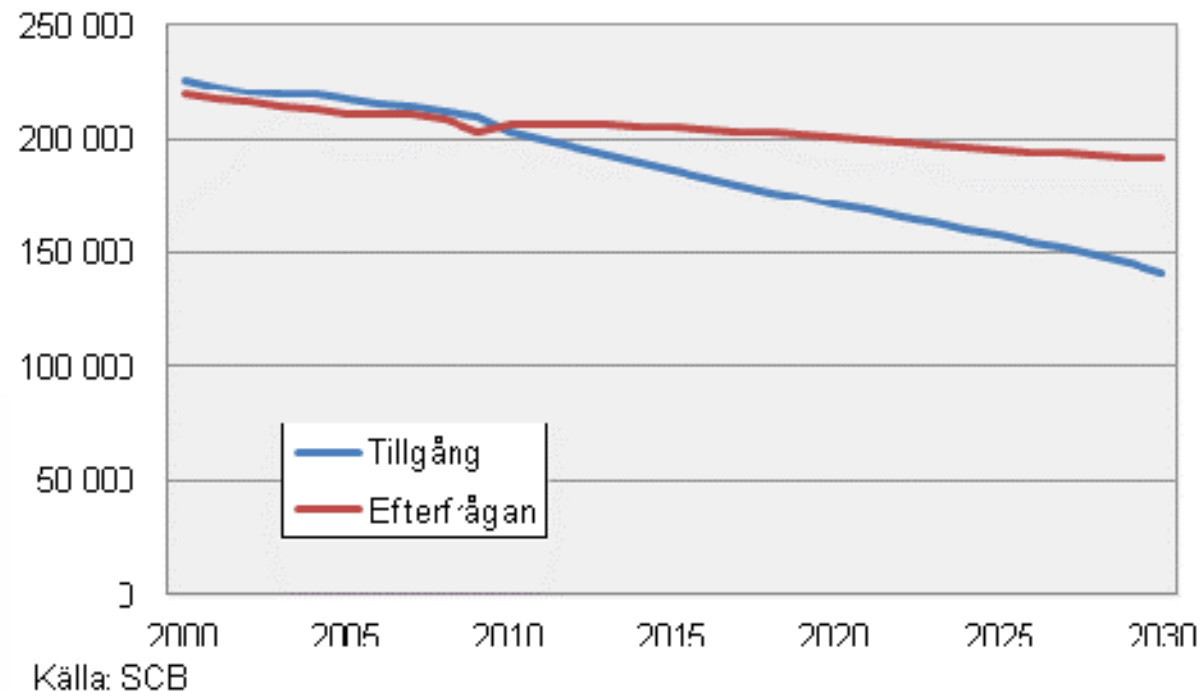


# Are we risking a future shortage of competence in the nuclear trade?

Some thoughts from the academy  
by  
Ane Håkansson, Uppsala University

## ”Projected deficit of Bachelor engineers (högskoleingenjörer) in Sweden



- Previous "Gymnasieingenjörer": 78% older than 45 years
- About 4000 students per year start a Bachelor engineering programme

Source: SCB Arbetsmarknad 2013:1: Ingenjörerna

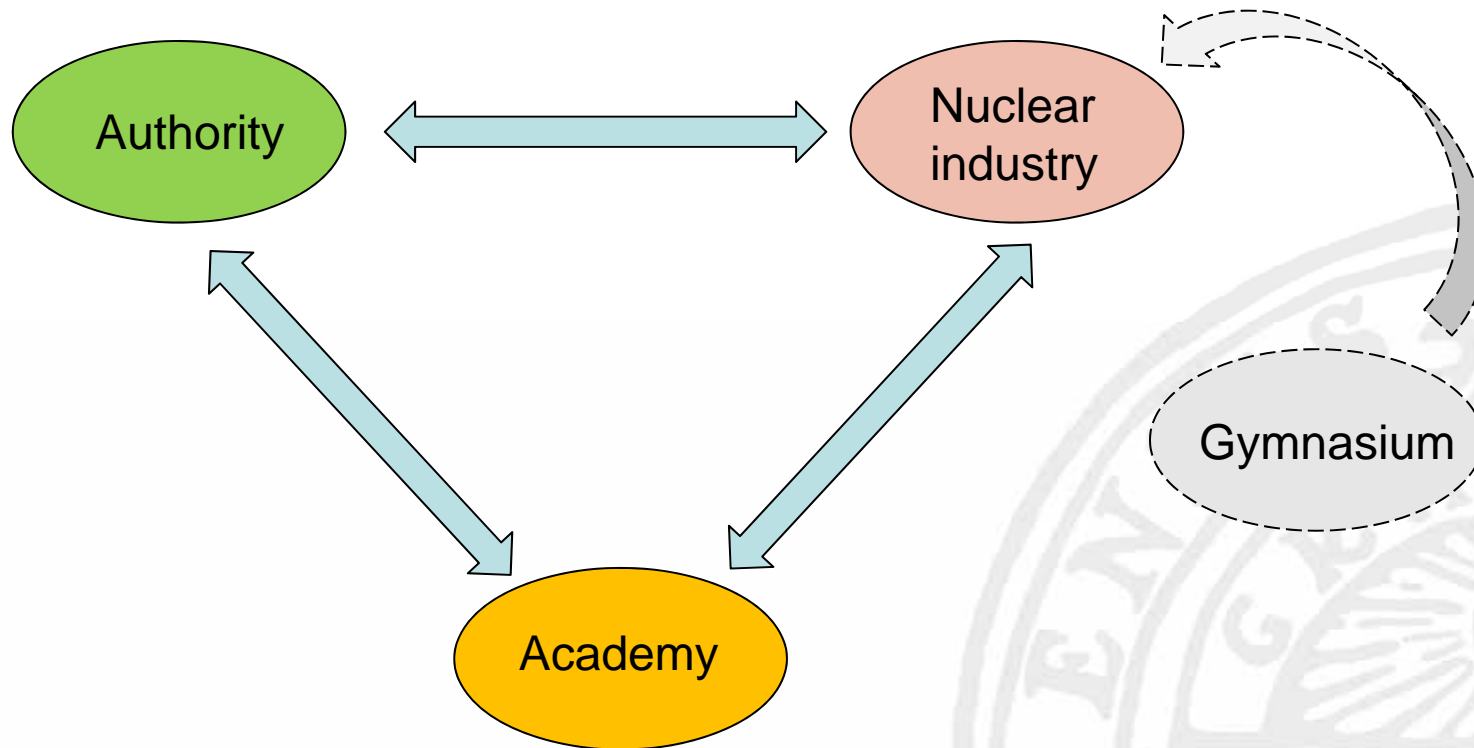
# Conclusions

- The need for nuclear educated personnel in the future is quite obvious.
- The volume is unclear in the light of the current situation.



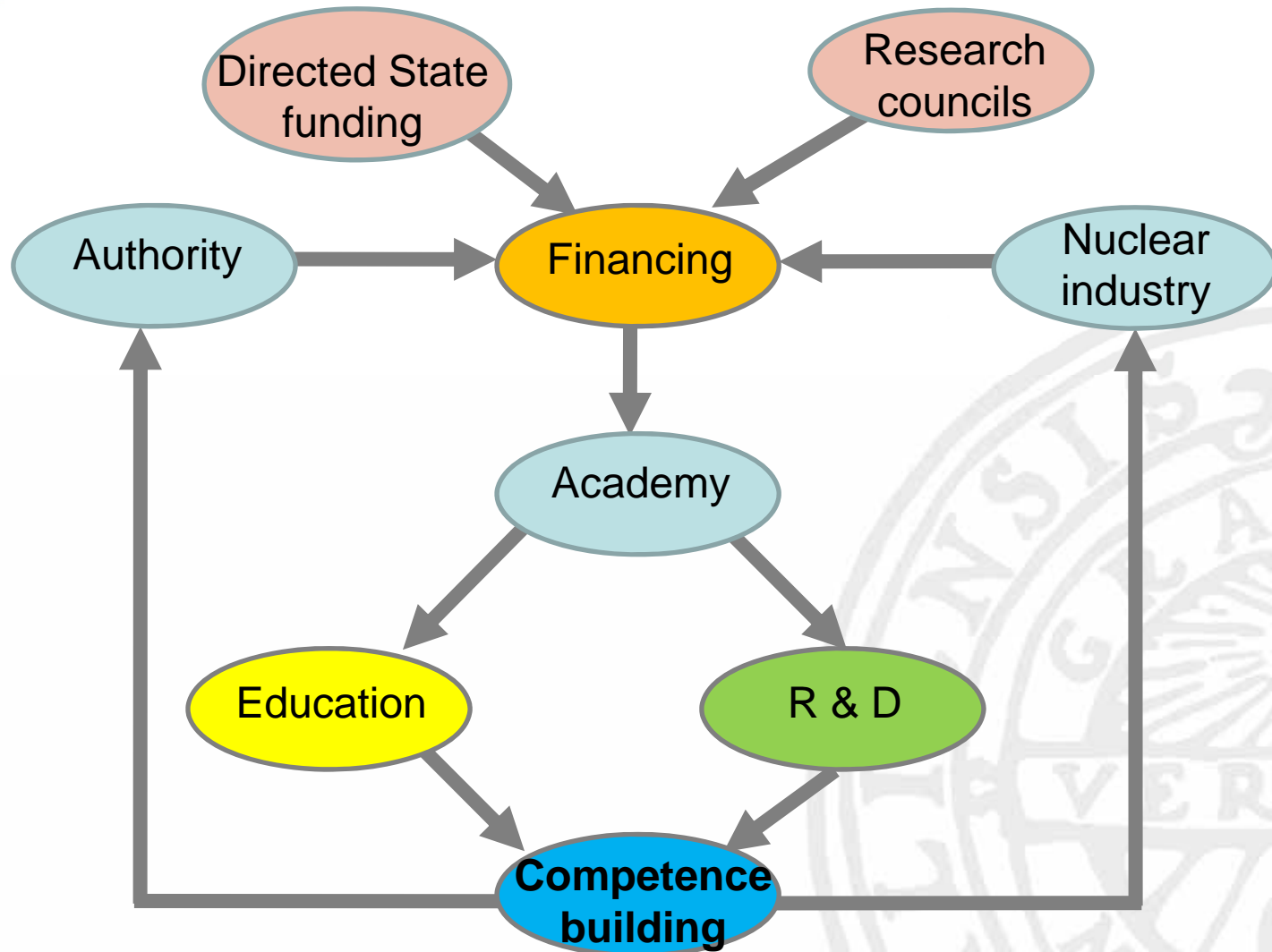
# “The Swedish Model”

The institutional system – man power



# “The Swedish Model”

The institutional system – previous funding



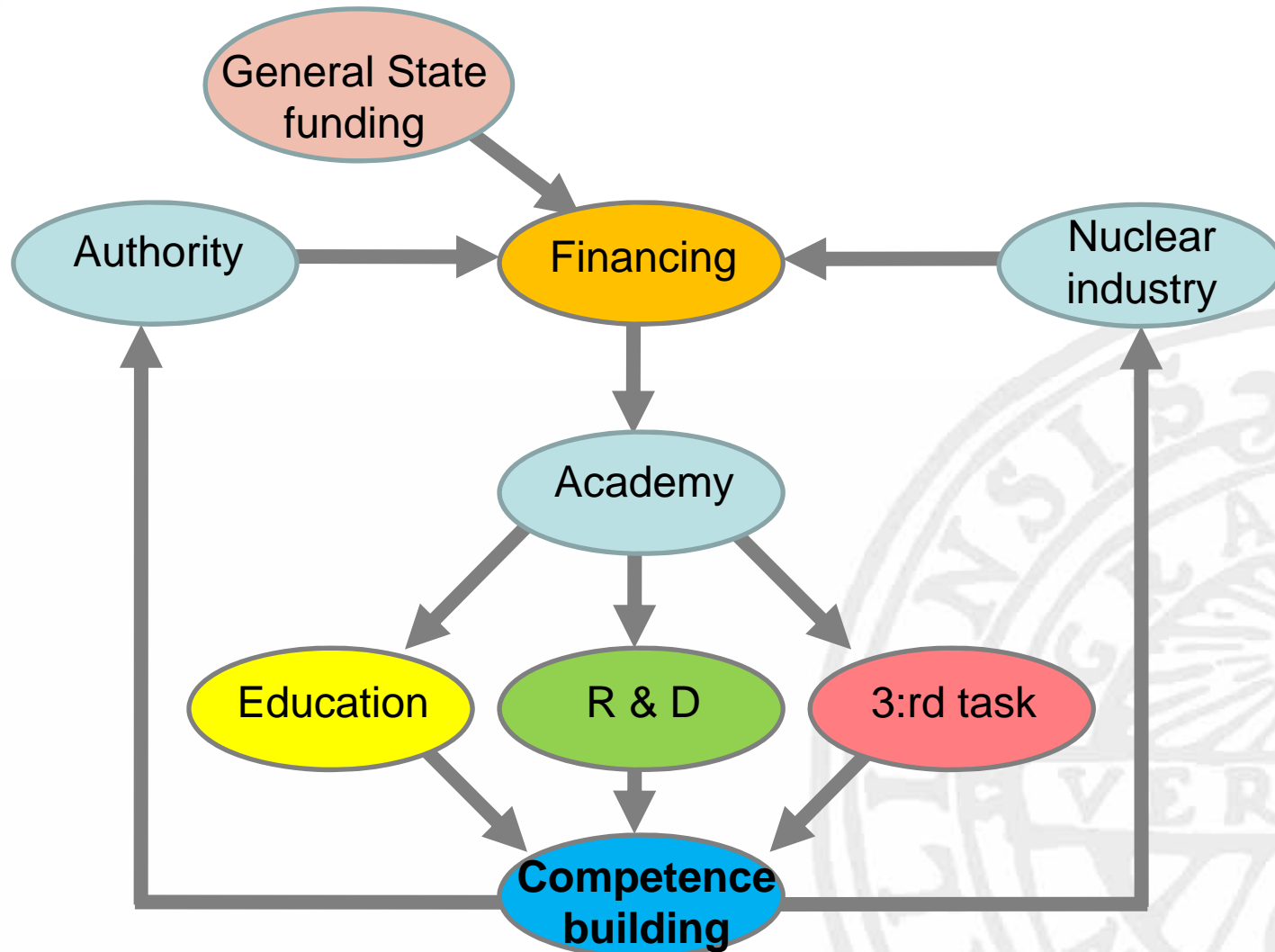
## The confused late eighties

- No state funding for nuclear research and education
- Strong signals that N.P. will be shutdown  
-young people were not eager to study nuclear technology
- No replacement for 50 % of electricity production
- First generation nuclear specialists start to retire



# “The Swedish Model”

The institutional system – present funding



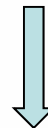
## “The Swedish Model”

This financing model has advantages but also implies:

- The academy is forced to go in a direction where external funding is available
- Nuclear education and R&D have no long-term stability
- The available funding is not adequate to maintain a broad academic scope



The national competence in today's and future nuclear technology such as Generation IV is under threat



Insufficient academic capacity for educating young people in nuclear technology



## Quo Vadis?

- The national electricity supply must be put in an international perspective\*. Dismantling of nuclear capacity in Sweden will be counter-productive relative to set political goals.
- There is a need for new people in the future. How many is more unclear in the light of the current situation.
- Securing the national nuclear competence necessitates a substantial amount of state base funding to nuclear research and education through **political** means e.g.:
  - Allocate economical means to **Vetenskapsrådet**. Direct **SSF**, **Vinnova** etc. towards new fields.
  - Changing the directives of **Energimyndigheten** (annual research budget of 1.3 billion SEK - nothing goes to nuclear R&D).
  - Changing **Vattenfall's** directives
- Fast action is paramount. Otherwise it is not likely that the academy will be operative if or rather when it is needed

\* <http://uu.diva-portal.org/smash/get/diva2:752144/FULLTEXT01.pdf>