

Monitoring, Adaptive Management, & Financing

IMPLEMENTATION





MONITORING

Establish monitoring protocols for technologies

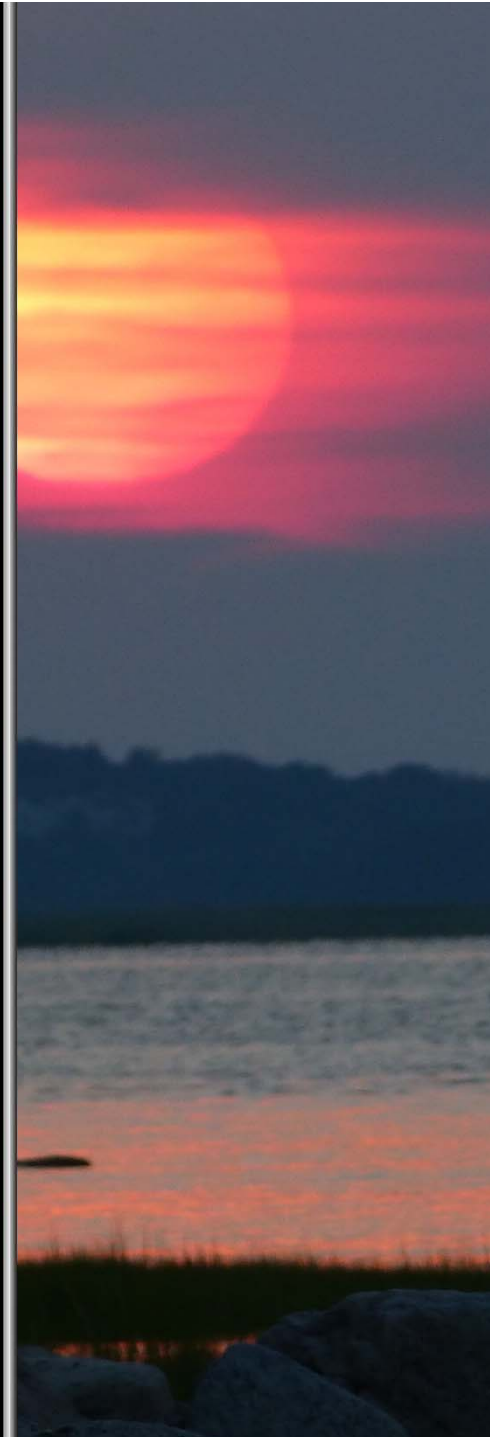
Establish monitoring protocols for meeting total maximum daily loads (TMDLs) in Cape Cod water bodies

Establish a process and structure for consolidating existing monitoring programs and data in to a centralized location

Identify region-wide monitoring needs

ADAPTIVE MANAGEMENT

A structured approach for meeting water quality goals that monitors outcomes, assesses progress over time, and requires recalibration of plans and projects, as necessary, based on review and evaluation of monitoring.

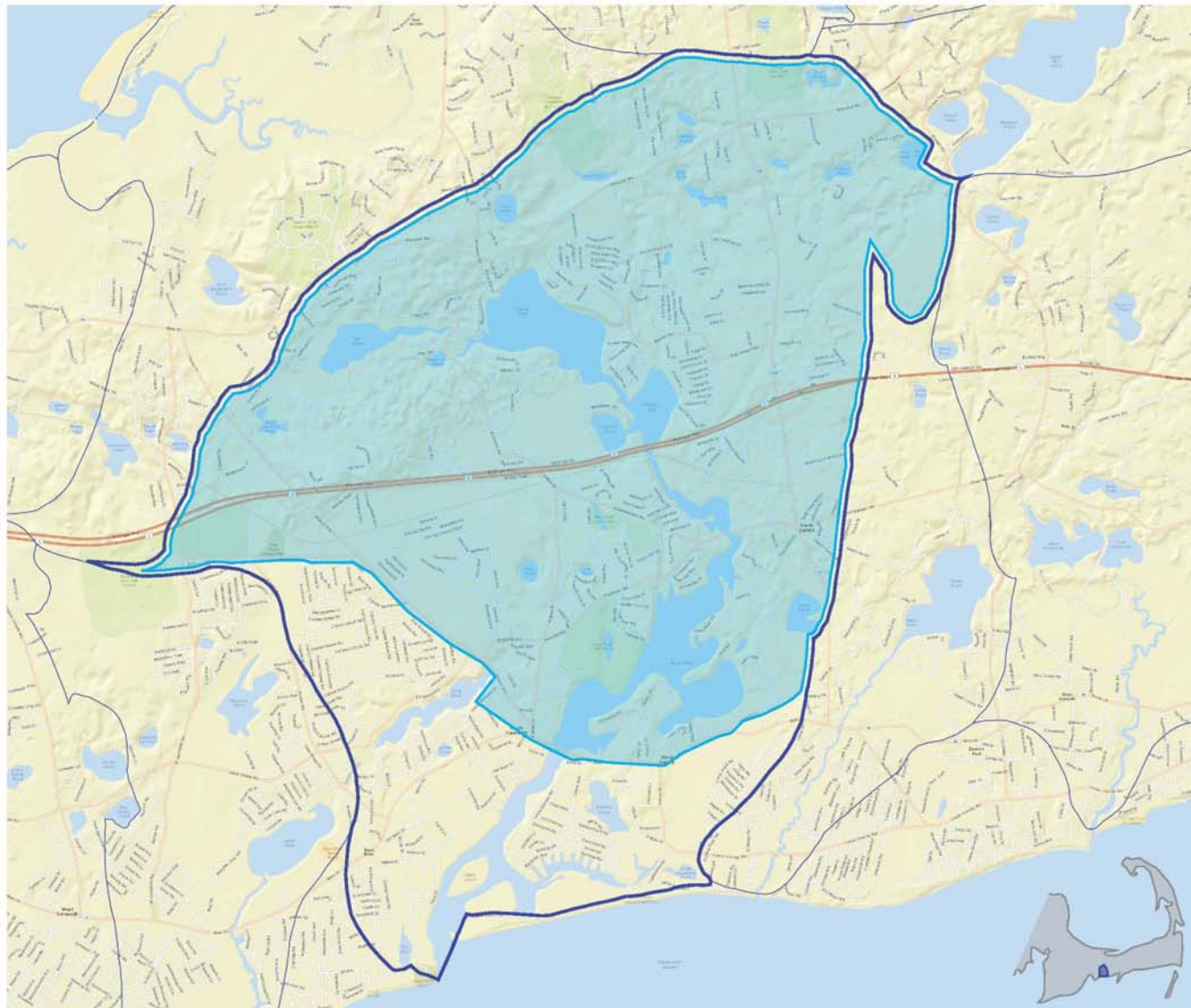


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Sample Cape Cod Subwatershed

TOWN OF YARMOUTH MASSACHUSETTS

MAP 1: TOTAL COLLECTION AREA NECESSARY TO MEET:
Current Nitrogen Removal Needs



NITROGEN CALCULATOR

1 Current N Removal Needs (TMDL) **+37,400 KG/YR** **+100%**

2 Additional N Removal Needs

Failed Title 5 Systems

Anticipated Growth Areas

3 Low Barrier Technologies

Fertilizer Management

Stormwater BMPs

4 Watershed Alternative Technologies

Const. Wetlands - GW

Const. Wetlands - SW

Phytobuffer

Perm. React. Barrier

Fertigation Wells

Shellfish Aquaculture

Inlet Widening

5 On-Site Alternative Technologies

IA VA Title 5 Systems

Alt. Toilet Systems

6 Collection/Sewer **-37,400 KG/YR** **-100%**

Remaining Nitrogen to Meet Goal **0 KG/YR** **0%**

Indicator Bar



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DATE
02_04_14

CAPE COD
COMMISSION

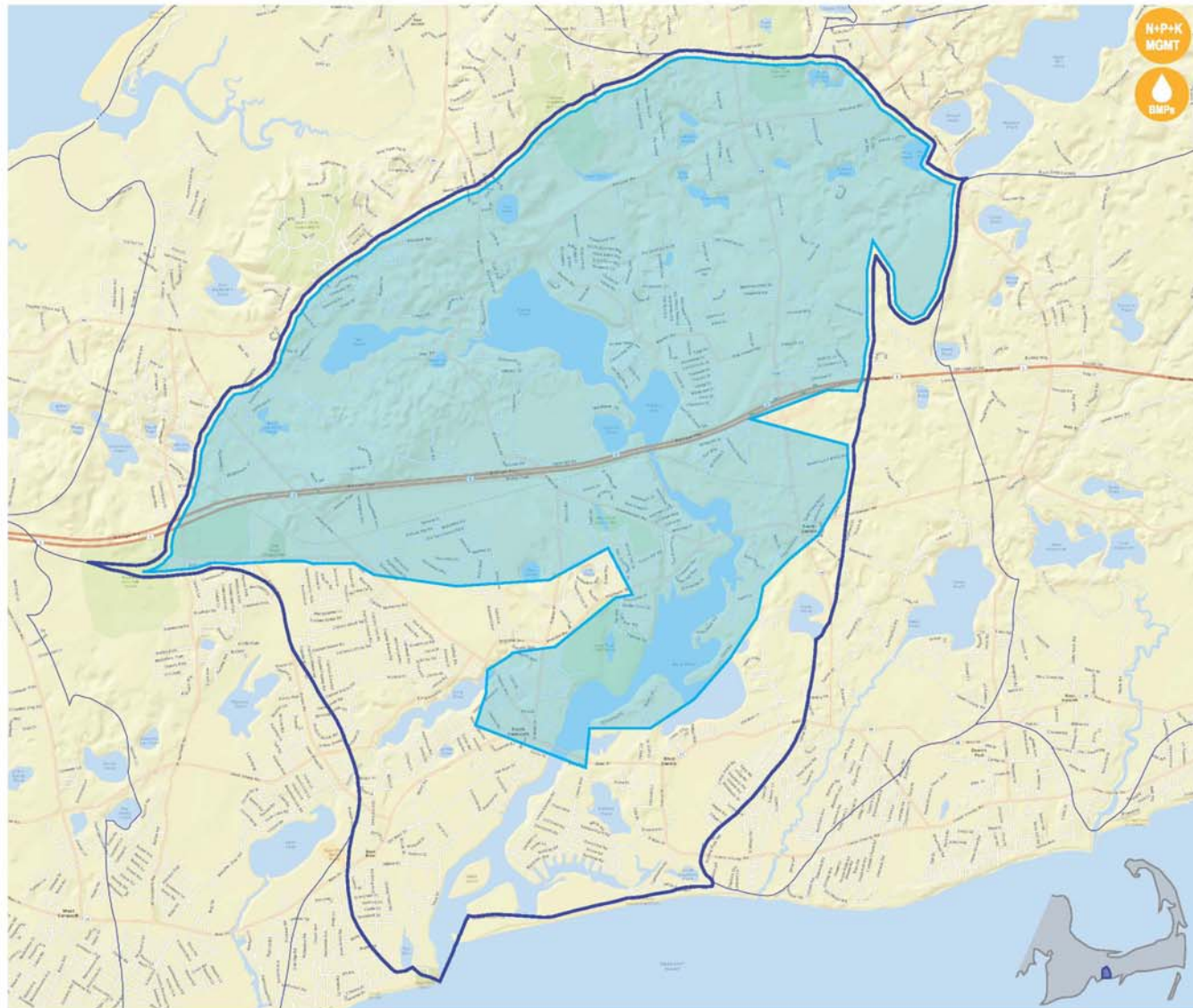
Draft Watershed Concept Maps
SHEET NUMBER
SC-1

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Sample Cape Cod Subwatershed

TOWN OF YARMOUTH MASSACHUSETTS

MAP 3: TOTAL COLLECTION AREA NECESSARY TO MEET:
Current Nitrogen Removal Needs
 + **Additional Future Nitrogen Removal Needs**
 - **Low Barrier Technologies**



NITROGEN CALCULATOR

1	Current N Removal Needs (TMDL)	+37,400 KG/YR	+93.5%
2	Additional N Removal Needs	+2,600 KG/YR	+6.5%
	Failed Title 5 Systems	+600 KG/YR	+1.5%
	Anticipated Growth Areas	+2000 KG/YR	+5%
3	Low Barrier Technologies	-10,000 KG/YR	-25%
	Fertilizer Management	-5,000 KG/YR	-12.5%
	Stormwater BMPs	-5,000 KG/YR	-12.5%
4	Watershed Alternative Technologies		
	Const. Wetlands - GW		
	Const. Wetlands - SW		
	Phytobuffer		
	Perm. React. Barrier		
	Fertigation Wells		
	Shellfish Aquaculture		
	Inlet Widening		
5	On-Site Alternative Technologies		
	IA VA Title 5 Systems		
	Alt. Toilet Systems		
6	Collection/Sewer	-30,000 KG/YR	-75%
	Remaining Nitrogen to Meet Goal	0 KG/YR	0%

Indicator Bar



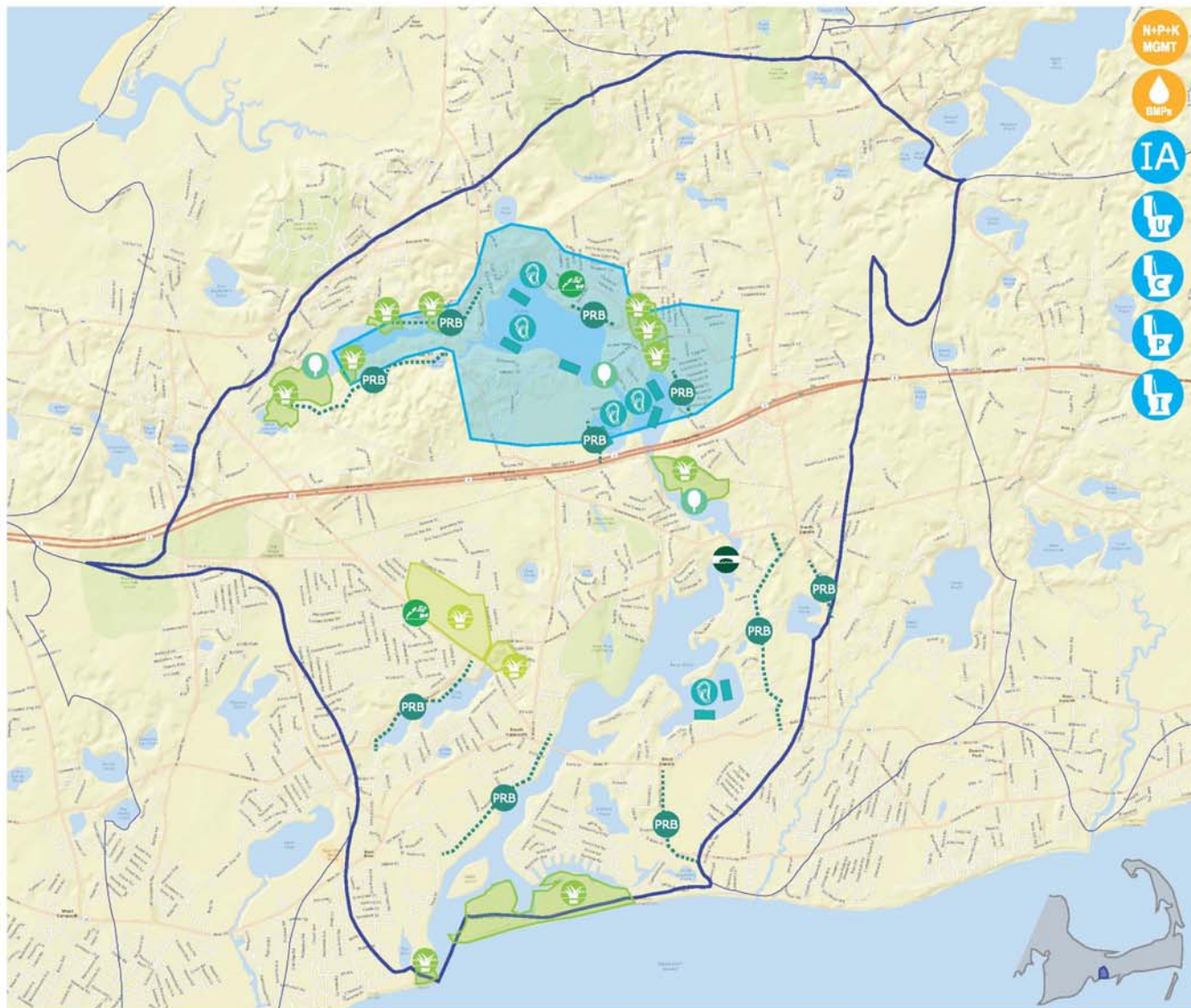
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Draft Watershed Concept Maps	SHEET NUMBER SC-3	

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Sample Cape Cod Subwatershed

TOWN OF YARMOUTH MASSACHUSETTS

MAP 5: TOTAL COLLECTION AREA NECESSARY TO MEET:
Current Nitrogen Removal Needs
 + **Additional Future Nitrogen Removal Needs**
 - Low Barrier Technologies
 - Watershed Alternative Technologies
 - On-Site Alternative Technologies



NITROGEN CALCULATOR

1	Current N Removal Needs (TMDL)	+37,400 KG/YR	+93.5%
2	Additional N Removal Needs	+2,600 KG/YR	+6.5%
	Failed Title 5 Systems	+600 KG/YR	+1.5%
	Anticipated Growth Areas	+2000 KG/YR	+5%
3	Low Barrier Technologies	-10,000 KG/YR	-25%
	Fertilizer Management	-5,000 KG/YR	-12.5%
	Stormwater BMPs	-5,000 KG/YR	-12.5%
4	Watershed Alternative Technologies	-22,100 KG/YR	-55.25%
	Const. Wetlands - GW	-3,000 KG/YR	-7.5%
	Const. Wetlands - SW	-4,000 KG/YR	-10%
	Phytobuffer	-100 KG/YR	-0.25%
	Fertigation Wells	-600 KG/YR	-1.5%
	Shellfish Aquaculture	-10,000 KG/YR	-25%
	Perm. Road Barrier	-3,900 KG/YR	-9.75%
	Inlet Widening	-500 KG/YR	-1.25%
5	On-Site Alternative Technologies	-2,800 KG/YR	-7%
	I/A Title 5 Systems	-0 KG/YR	-0%
	Alt. Toilet Systems	-2,800 KG/YR	-7%
6	Collection/Sewer	-5,100 KG/YR	-12.75%
	Remaining Nitrogen to Meet Goal	0 KG/YR	0%

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FINANCING

FINANCING MODEL – A TOOL FOR COMMUNITIES TO EVALUATE DIFFERENT FINANCING OPTIONS

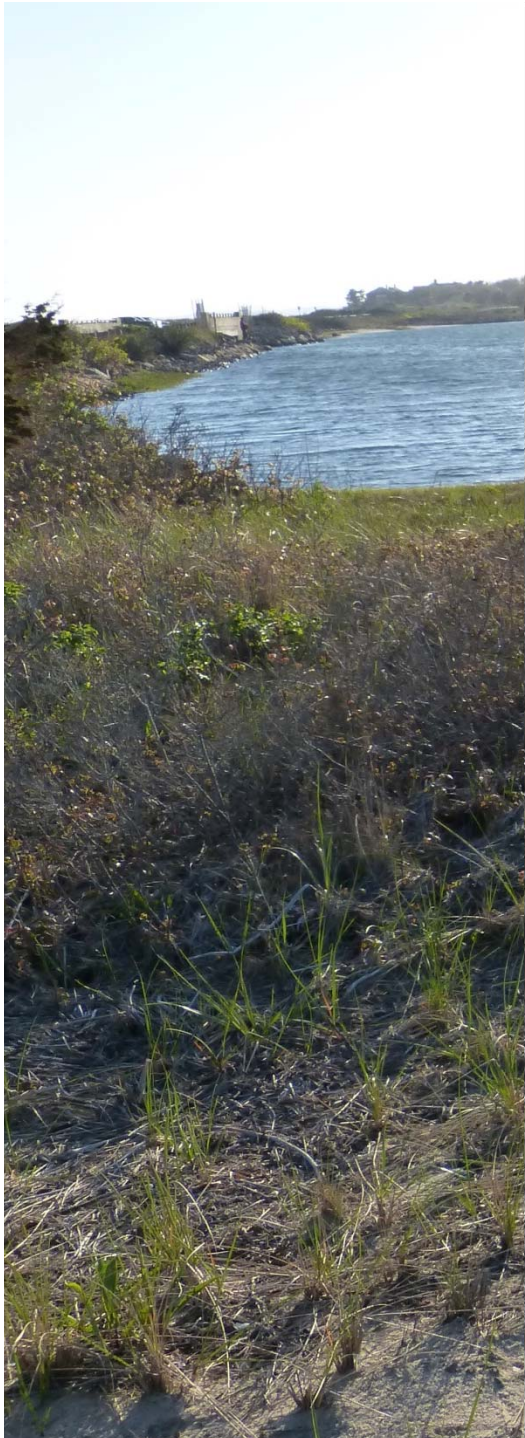
Starting with existing costs

Include new costs in **COST MODULE**

Identify options in **REVENUE MODULE**

Calculate impact in **AFFORDABILITY MODULE**





SUB-REGIONAL MEETINGS

What are the key questions or considerations that the sub-regional groups should examine or explore regarding the topics of monitoring, adaptive management and financing/affordability?