

The background of the slide features abstract, overlapping green geometric shapes, primarily triangles and polygons, in various shades of green, ranging from light lime to dark forest green. These shapes are concentrated on the right side and bottom, creating a modern, dynamic feel.

# Linking Forests with “Zero Hunger Challenge”

United for a Sustainable World

Amauri Molina  
INAB, Guatemala, 2014.

# Content



World Context

Food Security

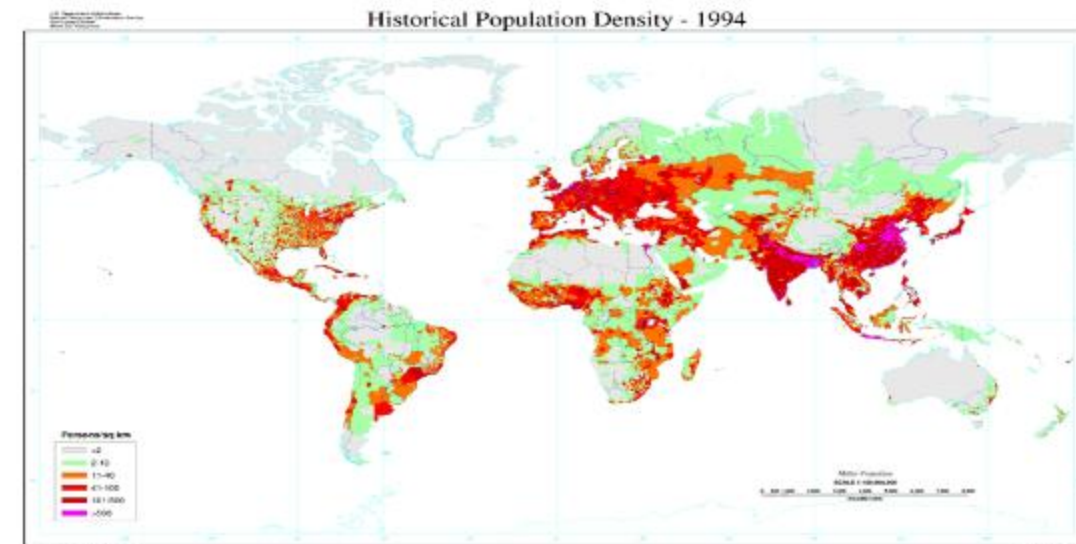
Pillars of Zero Hunger Challenge

Forests and their relation with Zero Hunger Challenge

Areas to reinforce and Recommendations

# World Context

- ▶ 925 million hungry people in the world (14%)
- ▶ Commitment to reduce hunger and extreme poverty by half, proportion of people that suffer hunger for 2015 (ODM 2015)
- ▶ For the above worldwide distribution/production of food, the population expanded by 70%
- ▶ Difficult objective to fulfill because of the consequences of variability and climate change



# Food Security

Situation that ensures all people to have at all times, physical, social and affordable access to sufficient, safe and nutritious food to satisfy their dietary needs and food preferences for an active and healthy life.  
(FAO, 1996)

## Pillars

- Availability
- Access
- Selection and use
- Provision stability

# Pillars of Zero Hunger Challenge

## Pillars

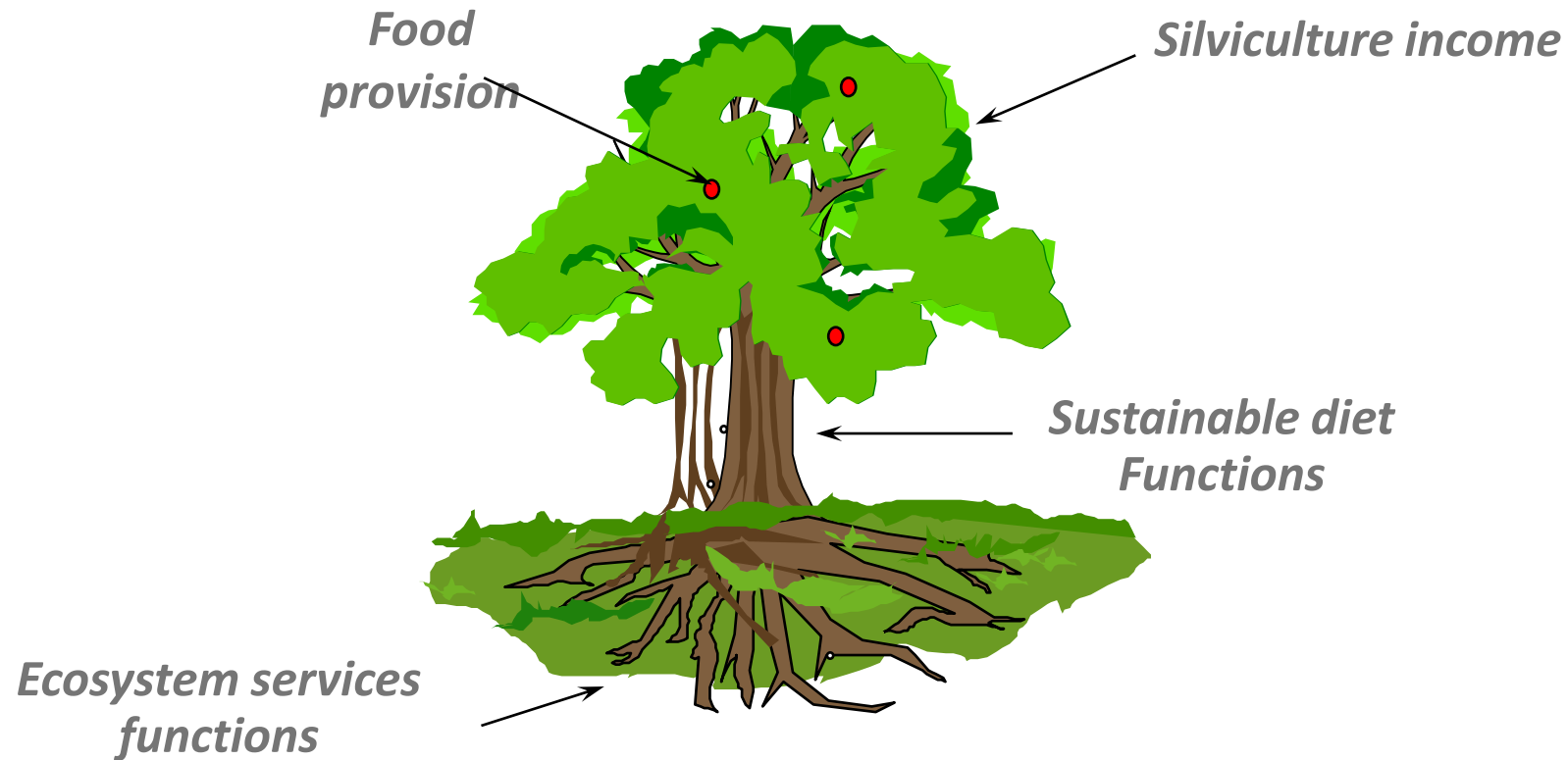


- ☐ 100% access to appropriate nutrition all year round
- ☐ Zero stunted children less than 2 years of age
- ☐ All food systems are sustainable
- ☐ 100 % increase in smallholder productivity and income
- ☐ Zero loss in food waste.



In addition to these five pillars, a key area which requires special attention is women gender empowerment and equality.

# Forests and food and nutrition security



These forestry management relations, contribute directly or indirectly to fulfill the Zero Hunger Challenges.



# I. Forests and food supply. (Pillar 1 y 2)



Wild life



Edible insects



*Forest trees/farming of edible agriculture products*



*Forests that supply food to the communities in the highlands.*

Forest beneficiaries, trees in agriculture products and SAF's for food security and nutrition

# Some examples of the importance of forests in food security: *direct supply of food*

## Leaves

- ▶ Wishnay (*Spathiphyllum phryniifolium*)
- ▶ Fungi (*Amanita caesarea*, *Lactarius indigo*, etc.)
- ▶ Chilca (*Bacharis scandens*)
- ▶ Ixpulula
- ▶ Pigeon berry (*Rivina humilis*)
- ▶ Tepejilote (*Chamaedorea tepejilote* Liebm)
- ▶ Pacaya palm (*Chamaedorea* sp.)
- ▶ Chaya or Tree Spinach (*Cnidosculus aconitifolius*)
- ▶ Smooth amaranth (*Amaranthus* sp.)
- ▶ Black berry (*Solanum americanum*)
- ▶ Malanga (*Colocasia esculenta*).
- ▶ Quequexque. (*Xantosoma* spp)

## Fruits

- ▶ Cocoa (*Theobroma cacao*)
- ▶ Mexican Calabash (*Crescentia alata*)
- ▶ Zapote (*Pouteria* spp.)
- ▶ Guayaba (*Psidium guajava* L)
- ▶ Marzipan
- ▶ Annona (*Annona cherimola*)
- ▶ Cainito (*Chrysophyllum caimito*)
- ▶ Black Cherry (*Prunus capuli*)
- ▶ Pepper (*Piper nigrum*)
- ▶ Pepper

## Vines

- Water Vine (*Vitis tiliifolia*)
- Vanilla (*Vainilla panifolia*)<sup>a</sup>





# Some examples of the importance of forests in food security:

## *direct food supply*

### Seeds

#### ► Ramón (*Brosimum allicastrum*)

Meaning, names

Distribution

Consumption form (seed, beverages or brews, flours, cakes, atoles, bread, tortillas, flan, cookies)

It is a delicious seed, nutritious, antioxidant, abundant and easy to harvest.

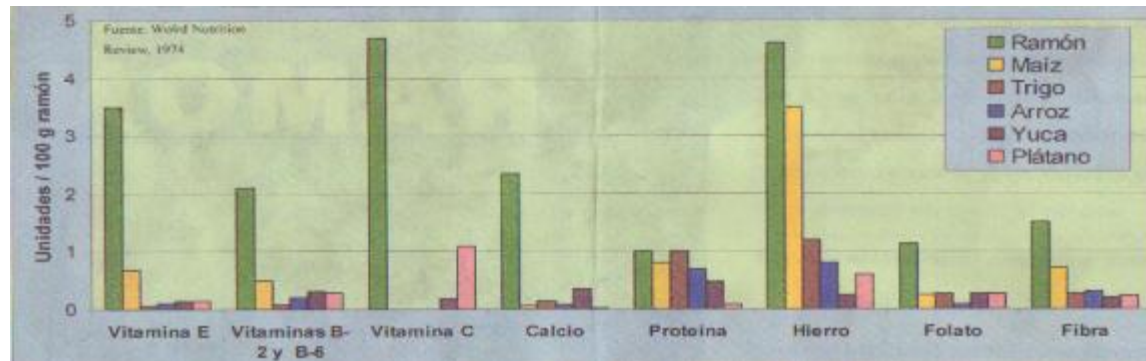
It is not necessary to cut the trees in the forests nor burning for harvesting.

It is totally organic.

It is also a forage crop

Appropriate for tree

Production.



ACOFOP, 2006

# Roots and root crops

- **Yuca (Cassava )**

*Manihot aesculifolia* and *Manihot rhomboidea* with two subspecies, *M. rhomboidea* subsp. *rhomboidea* and *M. rhomboidea* subsp. *Microcarpa* (USDA et al. 2004).

- **Yam**

Three edible species: Yam (*Dioscorea alata*) found wild and cultivated. The other two species: *D. bulbifera*, is found wild and cultivated and *D. convolvulacea*, only wild (Ayala 1999).

- **Quequexque (*Xanthosoma violaceum*)**

- **Jicama (*Pachyrhizus* spp.).**

National geographic distribution: Baja Verapaz, Zacapa, Chiquimula, Jalapa, Santa Rosa, Jutiapa, Suchitepequez, Retalhuleu y Quiché.





# Indigenous leafy vegetables

There are other wild plants used widely in the traditional Guatemalan cooking and in specific regions.

- Loroco (*Fernaldia pandurata*)
- Izote (*Yucca elephantipes*)
- Pacaya (*Chamaedorea tepejilote*)
- Within local use: *muta o piñuela* (*Bromelia pinguin* y *Bromelia plumieri*) used in the eastern part of the country
- Sauco (Mexican *Sambucus mexicana*) used in the production of jelly in the highlands
- Pito coral tree (*Erythrina berteroana*)
- Palms, such is the case of *Carludovica palmata* (*k'ala*), *Orbignya cohune* (*bayal*), used in the Q'eqchi region.

Source: Barrios et al., 2008



Picture: Gustavo A. Zambrano Cabrera

# Fungi

In the highlands in coniferous forests (*Pinus maximinoii*) and oaks (*Quercus peduncularis*), mycorrhiza relations are established and fungi is used by the communities.

Some species:

- ✓ *Pisolithus tinctorius*, as cicatrizer
- ✓ *Cantharellus cibarius* (chanterelle), edible
- ✓ *Lactarius deliciosus*, edible (Saffron milk cap)
- ✓ *Helvella crispa*, white saddle, edible
- ✓ *Amanita caesarea*, Caesar's mushroom or *kaxul* edible
- ✓ *Ramaria botrytis*, clustered coral; edible
- ✓ *Hydnum repandum*, sweet tooth or *rak mazat*; and the *guachipilín*; edible.



# Honey, wild animals, insects

- ▶ 250,000 homes complete their diet with honey
- ▶ In 62 countries, wild life and fish offer 20% of animal protein in rural areas
- ▶ Insects: 2,000 million people eat insects.  
<http://www.fao.org/docrep/018/i3264s/i3264s00.pdf>
- ▶ Entomophagy : the consumption of insects as food by humans
- ▶ Typical case in Guatemala: atta “zompopos de mayo”  
<http://www.youtube.com/watch?v=AOBpjJ7Uc2U>





## ii) Forests and income source (Pillar 1, 2 y 4)

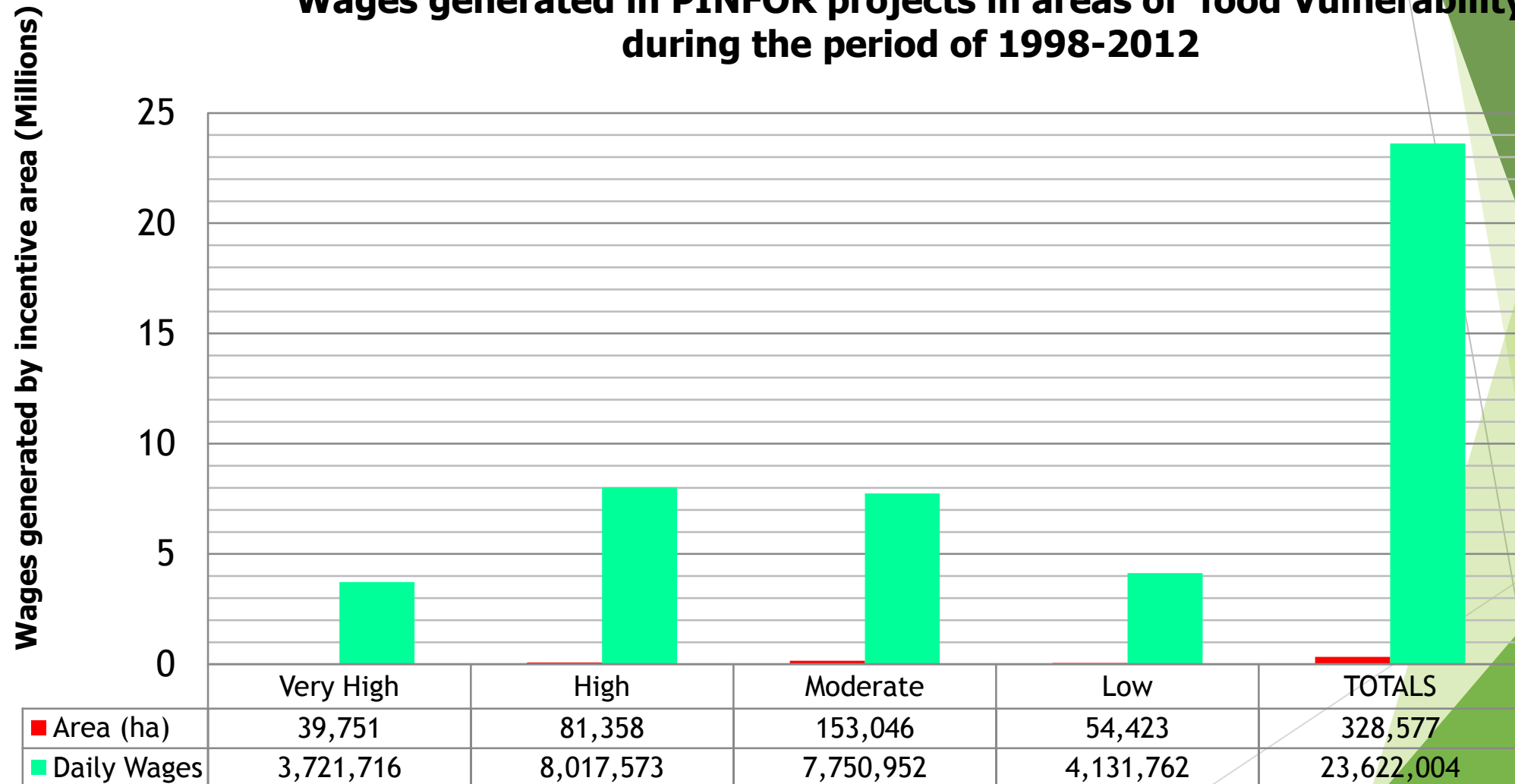
Silviculture generates jobs and income, through:

- a. Job creation in the forestry sector*
- b. Small and medium forestry enterprises*
- c. Income from agro-silviculture*
- d. Commerce and markets*
- e. Inter-sectorial links (forest tourism)*



## II. Forests, working hours and income source (Pillars 1, 2, and 4 of Zero Hunger)

### Wages generated in PINFOR projects in areas of food Vulnerability during the period of 1998-2012



## II. Forests, working hours and income source (Pillars 1, 2, and 4 of Zero Hunger)





## II. Forests, working hours and income source (Pillars 1, 2, and 4 of Zero Hunger)

Sustainable management of non-wood  
Forest Products



Sapodilla - *Chicle* (Manilkara Sapota), ramón (added value)

Acofop, 2006

### III. Forests and tree functions in sustainable diets (pillar 3)

- a. Indigenous peoples' food systems*
- b. Arboreal tree products for micronutrient intake and healthy diets.*
- c. Contribution of forest food to diets.*
- d. Contribution of firewood (wood fuel) in sustainable diets.*





### III. Forests and food systems: firewood for cooking and processing food (Pillar 3 of Zero Hunger Challenge)

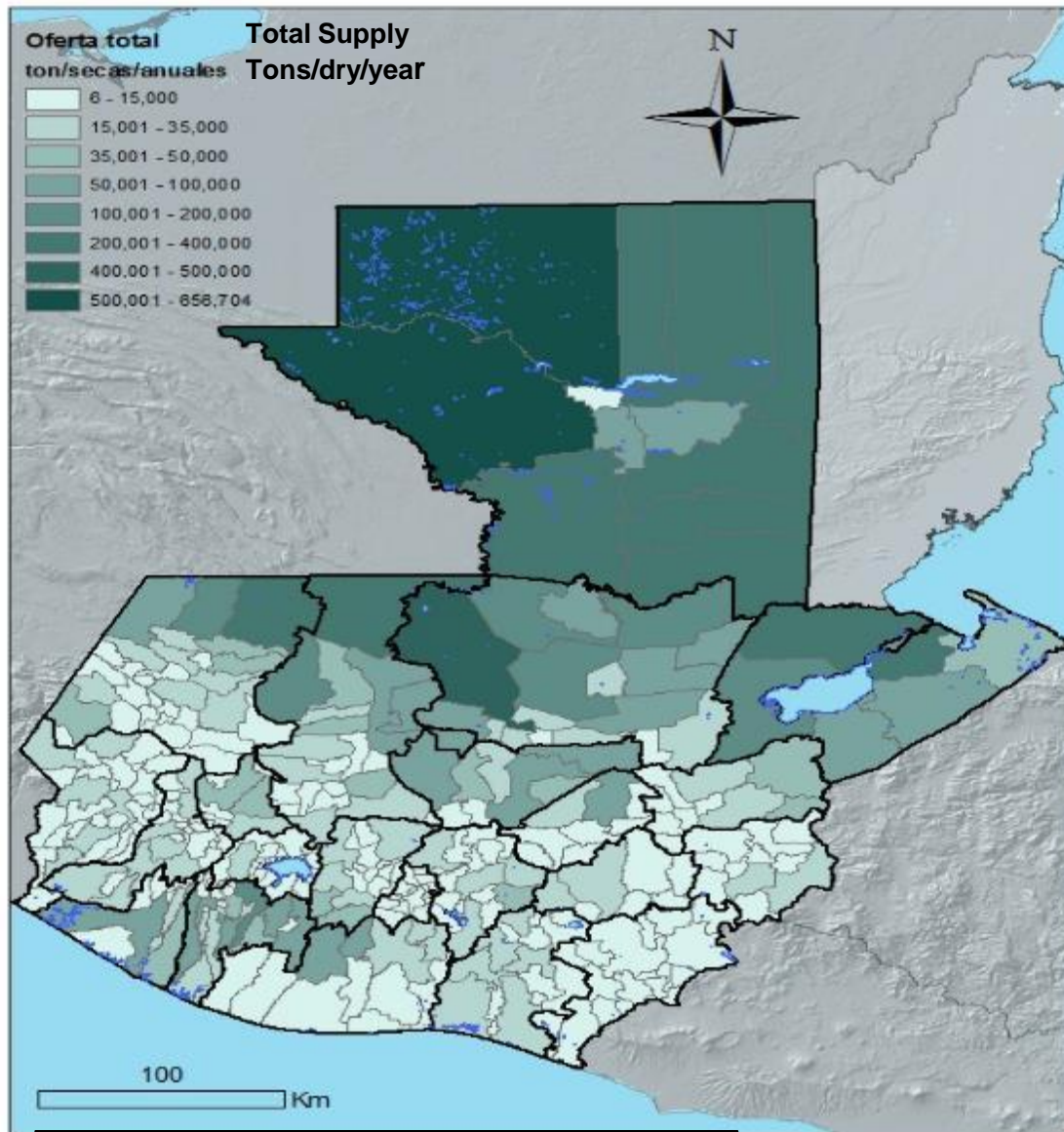


More than 60% of homes use firewood for cooking 57% of national energy matrix



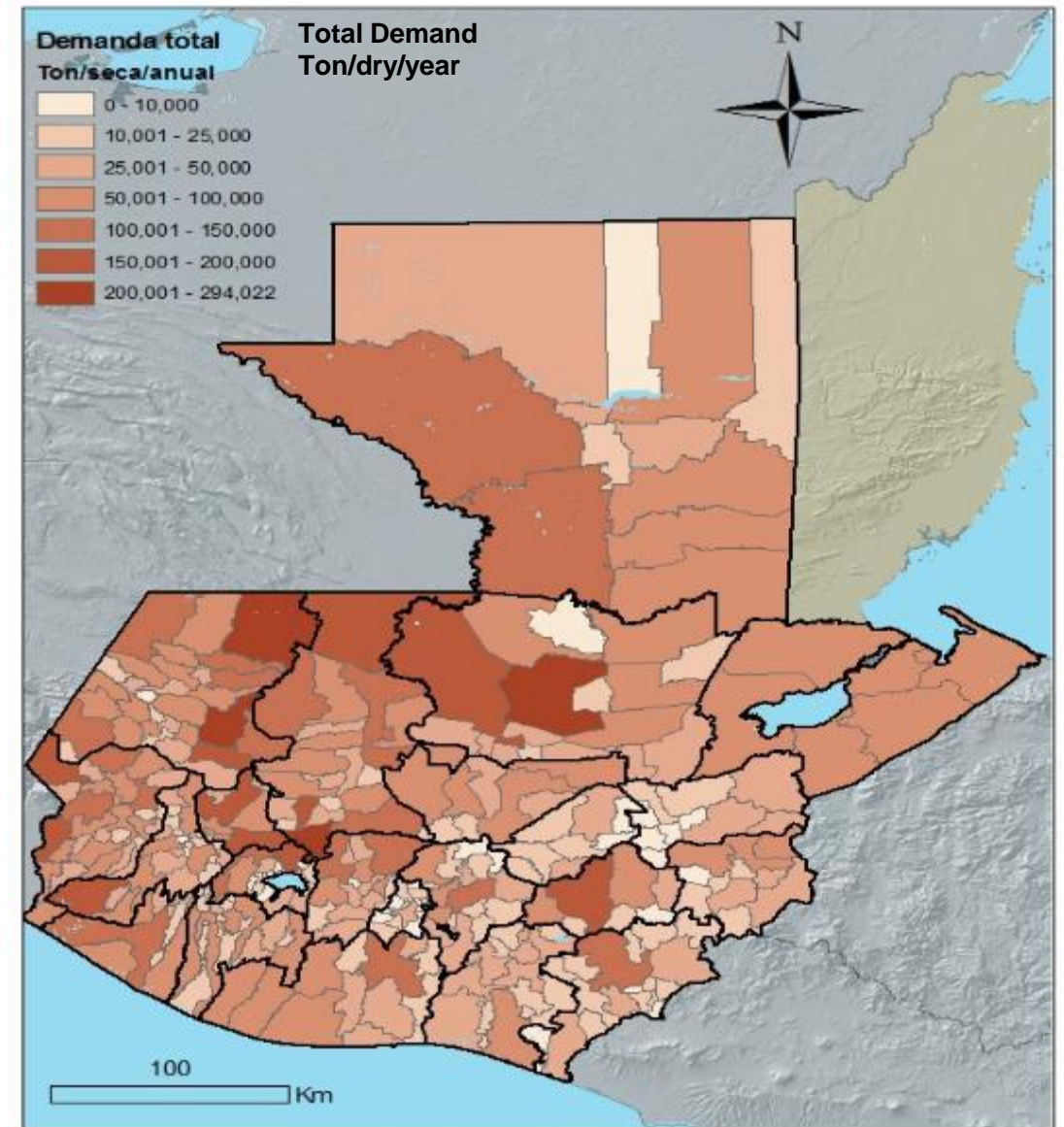
# Firewood demand

**10,120,924**



INAB, URL, FAO, 2012

**15,771,187**



## IV. Forests and their function of ecosystem services (Pillar 4 Zero Hunger Challenge)

The function of the ecosystem services to the increase of nutrition and food security through:

- a. Arboreal biodiversity in agriculture landscapes.*
- b. Adaptation based on ecosystems to climate change for food security and resilience*
- c. High river basin management order for food security*
- d. Mangrove for fishing production.*



# Areas to strengthen forestry management to contribute in the best way to Zero Hunger Challenge

- Consideration of forest benefits in SAN strategies
- Facilitate technology for food cooking and excessive use of firewood.
- Recovery and generate knowledge of forestry diversity associated with sustainable diet
- Reinforce women participation in value chains
- Produce intersectorial forestry links that will have an impact on food security and nutrition (Zero Hunger): energy, industry, agriculture, Climate Change, economy, tourism



# General Recommendations

- To generate investigation and development of forestry food byproducts
- To facilitate the development of value chains that imply the use of forestry food byproduct.
- To strengthen extension services in agriculture, forestry, health, education with mastery in forests and Nutrition and food Security.
- To promote forestry (agro) arrangements with food/energy goals.