



**GRoW transfer
- region Africa**

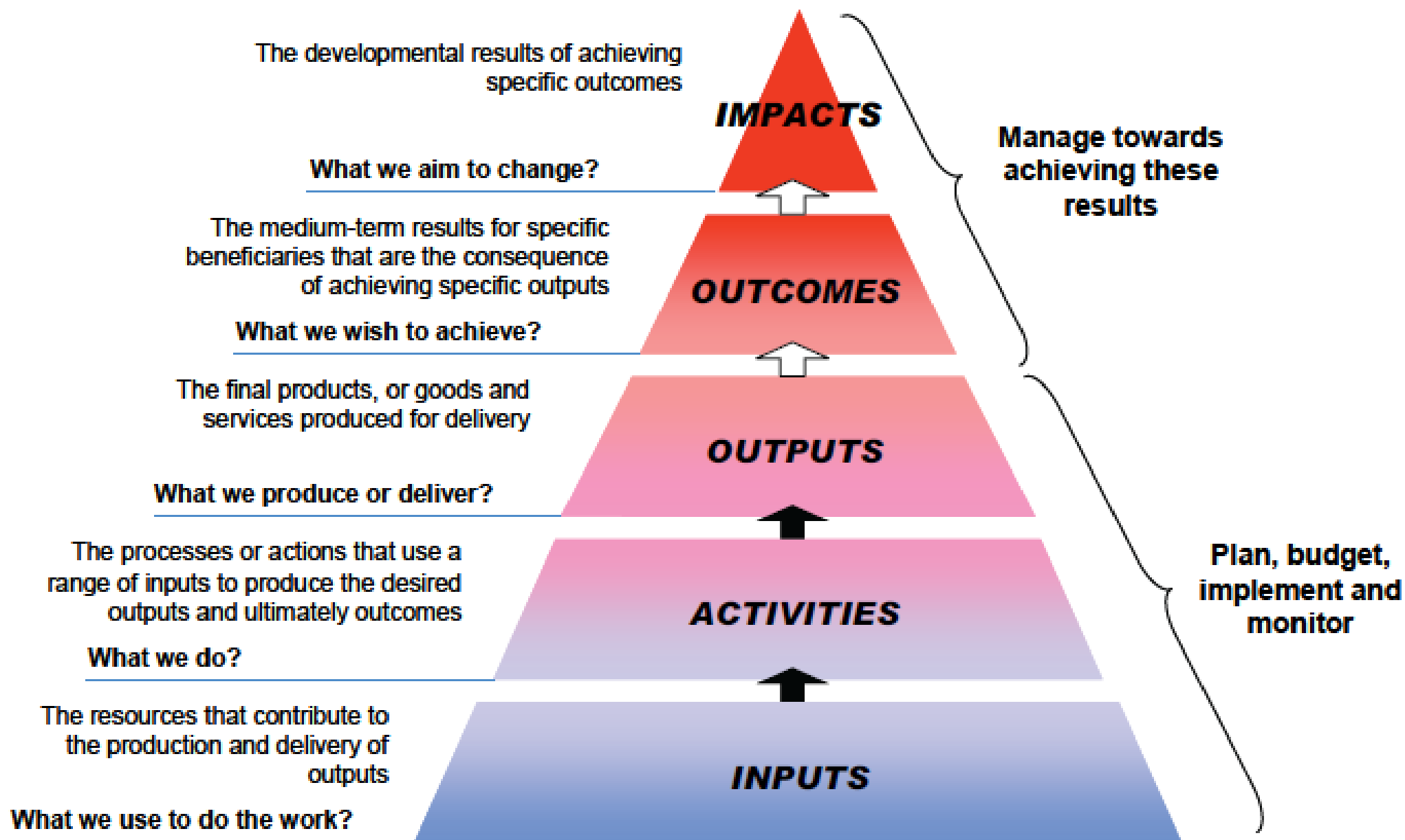
Marius Claassen



How can research successfully be translated into practical application and integrated into daily management practices?

- Impact focus

- Impact focus

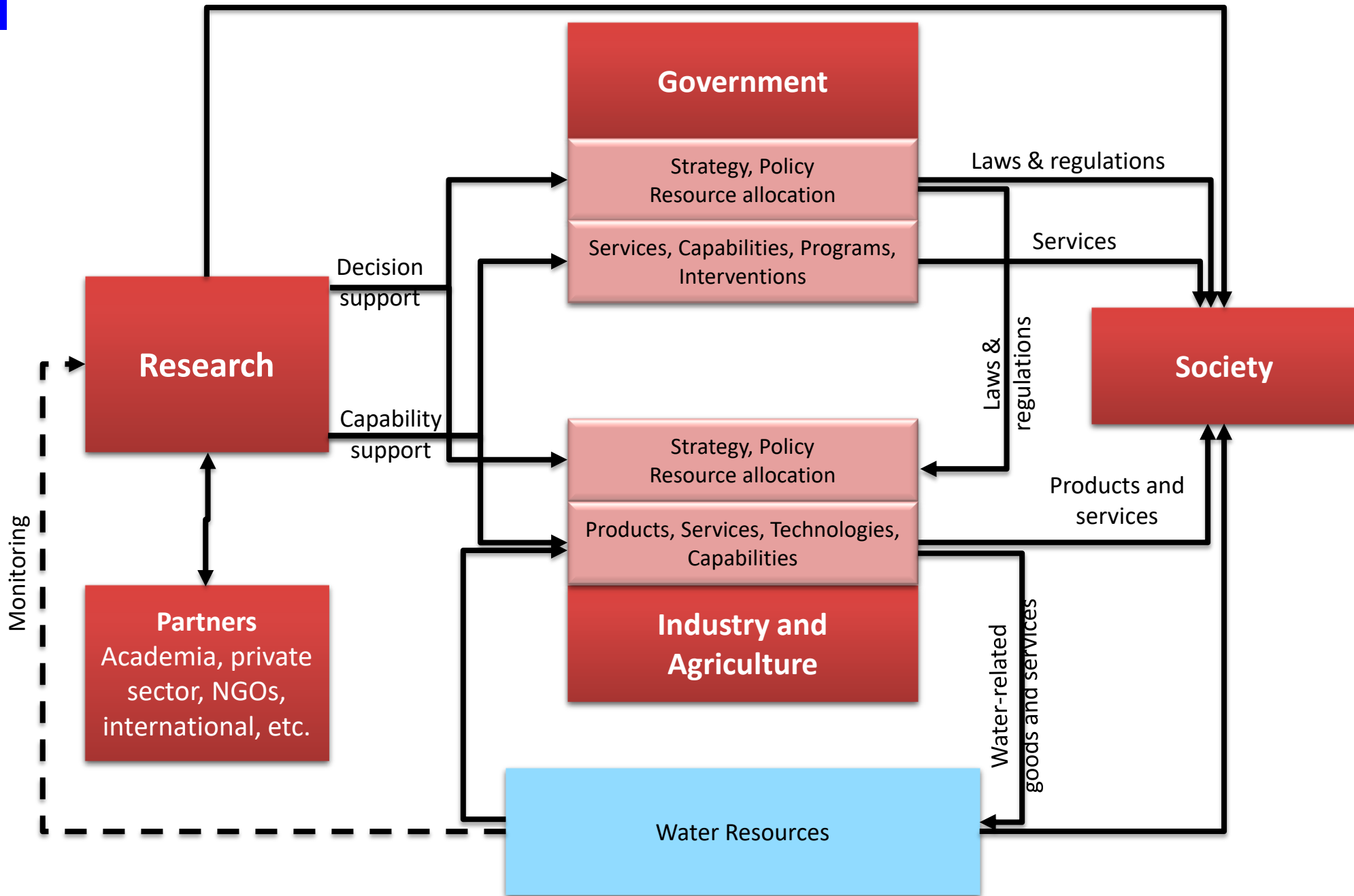




How can research successfully be translated into practical application and integrated into daily management practices?

- Impact focus
- Impact pathway

- Impact pathway



- 
- Empirical evidence

- Empirical evidence

Alice: "Would you tell me, please, which way I ought to go from here?"

"That depends a good deal on where you want to go," said the Cat.

"I don't much care where--" said Alice.

"Then it doesn't much matter which way you go," said the Cat.





How can research successfully be translated into practical application and integrated into daily management practices

- Outcomes orientation
- Impact pathway
- Local capacity

- Local capacity



- Empirical evidence

*"It takes all the running you can do, to keep
in the same place."*

The Red Queen





How can research successfully be translated into practical application and integrated into daily management practices

- Outcomes orientation
- Impact pathway
- Local capacity
- Communication

- Communication



RESEARCH

REVIEW

ENERGY

Net-zero emissions energy systems

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Some energy services and industrial processes—such as long-distance freight transport, air travel, highly reliable electricity, and steel and cement manufacturing—are particularly difficult to provide without adding carbon dioxide (CO₂) to the atmosphere. Rapidly growing demand for these services, combined with long lead times for technology development and long lifetimes of energy infrastructure, make decarbonization of these services both essential and urgent. We examine barriers and opportunities associated with these difficult-to-decarbonize services and processes, including possible technological solutions and research and development priorities. A range of existing technologies could meet future demands for these services and processes without net addition of CO₂ to the atmosphere, but their use may depend on a combination of cost reductions via research and innovation, as well as coordinated deployment and integration of operations across currently discrete energy industries.

egrated assessment models remains challenging (4–6).

Here, we review the special challenges associated with an energy system that does not add any CO₂ to the atmosphere (a net-zero emissions energy system). We discuss prominent technological opportunities and barriers for eliminating and/or managing emissions related to the difficult-to-decarbonize services; pitfalls in which near-term actions may make it more difficult or costly to achieve the net-zero emissions goal; and critical areas for research, development, demonstration, and deployment. Our scope is not comprehensive; we focus on what now seem the most promising technologies and pathways. Our assertions regarding feasibility throughout are not the result of formal, quantitative economic modeling; rather, they are based on comparison of current and projected costs, with stated assumptions about progress and policy.

A major conclusion is that it is vital to integrate currently discrete energy sectors and industrial processes. This integration may entail infrastructural and institutional transformations, as well as active management of carbon in the energy system.

Aviation, long-distance transport, and shipping

In 2014, medium- and heavy-duty trucks with mean trip distances of >100 km (>100 miles) accounted for ~270 Mt CO₂ emissions, or 0.8% of global CO₂ emissions from fossil fuel com.

- Empirical evidence

"You should say what you mean," the March Hare went on.

"I do," Alice hastily replied. "At least I mean what I say.

That's the same thing you know."





Which specific framework conditions need to be taken into account in an African context?

- Politics (Cape Town water)
- Policy
- Regulations/Customs
- Funding instruments
- Data
- Social
- Logistics
- Partnerships

Which specific framework conditions need to be taken into account in an African context?

- Politics
- Policy (Irrigation of waste water)
- Regulations/Customs
- Funding instruments
- Data
- Social
- Logistics
- Partnerships

Which specific framework conditions need to be taken into account in an African context?

- Politics
- Policy
- Regulations/Customs (License bureaucracy)
- Funding instruments
- Data
- Social
- Logistics
- Partnerships

Which specific framework conditions need to be taken into account in an African context?

- Politics
- Policy
- Regulations/Customs
- Funding instruments (MIG vs maintenance)
- Data
- Social
- Logistics
- Partnerships

Which specific framework conditions need to be taken into account in an African context?

- Politics
- Policy
- Regulations/Customs
- Funding instruments
- Data (availability, metrics)
- Social
- Logistics
- Partnerships


Which specific framework conditions need to be taken into account in an African context?

- Politics
- Policy
- Regulations/Customs
- Funding instruments
- Data
- Social (Nda!)
- Logistics
- Partnerships



Which specific framework conditions need to be taken into account in an African context?

- Politics
- Policy
- Regulations/Customs
- Funding instruments
- Data
- Social
- Logistics (Mail, travel)
- Partnerships



Which specific framework conditions need to be taken into account in an African context?

- Politics
- Policy
- Regulations/Customs
- Funding instruments
- Data
- Social
- Logistics
- Partnerships (Local knowledge)

- Empirical evidence

*"There's no use in trying," Alice said,
"one can't believe impossible things."*

*"I daresay you haven't had much practice,"
said the Queen*



- Empirical evidence

*"There's no use in trying," Alice said,
"one can't believe impossible things."*

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Thank you

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