Urban Agriculture & Food Security

Auroville Green Practices 2013
Eco-Productive Cities

Urban Agriculture

Urban Agriculture is the practice of growing vegetables, fruits and other crops within city limits.

Food Security

"when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life"

Source: World Food Summit 1996

Issues

POPULATION GROWTH

URBANIZATION

LOSS OF AGRICULTURAL LAND

WATER SHORTAGE

UNEQUAL DISTRIBUTION

RISING FOOD PRICES

FOOD WASTAGE

LOSS OF TOP SOIL

INFLATION

HEALTH AND DIETARY CHANGES

HUMAN HAPPINESS

Some Facts

Indicator	Global 2011	Global 2050	India 2013	India 2050*
Population	7 billion	9 billion	1.27 billion	1.8 billion
Urban Population	3.3 billion (50%)	6.3 billion (68%)	400 million (30%)	900 million (50%)
Slum Population	1 billion		94 million	

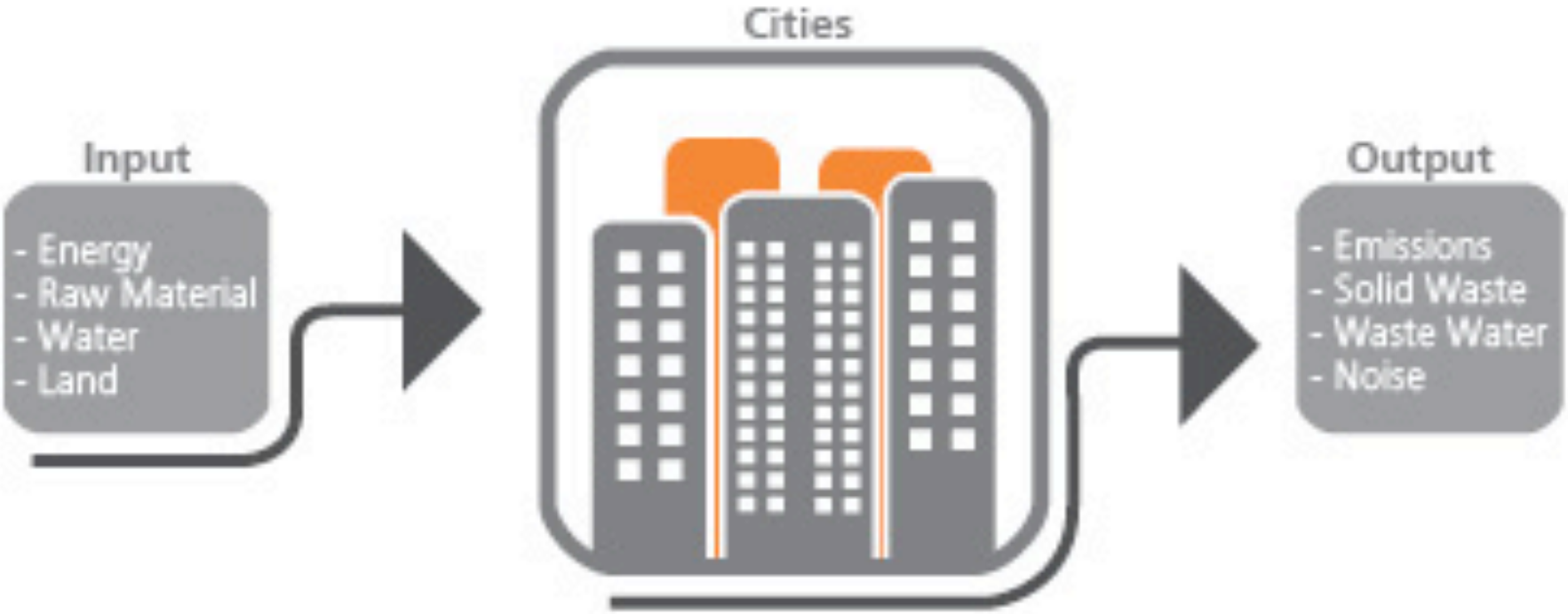
(United Nations 2011)

* 15 million added per year

Cities as Eco-Predators

- From 1900 to 2000 resource consumption and urban populations went up sixteen fold.
- Cities, on 3-4% of the world's land surface, use 80% of its resources, and discharge most wastes.

What cities produce?



Human habitats essentially are centers of waste generation

More facts

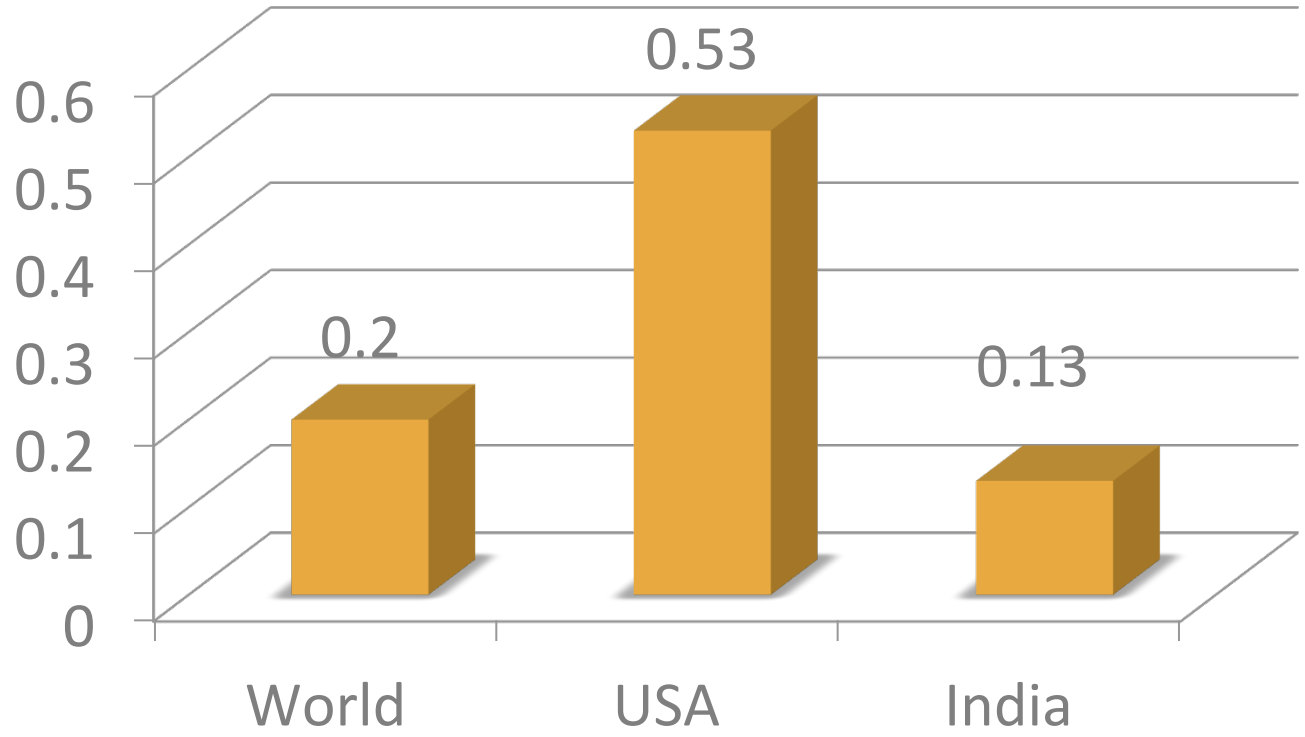
To feed 9 billion an increase of 70% in global food production is required.*

How to feed the existing population as well as the projected increase of 2 billion people in the coming decades?

* If not radical change in the distribution and wastage in the food system occurs

Arable Land

Arable land in hectares/per head



Source: World Bank 2010

1980 : 0.27 ha/per head
2050: 0.09 ha/per head

Soil Erosion

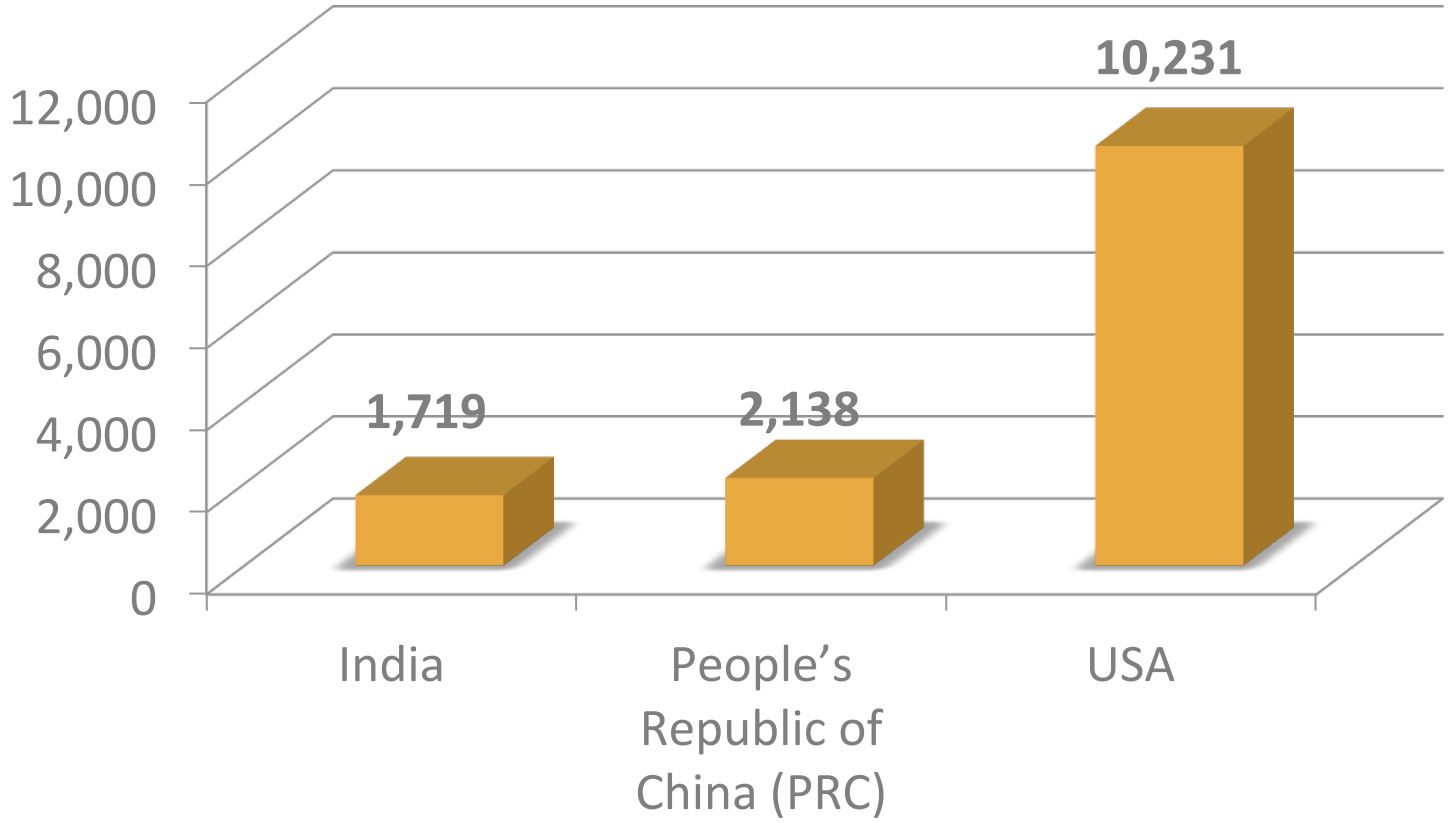
Globally crop land is shrinking by 10 million hectares a year due to soil erosion.

Region	tons/ha/yr.
Africa, Europe, Australia	5 - 10
North, Central, South America	10 -20
Asia	30

It takes (on average) about 100 years to generate a millimeter of soil

Water

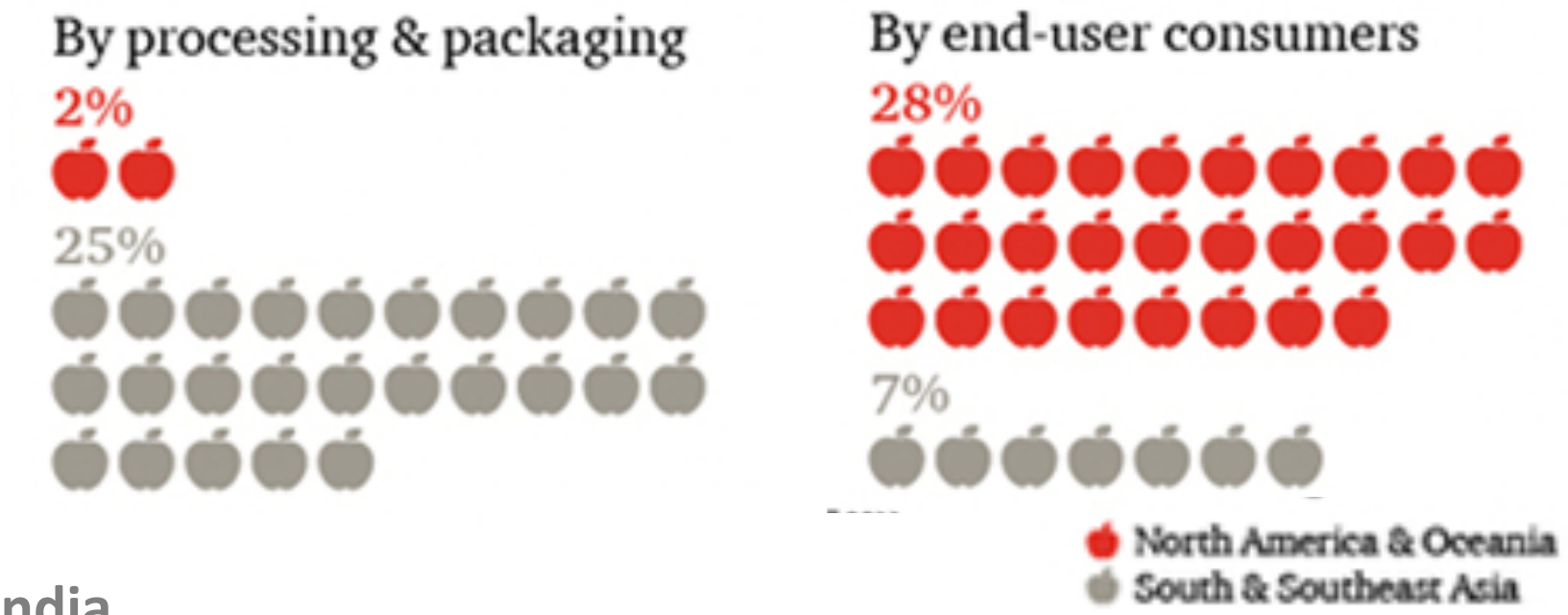
Per capita availability of renewable water in m/3 per person/year



Source: Aquastat Database Query 2011

Food Wastage

% of wasted fresh fruits and vegetables - from field to fork



Source: FAO 2012

India

- 50% of the food is lost during transportation
- 21 million tones of wheat annually due to inadequate storage and distribution.

Source: FAO 2011

Health

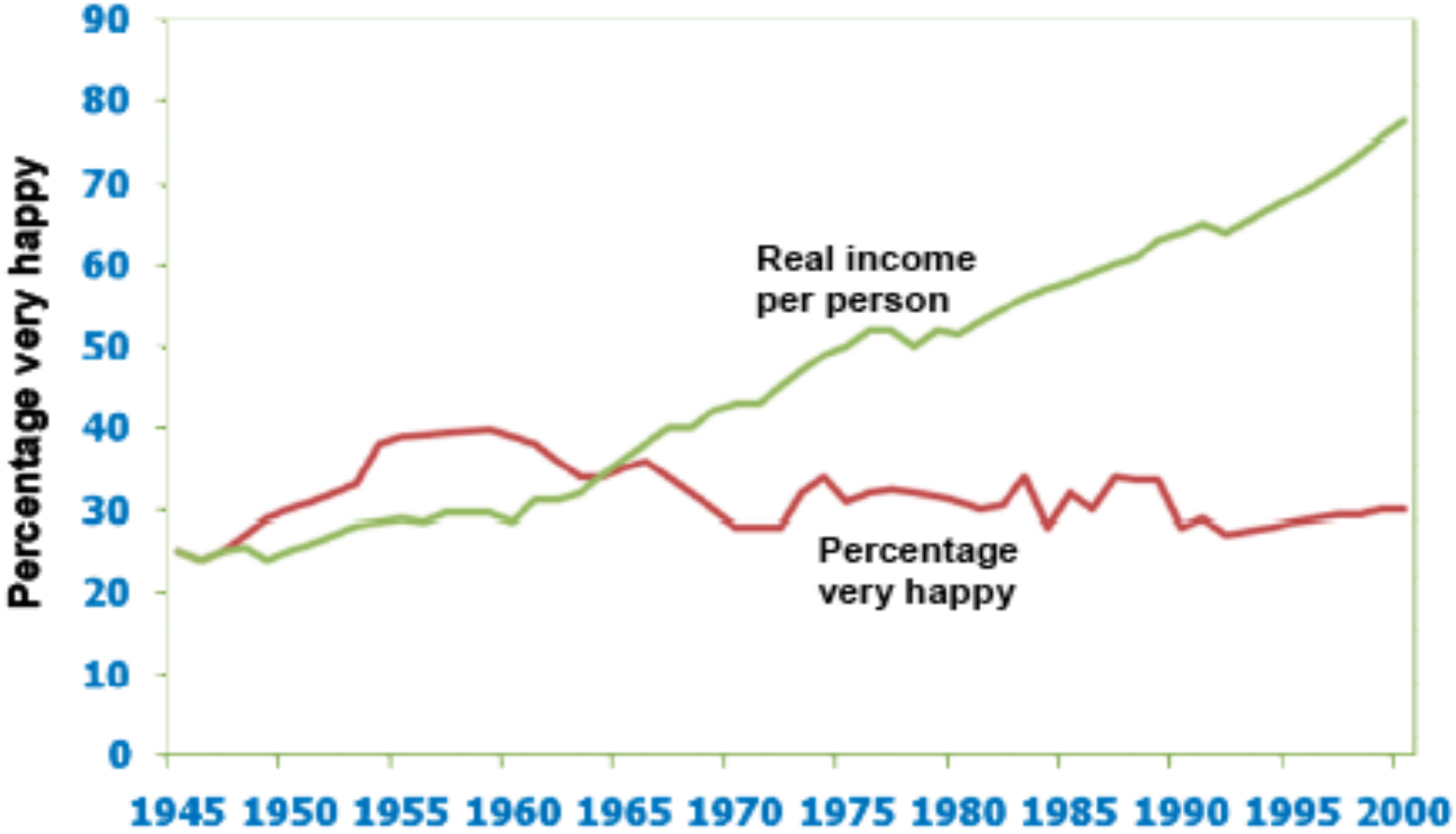
1 billion people do not have the required calorie intake (many of them are farmers) (OECD-FAO 2010)

Dietary shift: higher intake of meat, dairy and vegetable oil (high level of energy, cereal & water input)

1 kg of meat contains 3 kg of grains

If the cereal that was used to feed animals was instead used to feed the human population, the annual calorie need of more than 3.5 billion people could be provided for

Happiness



Source: Layard, R. (2005)

An Opportunity?

Green Bronx Machine – NY school

Education, business in setting up organic gardens, social integration

Jamie Oliver's Kitchen Gardening Project

Kitchen gardens in schools, curriculum, preparing meals, food choices, diet related illnesses,

From Roof to table – Bell Book & Candle restaurant, Greenwich Village, NY

More than 70 varieties of herbs vegetables and fruit are grown in vertically planted towers. 60% of the restaurants food from their roof top garden.

San Francisco legislation to facilitate UA

Allowed the selling of food, locate the sites, provide seeds tools and advice.

BRAZIL

Food security, poverty alleviation, promoting community spirit, maintaining cleanliness in public spaces, preserving local food habits, education, therapeutic activities.

Governmental support: supplying land, instruction, tools and seeds, to financial support

Russia's Private Garden Plot Act,

Entitles every Russian citizen to a private plot of land, free of charge, (2.2 acres to 6.8 acres). 35 million small family plots operated by 105 million people 50 percent of the milk supply, 60 percent of its meat supply, 87 percent of its berry and fruit supply, 77 percent of its vegetable supply, and 92 percent of its potato supply

Dar-es-Salaam, Tanzania

Crop production takes up 34,000 hectares or 23 per cent of the city area and 90 % of the vegetables sold are grown within city limits.

Shenzhen, China

Perishable vegetables are cultivated in the city, grains and hardy produce in the periphery. 60% of vegetables, meat and seafood comes from urban farms.

Rooftop Farm Germany

‘Fresh from the Roof project; 7,000-square-meter roof garden with a fish farm, to provide Berliners with sustainable, locally-grown food.

Container Farm, Switzerland

ECF Container farm – aquaponic system

Gotham Green House, Brooklyn, NY

80 tons of produce per year on 2,800 m/2 - hydroponic system, solar system,

Rooftop Farm Japan

Sweet potatoes grow in roof- top environment

Rice Farm, Tokyo

Rooftop Garden, Bangalore

Urban Agriculture Benefits

Environment

- Reduce in transport and storage
- Greening Cities counters urban heat island effect
- Reduces building cooling costs
- Improve urban air quality
- Rooftop gardens reduce glare, noise and wind
- Urban gardens provide wildlife habitat
- Increase of biodiversity
- Retains storm water
- Reduces landfill waste if composted at source (less methane emission)

Individual

- Freshly harvested crops are healthier
- Planting fruits and vegetables encourage a healthier diet
- Growing is cheaper and saves petrol
- More variety (mainstream vegetables)
- Stress buster, exercise
- Provides you with food which origin you know
- Access to or even view of green roofs can increase property value

Community

- Brings people together (community building)
- Produce can be shared of given as a gift
- Activity for otherwise unemployed people
- The whole family or even neighborhood can get together
- Revitalizes neighborhoods

What's possibly missing?

Policy level

- UA incorporated into cities land use plan (legal framework)
- Building codes need to be adapted (rooftop farming)
- Public institutions to be encouraged to buy locally produces food
- A cooperative relationship with the municipal waste collection system for collecting and composting organic waste

What's possibly missing?

Cultural level

- Make growing food a dignified professions
- Redefine what beauty means (landscaping)
- Value healthy and locally grown food

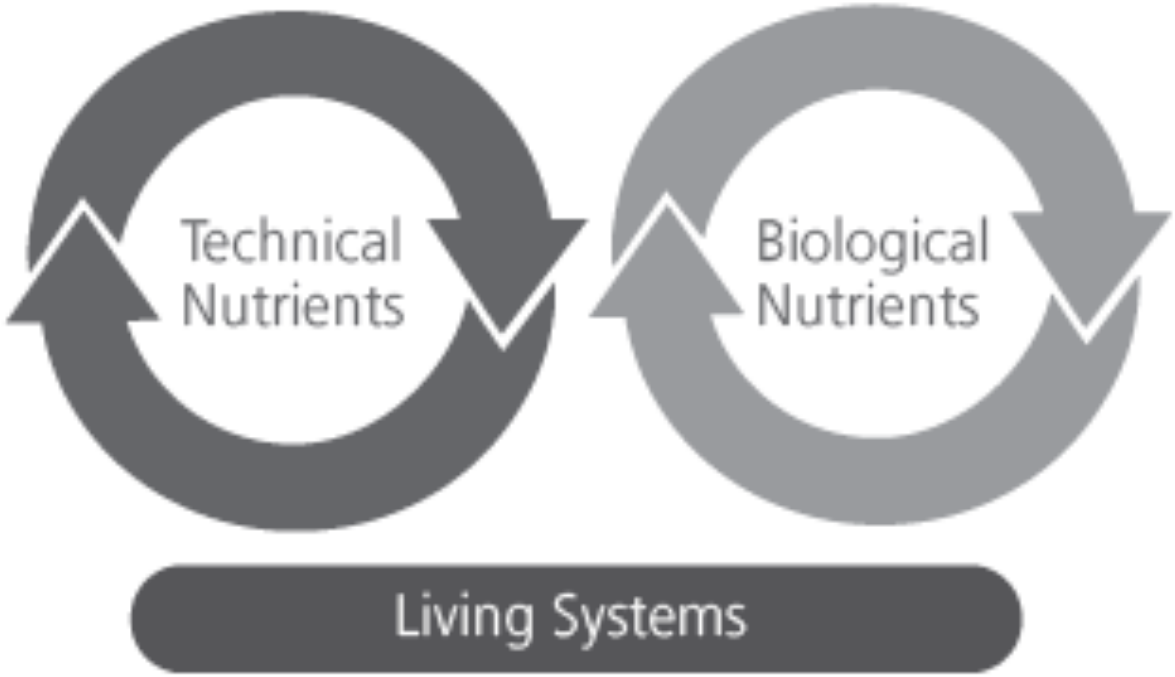
What's possibly missing?

Technology level

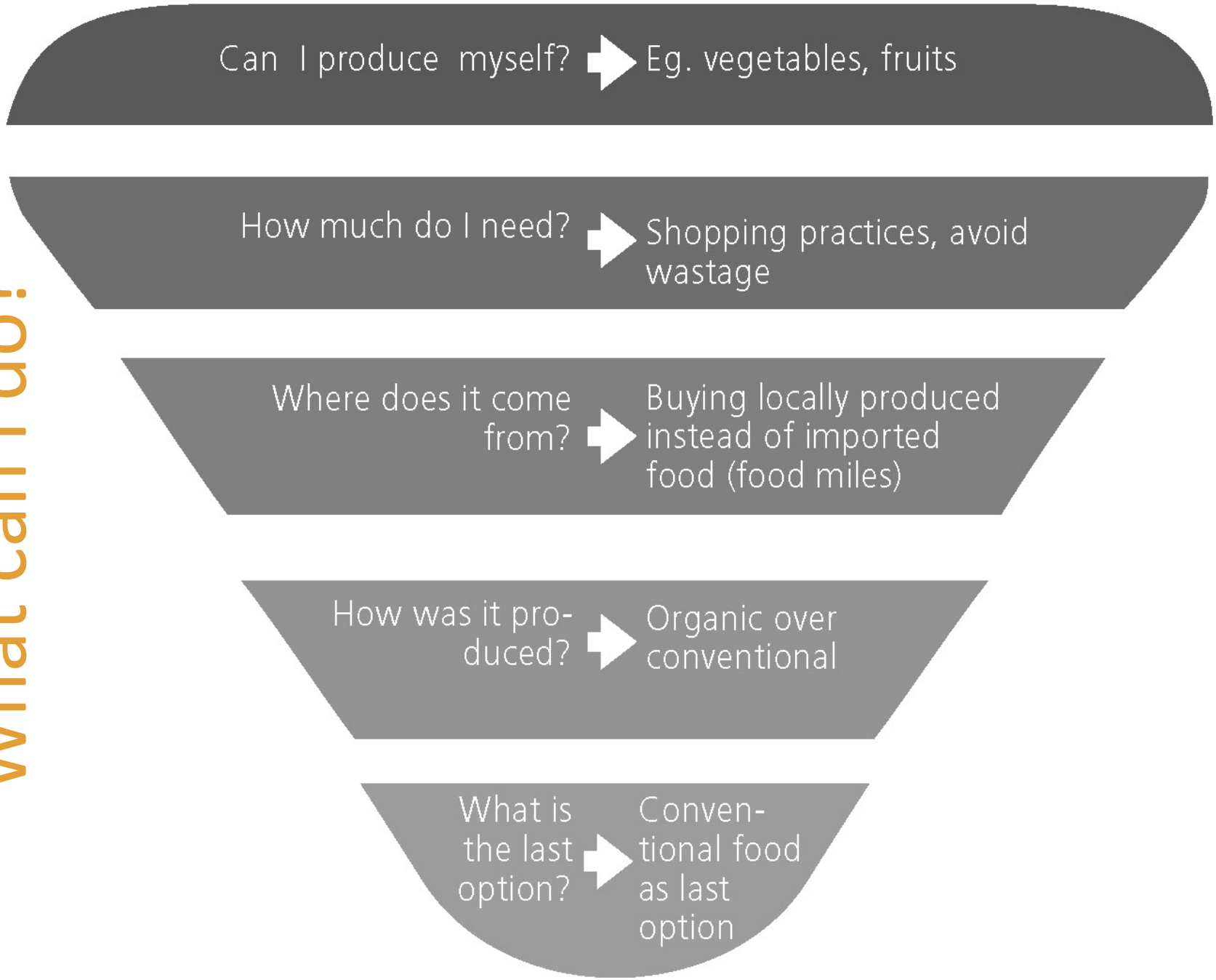
- Make input materials for UA easily available (knowledge, containers, tools, seeds, soil etc.)
- Institutions for research and knowledge dissemination

What needs to shift?

Linear Economy



What can I do?


Can I produce myself?
Eg. vegetables, fruits
How much do I need?
Shopping practices, avoid wastage
Where does it come from?
Buying locally produced instead of imported food (food miles)
How was it pro-duced?
Organic over conventional
What is the last option?
Conven-tional food as last option

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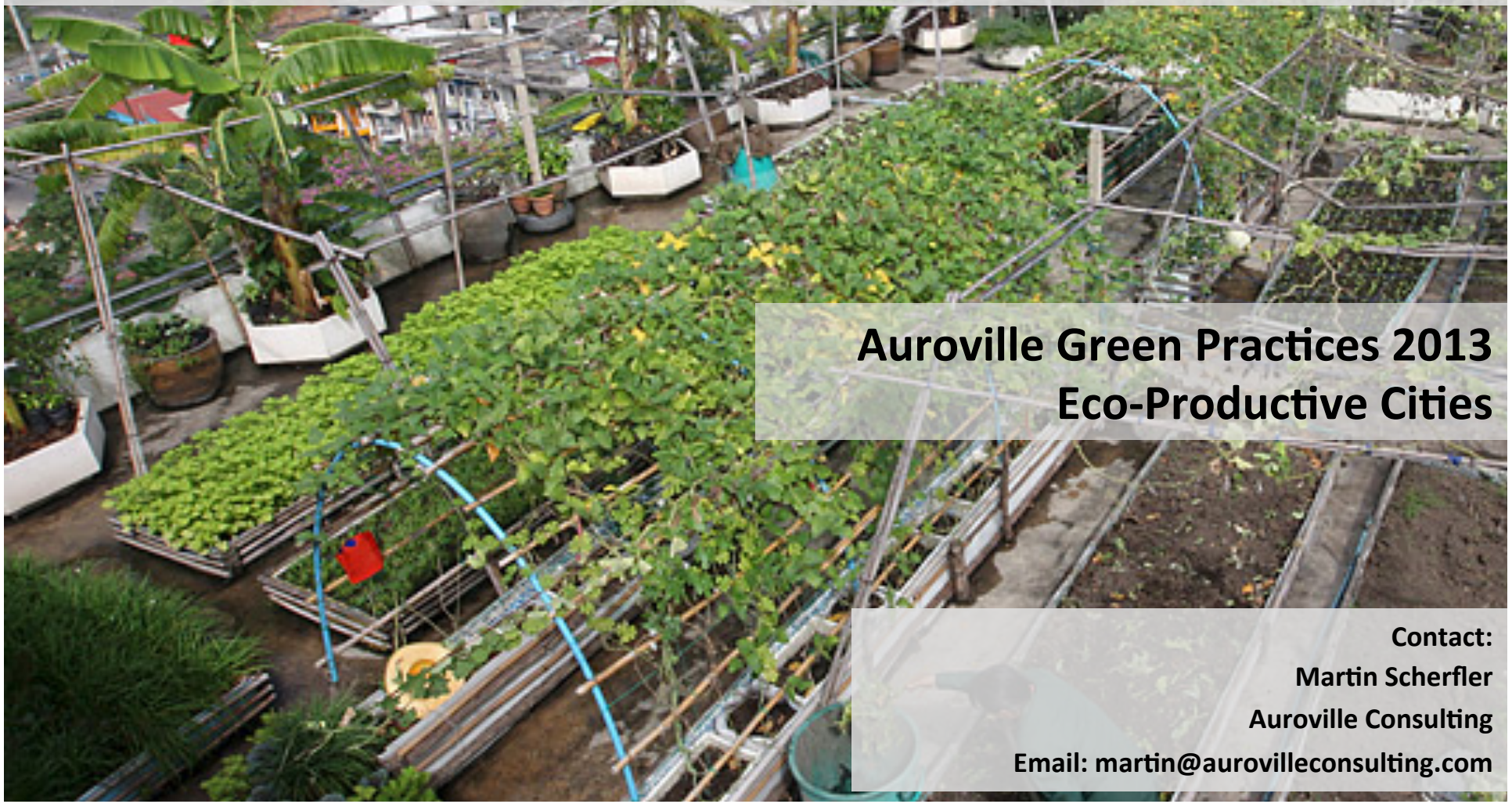

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Contact:
Martin Scherfler
Auroville Consulting
Email: martin@aurovilleconsulting.com