

ENVIRONMENT IN THE 21ST CENTURY – RISKS AND RESPONSES

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THE ENVIRONMENTAL CONTEXT

20TH CENTURY

- easy politics
- familiar agenda
 - air&water
 - noise
 - wastes&recycling
 - chemicals
 - radioactivity
 - endangered species

21ST CENTURY

- hard politics
- emerging agenda
 - climate change
 - forests
 - water
 - biodiversity
 - food security
 - fisheries

SUSTAINABLE DEVELOPMENT - THE CHALLENGE

- the task is to deliver rising real incomes
- to 8 billion people
- by 2050
- without irreversibly undermining the productivity of the 6 ecological systems which provide the foundations of the economy

ECOLOGICAL FOUNDATIONS

- croplands
 - rangelands
 - forestlands
 - freshwaters
 - oceans
 - the atmosphere
-
- \$16 - 54 trillion/year

THE PILLARS OF PROSPERITY

ENERGY SECURITY

CLIMATE SECURITY

FOOD SECURITY

WATER SECURITY

STRESSING THE PILLARS 1

- cereal consumption has doubled since 1970 and stockpiles relative to consumption are at their lowest levels ever.
- 30% of the world's major fisheries now have yields that are at less than 10% of their original level. on current projection there will be a 100% collapse by 2050.

STRESSING THE PILLARS 2

- one third of the world's population currently experience water stress. two thirds of china's cities, that is 400, already suffer water shortages.
- more than 250 rivers worldwide are depleted. in many years the Nile, Yellow, Indus, Rio Grande, Colorado, Oxus and Murray rivers do not reach the sea. this year, as last, drought has struck the Amazon.

STRESSING THE PILLARS 3

- by 2030 world primary energy demand will be 80% greater than it was at the beginning of the century.
- oil demand will be 116 million barrels per day compared to today's 84 million barrels a day;

STRESSING THE PILLARS 4

- global average temperatures are rising by 0.2 degrees centigrade a decade.
- on current projections we will double the amount of carbon we add to the atmosphere each year by 2030.

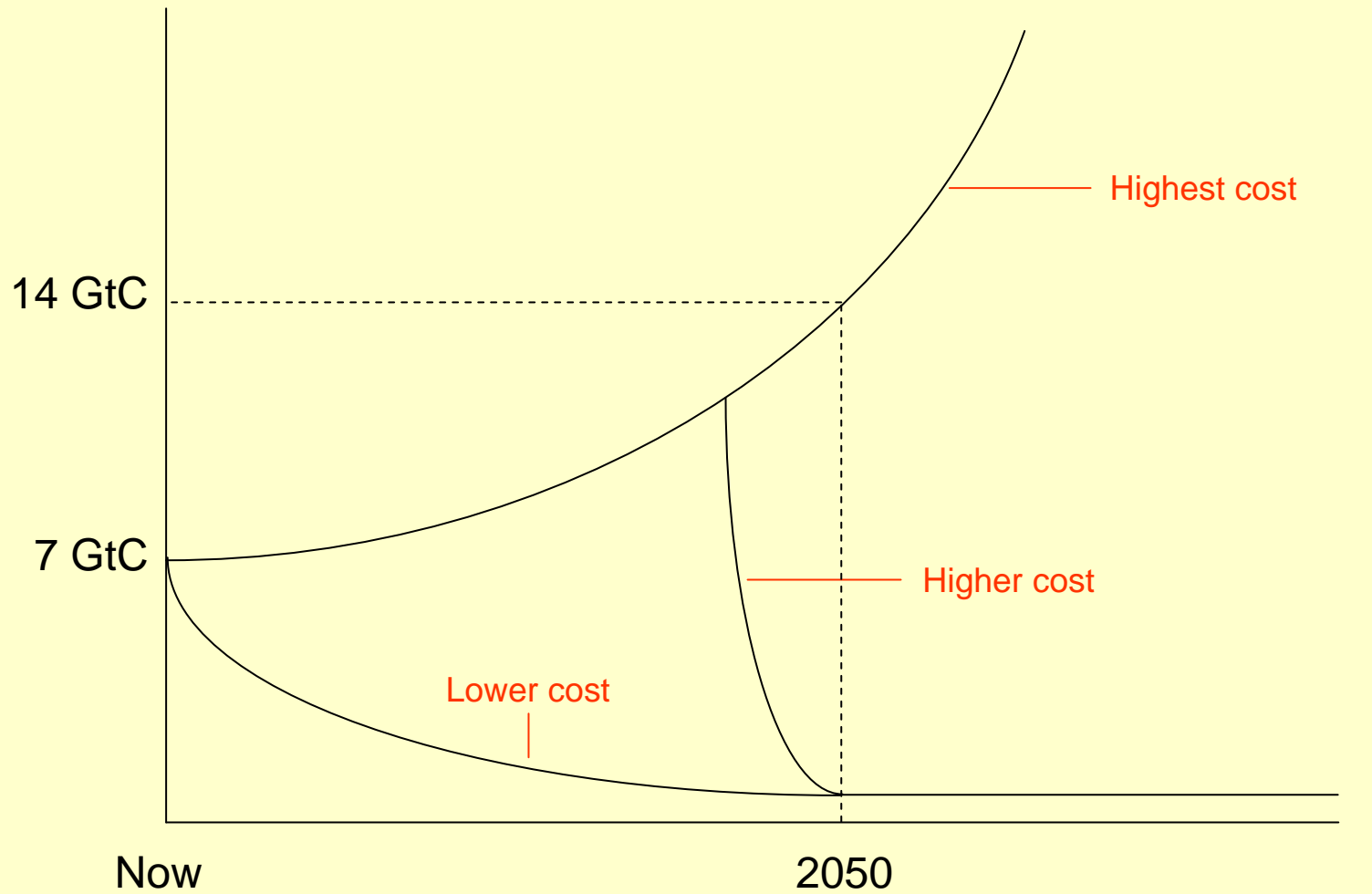
WHITHER THE SCIENCE?

- 2⁰C
- 0.7⁰C
- 0.7⁰C
- 380 ppm, 400ppm
- 425 ppm
- 2/3 ppm
- 500 – 550ppm
- 4AR – 2007

STERN

1%

5 – 20%



Phase I
Investment dominates

Phase II
Carbon prices dominate

Regulation, taxation, carbon markets, investment

ENVIRONMENTAL STANDARDS

- HYPER ENERGY EFFICIENT
- ZERO CARBON EMISSIONS
- MINIMAL FOOTPRINT
- NO NET LOSS OF BIODIVERSITY
- CLOSED CYCLE WATER USE
- WASTE RECYCLE
- NEAR ZERO EMISSIONS TO AIR

RISKS ?

- OPERATIONAL v BUSINESS
- IMPACTS v POLICY
- ACTION v INACTION
- STRATEGIC v TACTICAL