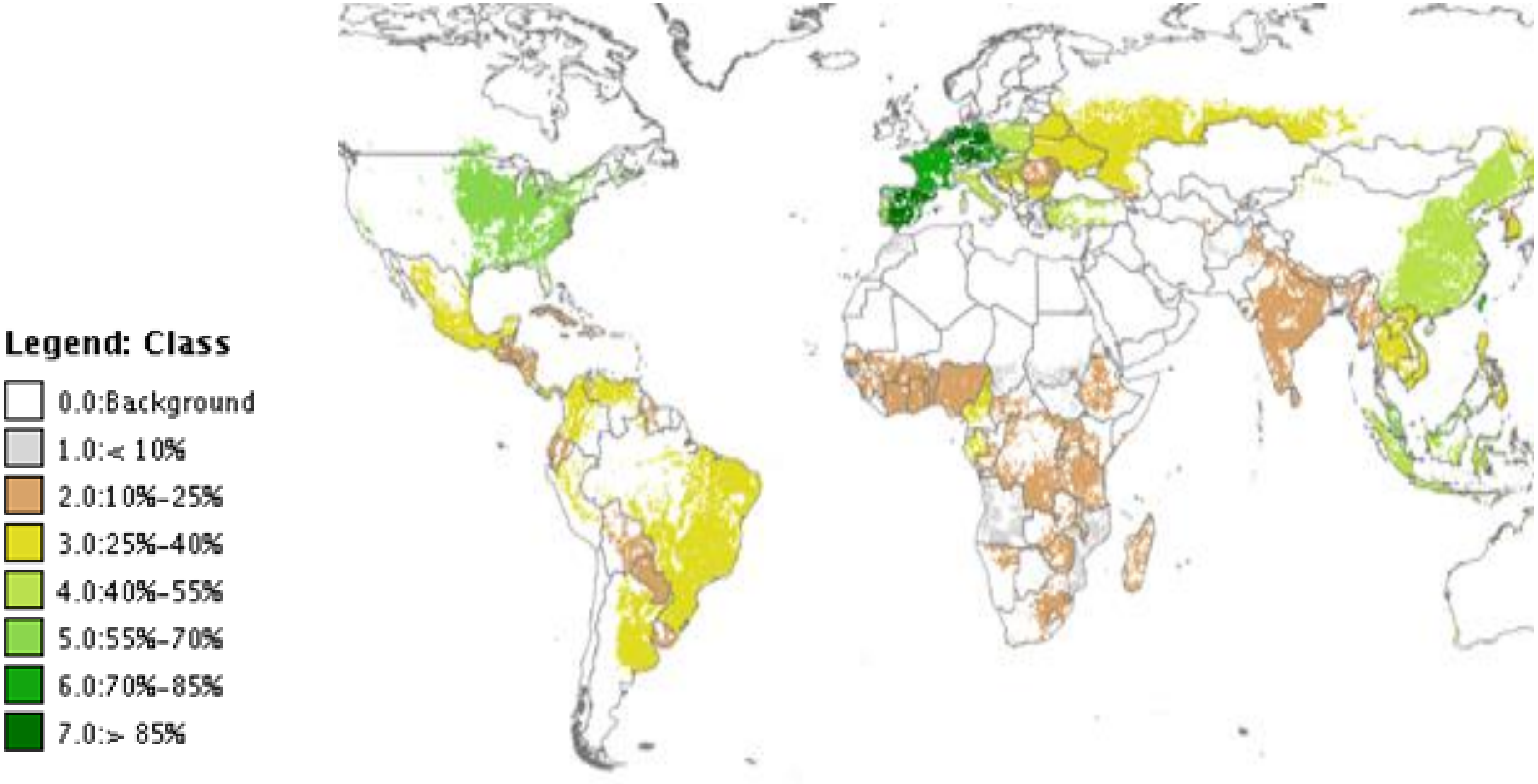


Pockets of Sustainable Bioenergy

- Agriculture
  - Residues associated with growing food production
  - Higher yields on cropland (sustainable intensification)
  - Efficient livestock husbandry: freeing up pastureland
  - Reduced food losses and waste: freeing up farmland
- Forestry
  - Residues (complementary fellings on timberland)
  - Higher yields in planted forests (better management)
  - Afforestation of degraded forest and marginal lands
- Algae

Yield Gap: Illustrated by Maize

Ratio of Actual to Potential Yield for Maize (Year 2000)

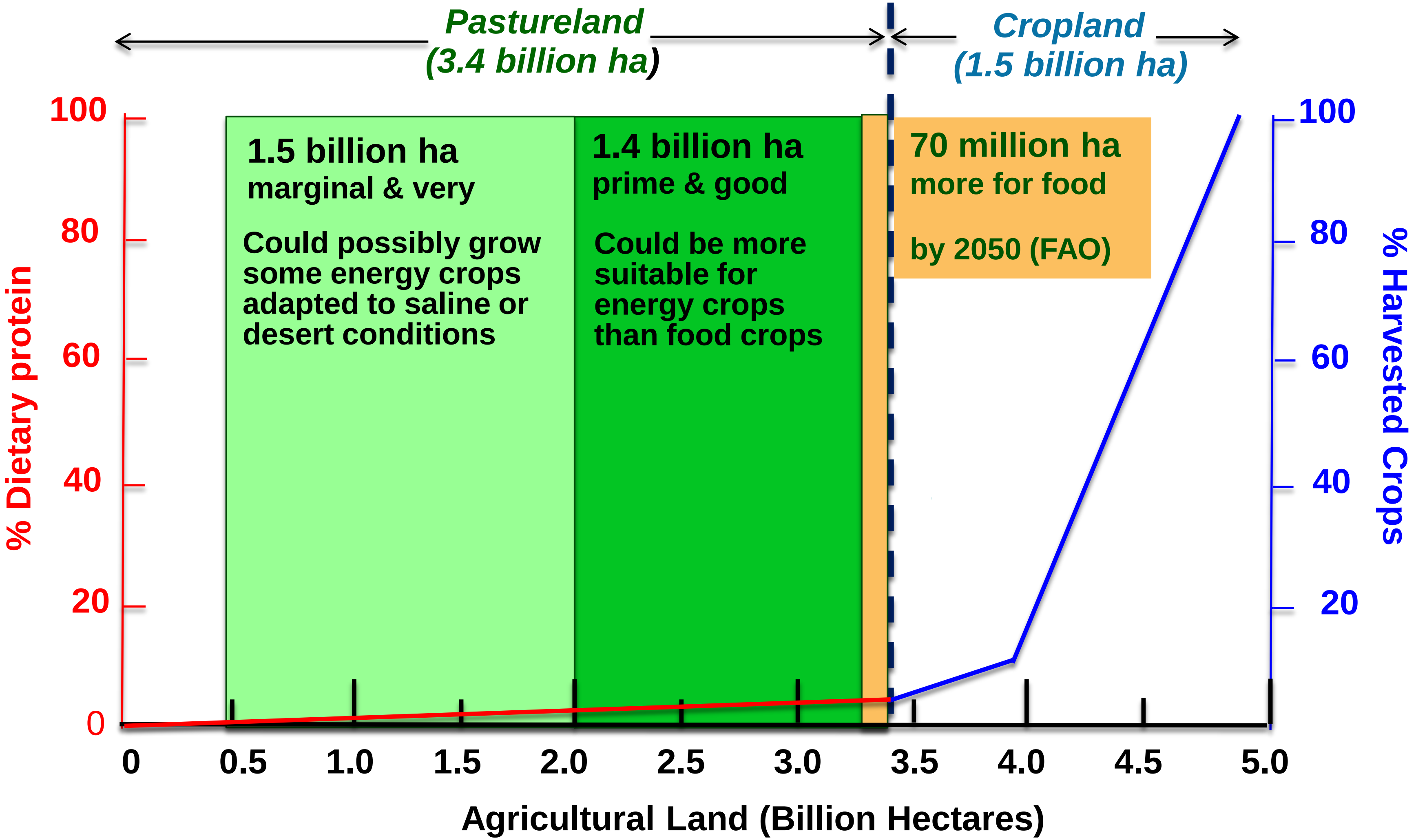

Legend: Class
0.0:Background
1.0:< 10%
2.0:10%-25%
3.0:25%-40%
4.0:40%-55%
5.0:55%-70%
6.0:70%-85%
7.0:> 85%

Source: Global Agro-Ecological Zones

Pastureland Available Globally for Biofuel Crops

IRENA

International Renewable Energy Agency



Best Practice Losses by Food Chain Stage

Food Type	Agricultural Production	Postharvest Handling & Storage	Processing and Packaging	Distribution: Supermarket Retail	Consumption
Cereals	2%	2%	3.5%	2%	1%
Roots & Tubers	6%	7%	10%	3%	2%
Oilseeds & Pulses	6%	0%	5%	1%	1%
Fruits & Vegetables	10%	4%	2%	8%	5%
Meat	2.9%	0.2%	5%	4%	2%
Milk	3.5%	0.5%	0.1%	0.5%	0.1%

Potential Land for Solid Biomass

- **Closing the Yield Gap: 550 M ha**
- **Better Use of Pasture Land: 950 M ha**
- **Reduced Food Chain Losses: 300 M ha**
- **Reafforestation: 350 M ha**
- **TOTAL: OVER 2 BILLION HECTARES, 300 EJ**

Policies to Boost Solid Biomass

- ***Accelerate improvement of crop yields*** by expanding extension services to spread modern farming techniques.
- Improve understanding of ***logistical approaches*** for cost-effective harvesting of farm and forest residues.
- Collect ***comprehensive data*** on land that could be used for sustainable ***wood and grass crops***, including likely yields.
- Conduct in-depth research on ***practices for cultivating rapidly growing trees and grasses*** on pastureland that could sequester carbon and enhance biodiversity.
- Institute ***more secure land tenure*** and ***better governance*** to provide incentives for more intensive land management.
- Provide Incentives to plant ***trees on degraded lands.***