



FCFA-FRACTAL Seminar

Understanding Urban Governance: Entry points for climate science

Webinar presentations

15 April 2016



Understanding Urban Governance: Entry Points for Climate Science to Inform Development Decisions

Dianne Scott (ACC)

FRACTAL team

15th April 2016

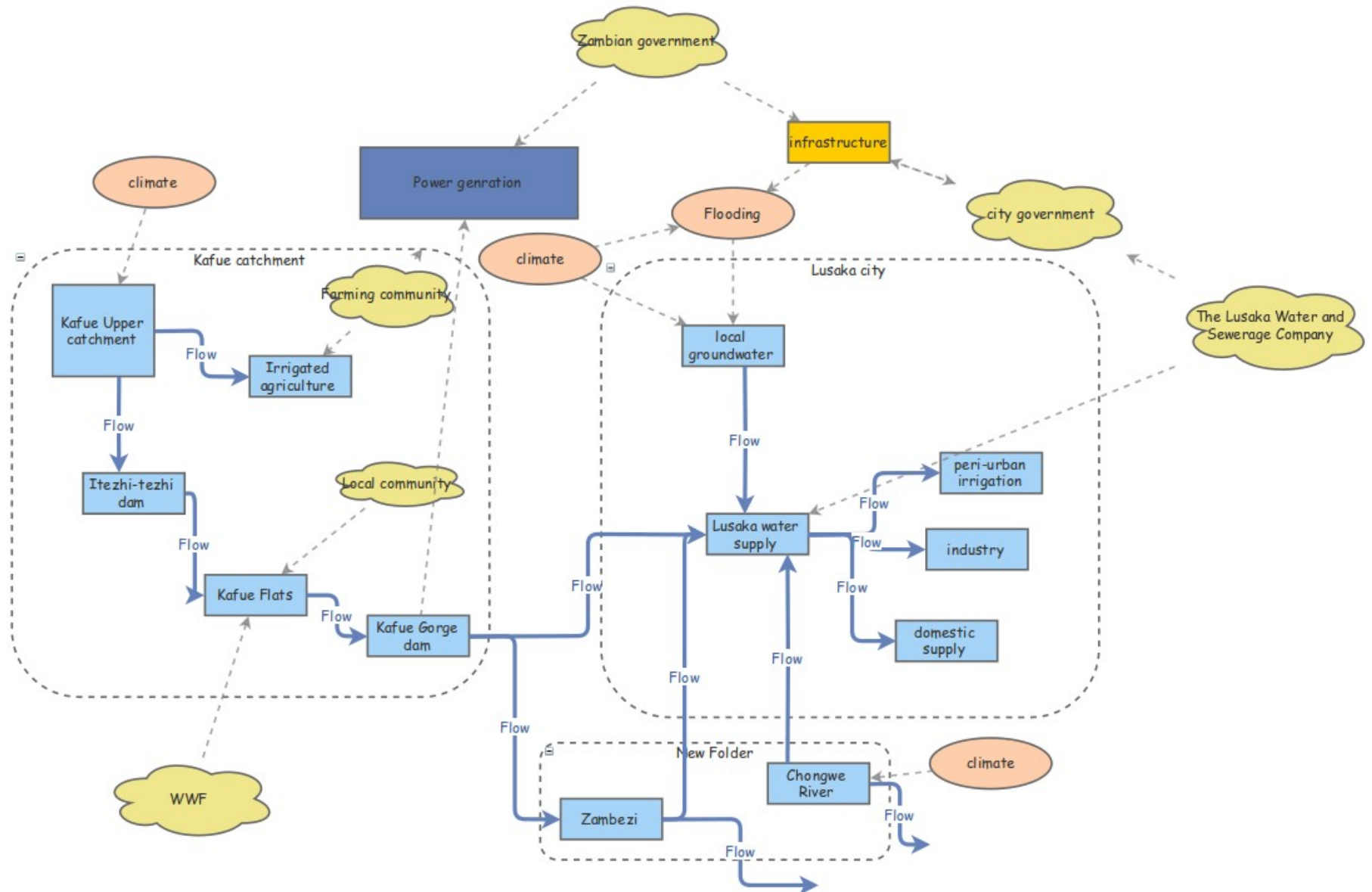
Structure of presentation

- Aim
- Urban governance in the FRACTAL project
- Urban governance in the Anthropocene
- What is urban governance?
- The concept of an urban governance configuration
 - Definition
 - The analytical elements
 - Decision-making
- Conclusion

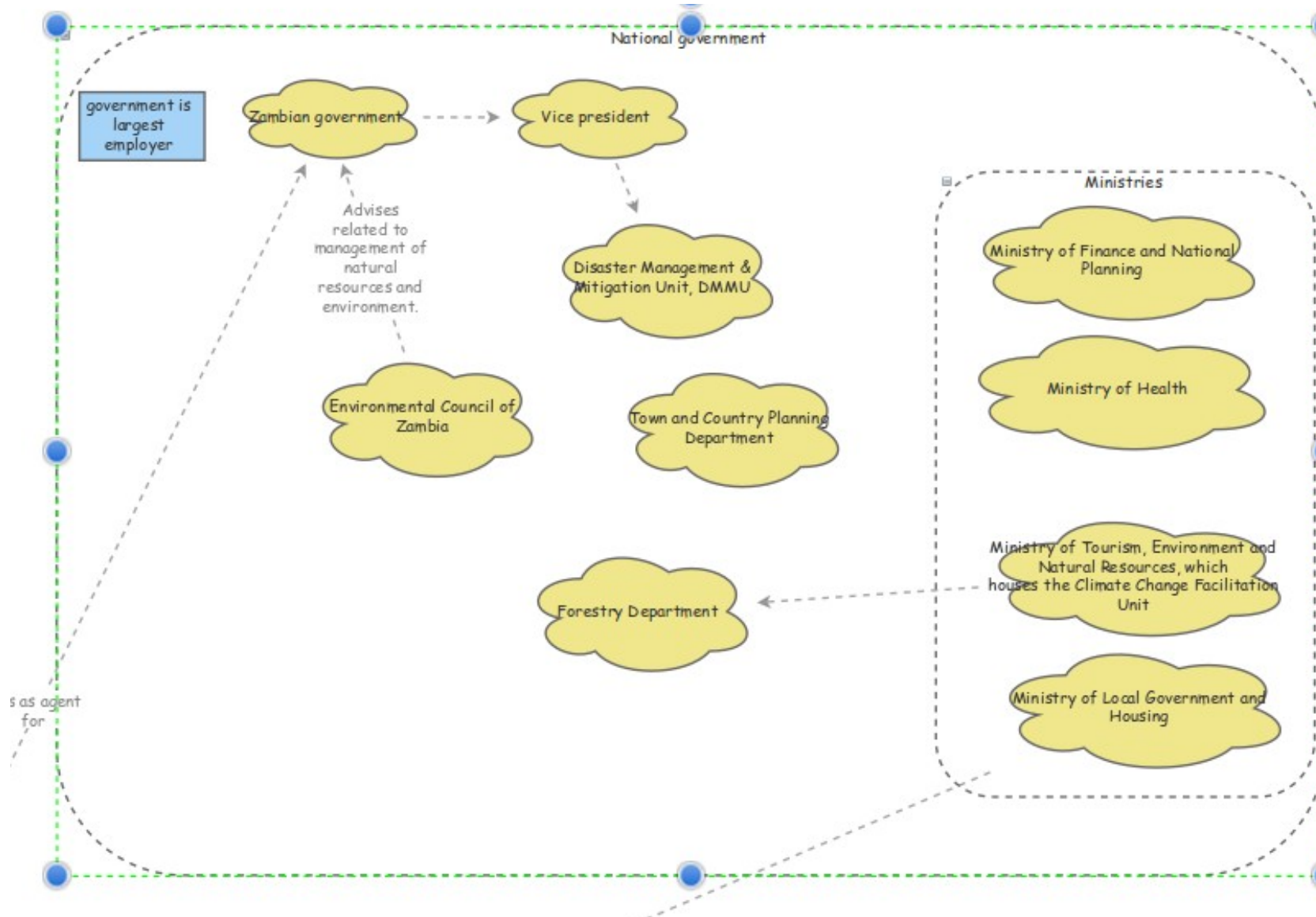
The application of the concept of urban governance configurations in the Nexus cluster

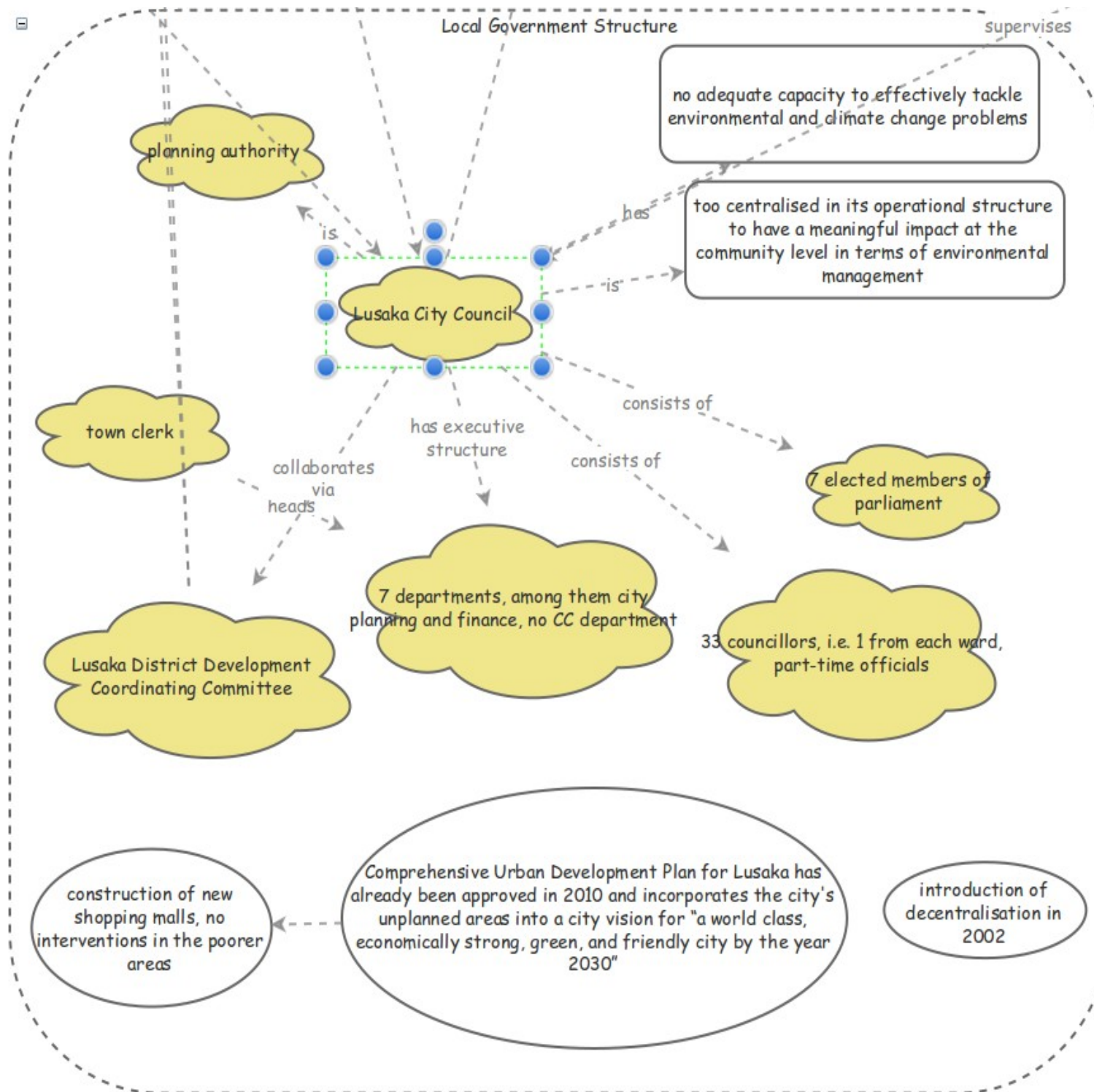
- Lusaka city region
- Nexus cluster team (Interdisciplinary)
- Development of *conceptual model* of the spatial configuration of “people, institutions, water flows, climatic changes, hydraulic and energy technologies” governing water and energy in the face of climate change (Boelens et al, 2016)
- Work in progress

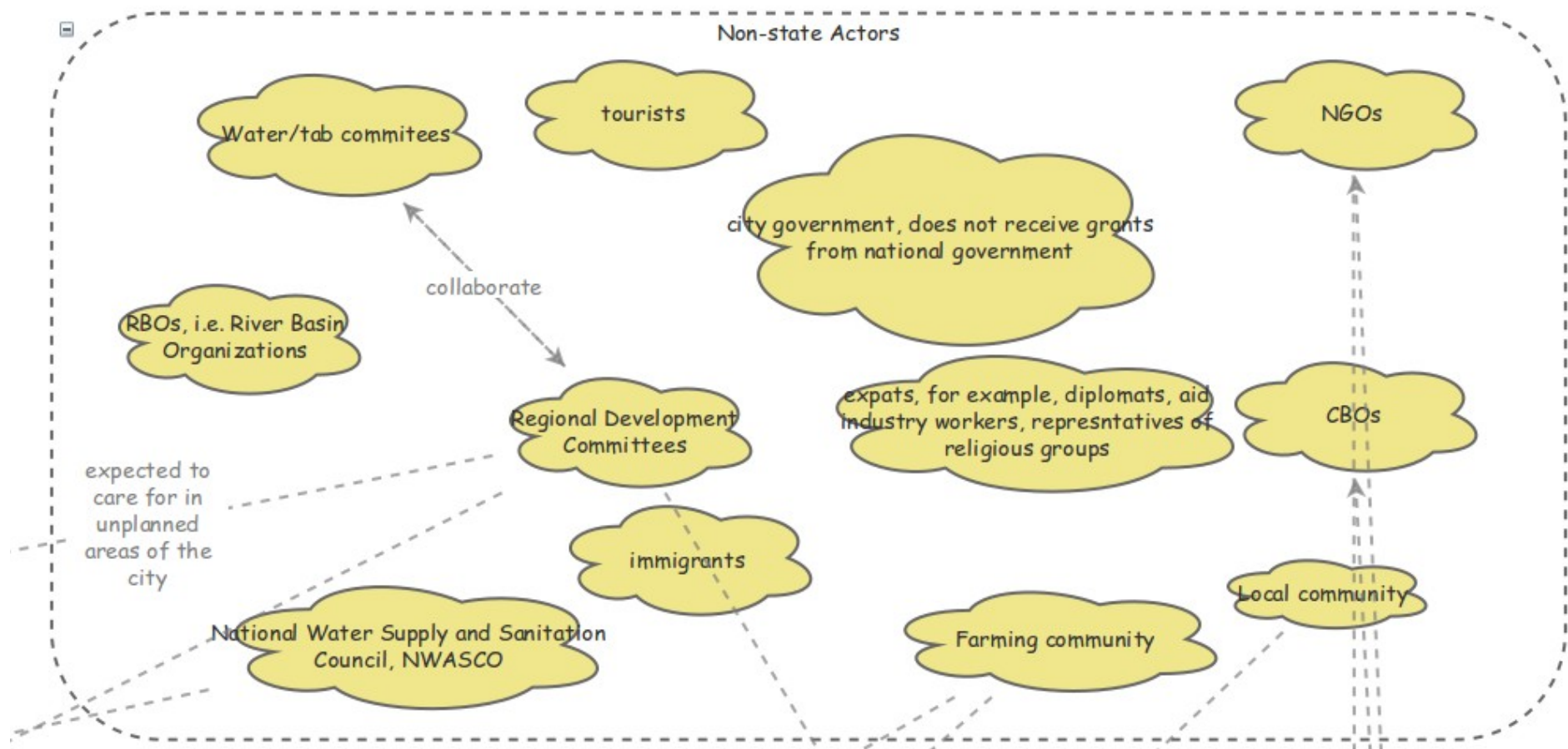
Initial simple multi-agent city model

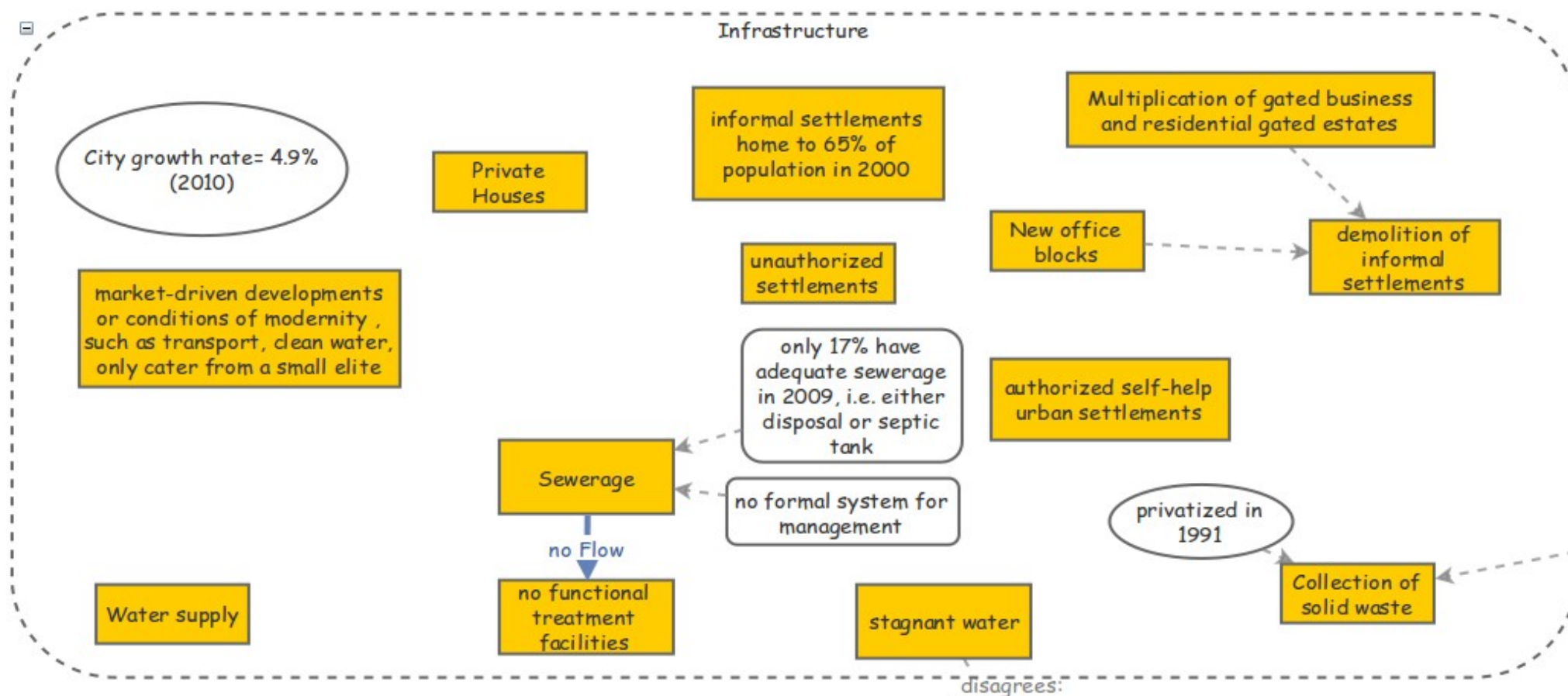


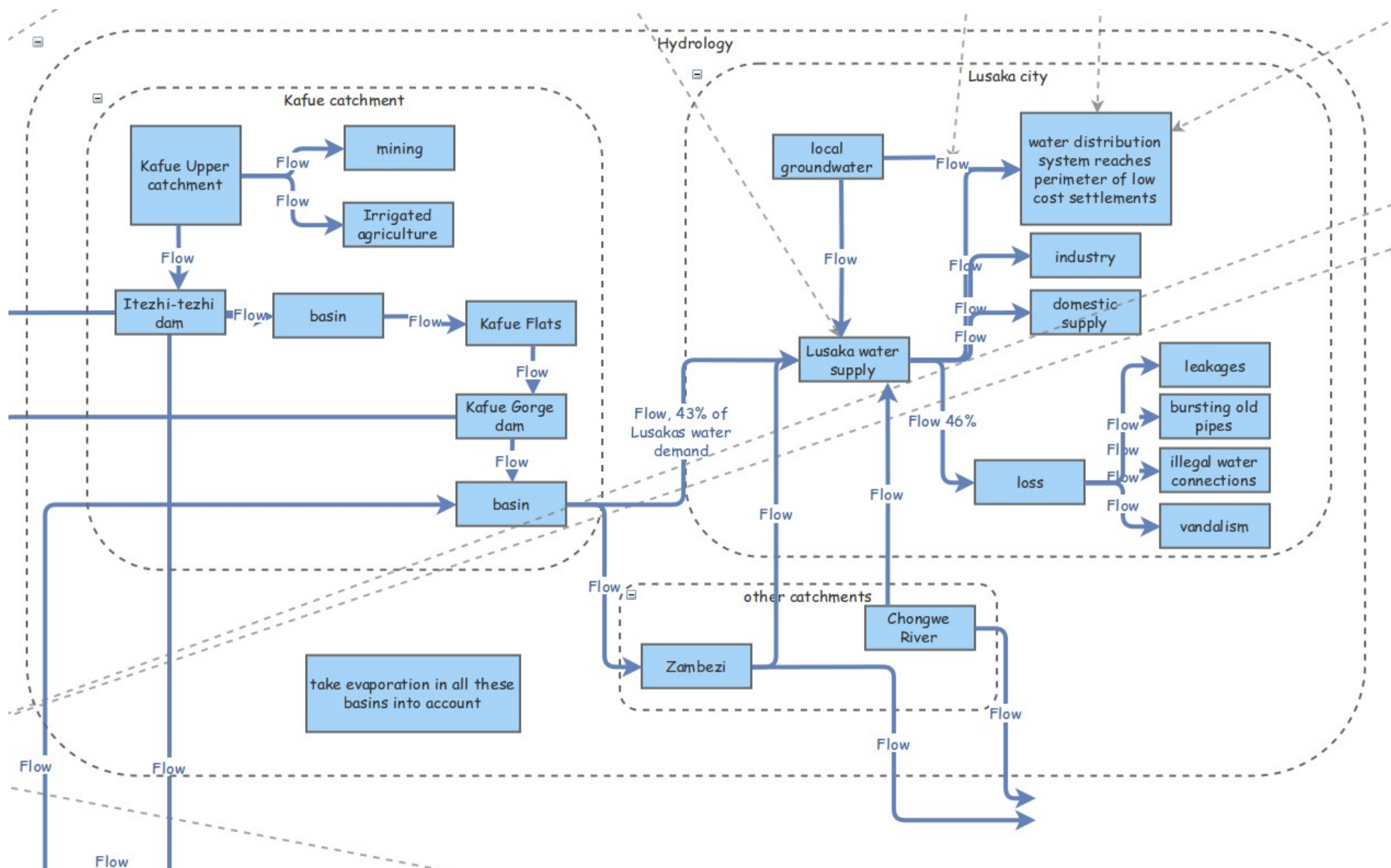
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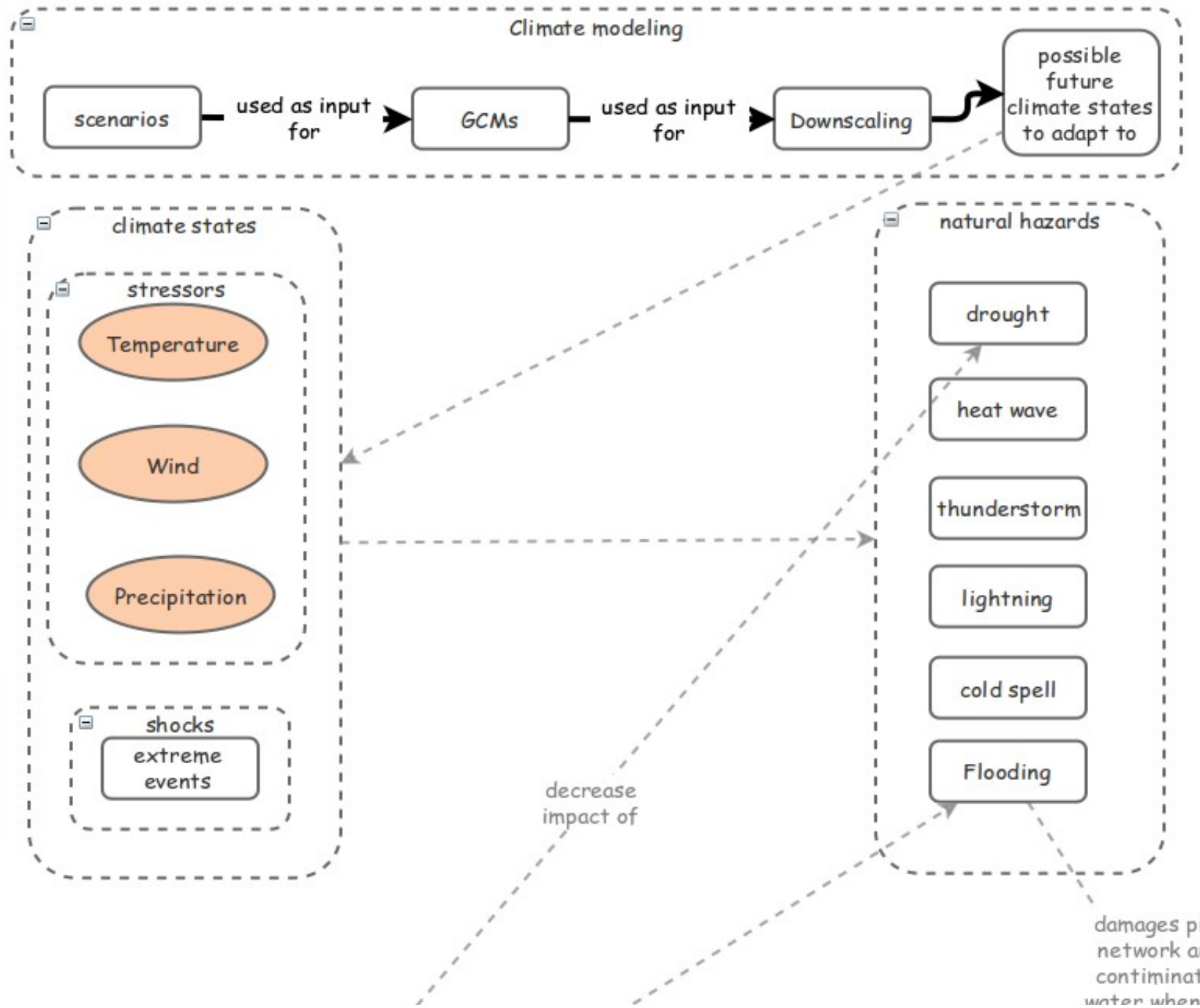














Political Economy of Long-Lived Decisions

FCFA – FRACTAL Seminar



The role of FCFA and our brief from them



- Specifically focussed on influencing long-lived decisions on the 5+ to 40 year timescale
- Encourages the formulation and presentation of scientific insight into 'management decision making information that can be shape outcomes

Long lived investments with sunk capital costs



(typically infrastructure)

Long term planning and policy making –



Creates vulnerability and long-lasting implications (sector dev plans)

Interventions with long-lead times



(R&D, rural to urban migration from highly impacted areas)

Core Questions to support the research consortia focus their work to target key decision makers in Africa :

- **What long lived economic decisions are most relevant** to influence to respond to climate change adaptation imperatives?
- **Which institutions and processes exert the greatest influence** on long lived economic decisions?
- **What is the most appropriate strategy for influencing** these institutions and processes?

The approach to exploring the political economy



Define the types of
'adaption relevant'
long-lived economic
decisions

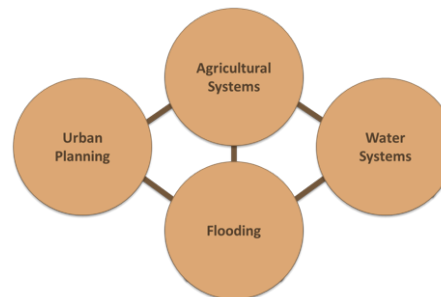
Deliver a framework
for analysing who
makes decisions in
different adaptation
'domains'

Analyse appropriate
case studies to
identify to build
insight into who
makes key decisions

We see five categories of 'economic decisions' that are relevant when thinking about climate change adaptation

Category	Description
1 Infrastructure	<ul style="list-style-type: none"> Decisions about the location and design of hard physical infrastructure Covering water, energy, transport, ICT, and agriculture Includes economic and social infrastructure
2 Natural Resources Infrastructure	<ul style="list-style-type: none"> Decisions about the management, use and conservation of natural resources Covers aquatic, terrestrial and marine ecosystems
3 Economic structure and strategy	<ul style="list-style-type: none"> Decisions that influence the prevailing economic development model and industrial strategy being pursued Includes decisions about spatial planning of industry, settlements/cities
4 Social policy / systems	<ul style="list-style-type: none"> Decisions that impact social development – human capital formation and protection Includes decisions/frameworks that govern welfare, labour rights, health, land rights and poverty alleviation
5 Institutional flexibility	<ul style="list-style-type: none"> Relevance: Some institutional mandates support flexibility, while others create rigidity or constrain adaptation (principles vs. rule-based systems) Issues to consider include institutional mandates, accountability and autonomy

Out of scope: overarching governance issues – accountability, role of civil society etc.



Focus of analysis

- Providing a clear typology of all the 'types' of economic decisions relevant in the context of climate adaptation
- Clarifying which have the most long-lived impact i.e, which have the greatest potential to create 'lock-in' and limit resilience in non-stationary environments

Focus of analysis

- Identifying – based on an initial assessment of FCFA research consortia focus areas – a limited set of adaptation 'domains'
- Each domain reflects a broadly distinct set of adaptation challenges and maybe associated with different decision making institutions and institutional dynamic

Focus of analysis

- Identifying a set of case studies within each domain - to ground truth hypothesis about who makes decisions
- Identifying the relationship between decision making at different scales (, trans-boundary, national, district) and across decision areas (policy, planning and implementation)³

We see five 'types' of economic decisions that are relevant when thinking about climate change adaptation



Category

Description

Infrastructure

- Decisions about the location and design of hard physical infrastructure
- Covering water, energy, transport, ICT, and agriculture
- Includes economic and social infrastructure

Natural Resources Infrastructure

- Decisions about the management, use and conservation of natural resources
- Covers aquatic, terrestrial and marine ecosystems
- Includes the structure and management of land rights

Economic structure & strategy

- Decisions that influence the prevailing economic development model and industrial strategy being pursued
- Includes decisions about spatial planning of industry, settlements/cities

Social policy and systems

- Decisions that impact social development – human capital formation and protection
- Includes decisions/frameworks that govern welfare, labour rights, health and poverty alleviation

Institutional flexibility

- Cutting-across the four categories of decision making we've identified Institutional Flexibility as an important additional economic consideration
- Some institutional mandates support flexibility, while others create rigidities or constrain adaptation (principle vs. rule based systems)
- Issues to consider include institutional mandate, accountability and autonomy

Out of scope: overarching governance issues – accountability, role of civil society etc.

Decisions are linked and take place at multiple scales



- To pin-point areas where scientific insight can be influential, it can be useful to think not only of discrete 'types' of economic decisions (over infrastructure vs. economic strategy etc.), but of 'decision-making chains'.



Different spatial scales of decision making are relevant to the FCFA.

National Level

Sub-national Level

City Level

Trans-boundary level

A set of key research questions will inform our analysis and support development of the Framework report



Thematic questions

What long lived economic decisions are most relevant to influence in order to respond to climate change adaptation imperatives?

Which institutions and processes exert the greatest influence on long lived economic decisions?

How do decision makers use scientific evidence on climate change?

What is the most appropriate strategy for influencing these institutions and processes?

Sub-questions

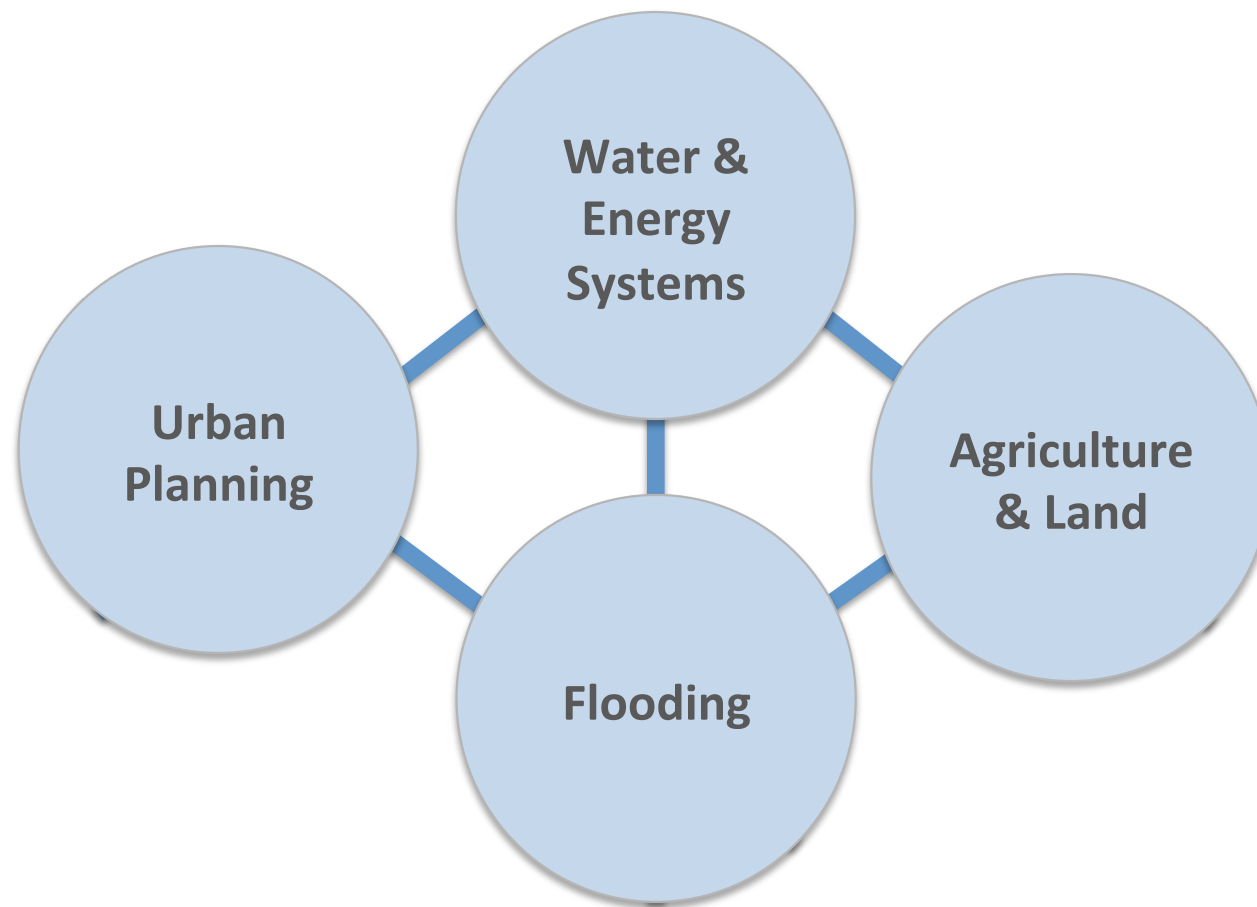
- What are the key adaptation imperatives in Africa?
- How do imperatives differ across regions/countries?
- What economic decisions have the most material impact on the ability to adapt?
- What economic decisions support resilience?
- Which institutions have the greatest financial and policy making power in Africa?
- Who/what influences the allocation of resources and design of policy ?
- What are the different decision making models that guide long lived economic decisions?
- What is the academic evidence for how science informs climate change policy?
- What is the practical evidence for how science is used to inform decisions in Africa (case studies)?
- What prevents decision makers from using science effectively?
- How should decision makers be engaged?
- Who should engage decision makers?
- What are the channels/opportunities for engaging decision makers?
- When should decision makers be engaged?

How can FCFA research consortia research be designed to have the maximum influence on institutional decision making relevant for climate change adaptation, in Africa ?

Based on our initial understanding of the FCFA research consortia agendas – we see four major ‘domains’ of adaptation decisions that are relevant to consider



Four main domains of decision making



Matching FCFA research consortia 's to cases



Uncertainty Reduction in Models for Understanding Development (UMFULA)

Focussing on: resolving knowledge gaps in models and decision making processes in central and southern Africa

Pilots: water availability and trade-offs in lower Shire in Malawi and Rufiji in Tanzania

Future Resilience for African Cities and Lands (FRACTAL)

Focussing on: resolving climate information down to the city scale and integrating it into planning and decision responses

Pilots: primary focus on Windhoek, Maputo, Lusaka

Integrating Hydro-Climatic Science into infrastructure & Livelihoods decisions in East Africa (HyCRISTAL)

Focussing on: translate quantitative hydrological models into decision making data. Use this to explore WASH impacts in primarily urban areas.

Pilots: primary focus on Kigali, Kampala and Kisumu and wider Lake Victoria Basin

African Monsoon Multidisciplinary Analysis (AMMA 2050)

Focussing on: improving data to track monsoon patterns in West Africa

Pilots: urban water infrastructure in Ouagadougou, drylands Agriculture in Senegal

Rufiji Basin, Tanzania

Maputo,
Mozambique

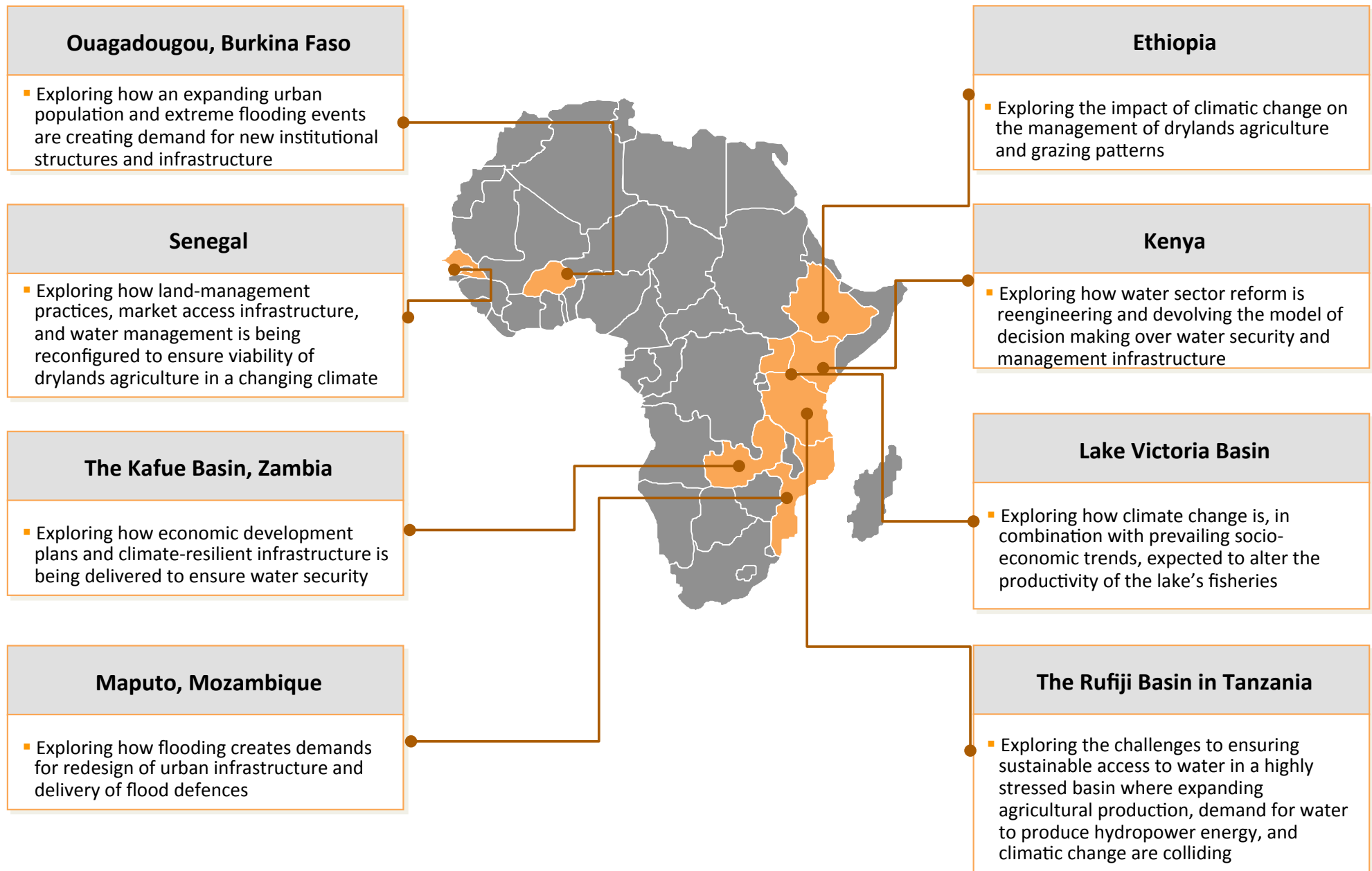
Lusaka, the Kafue
Basin, Zambia

Lake Victoria Basin

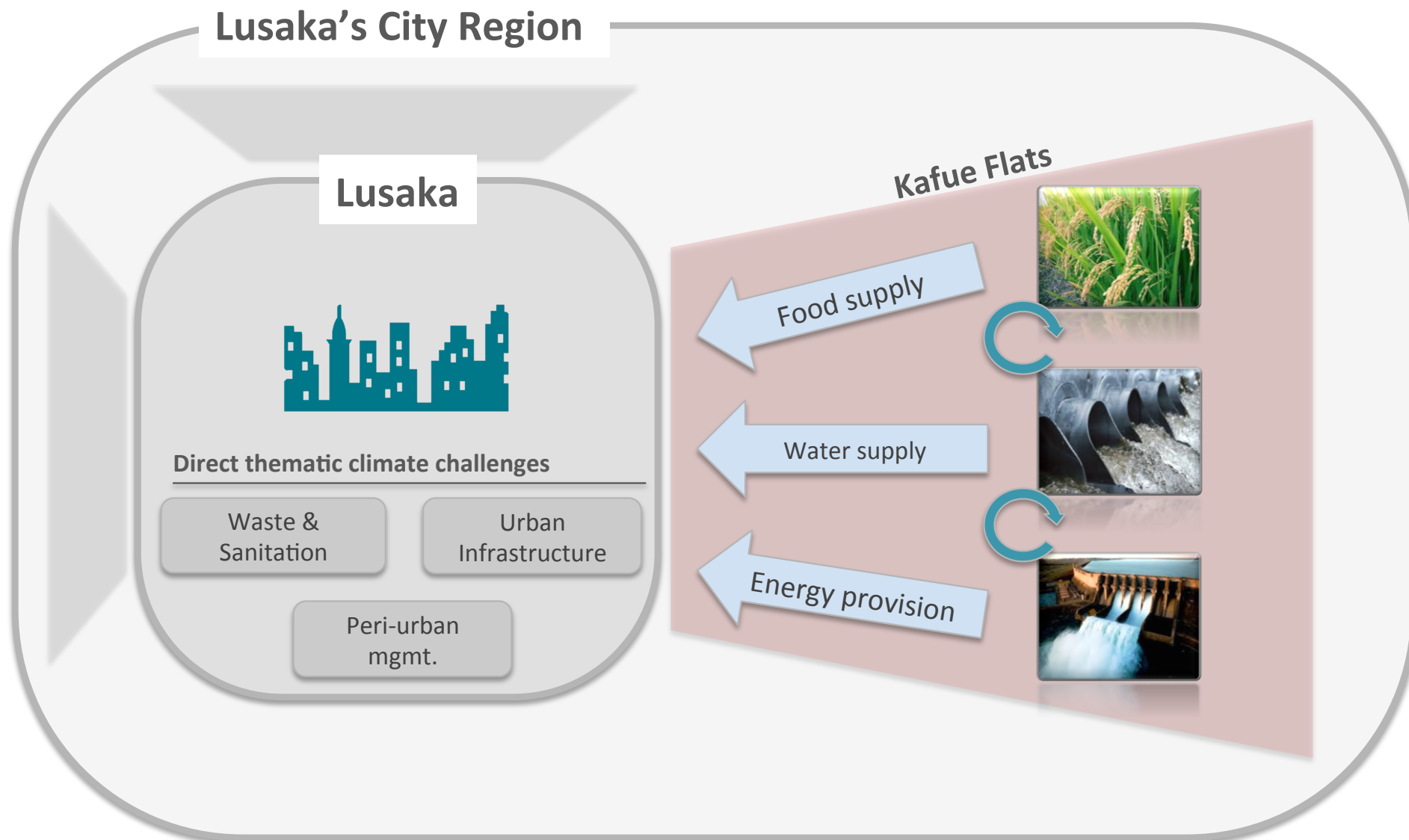
Ouagadougou,
Burkina Faso

Agriculture,
Senegal

From those domains, the team conducted eight case studies



Lusaka case study



Lusaka institutional decision making model



International model

Bi-lateral
donors

Development
Finance Inst.

International
NGO's

REC's

Regional
governments

National model

TANESCO

Water
Resources
Group

River Basin
Authorities

Min of Water

National
Planning
Commission

Water utilities

Local NGO's

District
Councils

Min of
Agriculture

Treasury

SAGCOT

Regional Water
Utility

Min of Energy

National Water
Board

RUBADA

Min of Tourism

Office of the
President

Parastatal
companies

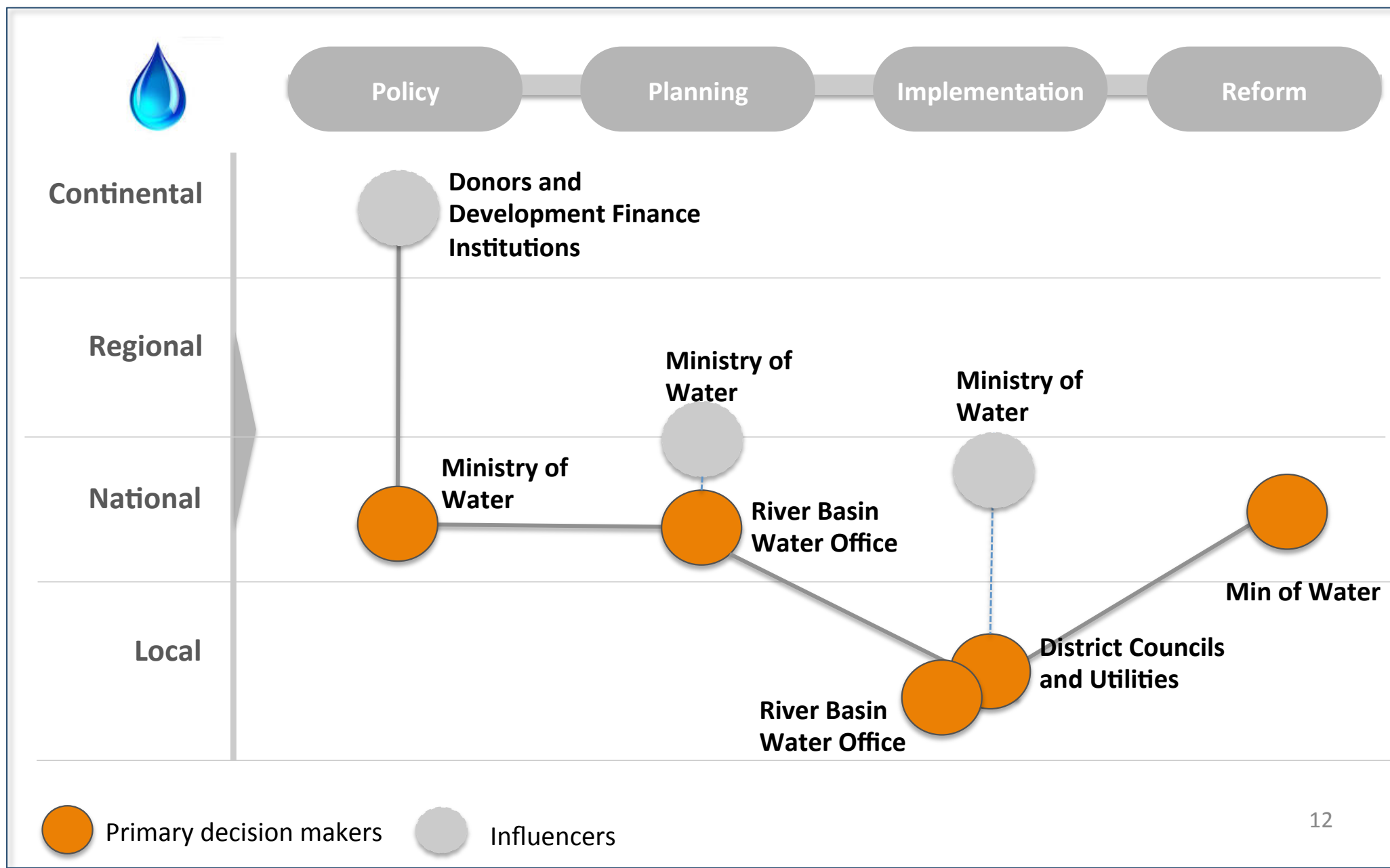
Public-Private
Entities

Civil society

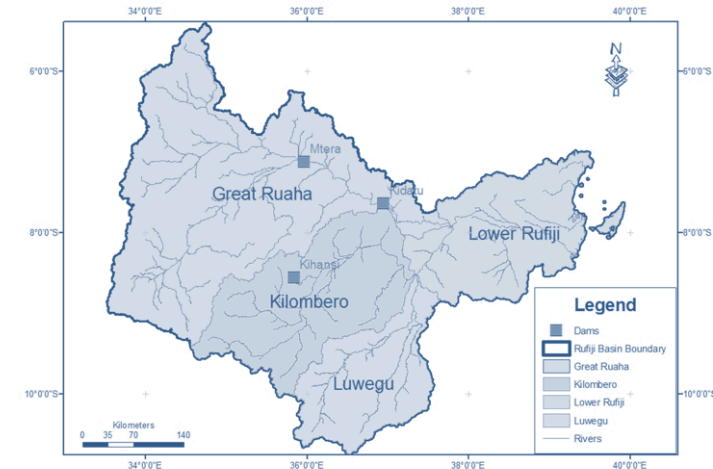
Local/District
entities

Gov Departments

High-level analysis of the key institutions involved in decisions over multi-sector water security infrastructure in Tanzania



Listening to feedback from FCFA research consortia we heard two big issues



Urban issues

- **Service Management:** utility and water management infrastructure
- **Planning:** urban land and water use planning
- Extreme event prediction and response

Basin challenges

- **Nexus challenges:** managing competing water, energy and agriculture trade-offs
- **Transboundary management:** managing fisheries and shared river basin resources



Identify the strength of national planning bodies

- Important role in shaping national development and economic strategy: power to forge a national vision and promote decisions about trade-offs in the allocation of resources between sectors or compile individual sector plans developed by more powerful ministries.

Understand the power dynamics between ministries

- Ability to raise revenue, disburse funding, or manage access to critical resources (energy, land, water) can influence the relative power of ministries and make some effectively more senior and influential.

Recognize how money flows at a national level

- National Treasuries and Ministries of Finance often control the money, while line ministries will often have to secure the support of treasury in order to access funding for implementation.

Understand the institutions involved in local-level planning

- Local institutions, such as District Councils and LGAs, are often expected to play a central role in implementation, local budget allocation, and decisions over where and how infrastructure is delivered.

Understand the role of donors

- Donors exercise varying degrees of influence in supporting national-planning and economic decision making.

Understanding urban Governance: Entry Points for Climate Science:

Contextualizing the discussion

Gilbert Siame
University of Zambia



Fig. 1: **Decision making dynamics in the water sector for Lusaka**

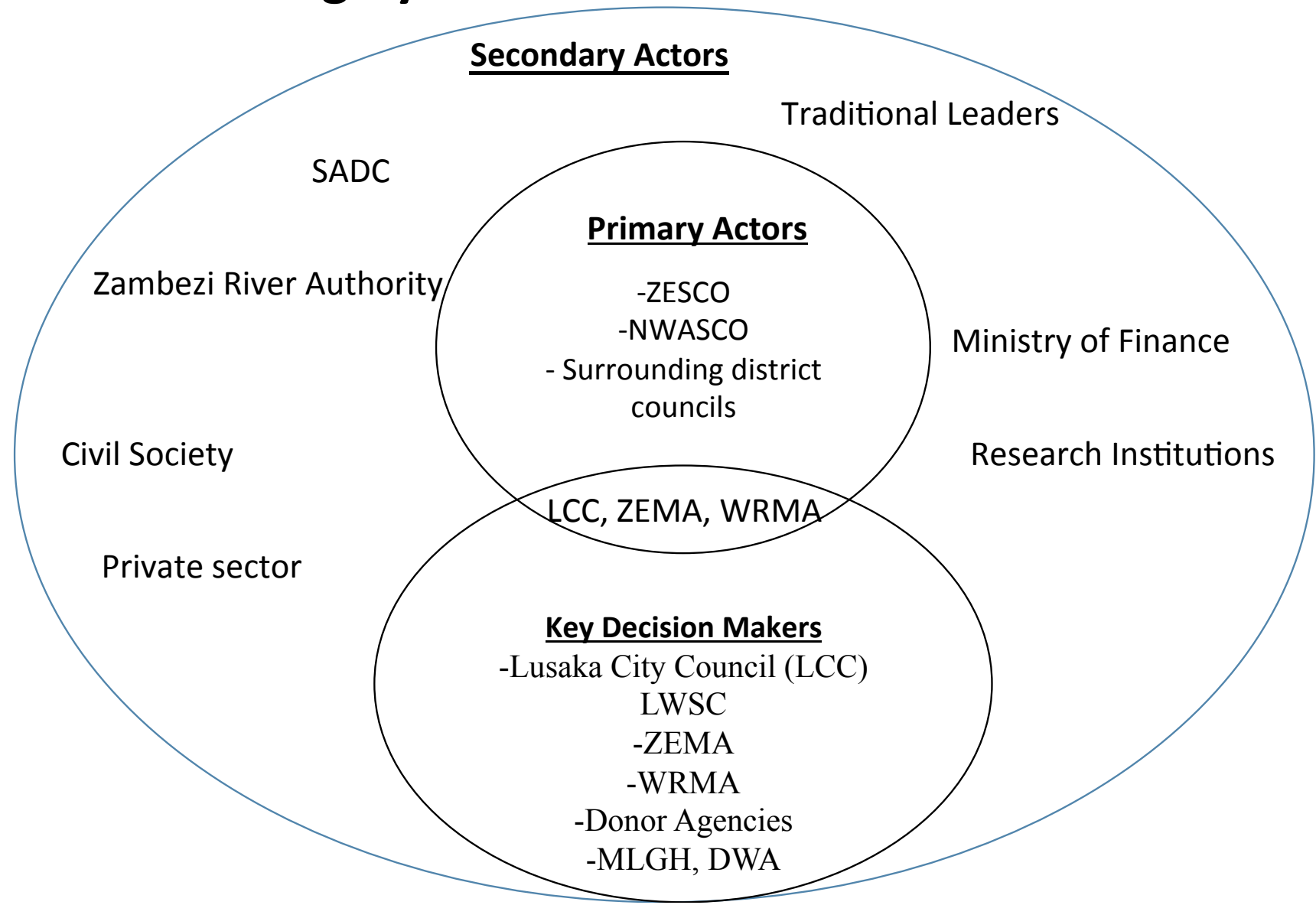
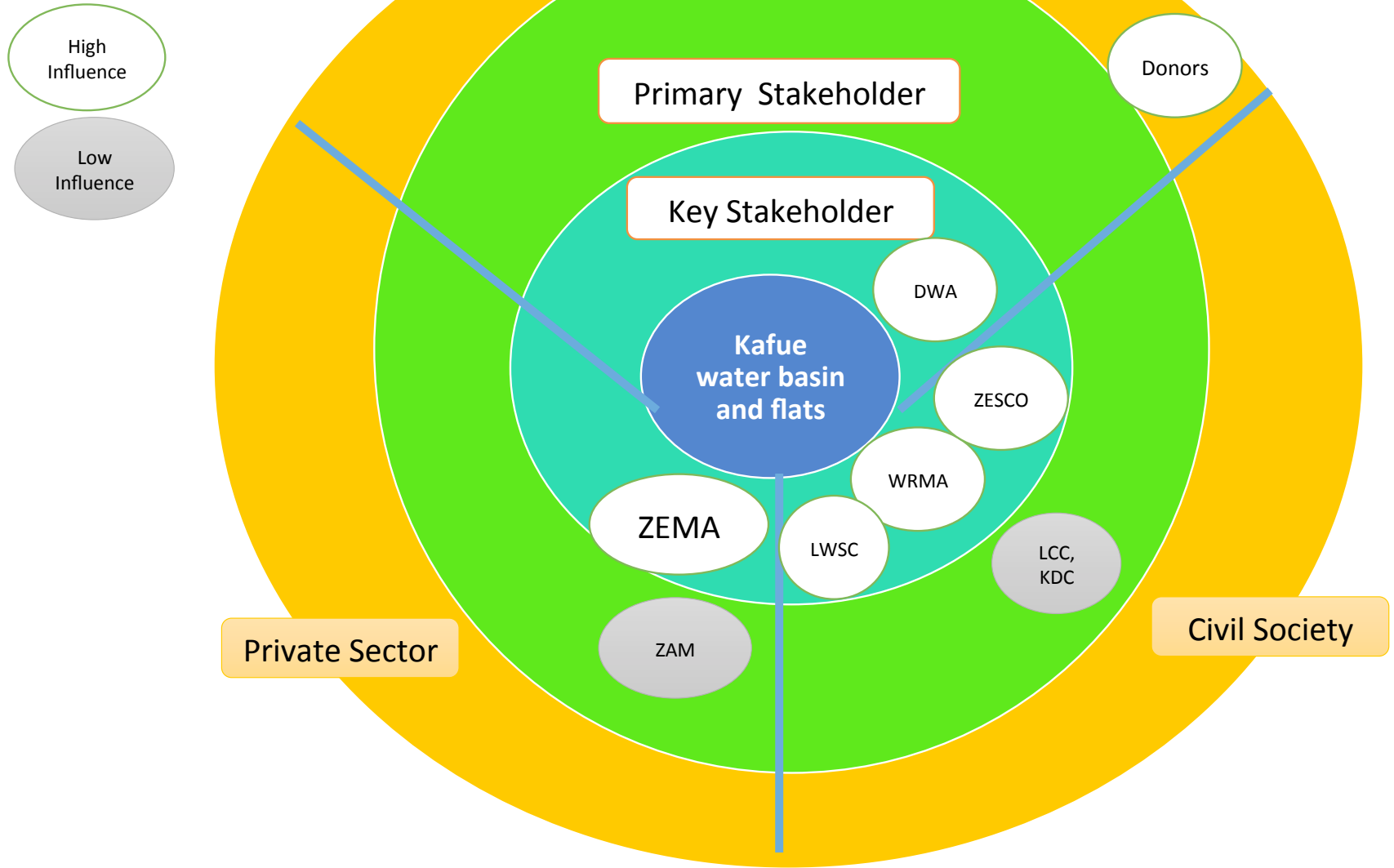


Fig. 2: Decision making dynamics on Kafue: Water and energy implications



Institutional dynamics in economic decision making

Institution	Sector(s)	Mandates relevant to building climate resilience	Influences on decisions
Ministry of Finance	Finance	- Mainstreaming climate	- ZNCCS can enhance climate mainstreaming
Ministry of Commerce, Trade and Industry/ZDA	Infrastructure & enterprise development	- Creation of Multi-facility Economic Zones for Lusaka	- Room to promote resilience in infrastructure/urban development - Room to influence private sector
Lusaka City Council,	All sectors	- Solid waste management - Spatial Planning - Urban infrastructure - Maintain ecological infrastructure	- Political motivations? - Room to coordinate all economic actors

RDA	Road Development	Integrating climate resilience in road development	Room to influence designs, construction and routing
ZNCC	Innovation and standards-	Testing, adoption of construction technologies	Room to develop new standards, promote adoption of construction technologies
ZESCO	Energy	Generation and supply	-Transboundary resources management issues -Regional Power agreements -Room to invest in Alternative energy sources
Private sector	All relevant sectors	Design, construction, management	Can influence the firms through NCC, NCCS, LCC

Decision making dynamics and current spatial configurations

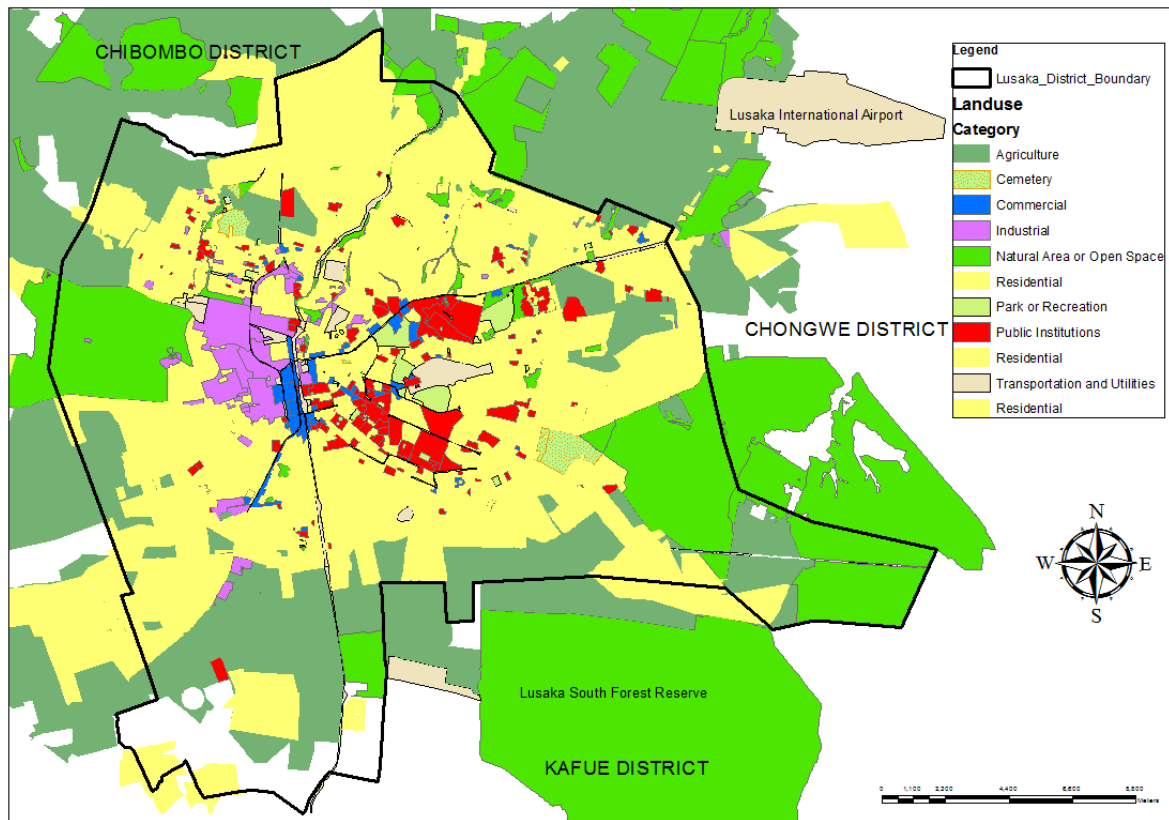


Figure 3: Land use systems in Lusaka & surrounding Districts

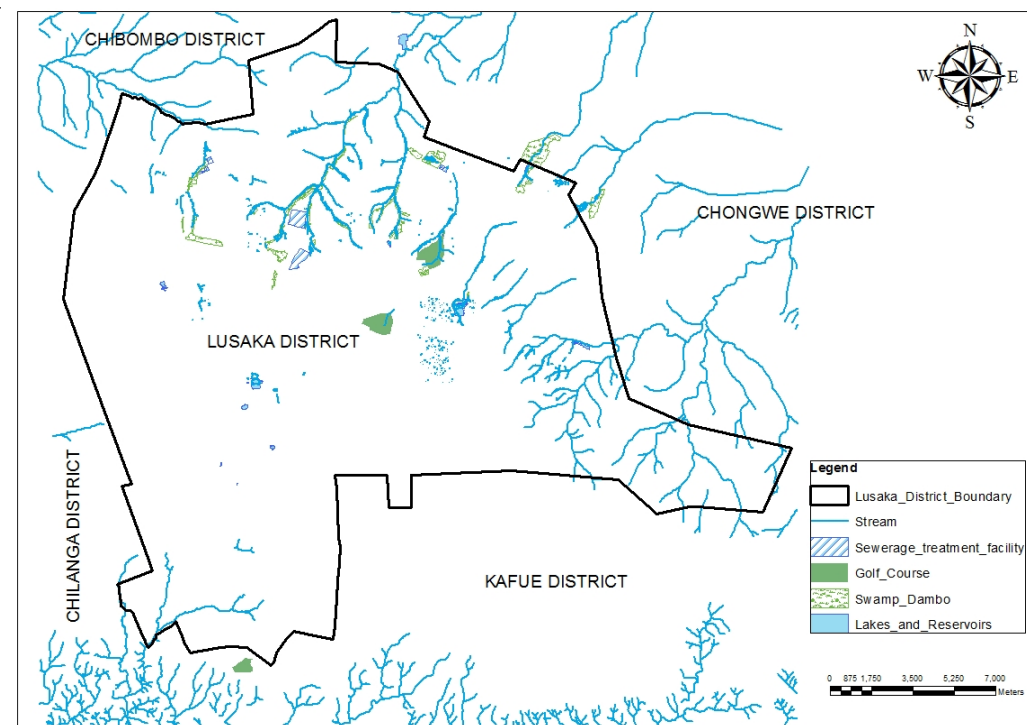


Figure 4: Lusaka District ground water /drainage systems



ZAMBIA'S CLIMATE RESILIENCE AGENDA AND ENTRY POINTS FOR CLIMATE SCIENCE

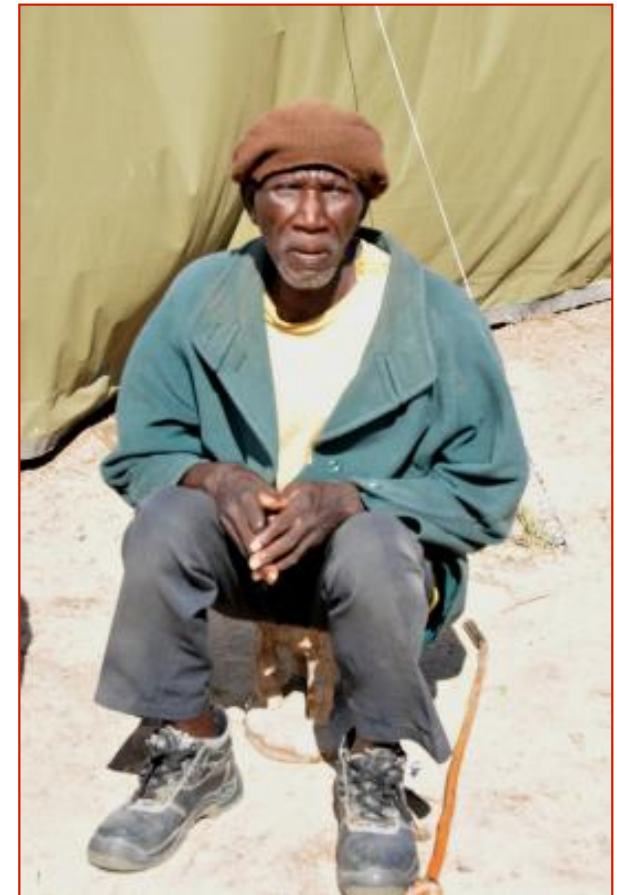
Dr. Tasila Banda
Technical Advisor and Coordinator – EC-LEDS Program
Interim Inter-Ministerial Climate Change Secretariat (ICCS)
15 April, 2016





CLIMATE CHANGE POSES MAJOR DEVELOPMENT CHALLENGES FOR ZAMBIA

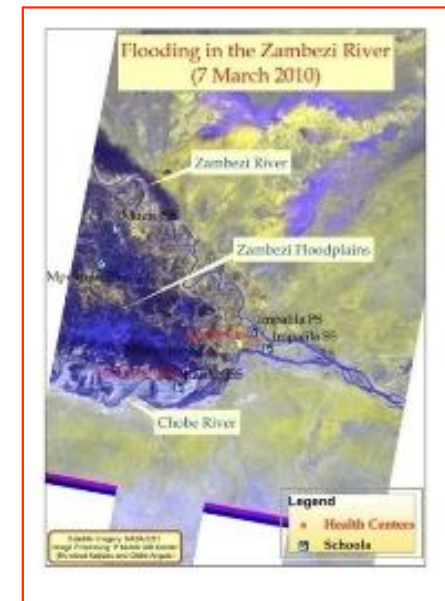
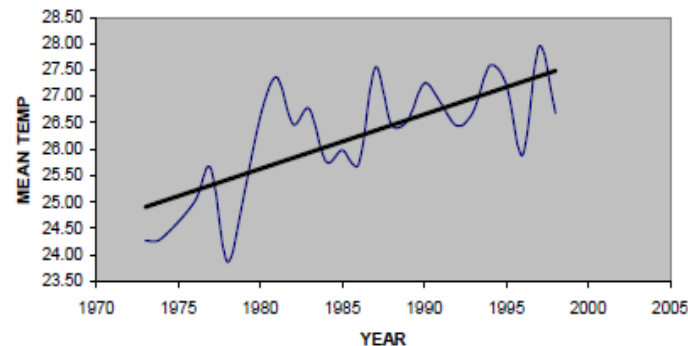
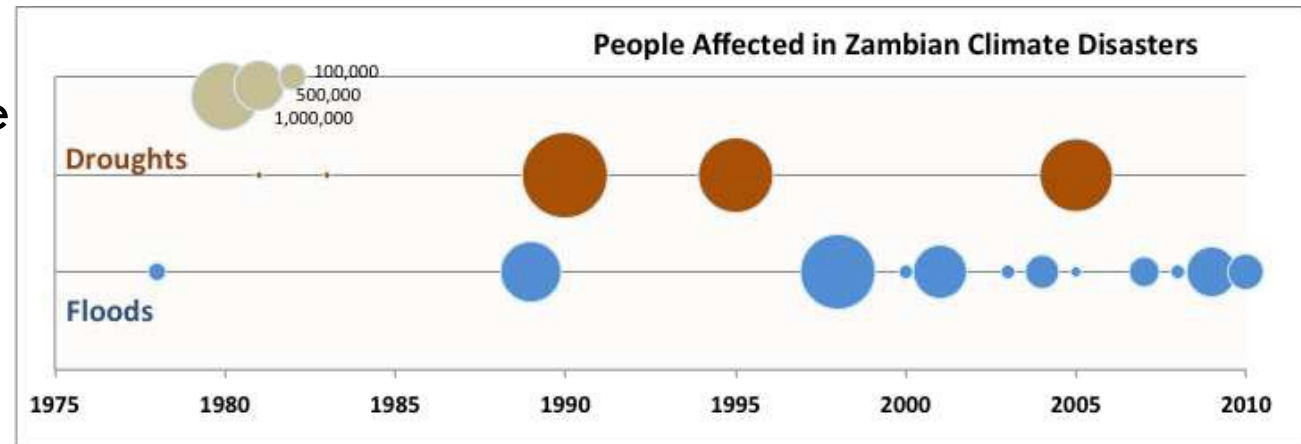
- ❑ Over past 30 years, floods and droughts have cost Zambia US\$13.8 billion – equivalent to 0.4 % of annual GDP growth
- ❑ In the absence of adaptation, rainfall variability could keep an additional 300,000 more Zambians below the poverty line
- ❑ Climate variability could cost Zambia US\$4.3 billion in lost GDP over the next decade, reducing annual growth by 0.9%





THE TRENDS (1960-PRESENT)

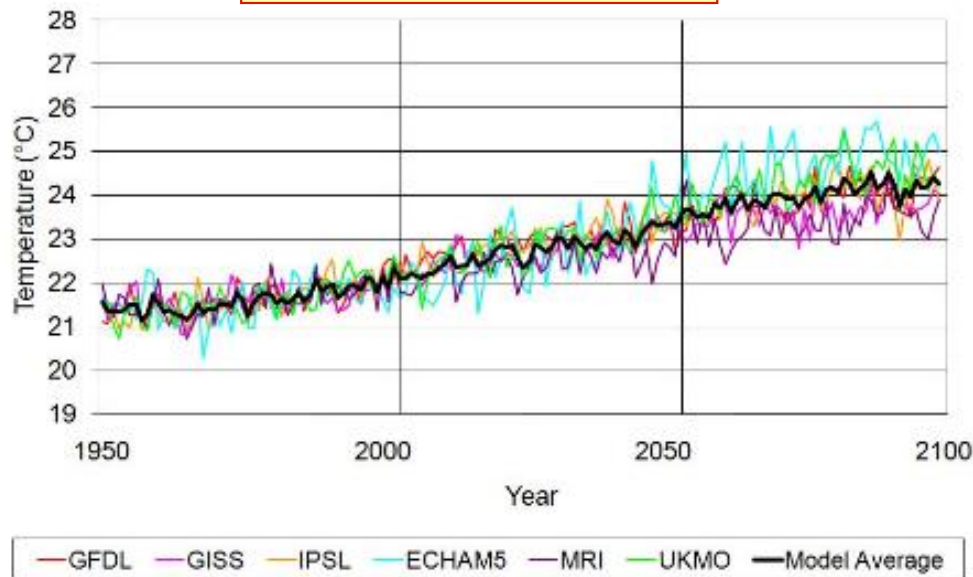
- Net trend towards more floods and droughts
- Mean temperature increased by 1.3 C since 1960
- Number of hot days and nights has increased
- Mean rainfall has decreased by 2.3% per decade



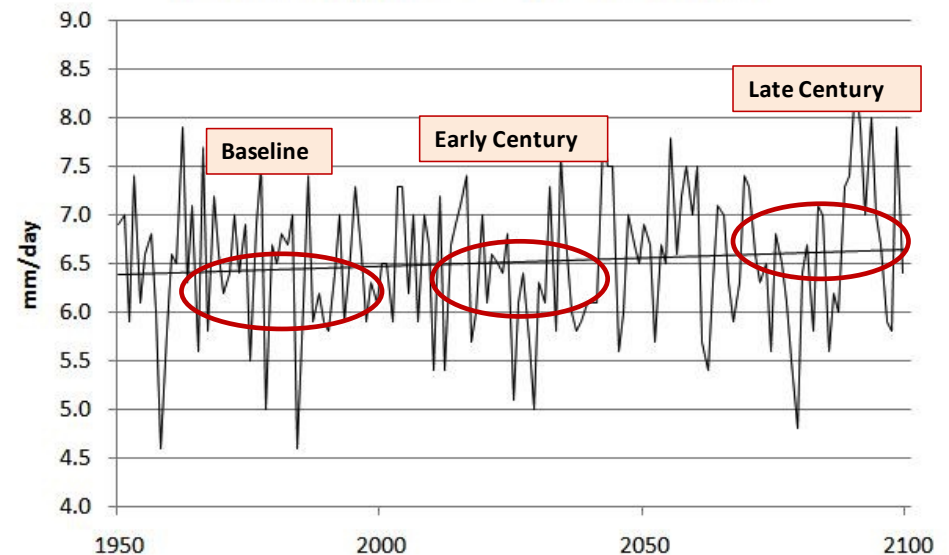


PROJECTED FUTURE TRENDS

Temperature Rise



Rainfall Variation

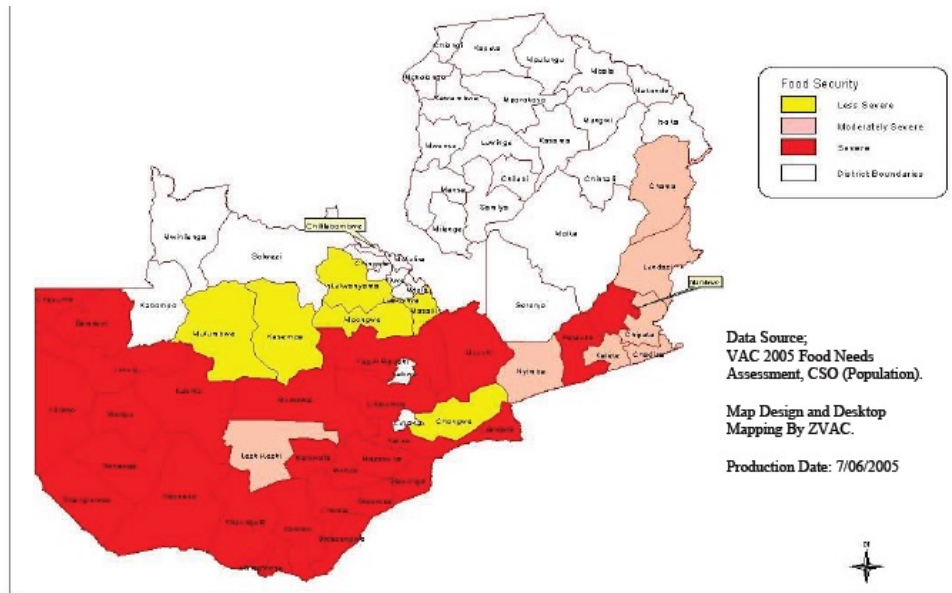


- Temperature projected to rise by 3-5°C by 2100
- Average precipitation not projected to change significantly; **however**
- Precipitation variability expected to increase: early rainy season to become drier, peak rainy season with heavier rainfall periods.
- Climate extremes to accentuate: more intense floods; more frequent droughts.

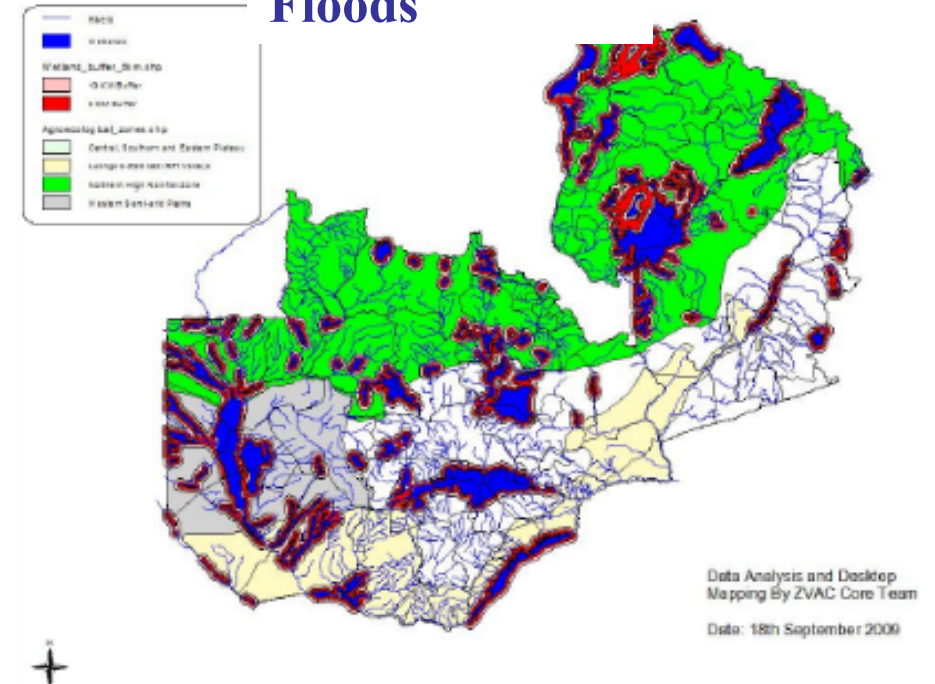


ZAMBIA: MAJOR EXPOSURE TO CLIMATE

Food Needs Areas – 2005/06 Drought



Floods



The Southern part of Zambia is generally considered to be the most vulnerable



IMPACT ON THE MOST VULNERABLE

Women-headed Households, the Elderly, Incapacitated, and those taking care of AIDS-orphans are most vulnerable. Single or divorced male-headed HHs are also highly vulnerable (due to malnutrition)

When hit with floods or droughts, vulnerable HHs cope by reducing food or essential expenditures (health, education). They also increase their level of indebtedness and rely further on casual labor – however, this is mostly food-for-works which is similarly impacted by the weather.



Many traditional coping mechanisms (e.g. indigenous early warning) are no longer working due to weather unpredictability and changing economic conditions



NATIONAL RESPONSE TO CLIMATE CHANGE

- National Adaptation Program of Action (NAPA) identified vulnerable sectors
 - Agriculture and food security
 - Wildlife and Forest.
 - Human Health
 - Water and Energy
- Draft National Climate Change Response Strategy
 - Policy needed to be addressed (Draft National Policy on Climate change)
 - Setting up of effective institutional arrangements
 - Also identified Sector Actions (REDD, GG, Early warning System)
- Nationally Appropriate Mitigation Actions (NAMAs) under formulation



- Further to show Zambia's Commitment, the INDC (with both adaptation and mitigation ambitions) has been developed submitted the UNFCCC as a contribution to international agreements on climate change.

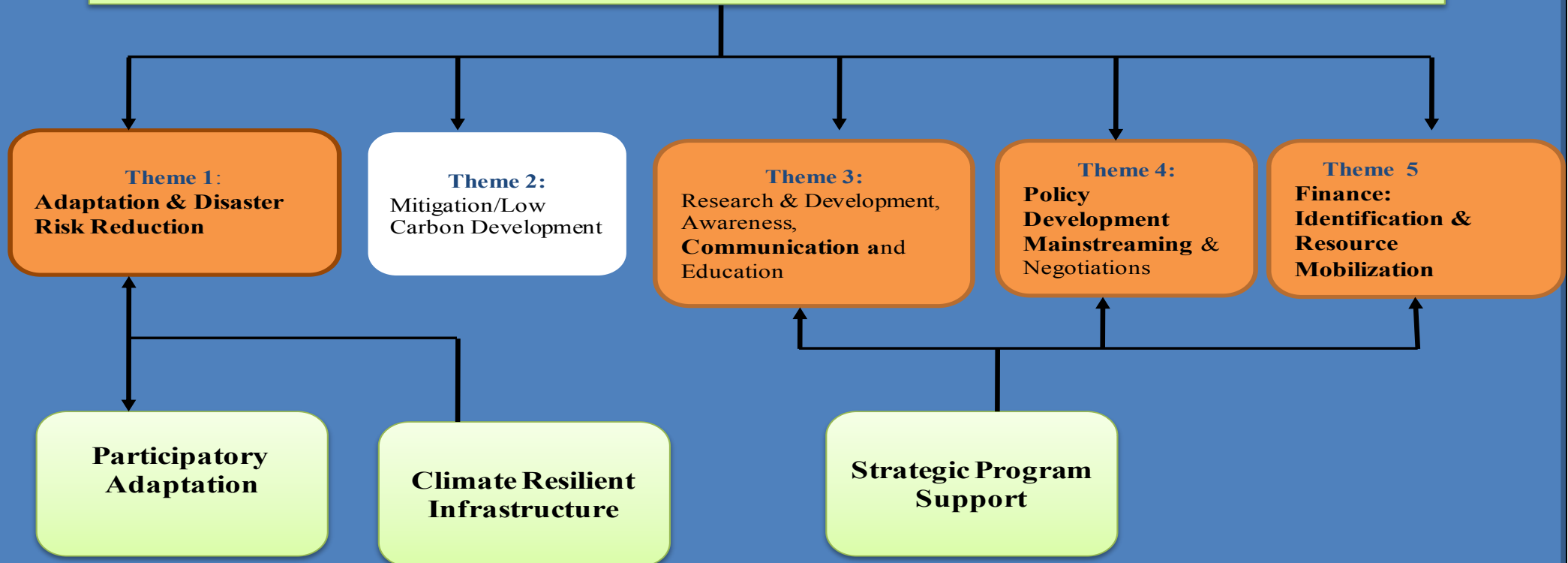


Zambia's National Climate Change Agenda

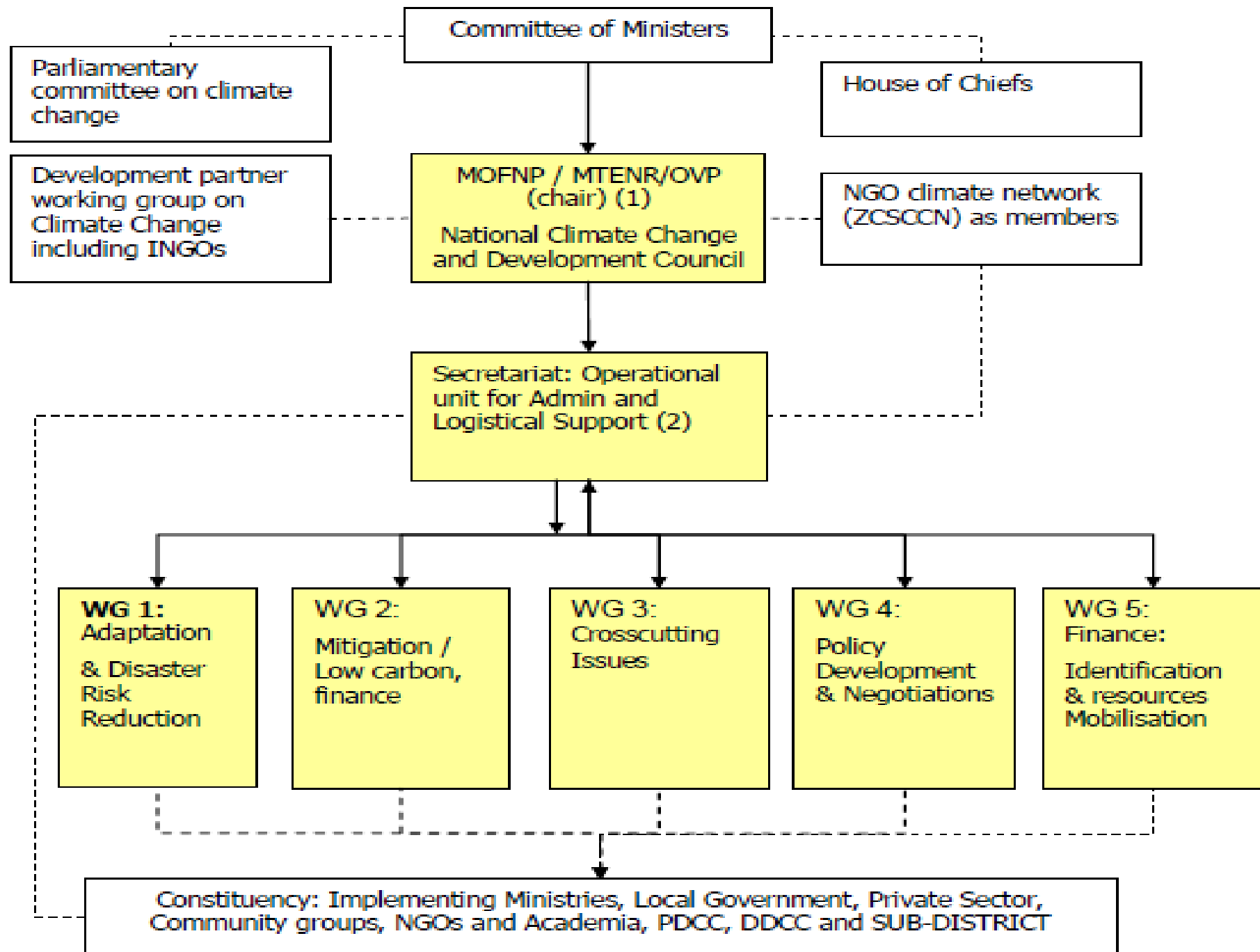
Vision 2030: *A Prosperous, Middle-Income Country by 2030*

National Programme Strategic Vision: *A Prosperous, Climate-Resilient Economy*

National Programme Goal: *Climate change mainstreamed in the most economically important and vulnerable sectors of the economy (by 2015)*



INSTITUTIONAL ARRANGEMENTS

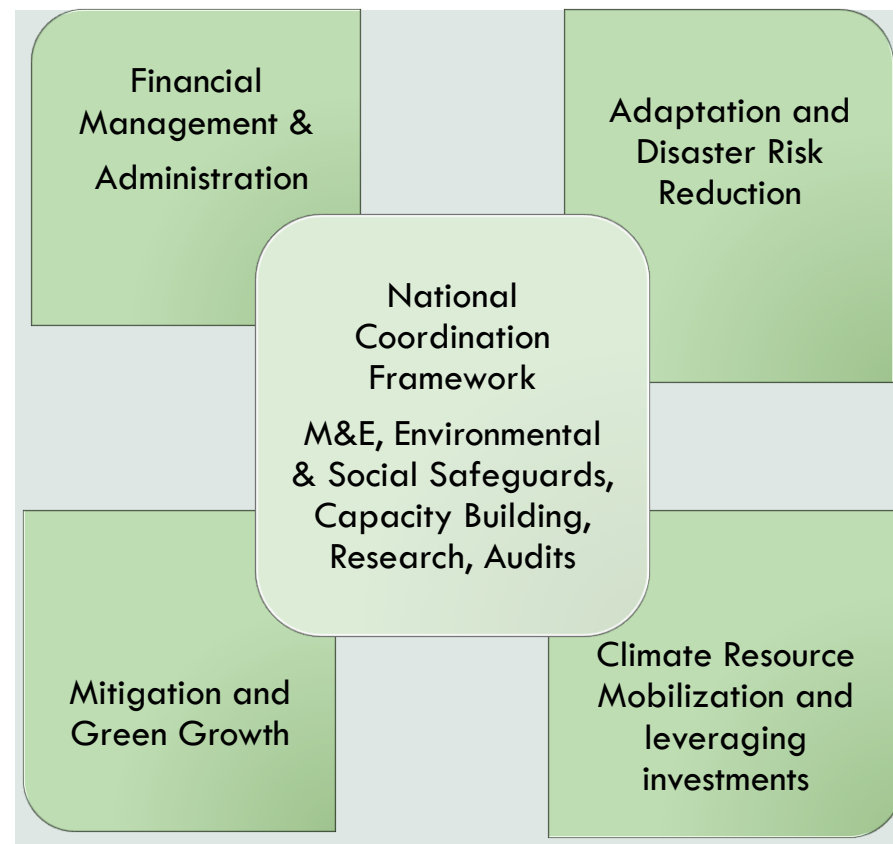


INTERIM INTER-MINISTERIAL CLIMATE CHANGE SECRETARIAT (ICCS)

FUNCTIONS

- National coordinating body for all climate change related activities in the country
 - Implementation by Line Ministries
- Core team from Key Ministries
- Growing portfolio
 - Pilot Program for Climate Resilience (PPCR)
 - Scaling up of Renewable Energy Program (SREP)
 - REDD+ (BioCarbon Fund, FIP)
 - GRZ-UN Joint Program on Climate Change
 - Green Growth Strategy
 - Enhancing Capacity on Low Emission Development Strategy (EC-LEDS)
 - Green Climate Fund (GCF)
 - Resilience and Cohesion of Displaced Persons and Border Communities

STRUCTURAL ARRANGEMENTS





PPCR Phase II in Brief

**Climate-Resilient
Infrastructure Investment**

**Participatory
Adaptation**

Strategic Support

- In Barotse and Kafue Sub-basins

- Institutional support to National Climate Change Program
- Strengthening Climate Information

STRENGTHENING CLIMATE RESILIENCE IN THE KAFUE SUB-BASIN: SUPPORTED BY THE AFRICAN DEVELOPMENT BANK

STRENGTHENING CLIMATE RESILIENCE IN THE BAROTSE SUB-BASIN: SUPPORTED BY THE WORLD BANK

IFC support to Climate Resilient Private Sector Investment

Nordic Development Fund (NDF) support to Climate Resilient Infrastructure Standards and Codes

SCALING UP RENEWABLE ENERGY PROGRAM IN LOW INCOME COUNTRIES (SREP)

- ❖ On 27th June 2014, Zambia selected as one of 14 new pilot countries to benefit from SREP
- ❖ Zambia can assess up to US\$ 40 million
- ❖ Next Steps:
 - ❖ Development of an Investment Framework
 - ❖ Mobilization of partners
 - World Bank
 - African Development Bank
 - Swedish International Development Agency
 - Private Sector investor
 - ZESCO



Technical studies on: 1) Energy access surveys; 2) Grid capacity analysis

ZAMBIA FOREST / REDD+ PROGRAM: INTEGRATING & SCALING UP FINANCING

**“Readiness”
Phase**

UN-REDD Grant

REDD+ Readiness
-REDD Strategy Dev



**Implementation &
Investment**

Bio-Carbon ZIFL

**Forest Investment
Program**

**FIP – DGM Dedicated
Grant Mechanism for
Local Communities**



**Results &
Performance
Payments**

**Forest Landscape -
Emission Reduction
Program: Payments
for Results**

Global Green
Climate Fund

Private Investors



GRZ- UN JOINT PROGRAMME ON CLIMATE CHANGE & DISASTER RISK REDUCTION

❖ Some of the initiatives ICCS is facilitating include the following programs:

- ❖ FAO- Development of climate smart agriculture (MAL)
- ❖ UNDP- Early warning systems (Met)
- ❖ UNDP/GEF – Adaptation to Climate variability and change in agro –ecological regions 1 & 2 (MAL)
- ❖ UNDP – Low emission capacity building project (MLNREP)
- ❖ UNDP – Regeneration of indigenous forests



ENHANCING CAPACITY ON LOW EMISSION DEVELOPMENT STRATEGY (EC-LEDs)

- ❖ Supported by US Government
- ❖ National level technical support to GRZ through GCC Sustainable Landscape Funds of US Forest Service (USFS)
- ❖ Initiative aims to support Zambia's efforts to pursue long-term, transformative development and accelerate sustainable, climate-resilient economic growth while slowing growth of greenhouse gas (GHGs) emissions



GREEN GROWTH STRATEGY

- ❖ Building on existing green initiatives as they are locally defined
- ❖ Scoping study for potentials and challenges of inclusive green growth in Zambia done
- ❖ 3 policy dialogues with the Government, Civil Society and development partners held
- ❖ Considerable consensus on how to realize the national development planning opportunity



Green Climate Fund

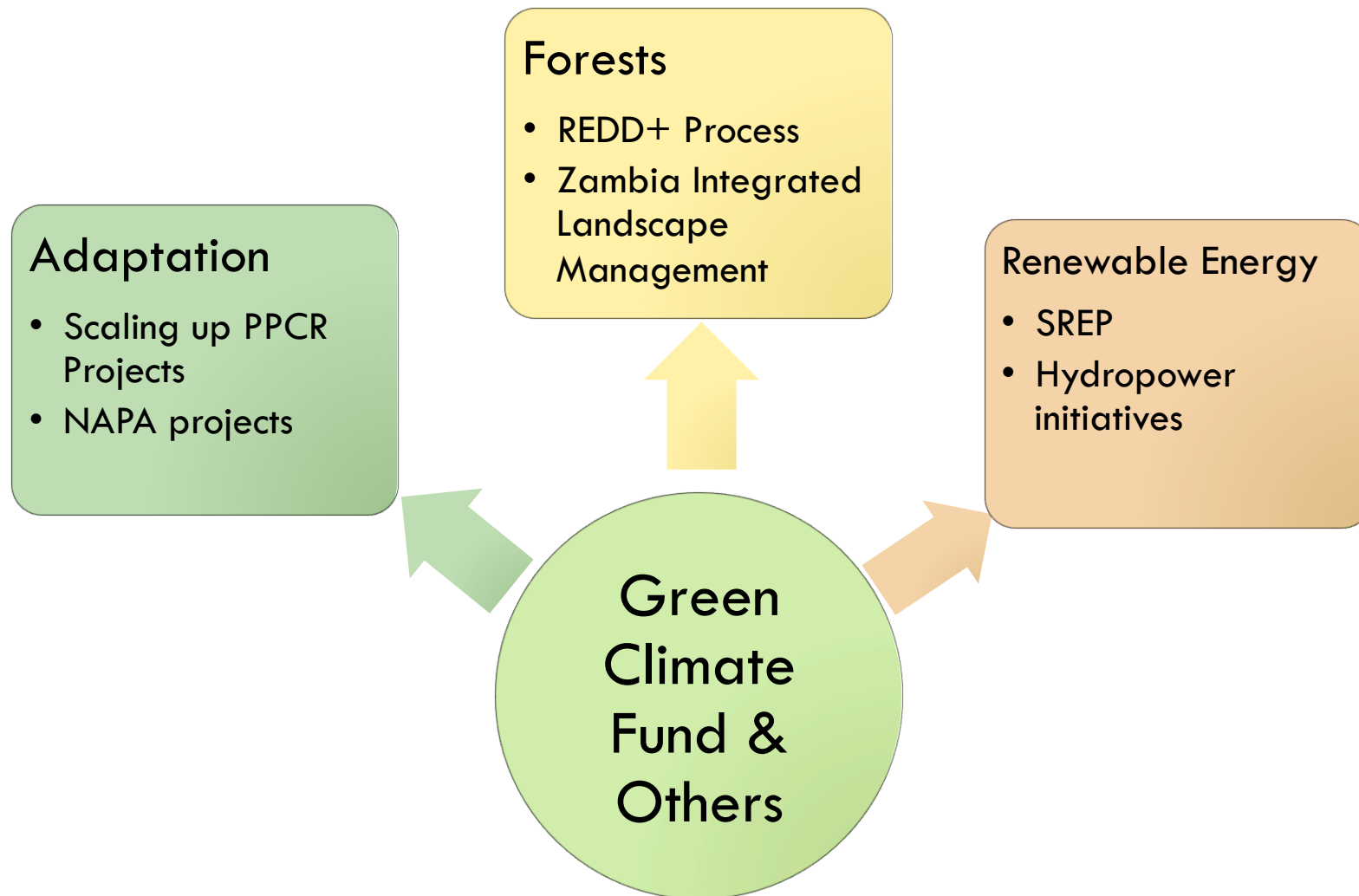
National Designated Authority (NDA)

- Ministry of Finance (Planning Department) is NDA
- Strategic Framework for engagement
- Pipeline Projects
- Readiness Support (US\$300,000.00 for Capacity building of NDA)

National Implementing Entity (NIE)

- Interim Climate Change Secretariat (ICCS) is NIE
- Readiness Support
- Intermediaries
 - World Bank

MOVING FORWARD: Scaling Up On-going Investments



ENTRY POINTS FOR CLIMATE SCIENCE : PPCR

❖ Current Efforts:

- ❖ PPCR (ICCS&DMMU) – strengthening of climate information
- ❖ MET Department - investment in infrastructure for MET data measurement (temp, rain, and early warning systems).

❖ The need:

- ❖ Climate information through modeling to 20, 30, 50 years;
- ❖ Link modeling to impact assessment for Infrastructure, health, dams, agriculture, etc.
- ❖ Impact assessment will feed into long-term planning and long-lived infrastructure.

❖ Entry points in Lusaka:

- ❖ UNZA Math department in conjunction with MET department -Global Climate Model/Regional Climate Models This requires a lot of computers to achieve the modeling.
- ❖ SASSCAL – Climate modeling and regional down scaling platform to generate scientific knowledge on climate change. This requires building modeling capacity for Engineers, Scientists, Geographers, Meteorological and Climatologists.

THANK YOU

