



Mainstreaming of Environmental Flows into Integrated Water Resources Management

Madagascar's case

Cape Town November 2019

Strong points of the main fluvial basins of the country

- Contribution of the great rivers that flows out toward in the Canal of Mozambika :
 - River Betsiboka (49 000 km²)
 - River Tsiribihina (49 800 km²)
 - River Mangoky (55 000 km²)
 - River Onilahy (32 000 km²)
 - River Sofia (27 300 km²)

They correspond to the largest Malagasy rivers whose basins extend over several natural hydrological units and whose characteristics observed during the Downstream stations result from the composition of the own regimes of the different fractions elementary basin

Policy and institutional frameworks on river basin management in the country

- Sectoral Political Declaration of Water
- Law of Water n°1998-029
- Regulation, executive decree :
 - Decree n°2003-793 on the regulation of the use of water resources
 - Decree n°2003-973 on the regulation of spills, discharges, direct deposits or indirect in surface or underground water
 - Decree n°2003-792 relative tax on the levy and discharge on water resources (suspended)

Institutions responsables et leurs relations (structure de gouvernance)

Responsible institution :

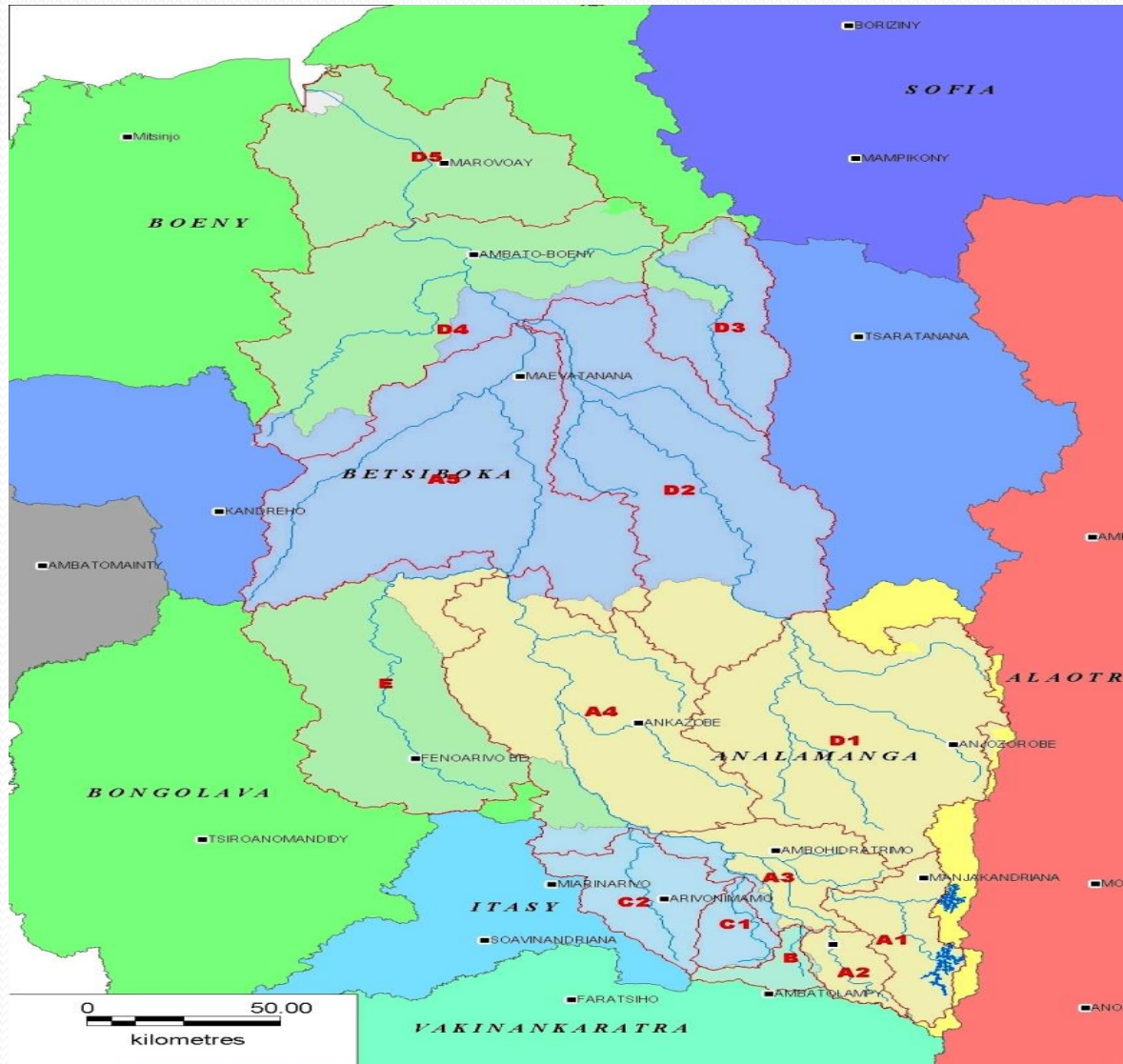
“National Authority for Water and Sanitation” (ANDEA) established by decree n°2003-192, it is placed under the technical supervision of Ministère in charge of water

Governance structure :

L'ANDEA has its deconcentrated services « Basin Agencies » provincial level and local level “Basin Committee”, are all non-functional until now.

Importance of the key river basins in the country

The Case of Betsiboka's Bassin



potable water (2011)

Centres	Total Population (hab)	Total population gone against (hab)	Population totale desservie (hab)		Taux de desserte (%)		
			par BP	par BF	BP	BF	Ensemble
Grand Tana	1 872 970	915 822	509 722	406 100	54,6%	45,4%	49,4%
Fenoarivobe	20 883	3 832	712	3 120	18,6%	81,4%	18,4%
Mahajanga	219 344	133 644	69 948	63 696	52,3%	47,7%	60,9%
Ambato Boeni	25 101	3 357	3 117	240	92,8%	7,2%	13,4%
Marovoay	33 070	14 997	3 447	11 550	23,0%	77,0%	45,4%
Maevatanana	15 174	9 512	3 112	6 400	32,7%	67,3%	62,7%
Ensemble urbain	2 186 543	1 081 163	590 057	491 106	54,6%	45,4%	49,4%

Use pastoral (oct 2017)

Région	Efficient Livestock			
	Bovine	Porcine	Ovine	Caprine
Analamanga	220 941	128 394	4 032	573
Vakinankaratra	13 426	6 322	263	41
Itasy	76 741	29 074	1 955	-
Bongolava	36 211	7 548	-	279
Boeny	327 398	13 470	11 191	9 147
Betsiboka	86 389	22 196	2 266	1 005

perimeters irrigated

REGION	DISTRICT	Superficies Irriguées (ha)
ANALAMANGA	ANDRAMASINA	6 872
	AMBOHIDRATRIMO	7 451
	MANJAKANDRIANA	10 677
	ANJOZOROBE	9 350
	ANKAZOBE	5 251
	TANA-ATSIMONDRANO	10 340
	TANA-AVARADRANO	7 594
	<i>SOUS TOTAL</i>	<i>57 535</i>
VAKINANKARATRA	AMBATOLAMPY	2 815
	<i>SOUS TOTAL</i>	<i>2 815</i>
ITASY	ARIVONIMAMO	15 645
	MIARINARIVO	1 159
	<i>SOUS TOTAL</i>	<i>16 804</i>
BONGOLAVA	FENOARIVO-BE	2 480
	<i>SOUS TOTAL</i>	<i>2 480</i>
BOENY	AMBATO-BOENI	34 828
	MAROVOAY	26 143
	MAHAJANGA II	264
	<i>SOUS TOTAL</i>	<i>61 235</i>
BETSIBOKA	MAEVATANANA	7 316
	TSARATANANA	2 778
	KANDREO	467
	<i>SOUS TOTAL</i>	<i>10 561</i>
BASSIN	TOTAL	151 430

Energy

River Ikopa (Antananarivo) : Tsiazompaniry 5,2 MW
Antelomita 8,4 Mw

Project : Mahavola 300 Mw
Antafofo 160 Mw
Betsiboka 56Mw

Fluvial Transportation

- The Betsiboka stream is navigable in all seasons between the districts of Marovoay and Ambato Boeny
- During the rainy season, several roads are cut. The dugout is the means of transportation of the goods and means of displacement of the populations

Challenges facing the management of river basins

- Attenuation of the climatic Change effect
- Reduction of bush Fire (Lavakisation phenomenon)
- Application of the different texts (ex purification)
- Reinforce the control of the pollution and conservation of water, because it is a key factor in the maintenance of the integrity of the ecosystems

Current and planned interventions to improve the status of the key river basins highlighting

- Reforestation
- Setting up of anti-erosive device.
- Requirement on the survey of Environmental impact to all project.

RESULTS:

- * Reduction of the erosions of the lands and the lavakisation
- * Increase of resources in Water exploitable

Recommendations on next steps

Setting up of the agencies and committees of basin and to conduct the development of the Schema of planning of water Management.

Setting up of the devices of follow-up and control of resources in water.



THANK YOU