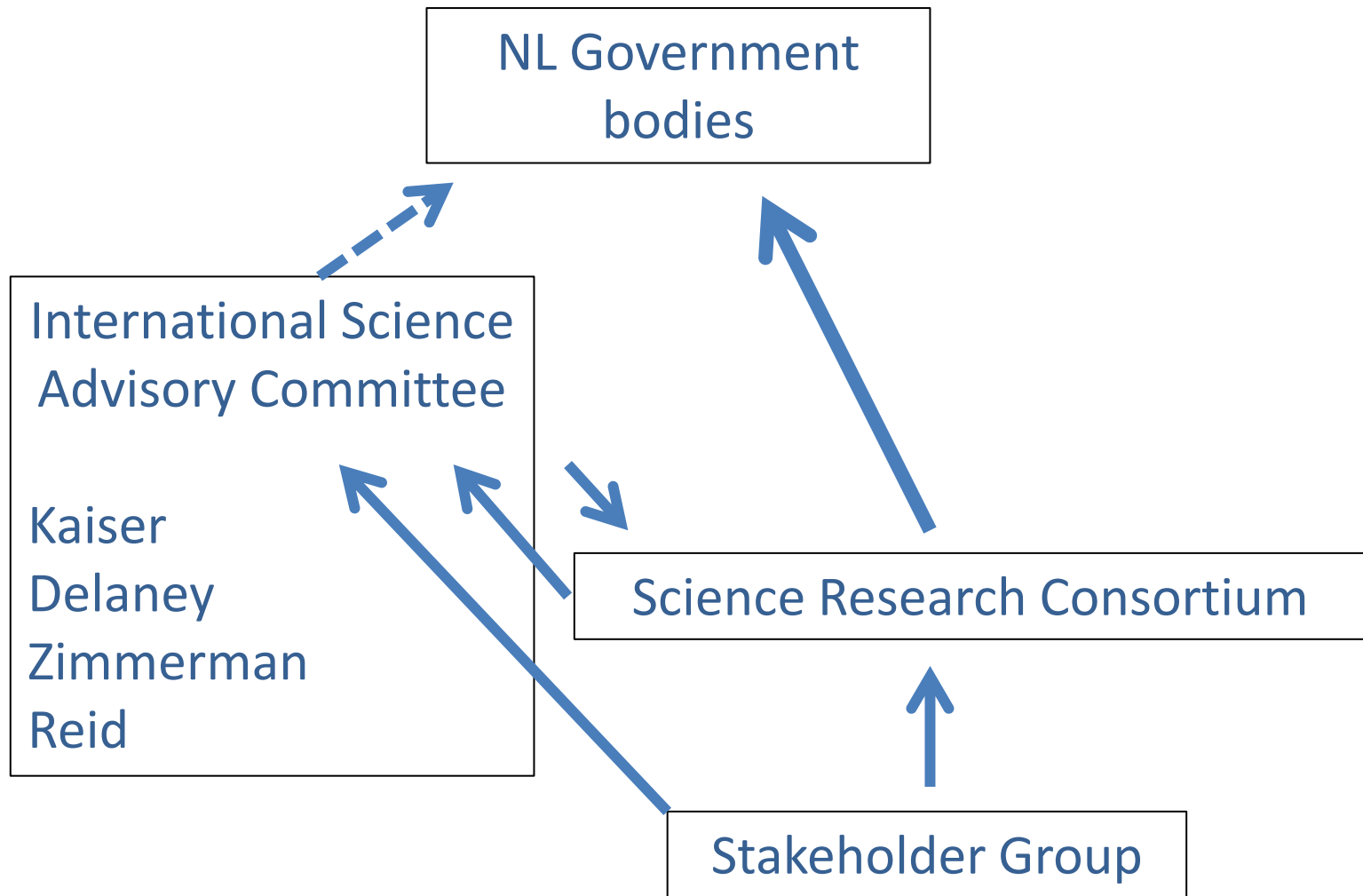




# Pulse fishing: opportunities and knowledge gaps

Michel Kaiser

# Flow of information



# Consultation with stakeholders about research questions

- Directed questionnaire to poll most important science questions.
- 14 organisations/individuals responded
- Representing 79 consultees
- Some organisations with >100 members
- 73 individual questions compiled
- Need to aggregate questions for phase II consultation

# Main themes of 'questions'

Mortality of seabed animals (epi and infauna)

Mortality of target and non-target fish

Bycatch reduction

Ecosystem effects e.g. on nutrient cycling

Energy efficiency vs fish production using other methods

Footprint of the fishery relative to normal beam trawl fleet

Social and economic consequences

# Which questions are investigated?

- Mortality of seabed animals (epi and infauna) **YES**
- Mortality of target and non-target fish **YES**
- Bycatch reduction **YES**
- Ecosystem effects e.g. on nutrient cycling **MAYBE**
- Energy efficiency vs fish production using other methods **YES**
- Footprint of the fishery relative to normal beam trawl fleet **YES**
- Social and economic consequences **MAYBE**

# Calculation of animals killed in sediment by beam trawling

If we know how deeply the fishing gear penetrates the seabed we can calculate the proportion of animals depleted in the path of the trawl

Diagram located here will appear in Proceeding of the National Academy of Sciences very soon in a paper:

Hiddink J.G., Hughes K.M., Hilborn R., Sciberras M., Szostek C.L., McConnaughey R.A., Collie J.S., Pitcher R., Ellis N., Rijnsdorp A.D., Amoroso R.O., Parma A.M., Mazon T., Suuronen P., Jennings S. & **Kaiser M.J.** in press. Depletion and recovery of seabed biota following bottom trawling disturbance. *Proceedings of the National Academy of Sciences.*

If pulse trawling reduces penetration it should reduce the proportion of animals killed in sediment

	Tickler chain beam trawl	Pulse trawl
2013	2.0 cm	1.2 cm
2014	1.5 cm	0.9 cm