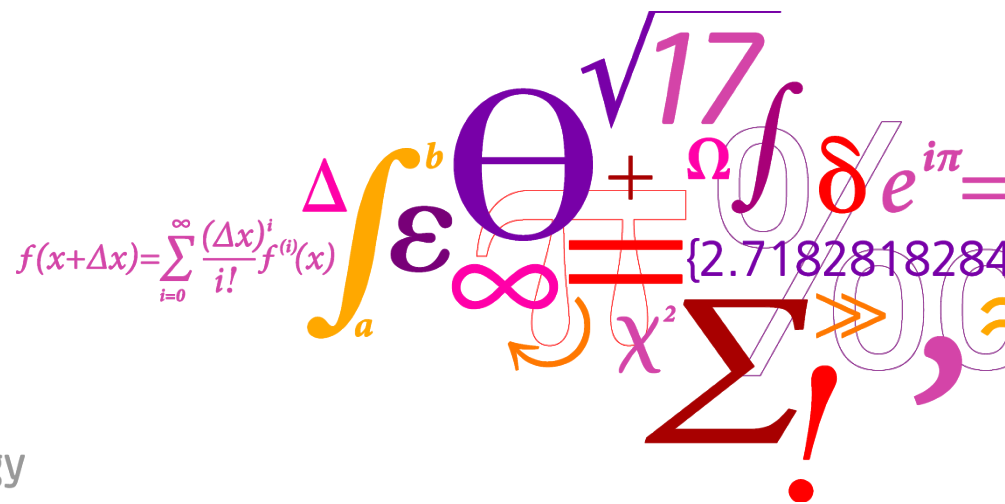


# Roadmap exploration: the wind example

If a man does not know  
what port he is steering for,  
no wind is favourable

Session summary

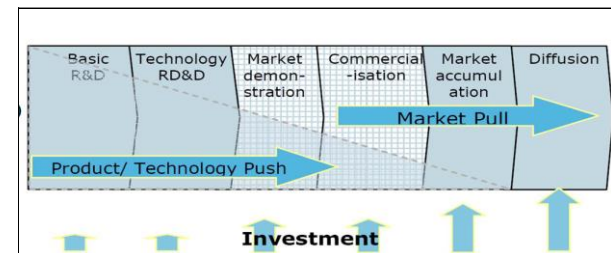


# The roads to a sustainable energy future

- Roadmaps a promising **strategic tool** to accelerate low carbon technology development:
  - **C**ommunication about the key challenges, targets to be set, actions to be made and milestones to reach
  - **C**oordination of view points from diverse stakeholders
  - **C**ooperation across private and public sector absolutely necessary
  - **C**onsensus to be reached – robust roadmaps are flexible, living documents
  - **C**ommitment to start walk the talk.
- **Process as important as the end result**
- **Iterative loop between roadmaps and implementation**

# Intelligent combination of Technology RD&D and other support mechanisms

- Broad consensus about the IEA wind roadmap - BLUE scenario one of several futures
- From generic, abstract global roadmaps to specific regional roadmaps taking into account local circumstances (and costs)
- Top down priorities vs. bottom up processes led by industry.
  - National vs. global outlook
  - Energy/climate policy vs. national industrial policy
- R&D collaboration in stages closer to the market – off shore wind gives good examples (foundations, infrastructure, wind assessment and forecasting, materials, aerodynamics, standards etc.)
- Smooth transition from stage to stage
- Public acceptance, educating the public – more knowledge needed
- The role for international RD&D collaboration



# From roadmaps to implementation (1)

- Non trivial task to implement roadmaps, once endorsed
- Financing – huge resources to be raised in short time
  - Generation during the process – when is industry willing to invest?
  - key task to spend money wisely
  - policies and framework conditions play a role (stable policies not stop and go)
  - well functioning innovation systems
- Capabilities and capacity building
  - Capability to develop technologies at the speed foreseen, with the quality and reliability required and at the estimated affordable prices
  - Combination of R&D and mass production
  - Learning from oil and gas industry for off shore wind
  - Capability to adopt technologies for local needs

## From roadmap to implementation (2)

- Combination of journeys where risks are to be shared and minimized:
  - Technologies – Companies – Markets – Regulations
- PPP decisive for sharing risks and accelerate technology development and deployment
- IP – divergent views:
  - IP sharing vs. IP protection
  - IP vs. accelerating innovation
- R&D input & output metrics
  - Effectiveness, not just expenditures
  - Leverage between public and private funding
  - Carbon saving – short and long term
  - Some methodology development needed
- Financial metrics:
  - Technology, warranty and counterparty risk assessment
  - Track records essential

One thing is the nautical chart to understand  
another thing the vessel to steer

Holberg, 1722

