

# Organisational Change and Safety

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ERGONOMICA

# summary

Target audience: Competent Authorities / Industry

- Correlation between Organisational Change and Hazards
- Gaps in Change Capacity: 3 International Case Studies
- Towards Predictive Change Analysis

A final quest (Competent Authorities)

# Change in Organisations

Any organisation aims at sustaining its business. Safety is not the core mission of such systems, but market and service is

Maintaining organisational business...

...actively

- detect opportunities or implement solutions (it requires active changes)
- **changes are triggered proactively** to impact business, production, quality or safety

...passively

- response to the external business (environment, regulators, competitors)
- **changes are absorbed passively** with or without proper strategy

# Why Organisational Change and Safety?

- Many instances of **organisational changes** are not analysed **resulting in poor defenses** against major accidents (HSE, 2003a):
  - Castleford (1992): “5 deaths...recent company re-organization (HSE, 2003a)
  - Tianjin, China (2015): explosion with 165 deaths...site opened only in 2014
  - Deepwater Horizon (Gulf of Mexico, 2014) – improper mgm of change
  - BP Texas City (USA, 2014) – improper mgm of change
- Quote (Brazier, 2006): “The process industry has always had to deal with changes to plant and **equipment...even more on people and organization change**”

# Why Organisational Change and Safety?

- Notably, changes like ...
  - merges and acquisitions
  - “downsizing”
  - management turnover ratio
  - externalization of services
  - Over-use of short-term contractors
  - public-private combinations
  - new technology / complex supply chain systems
  - new regulatory schemes

...may bring forward rooms for “organizational” hazards at plant level which are not followed up by proper management systems (HSE, 2003b)

# Why Organisational Change and Safety?

- Nature provides changes – e.g, Climate-Natech link
- *Regulatory Action Paradox* - action triggered to increase safety but the **complexity of implementing new regulations** could **maximise temporary exposures to risks** in the first **transition period**
- Quote: «The systems needed to manage these changes are not so well understood”. – Brazier, 2006

So the question is: **what gaps** in **change capacity**?

## Case Study I - *Chemical Domain*

- Capacity Building in CAPP - 14 EU Neighborhood Countries (2016)
  - Seveso ENPI Project (European Neighbourhood Policy Initiative, DG-ECHO/EC)
    - Profiling EU Neighborhood Countries
    - Drive strategic support to CAPP needs
  - Critical: are they ready to change as EC would suggest?
  - Less known: what transition times are required to express change?
  - Critical: what change programmes they are implementing?
  - Unknown: **what is Capacity Building on Org. Change?**
  - Unknown: what, when and how change is measured?

## Case Study II – *Aviation Domain*

- Proactive Safety in Aviations – PROSPERO EU R&D Project (2012-15)
  - New Model about Risk Intelligence
    - Big Data across Aviation Sectors (Airline, ATM, Airports)
  - Failure: unknow capacity to change (even within single organisations)
    - EASA was part of the problem
  - Failure: over-optimistic transition times to implement new methods
    - Expectations to share data was constrained by power relationships, confidentiality, and no procedures to solve on classified information
  - Partial Failure: no formal measuring of change (unclear what to measure)



## Case Study III - Human/Man-made Disasters

- EU–Turkey Cooperation Project (2015-) (Eu. Civil Protection Mechanism)
  - Profiling national Capacity Building for Disaster Management and Control
- Criticality:           unclear capacity to change (resources, competence)
- Criticality:           over-optimistic transition times to implement new approaches
- Potential Failure: lack of a change management process
- Criticality:           no formal monitoring of change impact (unclear what to measure)

## Lessons Learned from Case Studies...

- unclear **capacity building on change**
- over-optimistic **transition times**
- lack of a **change management process**
- no formal **monitoring of change impact** (unclear what to measure)

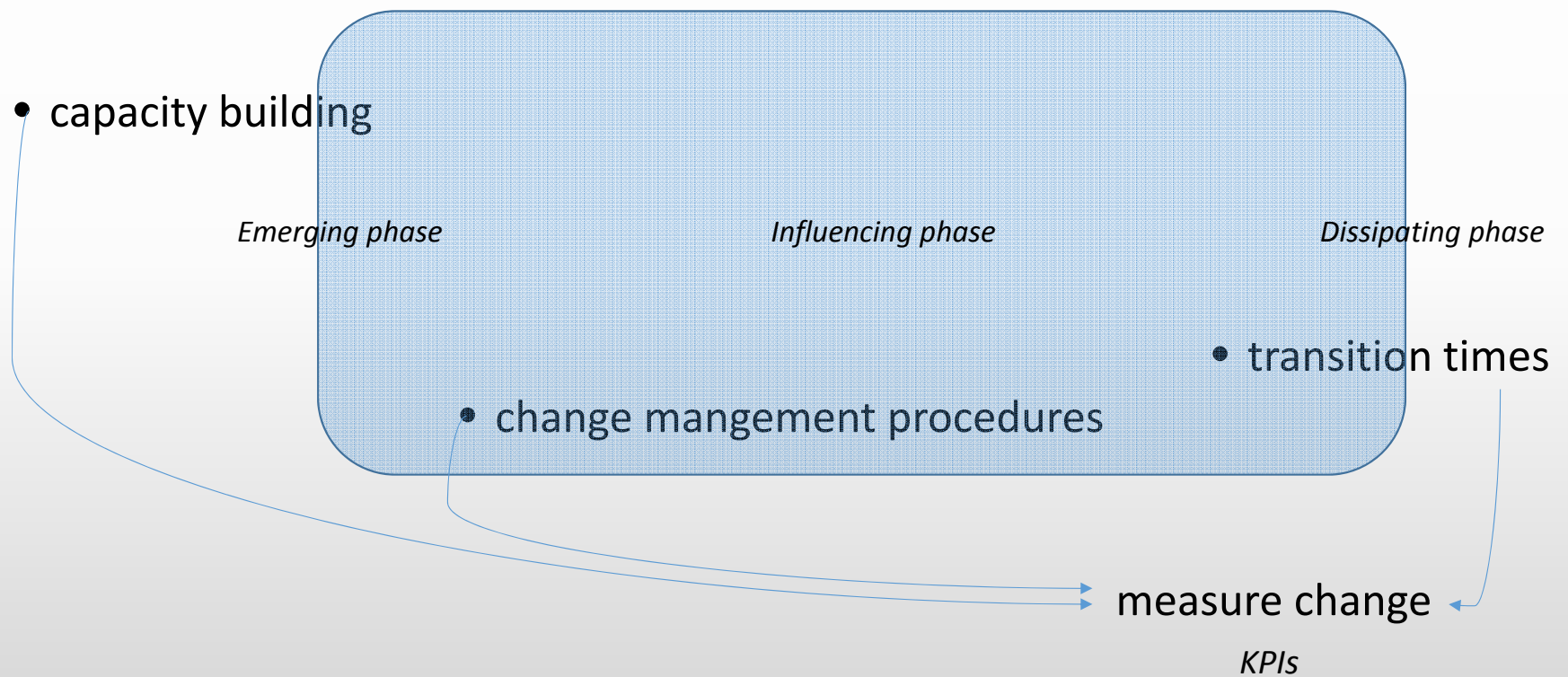
*The latter one: ...from compliance-based to performance-based regulatory strategy oversight?*

# Change life-cycle model

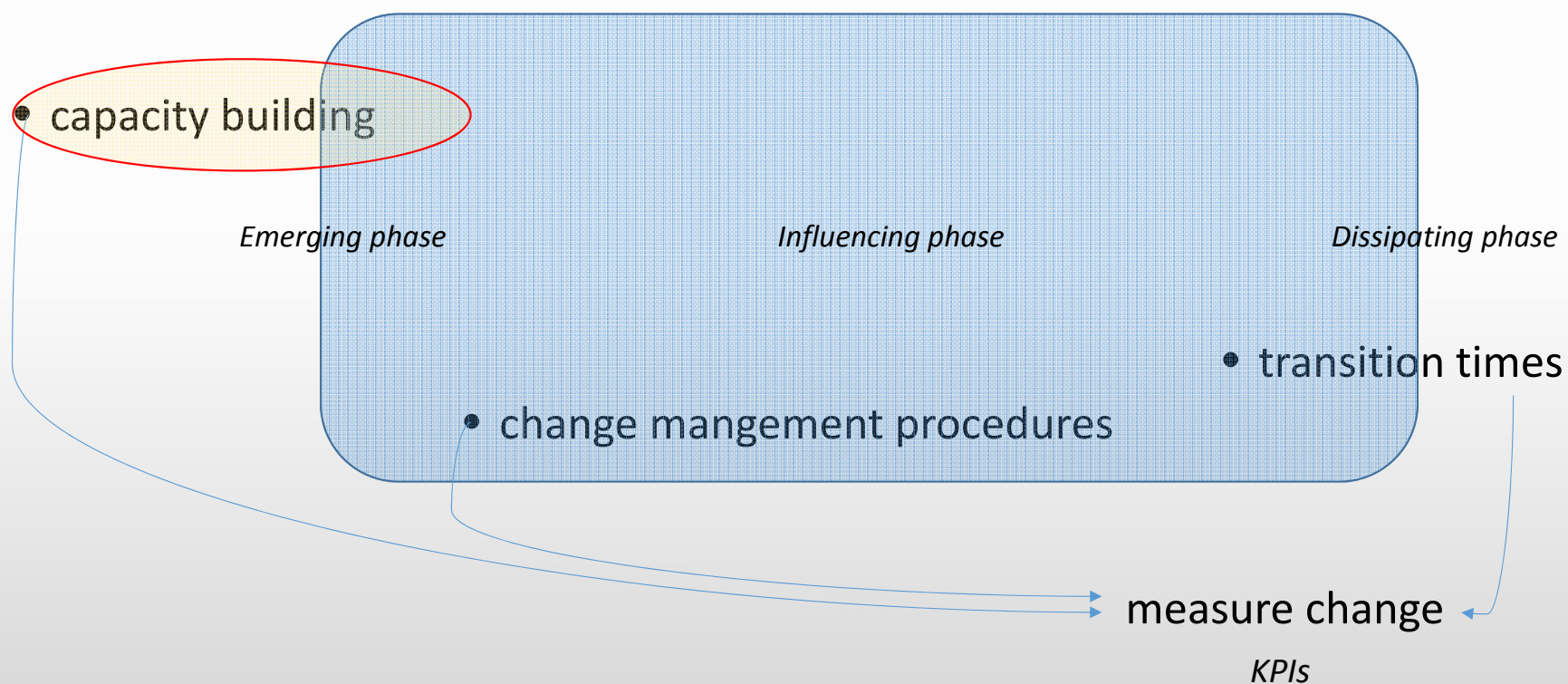


- Emerging phase
  - Any change has an input – **what initiates a change**
    - The source of change acts on specific parts of the org.
    - **Some combinations of source of change are predictable** (use of contractors and training procedure updates)
    - Source of change could act in organisations as «sincronous» or worst, time-lagged (unpredictable)
- Influencing phase
  - Any **change affects processes** – thus change can be **managed accordingly**
    - Capacity of management of change: Organize resources, procedures, competencies and measures to operationalize change like a «formal internal project»
  - Any change has an output - Any **change will lead to multiple effects**
    - known/expected effects vs unknown/unexpected effects
    - it is thus possible to monitor the KPIs on such parts as well as their interactions as a risk pattern
- Dissipating phase
  - Any change degrades over time – it stabilizes and fades away
    - it is **gradually internalized as normal state of affair** («smoking ban effect»)

# Competent Authority: Strategic Change Oversight



# Competent Authority: Strategic Change Oversight



## *measure change (capacity building)*

*For organisations **WITHOUT** change management programmes/procedures (CMPs)*

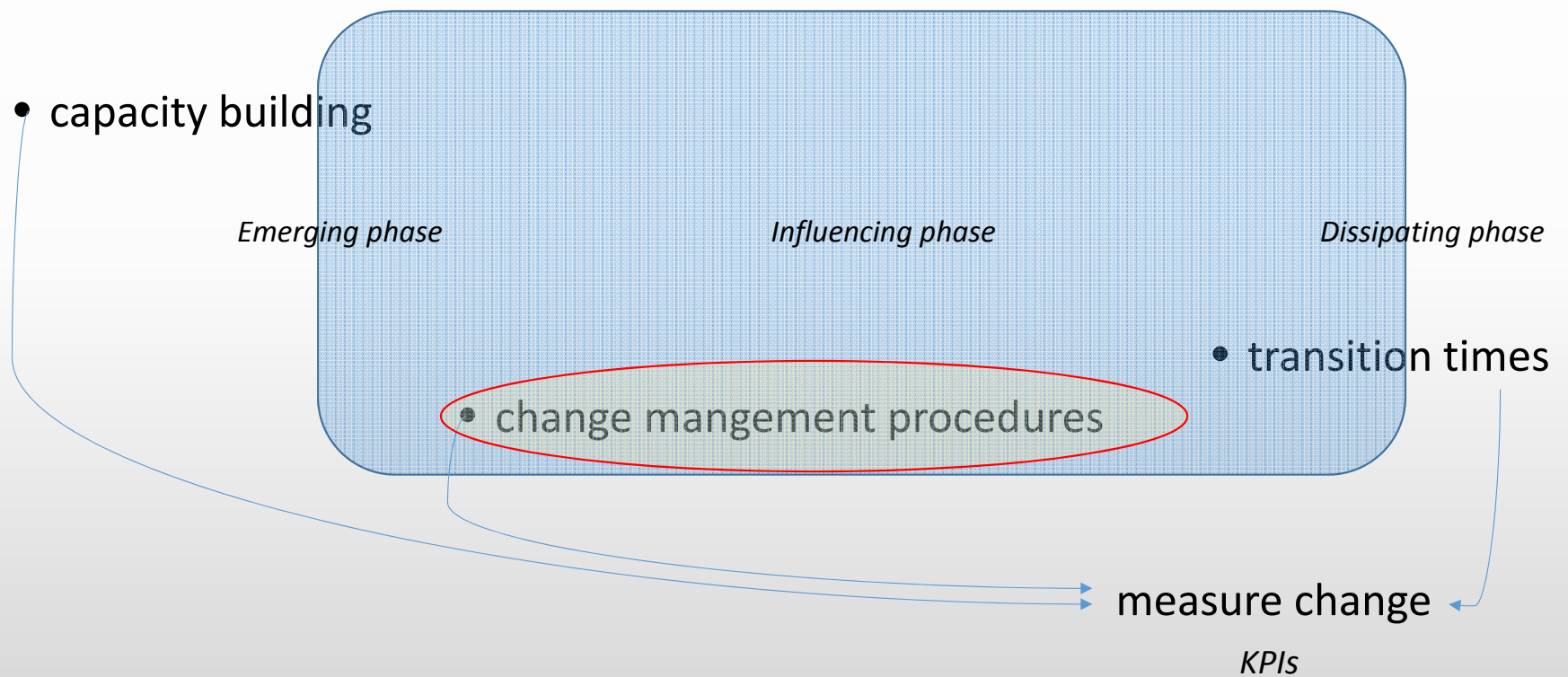
1. Survey Capacity Building (about Change management)
2. *Measure Survey BEFORE complete Change exposure*

## *measure change (capacity building)*

Adapted from ENPI Survey 2015 (JRC source)

- Section 1 - Legislative and Regulatory Context
- Section 2 – Enforcement (Inspection systems)
- Section 3 – Change Awareness and Competence on Change effects
- Section 4 – Change-*driven* Risk Reduction Measures
- Section 5 – Change Needs and Limitations

# Competent Authority: Strategic Change Oversight





# *measure change (CMPs)*

For organisations **WITH** change management programmes/procedures (CMPs)

1. Compliance based: Audit of means of compliance (presence of CMPs)
2. Performance based: Test performance of CMPs (e.g., KPIs on CMPs available)

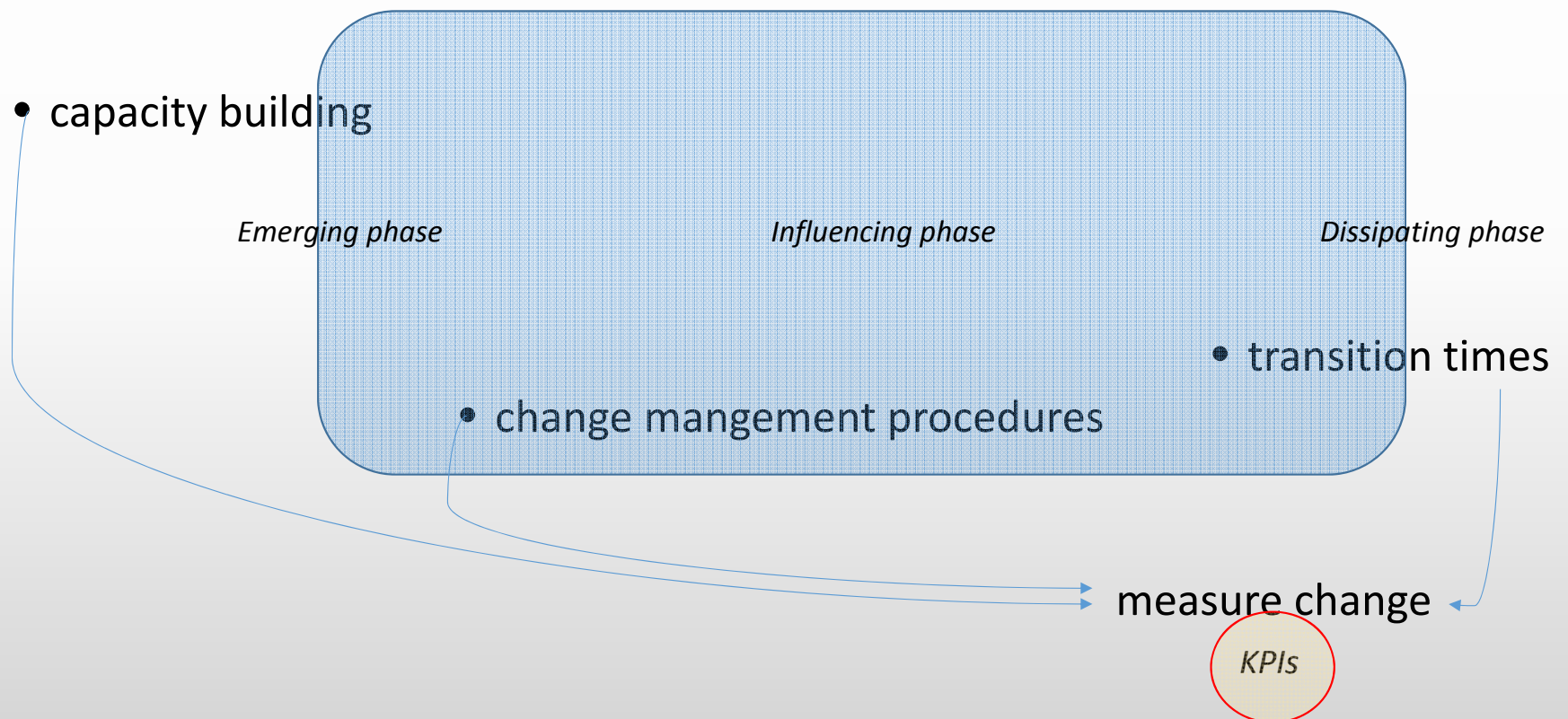
- This is the best condition to meet at regulatory level



Dedicated change management team/functions  
Dedicated change management workflows  
Dedicated change communication strategies  
Dedicated task-process analysis

Available database/ software to management of Change 17

# Competent Authority: Strategic Change Oversight



## *measure change (KPIs focus)*

You have a change model of the **expected variation on KPIs**

1. selection of expected KPIs (requisition/review values before change)
2. define *point estimates of KPIs at short – medium – long term* (expected values due to change)
3. Measure KPIs at *short – medium – long term*
4. **Quantify «distance» between expected and observed KPIs values at various transition times (short-medium-long)**

## *measure change (KPIs focus)*

### **Input indicators**

Planned/actual input m/hrs ratio\*

Planned/actual input budgeted availability ratio\*

Planned/actual man-power availability\*

\*at deadlines

### **Process indicators**

Supply Chain efficiency ratio (x100 interventions)

# overdue tasks/day

# rework/day

# delayed Decisions/ day

# communication delay/day

# overdue deadlines/day

### **Output indicators**

# missions completed

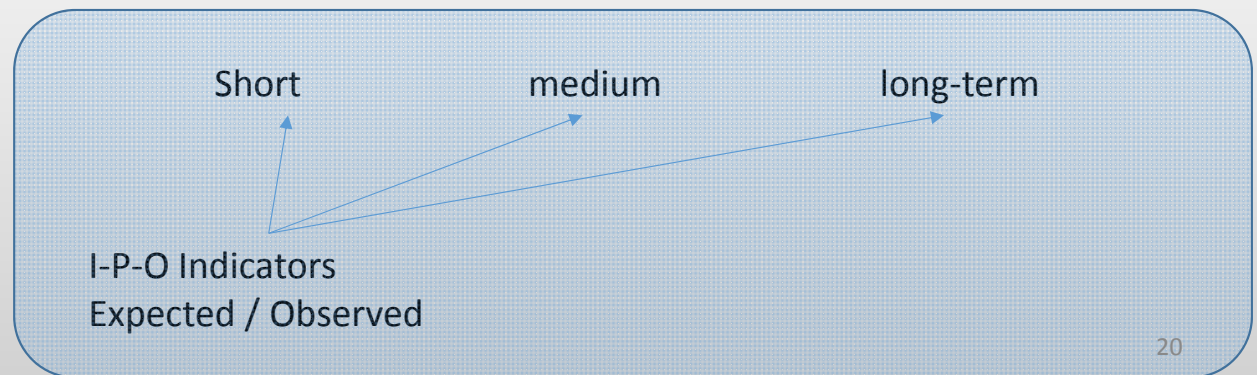
# action targets completed

% business continuity delivered to CI (hospitals  
energy/power complex, authority complex)

# on-time response delivery

% disaster cost savings/mission delivery

% manpower injuries/mission



*measure change (KPIs focus)*

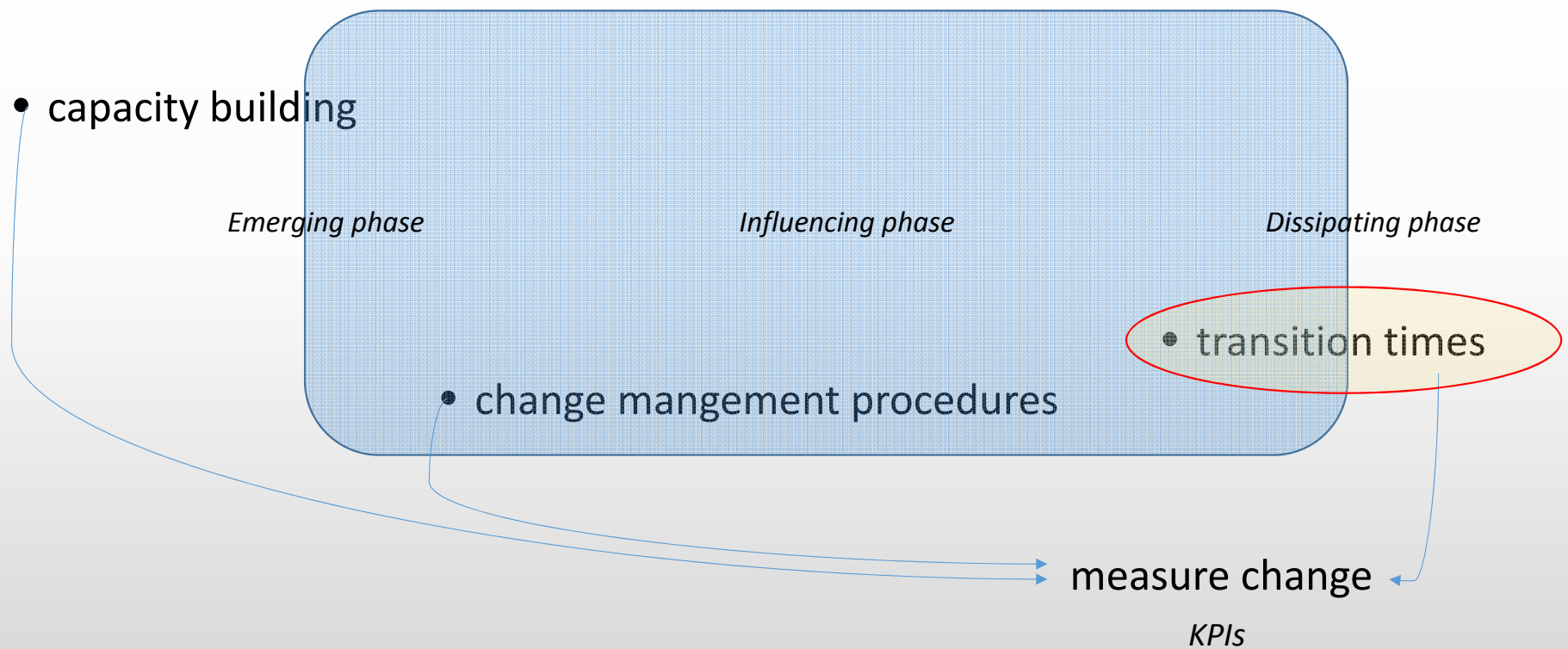
*You do not have a model of the expected effects on KPIs*

1. Shortlist KPIs as used to actual Safety or Operational Performance (e.g, n. near misses/yrs ; quarterly revenue increase)
2. *Study risk pattern profile at transition times (short-medium-long)*

## *measure change (KPIs focus)*

Risk Patterns in Change (precursors of Neg Performance)						
CHANGE		Contractors <.40%	Plant type	Season	Negative Performance	Probability
Before		Negative	AT	Spring	9+	,95
Before		Negative	AT	Winter	9+	,91
Before		Negative	B	Spring	9+	,88
After –short		Positive	B	Summer/Autumn	<= 1	,86
After – mid		Negative	B	Winter	9+	,82
After – long		Positive	AT	Summer/Autumn	<= 1	,79
After – long		Positive	AT	Spring	<= 1	,67
Total	N	370	370	370	370	370

# Competent Authority: Strategic Change Oversight



## *measure change (Transition times)*

1. Record all transition times
  1. Time spent to introduce Change (e.g., transition time to enter new IT)
  2. Time spent to adapt to change (e.g., optimal org. response to change)
  3. Time spent to accomodate change (e.g., )
2. Study trends on transition times as lessons learned on reaction of specific industries or segments



## Towards...*predictive change analysis*

- **Anticipate organisational response to change demands** before the change occurrence – this protects you by risk in change
  - Study multiple change types and for each one of them estimate/simulate the effects in future scenarios

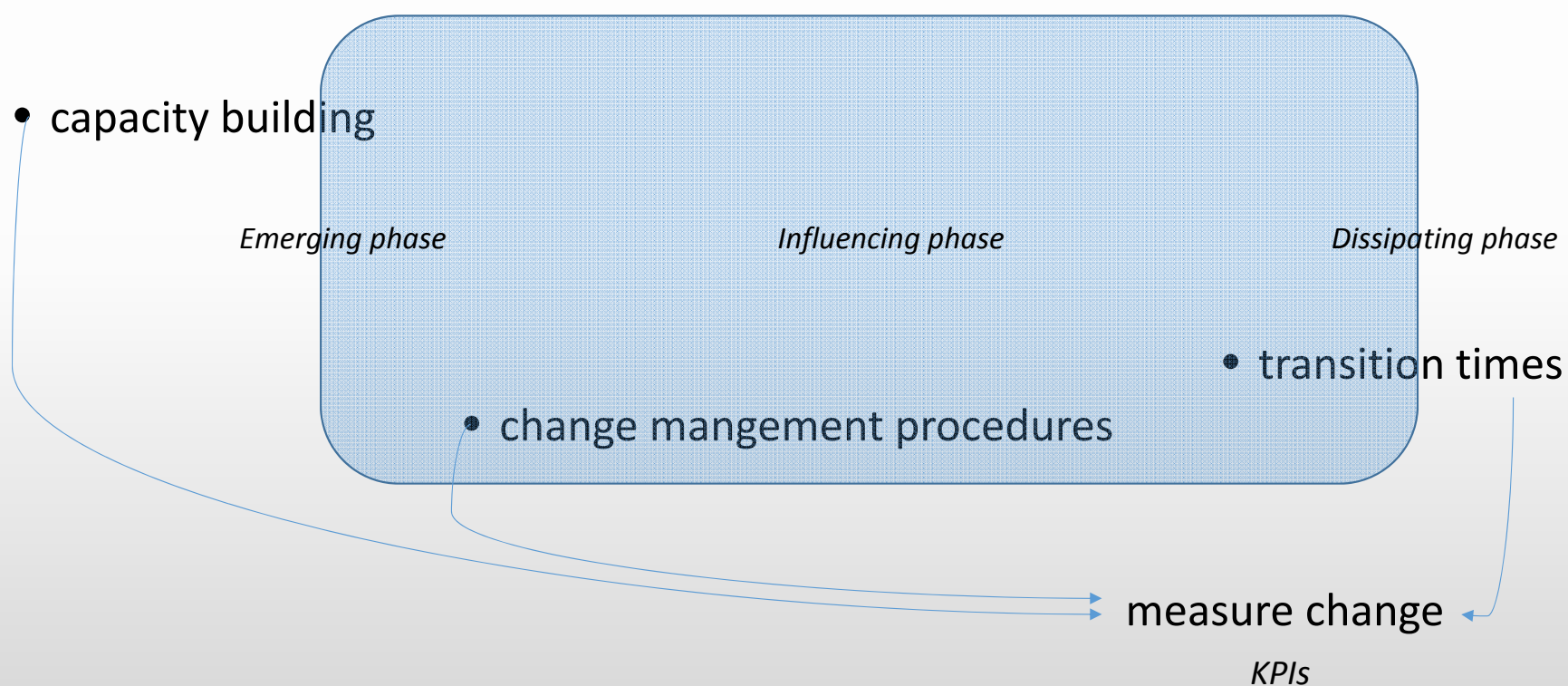
Possible????

## Towards...*predictive change analysis*

### The FAST case

- from 2010, FAST applies a methodology to study **Areas of Change** for the next 10-20-30 years forward (now) in order to detect the **most likely future hazard due to areas of change** before their actual/real occurrence
- anticipate safety response actions at regulatory and industrial level (called Prognostic Safety)
- more time available over transition times to drive the management of organisational changes (to control hazard evolutions)

# What is Change capacity of Competent Authority?



**Thank you**