

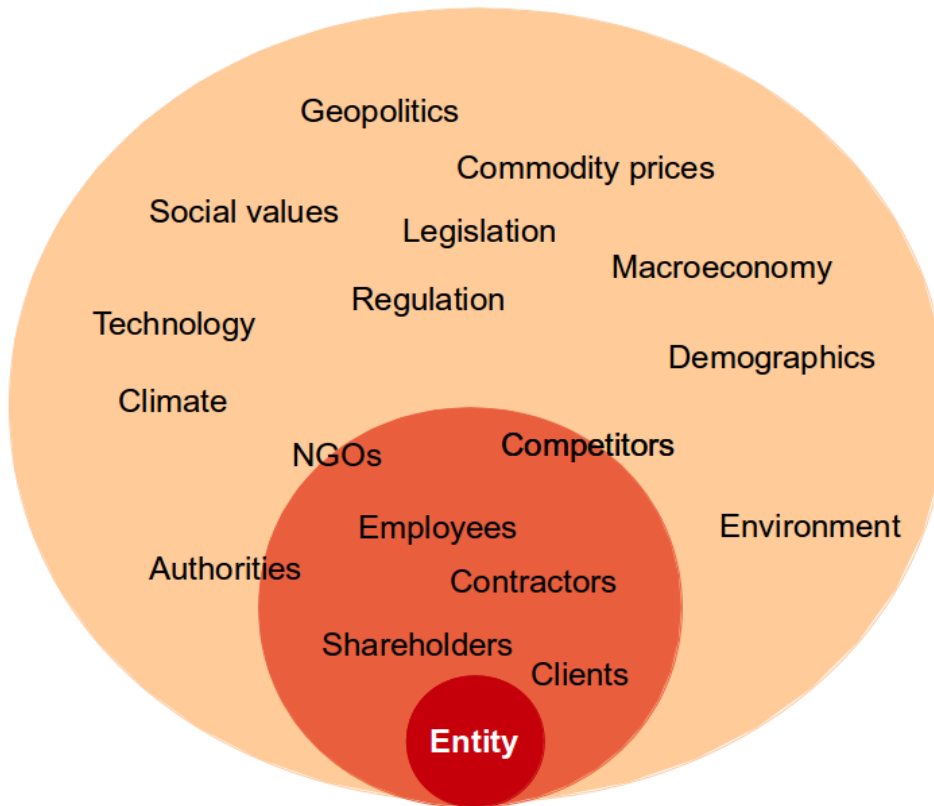
Content overview

- Meaning, purpose and scope of scenario planning
- Scenarios and decision making
- **Scenario development methods**
- Scenario practice in the world of energy
- Fundamental driving forces/key uncertainties
- World Energy Scenarios – The future of nuclear (2019)

Content of this session

- Purpose and essence
- Pre-determined elements
- Deductive method
- Inductive method
- Incremental method
- Influence diagram

Defining the purpose



1. Geographic area
2. Time horizon
3. Themes

Pre-determined elements

Pre-determined elements are relevant factors or developments the outcomes of which are considered known for the purpose of the scenario discussion.

Example: population growth

(but: for other purposes there can also be different scenarios for population growth)

Establishing pre-determined elements:

- **Leads to valuable discussion**
- **Reduces the amount of uncertainty to be reflected in the scenarios**

Pierre Wack about Scenario Planning (1986) *Pre-determined elements*



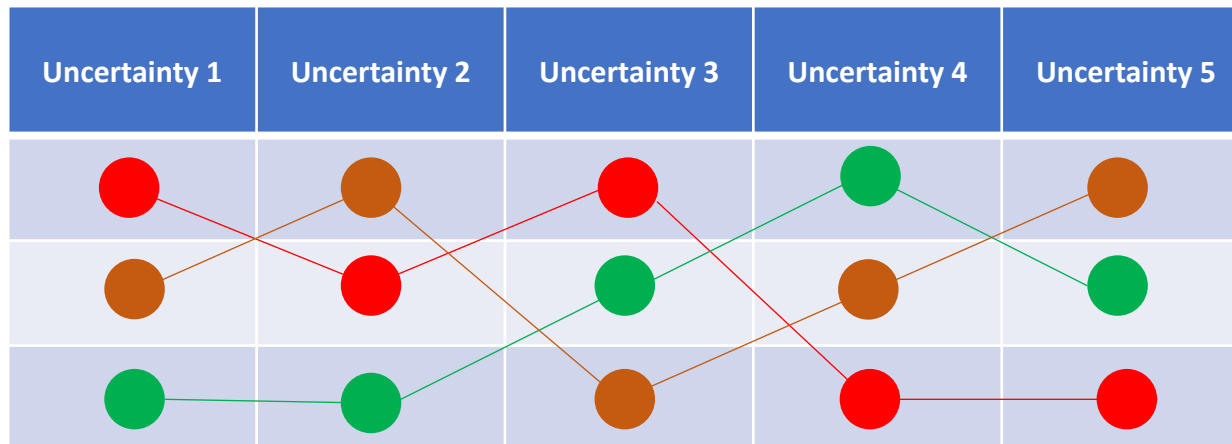
Source: Youtube, Oxford Futures Library

Uncertain elements, uncertainties

But then we are left with a number of uncertain elements or **uncertainties**

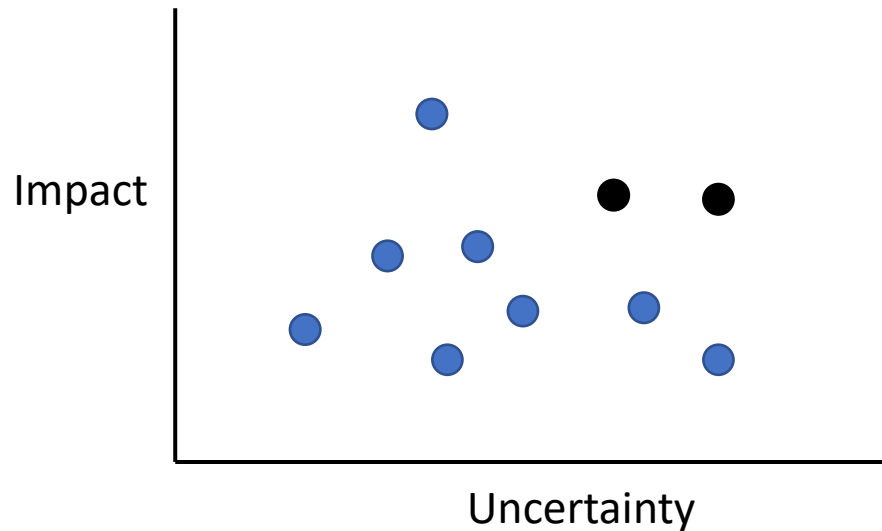
We need to..

- .. assess what can the outcomes of these uncertainties are in the future
- .. string these outcomes together to form logical, coherent scenarios

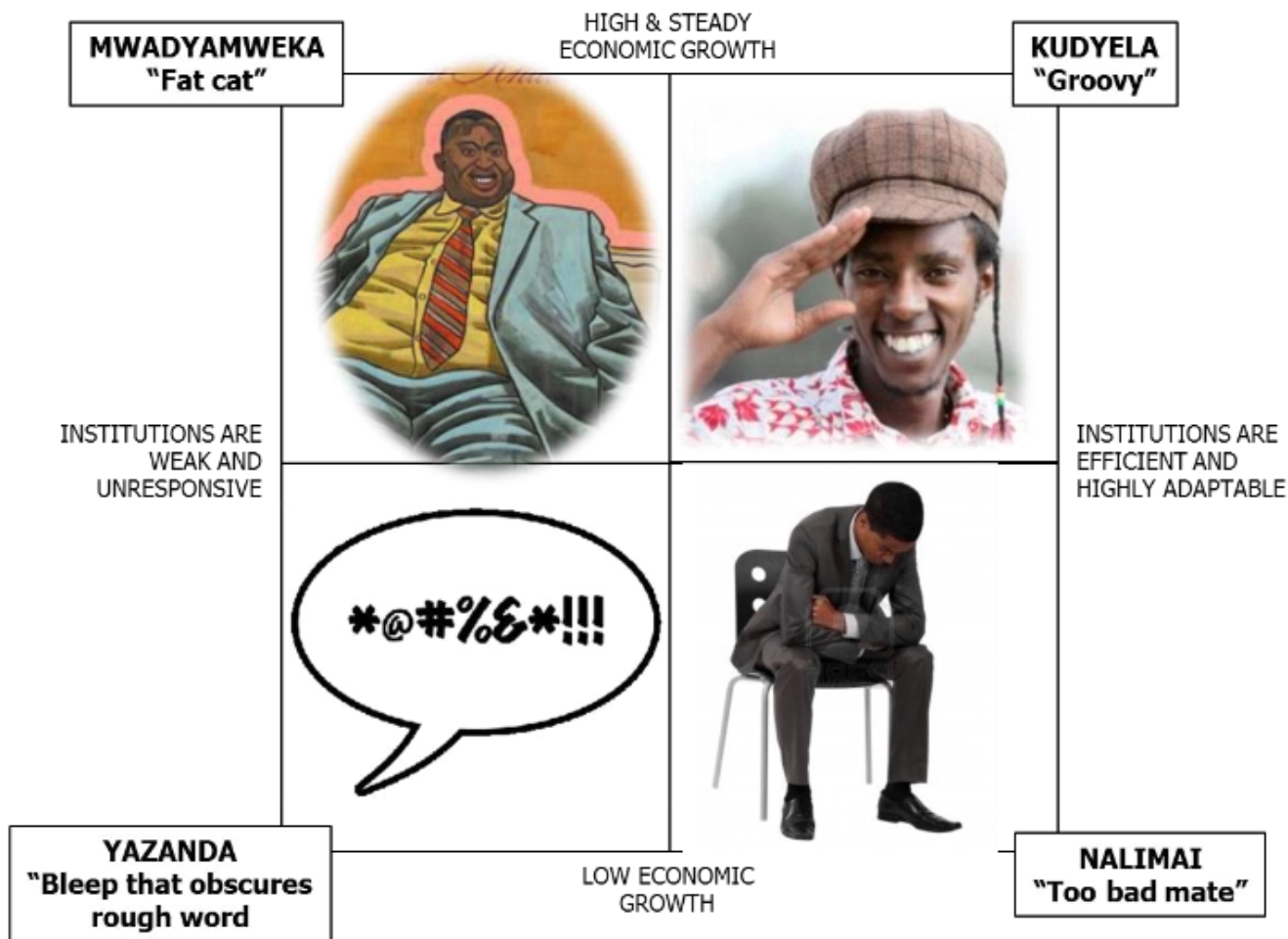


The deductive method

- Group and rank scenario elements by uncertainty and impact
- Choose the two highest ranking elements
- Consider possible outcomes for these elements and group in a two by two matrix



Example of deductive method



Issues with deductive method

Advantage:

- Structured and clear approach

Issues:

- Mechanistic
- Always leads to four scenarios
- Not necessarily provides insight in 'how things hang together'

Inductive method



Inductive method



Inductive method

Advantage:

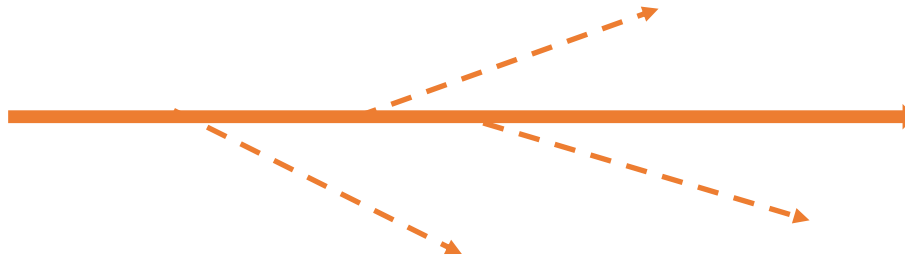
- Intuitive and flexible

Issues:

- Difficult to get started
- Will usually require multiple iterations

Incremental method

A 'base scenario' with possible deviations around some key uncertainties.



Incremental method

Advantage:

- As the central scenario is usually a ‘best guess’ forecast, the audience may be able to better relate to the scenarios presented

Issue:

- The approach is not a good framework to show ‘how things hang together’

Recap methods

- **Deductive method** – 2 x 2 matrix, mechanistic
- **Inductive method** – flexible and intuitive, but more difficult
- **Incremental method** – comfortable but less effective

Influence diagrams

- A diagram to show the interrelationships between important factors
- Uncertainties are shown as ovals, the influences by arrows
- Objective function may be shown as a diamond

Use:

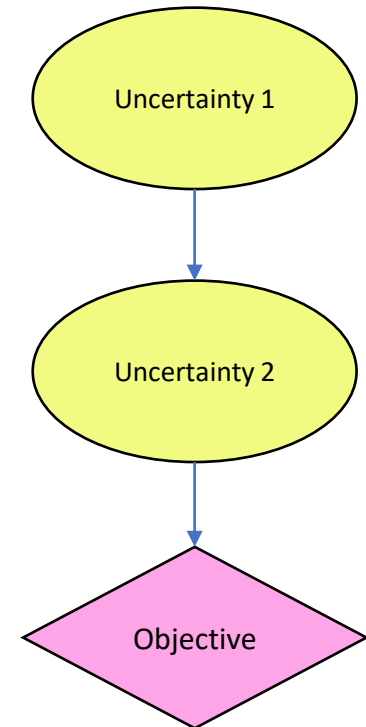
Get an overview of all interrelationships

Facilitate discussion

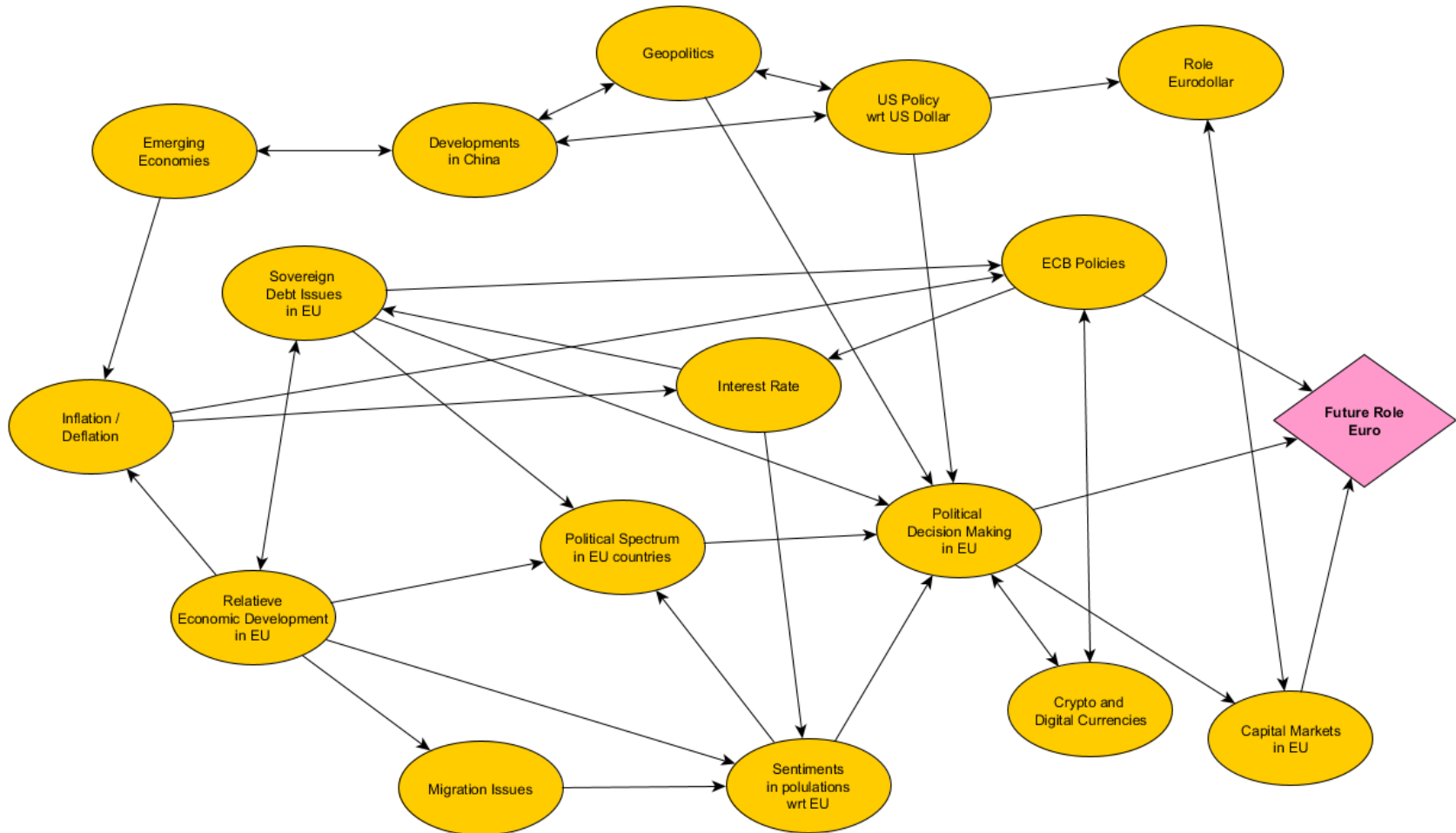
Tips:

Be selective in choosing uncertainties and drawing arrows

There is never a right, complete diagram



Influence diagram - example



Energy mix for German power supply

