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# Coping with problems in water resource management in urban areas: The role of Science Academies

*„Enhancing Water Management Capacity in a Changing World:  
Science Academies working together to increase global access to Water and Sanitation“*

IAP, IANAS, and ABC Symposium  
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# Problem urbanisation



- More than 50% of world population lives in urban areas
- Urbanisation has several advantages for the individual but causes several problems
- most important impact
  - → influence on resource fluxes (resource influx; waste efflux)
- High water demand in urban areas (often higher living standard in urban areas)
- High population density creates (or increases) water scarcity

Influx of resources:

- Water
- Energy
- Food
- Raw materials

Efflux of waste:

- Waste water
- Solid waste



# Impact of urban areas



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- Cities have impact on:
  - Other cities
  - Surrounding areas
  - Hinterlands
- Influenced regions have important role for resource provision and disposal of wastes

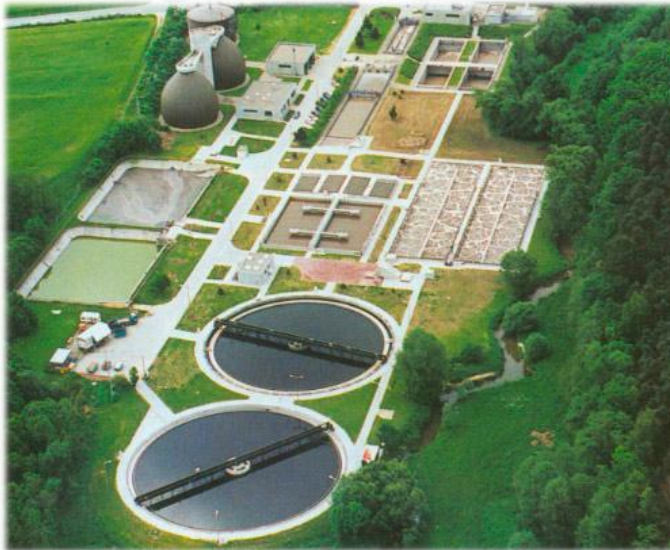


# Water management in urban areas



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- Water management one of the main challenges in urban areas
  - Access to clean water
  - Access to sanitation



# Waste water treatment



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- Large central treatment units vs. small de-central units



# Waste water treatment



- Innovative technical concepts

- Drainage via constructed wetlands (Lod... ) (application of phytotechnology and ecohydrology)
- Separation of surface runoff from general waste water system
- Decentralisation
- Integrated sanitation concept -> combination with energy production in biogas plant

Approaches from Science

# Role of science



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- Identification of problems and finding science based solutions
- Solutions for multiple scales:
  - general approaches and concepts
  - regional solutions (depending on regional circumstances)



# Further approaches



## Approaches beyond technical solutions

- Bottom-up and top-down approaches
  - Political instruments (taxes) to regulate water
  - Education to regulate water
- Integrated strategies (e.g. water resource management, urban planning, sustainable development)

Approaches from Science,  
Policy & Society



Science has the answers.

What do we then need Academies and their  
networks for??

# Science Academies



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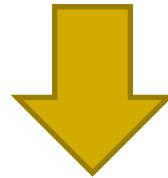
1. Network of scientific excellence
2. Interdisciplinary platform (connect engineering, natural sciences, social sciences, economics, law, humanities)
3. Starting points for science-policy dialogue and science-society dialogue

# Science Academies



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- Neutral, authoritative institutions that can provide
- Credible information
- Academies can provide scientifically based information and recommendations regardless of influence

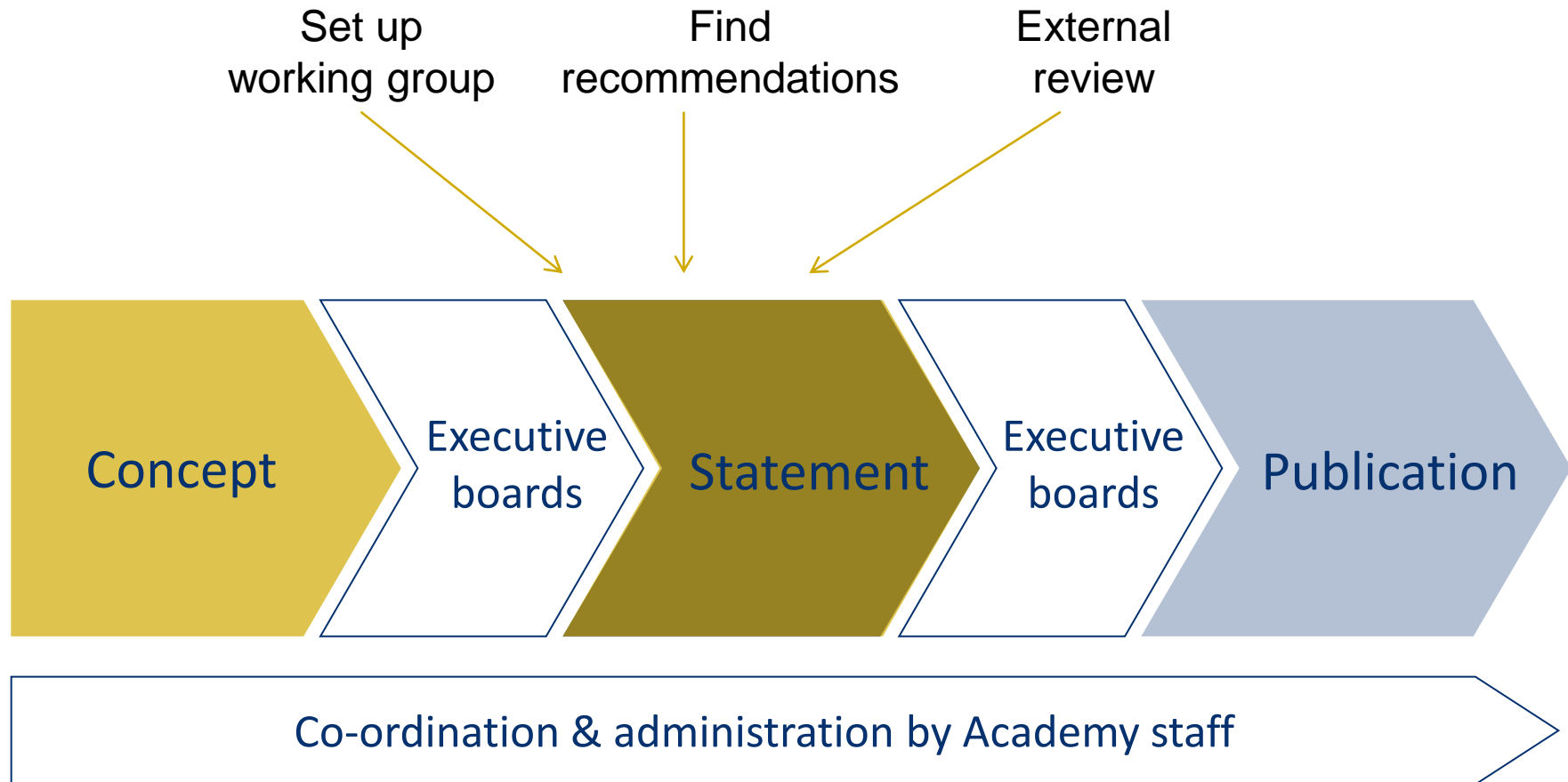


1. Great value to policy makers
2. Create public acceptance of decisions

# Work flow ... from idea to the product



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# Tailor-made policy advise

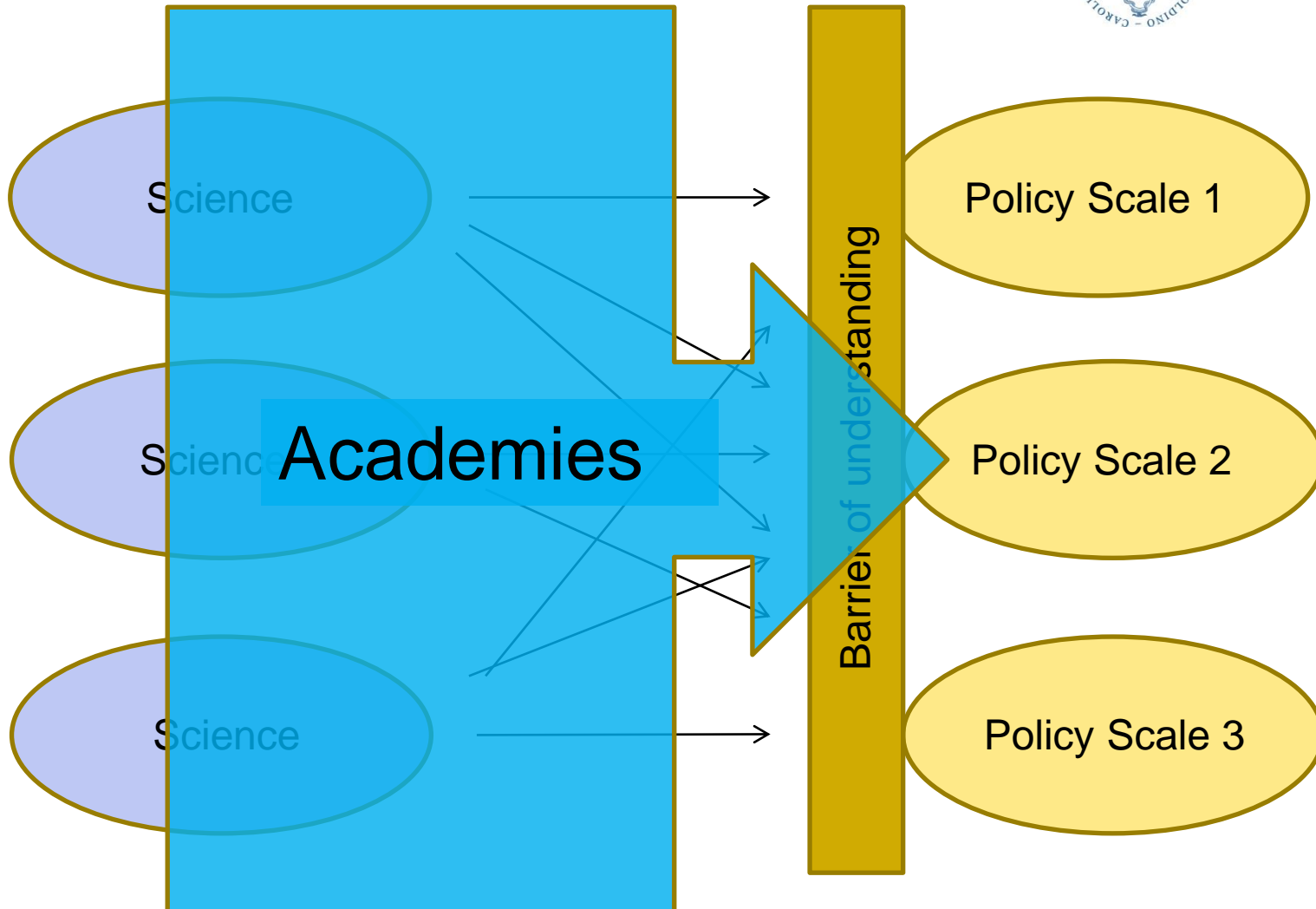


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- Accurate
- Reliable
- Transparent
- Free from influences and special interests

BUT

- Producing paper is not the end of the work!



# Communicate results and recommendations



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- Recommendations must be carried into policy
- Translate scientific facts into common language!
- Communicate findings on all scales! (multi-scale governance)
- Public relations

# Role of academy networks



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- IAP, EASAC, IANAS, NASAC, etc.
  - International networks of excellence
- Regional, international workshops
- Activities in science-policy-dialogue at all scales
  - international (G8, IAP), regional [international] (Leopoldina-NASAC-Cooperation), national, regional [subnational], and local (e.g. local large agglomerations)
- Capacity building → communicate into academies of other networks, outside networks, countries without academies
- Science-policy on legislative and executive scale (national agencies)

# Outlook



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- Improve follow-up
- Enhance efficiency of academy activities – regional workshops
- Building interface using academy networks as a basis
  - science
  - stakeholders
  - decision makers
  - broader society
- Improve capacity building!



# Obrigado



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