

Strategic Analysis Adaptation Assessment

An Alternative to the Economist's
Storyline Scenario





Advanced Energy and Material Systems Lab

Mechanical Engineering

- Dr. Susan Krumdieck - Energy and Materials
- Dr. Elijah Van Houten - Numerical Modeling
- Dr. Mathieu Sellier - Optimization and Simulation

Civil and Environmental Engineering

- Dr. Andre Dantas - Transportation and Neural Networks

Electrical Engineering

- Dr. Wade Enright - Power Systems
- Dr. Alan Wood - Power and Smart Networks

Computer Science

- Dr. Richard Green - Human Interface Technologies

Geography

- Asst. Prof. Simon Kingham - Transport

Advanced Energy and Material Systems Lab



**Advanced means
Constrained**

Economic Scenarios

World Energy Outlook 2004

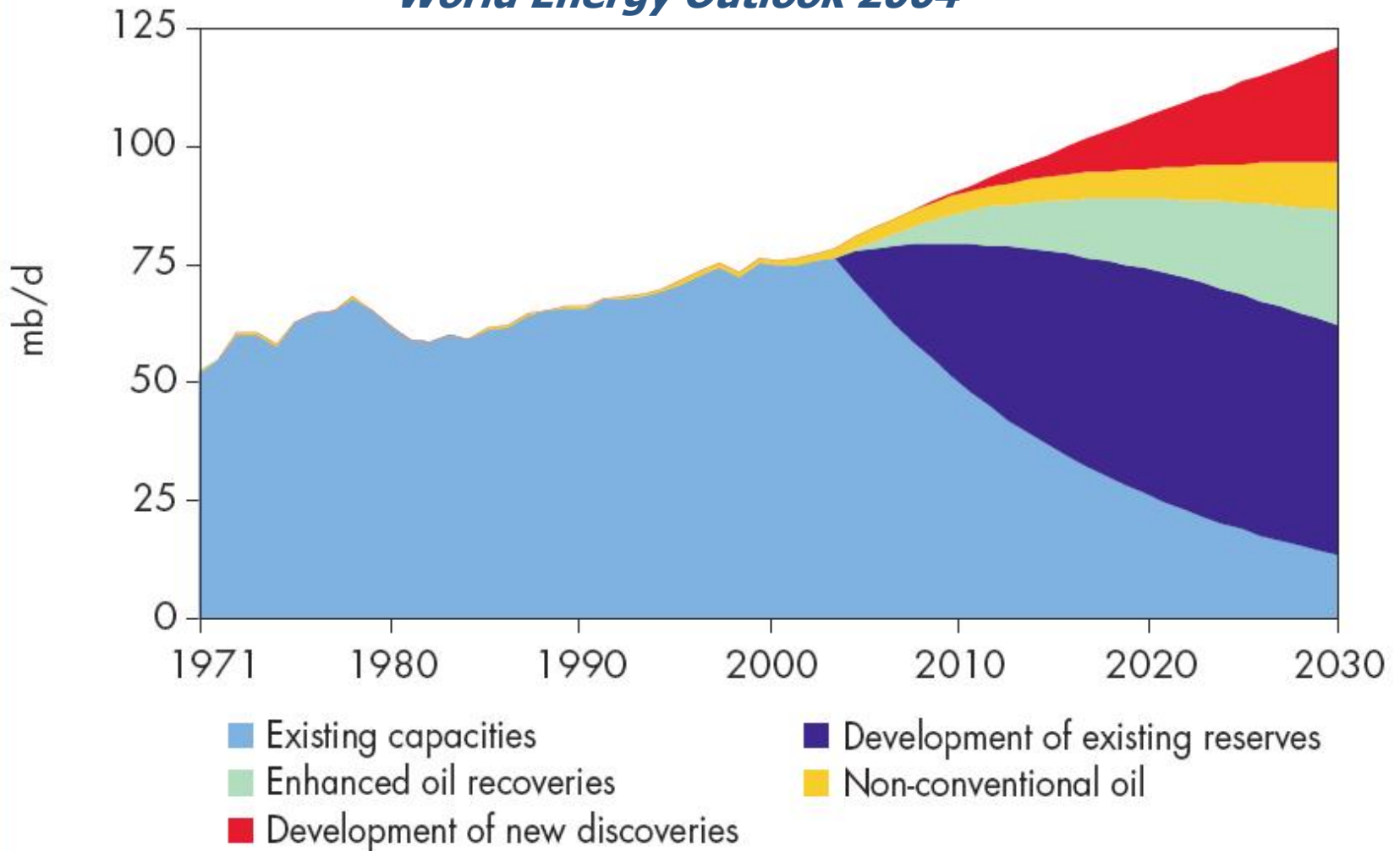
“World primary energy demand in the Reference Scenario is projected to expand by almost 60% between 2002 and 2030...”

“High Oil Price Case, in which the average IEA crude oil import price is assumed to average \$35 per barrel over the projection period.”

“Global oil production will not peak over the projection period so long as necessary investments in supply infrastructure are made. New capacity will be needed to offset production declines and to meet demand growth.”

World Oil Production by Source

World Energy Outlook 2004



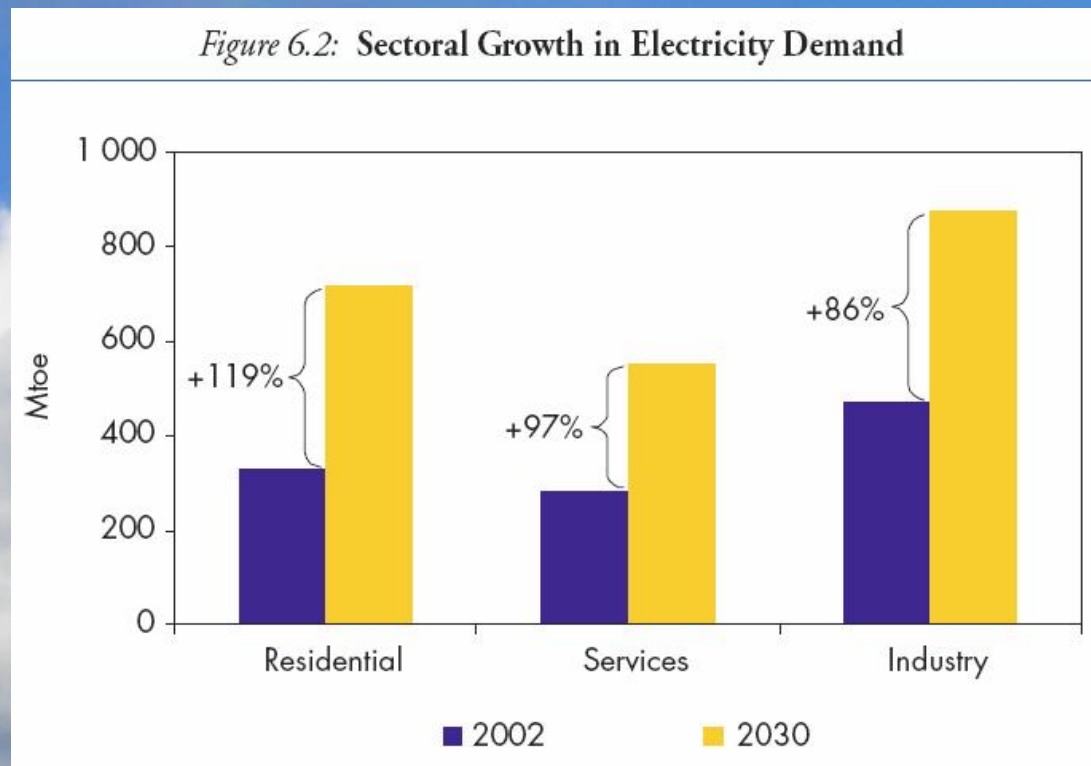


A peak by any other name...



Economic Scenario

Should governments and businesses really be planning based on this kind of “information”?



If you want something done right...

- Explain my idea of how to look forward
- Apply the method to a case study
- Compare the outcome to current Govt. strategy.



Strategic Analysis Adaptation Assessment

Strategy (noun)

Non-negotiable Outcome

1. planning of war
2. carefully devised plan to achieve a goal
3. adaptation important to evolutionary success

Survival

Strategic Analysis

Adaptation Assessment

Analysis (noun)

1. separation into components
2. close examination of details of parts
3. description or assessment

Strategic Analysis

Adaptation Assessment

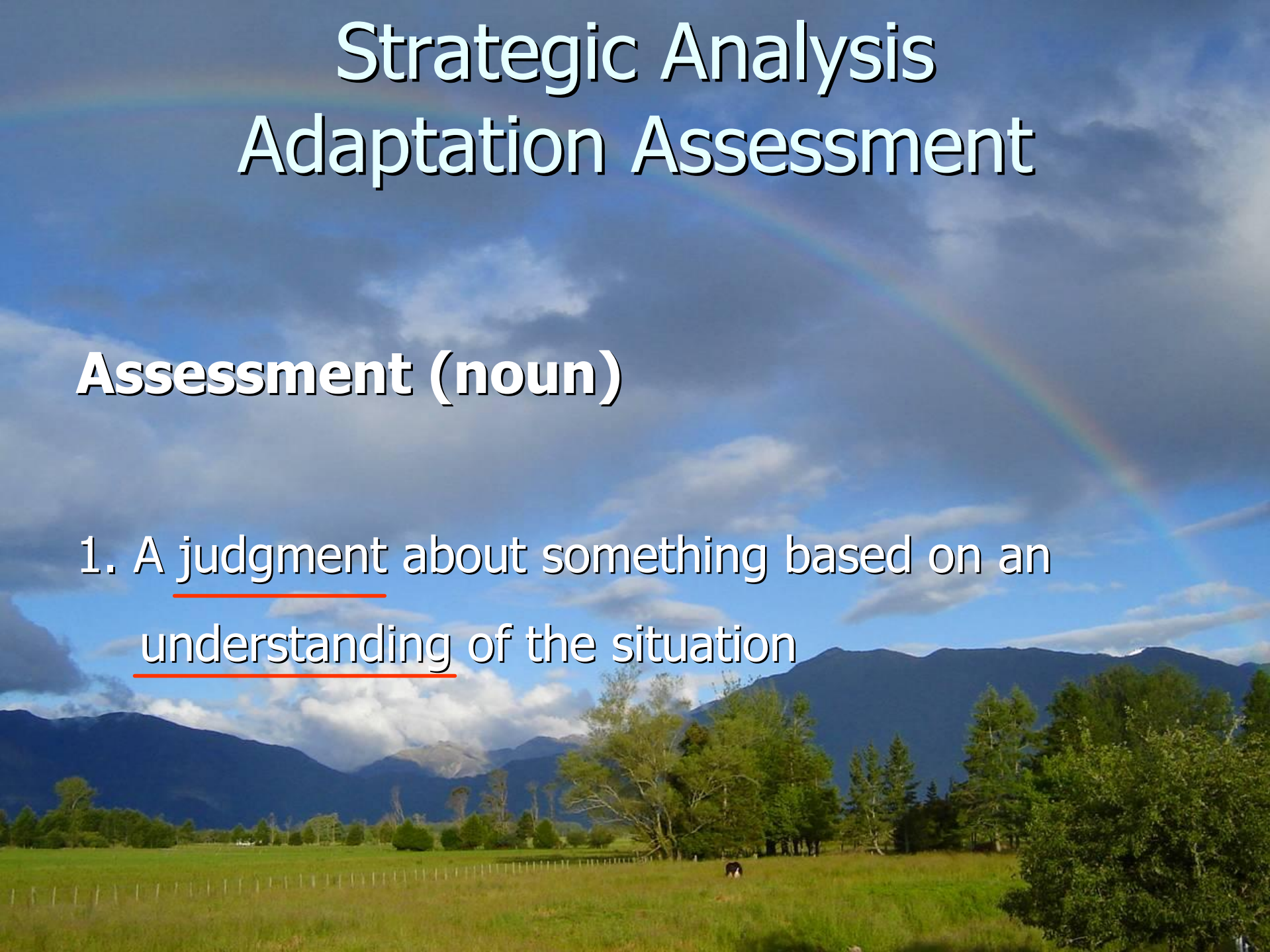
Adaptation (noun)

1. process of changing to fit new circumstance
2. something has been modified for a purpose
3. development of physical and behavioural characteristics that allow organisms to survive in their habitats

Strategic Analysis Adaptation Assessment

Assessment (noun)

1. A judgment about something based on an understanding of the situation



Strategic Analysis Adaptation Assessment

SAAA Method:

1. Identify and Characterize the Activity System

Understand

2. Identify the Adaptation Issues and Risks

Analyse

3. Create Transformation Concepts

Goals, Unconditional Outcome

4. Develop Strategic Adaptation Assessments

Decisions

Strategic Analysis Adaptation Assessment

Define Activity System

Identify the Adaptation Issues

What is the Problem?

What poses risks to these activities?

Generate Transformation Concepts

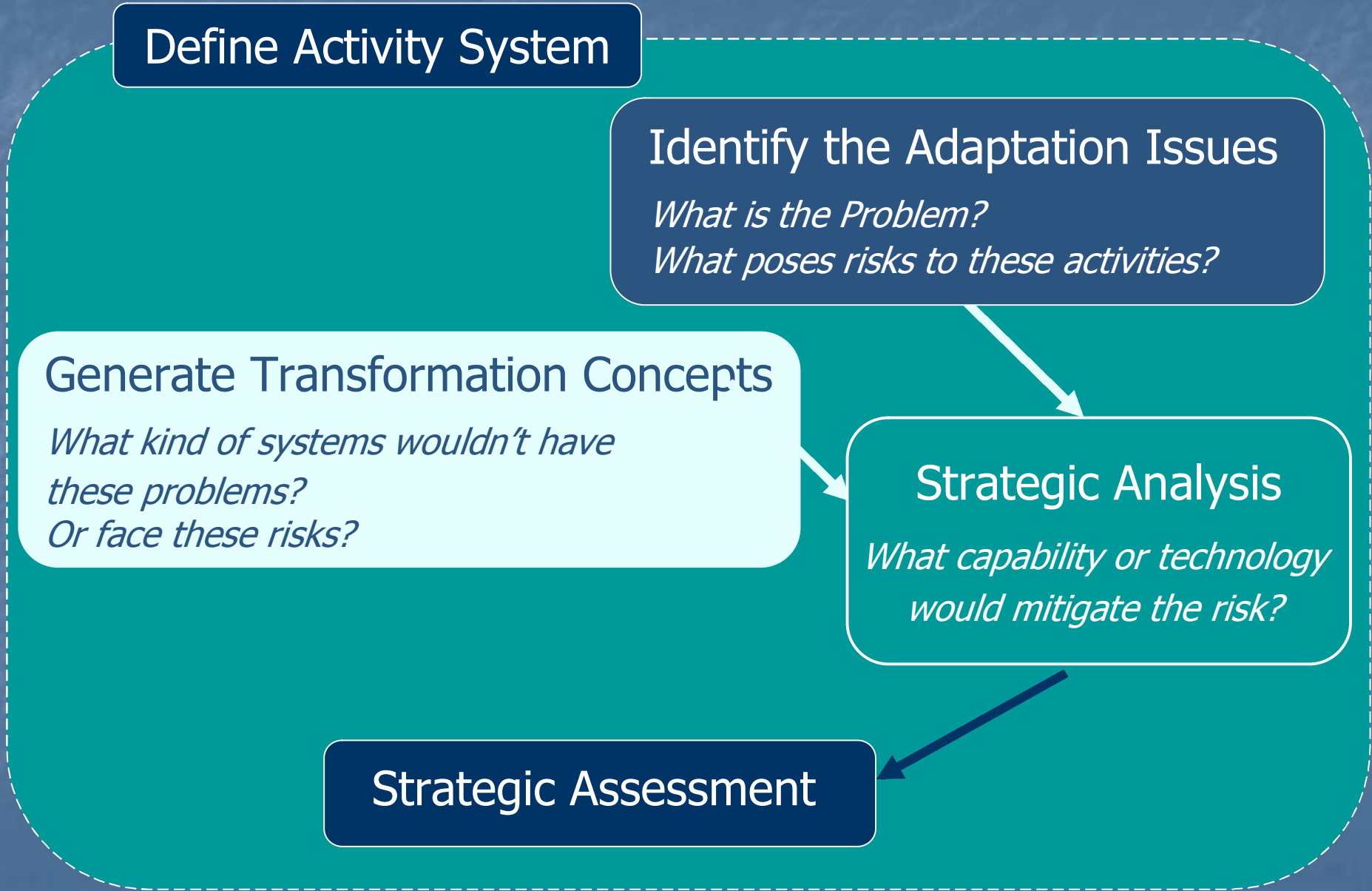
*What kind of systems wouldn't have
these problems?*

Or face these risks?

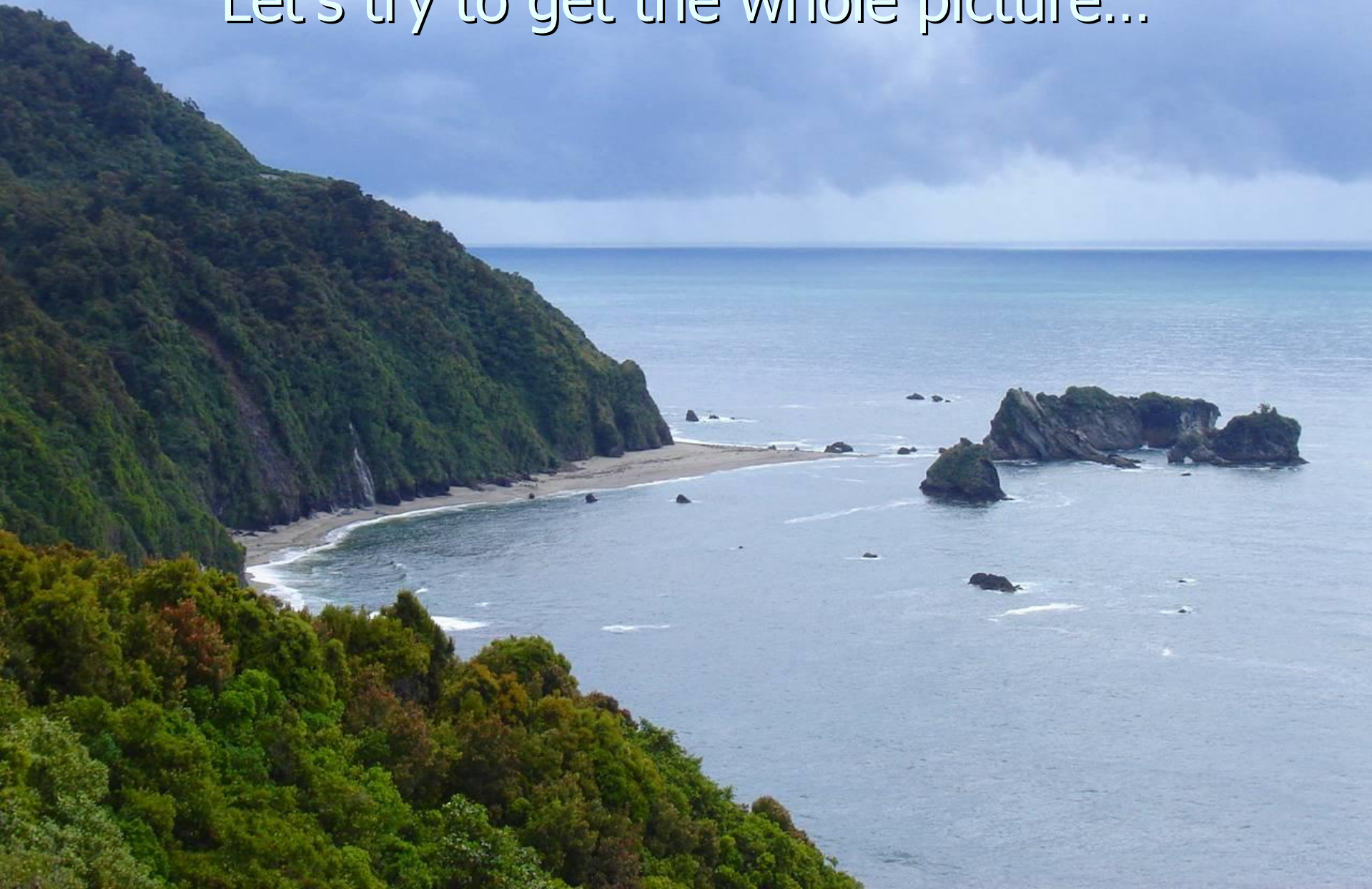
Strategic Analysis

*What capability or technology
would mitigate the risk?*

Strategic Assessment



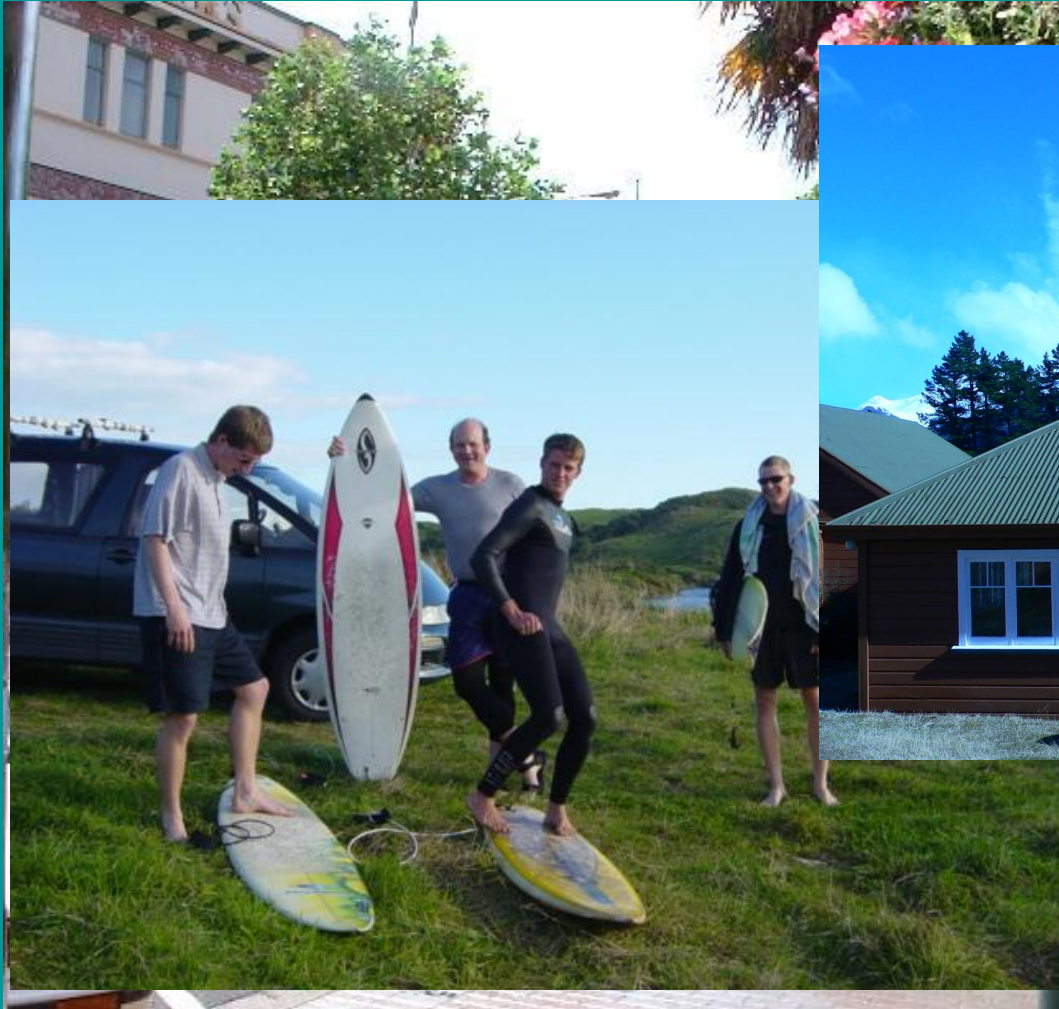
Let's try to get the whole picture...



Case Study

Define Activity System

Personal Transportation



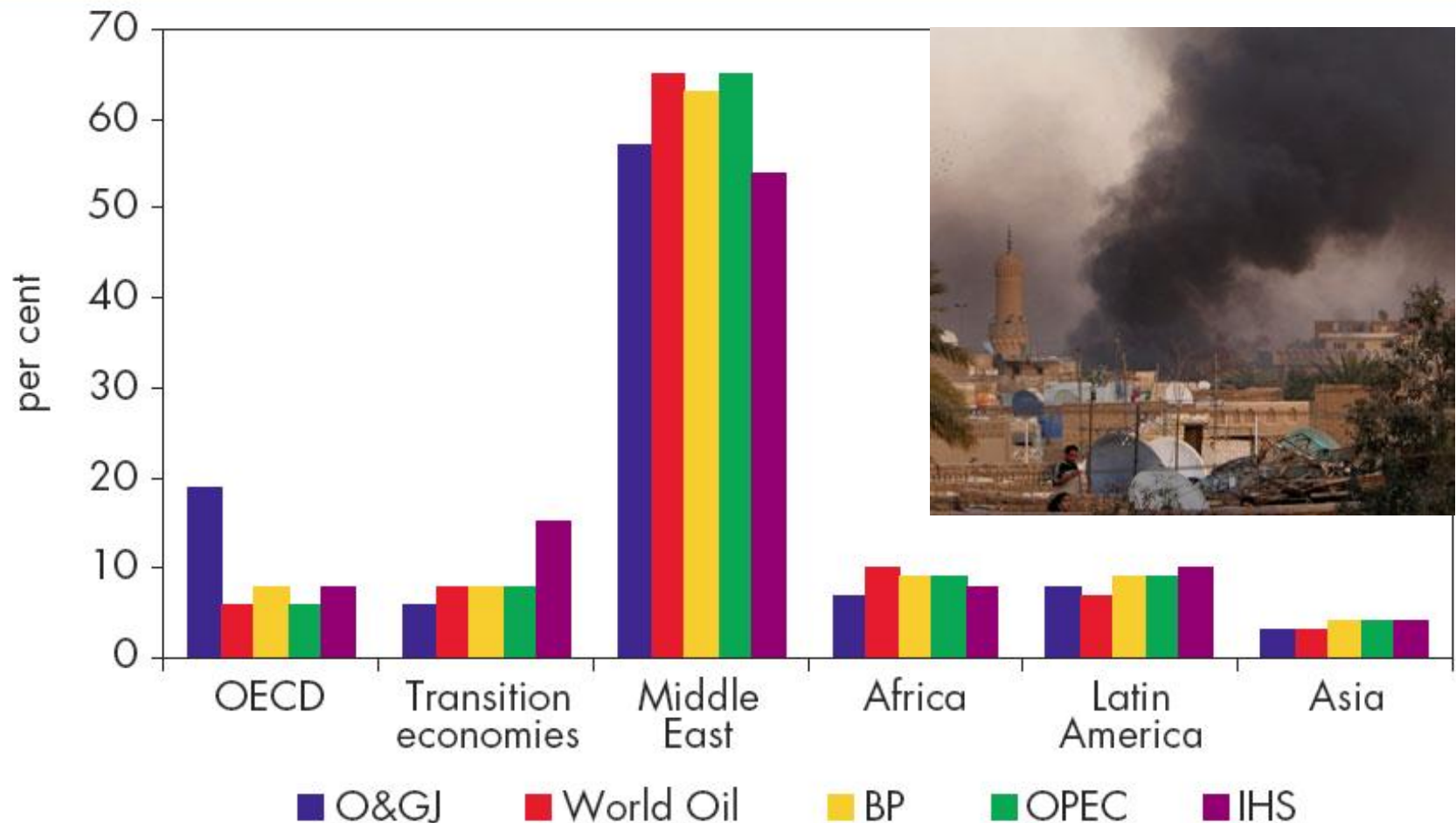
Identify the Adaptation Issues

What is the Problem?

What poses risks to these activities?

Case Study

Personal Transportation



Identify the Adaptation Issues

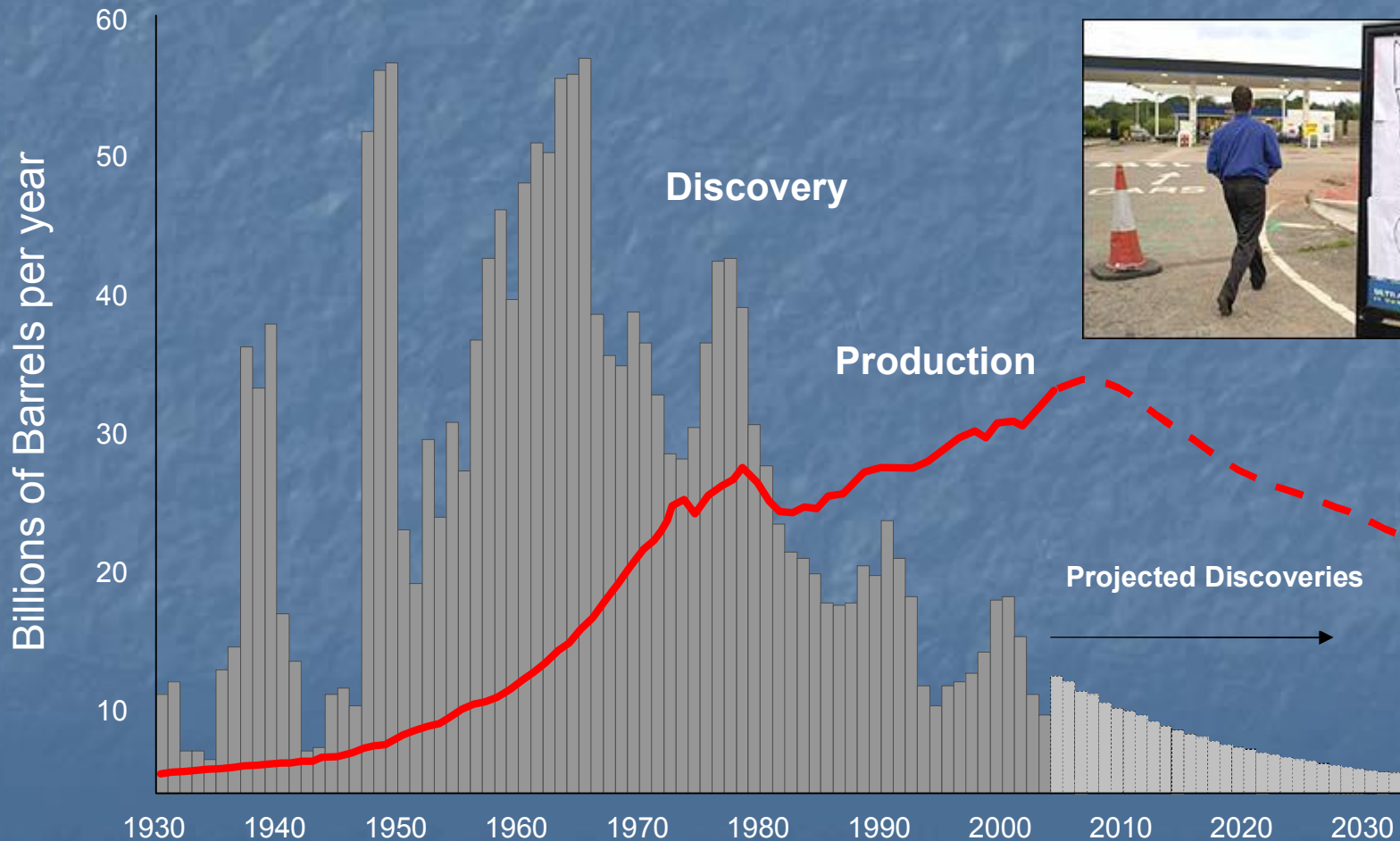
What is the Problem?

What poses risks to these activities?

Case Study

Personal Transportation

Global Oil Production will Peak and Decline



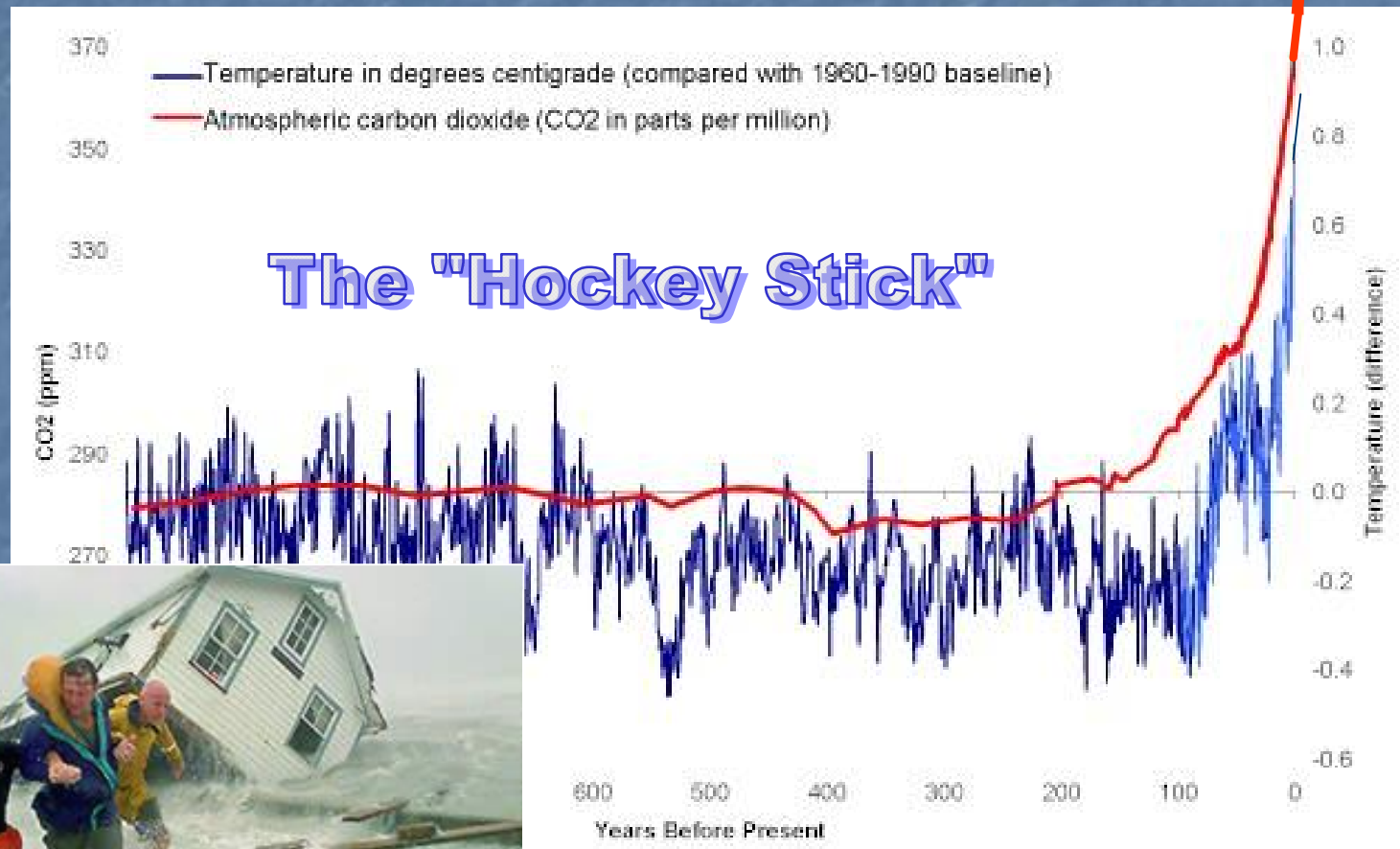
Identify the Adaptation Issues

What is the Problem?

What poses risks to these activities?

Case Study

Personal Transportation



Generate Transformation Concepts

*What kind of systems wouldn't have
these problems?
Or face these risks?*

Case Study

Personal Transportation



Non-Fossil Goods and Activity Options

Strategic Analysis

What capability or technology would mitigate the risk?

A technology that would apportion and manage sales of constrained fuel supply.

- ✓ Fuel Supply Disruption
- ✓ Fuel Supply Decline
- ✓ Reduced Fuel Consumption

Case Study

Personal Transportation



Case Study

Personal Transportation

Strategy Assessment

What do we do now?

Research and Engineering Development:

Immediate:

Constrained Fuel Supply Allocation and Distribution System

Continuing:

Fossil Fuel Reduction through Options

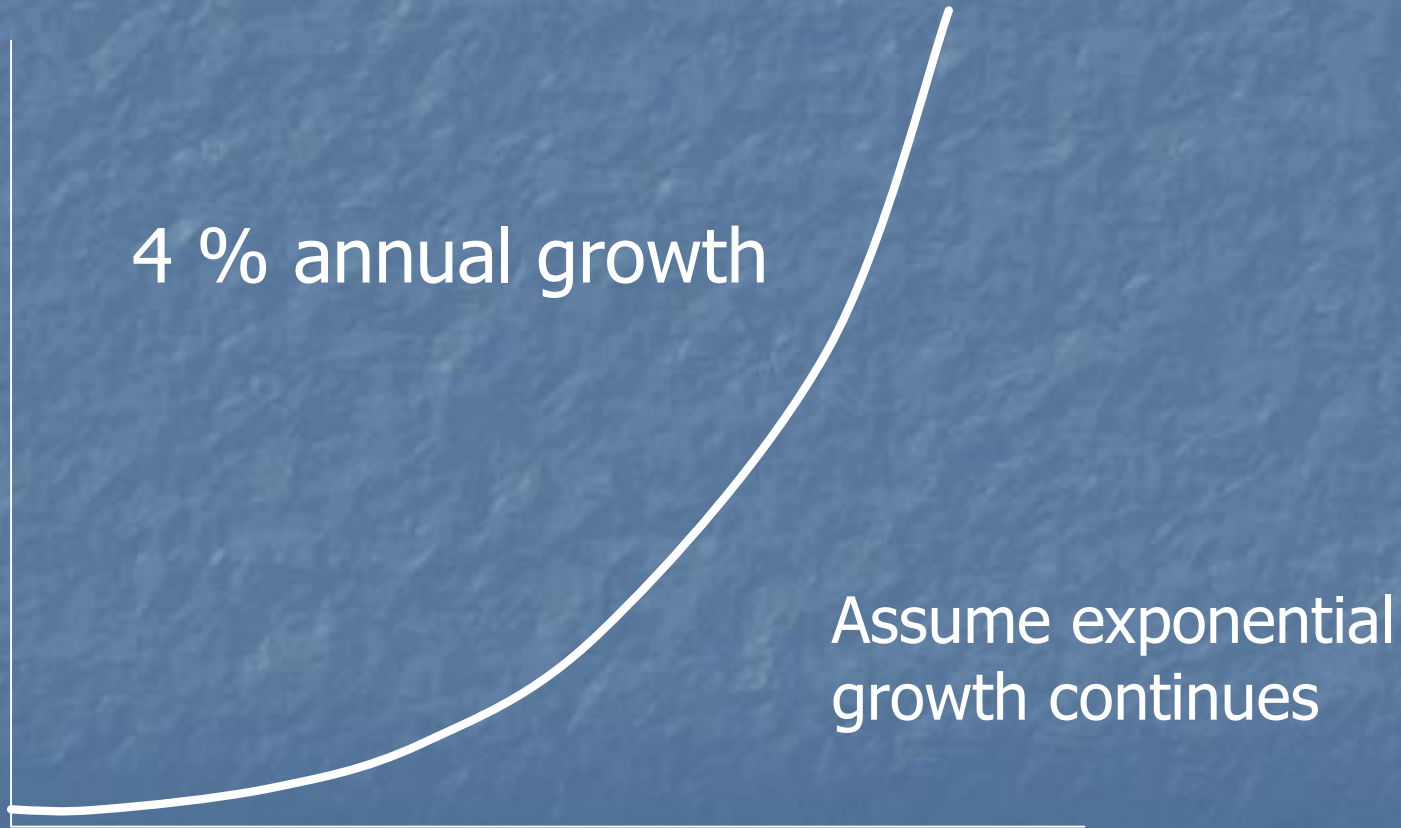
Long Range:

Non-Fossil Fuel Activity Systems

Compare SAAA to MED



Economic Scenario Method



MED Strategy for Oil Shortage

- Measures to Improve Supply –

 - Release stocks from NZ petroleum reserve to the market

 - Domestic production increased

 - Petroleum product specifications relaxed

- Measures to Restrain Demand –

 - Appeals made to the public via public information campaign to voluntarily save fuel, speed limit reduction

 - Government compulsion used to restrain demand, prevent hoarding and distribute a limited amount of fuel – (non-specific)

 - Substitute alternative fuels (non-specific)

New Zealand Energy Strategy

- Use Bio-fuels – Alternative Fuels
- Increase Vehicle Efficiency
- Shorter, Fewer Motorized Trips
- Electric Cars, Plug-in Hybrid Cars
- Public Transport to Ease Traffic Congestion
- Improve Public Transport to Reduce Road Costs
- Ensure 90 Day Reserve of Oil

How does SAAA method stack up?

A tall, balanced stack of smooth, dark grey stones against a clear blue sky. A single white egg is balanced on top of the stack. The stones are stacked in a slightly irregular but stable manner, creating a sense of height and balance.

- Adapting to new circumstances

✓ SAAA ✗ MED

- Evolution to goal of Fossil-Free Systems

✓ SAAA ✗ MED

Questions?

