



Norwegian Energy Sector

Adapting to a changing climate

Topic: Establish a plan (strategy) to ensure that the Energy Sector adapts to a changing climate



Roger Steen

Contingency Planning/Climate adaptation

The Norwegian Water Resources and
Energy Directorate (NVE)

rost@nve.no

..... adapt or....?

We could not agree on when,
how and what to adapt



What and how to adapt?

Technical?,
Physical?,
Institutional?,
Economical?,
Political?,
Legal framework?
Other....?



Adaptation

- Is adaptation to threats, altering behavior and regulating infrastructures and building codes something new?

Code of King Hammurabi, ca. 1728 – 1686 BC

- **§ 229** - If a builder build a house for some one, and does not construct it properly, and the house which he built fall in and kill its owner, then that builder shall be put to death.



Purpose of our activity

Background: When we build production sites and grid we build for the future. All parts of the infrastructure need to be robust to resist today's and tomorrow's threats

We (the society) need/demand secure Energy production, transportation and distribution 24/7. The Energy sector needs to focus on **worst case scenarios**

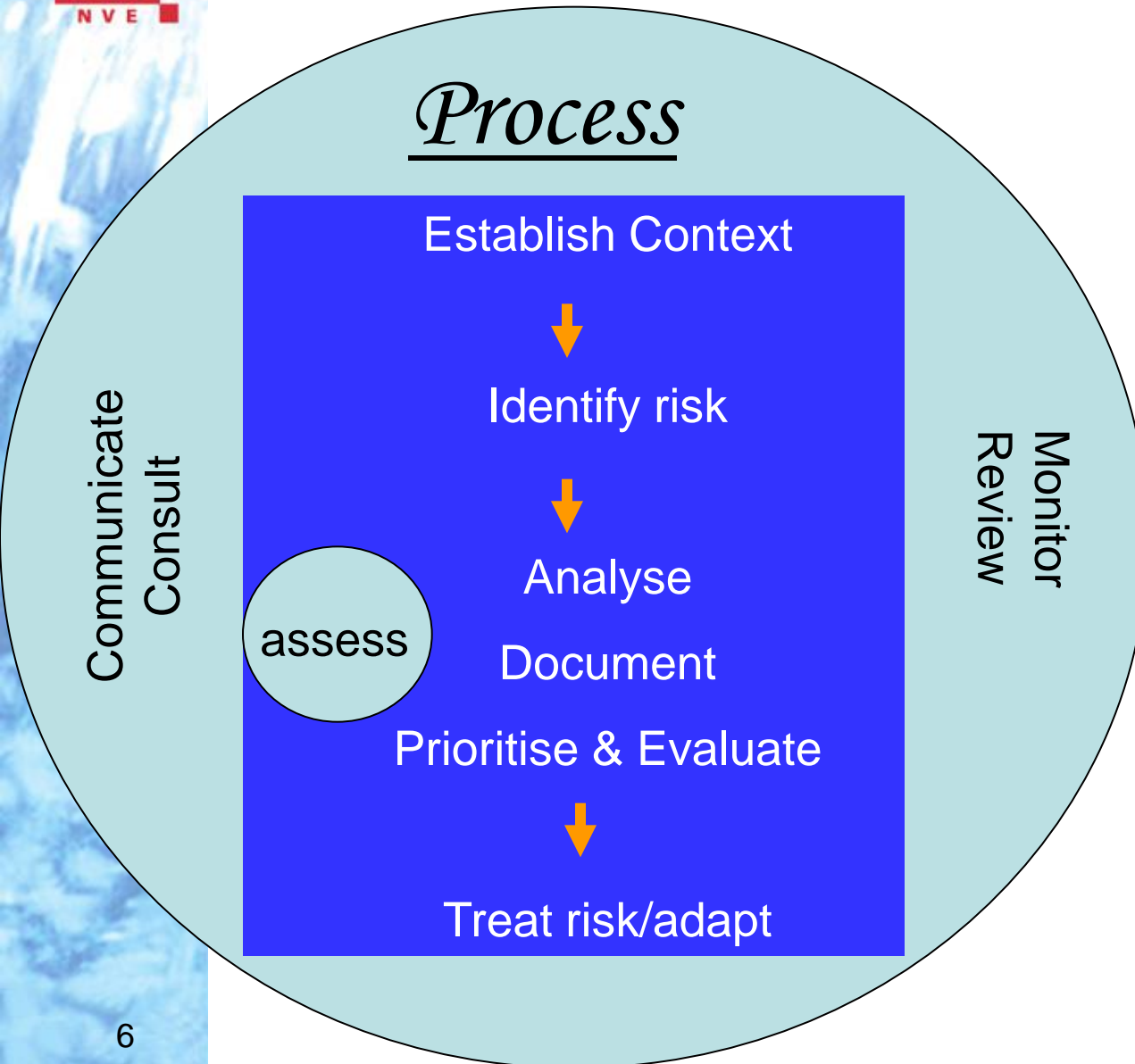
- can we even imagine a life without electricity?
- Create awareness on climate change
- Establish knowledge on the effects and consequences of climate change for the Energy sector
- Establish a foundation for prioritisation and action
- **Goal:** Resilient and reliable Energy sector



Some challenges (“obstacles”)

- How to create sufficient awareness and understanding of the need to adapt?
- Who to involve how and when?
- How to link knowledge and action?
- How to decode research to a decision making process?
- How to generate fundings for research
 - Increase cooperation between Sector Authority, End-Users and the Research community

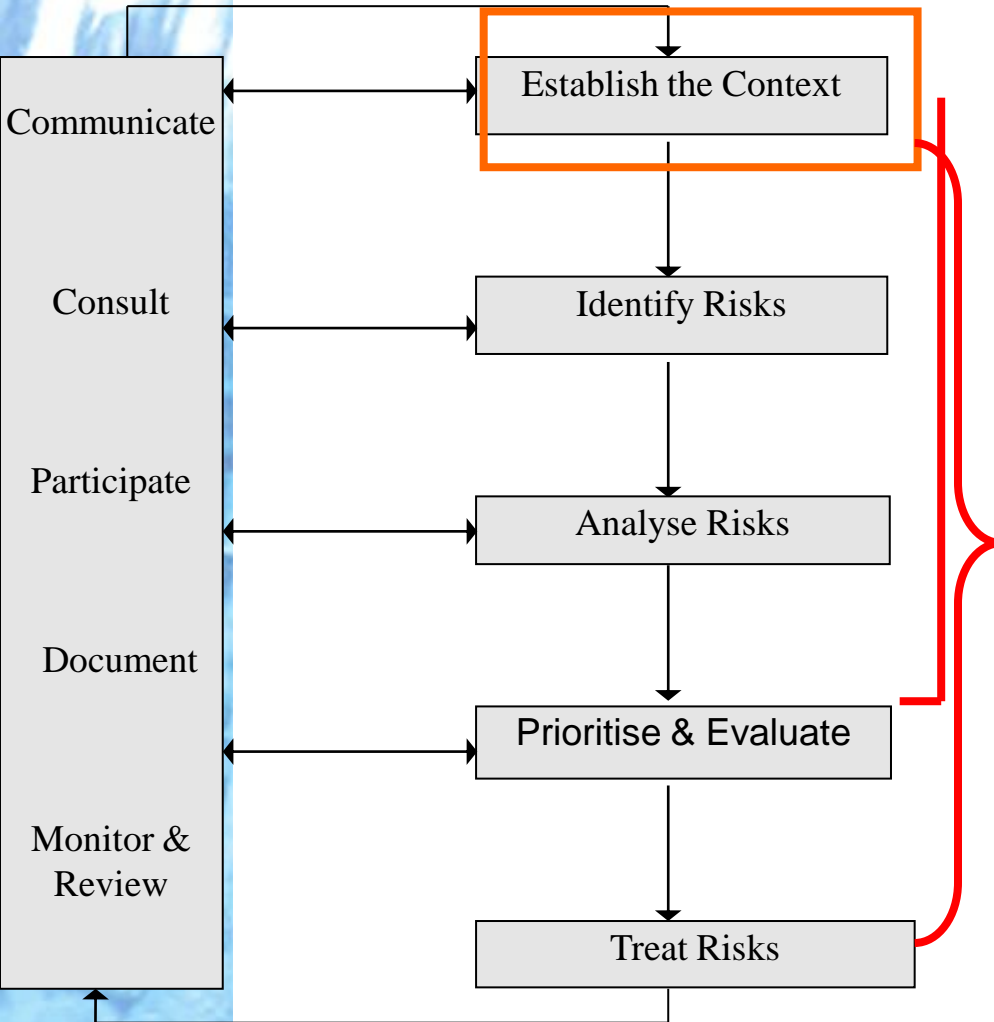
A not yet adopted “plan for adaptation”



Thinking aloud about possibilities to establish a adaptation strategy for the Energy sector



Establish Context



Step 1: **Establish Context**

- Identify stakeholder,
- Increase awareness
- *Understand organizational* – roles & processes

Step 2: **Identify Goals**

Links to other development aims & strategies within the sector

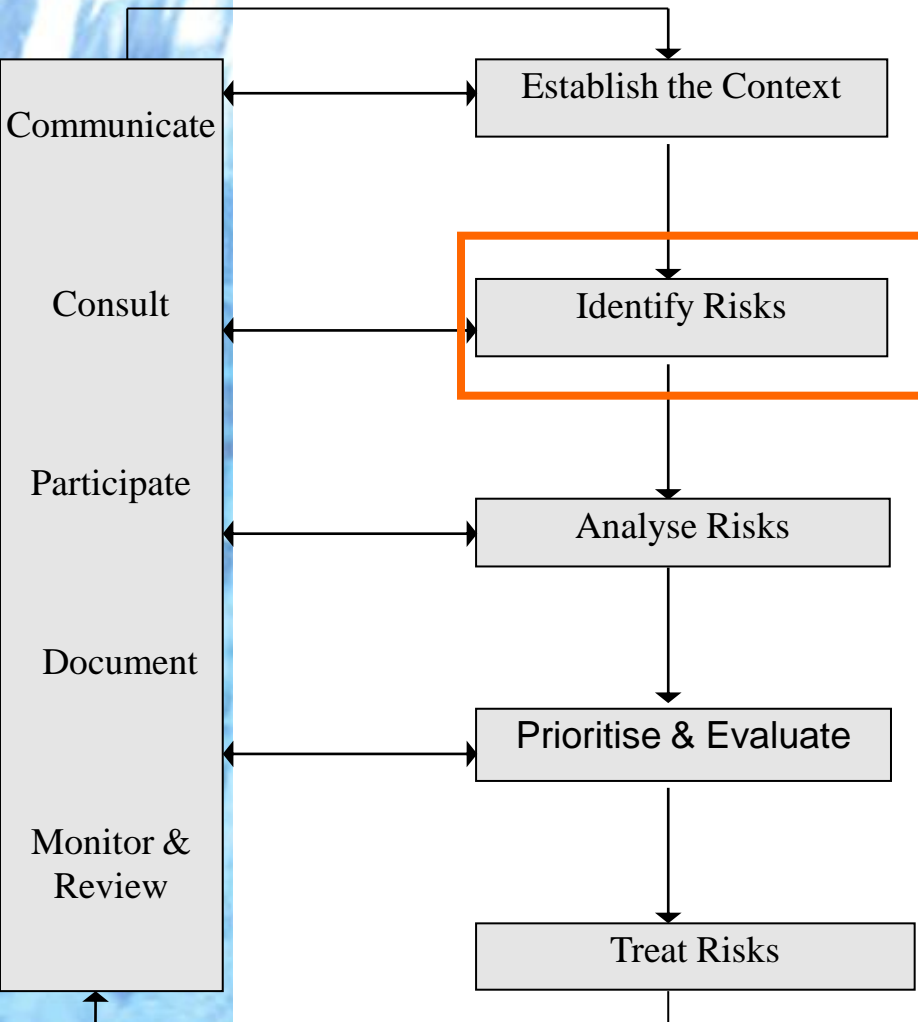
- *Reduce risks and vulnerabilities*
- *Increase resilience*

Step 3: **Establish Risk prioritization and Evaluation Criteria**

- Values - what is important (acceptable)
- Regulations
- Constraints e.g. Budget, Timeline,
- Opportunities e.g. Generic issue



Identify risks



Step 4:

a) **Identify all-hazards**

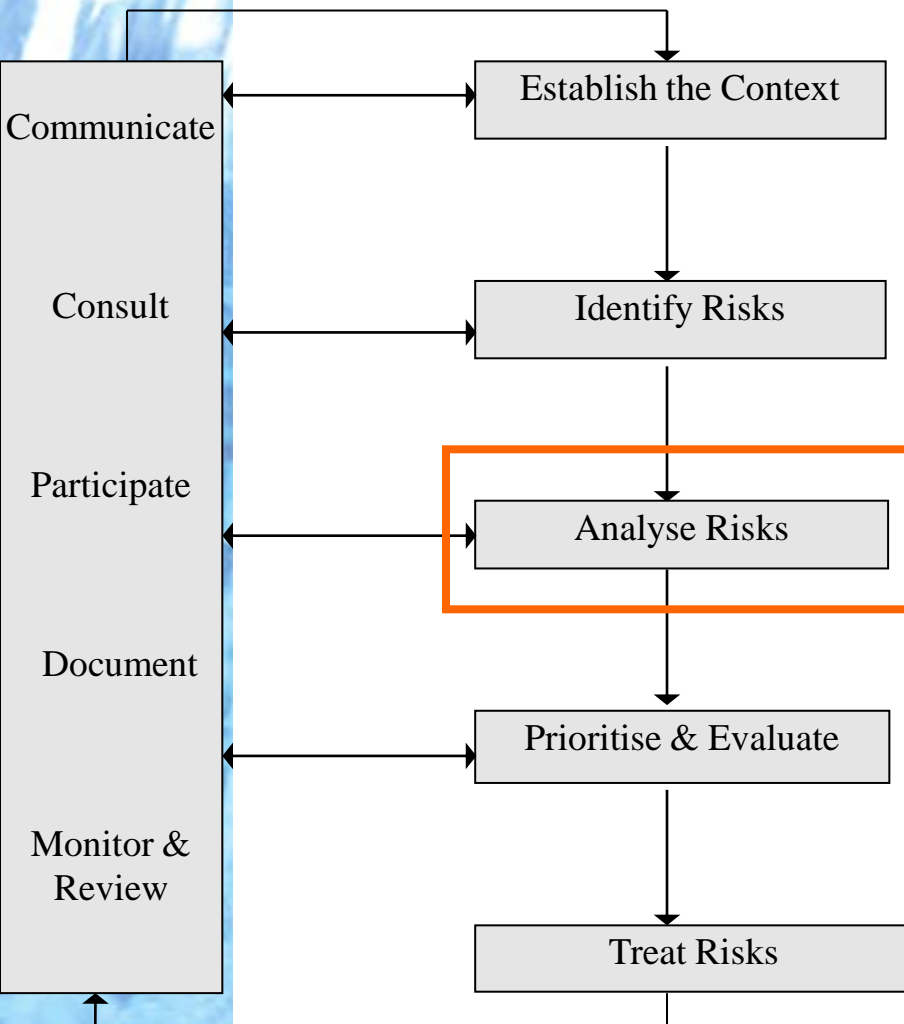
All potential effects of, and factors that add to a failure to adapt (in worst case an disaster)

b) **Describe risk thru scenarios**

Consequences – e.g impacts on the sector and/or the community



Analyse risks



Step 5:

a) **Assess**

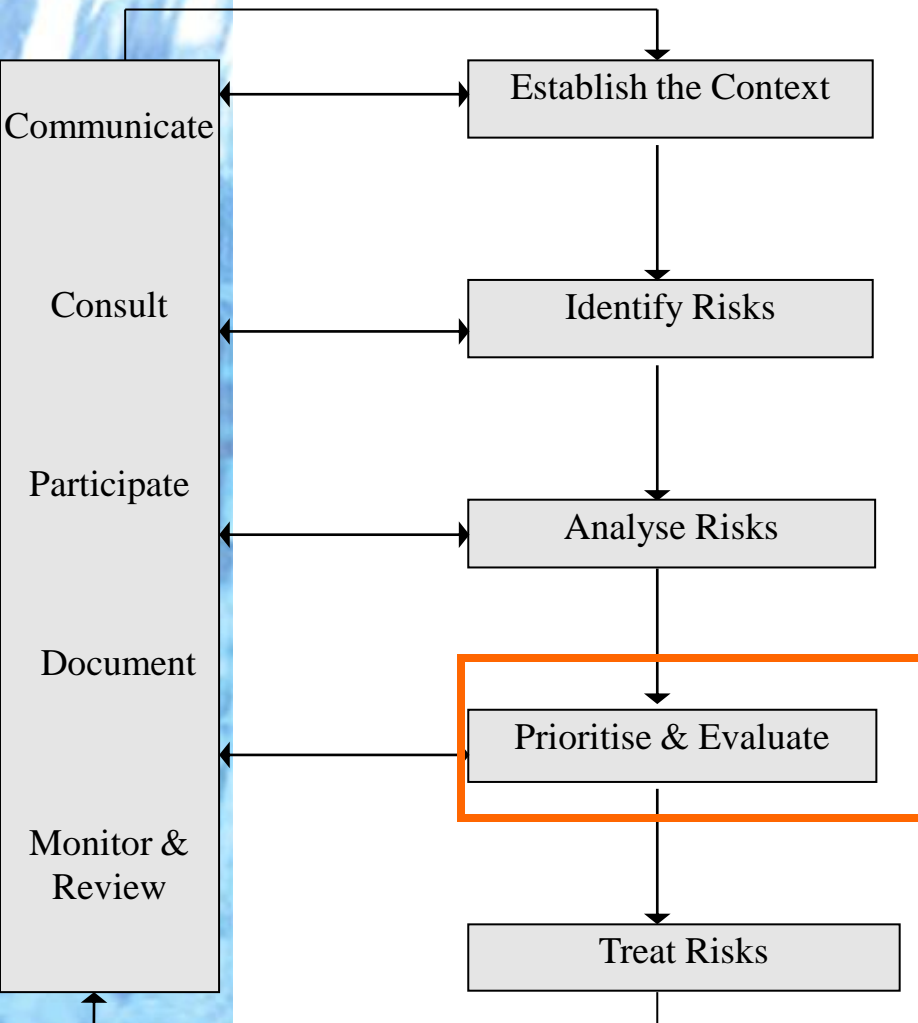
- existing or potential hazards & consequences
- focus on vulnerabilities, how to increase resilience, reduce dependencies etc...

b) **Establish level of risk**

- Fine-tune risk scenarios (likelihood (possibilities) & consequence)
- What risk can we accept?



Prioritise and Evaluate risks



Step 6:

a) **Prioritize Risks**

Use criteria from step 3:

- *Community values*
- *Budget, timelines*

b) **Identify Key Issues**

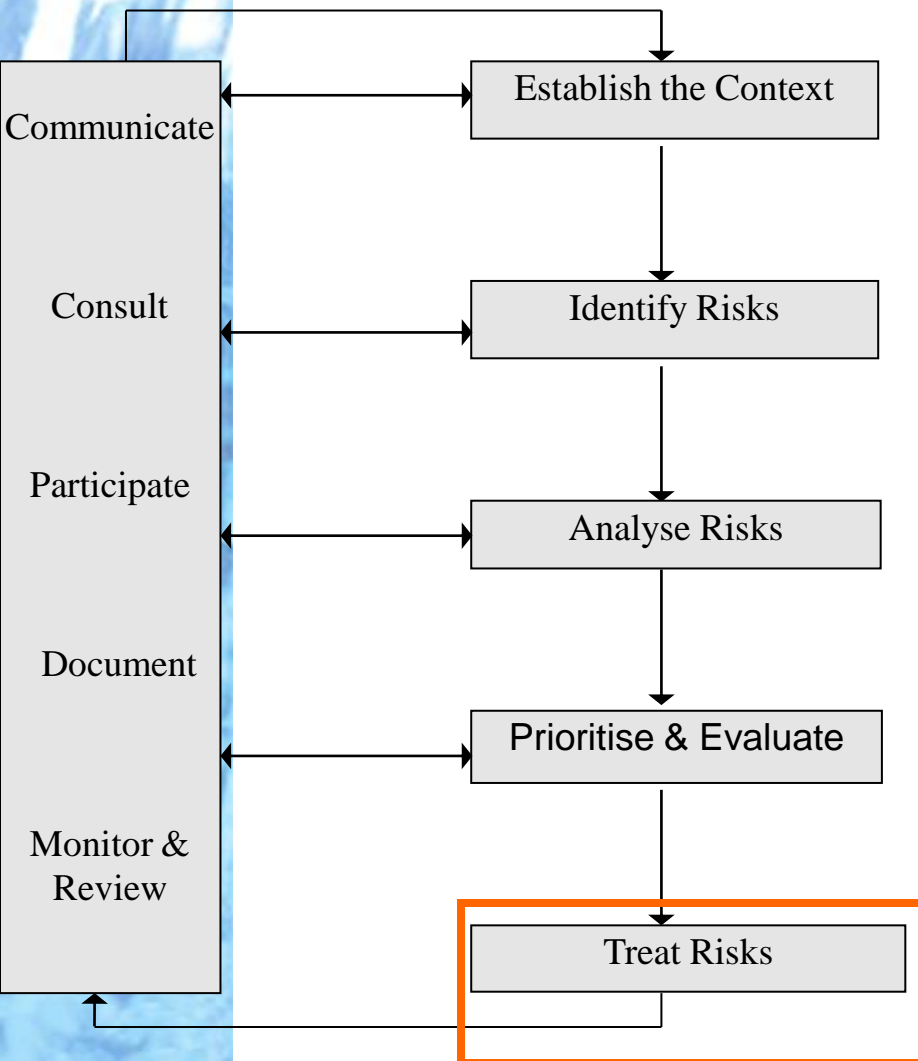
Areas for improvement?:

- *Developing and Sharing of Knowledge*
- *Policies & codes*
- *Processes & resources*
- *Relationships & communication*



Treat Risks

Putting in place management options



Step 7:

a) **Establish Objectives**

To address key issues e.g.

- *Evaluate the enforcement of codes, regulations and audits/inspetctions*
- *Use of sanctions..*
- *Use of motivation and stimulation..*

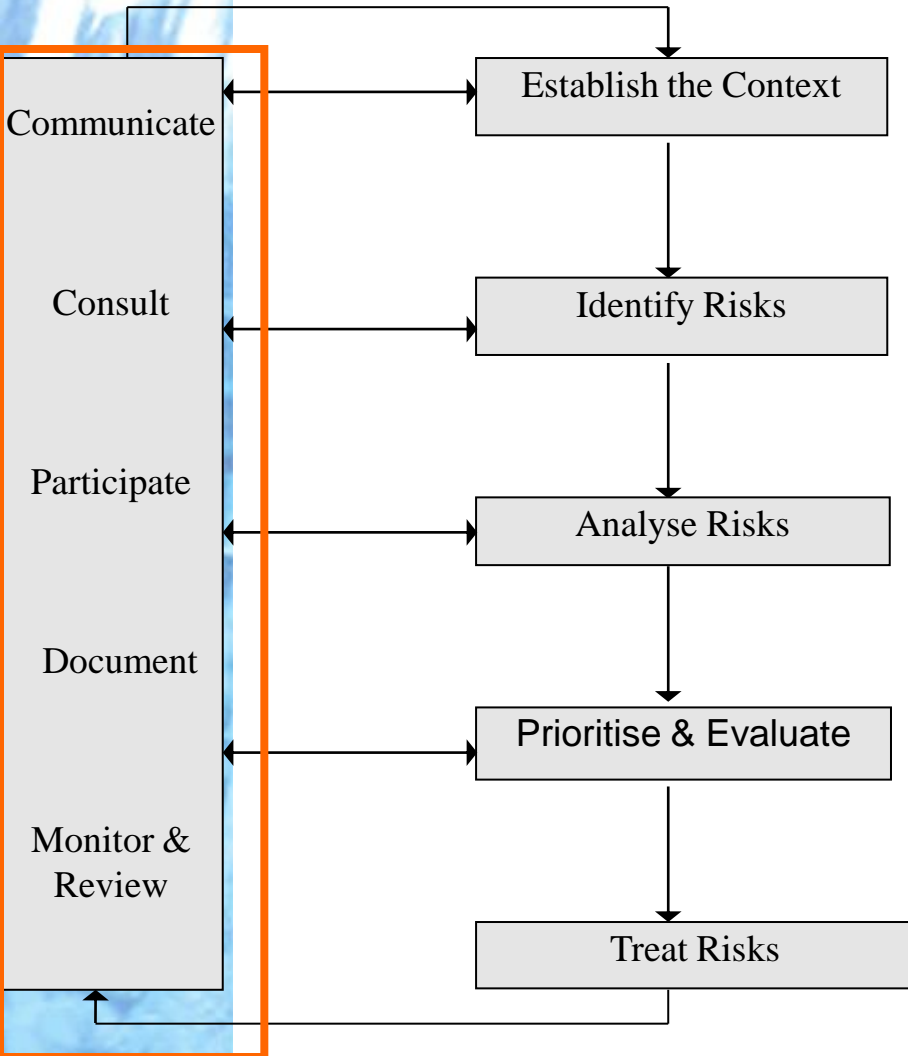
b) **Develop Targets & Actions**

- *Quantitative & time-framed*
- *Agency specific responsibility*
- *Stimulate activities*
- *Help those who need help..*



An open and including process

Ongoing Steps: Involving stakeholders & community



Communicate about:

- Research results, Aims, progress, opportunities for involvement, need for tools etc.

Consult on:

- Goals, levels of risk/vulnerability
- costs & benefits
- Laws and regulations

Monitor & Evaluate

- Monitor implementation, fine-tune the process
- Evaluate outcomes against goals & objectives
- Validation

Document all key steps

- Active sharing “pushing” of knowledge



Word of wisdom

- *By failing to prepare, you are preparing to fail*
 - *Benjamin Franklin*

Thank you for your attention!