



# ROLE OF INNOVATION IN SUSTAINABLE DEVELOPMENT

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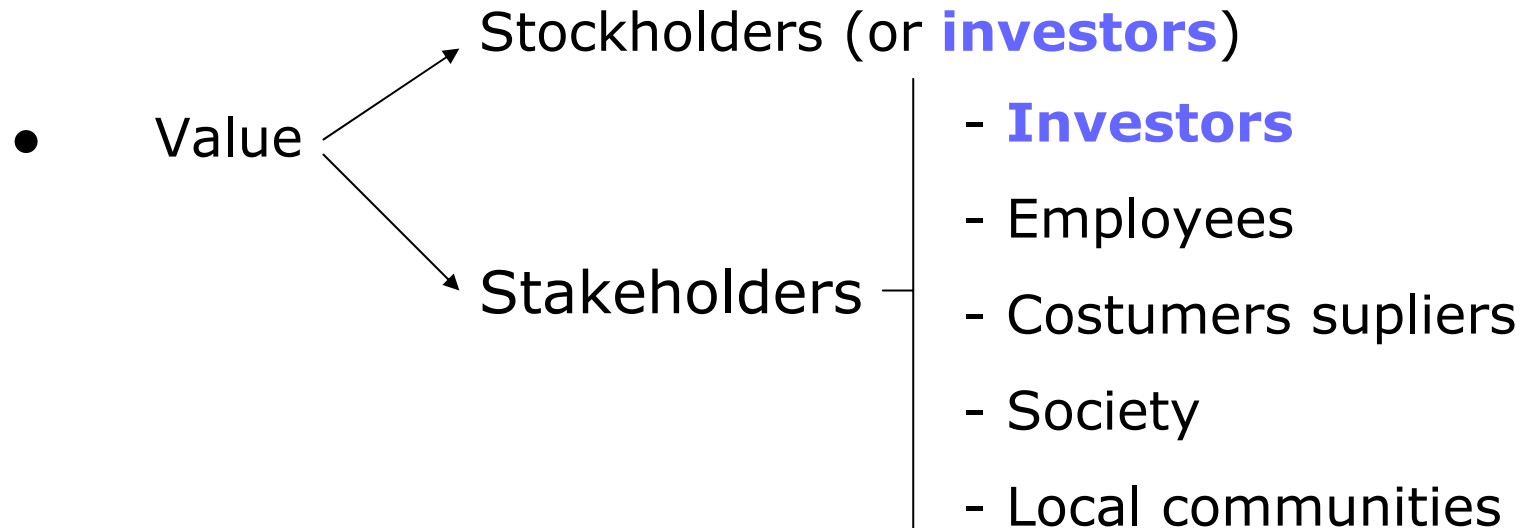
# What is Sustainable Development ?

Satisfy present needs and protect future  
opportunities for mankind

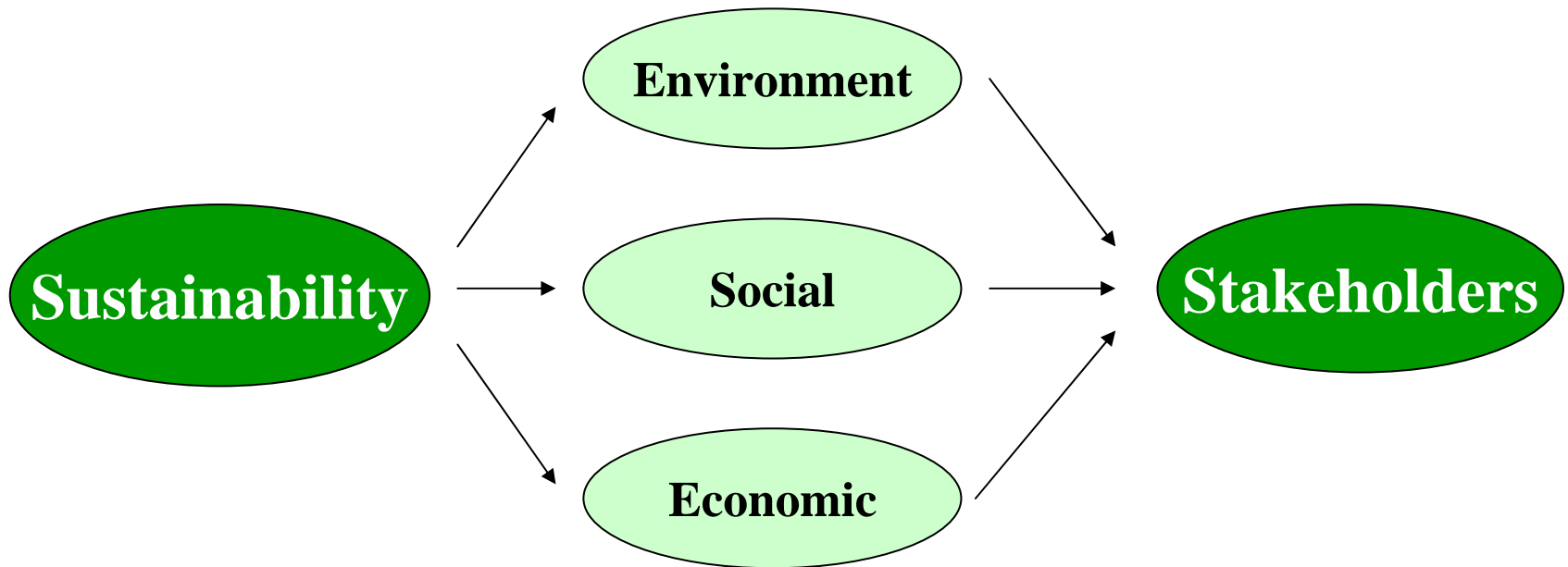


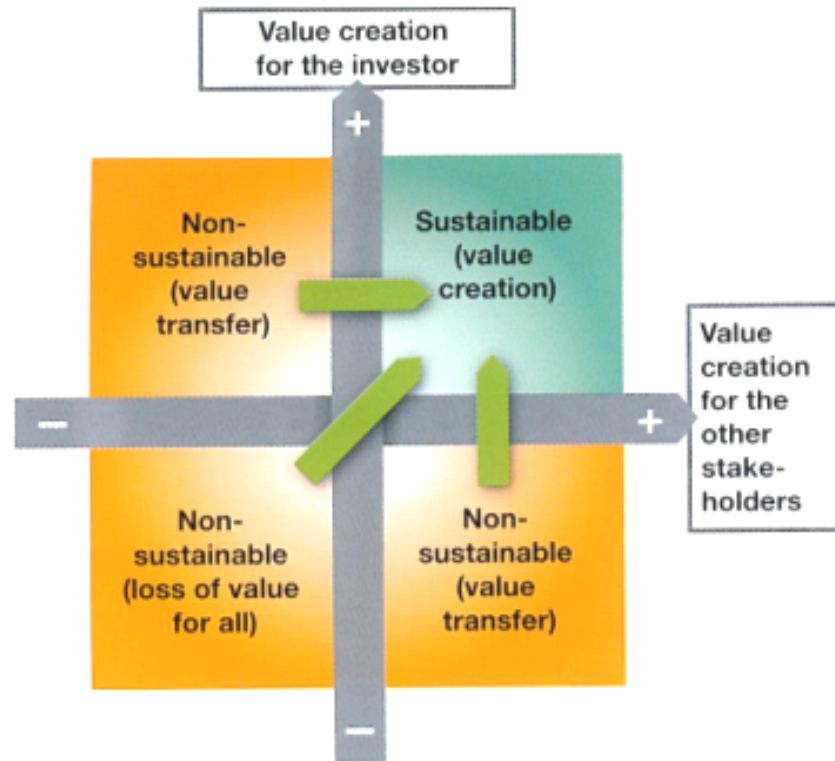
# What is Innovation ?

- **Innovation** is the creation of **value for stockholders** based on improved products, processes, methodologies
- R&D is a step in the value chain



# Value Creation





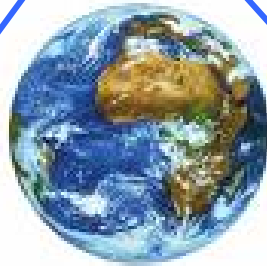
(in: Towards Sustainable Development – Assessment and Prospects 2008-2012 – SOLVAY)



# Global View

**Economical Development**

**(financial capital)**



**Environmental Protection**

**(natural capital)**

**People**

**(human capital)**

**(in:Constança Peneda – Sustainable Development – APEMETA SEMINAR 2006)**



# Who are the stakeholders / players ?

- Investors
- Customers & suppliers
- Employees
- Local communities
- Society



# Stakeholders Expectations

(Troughs due to actual world crisis)

## Investors

- **Profits**
- Ethics on governance
- Risk Analysis

## Society

- Responsible behaviour
- Transparency and information
- Fundamental rights
- **Natural resources protection**





# Stakeholders Expectations

## Costumers and Suppliers

- Quality, competitiveness and ethics
- Satisfaction with services or products
- **Collaborative innovation**

## Employees

- **Sustainable Management of Employment**
- Health and safety
- Protection against risks
- Compliance with regulations and labor laws



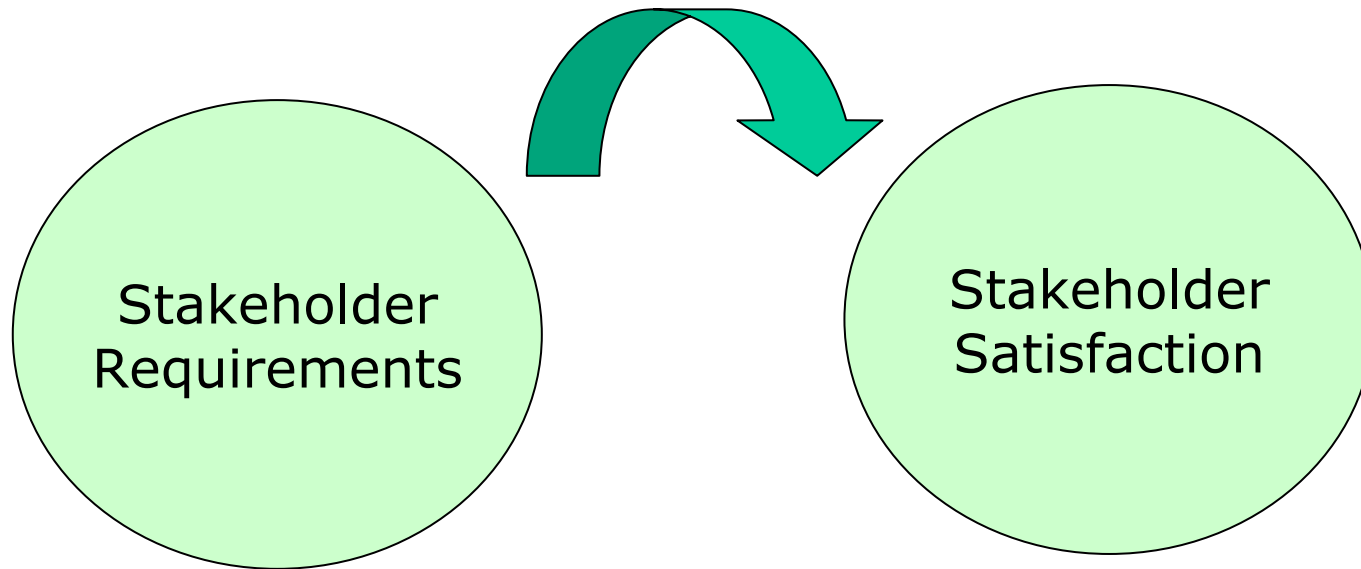
# Stakeholders Expectations

## Local communities

- Safety environment protection (Pollution Prevention)
- Responsible behaviour (CSR)
- Participation or cooperation in local life and employment



# Sustainable Management

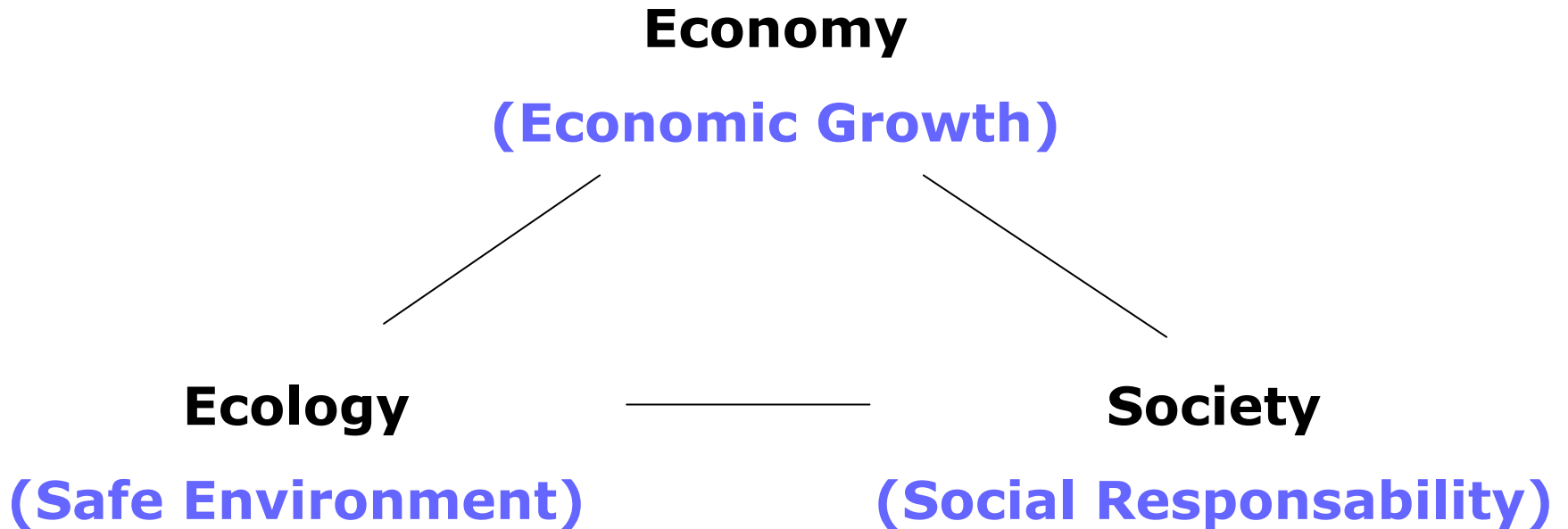


# Global Sustainability / Challenges

- Climate Change (including GHG emissions)
- Energy Resources
- Water Quality (e.g. drinking water)
- Biodiversity
- Natural Resources Management
- Health
- **Economic Globalization**

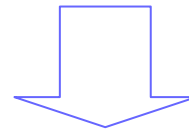


# Growth and Welfare



# How to solve troughs with actual crisis in the world ?

- Profits
- Natural Resources Protection
- Sustainable Management of Employment
- Economic Globalization



**Collaborative innovation within stakeholder is a key point to achieve these objectives**



# Collaborative Innovation with stakeholder is the key point to achieve the objectives

e.g. Renewable Energies could alloy worldwide about **seven million new jobs** until **2030** if a green model is applied

Using **Coal (without CCS)** in the same period will introduce **10 000 Mton of CO<sub>2</sub>** and only **2,7 million new jobs**

(in EREC, European Renewable Energic Commitee)



# Role of Innovation

- **Economic Growth**
- **Market Expansion**
- **Competitiveness**
- **Sustainability**



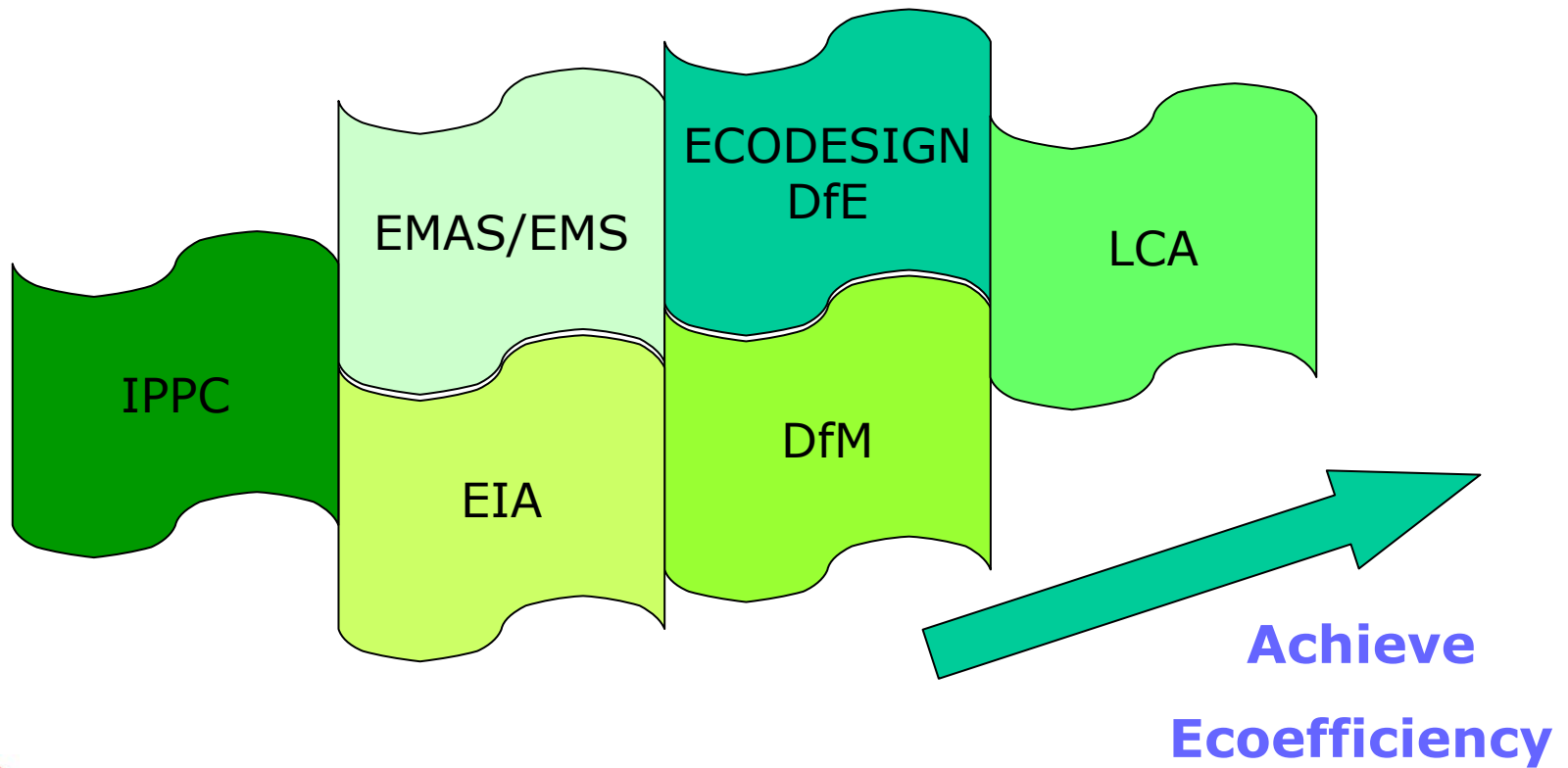


- **Innovation Driving Force for Sustainable Development**
- **Sustainability Strategy is Driving Innovatory Growth**



# Environmental Tools for Strategic Management

(To Achieve Eco-efficiency)



# Eco-efficiency

$$\text{Ecoefficiency (EC)} = \frac{\text{Economic Value (EV)}}{\text{Environmental Effects (EE)}}$$

**Maximize**

**Minimize**

- **Maximize EV**, increasing quality and added value
- **Minimize EE** decreasing natural resources, energy, water and emissions

i.e.

- **Ecoefficiency** is a leverage for **innovation**
- **Economic value and environmental effects** needs permanent progress promoted by innovation



# Ways and Means to Achieve Sustainability

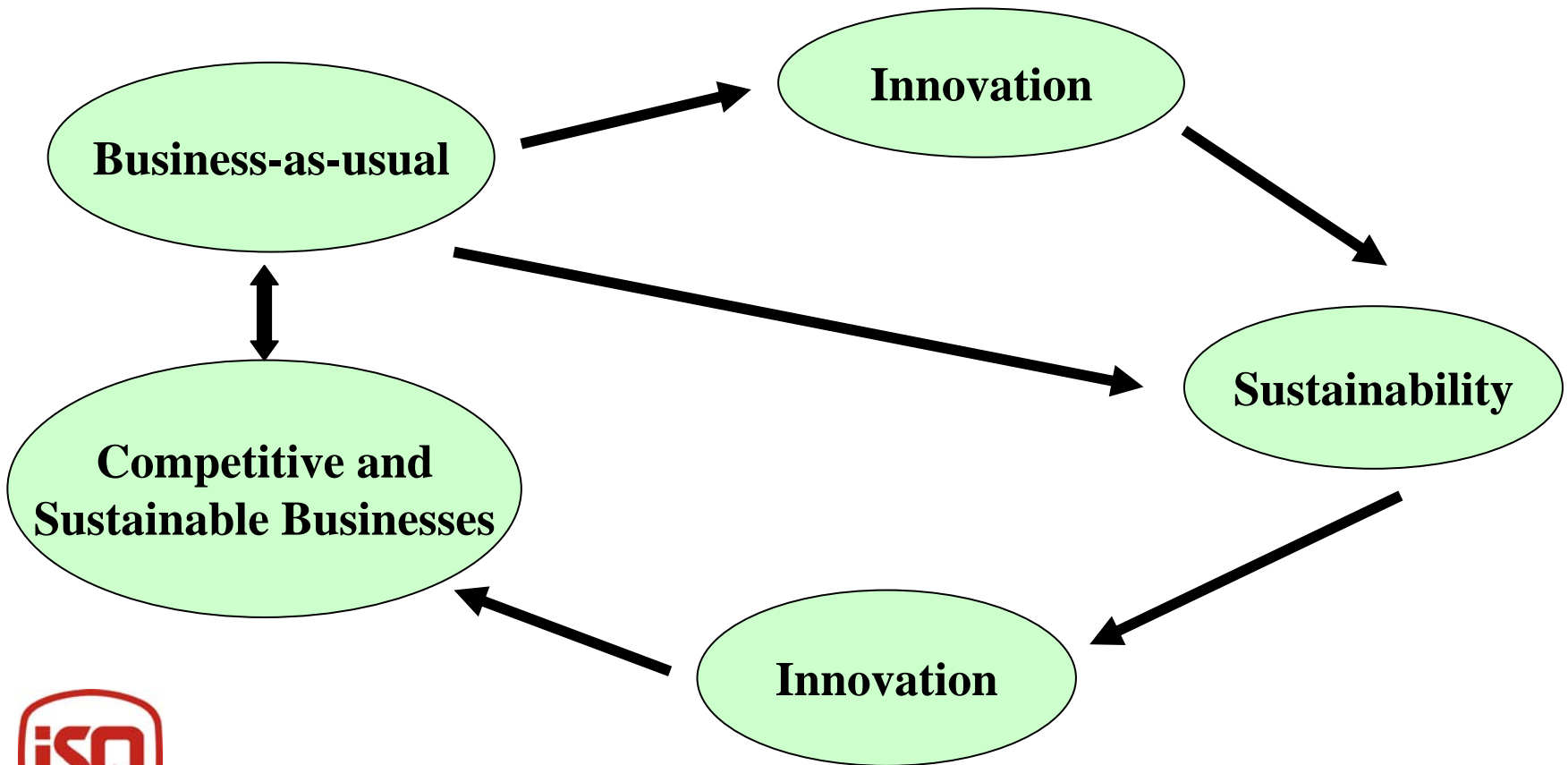
- Short Term - Prevention/Remediation (e.g. BAT)
- Medium Term - Innovation – New Technologies (Investment in R&D)
- Long Term
  - Innovation Through Science & Technology
  - Strong Investment in R&D

e.g. **All R&D/Innovation in EU programmes** must have gains in energy, environment/sustainability, competitiveness (**i.e. Sustainability is a “must”**)



# Conclusions for the Model

## (Innovation vs. Sustainability)



## Conclusions

- **Innovation** is a key issue to achieve **sustainability**
- **Innovation** will be a driven force to employment
- **Innovation** must be done in a collaborative research
- **Training** and education are one of the main issues to increase **innovation effectiveness**
- **Sustainability** will be also a driven force for **innovation**
- **Innovation and sustainability** will be important factors to overcome actual world crisis



# Thank You

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