



**ethanol  
summit  
2013**

# Unica Ethanol Summit

## Global Agenda for Biofuels!

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ALGENOL  
BIOFUELS  
*Harnessing the sun to fuel the world*

ENSYN

# Who We Are

gevo™

CTC  
CENTRO DE TECNOLOGIA CANAVIEIRA

AMYRIS

GranBio

AMERICAN  
PROCESS

Syntroleum

DU PONT®

REP REVE  
RENEWABLES

solazyme

DDCE  
DuPont Danisco Cellulosic Ethanol LLC

UOP  
A Honeywell Company

EMERSON

SundropFuels

coskata

DynamicFuels™

SynGest

Sapphire  
Energy™

EndicottBiofuels

BETASEED

CH2MHILL

Tyson

NESTE OIL

Canergy™

CIA  
*Green*

SGC  
GRUPO

MUSKET

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WASHAKIE  
RENEWABLE ENERGY

Intertek

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TRITON  
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CoolPlanet  
ENERGY SYSTEMS

GENX  
ENERGY GROUP

CHEMTEX

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MUREX  
N.A. LTD.

LanzaTech

VIESEL  
MADE IN THE USA

VIRENT

KIOR

SWEETWATER

weaver

Butamax™  
A joint venture between BP and DuPont

## Demand will continue to grow: China's desire to reach 'energy parity' will alone have a massive effect, not including other developing nations



### U.S.

Population: 308 MM  
GDP per capita: \$47,100  
Oil use: 19.2 MBD  
Oil use (per 1,000): 62 bpd



### Poland

Population: 38 MM  
GDP per capita: \$18,800  
Oil use: 0.55 MBD  
Oil use (per 1,000): 15 bpd



### China

Population: 1,330 MM  
GDP per capita: \$7,500  
Oil use: 8.3 MBD  
Oil use (per 1,000): 6.2 bpd

- If China aspires to be as "energy rich" as the U.S. by 2030, it will add **78.5 MBD**
- If China aspires to be half as "energy rich" as the U.S. by 2030, it will add **35.1 MBD**
- If China *only* aspires to be as "energy rich" as Poland\* by 2030, it will still need to add **12.7 MBD** (and still be the largest consumer of oil in the world)
- *When you factor in the significant demand growth from India, Russia, Brazil, and the Middle East, the effect will be highly disruptive to the world oil markets*

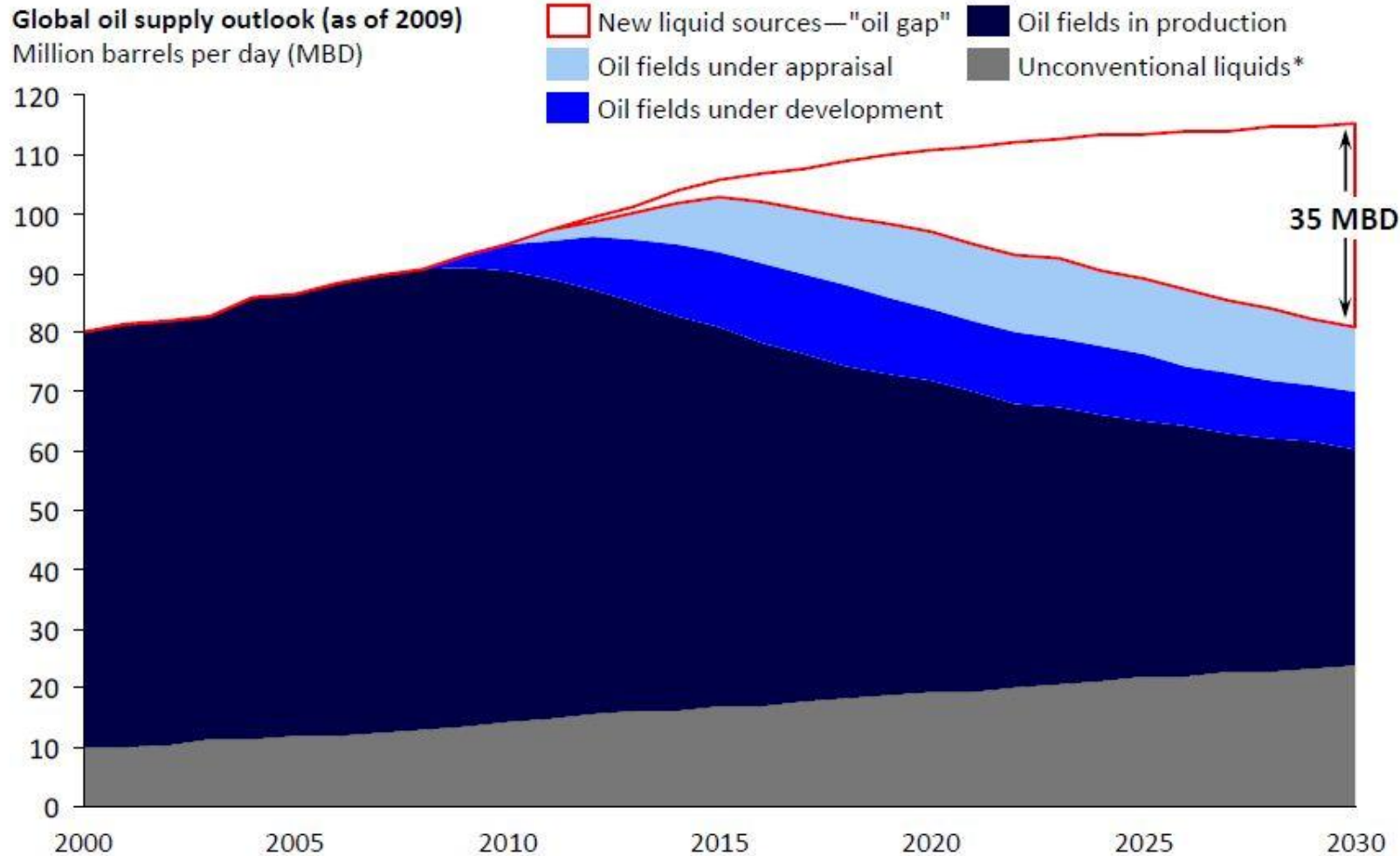
\* Poland has the lowest energy use per capita of any country with a GDP per capita greater than \$10,000

Note: Assumes population of China only grows to 1.4 billion by 2030



# CERA estimates that by 2030, the world will demand 35 million barrels per day of liquids from unidentified sources—an “oil gap” that must be filled

Global oil supply outlook (as of 2009)  
Million barrels per day (MBD)



\* Includes extra heavy oil, coal-to-liquids, gas-to-liquids, natural gas liquids, ethanol, biodiesel

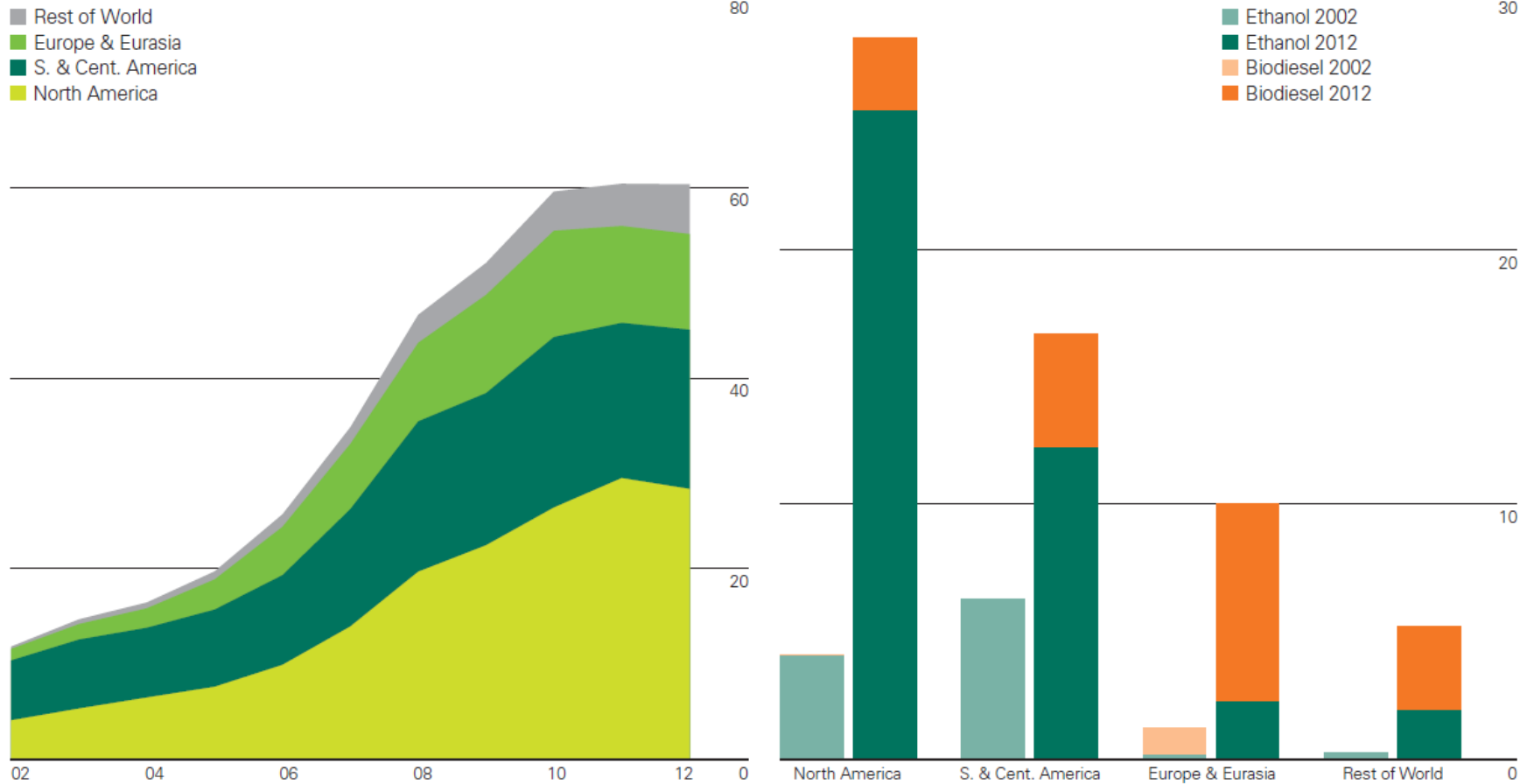
Source: Cambridge Energy Research Associates "The Future of Global Oil Supply", 2009



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## World biofuels production

Million tonnes oil equivalent



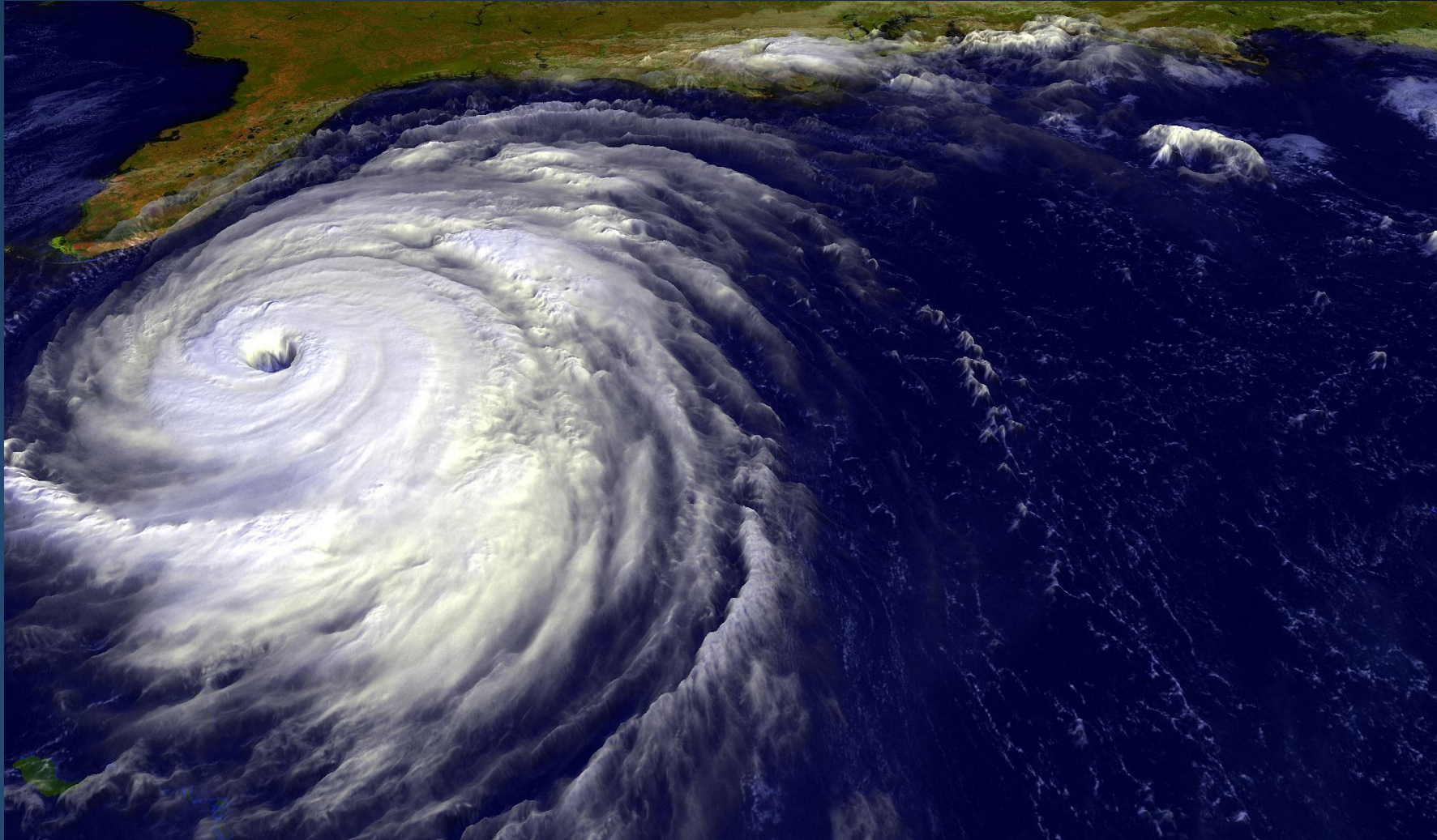
World biofuels production declined by 0.4% in 2012, the first decline since 2000. Increased output in South America and Asia Pacific was outweighed by declines in North America and Europe. Global ethanol output declined by 1.7%, the second straight annual decline. Biodiesel production grew by 2.7% and has doubled in the last five years and now makes up 31% of total biofuel supply.

Source: BP Statistical Review of World Energy, June 2013



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# Climate Change



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# Advanced Biofuels at work: Great Green Fleet



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# Thank you Let's Work Together



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