

# Using Ecosystem based design to enhance our Sustainability Outcomes



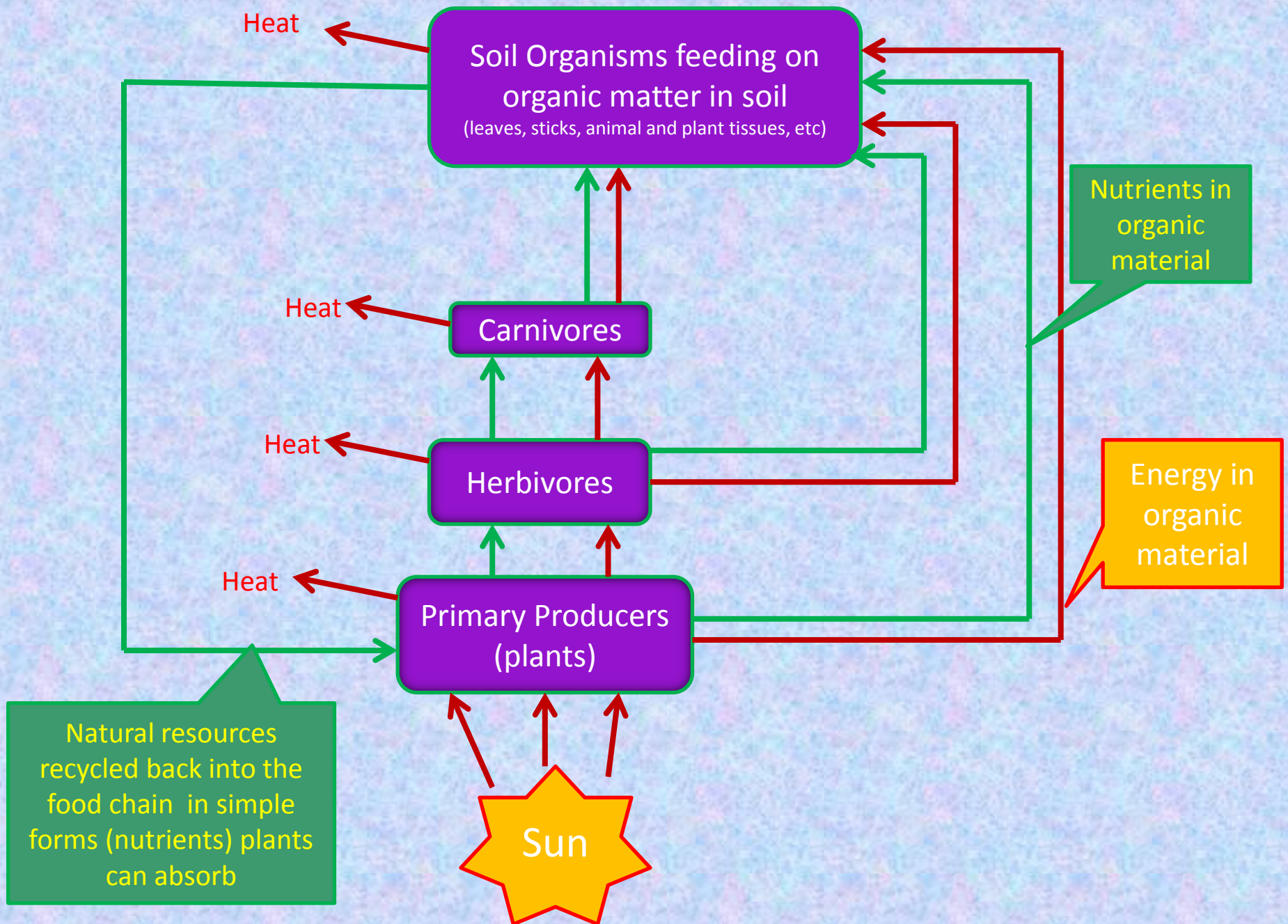
Dr Wendy Seabrook  
Hill Top Farm - working with nature

[www.hilltopfarm.wix.com/beyondsustainability](http://www.hilltopfarm.wix.com/beyondsustainability)

GOOD DESIGN  
THINKING

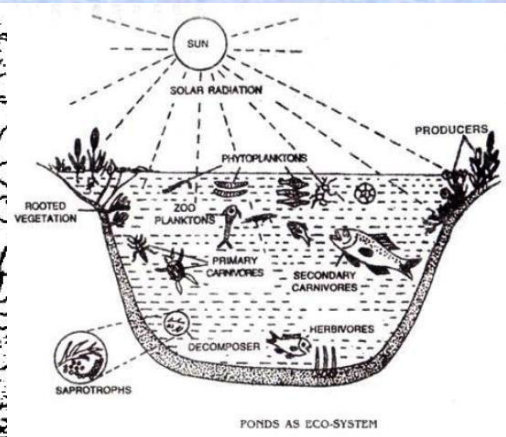


REGENERATIVE  
SYSTEMS



# HEALTHY NATURAL ECOSYSTEMS

PRODUCTIVE  
SELF-MAINTAINING  
RESILIENT  
SUSTAINABLE





"Healthy natural ecosystems are our models of Best Practice. They do not need anyone to spread mulch and fertilisers, control pollution, dispose of waste, weed or mow. Natural ecosystems take care of these processes themselves"



Renewable Energy

Renewable NR

Embodied energy in  
living organisms and  
organic material

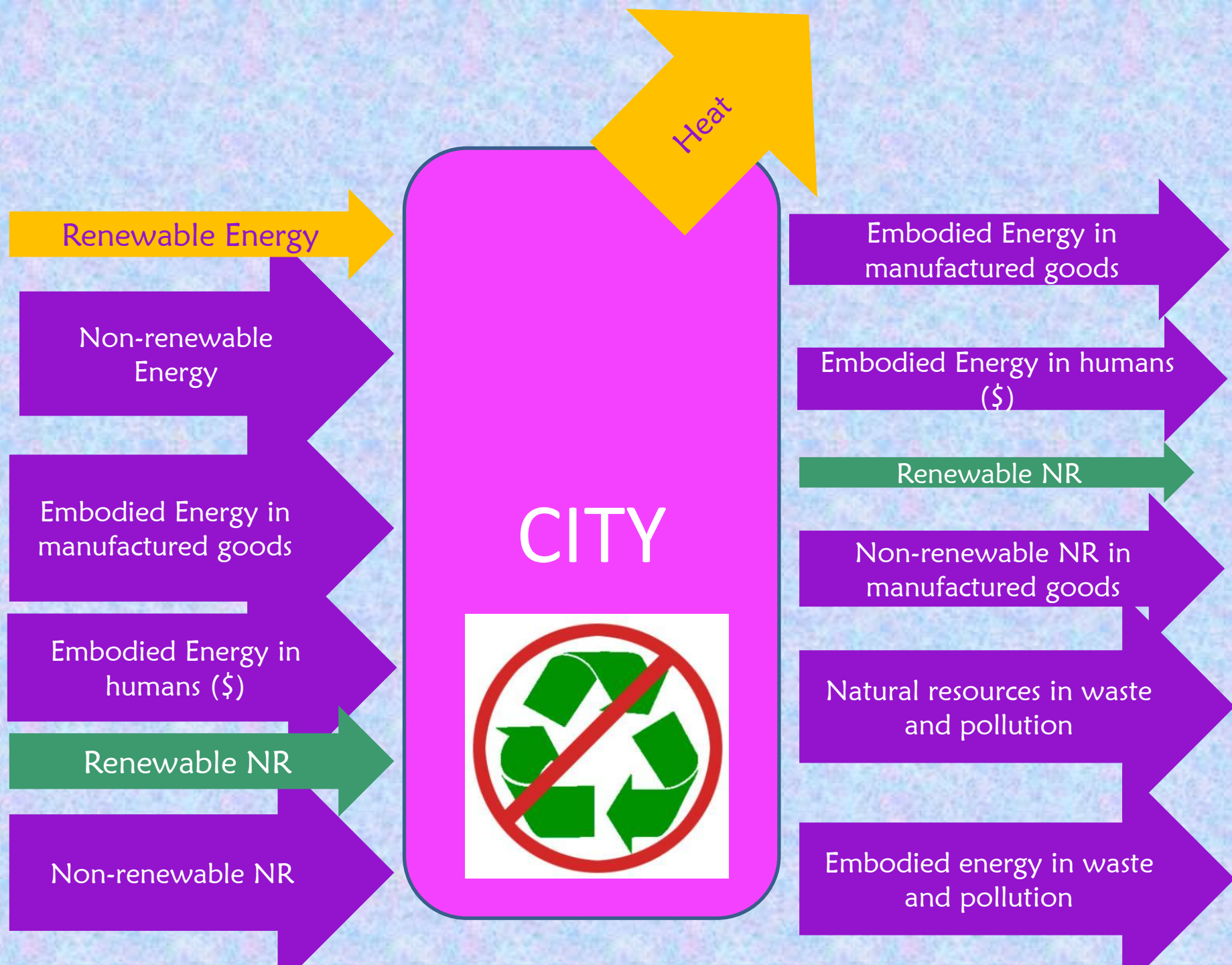
# HEALTHY NATURAL ECOSYSTEMS



Heat

Renewable NR

Embodied Energy in  
living organism &  
organic material



INPUTS



**HUMAN –MODIFIED  
ECOSYSTEMS**

OUTPUTS



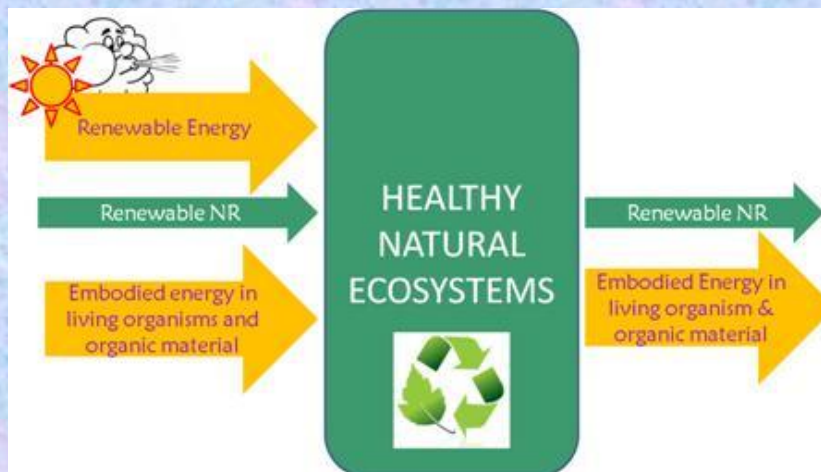
# The Ecosystem model enables us to:

- assess the sustainability of our systems
- see how the types and relative quantities of our inputs and outputs differ from healthy natural ecosystems - our models of Best Practice
- guesstimate, estimate or actually measure the quantities of these inputs and outputs and their environmental footprint
- look at the gap between where we are now and where we want to be using healthy natural ecosystems as our models of Best Practice
- use a Gap Analysis to highlight priorities or points of leverage for improving our systems
- prioritise Permaculture and other sustainability design tools and resources that can help us
- monitor and evaluate our progress in creating more regenerative systems



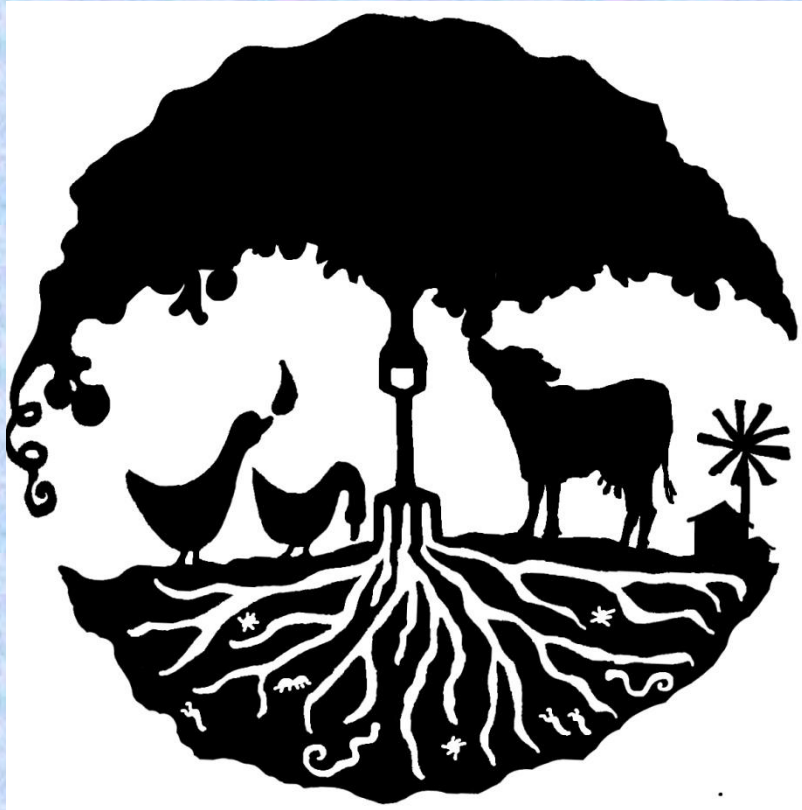
# Design your system to:

- avoid inputs of non-renewable natural resources and energy
- reduce your inputs of renewable resources
- reduce your inputs of energy embodied in materials you bring into your system
- produce no waste or pollution
- increase inputs of renewable energy and capture of ‘wild’ natural resources



# Hill Top Farm

Working  
with  
nature



Renewable Energy

Non-renewable Energy

Embodied Energy in  
manufactured goods

Embodied Energy in  
humans (\$)

Renewable NR

Non-renewable NR

## Hill Top Farm 2009

Embodied energy in  
waste and pollution

Embodied Energy in  
produce

Embodied Energy in humans

Renewable NR in produce

Non-renewable NR in  
waste and pollution



Renewable Energy

Non-renewable Energy

Embodied Energy in  
manufactured goods

Embodied Energy - humans  
(\$)

Renewable NR

Non-renewable NR

## Hill Top Farm 2015

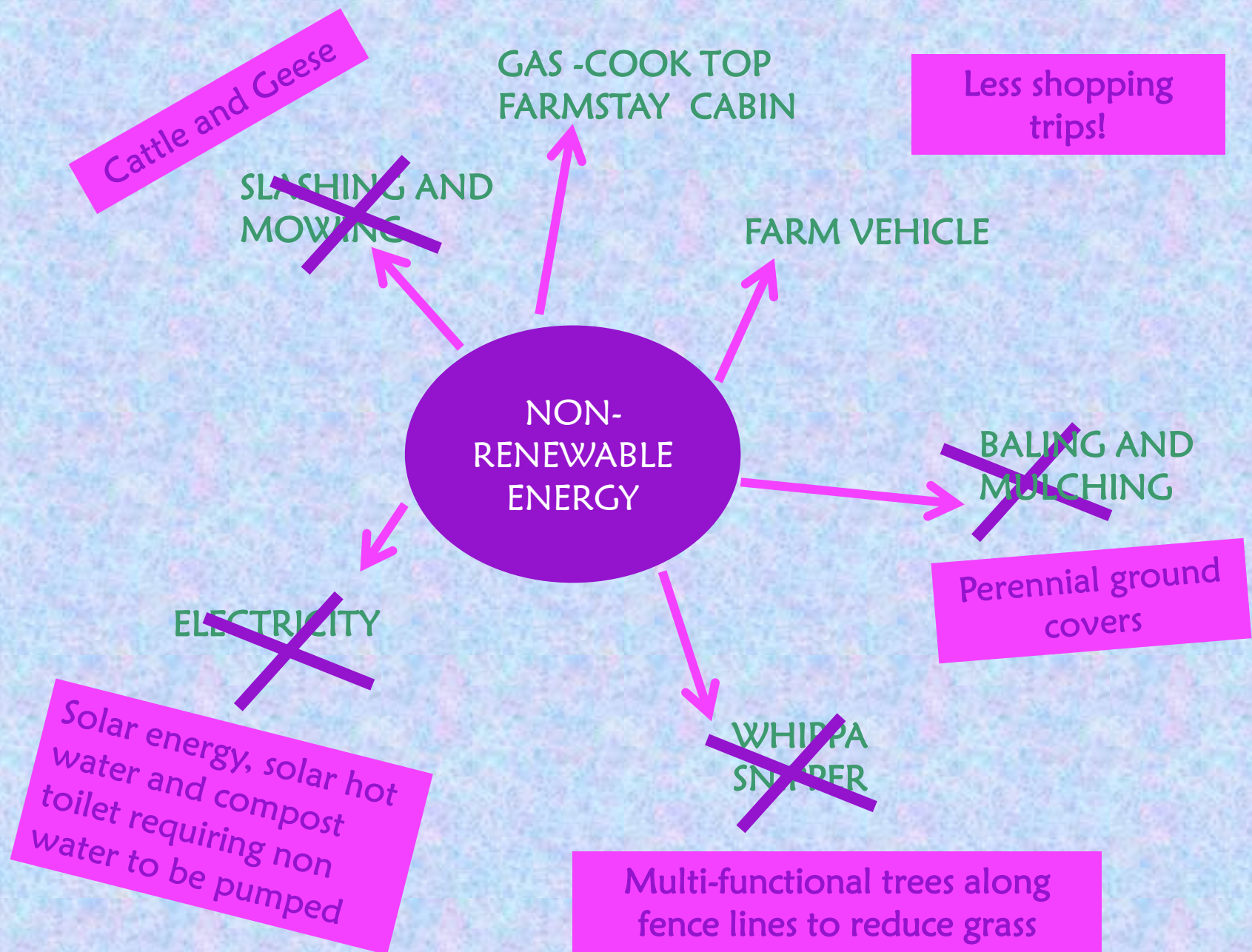
Embodied energy in waste  
and pollution

Embodied energy in  
produce

Embodied Energy in  
humans

Renewable NR in produce

Non-renewable NR in waste  
and pollution



Meat fruit and veggies mostly  
from farm plus root  
carbohydrates instead of grains

Still using pelleted chook poo in  
bananas, but have legumes, biomass  
accumulators, compost toilet, cattle and  
poultry as other sources of fertiliser

~~FOOD~~

~~FERTILISERS~~

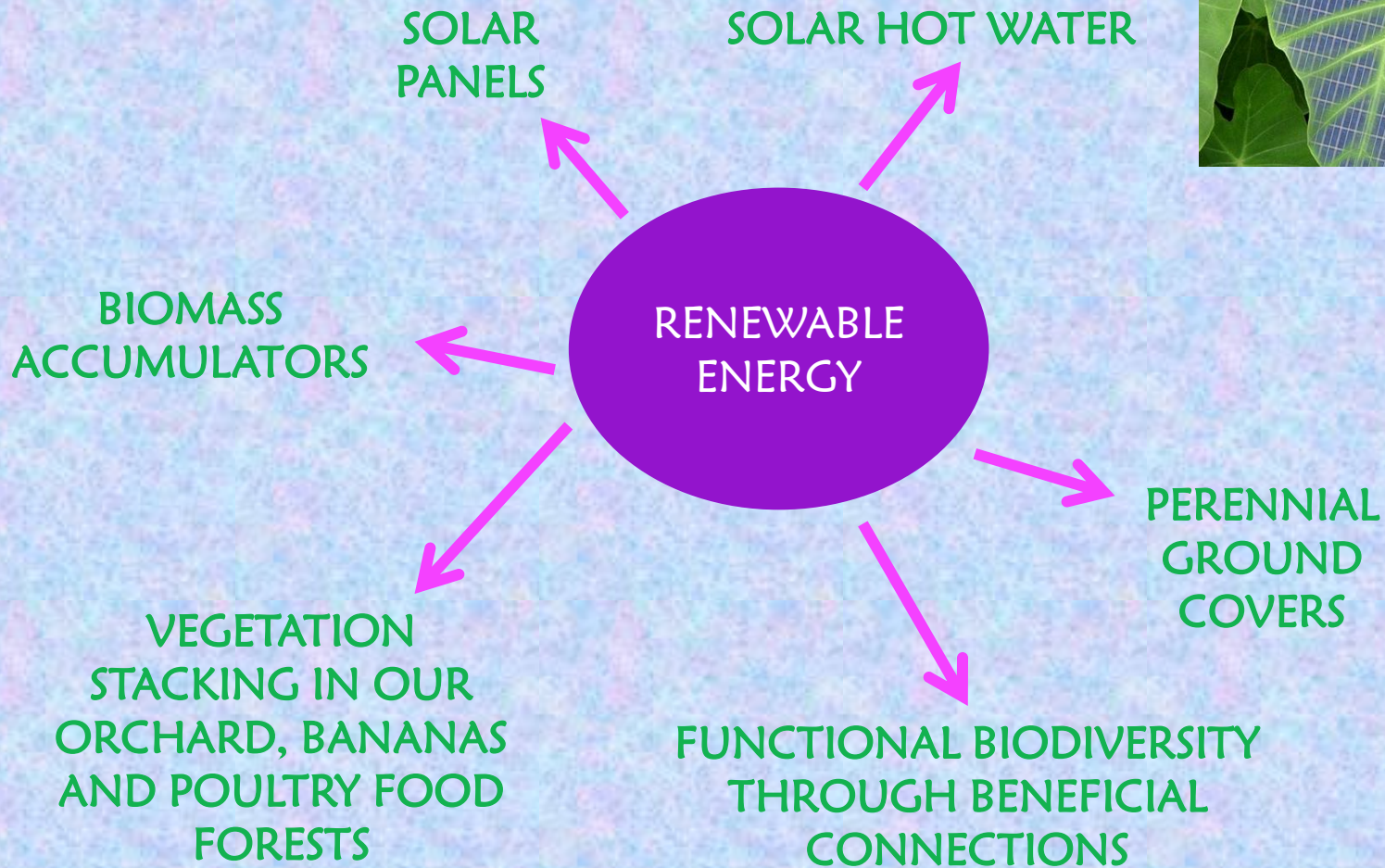


~~FENCE POSTS~~

~~ORGANIC  
PESTICIDES~~

Living fence posts

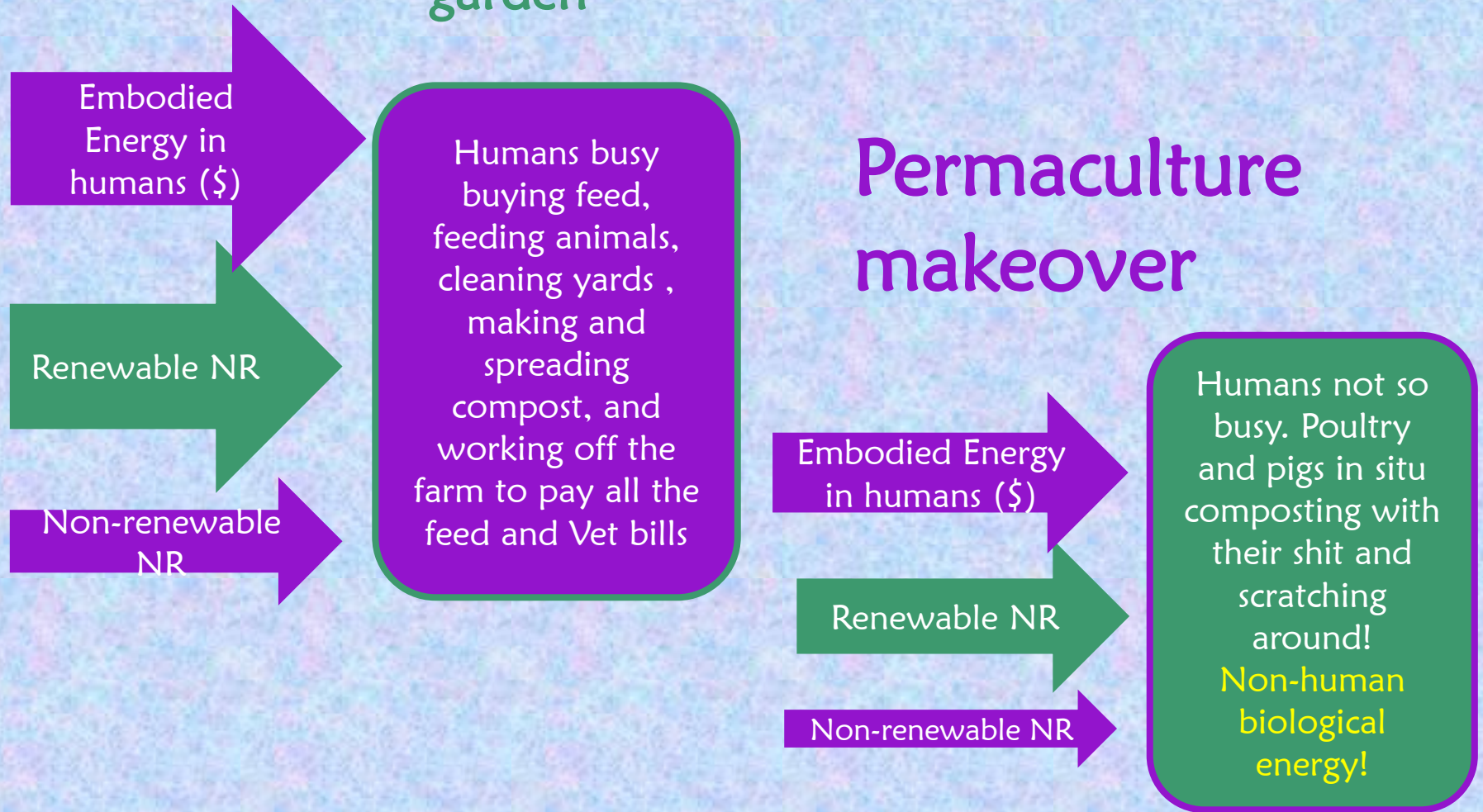
Need for Market  
Garden only. Orchard and bananas –  
beneficial insect attracting plants





# Scenario

Small holding with pigs, chickens, ducks and turkeys in fixed yards and a separate veggie garden





How would the ecosystem models for these household systems differ?



From Material World: A Global Family Portrait, by Peter Menzel

# Summary

By looking at our ecosystem from ‘outside’ we can easily:

- gauge how well our system is performing – environmentally, socially and financially
- use the types and quantities of inputs and outputs to prioritise actions, improving the performance of our systems
- monitor and evaluate our progress in creating more regenerative systems



PERMACULTURE PRINCIPLES,  
TOOLS AND PRACTICES



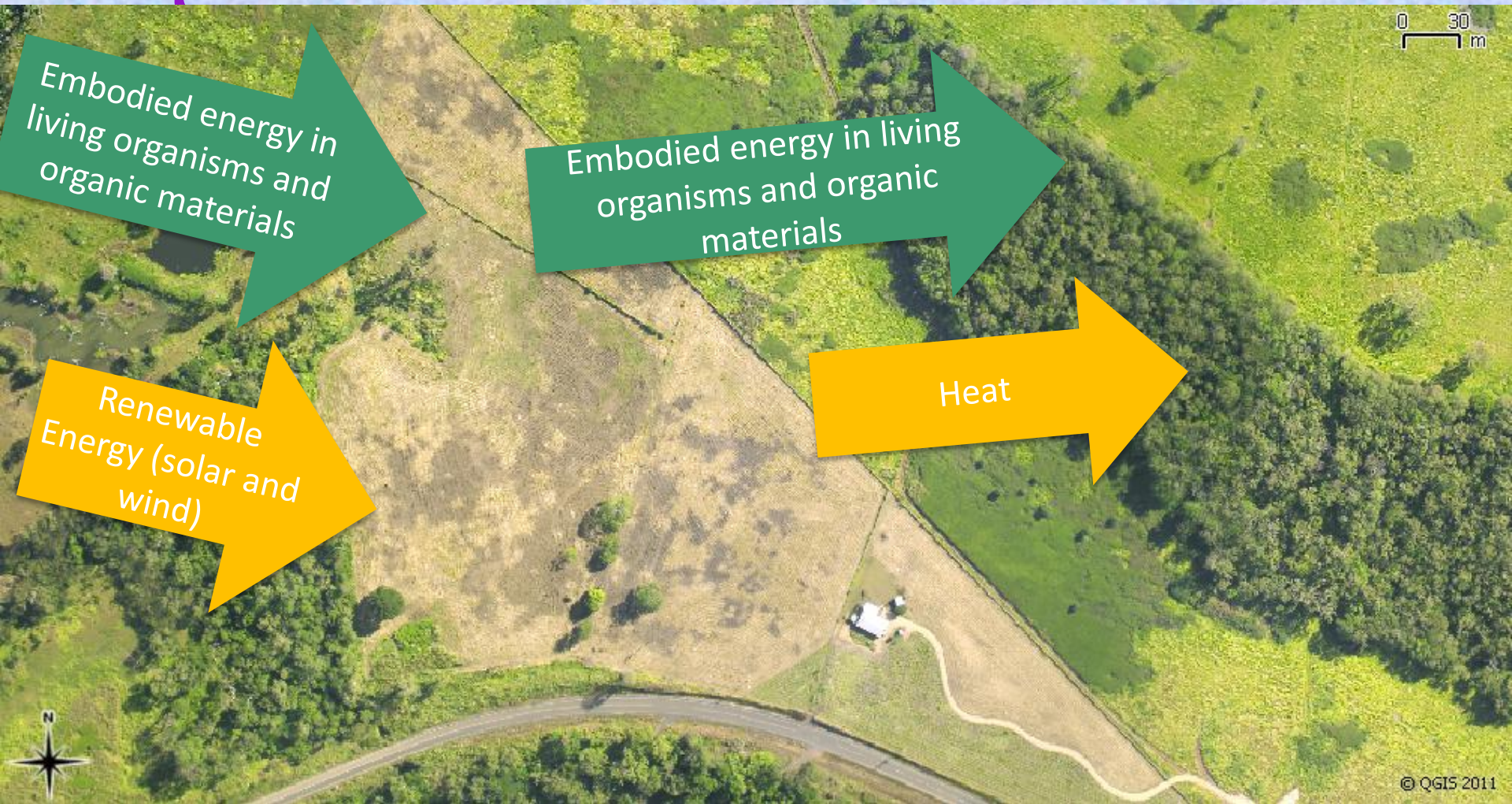


# ‘Wild’ natural resource inputs and outputs Hill Top Farm

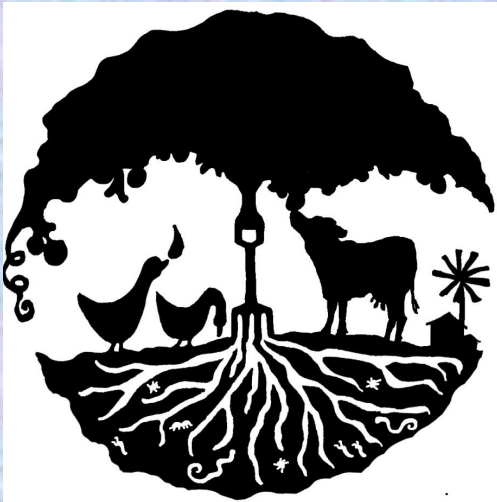




# ‘Wild’ Energy inputs and outputs Hill Top Farm



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