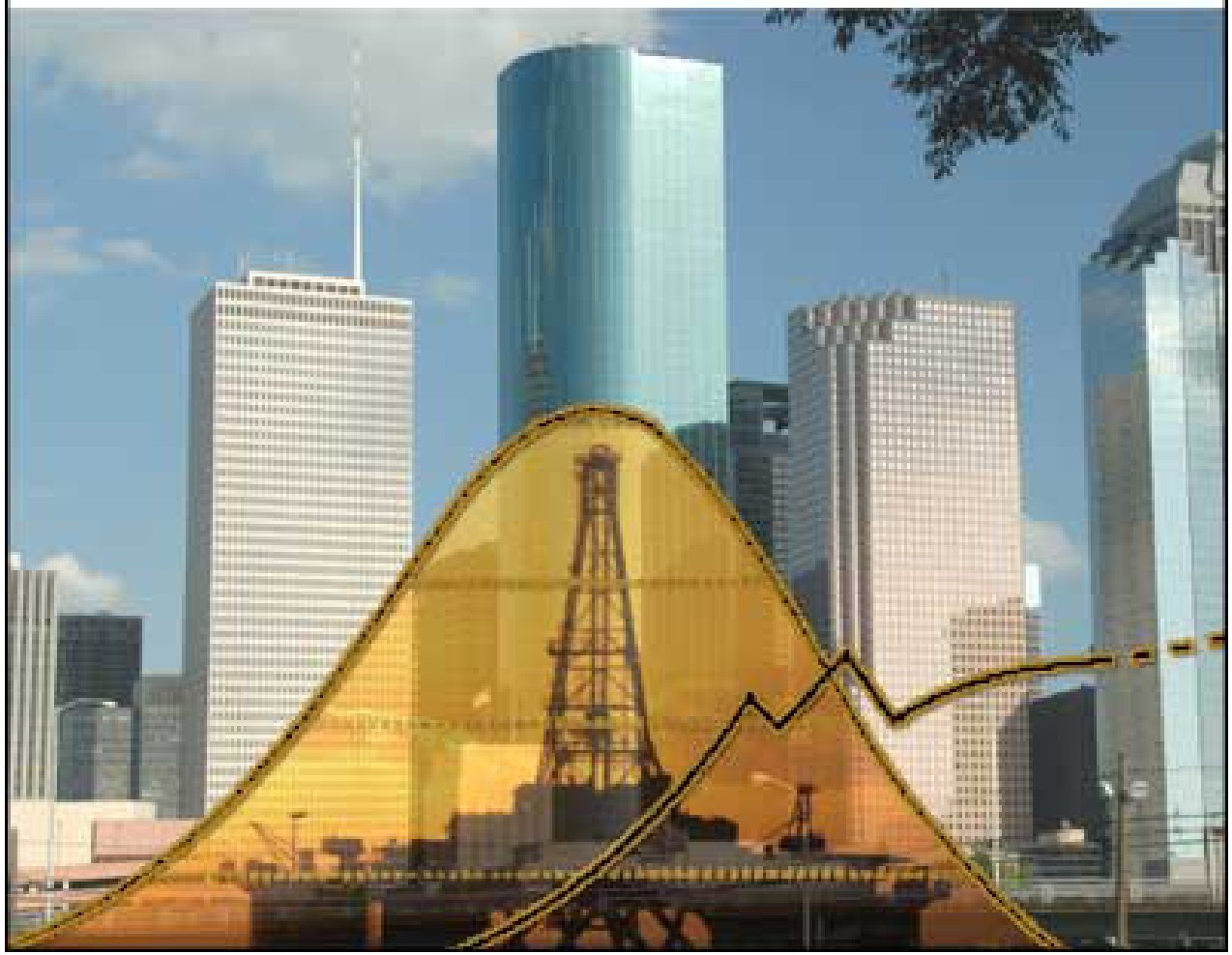
Houston After Oil



Forbes Eco-Lofts

Industrial Redevelopment Project

- Eco-friend Industrial site, residential & commercial space redevelopment
- 225 residential units
- On-site wind farm sufficient to needs of entire complex

Forbes, Innovations

One million gallon rainwater retention canal

Electric car fleet

Wind power for complex

Cross ventilation in all units

Community recycling

Concrete heat radiating floors

Forbes

Industrial ship channel location - old ink plant

Model unit, Open space, Solar gain

BedZED

Beddington Zero Energy Development

The future of housing? 100 units, “carbon neutral”

BedZED Facilities Center

CHP Plant (750-1000 KWH per annum) • Wastewater Treatment • Community Center • Leaching Field •

BedZED “Living Machine”

Onsite natural wastewater treatment

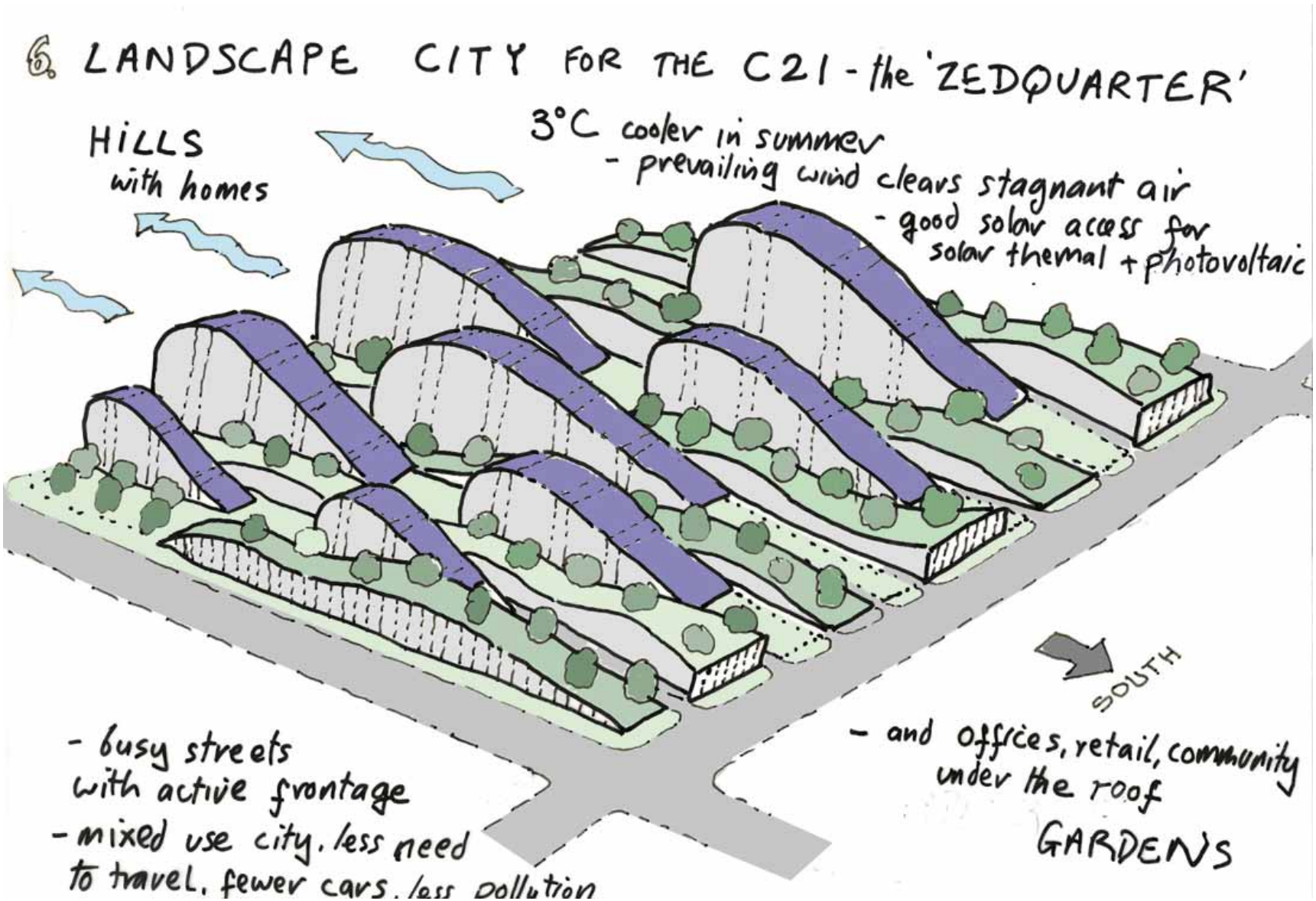
BedZED, EV Plug-in

Changsha Master Plan

1.4 Hectare ‘ZEDquarter’

Based on BedZED Model. 130 2-3 BR Homes / hectare. Rice husk CHP
approximately 500 people / hectare

Changsha


6. LANDSCAPE CITY FOR THE C21 - the 'ZEDQUARTER'
HILLS with homes
3°C cooler in summer
- prevailing wind clears stagnant air
- good solar access for solar thermal + photovoltaic
SOUTH
- busy streets with active frontage
- mixed use city. less need to travel. fewer cars. less pollution
- and offices, retail, community under the roof
GARDENS

Changsha Cross Section

Rooftop park, bike path

SkyZED - ZED Tower

The Future of High Rises?

Features

Generates its own power

Reclaimed materials

Higher-performance double glazed windows

300 mm of insulation

Power Assumptions

750-1000 KWH per annum per person

3 2-bed flats per floor

Wind turbines and PV look to provide 18000 - 24000 KWH per annum

SkyZED

SkyZED

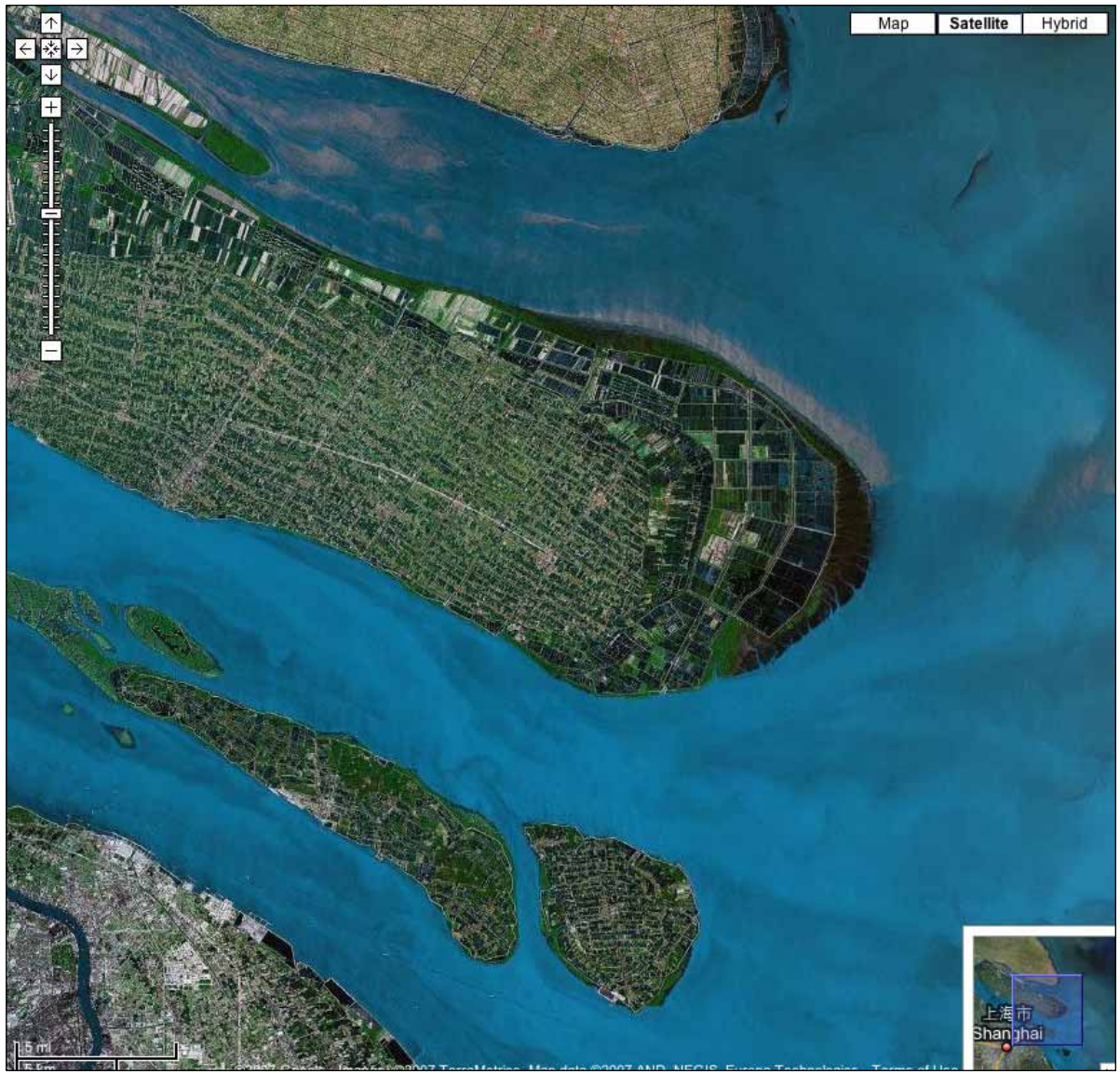
Vertical Turbines, Solar Gain, Super Efficient Design

Dongtan China

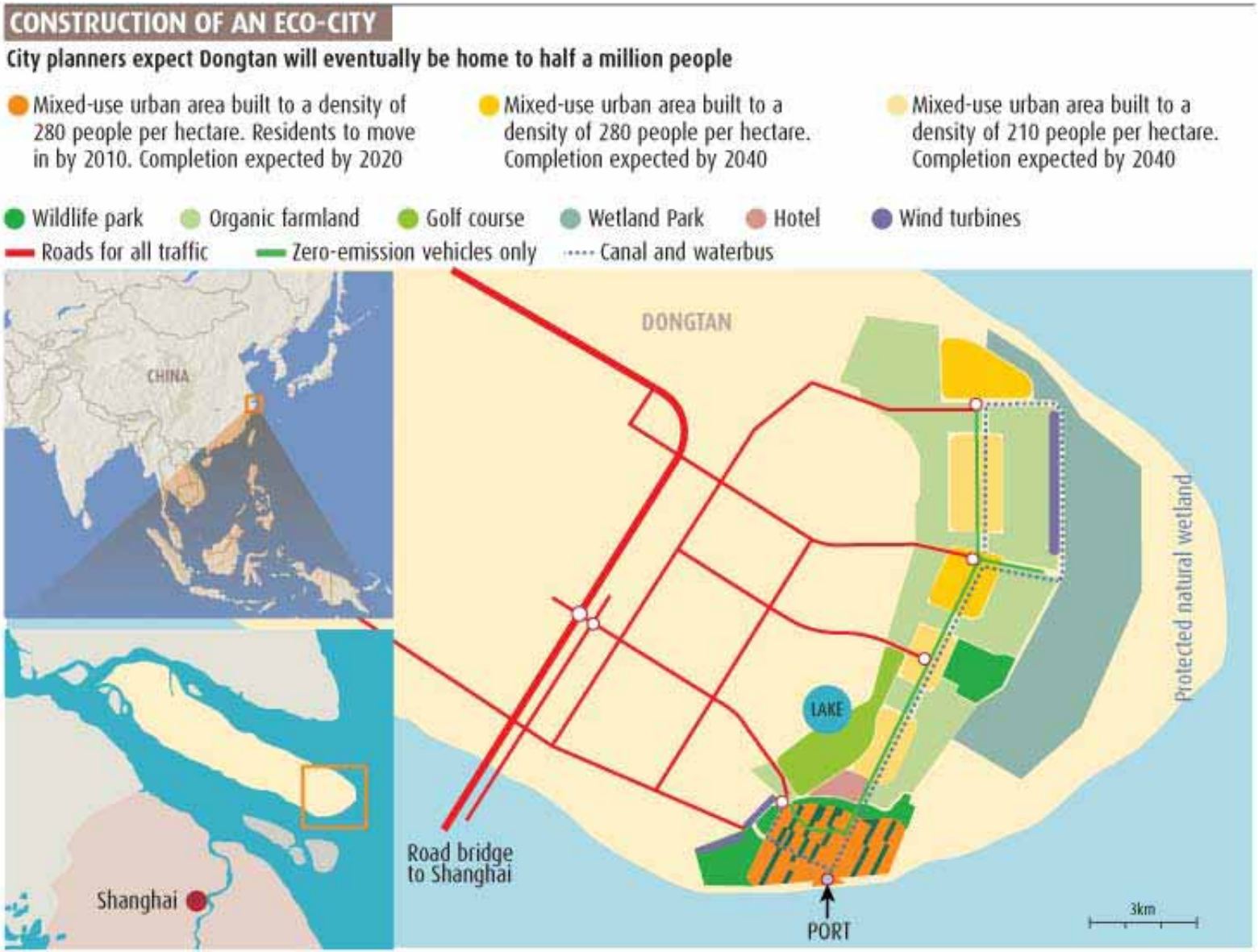
Carbon neutral city master plan. 500,000 people by 2030

Dongtan, Satellite View

Chongming Island, Yangtze River, Shanghai



Dongtan, Master Plan



Dongtan Aerial View

“Holistic” Systems Approach: Combustion free transport = clean air, quiet, open windows, less heat island effect, cheaper cooling.

Dongtan

The Future of Residential Developments?

Super efficient

Carbon neutral, low-carbon

On-site power production through solar, wind & biomass

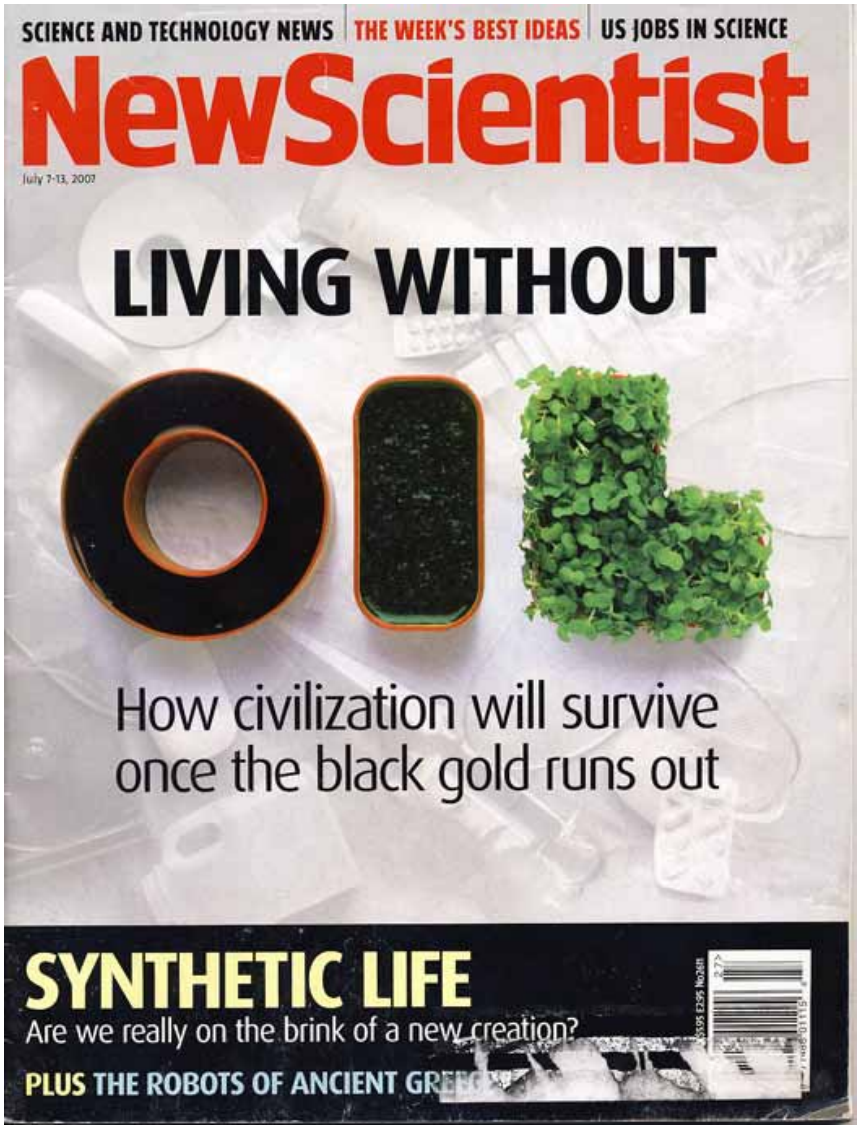
On-site wastewater treatment, recycling

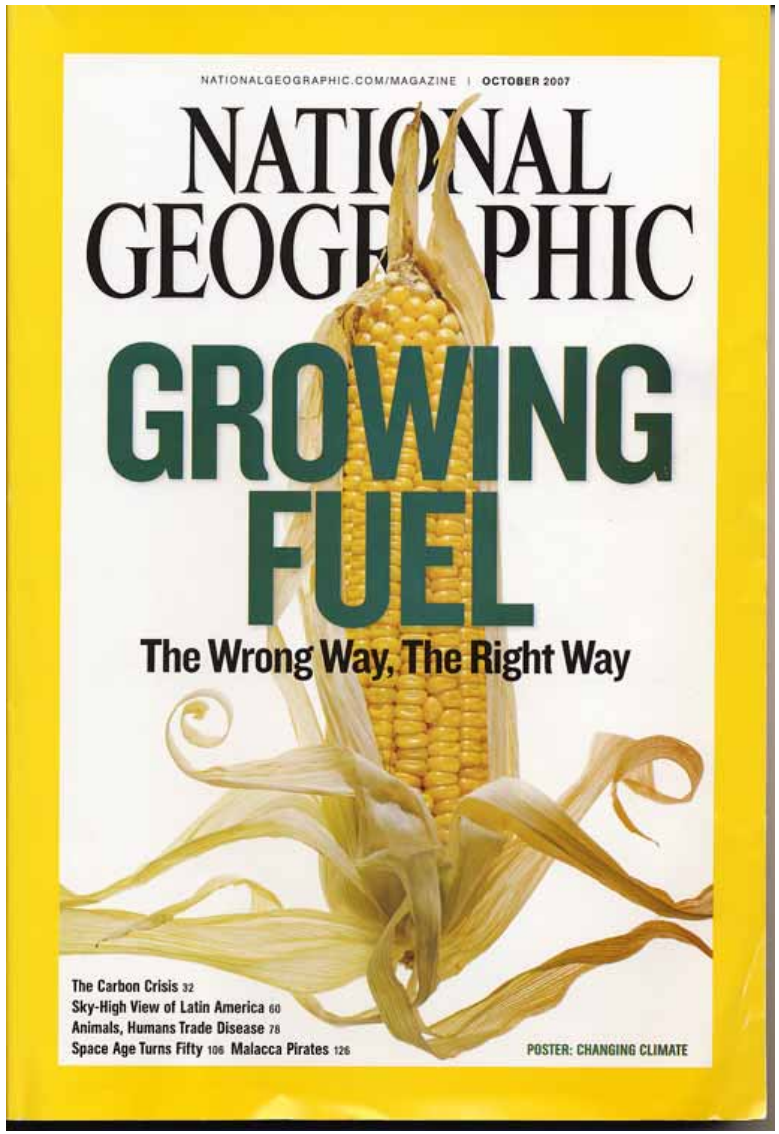
Plug-in Evs

LEED Standards for Sustainable Communities

BioRefineries, BioFuels

Who Needs Oil?





Biorefineries & Biochemicals

ks to create a polymer-based
nass feedstock instead of

old products, such as solvents

Wood • Soybeans • Algae

Biochemical Industry

polymer-based chemical industry that use biomass feedstock instead of petroleum.

Petroleum

Petroleum refined derivatives

Ethylene

Propylene

Benzene

Houston

Plants

Biochemical industry building blocks

Sugars

Starches

Fats & Proteins

Industrial and household products

Biorefined Products

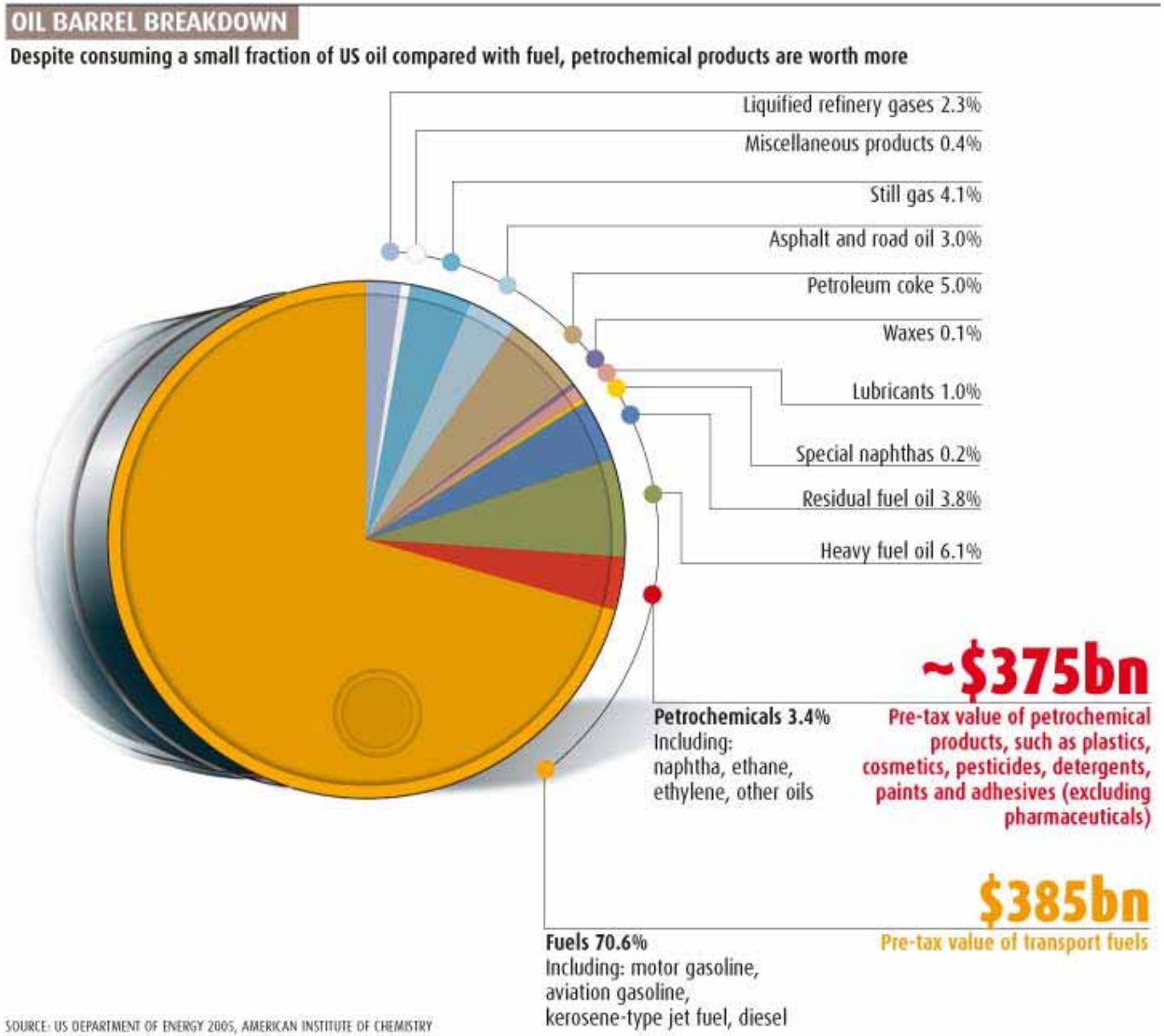
On the Market

- runway deicers, engine coolants
- solvents
- diesel fuel additives
- detergent
- plastics
- personal care products such as non-toxic nail polish

Biochemical Industry Benefits

- Profitable at smaller scales than conventional refineries
- Construction and operating costs are lower
- Operate at lower temperature and pressure than petrochemical refineries
- Less complicated to build

Profits in Chemicals



Biochemical Case Studies

A new breed of “chemical” company

Archer Daniels Midland produces detergents from sidestream products of their ethanol refinery. ‘The supermarket to the world’? - new motto needed?

Cargill is using soybean oil to make urethane polyols - a component of polyurethanes, which are used to make foams, adhesives, paints, sealants and more.

Many companies are marketing 100 per cent bio-based plastics, largely for use in packaging and made from lactic acid polymers derived from corn.

Aunt Jemima Tires!

Biochemicals, Government Forecast

By 2025, the US Department of Energy wants 25 per cent of industrial organic chemicals to be derived from biomass.

In addition to reducing dependence on foreign oil, **fostering a domestic biorefinery industry modeled after petrochemical refineries** is a primary objective of the Biomass Program. … the goal is to foster new industries converting lignocellulosic biomass into a wide range of products, including ones that would otherwise be made from petrochemicals.

A threat to Houston or an opportunity?

2007 Houston World Oil Conference

Proceedings

- Conference Program
- Conference DVD
- Video Highlights
- Peak Oil Review
- ASPO-USA