

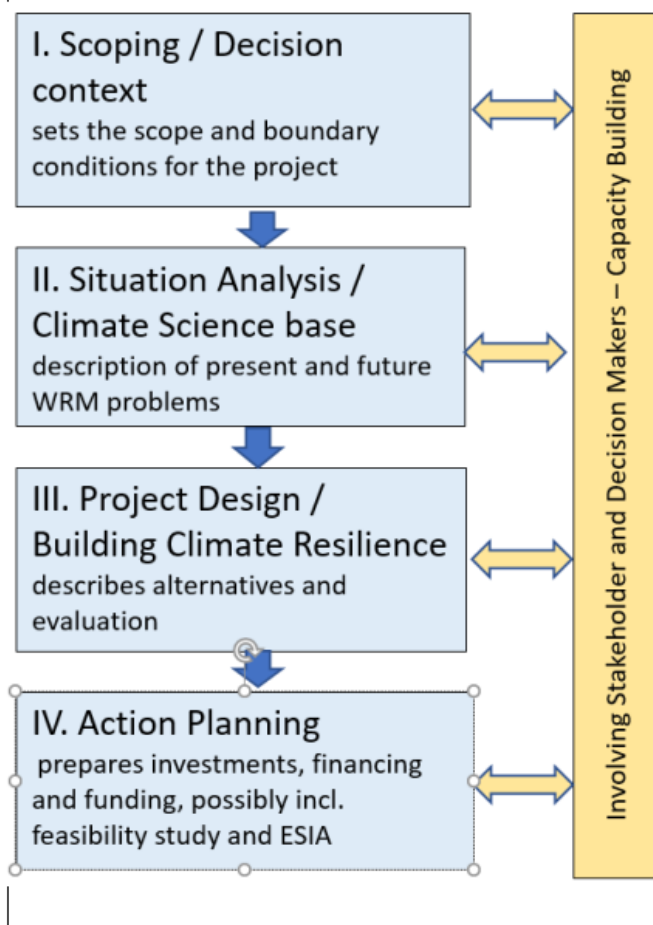
Governance for paradigm shifts

Åse Johannessen (Deltares)

GCF regional water sector training – Day 2

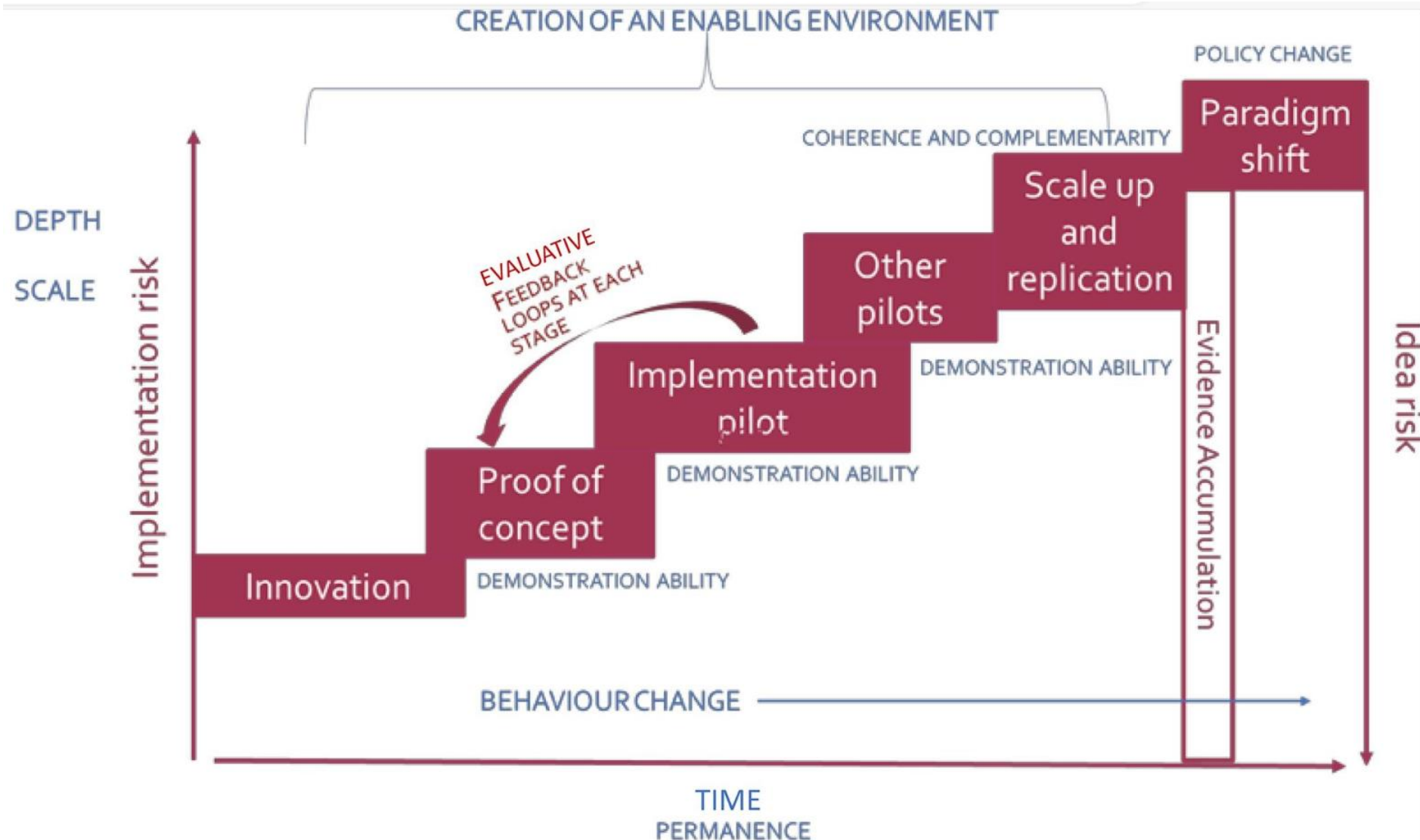
LEARNING OBJECTIVES

Figure 7: Structured approach for project identification and implementation



- I.-IV. **Scoping**: How to involve the right **stakeholders** to address recipients needs and vulnerabilities.
- II. **Situation analysis**: How to understand and identify **enabling conditions** for implementation (institutions, capacity, finance, policies, etc.).
- III.-IV. **Project design and action planning**: How to move beyond project scale for the long-term **bringing on paradigm shifts** (e.g. scalability and sustainability).

IN THE END GCF WANT TO ACHIEVE A PARADIGM SHIFT (IMPACT)

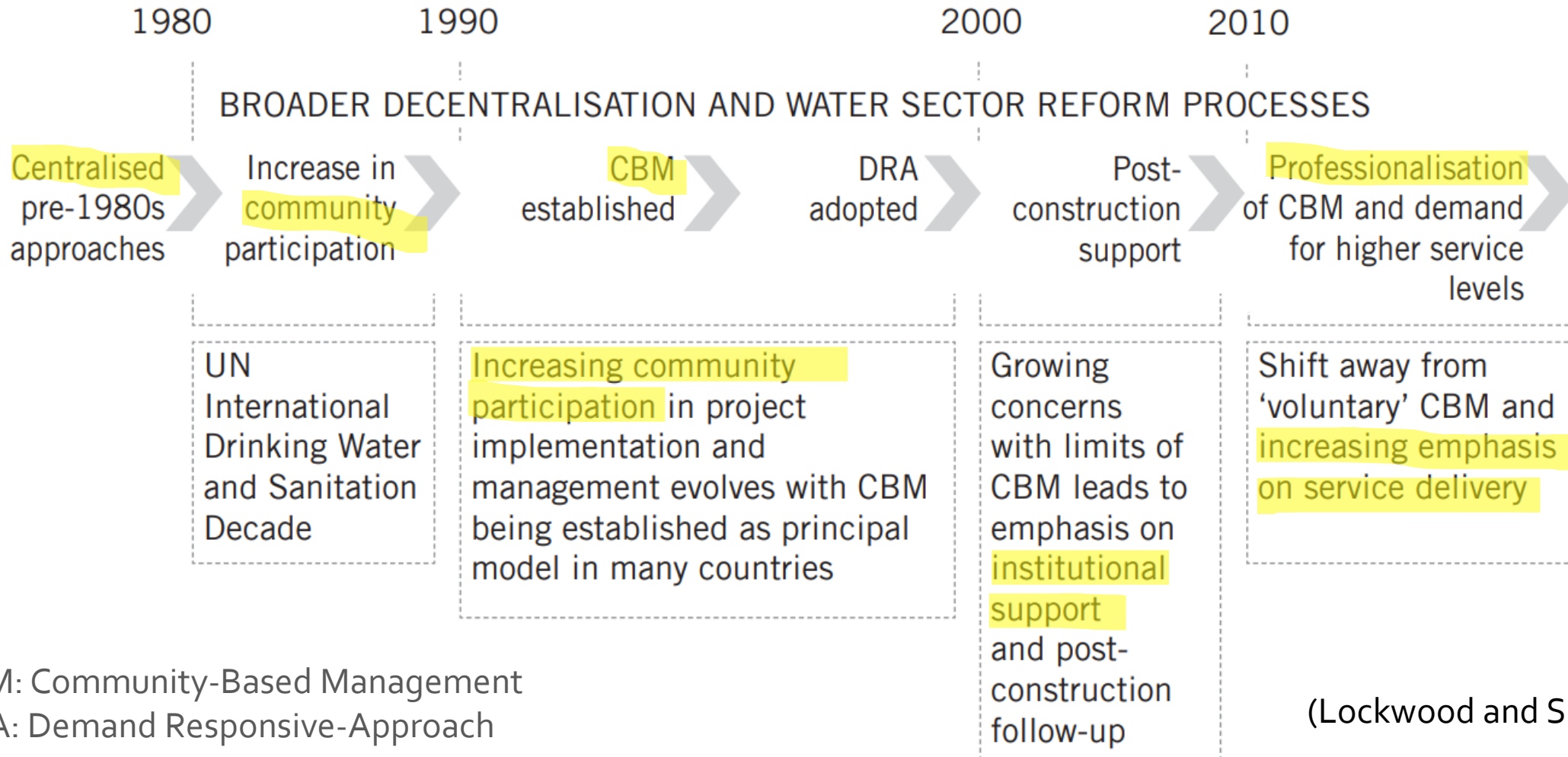


All GCF-supported projects will be required to ***define Paradigm Shift within the context of the project***

“a fundamental change in approach or underlying assumptions”

(Puri et al. 2022)

PARADIGM SHIFT EXAMPLE: RURAL WATER SUPPLY



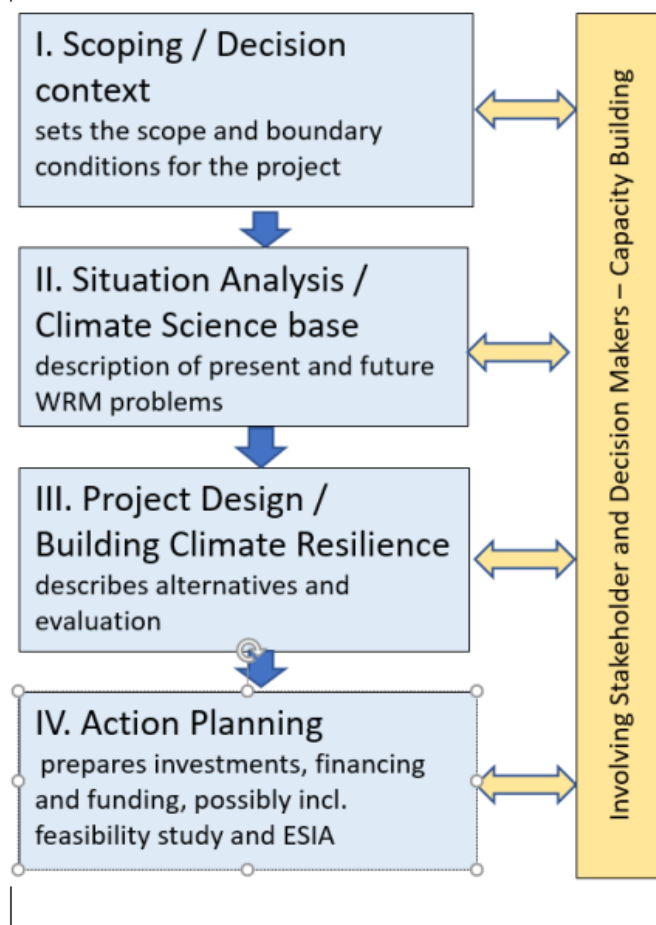
PARADIGM SHIFT - MANY SMALL REFORMS

From implementation approaches with limited scale to more sustainable services delivered at scale

- **Professionalisation** of community management supported by policy & legal frameworks (*from voluntary*)
- Increased recognition and promotion of **alternative service providers** (revenue collection enables more professional and specialised operators and their services)
- Sustainability **indicators and targets** of **performance and service** (not only monitoring coverage, number of units built).
- **Standardisation** - sectoral manuals with common frameworks, norms and standards (*from project based*)
- Post construction **support** to service providers (*from set up of water committees without support*)
- **Ongoing capacity support** to service authorities (from ad hoc).
- **Integral learning and sharing of experience** (from *ad hoc*)
- **Systematic planning for asset management, including life cycle cost**
- **Regulating services and service providers** – to ensure good quality of service and protect consumers (from regulation of only construction).

LEARNING OBJECTIVES

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STRATEGY OF ENGAGEMENT

WHO TO ENGAGE TO WHAT EXTENT?



For a GCF concept note it is useful to write a dedicated “Stakeholder Engagement Strategy for Green Climate Fund (GCF)-related Activities” for different phases of the project formulation, including the concept stage.

EMPOWERMENT stakeholders have the mandate to act

OWNERSHIP stakeholders are involved/committed

PARTICIPATION stakeholders are fully participating (two-way)

CONSULTATION stakeholders are consulted (one-way reversed)

INFORMED stakeholders are informed (one-way)

AWERNESS stakeholders know that something is happening

IGNORANCE stakeholders do not know what is happening

Decide what stakeholders are relevant to be engaged for the concept note.

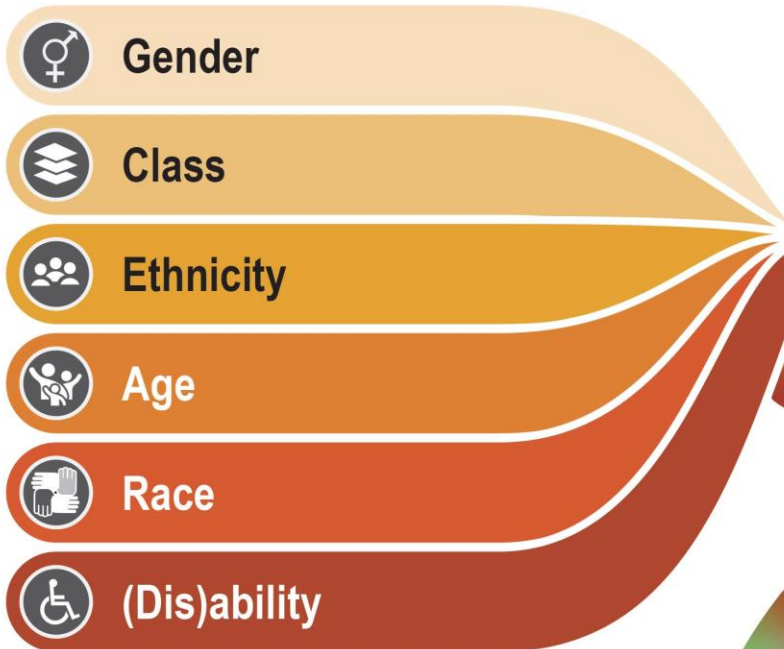
With increasing involvement there is increasing **cost** for the project and for the stakeholders.

Higher levels of involvement must be strategic as they need time and resources - are these available?

STAKEHOLDERS HAVE UNIQUE KNOWLEDGE ABOUT THEIR UNIQUE VULNERABILITIES

Intersectional Vulnerabilities

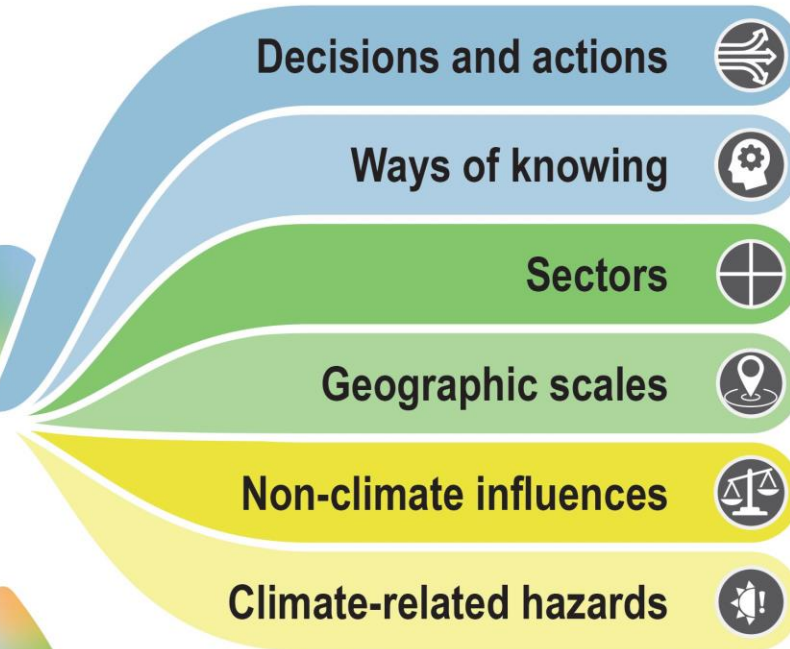
Intersectional identities



Intersectional vulnerabilities



Complex systems



Unequal exposure



Exclusion from benefits



Cascading impacts

VULNERABILITIES ARE SPECIFIC

In a specific locality there are local climate impacts, on natural resources which in turn impacts specific groups.

Climate
impacts



Bio-physical vulnerability: A wetland can be vulnerable to climate impacts, due to already existing (development related): Erosion and other forms of soil degradation, pollution of freshwater, shoreline erosion, flooding, loss of wetlands, drought and desertification.



If wetlands are impacted, then so are women's ability to provide food, water and fuel for their families.

Social vulnerability: Women are often subsistence producers, users and managers of the local environment. Women are especially vulnerable as they often do not have formal access rights to resources.

Knowledge Domains	What They Understand	People Who Use this Knowledge
Ecological Knowledge (ECO)	Understanding the structure and functions of a watershed, the hydrologic cycle, connections between groundwater and surface water, and the value of eco-system services provided by a watershed.	ecologists, farmers, hydrologists
Governance Knowledge (GOV)	Understanding the interrelationships among policy, regulations, government hierarchy, planning documents, ordinances, and the structures and processes in place to execute them.	town planners, code enforcement officers, elected officials, regulators
Land Use Knowledge (LAN)	Understanding the ways land management and conservation and the design of infra-structure and development can influence water quality and quantity, and the ways that the economic value and ecological value of land can be balanced.	town planners, farmers, developers, public works directors, water district managers
Educational Practices Knowledge (EDU)	Understanding how knowledge is generated and transferred among the knowledge domains. Designing and evaluating the effectiveness of education and outreach strategies.	education and outreach specialists, trainers, science translators, town planners
Science Knowledge (SCI)	Understanding the factors influencing water quality and quantity for the purpose of documenting conditions, monitoring change, understanding cause and effect relationships and evaluating the effectiveness of management practices and policies.	natural and social scientists, water quality monitors, regulators
Technology Knowledge (TEC)	Understanding the use and application of engineering and computer technologies to protect water, mitigate impacts, implement best management practices and restore lost structure and function in the watershed.	engineers, public works directors, GIS specialists

DIFFERENT TYPES OF KNOWLEDGE IS NEEDED FOR SYSTEMIC APPROACHES

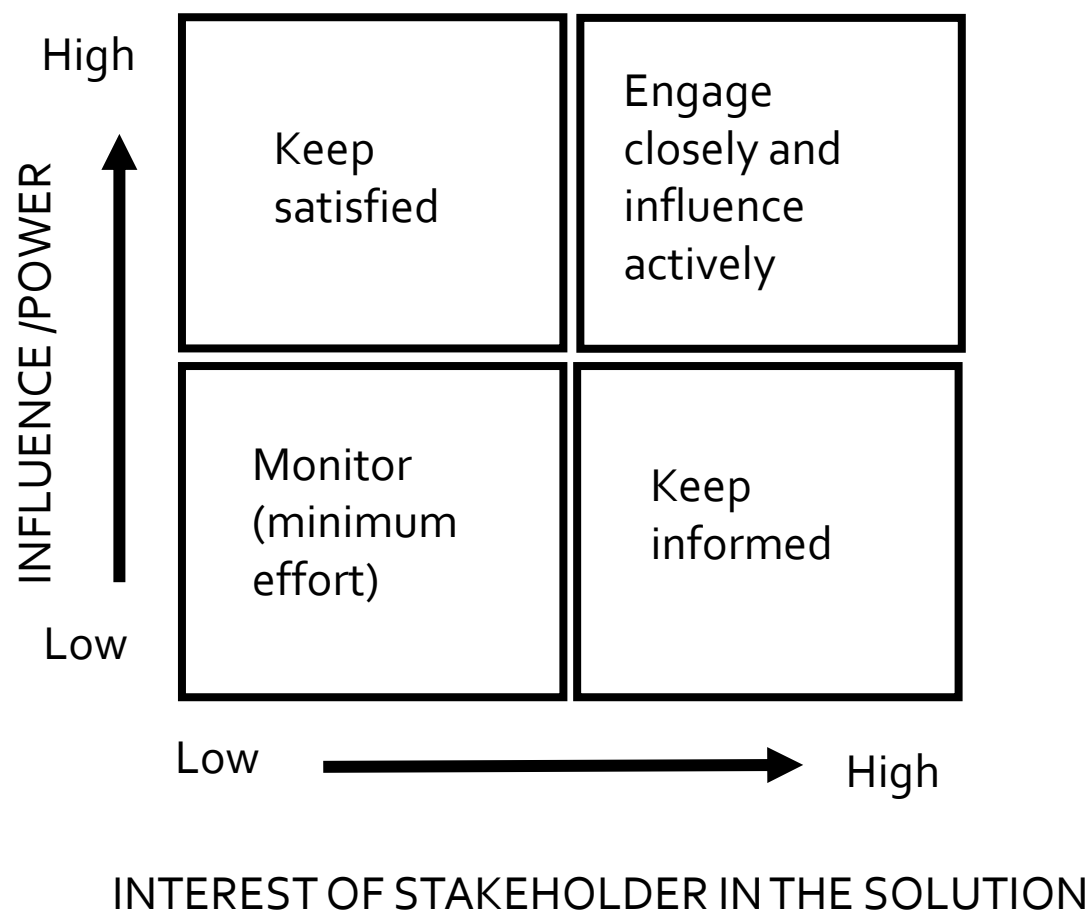


The six blind men and the elephant
The six blind men who came across an elephant for the first time in their lives and try to conceptualize it by touching it is originally from an Indian fable.

The story illustrates how humans tend to take their partial experiences as a whole truth, and their individual perspectives as the one and only version of reality. Yet their perceptions are very limited; one should keep in mind that they may be only partially right, and only hold partial information.

Knowledge domains	What they understand	People who will use this knowledge
Local knowledge	Fundamental aspects of day-to-day life in a given place	Not always appreciated in formal planning processes
Traditional knowledge	Passed on from generation to generation	
Socio-cultural knowledge	Understanding the customs, norms, informal institutions that guide decision-making.	

TOOL TO IDENTIFY INTEREST AND POWER OF STAKEHOLDERS



Important stakeholders are 1) people **affected** and 2) people **implementing** the project.

Organize the stakeholders in different matrices according to their interest and power.

Complement with a table including:

1. Stakeholder name
2. Solution perception
3. Values (socially accepted behaviour)
4. Resources
5. Needs
6. Roles and responsibilities
7. Indicate kind of stakeholder (NGO, public or private)

ENGAGING COMMUNITIES VIA TRUSTED INTERMEDIARIES

Key individuals to engage with communities, volunteers, or individuals who help

Community
empowerment and
organization
“Purok”

Water and
Sanitation – Disaster
Risk Reduction

Cebu, The
Philippines



Local Purok organisation in Cebu, The Philippines, of communities and PPPs improving WASH and DRR through learning dialogues stimulating co-creation of knowledge with citizens (Johannessen & Peter 2019)



Shared learning dialogues, Gorakhpur India, Integrated framework for urban climate change resilience planning applied by ACCCRN Asian Cities Climate Change Resilience Network (Moench et al. 2011)

PITFALLS – CONFLICT MANAGEMENT

- **Costs for the project and stakeholders:** Do stakeholders have time to spend to engage in the project? Dedicated budgets often needed.
- **Build expectations that are not going to be met.** What happens after the project?
- **Conflict management:** Risk for positioning by persons negative to an idea. Takes time to undo → Often better to build trust and positive energy about an idea or practice in smaller (positive) groups and then grow the numbers until there is a critical mass who buys into the idea.
- **Mediators and professional facilitators** are often needed for good process management and avoiding conflict. Putting many people in the room without prior preparation can risk conflict.

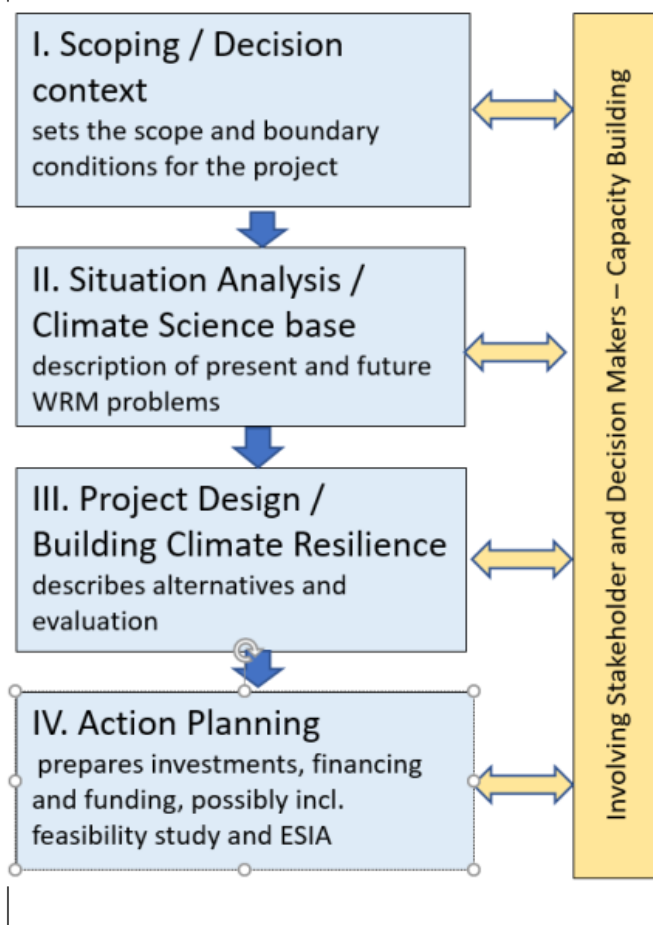


QUESTIONS/DISCUSSION (PART I)

- Do you have any experiences about project failure due to insufficient stakeholder involvement?
- Do you have any good experiences from involving stakeholders and can share some lessons learnt or tips?
- Other questions, discussion points?

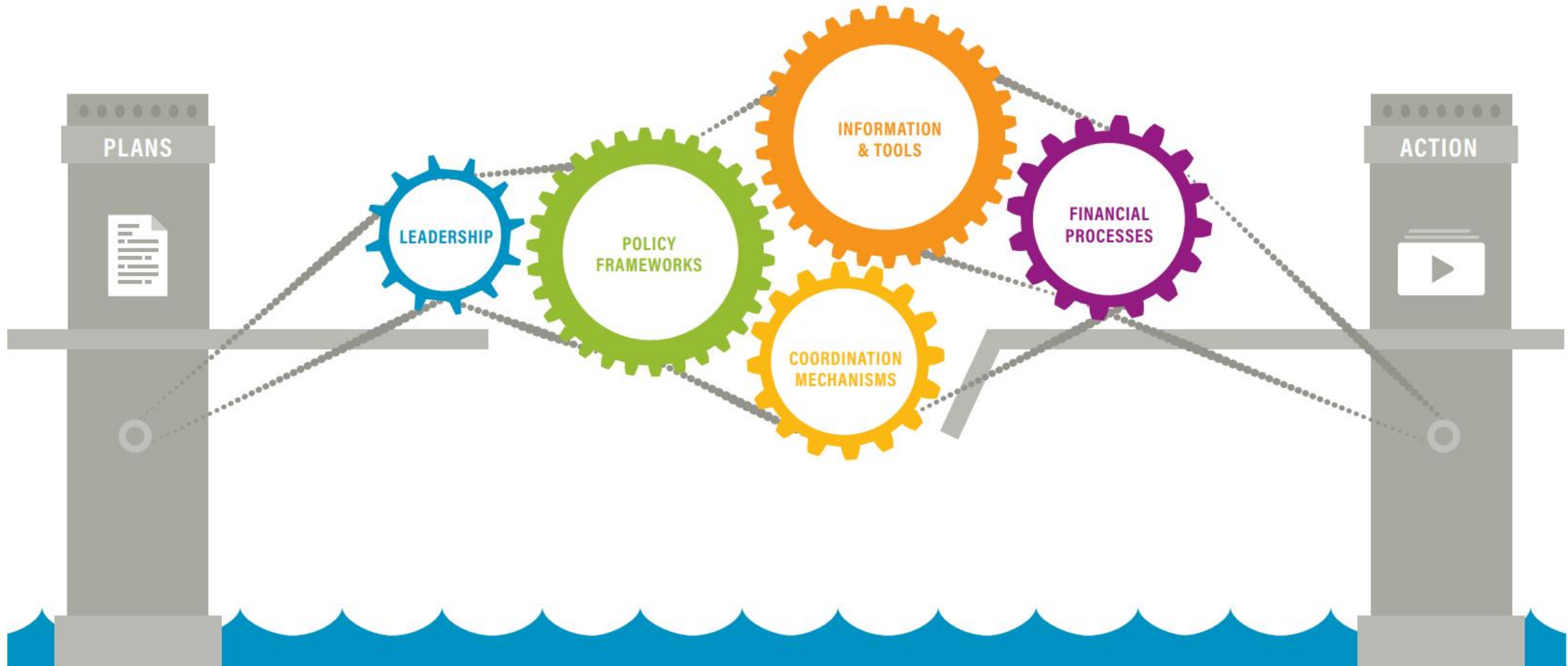
LEARNING OBJECTIVES

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ENABLING ENVIRONMENT – BRIDGING THE IMPLEMENTATION GAP



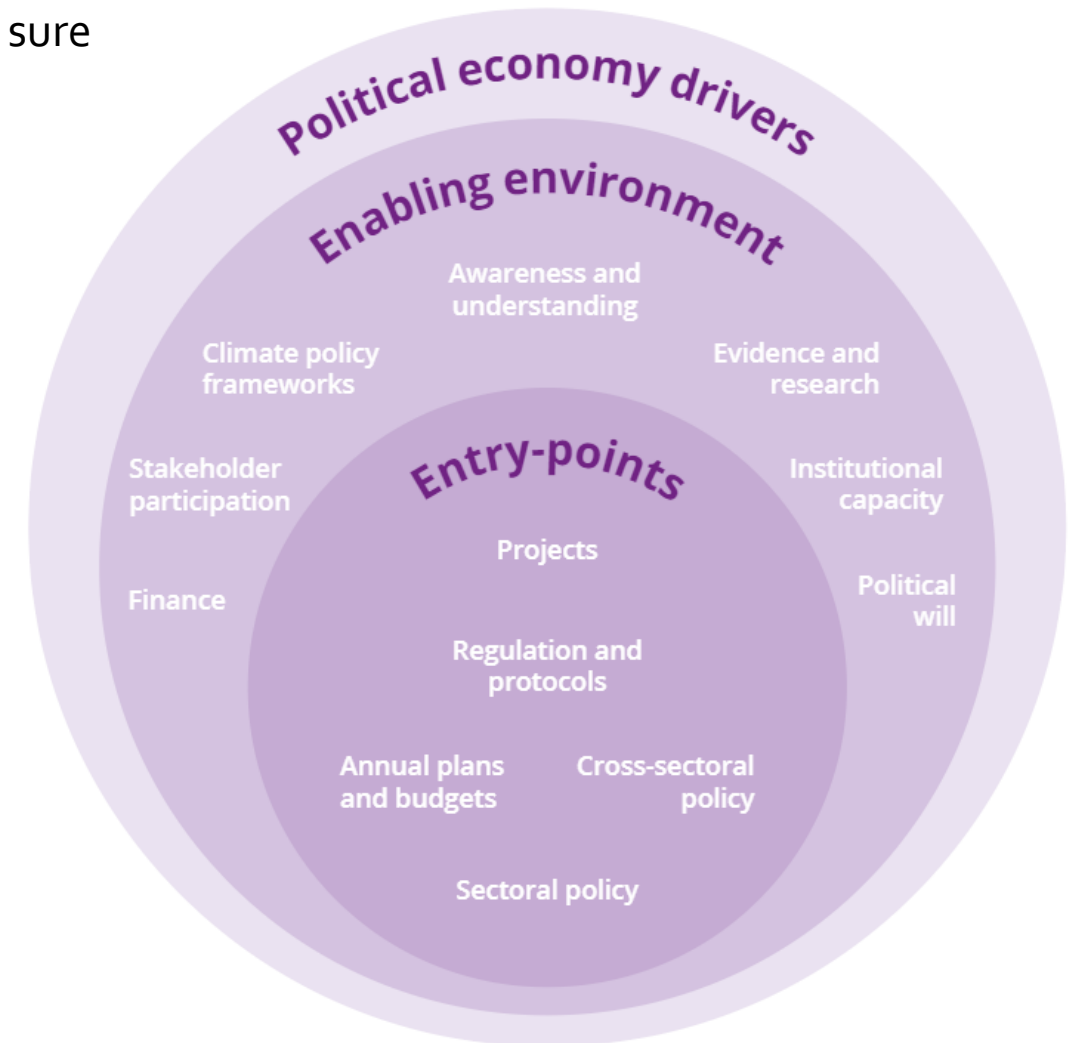
MAINSTREAMING CLIMATE ADAPTATION

The most recommended approach is mainstreaming = making sure adaptation is not a free standing activity but that it is a part of development planning at multiple levels.

*Climate risk
considerations*

Development planning and implementation

Future

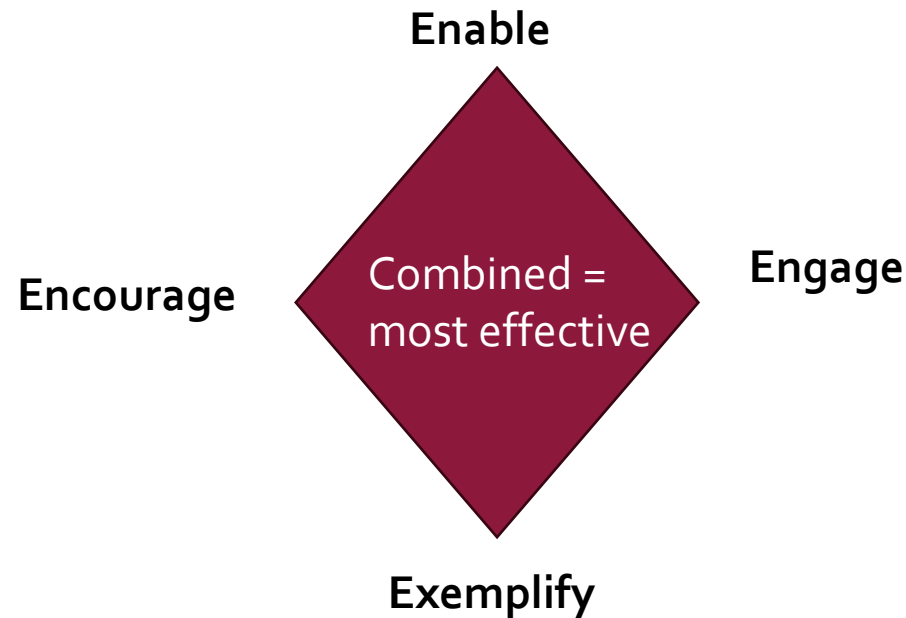


POLICY TOOLS – COMPLEMENTING REGULATIONS TO NUDGE/CHANGE BEHAVIOUR



Enable – making it easier: provide people with the support they need to make responsible choices (e.g. by Adaptation forum, adaptation fund, women empowerment, support for social enterprises, enable and build capacity of private sector to provide services...).

Encourage – give the right signals: incentives and disincentives; understand and offer the benefits to change to target audiences, to make sure they respond, providing regular feedback (e.g. Environmental action fund, Tax, Levy, Ethical trading initiative, operating and financial review. Database: PINE – Policy instruments for the Environment (OECD) – 3900 economic and market instruments implemented in 130 countries.



Engage – get people involved early on so that they understand what they need to do – help them develop a sense of personal responsibility. Work with the grain of lifestyles and through trusted partners and intermediaries to develop 'social norms' (e.g. printed media and PR and using businesses as intermediaries to host events).

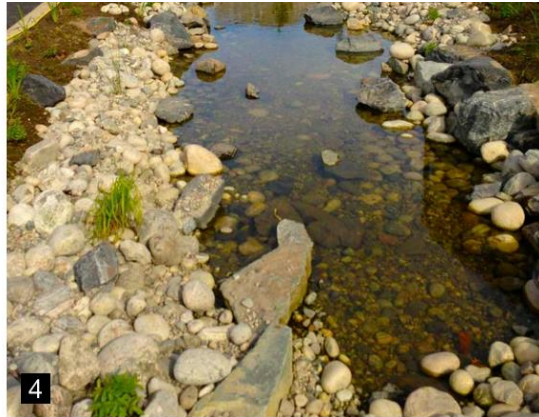
Exemplify – local authorities need to lead by example: Consistency in policies; female leaders, take action to 'exemplify' the same behavior. Demonstrate shared responsibility.

EXAMPLE OF POLICY TOOL

STORMWATER POLICY OSLO, NORWAY



The municipal stormwater policy developed in 2012: All drainage solutions need to be open and green unless the developer can show with evidence that this is impossible. Top down example that brought about a radical change in practice.

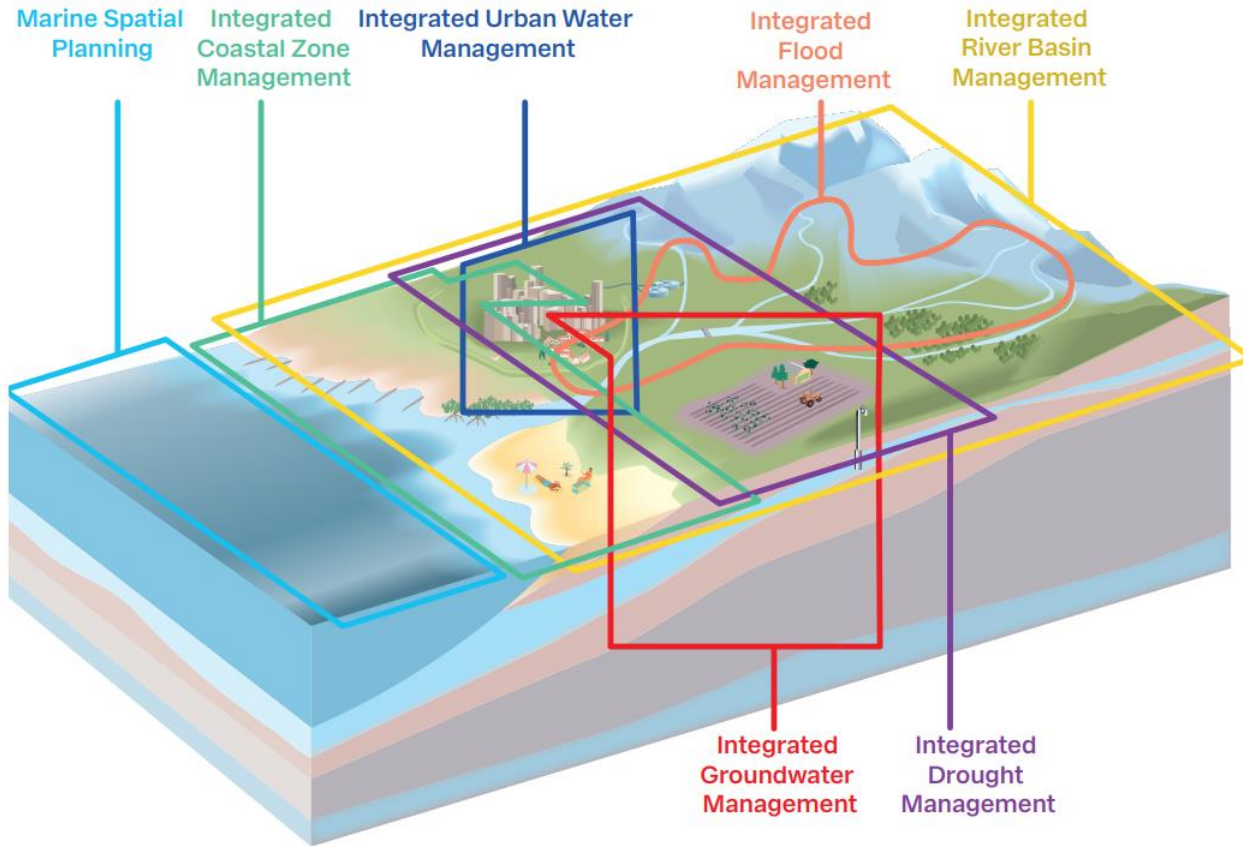


Process for change:

- Despite initial challenges with urban planners and developers, there was no real opposition to the strategy, partly owing to the *open dialogue with these key stakeholders*.
- Supported the change: *memories of heavy rainfalls in 2014 and 2015*.
- This happened at the same time as the re-opening of rivers and streams of its urban areas. Until 2012, most of the 24 kilometers of waterways were flowing underground.

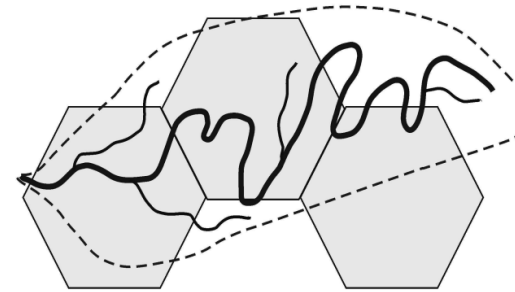
Source: [Strategi for overvannshåndtering.pdf \(oslo.kommune.no\)](https://oslo.kommune.no/Strategi%20for%20overvannsh%C3%A4ndtering.pdf)

INSTITUTIONS VS INTEGRATED PLANNING



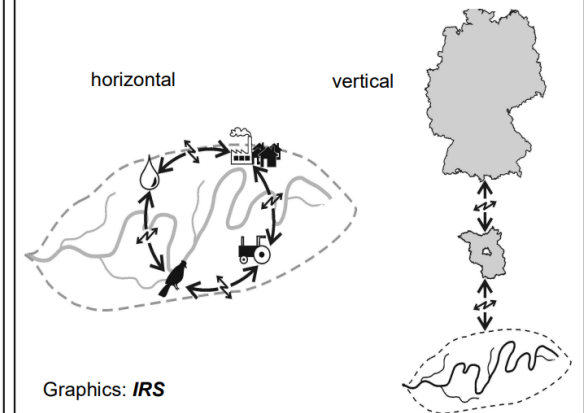
“Problems of fit”

Problems of incompatibility between institutional arrangements and bio-geophysical systems



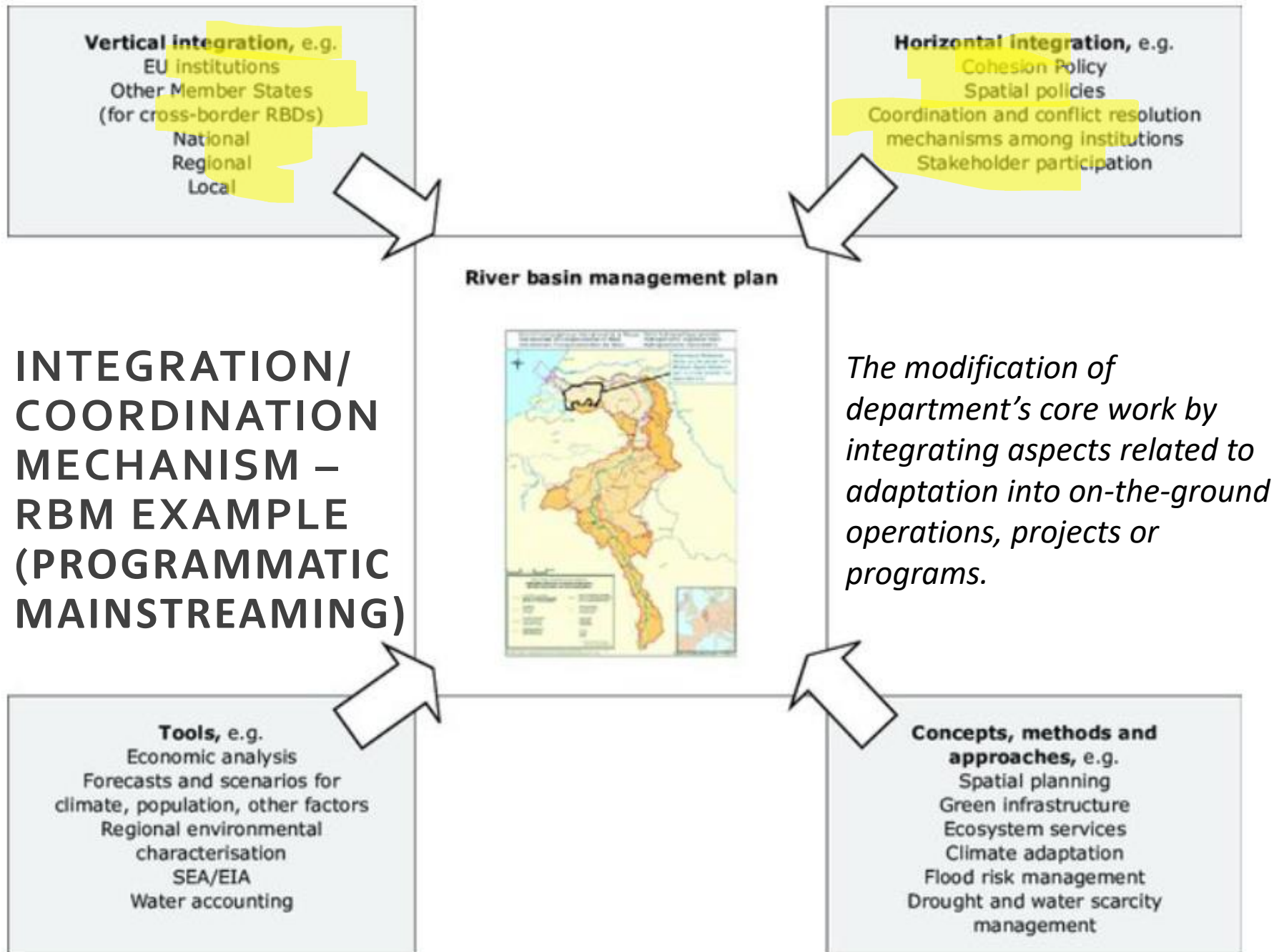
“Problems of interplay”

Problems of interaction between different institutions



→ Coordination mechanisms

The different elements to be addressed in the preparation of RBMPs.



Specific example from France:

Mechanisms for integration - voluntary guidance, regional scale in France, the authority for the Adour-Garonne RBD has prepared a **guidance document** for local authorities, for the integration of water management issues in urban planning.

INSTITUTIONS: HOW TO BRIDGE SILOES?



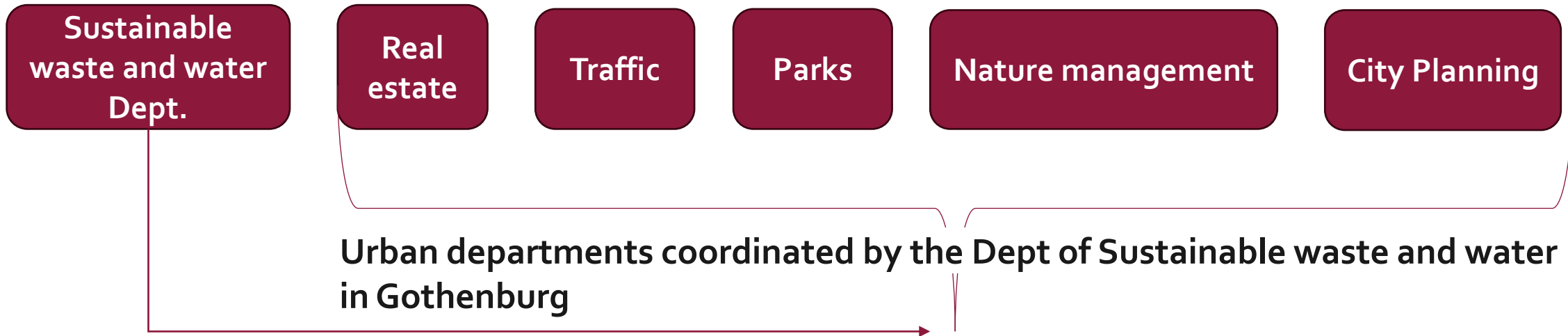
Siloes at urban level

Siloes are necessary for effective and specialized implementation.

However, for cross cutting issues like climate change and sustainability, siloes provide barriers.

→ **Coordination mechanisms**

INSTITUTIONAL COORDINATION - SECTORS



Gothenburg:

- Sustainable Waste and Water is a department in the City of Gothenburg that has become **mandated** to deal with extreme rainfall also across other departments such as: City Planning, Real Estate, Traffic and Parks, and nature management in their operations.
- In 2017, the political boards of City Planning, Real Estate, Traffic and Parks, and nature management aligned to **embrace the IWA's Principles of Water-Wise Cities**.
- The City Planning office has also worked on a **thematic addition to the city's master plan – "flood risks"**, which was adopted in 2018.

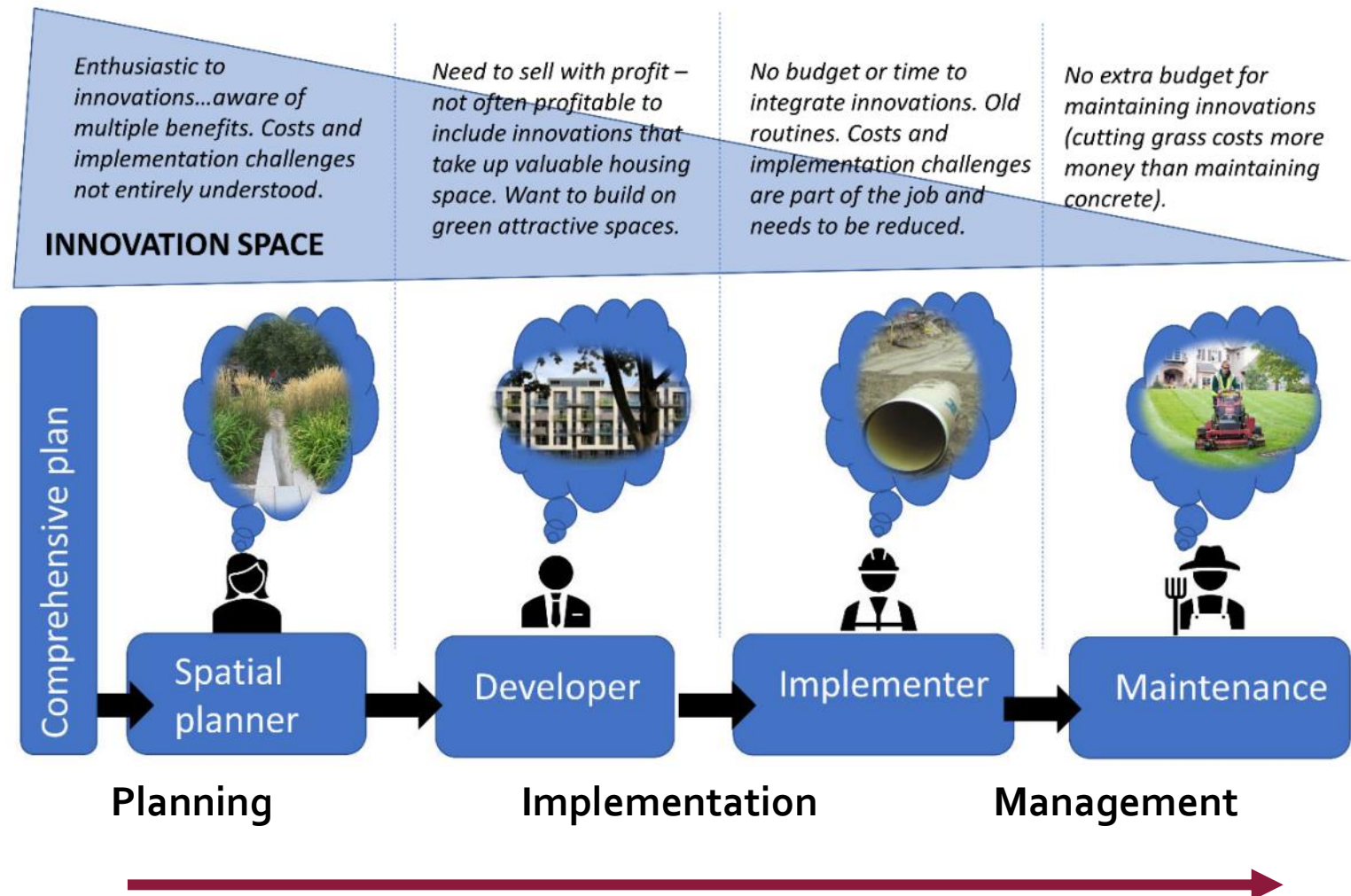
INSTITUTIONAL COORDINATING ALONG IMPLEMENTATION (MANAGERIAL MAINSTREAMING)

To enable implementation there is a need to make sure all actors in the planning – implementation “chain” are onboard and aligned.

A strong “chain” – is only as strong as its weakest link.

For example:

- For a Nature-based Solutions (NbS) option to be considered, it needs to fit into existing institutional contexts, norms, and regulations, including unwritten rules.
- If these enablers are not in place, NbS introduced in *planning* can be removed along the *implementation* – *management- maintenance* chain.



Increasing intensity of collaboration



Networking	Co-ordination	Co-operation	Collaboration
Dialogue and common understanding	Exploring shared needs and potential for co-ordination	Share resources to address common issues	Build interdependent system to address issues and opportunities
Loose/flexible links	Central body of people as communication hub	Central body of people consists of decision makers	Consensus used in shared decision making; resources and joint budgets are developed
Non-hierarchical	Facilitative leaders	Links formal with written agreement	Ideas and decisions equally shared
Minimal decision making	Complex decision making	Autonomous leadership but with group decision making in central and subgroups	Leadership high, trust level high, productivity high
Informal communication	Formal communication within the central group	Communication is common and prioritized	Highly developed communication system

LEADERSHIP FOR ADAPTATION



(1) **influence the policy process** to get adaptation policies accepted and implemented; (policy entrepreneurs that advocate policy change and innovation).

(2) **enhance connectivity** across different policy-making levels, sectors, and actors; collaborative, integrative leadership → attuning policies and strategies and synchronizing agendas of different levels of government, policy sectors, and public and private actors.

(3) **enhance the capacity of society** to learn in response to feedback from the natural system and to anticipate long-term impacts of climate change; (sustainability leadership) evidence-based decision-making.

(4) **adaptive decision-making - networks** concerned with climate adaptation → flexible decision-making – coalitions – experimenting, learning.

General important skills of a good leader



INFORMATION AND TOOLS

Learning initiatives, training, or access to technical expertise



Knowledge brokers—players that can facilitate information sharing across sectors and policy domains also from local level implementation —critical in bridging the implementation gap.

Active learning by all stakeholders is central.

Not only climate data and modelling.

Experts = monodisciplinary → interdisciplinary.



Stakeholders to express their information needs, direct information production, exchange and discuss data and viewpoints.

A shared knowledge base provides legitimacy and quality control of the information.



Dialogue and engagement integrates different types of knowledge – (traditional, technical, local etc.).

*Develops a **shared knowledge base** and a **mutual understanding** of the system to be managed and the problems that occur.*

HUMAN RESONANCE



Importance of communication and language – talking to human values and issues of the heart, culture, spirituality, identity, sense of place, etc.

From dry science to living salmons

The scientific communications of the problem (“too much Phosphorous and Nitrogen”) did not create action. But when the Rhine campaign started talking about “Bringing back the salmon” this resonated with stakeholders and triggered action with decision-makers and the public. (Example from the Rhine river).



From a city at risk of flooding to a liveable city

Water engineers focusing on water security (floods) did not get as much attention as they wanted in planning.

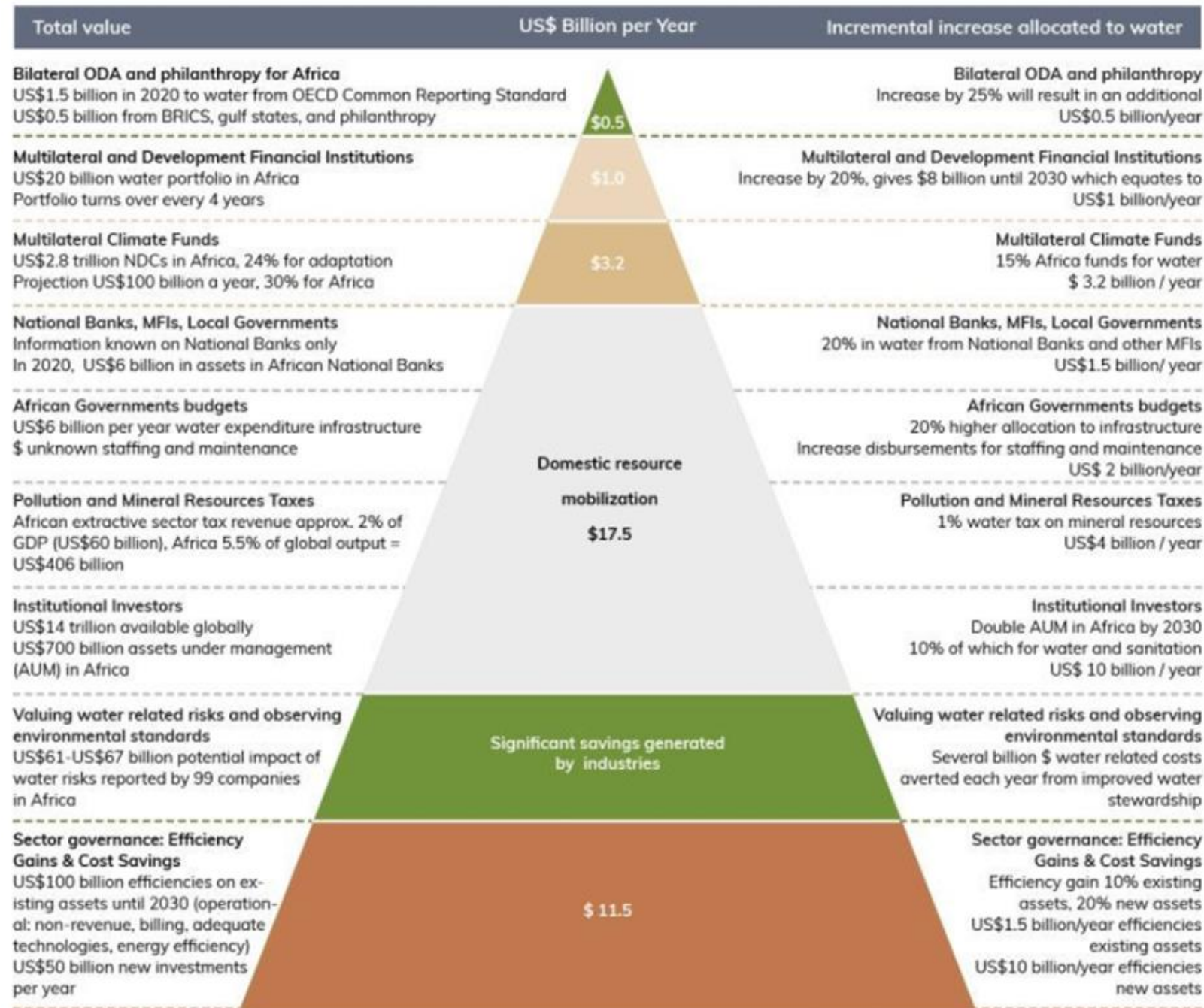
Things changed when they started collaborating with urban planners who were using a different language focusing on *liveability* creating a good place for humans to live, love and play. This was a language that inspired and enthused people. They could also combine budgets for joint projects that had multiple benefits like green areas that provide flood buffers. (Example from Rotterdam, The Netherlands).

FINANCING

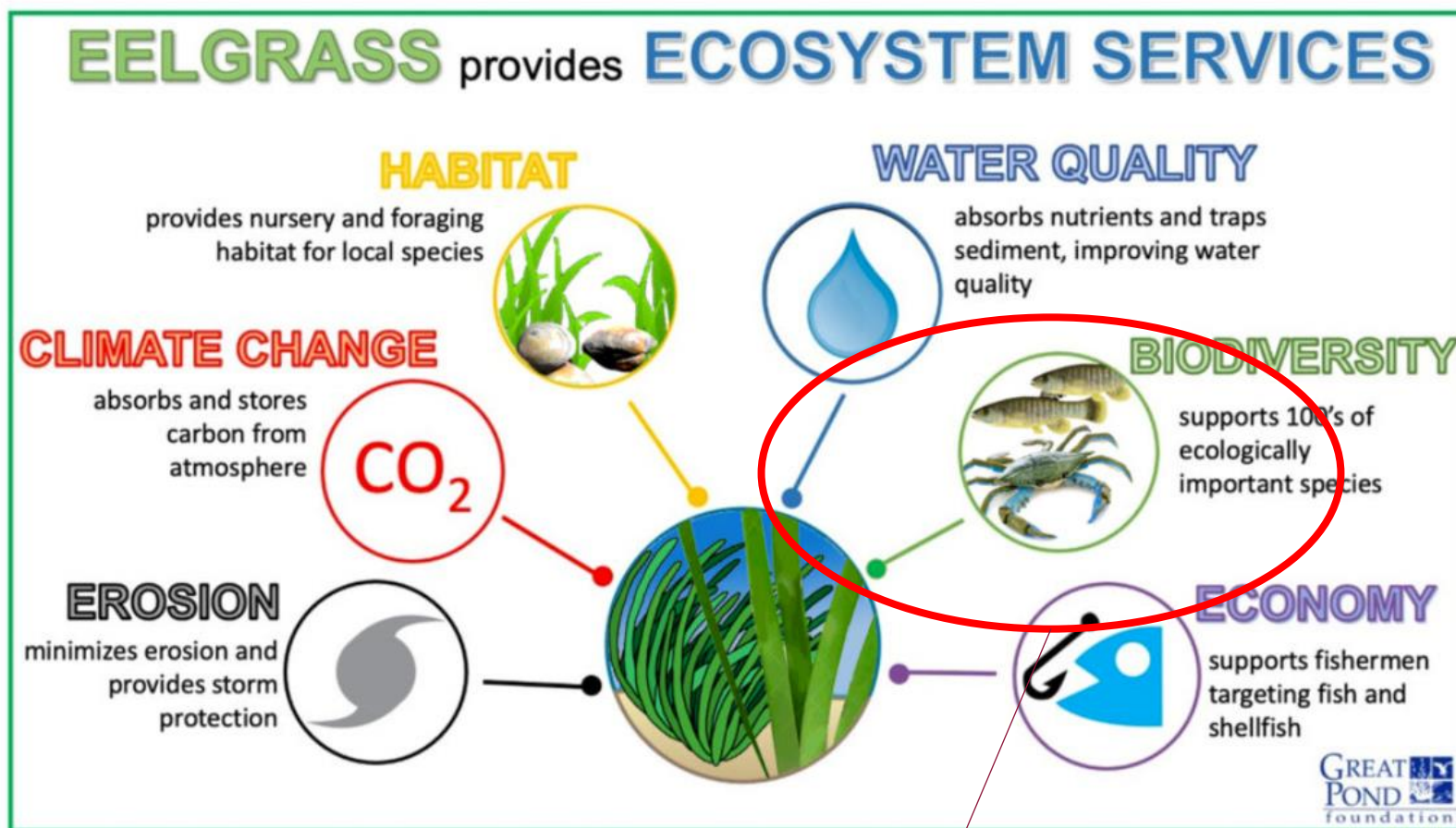
At least 90% of **adaptation finance** Africa needs to achieve water security & sanitation by 2030 can be accessed from domestic resources by improving the enabling environment for investments, better water governance, higher budget allocations, the efficient delivery of water services.

Finance is available but needs to be re-purposed

From the Africa Water Investment Program, AIP



NATURE - MULTIPLE BENEFITS AND USES – REQUIRES INVESTMENT PARTNERSHIPS



Often only one ecosystem service is funded, by government grants, by environmental sector

This figure was made possible by a 2020 Edey Foundation Grant.

FINANCING ARRANGEMENTS - NBS



Five categories of instruments to catalyze finance for Nature-based Solutions

1. **Information instruments** – key to modify behavioural changes, for example helping consumers select products produced in a sustainable way.
2. **Control and regulatory instruments** – Protected areas. Permits and licences such as fishing quotas and logging regulations.
3. **Economic and market instruments** – act as incentives or disincentives to shape firms and consumer preferences. E.g carbon credits, payments for ecosystem services, certification schemes.
4. **Institutional instruments** – help realign financial flows with climate and biodiversity priorities, such as investors coalitions, green banks, environmental agencies etc. .
5. **Financial instruments** –direct public investments in specific financial mechanisms often to demonstrate proof of concept and potential scalability/replicability. Also includes private philanthropy.

Three ways how instruments can be combined for maximum impact:



I. Blended finance approach - combining different instruments in synergistic ways, e.g. carbon credits together with upfront investments, profit from sale of commodities, upfront grants, concessional arrangements to access affordable finance.



II. Sequencing – maturity concessionality gradient. Starting with grants and moving away from depending on them towards accessing capital markets.

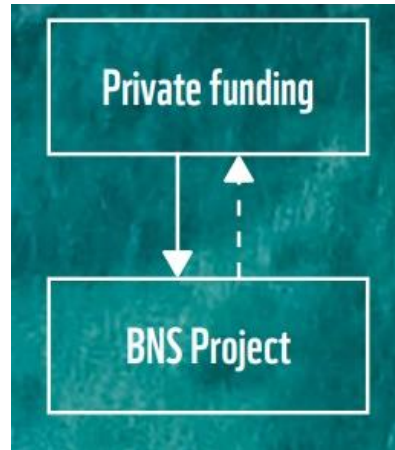


III. Establishing partnerships – between multiple financiers to secure instruments that complement each other. A) identify financing gaps b) mapping instruments to plug these gaps and c) building coalitions to generate the financial flows.

Three Blueprints to structure a project for Bankable Nature Solutions

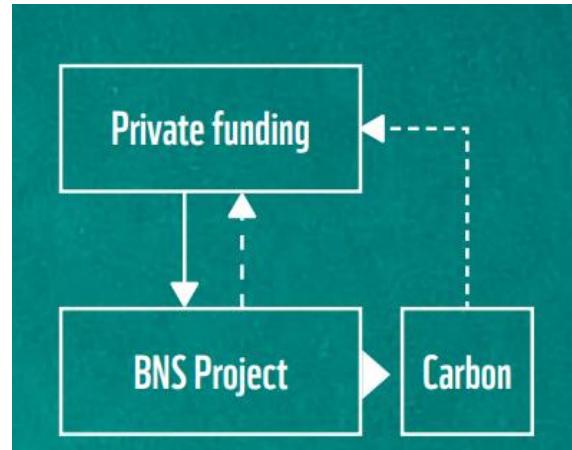


Private funding



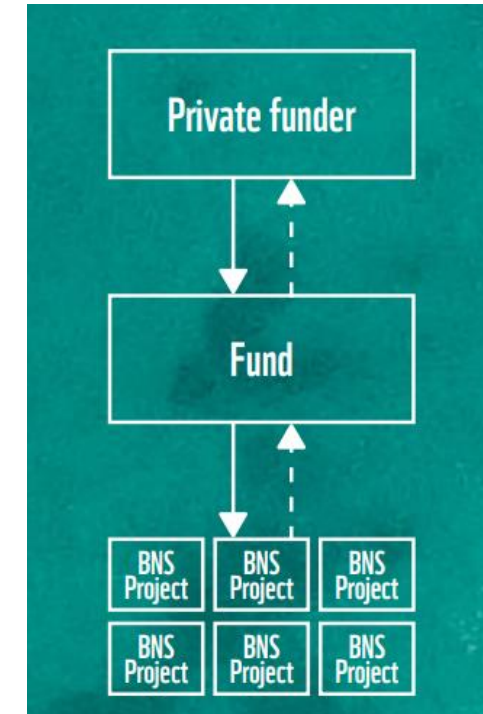
A project that receives funding from a private investor. The investment can be through debt or equity.

Carbon credits



The income from the sales of carbon credits. Can de-risk the investment of the funder. Problems can be small ticket size.

Pooling in a fund



An effective way to decrease risks and transaction costs is by pooling several projects in a fund.

Source: Bankable Nature Solutions, WWF, 2020

https://wwfint.awsassets.panda.org/downloads/bankable_nature_solutions_2_1.pdf

WATER SECURITY FOR CLIMATE RESILIENCE PARADIGM SHIFTING PATHWAYS

- An innovative approach to water security: **six detailed pathways**
- Need for global and regional lead advocacy
- Applicable on **needs-based** projects for countries using nexus and integrated approach
- **Systems thinking** approach considering NRS, SES and AIS links on project design
- **Context-based** unique connections between systems to be assessed





PARADIGM SHIFT - PATHWAY 1: ENHANCE WATER CONSERVATION, WATER EFFICIENCY AND WATER REUSE



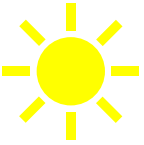
E.g., through demand management, smart digital water management, decentralized operation models and resource recovery, drinking water networks (new or rehabilitation), water losses reduction

- 1. Public Awareness Education and engagement** in water conservation, water-saving practices and technologies, and how to behave during water shortages.
- 2. Water Conservation Measures**, water-efficient appliances, fixtures, landscaping practices, tariffs to limit withdrawal, practices and technologies to reduce water use.
- 3. Water Efficiency Improvements** by upgrading infrastructure to minimize leaks, losses, rehabilitation or expansion of water access in places under high water stress or waterborne disease pressure. Implement water-saving technologies such as drip irrigation, rainwater harvesting. Optimize water use by utilizing sensors, meters, and data **analytics**. Strengthen water resource **monitoring** to anticipate availability linked to climate stresses.
- 4. Water Reuse and Recycling** of wastewater. Reuse water for irrigation, industrial processes, and groundwater recharge. Decentralized water reuse systems at community and household levels.
- 5. Integrated Water Resource Management:** foster collaboration among actors.
- 6. Risk assessments:** Include climate change projections and scenarios into planning and decision-making processes.
- 7. Resilience to shocks:** Adjust technical designs to secure proper functioning even under a changing climate.
- 8. Green Infrastructure and Nature-Based Solutions** permeable pavement, green roofs, urban wetlands, riparian buffers, floodplains that capture rainwater, infiltrate, recharge and reduce floods.
- 9. Policy and Governance:** Align policies and regulations with water efficiency and conservation goals.

EXAMPLE: THE CITY OF TSHWANE



PATHWAY 1: ENHANCE WATER CONSERVATION, WATER EFFICIENCY AND WATER REUSE



The City of Tshwane is exposed to water scarcity and extreme heat and drought. Non-revenue water loss may have been as high as 40%.

Future projections show a warming in the range of 1.7 to 4.7°C for the end of the century, a strong increase in the duration of heat waves as well as an increase in the duration of dry spells.

→ Increase in climate sensitive waterborne disease.



Adhere to the water restrictions in Tshwane.

No watering or irrigating gardens with hosepipes or sprinkler systems between 06:00 and 18:00.



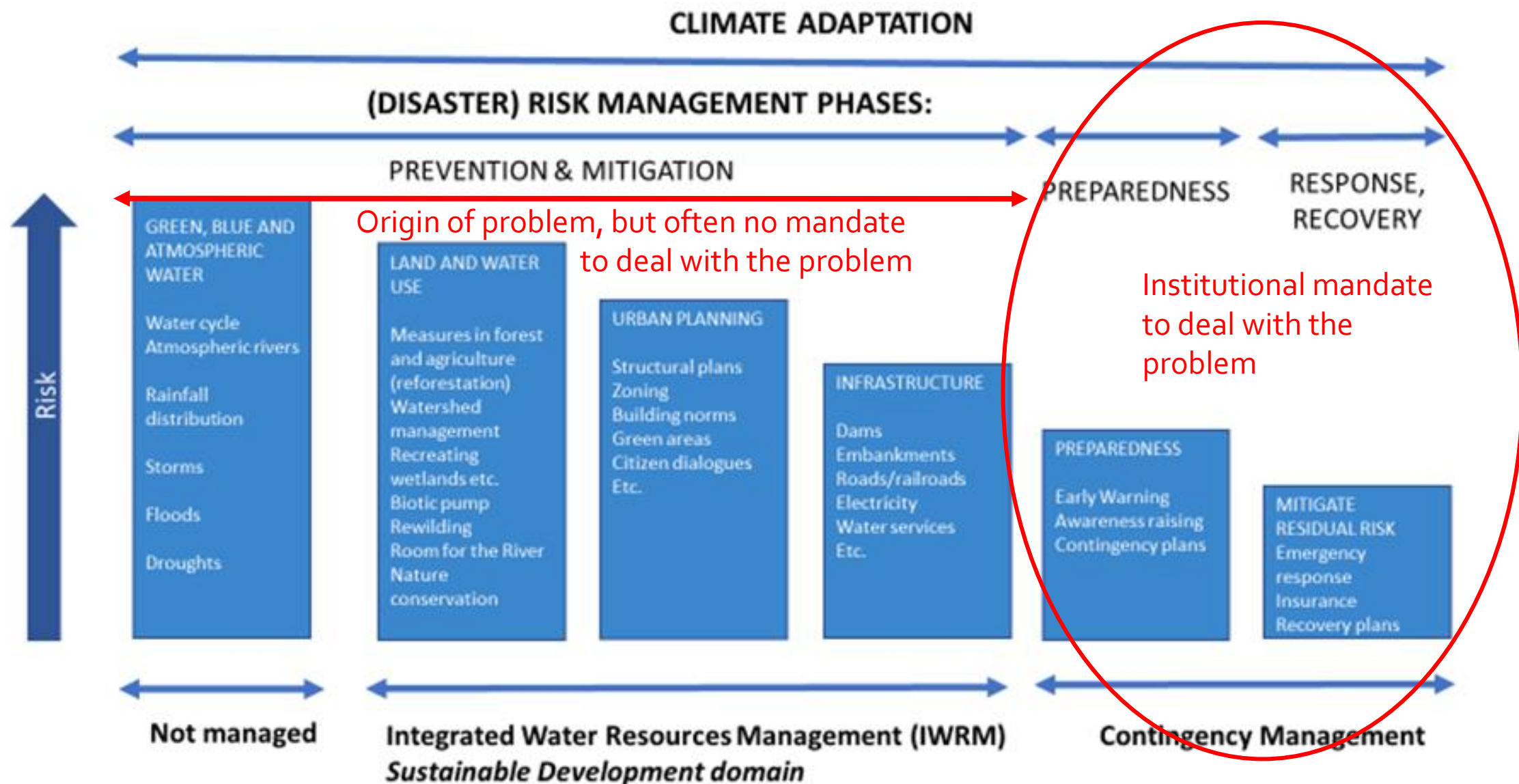
Activities in Tshwane to address the risks →

- **Policy and Regulation for water conservation.**
- **Implementation of Water Restrictions to limit non-essential water usage.**
- **Investment in Water Infrastructure** to minimize leaks and losses, repairing pipelines, installing water meters, monitor usage and detect leaks.
- **Promotion of Water-Efficient Practices**, reduce over-consumption, as well as encouraging the use of drought-resistant landscaping techniques.
- **Waste water treatment and reuse, greywater recycling from sinks, showers, and washing machines and rainwater harvesting.**
- **Community engagement and participation** such as water-saving competitions, workshops, and education awareness campaigns on responsible water usage practices and reporting leaks promptly.
- **Financing: Optimise billing and revenue** for water service providers and improve recovery performance.

PARADIGM SHIFT PATHWAY 2: FLOOD & DROUGHT RISK MANAGEMENT

- **Integrated risk assessment** to consider both drought and flood hazards, and identify risks, including cascading effects when a flood follows on a dry period, exacerbating soil erosion and flooding.
- **Flexible water management** that adapts to changing conditions and allocate water accordingly. Plan for both floods and droughts, which means multi-purpose solutions.
- **Sustainable land management practices** that also promotes livelihood diversification:
 - **Boost the small water cycle, reduce flood peaks:** Capture rainfall where it falls, delay runoff and increase infiltration, e.g. checkdams, stone bundles, remove hard surfaces. Store rainfall, including organic and biodiverse soils/ soil moisture and groundwater recharge. Identify relevant sectoral approaches, e.g. climate smart agriculture technologies, agroforestry, zai pits, etc.
 - **Introduce Nature-Based Solutions (NBS) and restore ecosystems** such as wetlands, floodplains, forests, riparian zones, tree planting and groundwater recharge areas.
- **Drought and flood early warning systems**, building capacity to prepare, respond, and recover.
- **Strengthen institutional coordination, collaboration**, in addressing flood and drought risk along the whole water cycle. (see e.g. [EPIC response framework](#) for more details)
- **Adapt policy and governance:** e.g. environmental legislation often does not mention floods or drought, but this is necessary to enable NBS and ecosystem management for this purpose.

LIMITED MANDATE (REGULATION AND INSTITUTIONAL FOR DROUGHT AND FLOODS)



EXAMPLE: PROGRAM FOR INTEGRATED DEVELOPMENT AND ADAPTATION TO CLIMATE CHANGE IN THE NIGER BASIN (PIDACC) AFDB/GC FUND



PATHWAY 3: INTEGRATED WATER RESOURCES MANAGEMENT (IWRM) AND SDG



Communities in Niger Basin (est. 130M) are highly dependent on natural ecosystems – rainfed agriculture, livestock farming and fishing – all vulnerable to climate change. The growing aridity and dwindling of water flows observed (reduction of total annual rainfall between 20-40% over 60 years) have degraded natural resources, increased erosion, and the silting of the Niger River.

Program for integrated development and adaptation to climate change in the Niger basin (PIDACC) AFDB/ GC Fund



- Investment/ activities:
 - Building the resilience of ecosystems and natural resources; Building the people's resilience; and program coordination and management.
 - Location: Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Guinea, Mali, Niger and Nigeria.
 - Budget: project cost 209.9 M US\$ AFDB (78 MUS\$), GCF (67,8 MUS\$), GEF (12.9 MUS\$), FIP (9 MUS\$), EU (18 M euros).
 - Status: execution (2019/2025)
 - Beneficiaries: 4 million small producers in the nine (9) countries of the Niger Basin
 - Website:

- The program applies an IWRM approach and address the **underlying drivers of degradation** of peoples living conditions and biodiversity of the basin. It considers the increasing climate variability, protection of water resources in a context of high water stress.
- Considering **upstream and downstream** dimensions.
- Considering increasing water demand with population growth.
- **Promote water resource demand management and reduction of loss.**
- **Measures to reduce silting of the river, improve natural resources management and enhance the population ability to adapt** (4 M directly and 10 M indirectly, ca 50% women).
- **Enhanced climate resilience landscapes** developed as a hedge towards climate extremes (40,000 ha forestry, 26,000 agroforestry; 10,000 of dunes stabilized; 110,000 ha of degraded land restored; mechanical and biological management of 45,000 (m3) of ravines undertaken.

PARADIGM SHIFT – PATHWAY 4: ECOSYSTEM BASED ADAPTATION – A SELECTION OF ECOSYSTEM SERVICES



Drinking water Ecosystems contribute to the supply of drinking water in the form of flows at surface or natural filtration of (ground)water.

Coastal protection and livelihoods e.g. mangroves, dunes and fisheries.

Protection against flooding and mitigating drought – ecosystems help infiltrate and slow down runoff from rainfall, and as such also recharges groundwater.

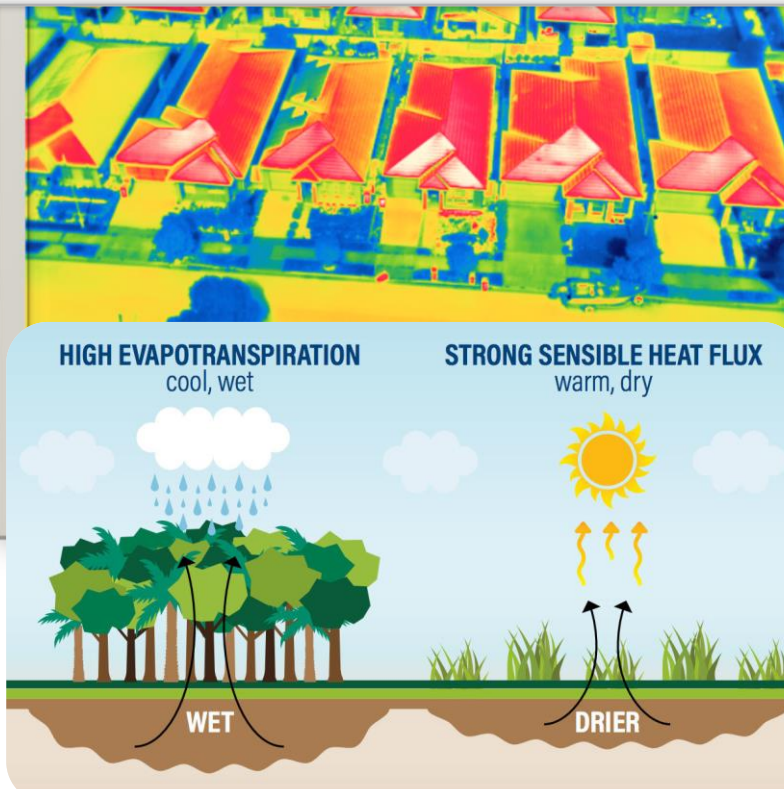
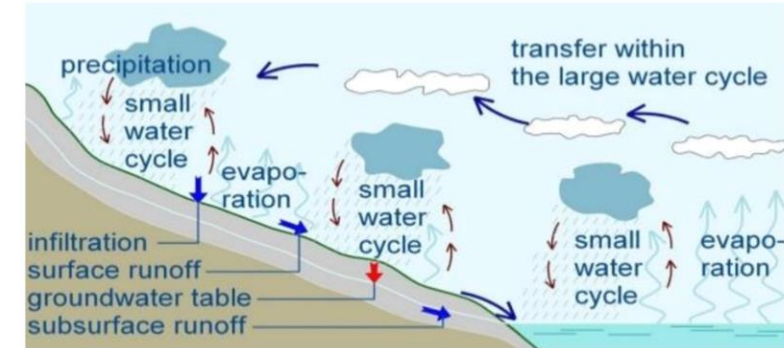
Local climate regulation – mitigation of heat island effect – which also is connected with the fact that urban forests reduce extreme rainfall events by moderating the climate.

Moving rainfall into drier areas

Ecosystems can provide steppingstones for water, where evapotranspiration from forests produce rainclouds that in turn is transported in the atmosphere to other catchments.

Increasing/decreasing rainfall

Increasing evidence that forests attract rainclouds and provide cooler and wetter environments, even providing a source of water.



EXAMPLE FROM THE WESTERN AREA PENINSULA NATIONAL PARK (WAPNP) CATCHMENT SUPPLYING WATER TO FREETOWN, SIERRA LEONE: PARADIGM SHIFT – PATHWAY 4: ECOSYSTEM BASED ADAPTATION



Risks: To ensure water services to society in downstream areas, water resources management is needed in the catchment. However, the WAPNP catchments are threatened by inadequate land use management, and deforestation causing erosion and degradation.

A **water fund** is suggested to preserve the forest and with it the water resource to regenerate degraded parts of the park, invest in alternative livelihood schemes for nearby communities.

The Freetown Water Supply & Sanitation Master Plan Studies identified potential sites for the construction of 10 new dams with reservoirs, to capture and store water for supply to the people of the Western Area at an estimated cost of US \$290 million;

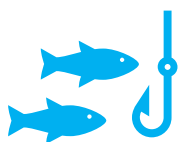
The Government of Sierra Leone hopes to raise the immediate necessary financing needs through grants, loans, public/private partnerships, etc.



PARADIGM SHIFT – PATHWAY 4: ECOSYSTEM BASED ADAPTATION



EXAMPLE: TIMOR LESTE COASTAL RESILIENCE PROGRAM PARADIGM SHIFT - PATHWAY 4 & 6: ECOSYSTEM BASED ADAPTATION & COMMUNITY KNOWLEDGE



Risks: Environmental hazards including unpredictable weather patterns and the impacts of more intense wet seasons and longer dry seasons, sea level rise, more frequent storms, saltwater intrusion, and upstream sedimentation.

Anthropogenic pressure, coastal development, and animal grazing compounds the risks.

One major pressure is the loss of important mangrove ecosystems; (used for fuel wood, construction, grazing animals, cleared for aquaculture.) This is reducing coastal protection, natural fish stocks and marine biodiversity, sediment capture from inland etc.

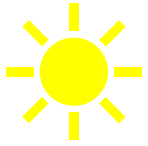
Timor-Leste's Coastal Resilience Program

- **Investment/activities**
- **Location:** Timor-Leste
- **Budget:** Funded by the GEF's Least Developed Countries Fund, the Coastal Resilience Program
- **Implemented** by the United Nations Development Programme (UNDP) in partnership with the Ministry of Agriculture and Fisheries.
- **Status:** Started in 2016
- **Beneficiaries:** seven of Timor-Leste's municipalities. More than 1,031 households have been supported with various diversified livelihood activities.

- **Mapping of the coastline ecosystems** including 4,775 hectares of mangroves.
- **Downstream, fish-farming, mangrove protection and replanting, and livelihood diversification** have been helping local communities take ownership of mangrove restoration and sustainable ecosystem management.
- Nearly 2,000 hectares of mangroves and wetlands have been conserved and restored with more than 82,000 mangrove seedlings planted.
- **Local schools** mobilized students. Households and youth have also been involved planting more than 17,345 multi-purpose trees.
- **Upstream,** the program has focused on complementary **land management** measures with the planting of species such as casuarina, acacia and vetiver grass along riverbanks and on steep slopes.

EXAMPLE: AQUA4SUDAN PARTNERSHIP - RURAL WATER FOR SUDAN PROJECT

PARADIGM SHIFT - PATHWAY 4 & 6: ECOSYSTEM BASED ADAPTATION & COMMUNITY KNOWLEDGE



Water has become increasingly scarce, due to less rainfall and environmental degradation on the one hand; and an increasing demand for water for domestic use, agriculture and pastoralism, industrial and other use on the other. The scarcity of water, leads to conflicts between different water users. At the same time boreholes may be failing requiring robust and low-tech solutions.



Farming community members from Wadi Bargo participating in the construction of water harvesting

- The IWRM approach contributes to the prevention and reduction of conflicts, and even improves social cohesion and mutual understanding between different water user groups (from the same or different ethnic groups).
- Exchanges between villages in a catchment to understand each others' realities and the whole catchment.
- Constructions of check dams and sand dams to provide water supply to people and livestock are successful.
- Construction of water harvesting structures.
- Explaining the difference between administrative and hydrological boundaries is an important step to prevent creating conflicts. Need engagement with the government stakeholders from the start.
- The speed of the implementation depends largely on the community decisions and slowing down may be necessary in order to prevent conflicts in the future. A push for fast implementation is unproductive in the long run.

EXAMPLE: MUKURU INTEGRATED DEVELOPMENT PLAN (NAIROBI, KENYA) PARADIGM SHIFT - PATHWAY 5 & 6: CLIMATE RESILIENT WASH & COMMUNITY KNOWLEDGE



Risks: Rapid urbanization and lack of urban planning meant that the Mukuru informal area in Nairobi, Kenya, was a health hazard, especially in the rainy season, with lack of service provision for a dignified and safe existence for its citizens, increasing climate vulnerability. The highly dense area had lack of toilets, unsafe water supply and solid waste management, and drainage and consequently diseases such as cholera. During rainfall, areas would flood and if fire the fire brigade could not access due to lack of wide roads.



- **Financial:** The informal economy was estimated at 59 Million USD annually which incentivized formal service providers to participate.
- **Organisation:** The project was made possible through the declaration of Mukuru as a Special Planning Area (SPA) in 2017 by the Nairobi County government. The plan started in 2020 with forming 7 interdisciplinary planning consortia, and one support consortia to coordinate and mobilize residents (see diagram). These worked to develop the Mukuru Integrated Development Plan with genuine partnership between government, residents, civil society and academia. Meaningful engagement of residents to identify root causes of vulnerability and solutions (e.g. lack of tenure).
- **Planning standards** were adapted to fit the limited space in informal settlements.
- **Water and Sanitation Services** upgrading including a water network of 1.6 km, 100 our flush toilets connected to a new Simplified sewer system of 1.44, PPDs (10) serving 100 households. Drainage, boreholes, hospital and a school.

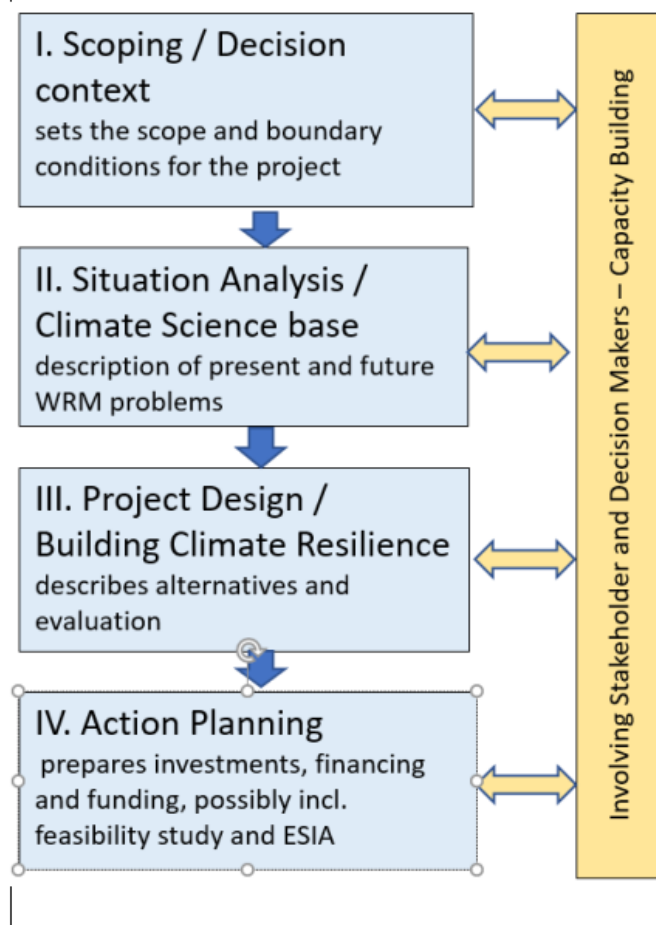


QUESTIONS/DISCUSSION (PART II)

- Do you have any experiences about specific enablers? What made a difference and how did you identify them?
- Other questions, discussion points?

LEARNING OBJECTIVES

Figure 7: Structured approach for project identification and implementation



- I.-IV. How to involve the right stakeholders to address recipients needs and vulnerabilities.
- II. Situation analysis: How to understand and identify enabling conditions for implementation (institutions, capacity, finance, policies, etc.).
- III.-IV. Project design and action planning: How to move beyond project scale for the long-term bringing on paradigm shifts (e.g. scalability and sustainability).

EACH PARADIGM SHIFT HAS FOUR DIMENSIONS



INNOVATION

The degree to which a new approach has been developed (or used differently), has impacted on others outside of its immediate scope, and has supported an innovative and/or risk-taking culture.

e.g. introduce new technologies, tools and approaches or use existing in a new way. Potential for knowledge and learning.



DEPTH

The degree to which an intervention has been taken up in terms of shift in behaviour, markets, systems and decision-making and embedded within the intervention's targeted groups and/or systems.

How *deep* the change is for the system or individual affected, i.e. level of uptake.



SCALE

The degree to which there has been a significant increase in quantifiable results within and beyond the scope of the intervention.

Encourage scalable/replicable solutions and investigate scaling opportunities, e.g., impact on a large number of persons.

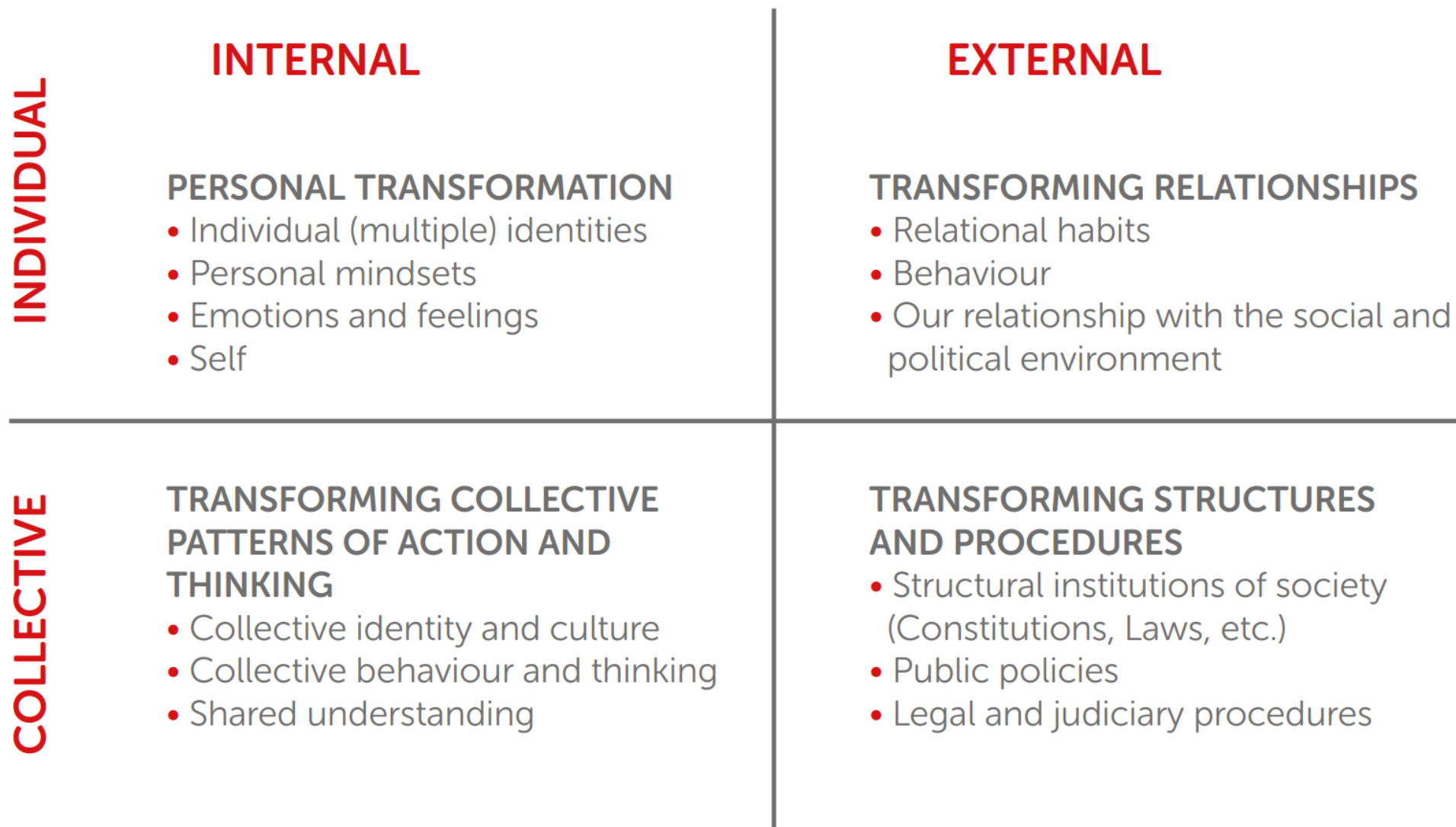


SUSTAINABILITY

The degree to which a structural, cultural and financial base has been created to support the desired change, and is continued over time.

Contribute to long term changes and enabling environment, e.g. laws, policies and regulation and market transformation to address climate change. Overall contribution to climate – resilient pathways.

THE FOUR DIMENSIONS OF CHANGE



WHERE TO START?



“TBU – True But Useless” - instead focus on the “bright spots” i.e. *focus on strengths and not problems.*

- Bright spots: who is interested in change?
- What is already happening we could add value to?
- What capabilities could we build on? What is already working well that we can scale up? Study and clone the bright spots. What are they doing differently? Why are they successful?
- What space/openings exist?
- What external factors in the context might help us?
- Are there new technologies or methodologies which might make a difference to our efforts?

DEFINE PARADIGM SHIFT ALONG THE FOUR DIMENSIONS



All GCF-supported project proposals will be required to ***define Paradigm Shift within the context of the project:***

- Are all four dimensions equally relevant and important? What will a shift look like within each dimension?
- Proposals should describe how the project is expected to contribute to that paradigm shift, taking into account and explicitly identifying the other conditions, actors and processes that will influence paradigm shift.
- Monitor and report annually on Paradigm Shift and its four dimensions: innovation, depth, scale, sustainability, for example, who will be involved, what data will be used to inform the assessments?



INNOVATION

The degree to which a new approach has been developed (or used differently), has impacted on others outside of its immediate scope, and has supported an innovative and/or risk-taking culture.



“Innovation is doing something new or doing something old in a new way.”

Water innovations are designed to *“contribute to the continuous improvement of water management, in terms of efficiency and effectiveness.”*

- It must be new and it must have value (for many people)
- Stages of innovation: Innovations must be generated, financed, diffused and applied (“valley of death” for innovations).
- Radical or incremental *innovations*
- **Technological Innovation** – Tapping novel sources of freshwater, smart infrastructure, waterless design to reduce system dependence on water, usage efficiency technologies, water reuse and recycling.
- **Organisational or business innovation** – e.g. a new business model (NBS), coordination mechanisms
- **Process, product and services innovation** – Automating tasks to streamline workflow, e.g. using tools, permeable asphalt

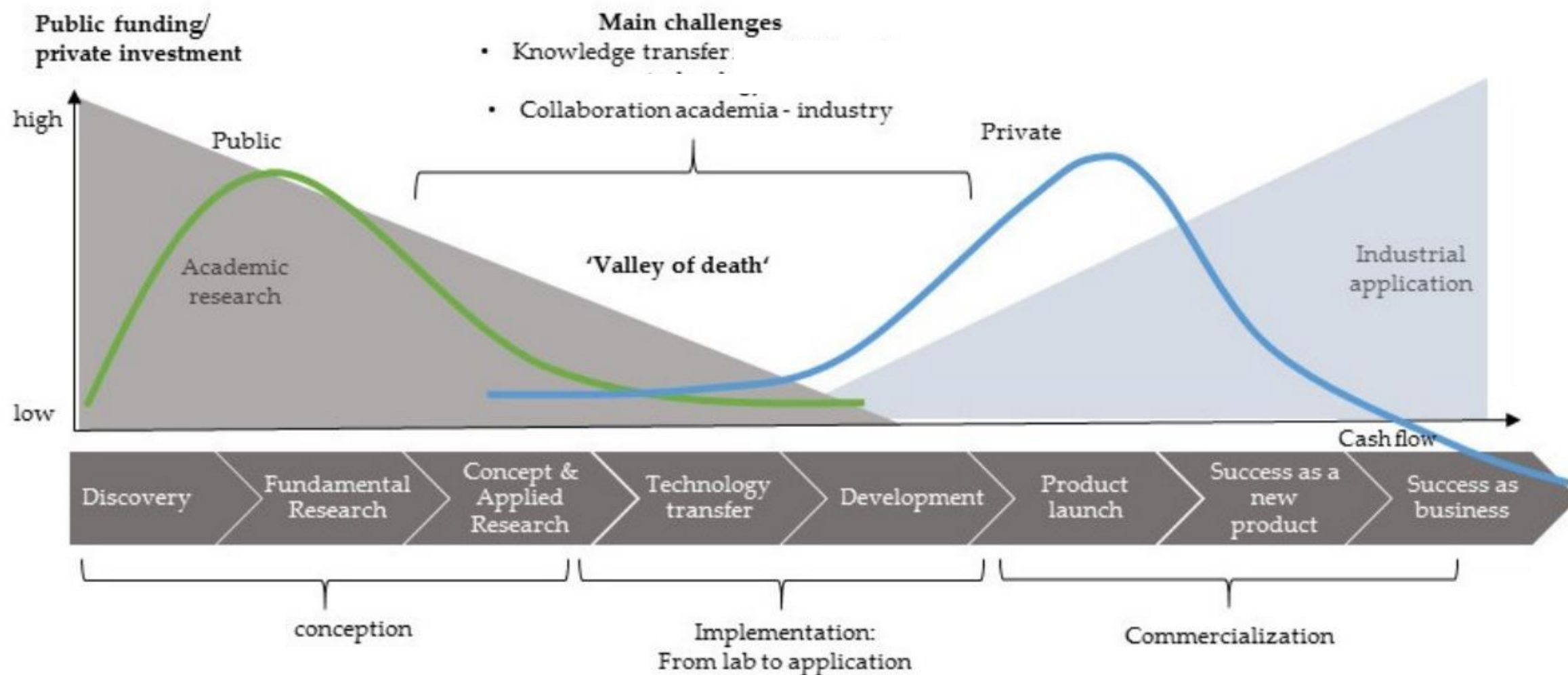


INNOVATION

The degree to which a new approach has been developed (or used differently), has impacted on others outside of its immediate scope, and has supported an innovative and/or risk-taking culture.



STEPS OF THE (TECH) INNOVATION DEVELOPMENT PROCESS –“VALLEY OF DEATH”





INNOVATION

The degree to which a new approach has been developed (or used differently), has impacted on others outside of its immediate scope, and has supported an innovative and/or risk-taking culture.



Taking the **time** for innovations is needed. *Initial* trade offs with maximizing efficiency and effectiveness.

Innovations need entrepreneurial personalities that are open to innovation and experimentation.





INNOVATION

The degree to which a new approach has been developed (or used differently), has impacted on others outside of its immediate scope, and has supported an innovative and/or risk-taking culture.



BALANCING INNOVATION WITH WHAT ALREADY WORKS

Innovations:

- No routines, less capacity
- Uncertainty – does it work?
- Needs time to get used to
- Need to find funding to experiment
- Needs experimentation (and risk taking)



Business as usual:

- Established routines and capacity
- Certainty – we know it works
- Effectiveness
- Established budget
- No need to experiment or take risks



SCALE

The degree to which there has been a significant increase in quantifiable results within and beyond the scope of the intervention.



Project

- Small scale, clear boundaries, simple governance. →
- Room for innovation. →
- Project funding. →
- Simple land ownership. →
- Project interests. →
- Involvement of core group with internal high trust. →
- Creative, enthusiastic entrepreneurial leaders that are convinced of urgency. →

Landscape scale



- Multi-level governance, legislation barriers/enablers when pilot needs to be accepted as mainstream.
- Innovation needs to be mainstreamed
- Structural financing, innovative arrangements.
- Tenure issues – multiple owners.
- Diversity of interests and agendas, cooperation needed with more actors and institutions.
- Representation of all stakeholders needed - Inclusive/exclusive participation. Trust/mistrust plays a role for engagement.
- Leadership is linked to larger organization. Not everyone thinks the intervention is urgent – need awareness raising.

Transboundary scale

- *Shared willingness, strategies, aims and objectives are needed between countries.*
- *Legal issues across countries.*
- *Leveling playing field: timing of decision-making, speed, approach can be different and can obstruct cooperation between countries.*
- *Decision-making support (knowledge base) different between countries.*
- *Trust and resource sharing agreements between countries (cf conflict management).*



SCALE

The degree to which there has been a significant increase in quantifiable results within and beyond the scope of the intervention.

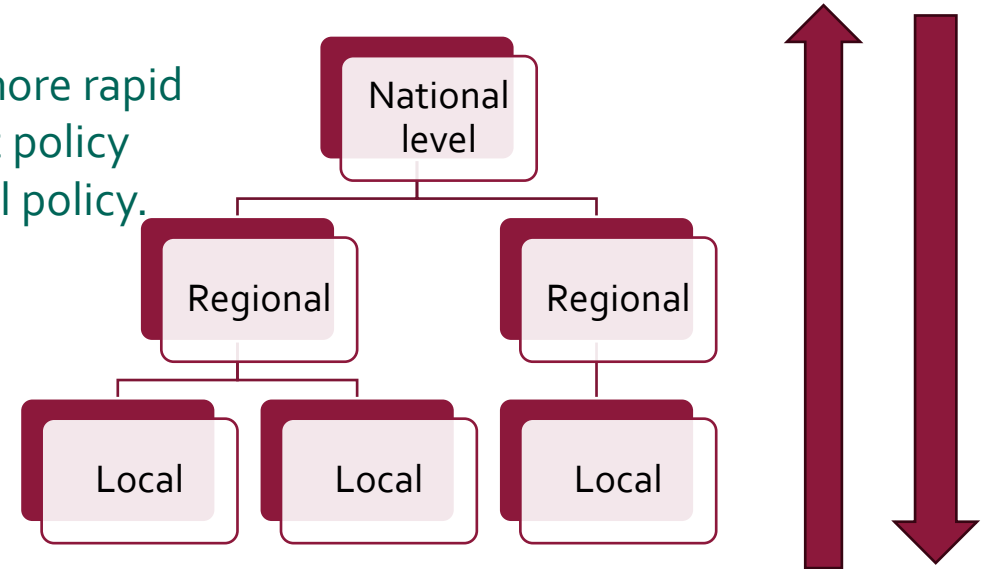


GREEN
CLIMATE
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MULTI LEVEL GOVERNANCE –BALANCING TOP DOWN AND BOTTOM UP

Centralized governance, has initiative from top down, and enables a more rapid response to external pressures, to achieve certain goals. It ensures that policy implementation at the local level is coordinated and reflects the central policy.

However, a **top-down approach can fall short on ownership** from lower levels of governance where the actions are (or should be) taking place. In addition, decision making at the top, relies on the quality of the information transmitted from the bottom, which is not always accurate or up to date.



In contrast, a **bottom-up approach, (locally led)** means better buy-in and increased likelihood of the change lasting **long-term**, and reflect an actual situation informed by connectivity or information sharing from the grass root or reality. However, the more decentralised planning and decision-making is, the more local governments must reinvent themselves, and often they lack the capacity. As such, a strong decentralised society, although they connect horizontally with other local governments, policies and implemented solutions can differ between the national and the local level and between other local governments.

A stress test is a desk exercise combining spatial information on the climate sensitivity (vulnerability) of various objects and functions in a certain area. It sees how far the system can take climate stress (waterlogging, heat, flood and drought). The difference in approach of Netherlands and Sweden is striking – and illustrates the role of a nationally coordinated initiative.



Sweden

Municipal planning monopoly (bottom up initiative)

Swedish municipalities are prepared for extreme weather – e.g. about 60% of the municipalities have done stress tests. 40% have done adaptation plans. Municipalities are supported by the Swedish Water and Wastewater Association (Svenskt Vatten) but the stress test is not mandatory.

Some municipalities are ahead due to individual planners and city leadership. Gothenburg is planning for measures in concrete projects, delaying and conveying water. Made video to make citizens aware: [Skyfallet som kan förändra Göteborg \(youtube.com\)](https://www.youtube.com/watch?v=Skyfallet)



The Netherlands

Planning for water coordinated at national level

Climate adaptation is nationally coordinated via the [Delta Program](#). Stress test is supported by common methodology and map of hazards: [Klimaat-effectatlas](#) with helpdesk.

All the municipalities, district water boards, provinces, and the central government have conducted stress tests, in collaboration with various stakeholders to assess climate risks. This is followed by risk dialogues to collaborate across sectors on solutions.

[Instructions for the standardised stress test Spatial Adaptation in the NL:](https://klimaatadaptatienederland.nl/en/policy-programmes/national-strategy/delta-programme-spatial-adaptation-dpra/delta-plan-spatial-adaptation/stress-test/) <https://klimaatadaptatienederland.nl/en/policy-programmes/national-strategy/delta-programme-spatial-adaptation-dpra/delta-plan-spatial-adaptation/stress-test/>

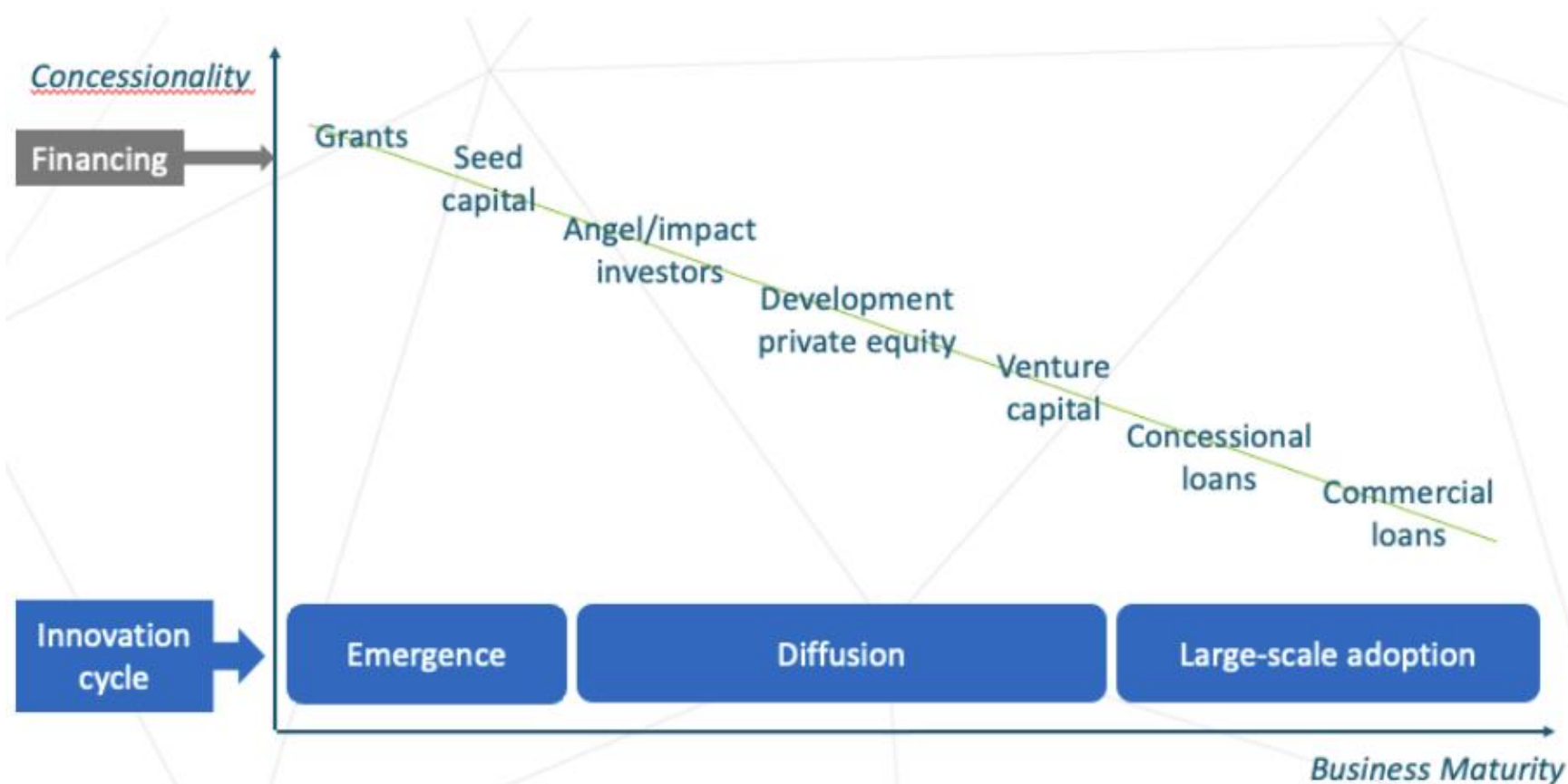


DEPTH

The degree to which an intervention has been taken up in terms of shift in behaviour, markets, systems and decision-making and embedded within the intervention's targeted groups and/or systems.



Sequencing of different financial instruments, for nature-based solutions, first relying on grants and increasingly on market mechanisms as they develop



For example, Cloud Forest Blue Energy Mechanism based on a combination of domestic investments (loans or equity) and payments for ecosystem services.

(Source: GCF, making blended finance work for NBS).



DEPTH

The degree to which an intervention has been taken up in terms of shift in behaviour, markets, systems and decision-making and embedded within the intervention's targeted groups and/or systems.



Strategic support is needed for private service provision to scale up and contribute to “depth” (i.e. not only number of persons served but how much their quality of life improved).

Example Sanitation Service Providers:

Need access to capital for equipment and sustainable, climate-resilient infrastructure to scale up.

USAID Water, Sanitation, and Hygiene Finance (WASH-FIN) helped design of business plans, and support in negotiating a loan from a local bank.





SUSTAINABILITY

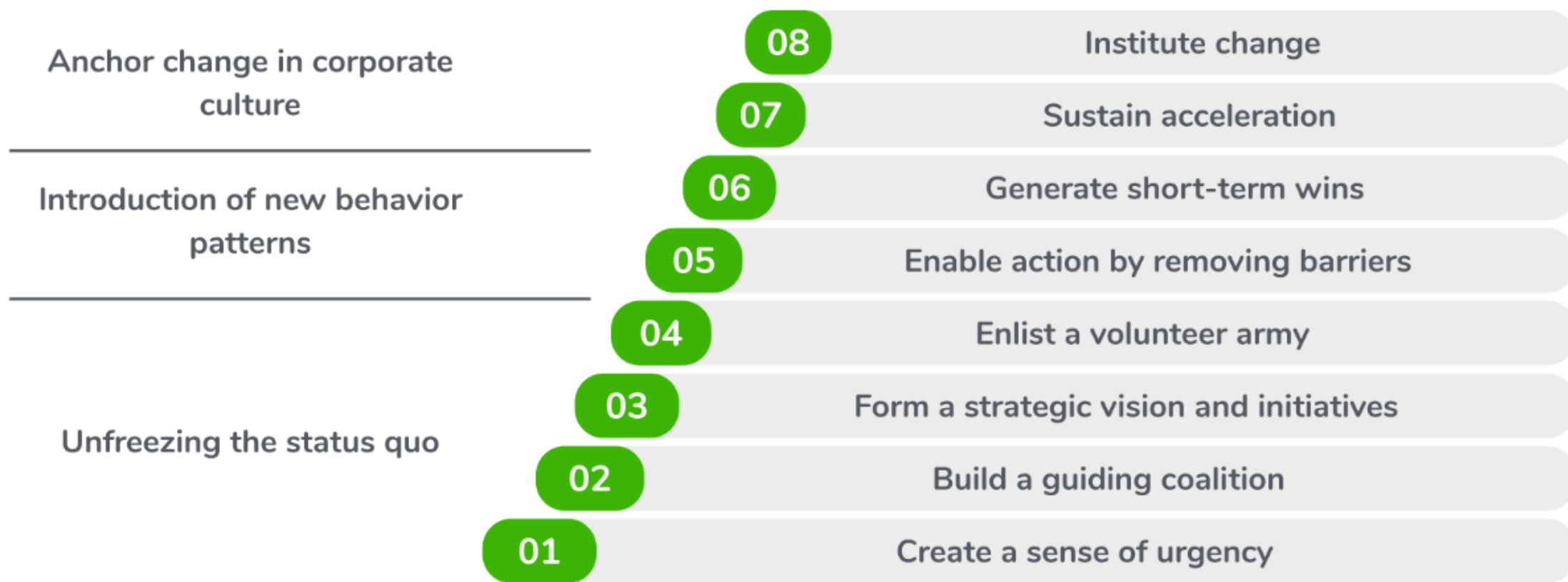
The degree to which a structural, cultural and financial base has been created to support the desired change, and is continued over time.



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INSTITUTIONAL CHANGE KEY FOR ENABLING SUSTAINABLE PARADIGM SHIFTS

Change Management model by Kotter



THEORY OF CHANGE

VISUAL ILLUSTRATION OF THE MAIN ELEMENTS TO CONSIDER IN A THEORY OF CHANGE ANALYSIS (LINK TO NEXT SESSION)

Theory of change: 'Description of a sequence of events expected to lead to a particular desired outcome', Rick Davies

CONTEXTUAL DRIVERS

Socio-economic, political, Technological factors

Existing policies, practices, beliefs

Actors, stakeholders, networks in research, policy and practice, power relations

Capacity of target groups to respond to and use research

Receptiveness of context

Organizations, resources, systems, skills

LONG-TERM, LASTING CHANGES

MEDIUM TERM CHANGES

Sphere of indirect influence – policy shapers, knowledge networks, planners, practitioners, stakeholder groups

SHORT-TERM CHANGES

Sphere of direct influence – partners, collaborators, stakeholders
immediate programme target groups

Sphere of control
Programme strategy:
Activities, stakeholder engagement; outputs

Outputs = products + comms + networks

Awareness + engagement of stakeholders

Use by main actor / stakeholder groups

Changes in e.g. knowledge, attitudes, skills, relationships

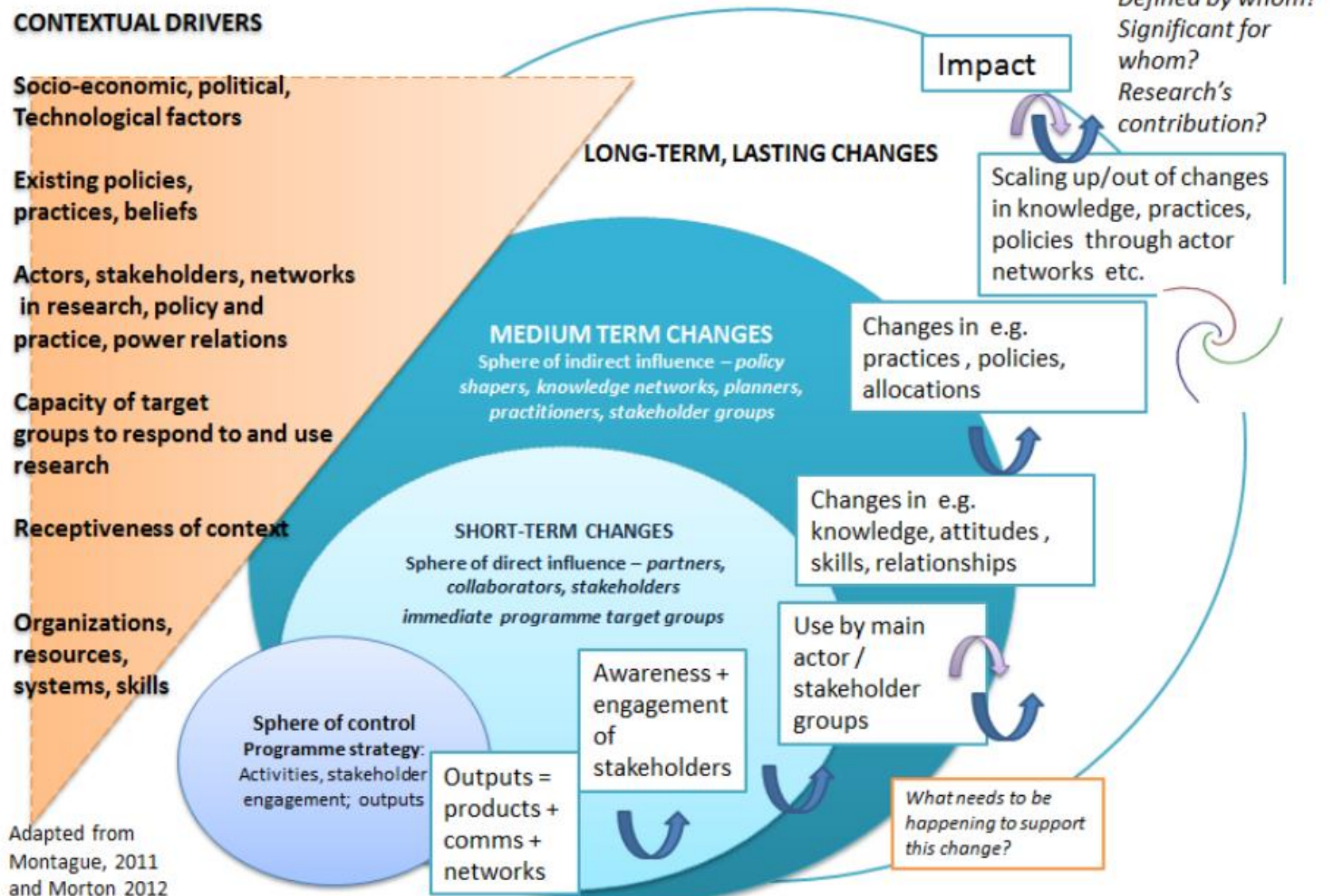
Changes in e.g. practices, policies, allocations

Scaling up/out of changes in knowledge, practices, policies through actor networks etc.

Impact

For whom?
Defined by whom?
Significant for whom?
Research's contribution?

Adapted from
Montague, 2011
and Morton 2012



QUESTIONS/DISCUSSION (PART III)

- Do you have any ideas and questions about the paradigm shift you want to address in your project?
- Other questions, discussion points?