Delta Programme

Deltares

Enabling Delta Life

LIVING with UNCERTAINTY

Huib de Vriend

What did Ian basically say?

The decisions we take have to be:

credible/valid

transferable

reliable

objective

well founded

What did Ian basically say?

but there are uncertainties concerning:

the system we work in

the knowledge / expertise we have

the information we base our work on

the tools we use

the future we look into

the response of the stakeholders involved

Uncertainty reduction

- sometimes possible and feasible

  ⇒ research / studies / monitoring

- sometimes possible, but not feasible

  (e.g. too expensive, too time-consuming)

- sometimes impossible!

So what for the Delta Programme?

SYSTEM UNCERTAINTIES
(variability, randomness)

- *inherent to the system ⇒ cannot be removed*
- *nature and range can be estimated*
- *insight into the system's functioning*

yields better estimates ⇒ worth pursuing

know the system
(physical, biological, socio-economic, political)
you are working in

So what for the Delta Programme?

EPISTEMIC UNCERTAINTIES

knowledge gaps can be filled

⇒ which gaps?

⇒ how to fill them?

⇒ define concrete programme objectives

⇒ identify what's lacking to achieve them
(actors: supply + demand)

⇒ decide how to acquire this

⇒ - collaboration programme

- research programme

optimise on research expenditure,
see what you can get elsewhere

So what for the Delta Programme?

LACK OF EXPERTISE
skill / know-how / experience

in NL: little opportunity to build it up
(floods / droughts seldom occur)

⇒ learn from floods / droughts abroad
- effectiveness of prevention
- impact mitigation
- recovery
- structural measures
- protection strategies

get involved in what happens elsewhere and build up expertise

So what for the Delta Programme?

TOOL UNCERTAINTY
(schematisation / input / usage)

⇒ know your tools and how to use them

⇒ make sure you choose adequate ones

⇒ never rely on one single tool

⇒ use system knowledge to interpret results

the Delta Instruments are tools you can utilise, but they can never replace you in making choices or decisions

So what for the Delta Programme?

UNCERTAINTY ABOUT THE FUTURE

develop scenarios for
- climate change
- socio-economic change
- cultural change
- technological evolution

Veerman (2008):
prepare for a pessimistic scenario,
but act only if and when necessary

So what for the Delta Programme?

UNCERTAINTY IN STAKEHOLDER RESPONSE

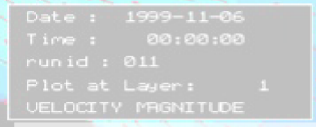
⇒ don't just confront them with your final choice

⇒ make use of their local knowledge

⇒ involve them in developing your line of thought

stakeholders are part of the game,
it's their world you're interfering with
⇒ make it also their problem you're tackling

and what for the Delta Model?



a model ...

- is a tool ⇒ quality of results depends on who uses it
- is a schematic representation of a part of reality
  ⇒ cannot replace reality in all its complexity and extent
  ⇒ horses for courses!
- produces results with an uncertainty range
- produces results that need translation to usable info
- does not take decisions!

the 'Delta Model' is a suite of validated models (+ other tools) on a low-threshold platform, but it does not produce the absolute truth

and what for the Delta Data?

measured data ...

- *are not exact ⇒ quality depends on tools and users*
- *cannot describe reality in all its complexity and extent*
- *come with an uncertainty range*
- *need translation to usable info*
- *do <u>not</u> take decisions!*

monitoring has to be a key element of the DP,
but the data don't represent the absolute truth

and what for novel approaches?

BUILDING WITH NATURE

+ nature does part of the work
+ complying with nature ⇒ less maintenance
+ faster recovery of natural behaviour
+ opportunities for new nature

but also:

- more uncertainty
- non-traditional cost-benefit consideration
- not a panacea

first think / experiment / test / monitor
and build up expertise / experience / confidence,
only then implement as full-scale measure

also, remember ...

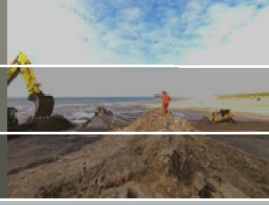
the future will be different from what we expect

⇒ monitor what really happens

⇒ prepare for clever responses

⇒ to that end: know your system (functioning, response, tipping points)

⇒ system = N(atural) + T(echnical) + S(ocial)



dealing with uncertainty
will help making
the Delta Programme
a certain success