

**United
Technologies**

ENVIRONMENTAL SUSTAINABILITY AT UTC

Presented to SIPRAC at CT DEEP

March 8, 2012

Company Private



Environment, Health & Safety

United Technologies Corporation

UNITED TECHNOLOGIES



Heating, ventilating, cooling & refrigeration systems



Security & fire protection services



Elevators, escalators, moving walkways, people movers & horizontal transportation systems



Industrial & aerospace systems



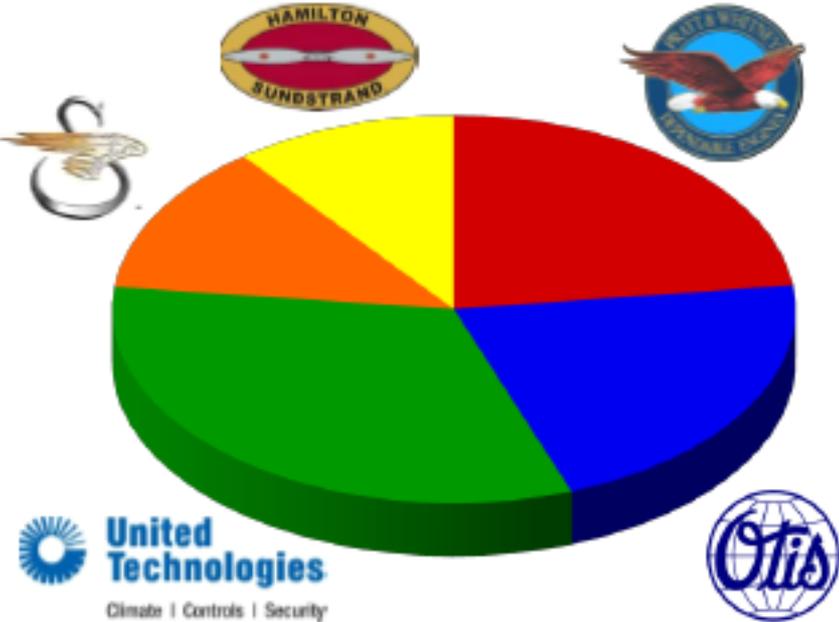
Aircraft engines, gas turbines & space propulsion systems



Helicopters

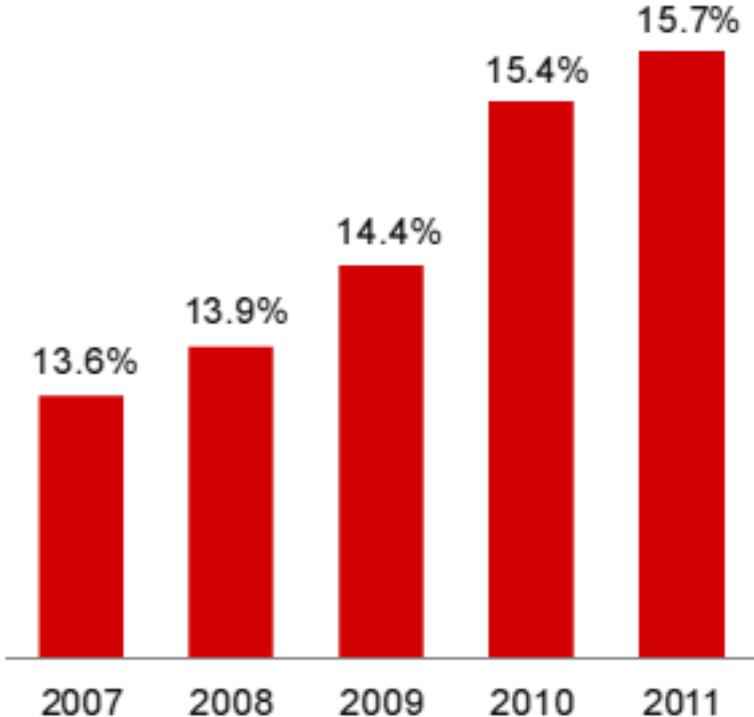
2011 RESULTS

Sales

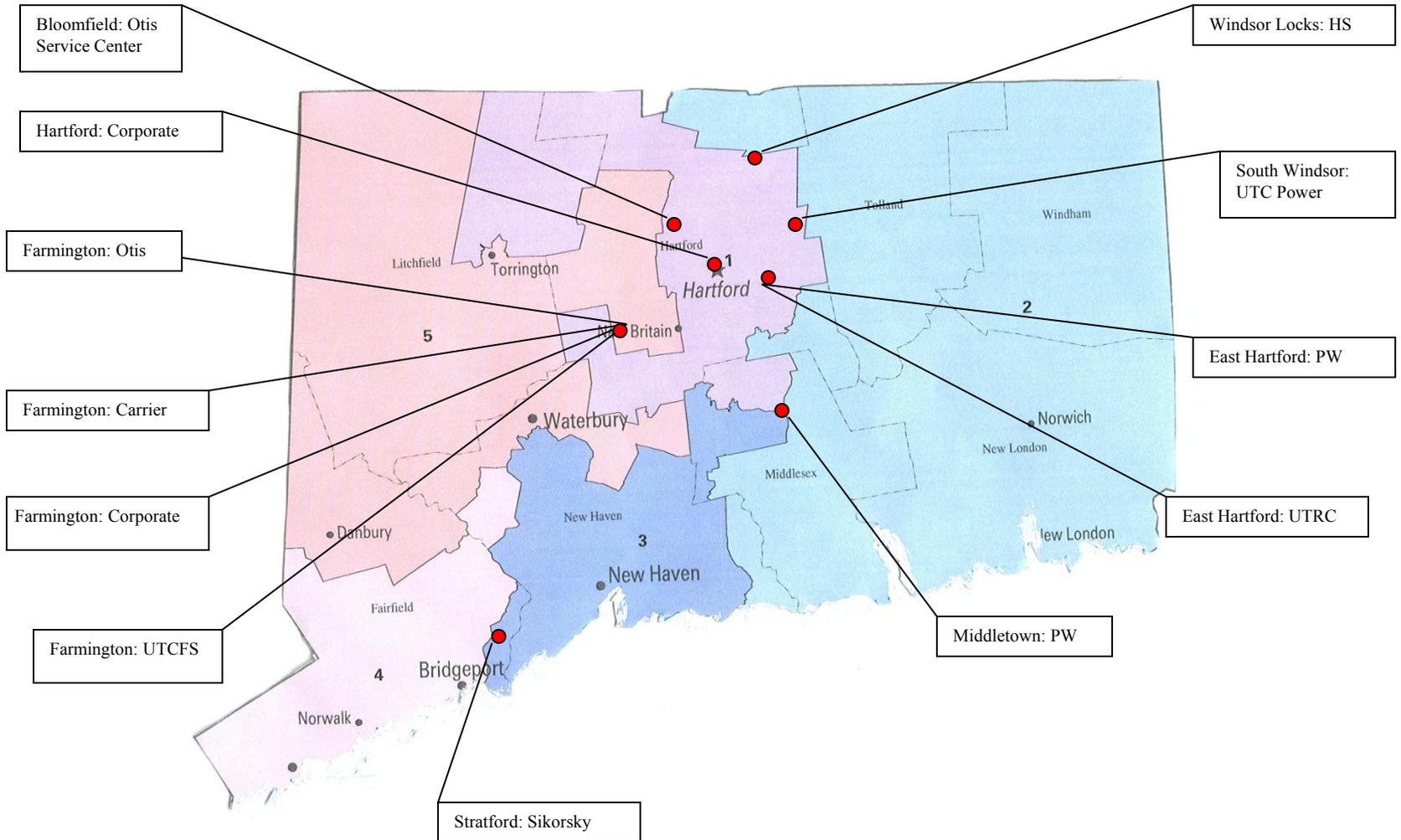


\$58.2 billion

Adjusted segment operating margin*



MAJOR UTC OPERATIONS IN CONNECTICUT

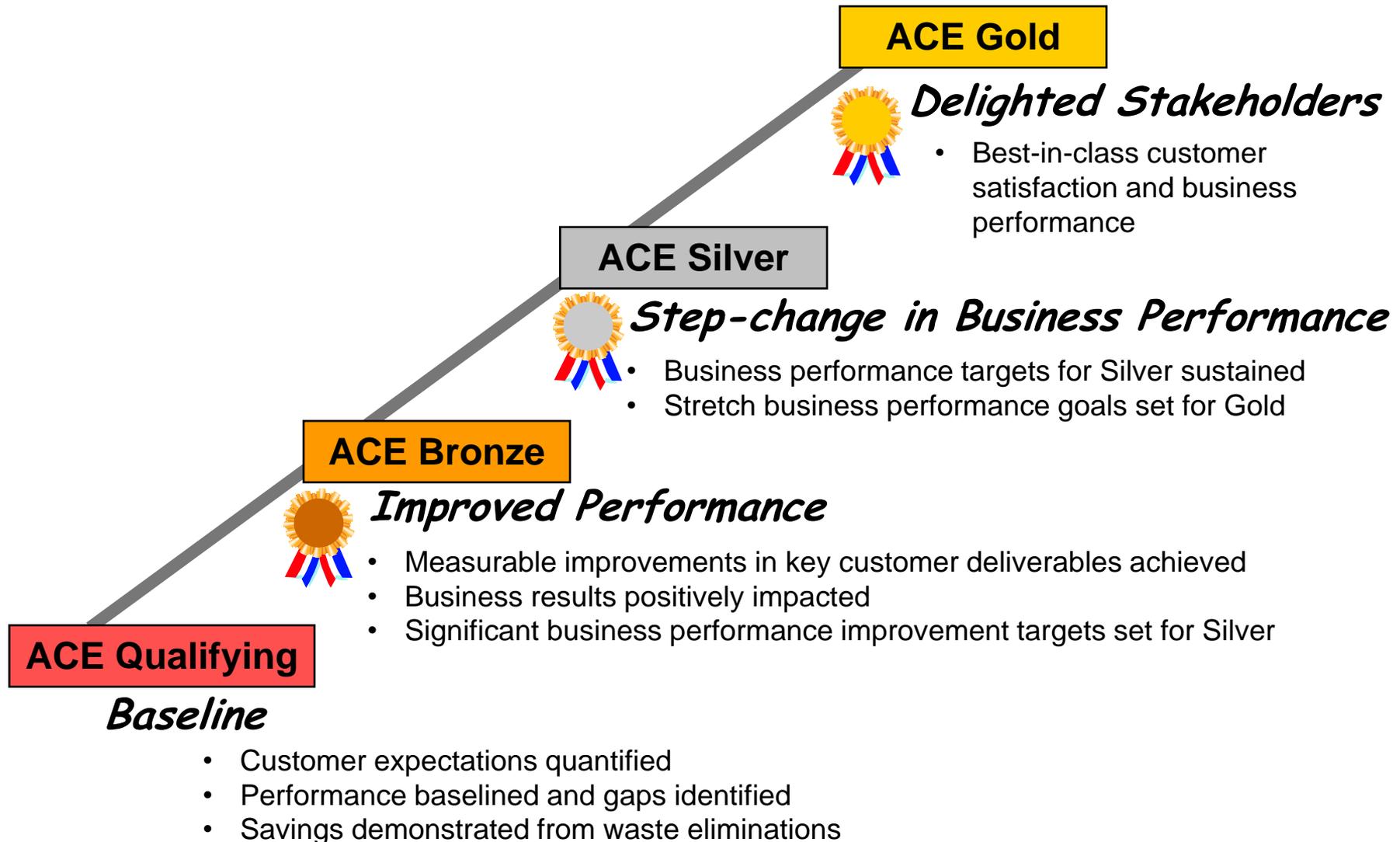


UTC ACE OPERATING SYSTEM



Customers Define our Quality

ACE CONTINUOUS IMPROVEMENT



SUSTAINABILITY

Social, environmental and economic performance

“Sustainability is doing things efficiently to preserve resources and minimize environmental impacts. Not everyone broadens the definition to include human capital but I would....”



George David
Former UTC
Chairman and CEO



Louis Chênevert,
UTC Chairman and CEO

“My predecessor, George David, had a vision 15 years ago...that UTC would be an environmental leader, both in our own operations and with our products. This was not a choice between financial and environmental performance. Rather, it was a steadfast commitment to the belief that profitability and environmental responsibility go hand-in-hand.”

UTC PERSPECTIVE

Environmental Sustainability – Environmental resource management that does not compromise availability of resources for future generations

Not an absolute measure or single model

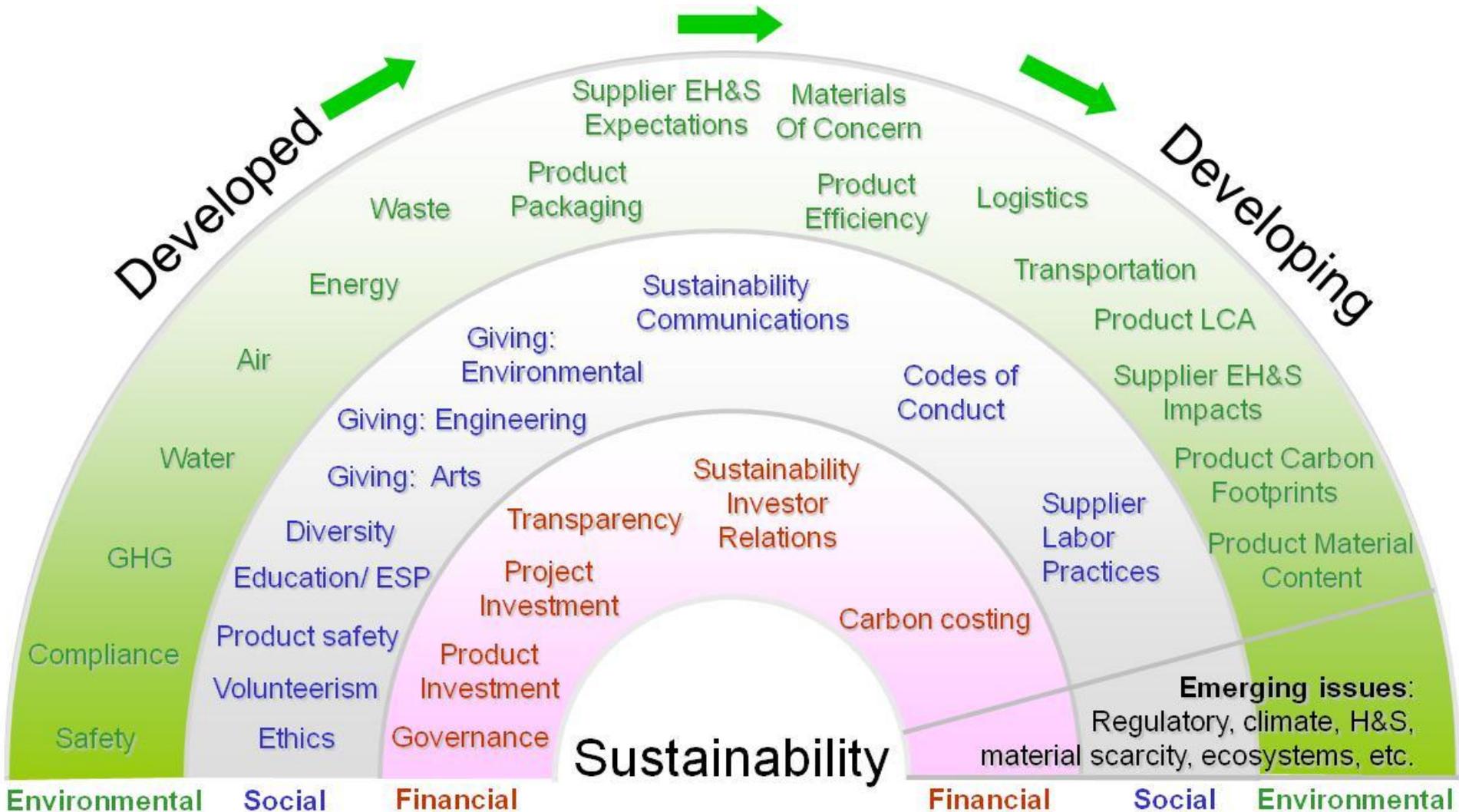
Evolves to respond to changing conditions and data

Not just an economic argument – includes non-quantifiable corporate culture

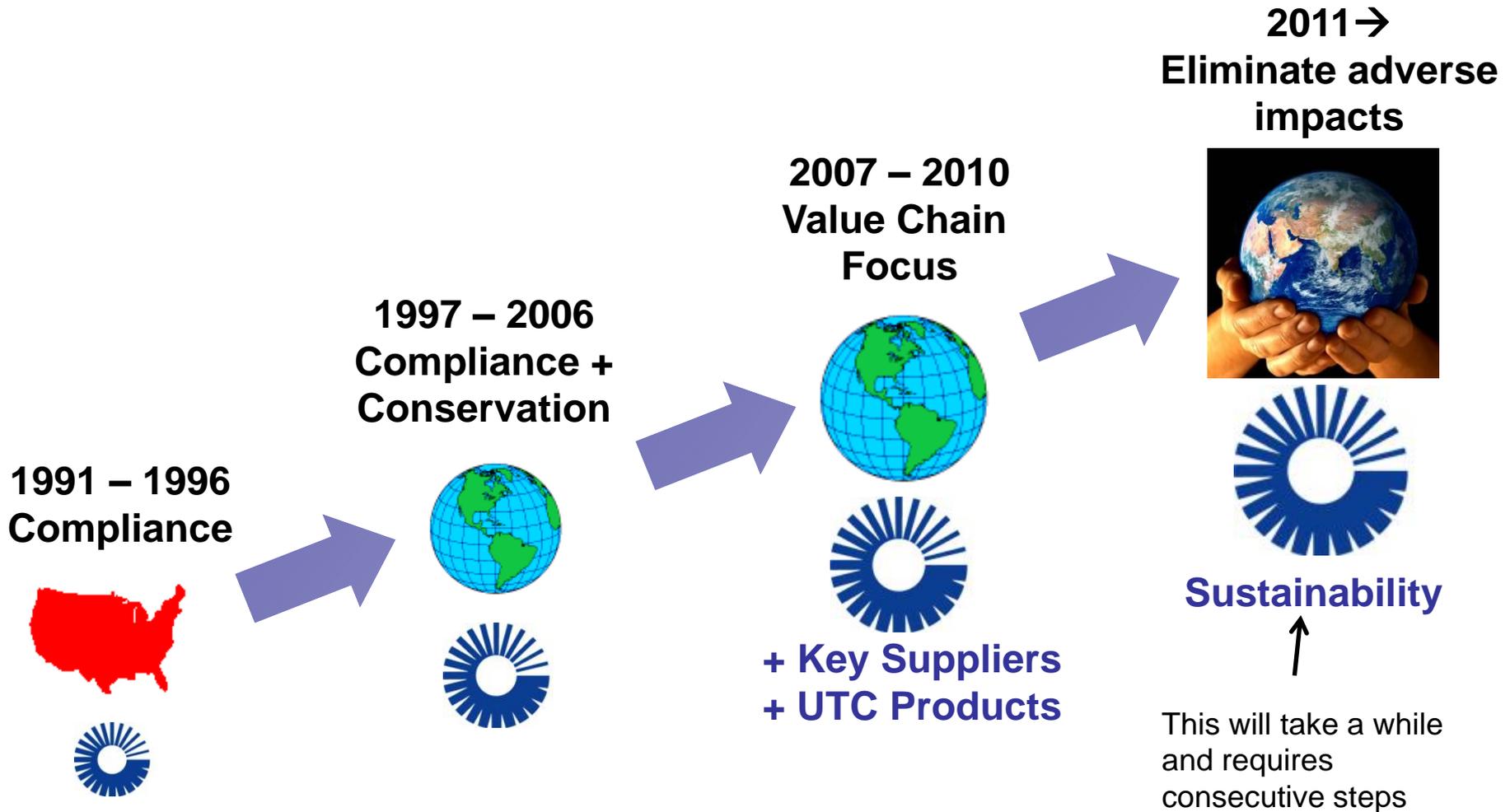
Requires identification of what you know and what you don't – “It's the right thing to do” won't routinely prevail

One mind at a time

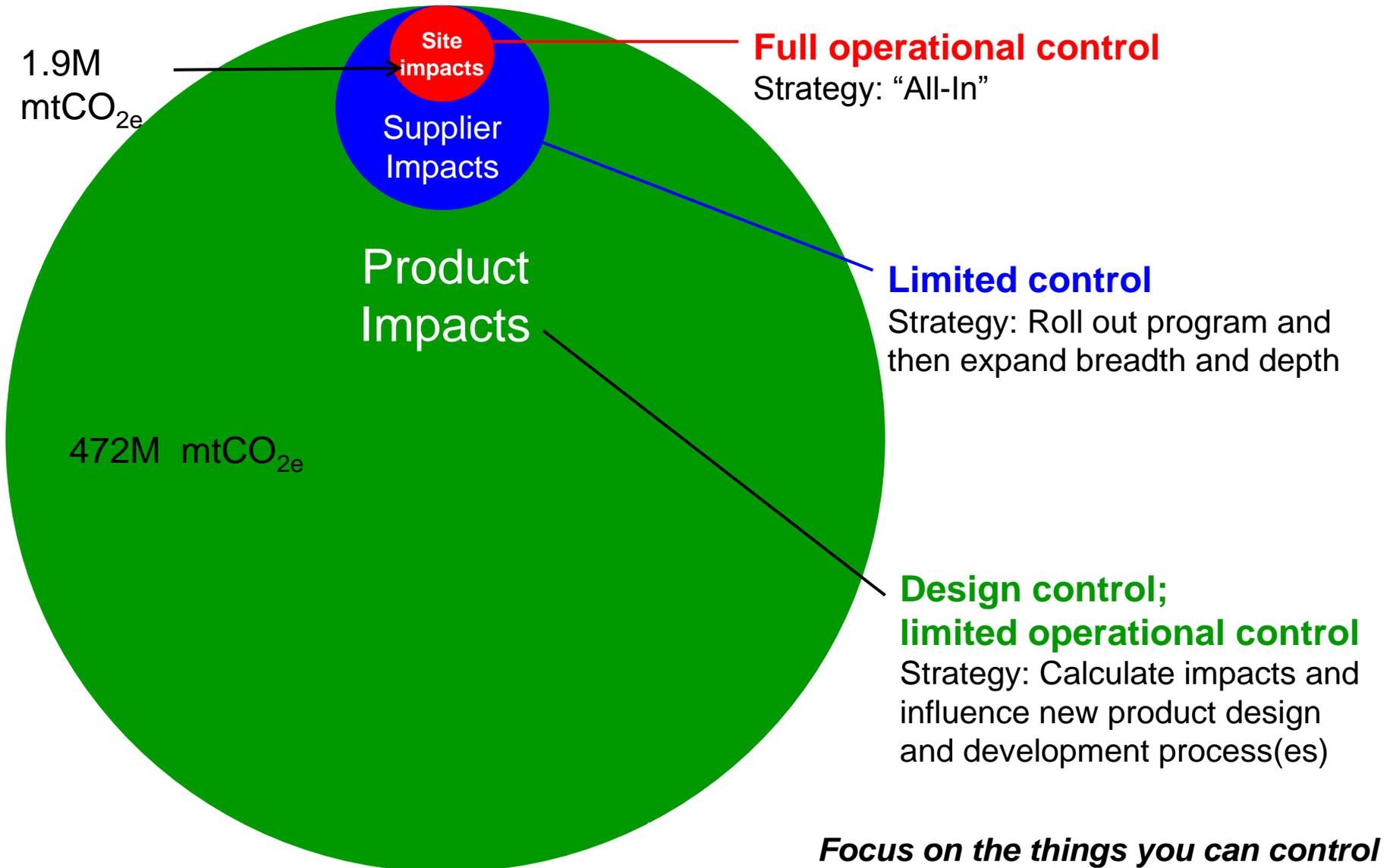
UTC SUSTAINABILITY ACTIVITIES



EVOLUTION OF UTC EH&S PROGRAM

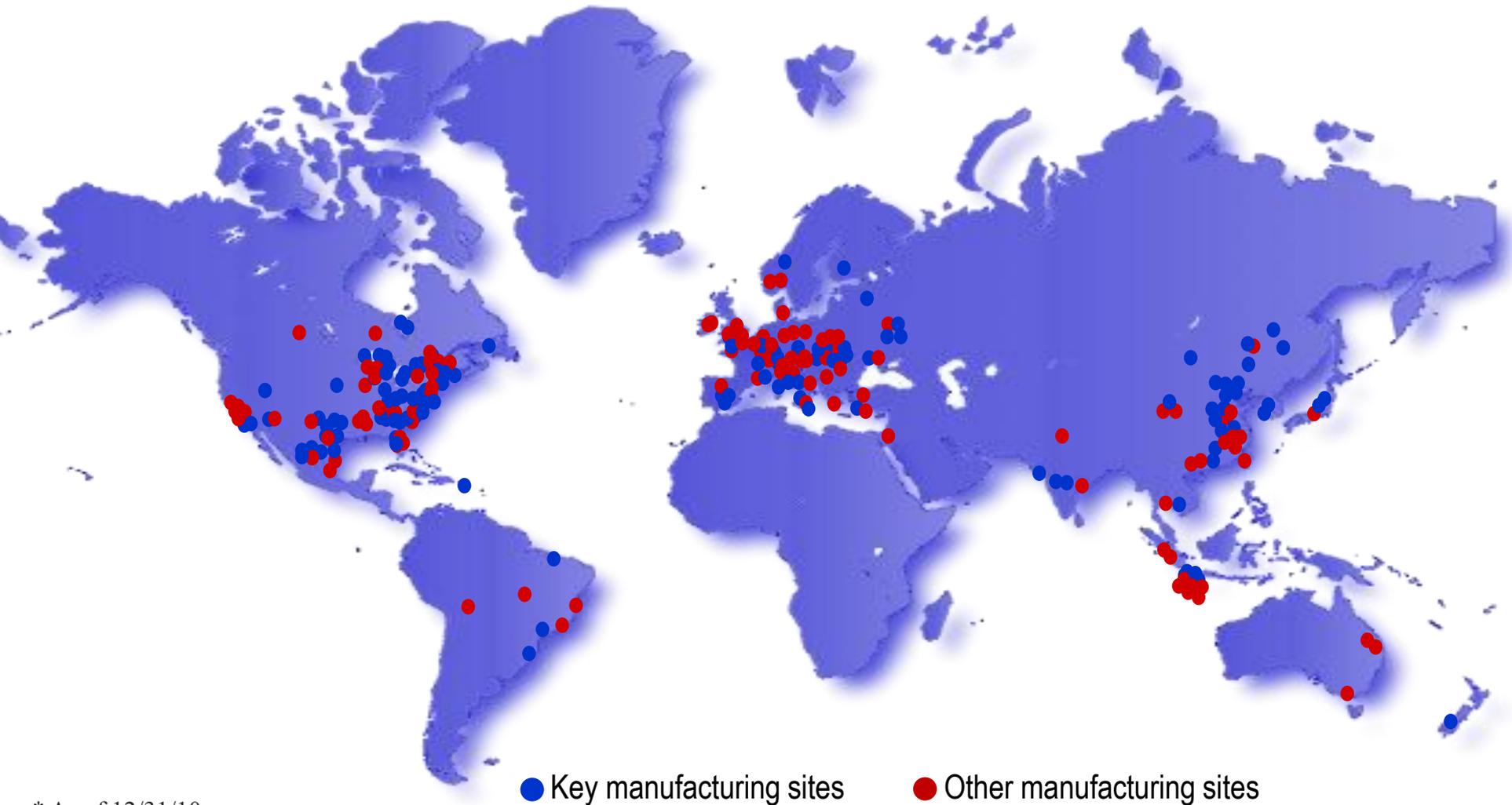


EH&S IMPACTS, CONTROL AND STRATEGY



GLOBAL PRESENCE

Manufacturing Sites Worldwide



* As of 12/31/10

CURRENT STATE

DATA DRIVEN

Data collected from 300+ sites

Quarterly analysis and reporting to management on progress towards goals

Single source of UTC externally reported data

1996 to present (depending on program)

EH&S Reporting System

Environment

Waste Reporting
Air Emissions
Fleet Emissions
Energy & Water Usage
New Product DfS
Supplier EH&S

CHALLENGES: UTC SITES



Global locations

4,859
97 million square feet;
62 million sq ft of owned,
35 million sq ft leased

Regulatory permits

1,847

Fleet Vehicles



45,000 Top 3 being **23K** vehicles @ Otis
14K vehicles @ F&S,
7K vehicles @ Carrier

Number of miles driven

685 million miles driven,

34 million gallons of fuel and

325K metric tons CO2e



Distributed workforce
 minimal control,
 customer worksites



65,000

Mechanics Technicians and
 Services reps

**25 million jobsite visits per
 year**



1.6 Million

Number of elevators/escalators
 serviced, installed, modernized
 2009

9,000+

Number of engines
 serviced at our
 locations, and at
 customer locations



Legacy product designs
 up to 50 years old

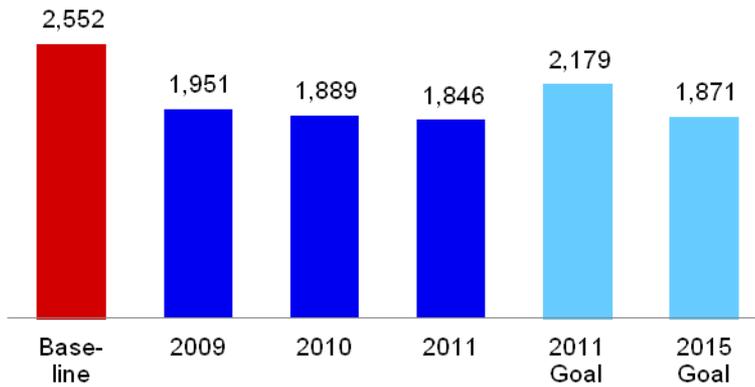
7,340

Number of helicopters
 serviced and modified at our
 locations, and at customer
 locations

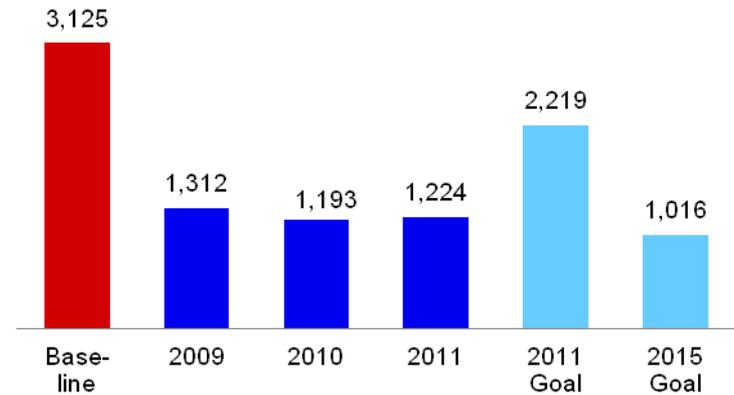
EH&S environmental METRICS

UTC

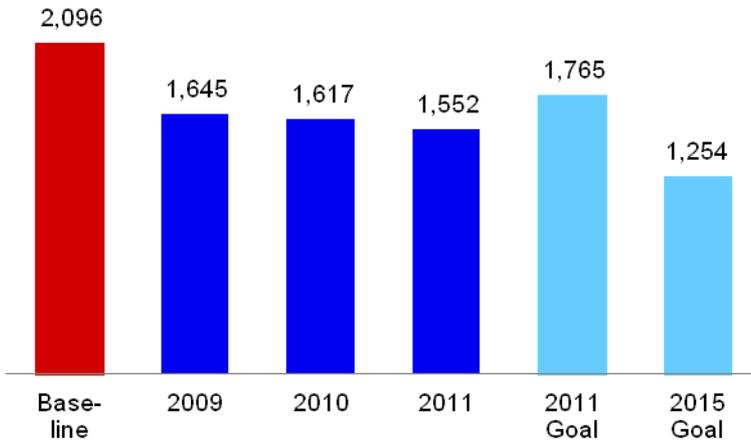
GHGs
(000 tons)



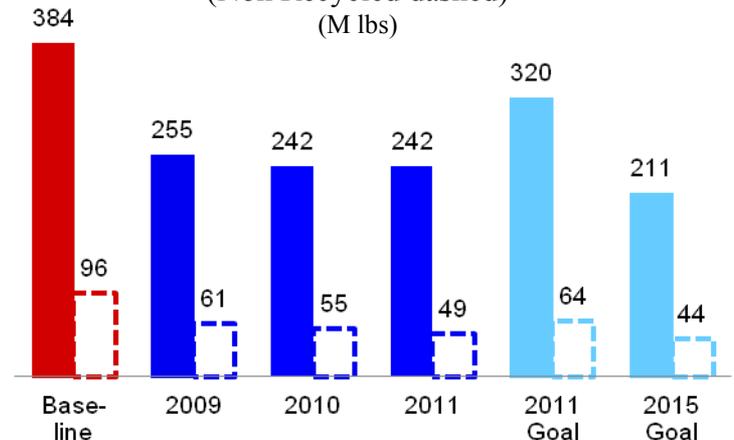
Air
(000 lbs)



Water
(M gal)



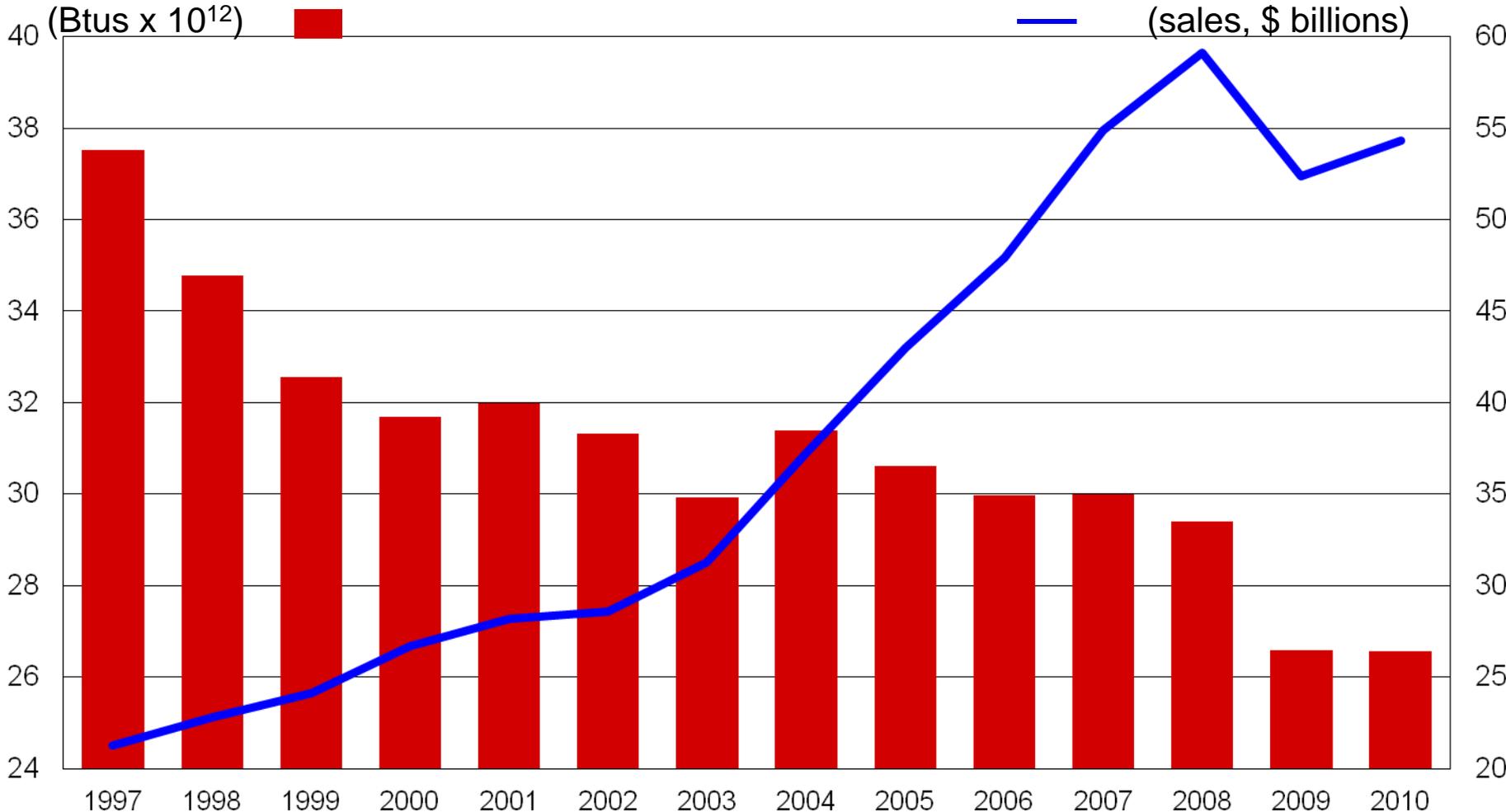
Industrial Waste
(Non Recycled dashed)
(M lbs)



Baseline = 2006 data with adjustments (e.g., acquisitions, divestitures, etc.)

ENERGY CONSUMPTION

Worldwide



GHG REDUCTION STRATEGY

Energy & GHG reductions = lower operating costs

UTC Standard Practice-017
and Reporting Requirements

Auditing of existing sites: identify opportunities

Maximize efficiency of older systems

Maximize efficiency potential of
new systems, new leases and fleet

Leverage cogeneration

Maximize efficiency of new sites:
Green buildings/zero-net energy buildings

Supply chain energy and
GHG reductions

2006 Corporate Responsibility Report
United Technologies Corporation 2006 Corporate Responsibility Report
At the Intersection

Objective 2:

Invest \$100 million over the next
four years in energy conservation
projects, including co-generation
systems.



SULLAIR



UTC Power

A United Technologies Company

Past

2007- 2010

2011 →

PROJECT IDENTIFICATION & DATABASE

Conservation projects and equipment upgrades

Since 2007 UTC has identified over 1400 projects valued at \$170 million; \$147 million are funded

Lighting

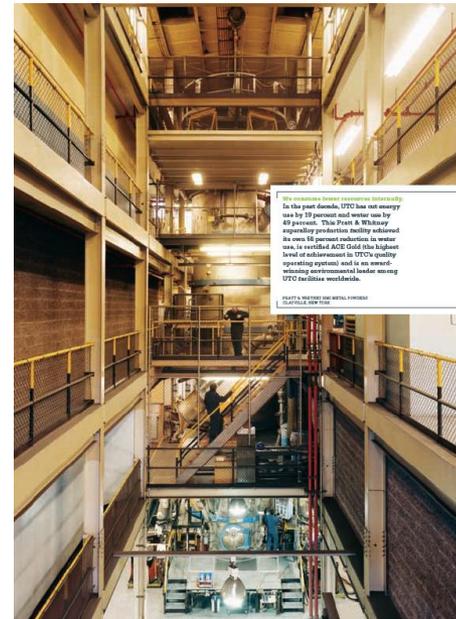
Compressed air

Leak management and Shut-it-off

HVAC systems

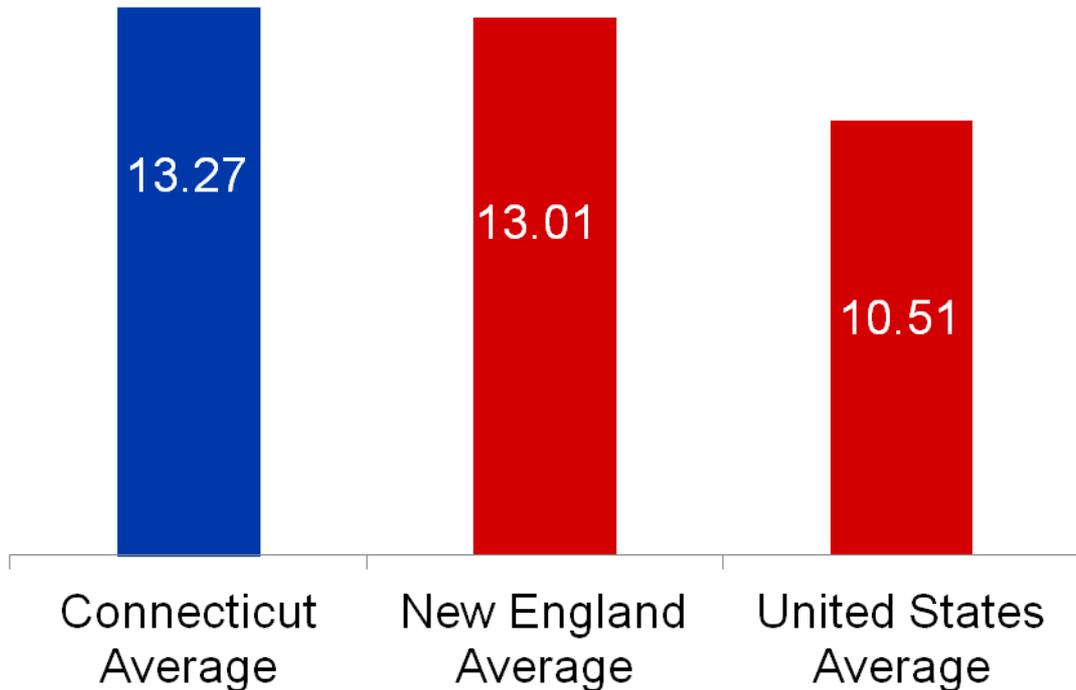
Process improvements

Co-generation systems at Pratt & Whitney, Sikorsky, Hamilton Sundstrand, and the Newington, Connecticut data center



UTC AVERAGE ELECTRIC UNIT COST

Energy Cost (cents / kwh)



Since 2006 UTC has invested over \$85 million in energy conservation and co-generation projects in CT facilities

ENERGY EFFICIENT BUILDING POLICY



LEED Certified buildings
 UTC standard for all new construction
 LEED Gold is target



P&W Shanghai
 Engine Center:
 LEED Platinum



Otis TEDA facility:
 Double LEED Gold



PW G Bldg. Renovation:
 LEED-CI Silver



Carrier's Charlotte, North Carolina and
 Huntington, Indiana Factories:
 First UTC LEED-EB factories and among only
 11 factories worldwide achieving this milestone




Sustainable Facilities Policy Statement¹

UTC EH&S Policy

United Technologies Corporation will not be satisfied until its workplace is safe from hazards, its employees are injury free, its products and services are safe, and its commitment to and record in protecting the natural environment are unmatched. UTC will make environment, health and safety ("EH&S") integral components of all business processes that impact the products, services, and operations of UTC worldwide.

Sustainable Facilities: Intent

The principle of sustainability is to do things efficiently to preserve resources and minimize adverse environmental impacts. UTC is committed to sustainability through five "themes": efficiency of our products, EH&S impacts of our operations, overall productivity, development of our people, and legal compliance and high ethical standards.

Buildings contribute 40 percent¹ of total greenhouse gas emissions globally. With a worldwide real estate portfolio of over 100 million square feet of owned and leased facilities, United Technologies can design and build new facilities that support the best policy to minimize impact on the environment, provide economic benefits and demonstrate our continued commitment to sustainability to our employees, customers, shareholders and the public.

A Sustainable Facilities Policy will:

- Conserve energy, reduce greenhouse gas emissions and minimize environmental impact.
- Utilize UTC products and expertise in creating sustainable and cost effective buildings.
- Provide an indoor environment that enhances employee health, safety and productivity.
- Ensure operation, maintenance and efficiency savings over the life of the building.

Sustainable Facilities: Requirements

Effective January 1, 2008, United Technologies Corporation will utilize the Leadership in Energy and Environmental Design (LEED) building rating system to incorporate sustainable practices in all new facilities. Building that are owned or leased are to incorporate sustainable features that enable a minimum of LEED-Certified and a target of a LEED-Gold rating.

Sustainable Facilities Applicability

All new facilities for which UTC has majority ownership and all new build-to-suit leaseback facilities with a lease term of greater than 10 years.

Facilities where the design is greater than 50 percent complete as of January 1, 2008 are exempt. Sustainable facility policies for existing buildings and major renovations and/or additions will be addressed in 2008.

¹ World Business Council for Sustainable Development "Energy Efficiency in Buildings Summary Report" August 21, 2007 <http://www.wbcsd.org/web/leab>

30 Projects

UTC GLOBAL ENERGY ADVOCACY

U.S. Green Building Council Green Schools Initiative



Alliance to Save Energy “Build Energy Efficiency” Campaign

World Business Council for Sustainable Development Global Energy Efficiency in Buildings Campaign



US-China Clean Energy Research Centers / US-India Joint Clean Energy R&D Center / Prince of Wales Corporate Leaders Group on Climate Change

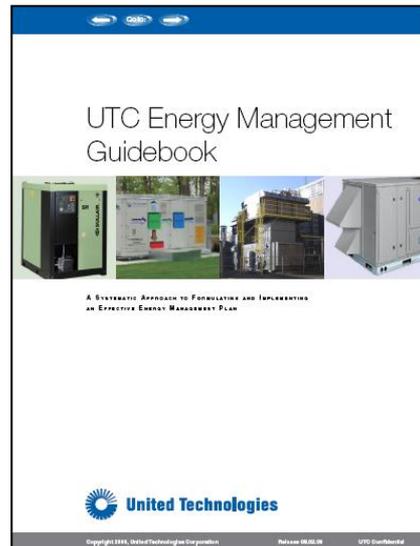
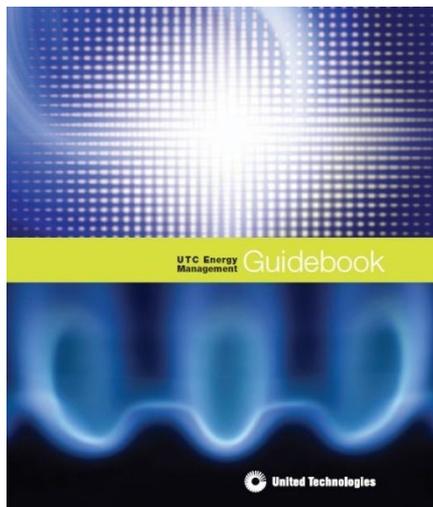
SUPPLIER ENERGY USE

UTC Supply Chain Energy Savings Estimate

“UTC could reach out to 200 of its largest and unique Suppliers ...save about 3.1 Trillion Btu/year of annual ...with a total cost savings of about \$20 million/year.”



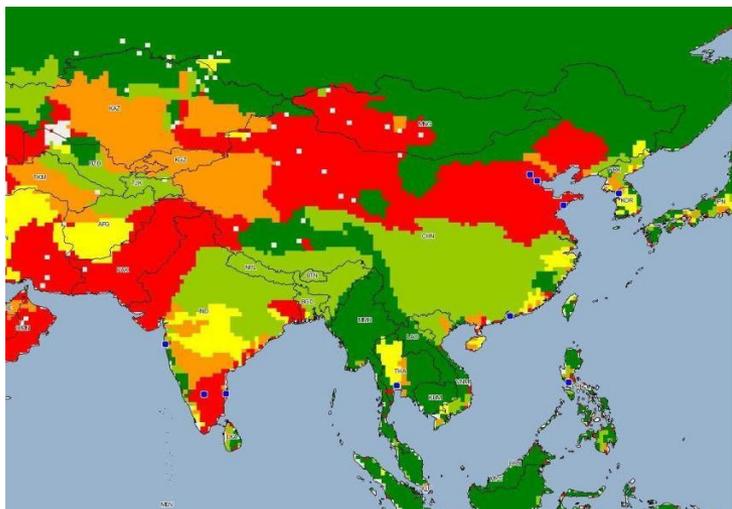
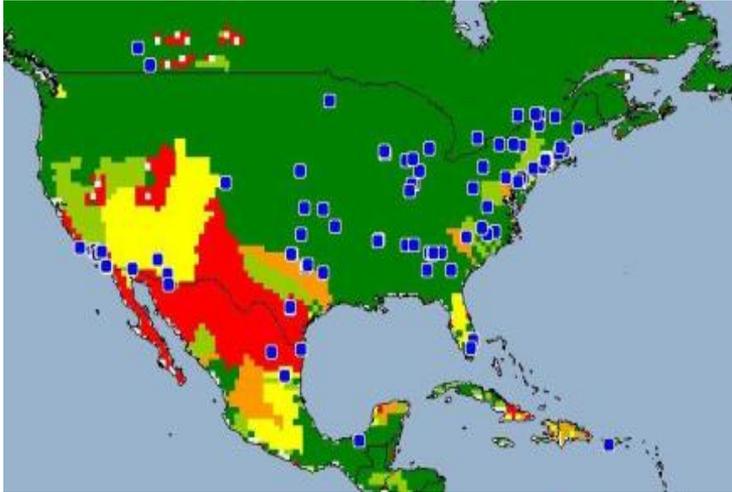
Initial steps include the distribution of Guidebook to Suppliers and development of DOE Save Energy Now Supplier Program



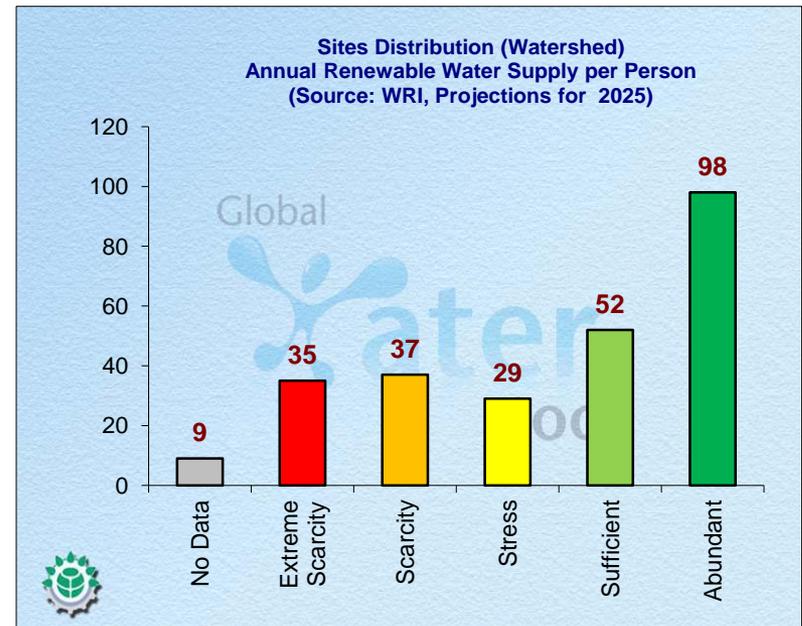
UTC Supplier Energy Management Guidebook
>2000 suppliers

UTC WATER ANALYSIS BY REGION

World Business Council for Sustainable Development



Completed an analysis of water consumption for **260 UTC sites** in relation to local water supply



DESIGN FOR SUSTAINABILITY

Focus on product attributes / indicators

Impact category	Possible attributes / indicators
Resource consumption	Material and energy consumption; water use; recycled content
Climate change	GHG emissions
Ozone depletion	Use of ODS; CFC, halon emissions (Cl, Br)
Acidification	NO _x , SO ₂ , NH ₃ emissions
Photochemical ozone	VOC, NO _x , CO emissions
Respiratory effects	PM, NO _x , SO ₂ emissions
Human and ecotoxicity	Use of chemicals of concern / restricted substances
Eutrophication (aquatic)	N, P compounds to water
Ionizing radiation	Radioactive emissions
Noise	Sound levels



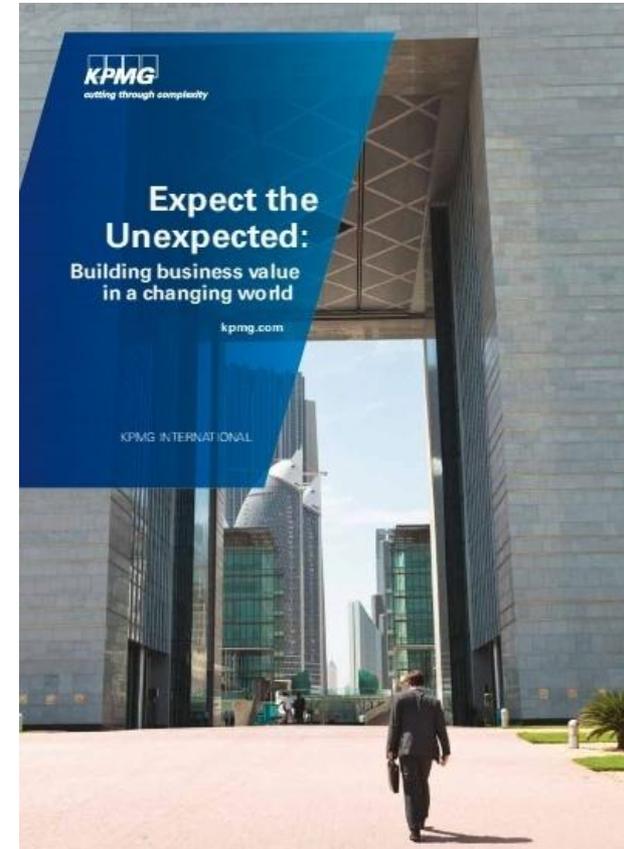
Attribute / Indicator	Raw Material	Manuf.	Distrib. / install.	Use / maint.	End-of-Life
Material consumption	●				●
Energy consumption		●		●	
GHG emissions	●	●		●	●
Air emissions				●	
Noise				●	
Restricted substances		●			●

Level of impact: ● High ● Medium ● Low Not relevant

FUTURE STATE

KPMG MEGAFORCES*

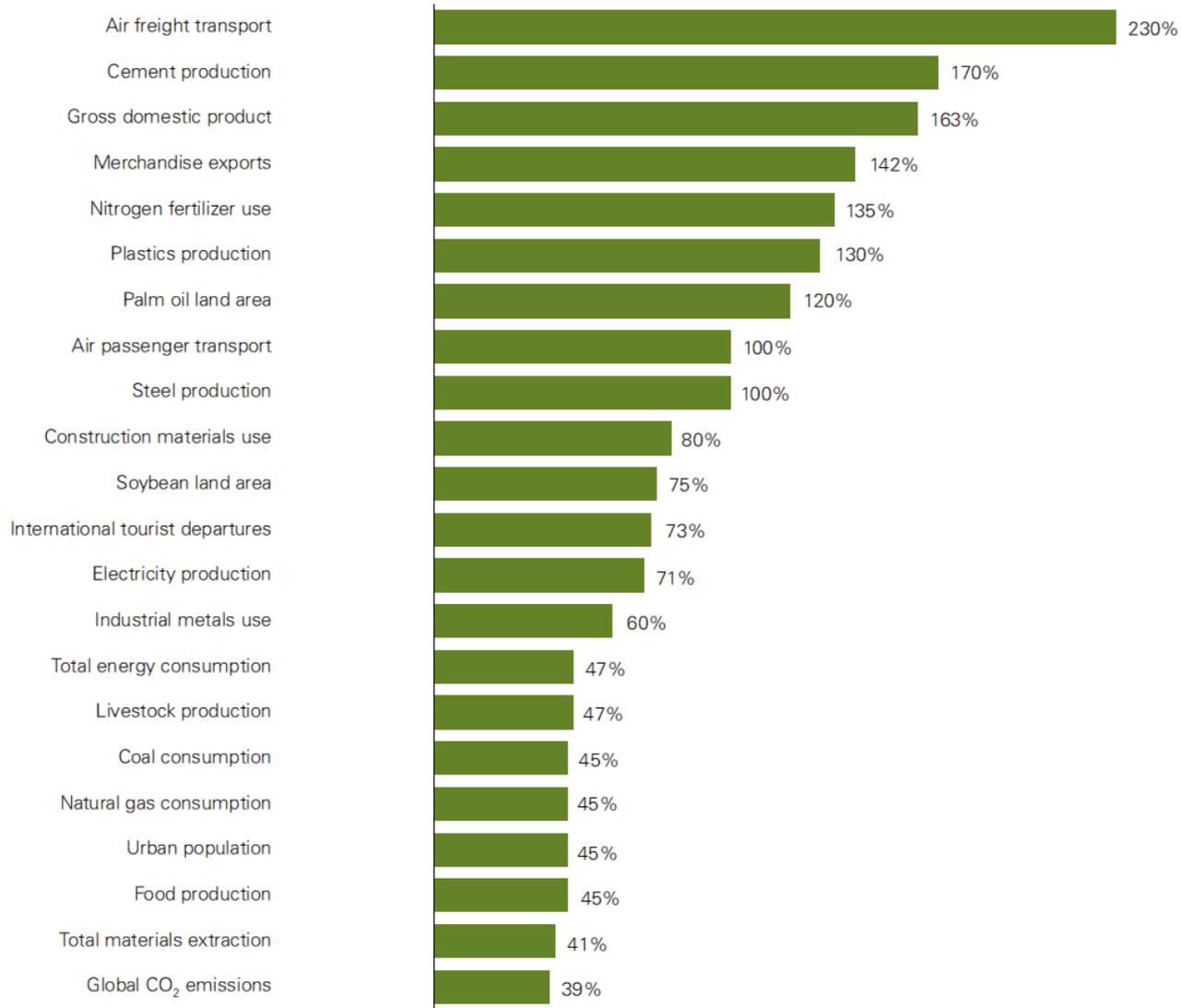
1. Climate Change
2. Energy & Fuel
3. Material Resource Scarcity
4. Water Scarcity
- 5. Population Growth**
- 6. Urbanization**
- 7. Wealth**
8. Food Security
9. Ecosystem Decline
10. Deforestation



Source: "Expect the Unexpected: Building business value in a changing world", KPMG International 2012. Copies available at KPMG.com

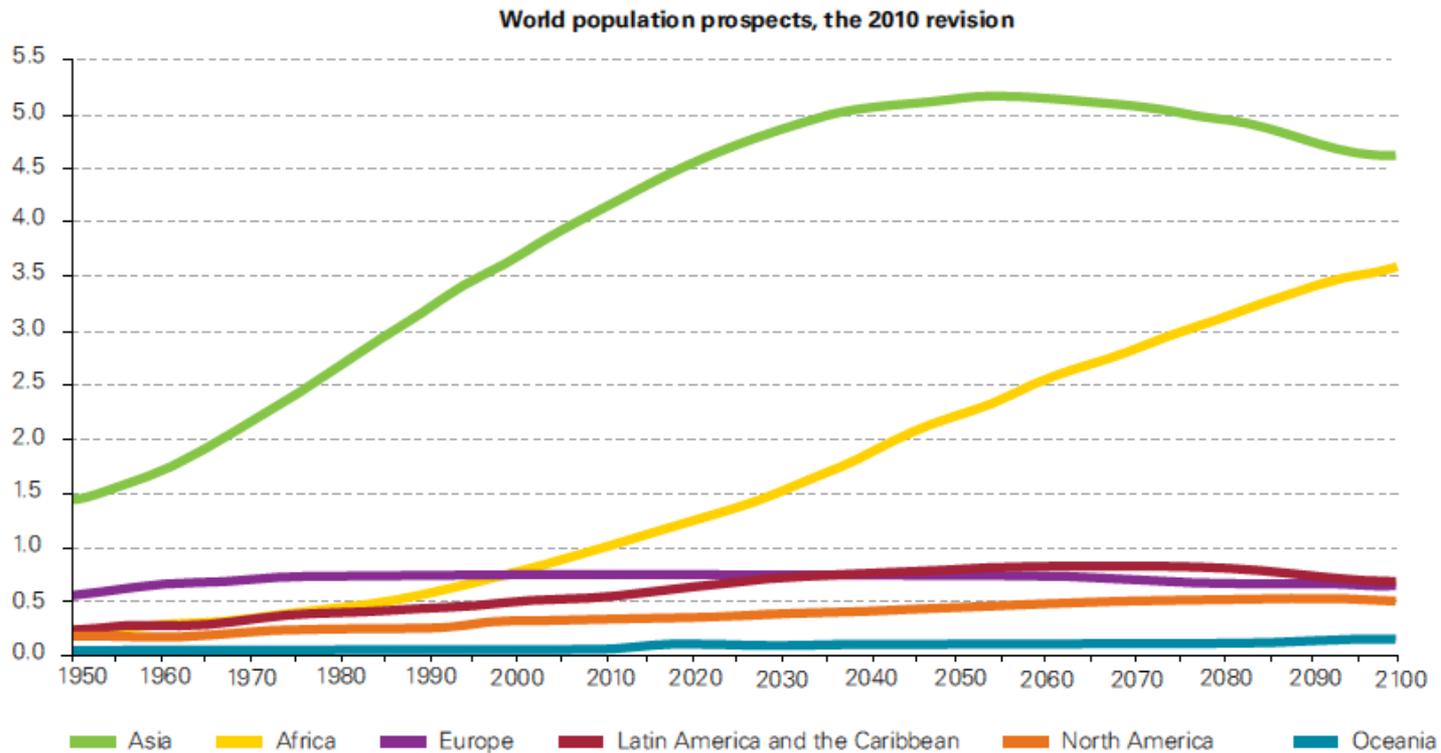
ACCELERATING IMPACTS 1990-2011

Percent change from 1990 through 2008–2011 on a global basis



POPULATION GROWTH

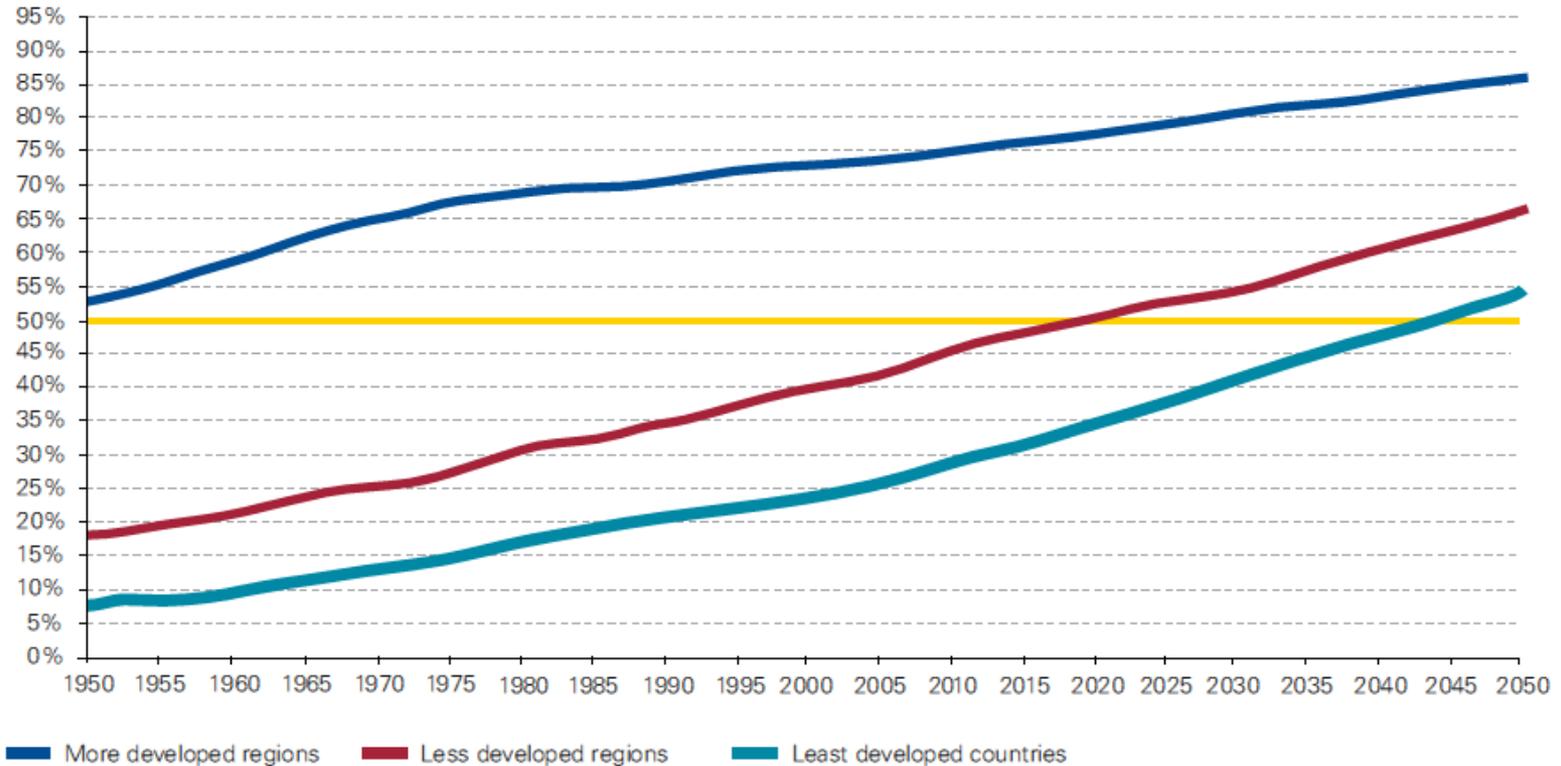
Projected world population growth, 1950-2100 (billions)



Source: United Nations, Department of Economic and Social Affairs, Population Division. (2011): World Population Prospects: The 2010 Revision. UN, New York. Available at http://esa.un.org/wpp/Analytical-Figures/html/fig_2.htm

URBANIZATION

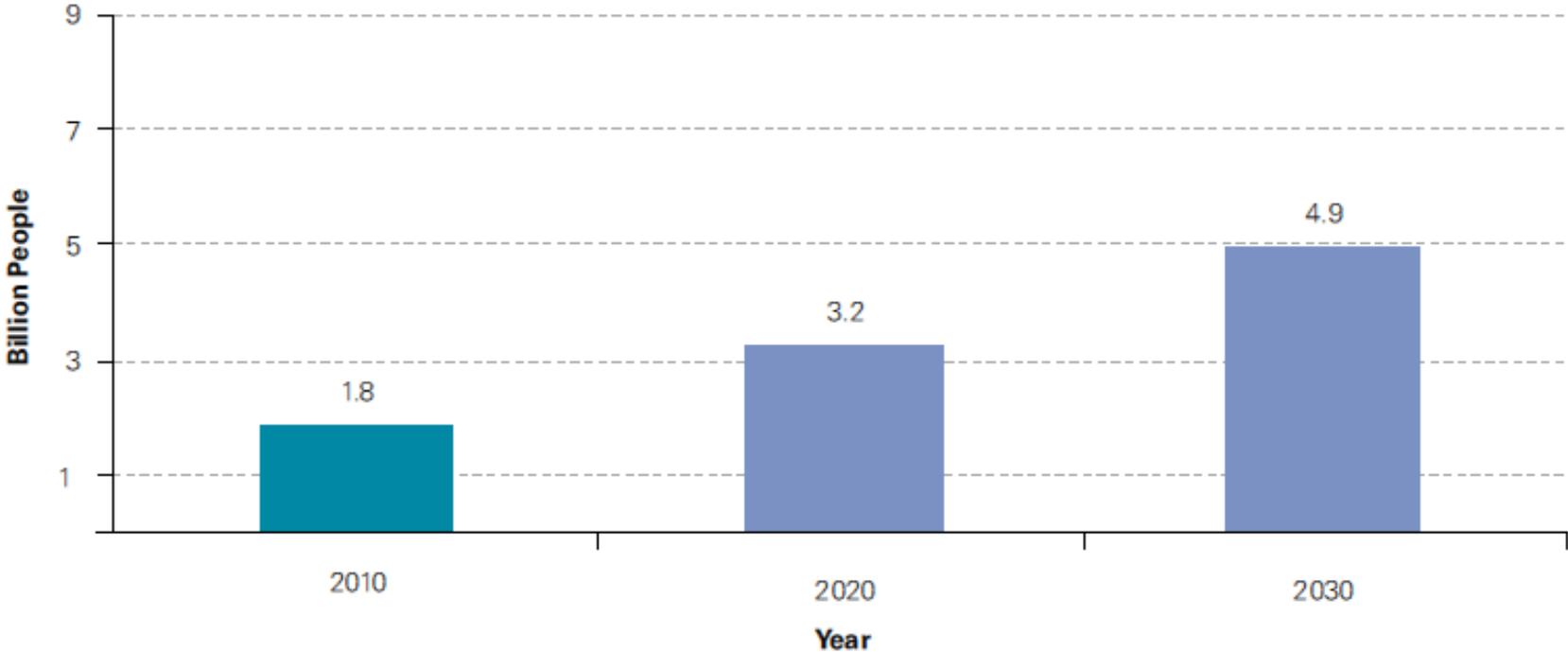
Forecast global urbanization, % of total population



Source: United Nation, Department of Economic and Social Affairs, Population Division. (2009). World Urbanization Prospects: The 2009 Revision. UN, New York. Available at http://esa.un.org/unpd/wup/fig_2.htm

GROWTH IN WEALTH

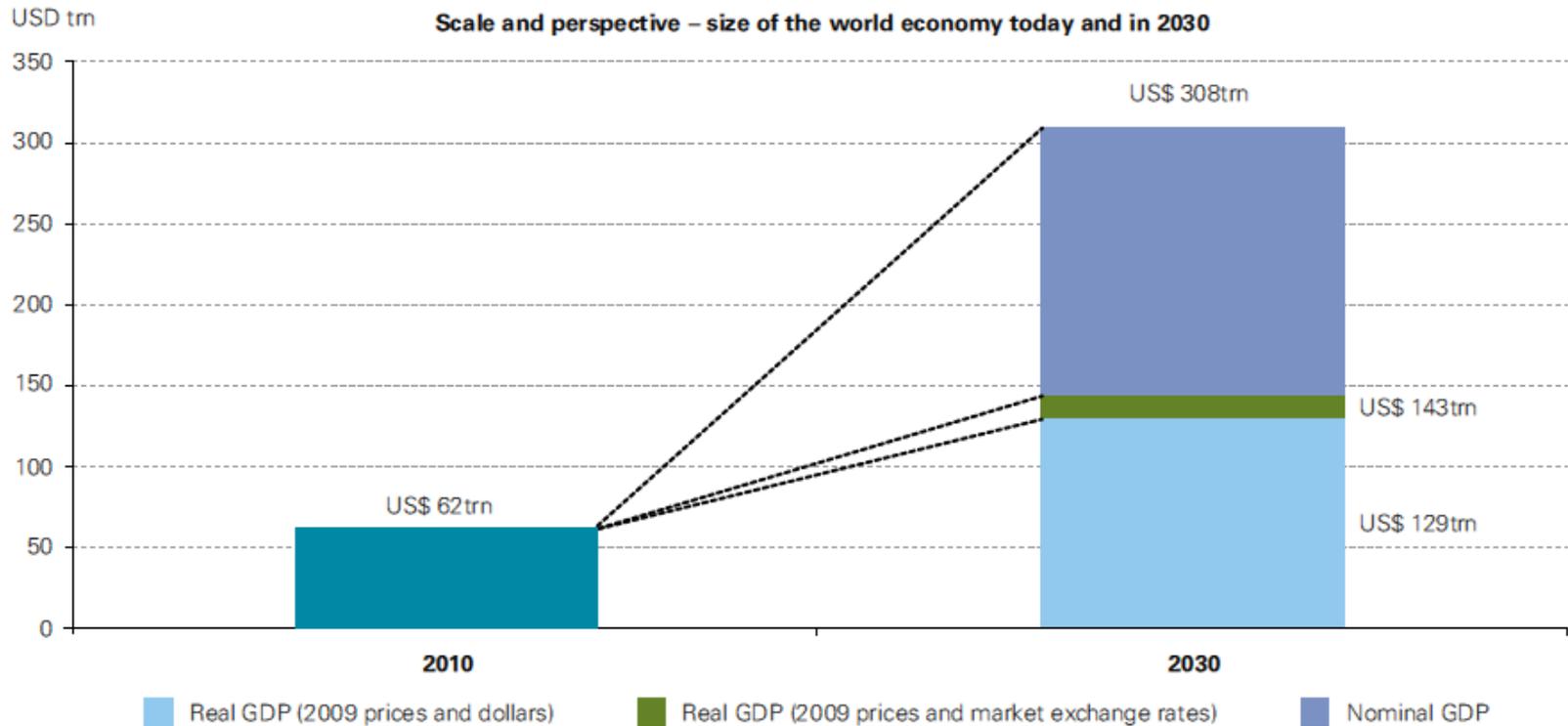
Growth of the global middle class



Source: KPMG International. (2012). Based on the data published in: OECD Development Centre. (2010). Working Paper No. 285: The Emerging Middle Class in Developing Countries © OECD, page 27

GROWTH IN WEALTH

World economy (GDP) from 2010-2030

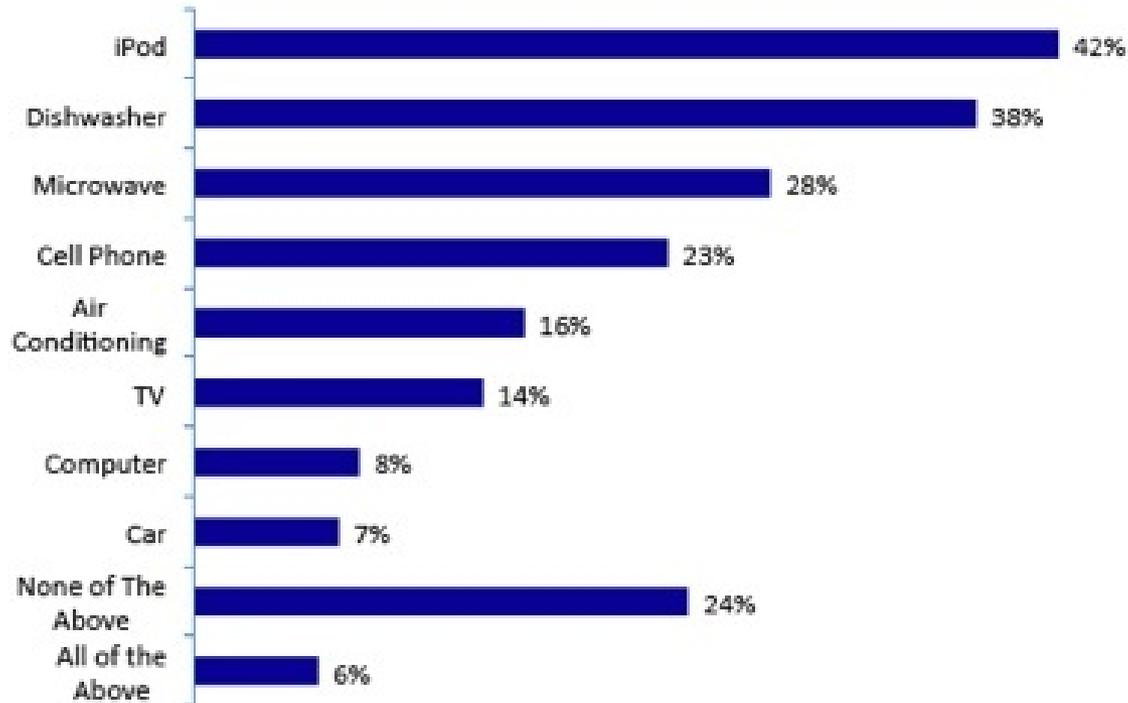


Source: Standard Chartered Bank (SCB). (2010). The Super-Cycle Report

MIDDLE CLASS DNA

If you thought these things were harming the environment, which of the following would you be willing to give up?

(% Willing To Do Without)



CHINA PM 2.5 – “I’M MAD AS HELL....”



2011

Chinese government PM2.5 data unavailable or erroneous

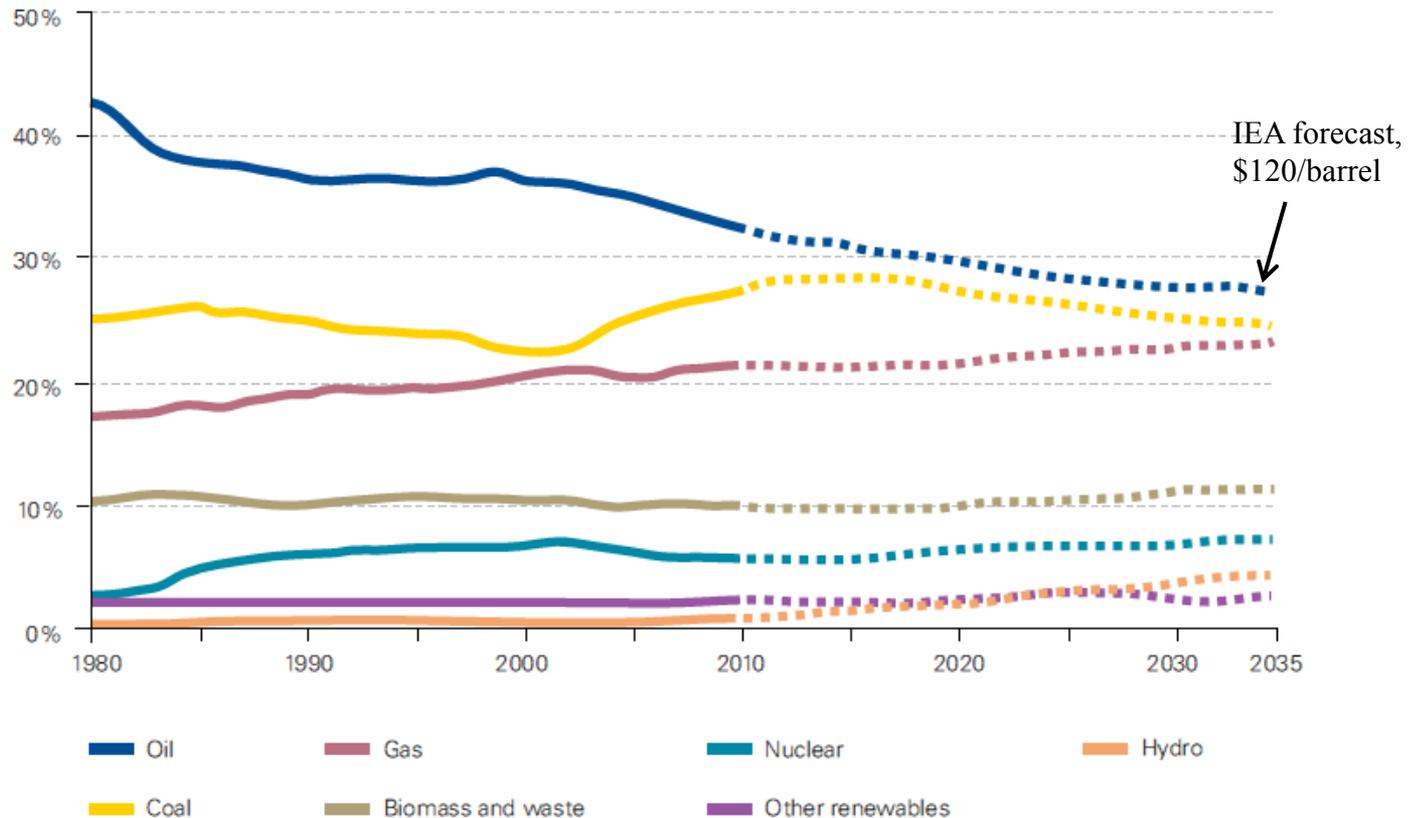
US Embassy PM2.5 monitor data available via web to alert US citizens in Beijing of unhealthy particulate levels

Citizen sites collect and make PM2.5 data available on web

Chinese government announces 4 step national plan for PM2.5 measurement and reduction

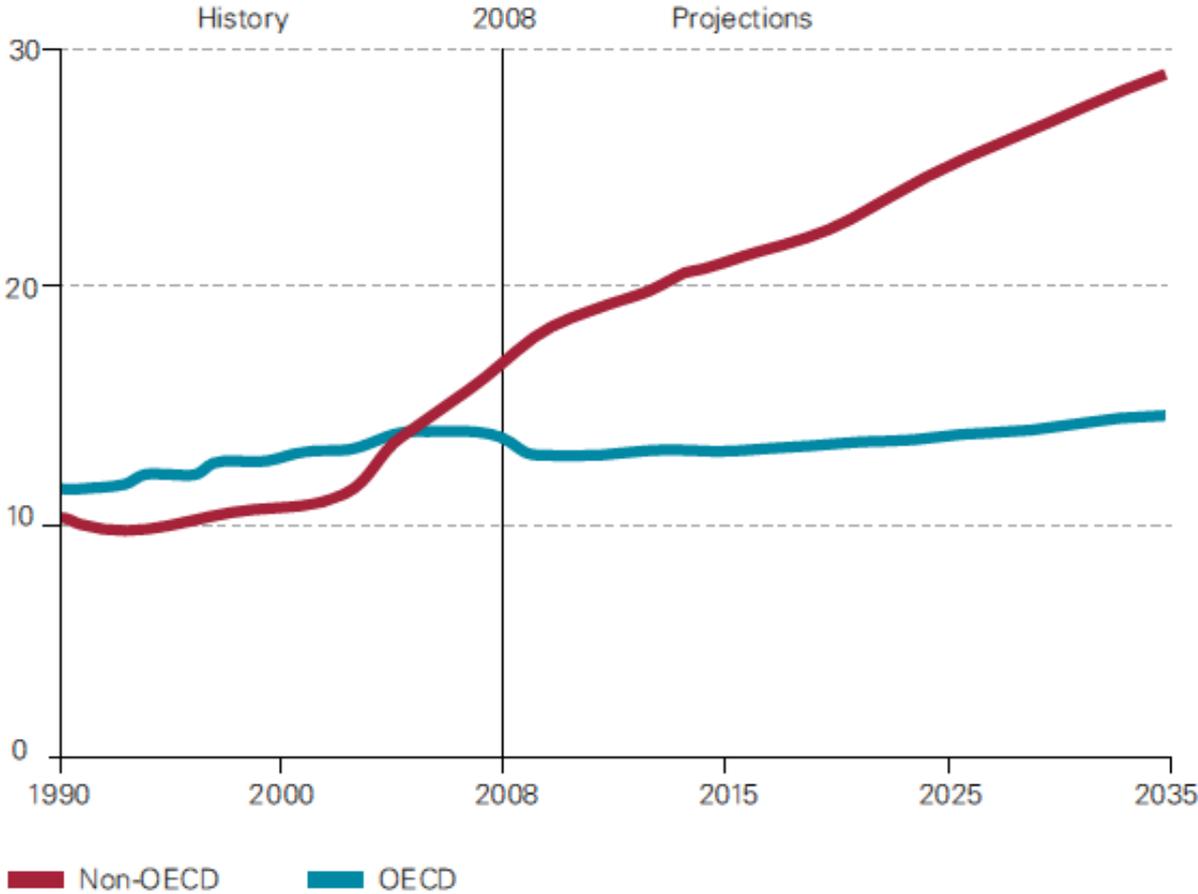
GLOBAL ENERGY SUPPLY

Forecast global energy sources in world primary energy demand



CARBON DIOXIDE EMISSIONS

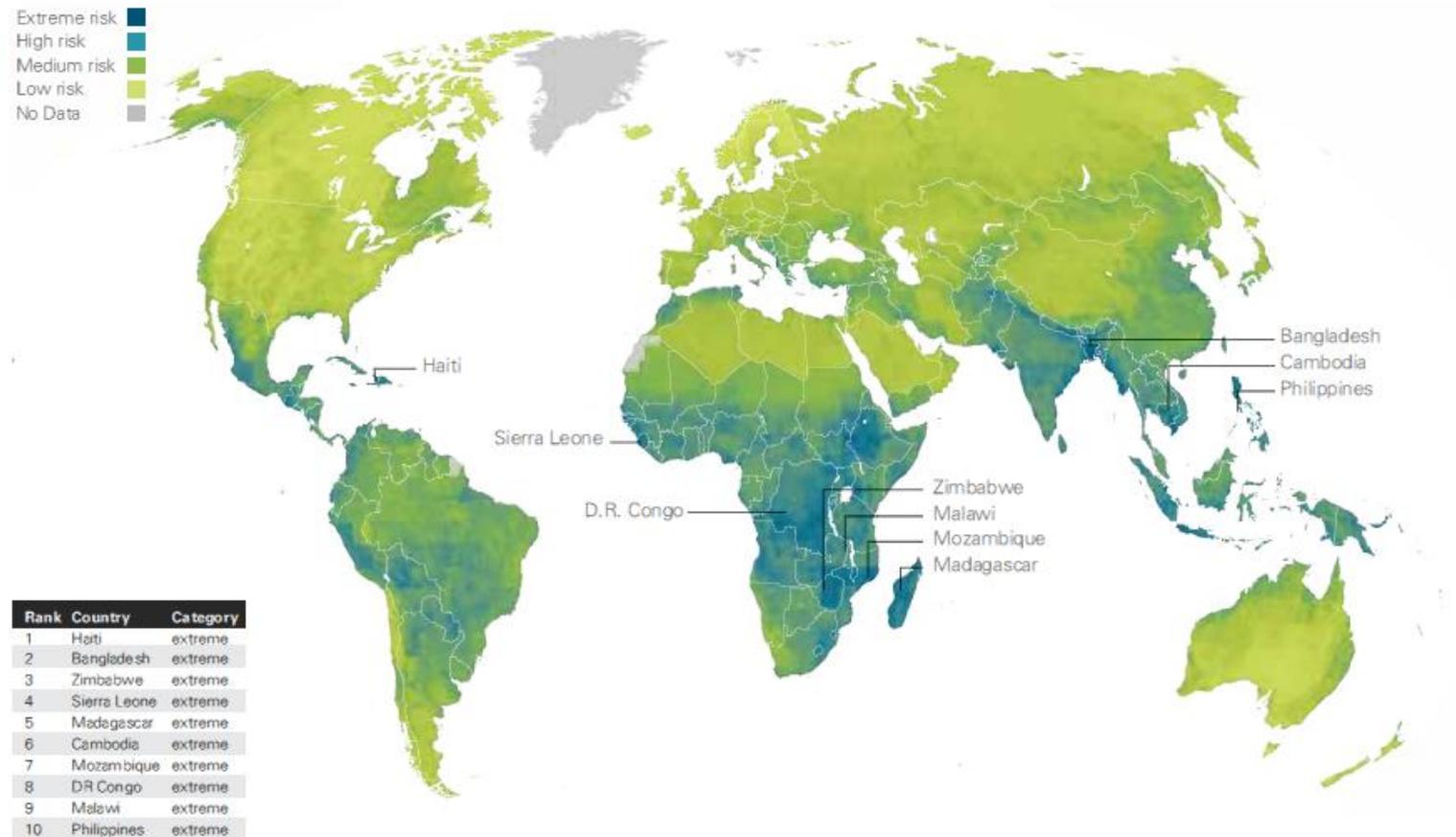
World energy related CO2 emissions, 1990 – 2035 (billion mt)



Source: U.S. Energy Information Administration (EIA). (2011). International Energy Outlook 2011. EIA, Washington D.C.

CLIMATE CHANGE VULNERABILITY

Climate change vulnerability index 2012



Source: Maplecroft, (2012). The Climate Change and Environmental Risk Atlas. Available at <http://maplecroft.com>

WATER DEMAND

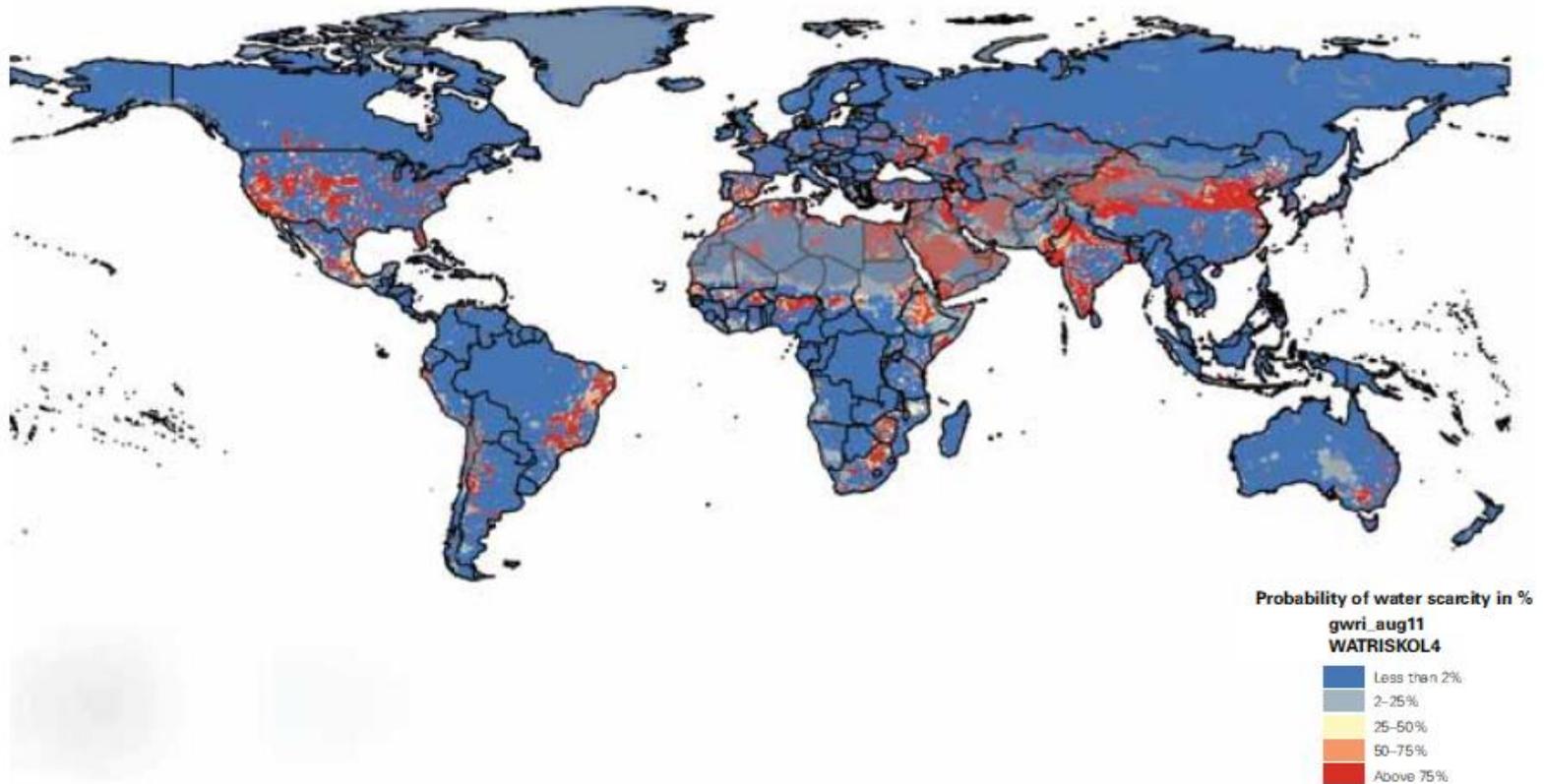
Increase in global water demand, 2005 - 2030



Source: The 2030 Water Resources Group. (2009). Charting Our Water Future.

WATER SCARCITY RISK

Probability of water scarcity in 2030

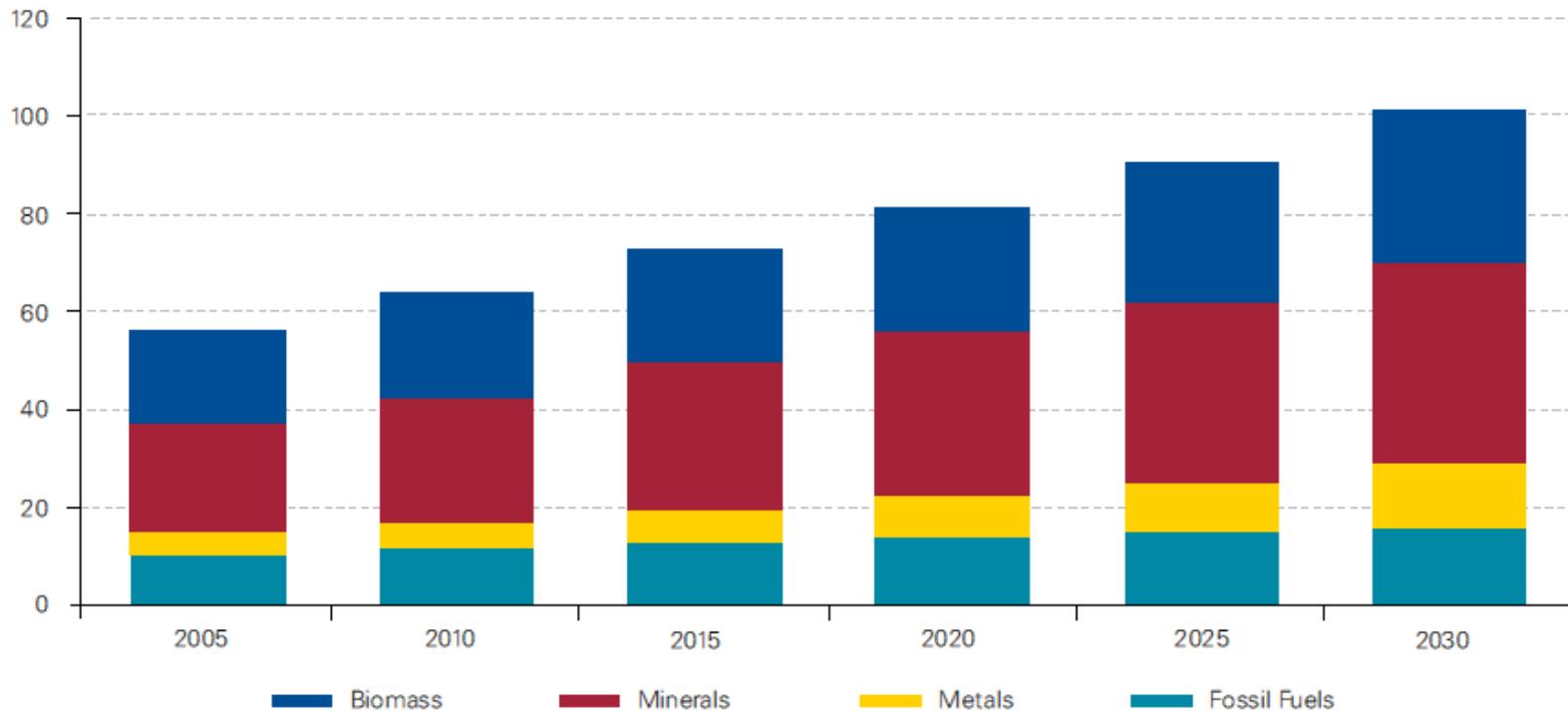


Source: Global Water Risk Index, Global Water Intelligence. (2011). Available at <http://www.water-risk-index.com/index.html>

MATERIAL RESOURCE COMPETITION

Business as usual worldwide resource extraction, 2005-2035

billion metric tons



Source: Sustainability Europe Research Institute (SERI), GLOBAL 2000, and Friends of the Earth Europe. (2009). Overconsumption? Our use of the world's natural resources. Vienna & Brussels.

EXPANDING SOCIETAL EXPECTATIONS

Waste minimization

EU Waste Directive – Reuse, recycling
China regional regulations

GHG emissions

EU ETS, Australia, China district cap and trade, UK
carbon tax

Product stewardship

EU REACH – toxic material elimination
Product take-back, recycled content standards

Business must lead or be led

PENDING IMPACTS -RECAP

Global population growth: + 2 billion by 2030

Global increase in middle class: + 3 billion by 2030

Demands for energy, goods/materials, commodities

Demand for clean environment

Demand for reliable investor ROI

Significant environmental and biodiversity degradation

Regulatory response

Changing Social License to Operate

NEXT PHASE: MATERIAL IMPACTS

Operations

Do no harm

Major Products

Best in class

Suppliers

Upper quartile in sector, continuous improvement

OPERATIONS: FUTURE APPROACH?

Waste

Zero landfill

Recycled unless LCA says no



P&W Shanghai Engine Center:
LEED Platinum

Air

Reduction in material pollutant impact

No site above TRI reporting threshold



Sikorsky Stratford solar array

Energy

World class in energy intensity

Water

100% recycle, reuse in water constrained areas

PRODUCTS: FUTURE APPROACH?

100% products thru Design for Sustainability

No toxic substances

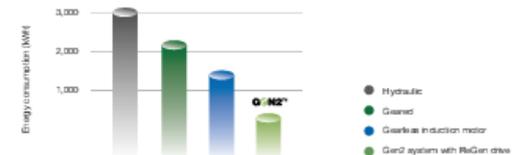
Best in class on efficiency and CO2 emissions
Remember Jevon's Paradox

Recyclability



Reduced energy consumption

Gen2 systems with ReGen drives reduce energy consumption by up to 75 percent.



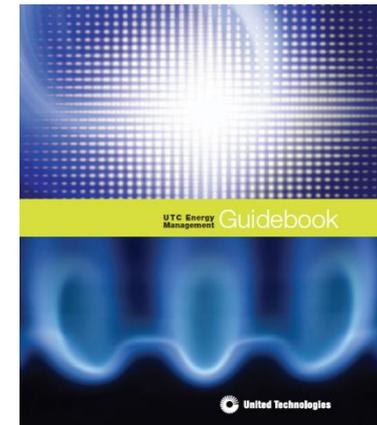
Based on 1000 kg at 1 m/s, 8 stops and 200,000 starts/yr (propulsion system only)

SUPPLIERS: FUTURE APPROACH?

Public and transparent EH&S data sharing
UTC and public

Supplier EH&S program in upper quartile of peer
sector

Continuous improvement



WHY GO FARTHER

ACE: requires continuous improvement leading to best in class – UTC class is global

Global changes by 2030 will change BAU

- Energy and material resource availability

- Increasing global environmental degradation

- Stakeholder expectations

Prudent risk management – well worth cost

We believe this is important

Q&A



Environment, Health & Safety

United Technologies Corporation

Rick Love
Manager, Environmental Sustainability
(860) 728-6513
richard.love@utc.com