

What makes an effective relationship between a regulator and dutyholder?

IChemE Hazards 34 Process Safety Conference

7 November 2024



Dr Luise Vassie

Head of Membership and Operations, Hazards Forum



Marc McBride

Member of Technical Advisory Committee of Hazards Forum
Principal Inspector – Nuclear Safety, Office for Nuclear Regulation



Helen Berry

Inspector – Nuclear Safety, Office for Nuclear Regulation

Purpose of workshop



1. Understand what makes an effective relationship between a regulator and dutyholder
2. Explore how we can improve the effectiveness of relationships between regulators and dutyholders
3. Explore the implications for regulation of increasingly complex systems

Workshop agenda



- | | |
|---|---------------|
| 1. Welcome, introductions and context setting | 13.30 – 13.55 |
| 2. Exercise 1 | 13.55 – 14.25 |
| 3. Models of effective regulation | 14.25 – 14.40 |
| 4. Exercise 2 | 14.40 – 15.10 |
| 5. 'Regulating' complex systems | 15.10 – 15.20 |
| 6. Wrap-up | 15.20 – 15.30 |

Why is it important for the regulator and dutyholder to have an effective relationship?



- Regulatory compliance, protection of people and the environment from harm, and continuous improvement
- Stakeholder confidence
- Business innovation, investment and growth
- Removal of unnecessary regulatory burden

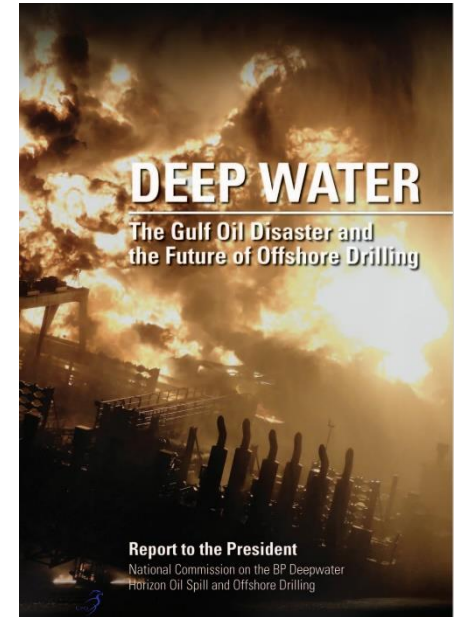
Case study 1



“The agency’s resources did not keep pace with industry expansion into deeper waters and industry’s related reliance on more demanding technologies. And, senior agency officials’ focus on safety gave way to efforts to maximize revenue from leasing and production”

“... a command and control, prescriptive approach to regulation did not adequately address the risks generated by the offshore industry’s new technologies and exploration, development, and production activities, including industrial expansion into deeper waters.”

Which accident was this? Deepwater Horizon Blowout



National Commission (2011). *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling*

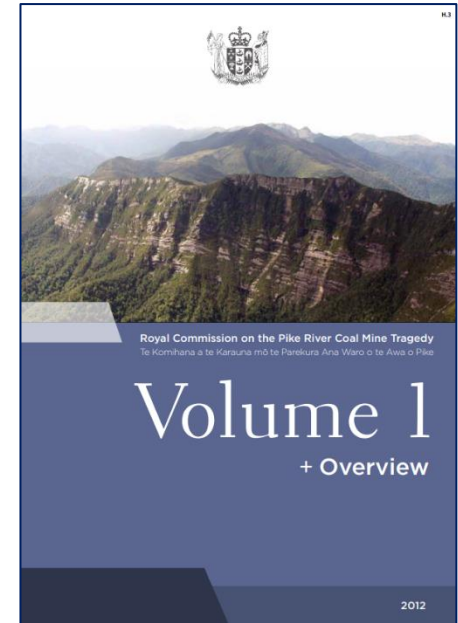
Case study 2

“... inadequate oversight of the mine by a health and safety regulator that lacked focus, resourcing and inspection capacity”

“The granting of exploration and mining permits, the assessment of environmental effects and the regulation of health and safety in coal mining were administered by separate entities under separate acts.”

“The Health and Safety in Employment Act 1992 placed primary responsibility for health and safety on the employer. This was appropriate, but was unfortunately seen by the [Department of Labour, DOL] as somehow reducing its responsibility to actively administer the legislation. DOL’s approach did not accord with the scheme and purpose of the legislation.”

Which accident was this? Pike River Coal Mine Explosion



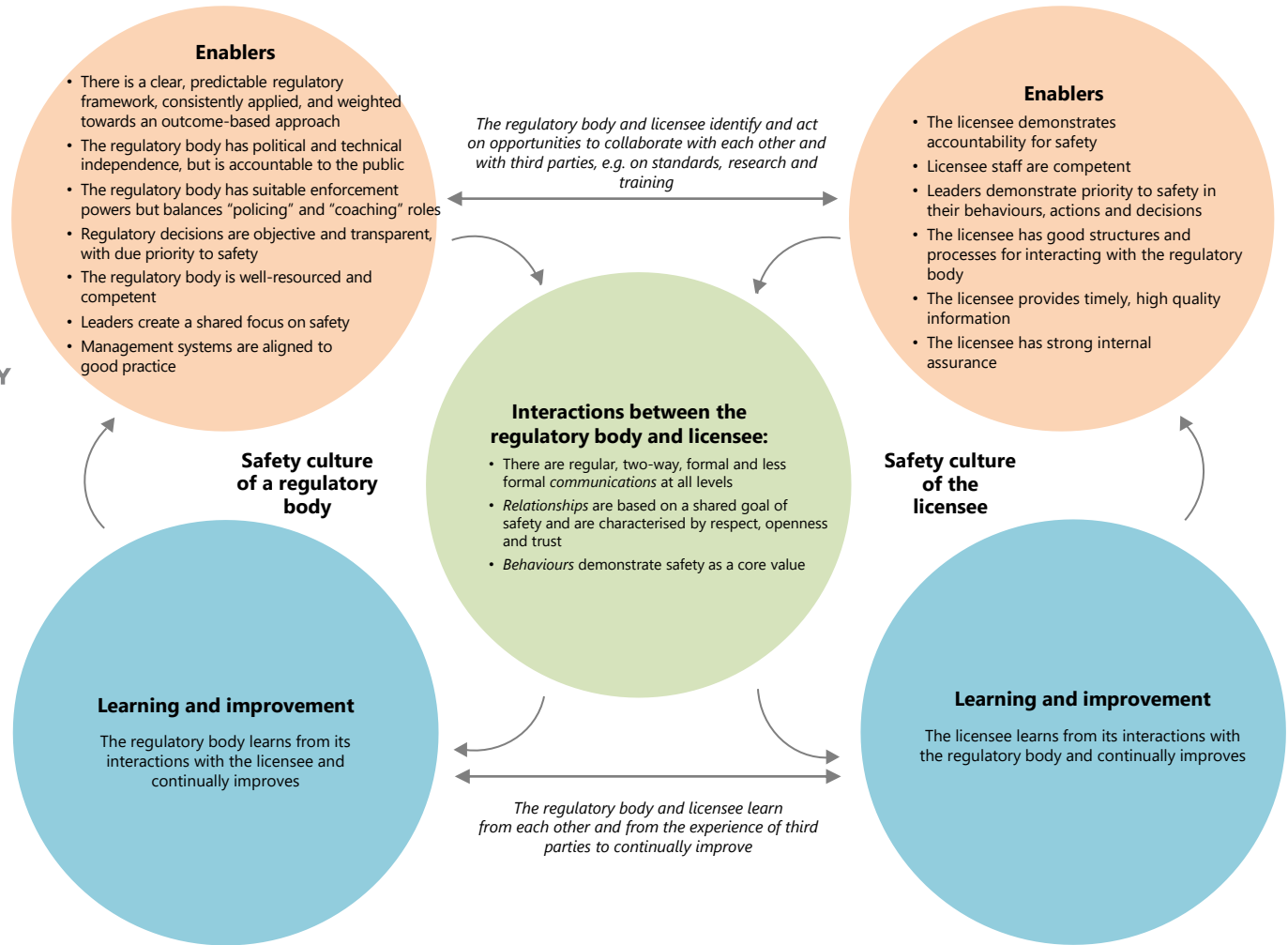
Royal Commission (2012). *Royal Commission on the Pike River Coal Mine Tragedy*

Exercise 1:

What are the most important attributes of an effective relationship between a regulator and dutyholder?



NEA (2024). *The Mutual Impact of Nuclear Regulatory Bodies and Licence Holders from a Safety Culture Perspective*

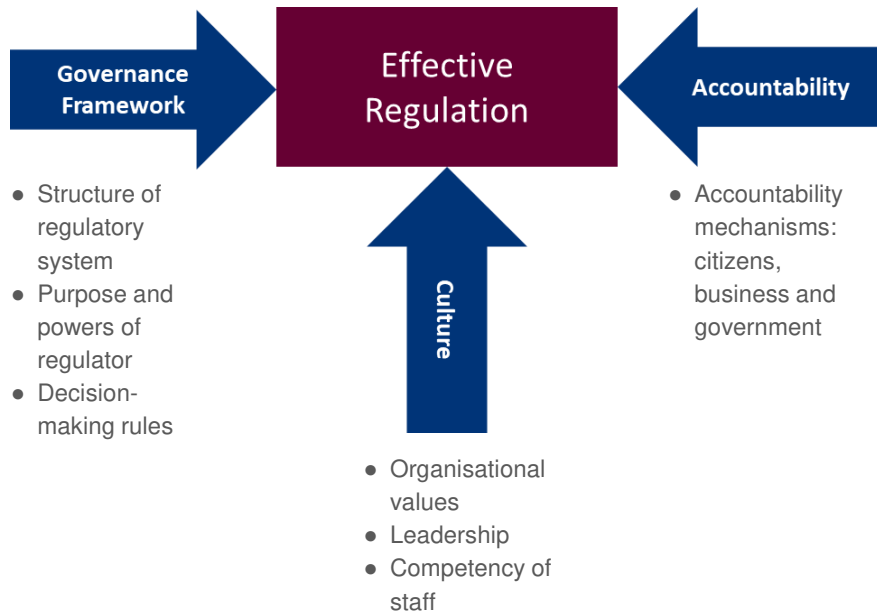


Effective regulatory systems need the right practices

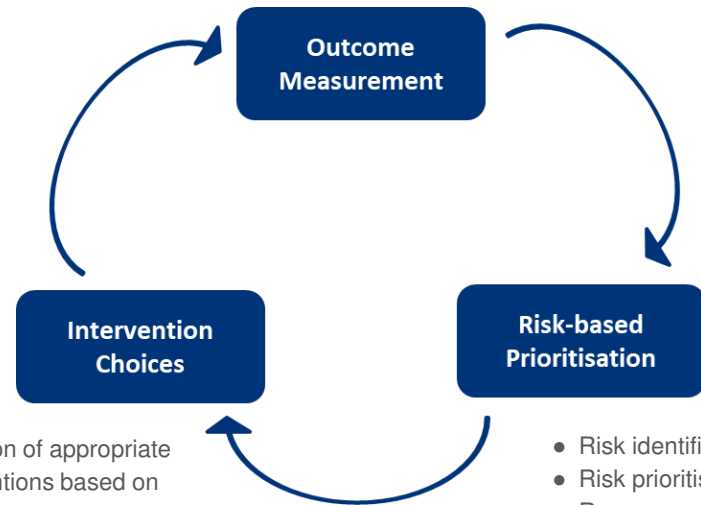
Russell and Hodges (2019), *Regulatory Delivery*

[See also Hodges (2022), *An Introduction to Outcome Based Cooperative Regulation*]

Effective regulatory systems need the right pre-requisites



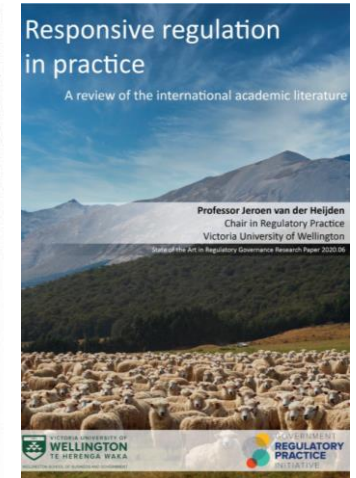
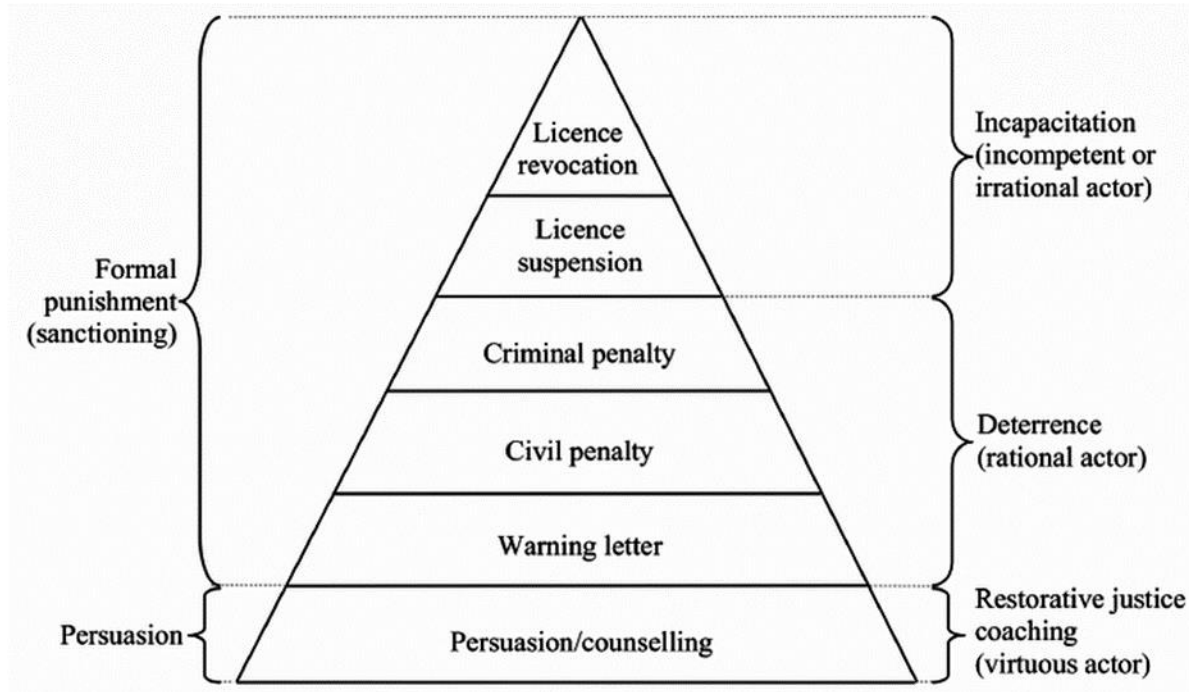
- Identification of desired outcomes
- Measurement of progress
- Evaluation of contribution to outcomes



- Selection of appropriate interventions based on understanding of the awareness, capability and motivation of the regulated and beneficiaries

- Risk identification
- Risk prioritisation
- Resource allocation

Responsive Regulation



van der Heijden
(2020). *Responsive
Regulation in Practice*

The enforcement pyramid is a heuristic that seeks to illustrate how compliance is likely to be achieved through 'soft' regulatory interventions, so long as the regulator can escalate to a severe response and is willing to use the most critical intervention.

Other approaches to responsive regulation:

- *Tripartism* - empowering citizens' associations, to overcome the risk of capture and corruption
- *Enforced self-regulation* - requiring firms to write their own sets of rules, which are then publicly ratified and enforced.
- *Partial industry regulation* - gaining leverage from the competitive conduct of an entire industry by regulating some, but not other, firms.

Exercise 2:

What would most improve the effectiveness of relationships between the regulator and dutyholder?

‘Regulating’ complex systems

The challenge of increasingly complex socio-technical systems:

Tractable systems	Intractable systems
Description of system is simple and principles of functioning are known	Descriptions are elaborate and functioning is not fully known
Behaviour of system can be predicted from behaviour of component parts	Behaviour of system can't be predicted from behaviour of component parts
Independent of other systems	Interdependence with other systems
Failures are resultant and predictable	Failures are emergent and unpredictable
Easy to control	Difficult to control

22,000 people working on the project in Britain

3,000,000 tonnes of concrete

10,000 kilometres of cables

3800 British businesses in the supply chain

60 year design life



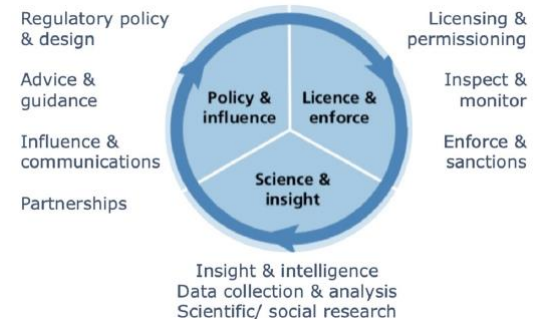
'Regulating' complex systems

- Safety-II thinking (Hollnagel, 2014):

Safety-I	Safety-II
Goal is to minimise the number of things that go wrong	Goal is to maximise the number of things that go right
Emphasis on 'work as imagined'	Emphasis on 'work as done'
Safety management is reactive, responding when unacceptable risks arise	Safety management is proactive, focussing on anticipation and adjustment
Humans seen mainly as a liability or hazard	Humans seen as necessary for system flexibility and resilience

- Implications for regulation:

- Recognition that complex systems can't be controlled
- Focus on outcomes rather than prescription
- Use of complementary methods, e.g. dialogue and observation, to explore 'work as done' and unlock tacit knowledge and learning, to complement compliance inspections
- overall shift in regulation from 'oversight' to 'insight'



Recap on objectives



1. Understand what makes an effective relationship between a regulator and dutyholder
2. Explore how we can improve the effectiveness of relationships between a regulator and dutyholder
3. Explore the implications for regulation of increasingly complex systems



Thank you

luisse.vassie@hazardsforum.org

Marc.McBride@onr.gov.uk

Helen.Berry@onr.gov.uk

References



- Hodges, C. (2022). An Introduction to Outcome Based Cooperative Regulation, International Network for the Delivery of Regulation, Research Series Paper No. 2022/1, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4031491
- Hollnagel, E. (2014). *Safety-I and Safety-II: The Past and Future of Safety Management*, CRC Press
- Judge, R. and Elahi, S. (2024). *Regulation fit-for-complexity*, Safer Complex Systems, Engineering X, Royal Academy of Engineering, <https://engineeringx.raeng.org.uk/media/gsed5gze/regulation-fit-for-complexity.pdf>
- National Commission (2011). *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling*, Report to the President, National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, <https://www.govinfo.gov/content/pkg/GPO-OILCOMMISSION/pdf/GPO-OILCOMMISSION.pdf>
- NEA (2024). *The Mutual Impact of Nuclear Regulatory Bodies and Licence Holders from a Safety Culture Perspective*, Report No. 7672, Nuclear Energy Agency, Organisation for Economic Co-operation and Development
- Royal Commission (2012). *Royal Commission on the Pike River Coal Mine Tragedy*, Wellington, New Zealand, <https://pikeriver.royalcommission.govt.nz/>
- Russell, G. and Hodges, C., Eds (2019). *Regulatory Delivery*, Bloomsbury Publishing
- van der Heijden, J. (2020). *Responsive regulation in practice: A review of the international academic literature*, State of the Art in Regulatory Governance Research Paper – 2020.06, Wellington: Victoria University of Wellington/Government Regulatory Practice Initiative, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3651924