

# Equitable Payments for Watershed Services

**A Joint CARE-WWF-IIED Programme  
funded by DGIS & Danida**

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# Program Objectives

- To modify unsustainable land use to conserve and improve “watersheds” for reliable supply/flow and quality of water
- To improve quality of life of communities through substantial benefits to the rural poor hence contributing to poverty reduction

# Participating Countries



# The Case of Tanzania

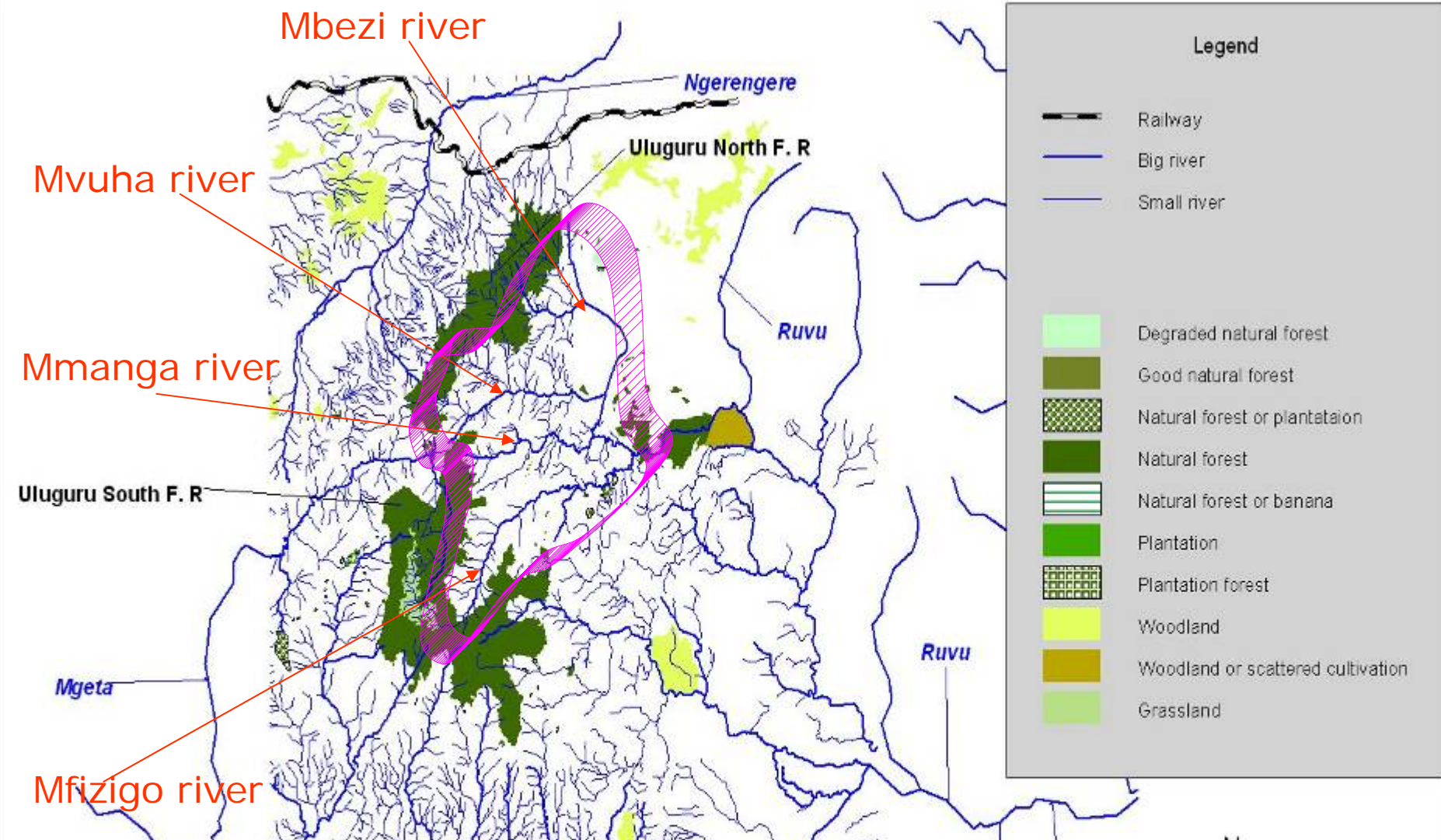
- Location: Morogoro region, Uluguru Mountains
- One of the poorest countries in the world:
  - ✓ HDI of 162/177
  - ✓ 42% below poverty line
- Most agriculture in Tanzania is subsistence
- All regions of Tanzania are experiencing inability to earn adequate livelihood





# Ecological & Developmental Problems in Tanzania

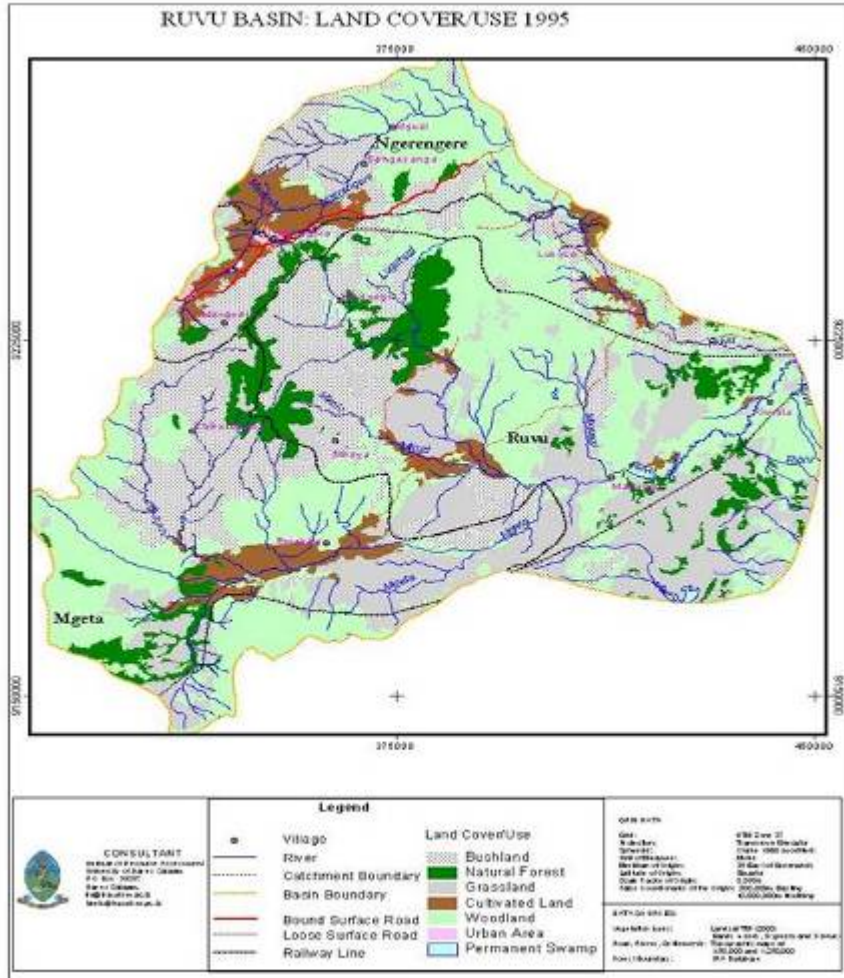
- Pervasive water scarcity
- Inability to earn adequate livelihood
- These two constituents are mutually reinforcing as over 80% of the population achieves livelihood through subsistence farming
- Morogoro Region stands out as it is experiencing stress in all four ecosystem services (biodiversity, landscape beauty, water and carbon) and livelihood constituents - priority region for development efforts



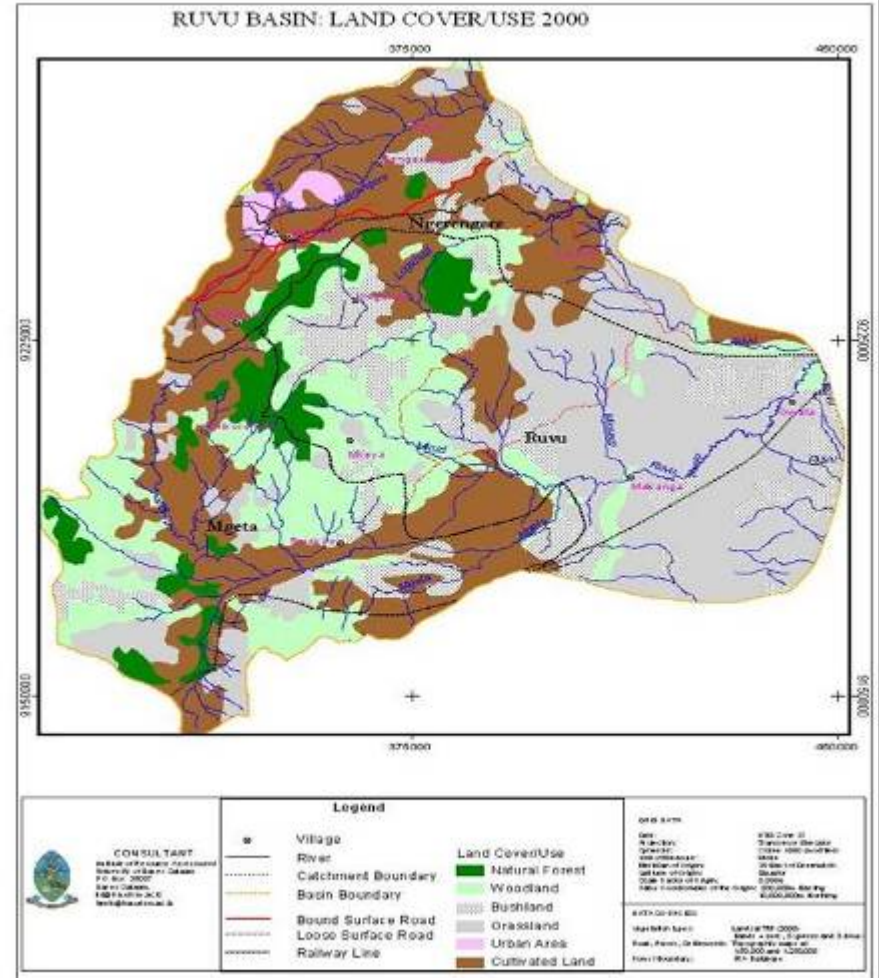
# Area of Intervention



# Land-Cover Change Ruvu



1995



2000

# Land-Cover Change

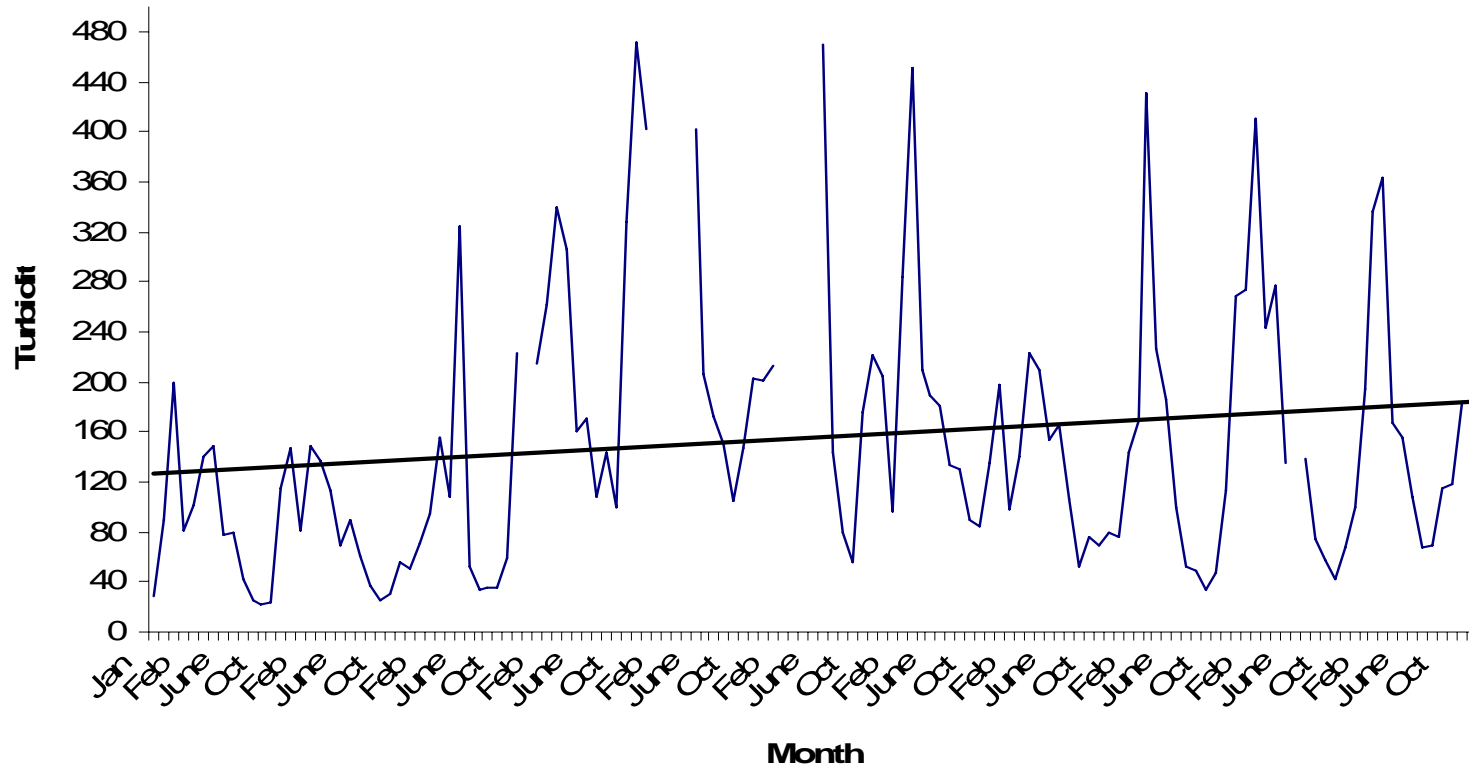
Sub Catchment	Area (Ha)	% Cultivated Land	
		1995	2000
Ngerengere	265,673	16	61 (381% increment)
Mgeta	370,788	7	39 (557% Increment)
Ruvu (Kibungo)	505,595	3	13 (433% increment)
<b><i>Average</i></b>		<b>9</b>	<b>38</b> (422% increment)



# Turbidity behind the reality.....



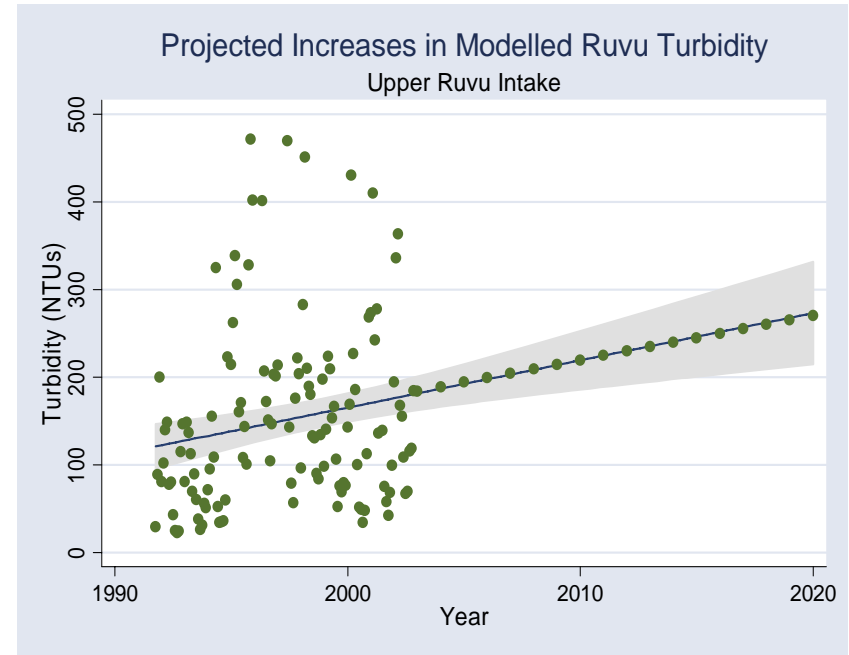
# Observations Water Quality: Sediments Ruvu River



- Average annual increase in turbidity = 5 NTU per year
- Reflects increases in sediment loading.
- Associated with vegetation degradation, erosion and higher sediment delivery into the streams.

# The Problem

- Private water users (DAWASCO – water provider of Dar-es-Salaam; Coca Cola, etc), and by extension Dar es Salaam, are heavily dependent on the Ruvu River and its catchments in the Ruvu Mountains
- The quality of water in the Ruvu River is falling
- Turbidity is increasing year by year, and is expected to continue increasing – on current trends by *1.5% to 3% p/year*





# Causes of the Problem

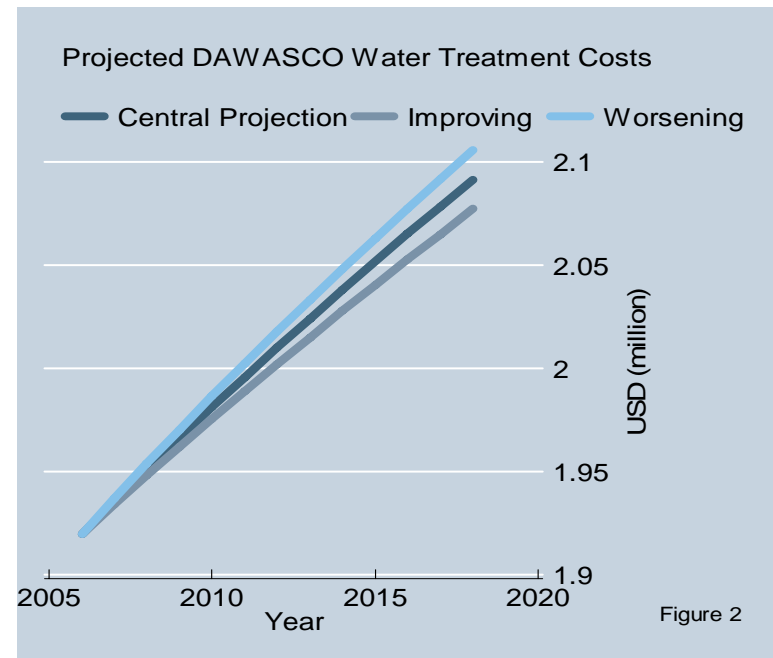
- Anthropogenic - unsustainable land use by poor communities upstream:
  - Steep slopes cultivation
  - Crops near riparian zone
  - Non technical irrigation systems
  - Deforestation for charcoal production

# Buyer Case: DAWASCO

- Sole water distributor for Tanzania
- In charge of water collection, distribution, sewage, and sanitation
- Public-private corporation under the Ministry of Water Resources

# Consequences & Costs of the Problem for DAWASCO

- DAWASCO is experiencing a worsening quality of water in the Ruvu
- Modeled water treatment costs expected to increase to *US\$2.1 million* in 2018



- Amounts to *US\$1.25 million* in additional treatment costs over 2006 levels
- Net Present Value of projected additional costs over 2006 levels is *US\$780,000*

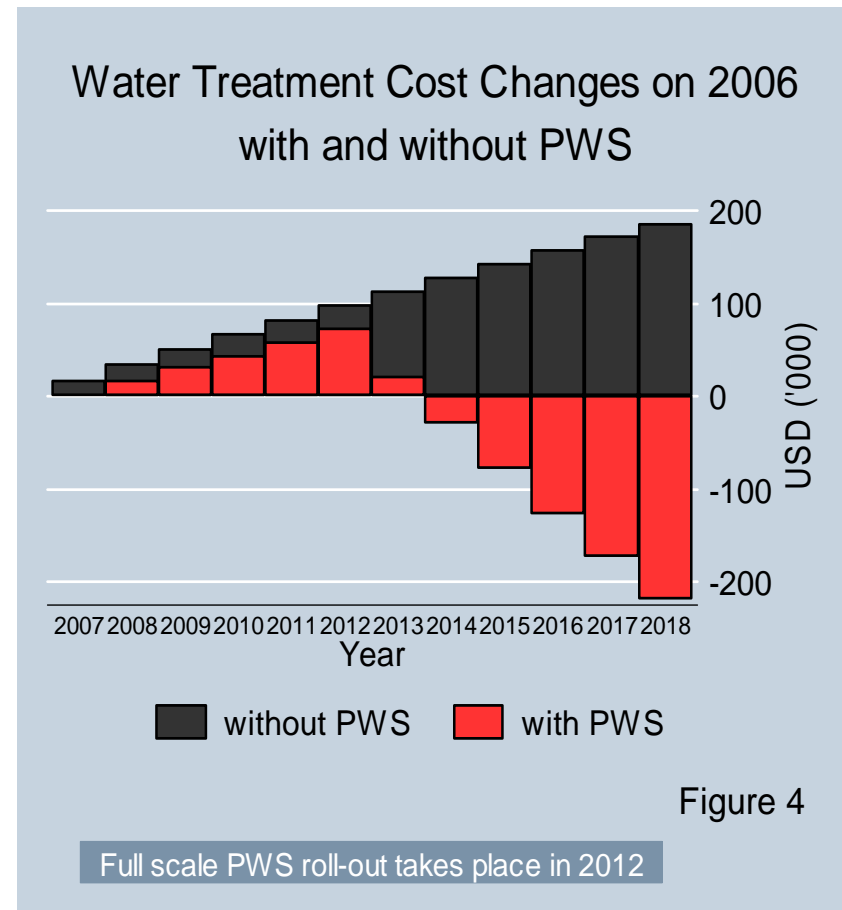


# The Solution: Payments for Watershed Services (PWS)

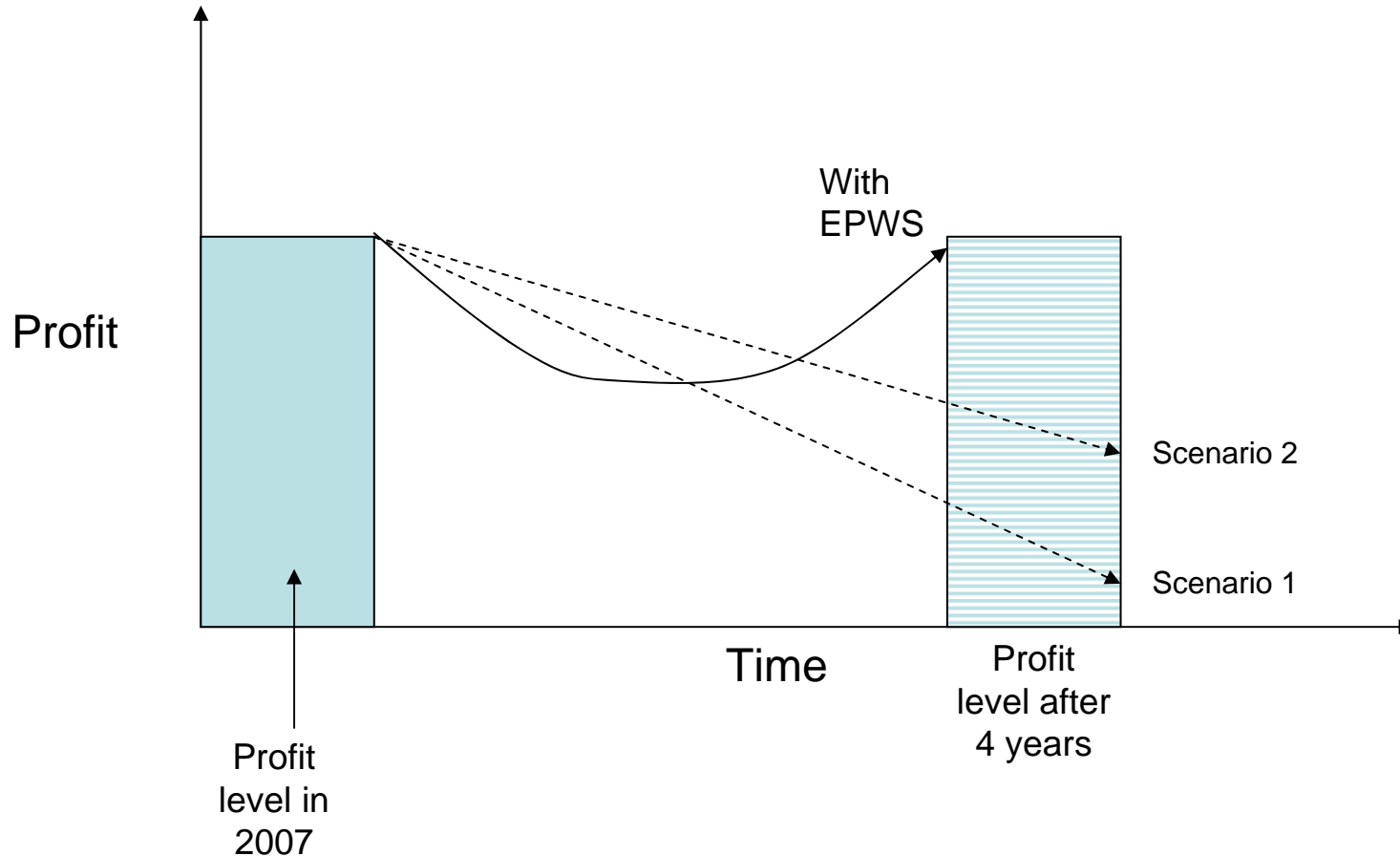
- A Public Private Partnership for Payments for Watershed Services
- An agreement between upstream poor communities (service providers or sellers) and downstream water service users or buyers
- Buyers: DAWASCO, a public-private corporation with the monopoly of water provision for Dar-es-Salaam; Coca Cola; other private companies
- Sellers: Upstream communities in the Kibungo sub-catchment
- Endorsement of agreement by Ministry of Water Resources

# Benefits of PWS

- DAWASCO will benefit through reduced water treatment costs
- PWS aims to reduce water treatments costs by *10%* over 2006 levels
- Total benefits to DAWASCO include:
  - cost savings (black)
  - cost reductions (red)
- Which amount to *US\$1.65 million* to 2018, with a Net Present Value of *US\$ 935,000*



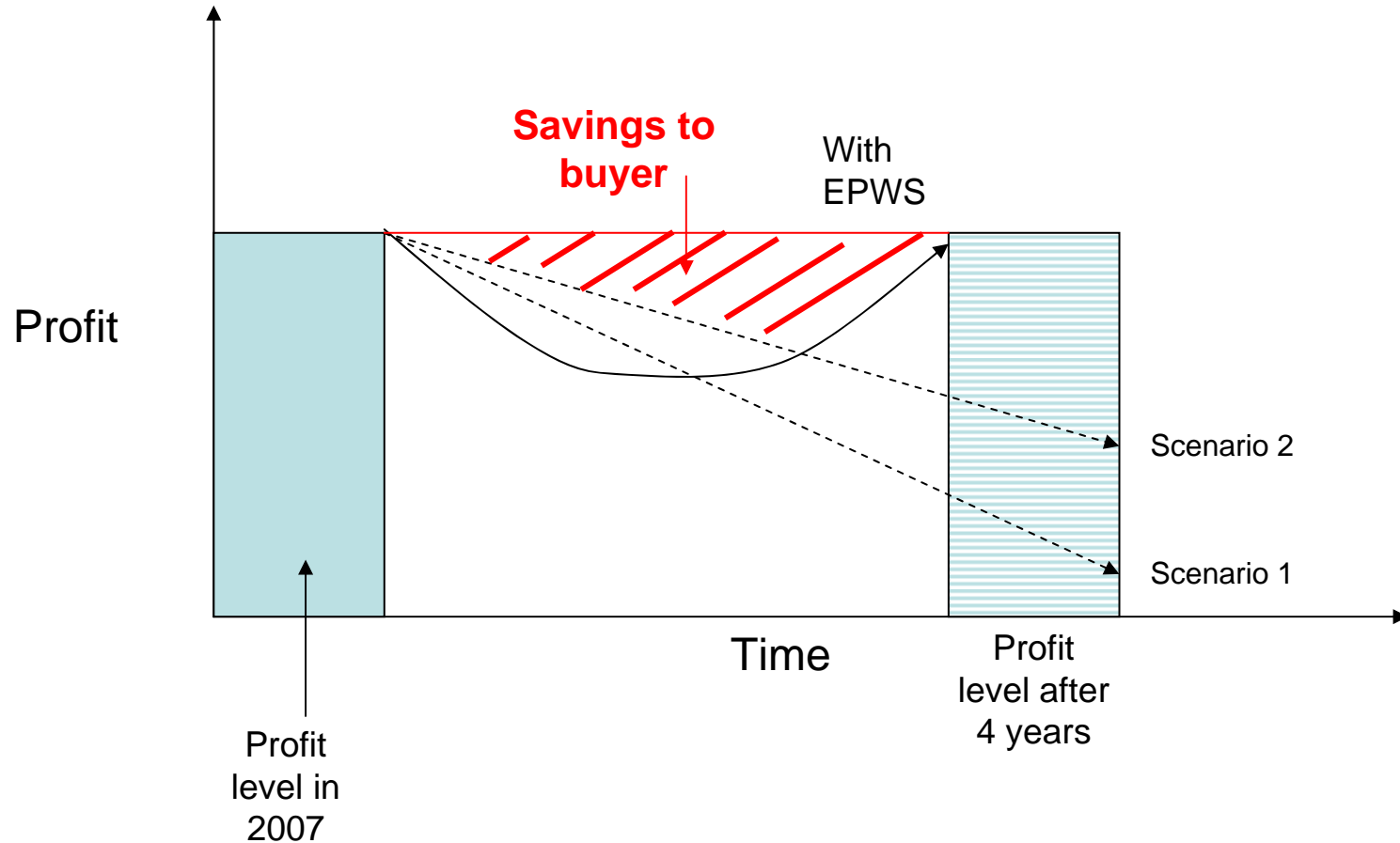
# The buyer's perspective (1)



Buyer faces considerable loss of profitability without EPWS as consequence of water problem. EPWS mechanism aims to return buyer to today's level of profitability

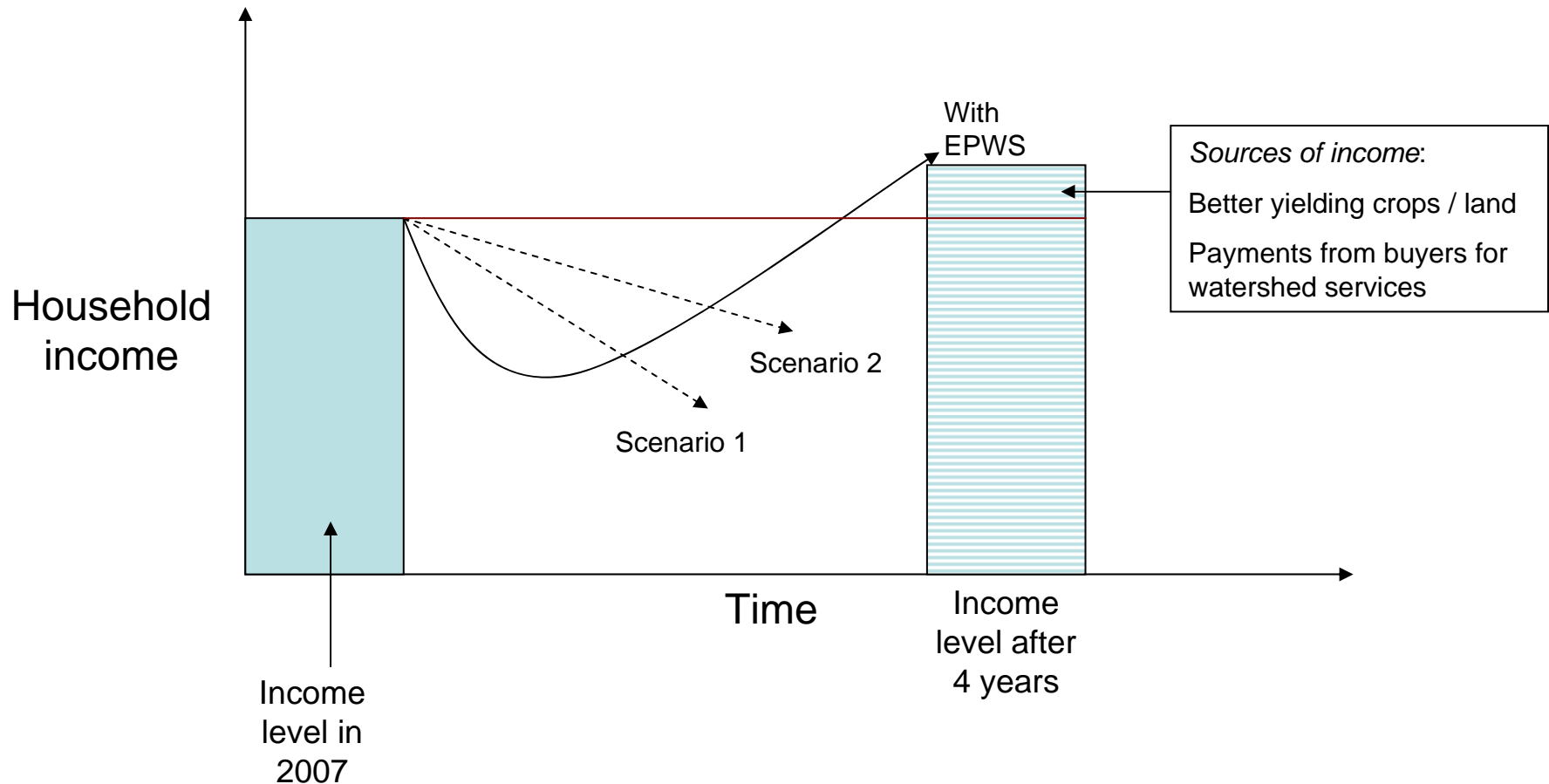


# The buyer's perspective (2)



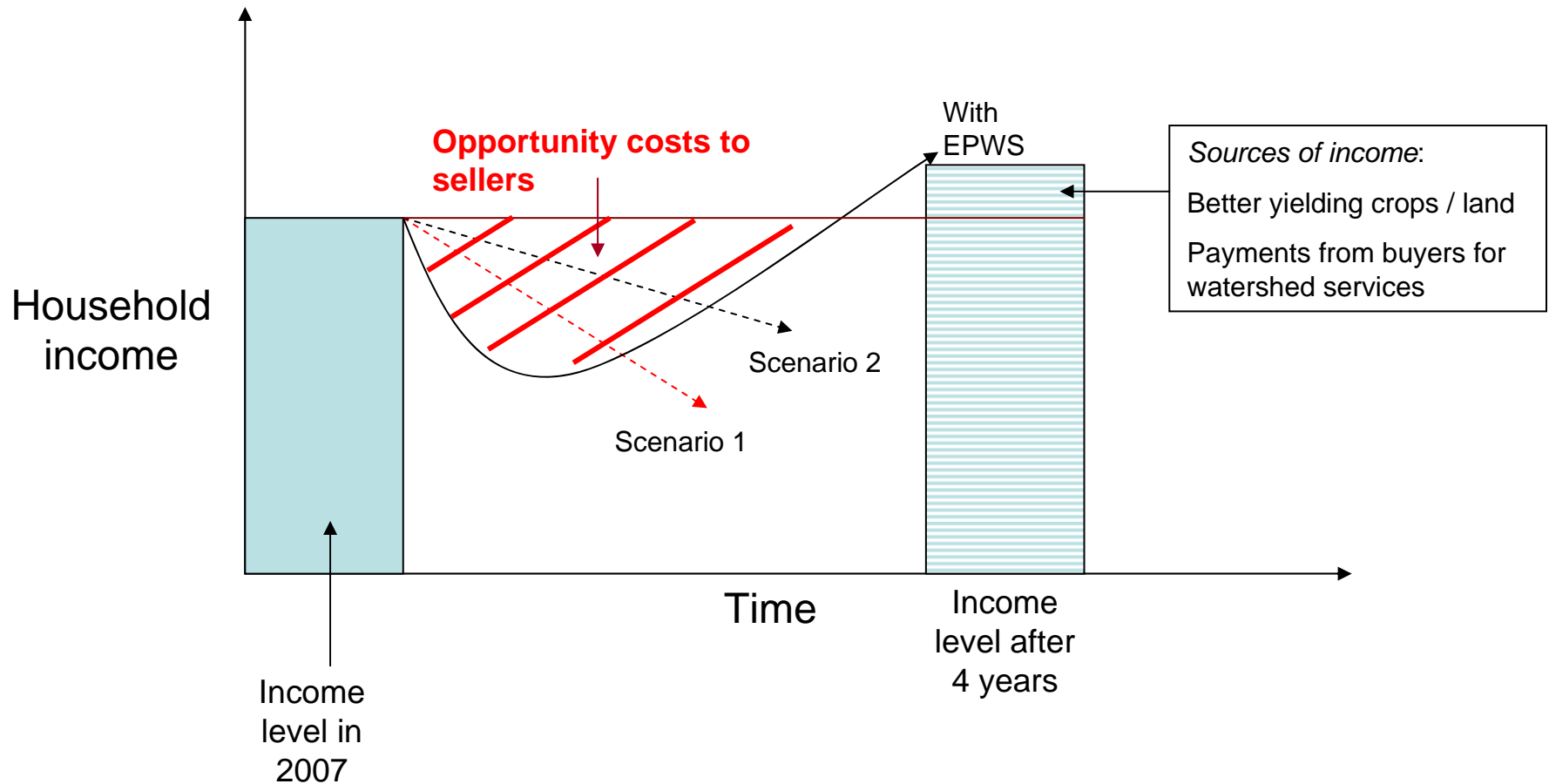
Buyer derives considerable savings from EPWS compared to alternative scenarios. These savings (and increased profit over time) fund payments to sellers of watershed services

# The seller's perspective (1)



Sellers face reduced income as consequence of water problem. EPWS delivers increased by the end of the intervention

# The seller's perspective (2)



The opportunity costs funded by the programme enable sellers to gain access to superior income streams



# Costs of PWS

- WWF/CARE with DGIS & Danida funding have met full costs of Phase I of baseline studies: hydrology, livelihood, cost-benefit analysis, legal-institutional (*US\$220,000*)
- Care/WWF will continue negotiations with DGIS and DANIDA to assume a share of cost risk for Phase II, co-financed by Dar es Salaam's beneficiaries of watershed services (the buyers)
- Care/WWF in negotiations with private sector participants (industrial users of Dar es Salaam's water):
  - DAWASCO has agreed to provide *US\$275,000* p/y over 4 years, amounting to *US\$1,100,000* in 4 years
- Research shows willingness to pay extra *US\$0.11* to *US\$0.18* p/m<sup>3</sup> for water where premium will be used for sustainable catchment management

# Communities Selected for Initial Intervention

Name	Ward	Districts	Population
Nyingwa	Kibungo	Morogoro Rural	1734
Lanzi	Kibungo	Morogoro Rural	1101
Kibungo juu	Kibungo	Morogoro Rural	1116
Dimilo	Kibungo	Morogoro Rural	909
Kifuru	Kibogwa	Morogoro Rural	632
Kibogwa	Kibogwa	Morogoro Rural	1770
Nyachiro/Tanana	Kibogwa	Morogoro Rural	1698
<b>Sub total (first 2 years)</b>	<b>2</b>	<b>1</b>	<b>8960</b>
<b><i>Scaling-up Kilbungo Total</i></b>	<b>11</b>	<b>2</b>	<b>45578</b>

# Estimated costs and benefits to communities

- Restoration of ecosystems in steep slopes and riparian zones for a total cost of *US\$1,287,000* (excluding opportunity cost and capacity building)
- Benefits for communities - changing from subsistence to sustainable agriculture:
  - 60% increase in land productivity in the 4<sup>th</sup> year (cash crops)
  - payments for watershed services after the 4<sup>th</sup> year



# Food for Thought

- Equity rather than “pro-poor”
- Uniqueness of a business approach
- Restoration of symmetries between social, natural and finance capital – bringing a peasant and a CEO to the same table
- Partnership developmental and conservation NGOs – pit-falls and successes