PROJECT ON INTEGRATED NATURAL RESOURCE MANAGEMENT
IN THE BAIKAL BASIN TRANSBOUNDARY ECOSYSTEM

Transboundary Diagnostic Analysis

workshop

Ulan-Ude 18-19 September 2012

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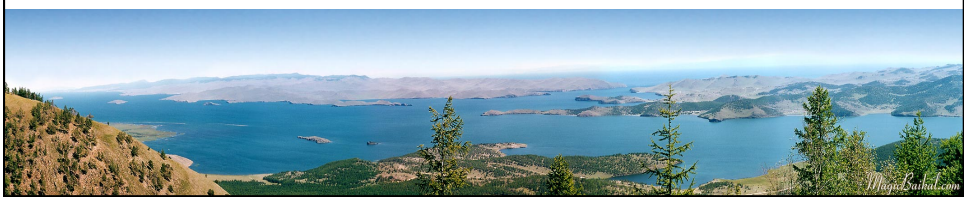
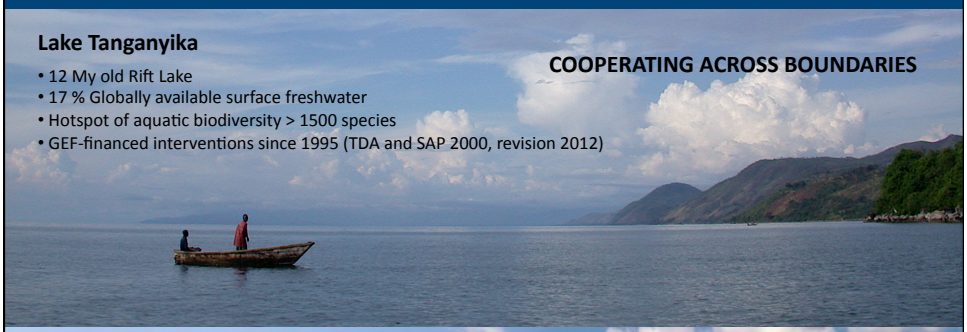


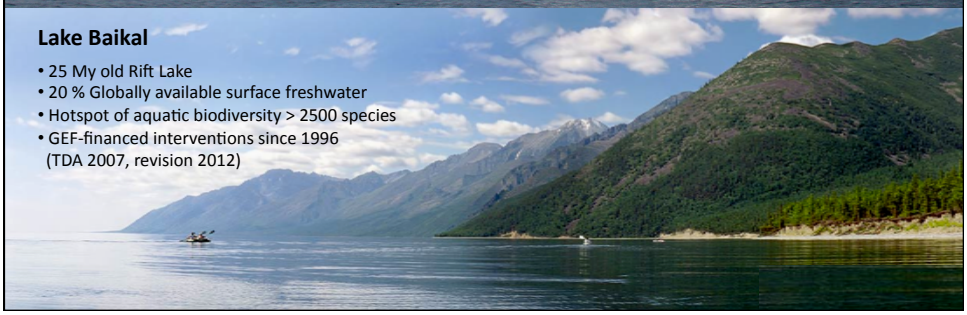
TRANSBOUNDARY DIAGNOSTIC ANALYSIS
LAKE BAIKAL BASIN



Lake Tanganyika

- 12 My old Rift Lake
- 17 % Globally available surface freshwater
- Hotspot of aquatic biodiversity > 1500 species
- GEF-financed interventions since 1995 (TDA and SAP 2000, revision 2012)

COOPERATING ACROSS BOUNDARIES



Lake Baikal

- 25 My old Rift Lake
- 20 % Globally available surface freshwater
- Hotspot of aquatic biodiversity > 2500 species
- GEF-financed interventions since 1996 (TDA 2007, revision 2012)

TRANSBOUNDARY DIAGNOSTIC ANALYSIS
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OBJECTIVES AND STRUCTURE OF THIS WORKSHOP

- Ensure that all stakeholders have a shared understanding of GEF TDA-SAP process
- Establish overarching framework to guide revision and enhancement of TDA
- Prioritise transboundary problems for subsequent strategic interventions
- Elaborate causal chain analysis to ensure that root causes of threats to Lake Baikal basin ecosystem are well-understood
- Institutional/governance analysis of strengths and weaknesses relevant to integrated water resource management in Lake Baikal basin
- Ensure mutual agreement on remaining tasks (e.g. technical baseline data), expected inputs, and deadlines for TDA finalisation

PART 1	PART 2	PART 3	PART 4	PART 5
Introduction to GEF TDA-SAP Approach	Joint fact-finding: Assessment and Prioritisation	Joint fact-finding: Causal Chain Analysis	Joint fact-finding: Governance Analysis	Discussion of Tasks Remaining to Finalise TDA

TRANSBOUNDARY DIAGNOSTIC ANALYSIS
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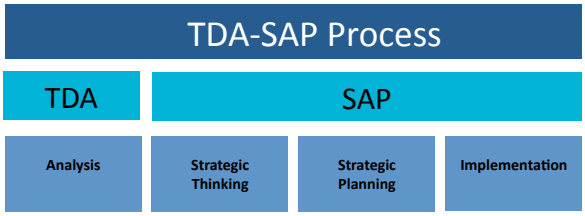
PART 1

GEF TDA-SAP Approach

WHY DO WE NEED A TDA-SAP APPROACH?

- Sustainable management requires **informed** decision making
- Environmental issues are often complicated, and financial resources limited: **prioritisation** of key problems is necessary
- Transboundary issues require a **cooperative approach**
- GEF TDA-SAP approach based on over 15 years of global experience with complex international waters issues (currently covering > 20 water bodies in > 100 countries)



TRANSBOUNDARY DIAGNOSTIC ANALYSIS
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TRANSBOUNDARY DIAGNOSTIC ANALYSIS (TDA)

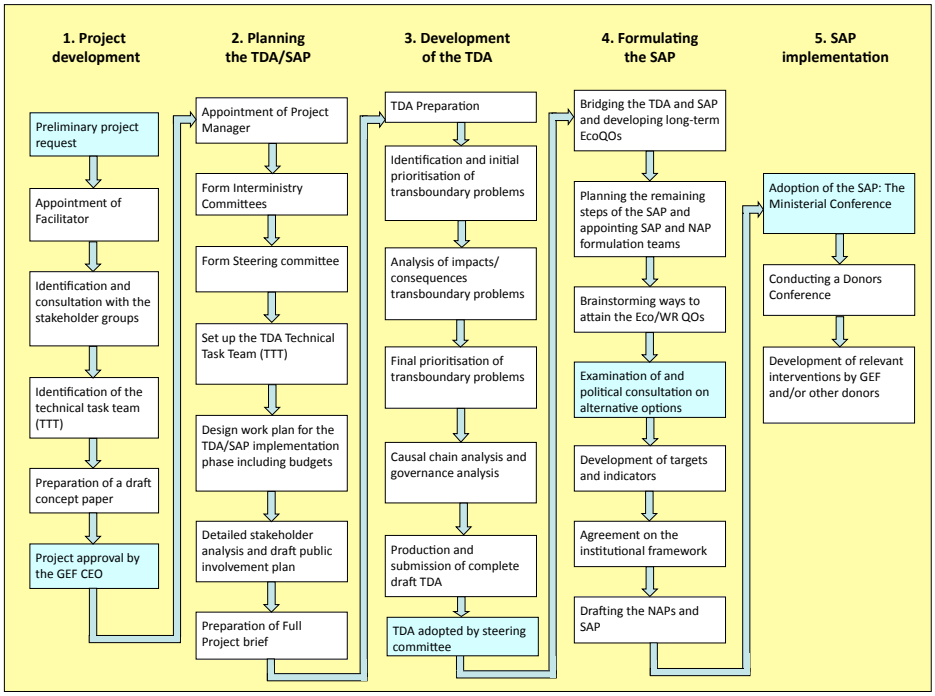
- Scientific and technical fact-finding analysis
- Should be an objective assessment and not a negotiated document
- Acts as a diagnostic tool for measuring the effectiveness of SAP implementation

STRATEGIC ACTION PROGRAMME (SAP)

- Negotiated policy document
- Establishes clear priorities for actions to resolve transboundary waters problems
- Identifies policy, legal and institutional reforms and investments needed to address priority transboundary waters problems
- SAP preparation is a cooperative process among key stakeholders

TRANSBOUNDARY DIAGNOSTIC ANALYSIS LAKE BAIKAL BASIN

TDA	SAP
• TDA identifies: - Environmental & socioeconomic impacts - Underlying sectoral and root causes - Analysis of governance • Based on reasoned and multisectoral consideration of the issues	• Outlines policy, legal, and institutional reforms & investments needed to resolve priority transboundary issues • Must be agreed before technical support, capacity-building, or investment projects can be developed
Factual basis for the formulation of SAP	**Sets out specific actions for each country that can be adopted nationally and harmonised regionally**



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TDA Preparation

TDA DEVELOPMENT: JOINT FACT-FINDING

Defining system boundaries

Collection & analysis of data / information

Identification and prioritisation of transboundary problems

Analysis of impacts/consequences of each transboundary problem

Causal chain analysis and governance analysis

Scientific Advisory Group

Production and submission of complete draft TDA

TDA adopted by steering committee

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FORMULATING THE SAP

Planning the steps of the SAP

Bridging the TDA and SAP and developing long-term **Ecosystem/Water Resource Quality Objectives** (see next slide)

Brainstorming ways to attain the Eco/WR Qos

Examination and political consultation on alternative options

Development of targets and indicators and agreement on the institutional framework

Drafting the action programmes

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ECOSYSTEM QUALITY OBJECTIVES

- Ecosystem or Water Resource Quality Objectives (Eco/WR QOs) are statements of the 'vision' of how stakeholders would like to see the state of the system in the future
- Eco/WR QOs provide the long-term goal for adaptive management

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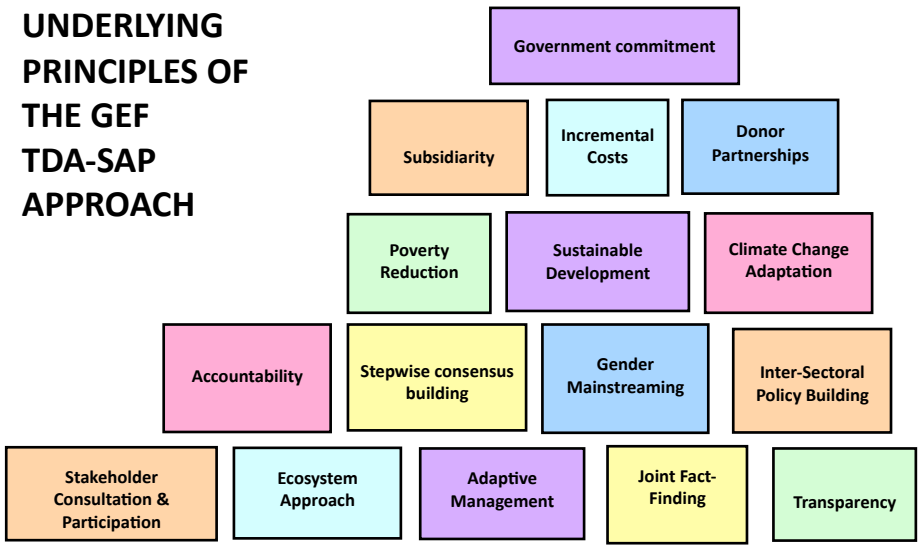
UNDERLYING PRINCIPLES OF THE GEF TDA-SAP APPROACH



ECOSYSTEM APPROACH

Convention on Biological Diversity (1998) "*The ecosystem approach is based on the application of appropriate scientific methodologies focused on levels of biological organization which encompass the essential processes and interactions amongst organisms and their environment*"

Ecosystem approach
www.cbd.int/ecosystem

ECOSYSTEM APPROACH IS BASED ON 12 PRINCIPLES TRANSLATED INTO 5 IMPLEMENTATION STEPS BY IUCN:

1. Determining the main stakeholders, defining the ecosystem area, and developing the relationship between them.
2. Characterizing the structure and function of the ecosystem, and setting in place mechanisms to manage and monitor it.
3. Identifying the important economic issues that affect the ecosystem and its inhabitants.
4. Determining the likely impact of the ecosystem on adjacent ecosystems.
5. Deciding on long-term goals, and flexible ways of reaching them.

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ADAPTIVE MANAGEMENT

KEY FEATURES:

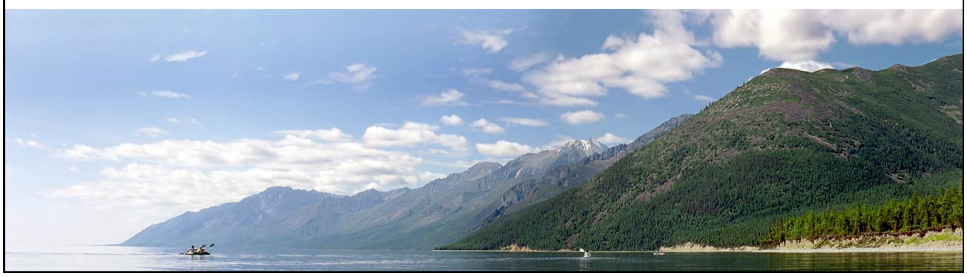
- Flexible system that is designed to cope with uncertainty and complexity in natural environmental and social systems
- Systematic process for continually improving management policies and practices by learning from the outcomes of operational programs

Adaptive management

Adaptive management process has two vital components

TDA AS BASIS FOR THE SAP

- Well formulated, evidence-based TDA will make it easier to develop logical, sustainable, and politically acceptable solutions for environmental challenges
- Findings from the TDA, particularly those relating to the priority issues, sectors and causes, will be used in the first stages of SAP development
- Long-term Eco/WR Qos in SAP should flow from the priority issues, sectors, and causes identified in the TDA
- SAP development should involve developing a matrix of options and identifying which part of the causal chain from the TDA they address



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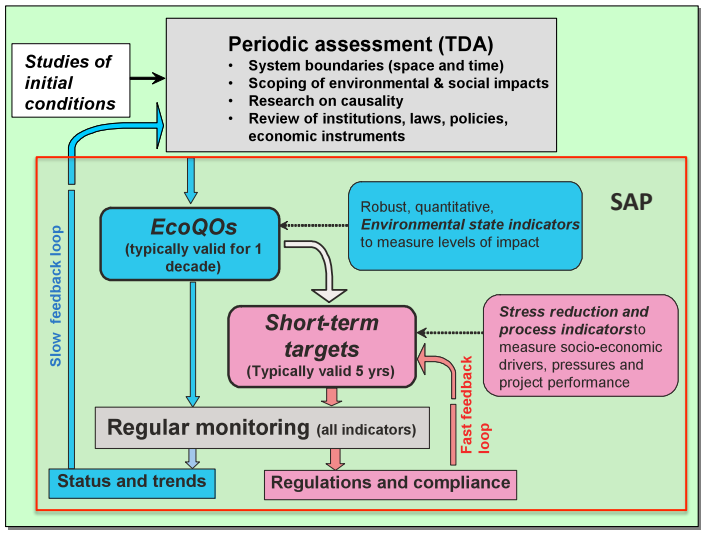
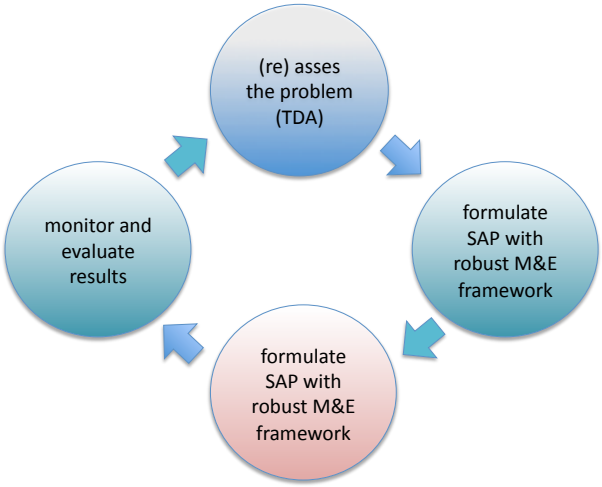
TDA AND SAP AS BASIS FOR ADAPTIVE MANAGEMENT



TDA AND SAP AS BASIS FOR ADAPTIVE MANAGEMENT



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PART 2

Joint fact finding:

Assessment and Prioritisation

FINALISING THE ASSESSMENT OF TRANSBOUNDARY ISSUES AFFECTING THE BAIKAL BASIN

- Inventory of transboundary issues identified in preliminary TDA requires a revision
- Formulation of issues/concerns needs to be specific, accurate, and clear
- For each problem, the geographical scope, environmental impact and socio-economic impact should be determined

General Issue or Concern	Specific Problem	Geographical scope	Environmental Impact	Socio-economic Impact
Degradation of the quality of surface water, groundwater, and soil	• Chemical contamination • Microbial contamination • Eutrophication • Increased suspended solids and sedimentation • Solid waste contamination • Thermal pollution	• Localised • Localised • Localised • Basin-wide • Basin-wide • Localised	• Loss of fish stocks • Loss of biodiversity	• Health problems • Increased costs for purification of water

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GENERAL CONCERN	SPECIFIC POBLEM
Human Health (= socio-economic impact)	• Water-borne diseases (microbial/viral pollution)
Pollution	• POPs • Heavy metals • Organic pollution (sewage discharge)
Hydrological problems	• Groundwater reduction
Biodiversity loss (= environmental impact)	• Climate change / warming (= cause) • Alien invasive species • Overgrazing by livestock • Unsustainable forestry practices • Forest fires
Environmental damage	• Mining industry (= cause) • Construction and operation of pipelines and electricity transmission lines (= cause) • Road and port construction (= cause) • Transport (= cause)
Insufficient transboundary agreements (= cause)	• Differences in legal and regulatory frameworks between Russian Federation and Mongolia (= cause)

ISSUES IDENTIFIED IN PRELIMINARY TDA

Section 6 preliminary TDA

GENERAL CONCERN	SPECIFIC POBLEM	
Degradation of Water and Soil Quality	• Chemical contamination • Microbial contamination • Eutrophication • Solid waste contamination	• Increased suspended solids and sedimentation • Thermal pollution
Degradation of Aquatic & Terrestrial Habitats	• Destruction of fish spawning grounds • Destructive logging methods • Illegal logging • Forest fires	• Construction of nearshore settlements, roads, ports, and pipelines •Overgrazing by livestock • Destructive mining methods
Unsustainable Fisheries & Wildlife Exploitation	• Illegal fishing • Poaching of wildlife	
Insufficient Critical Habitat Protection & Restauration	• Insufficient protection of aquatic and near-shore habitats, including river delta's	• Lack of a transboundary protected area
Modification of Hydrological Flows	• Lake level increase • Ground water level changes	
Biological Invasions	• Species invading aquatic habitats	• Species invading terrestrial habitats
Global Climate Change Impacts	•Unpredictable weather patterns • Extreme weather events • Floods / drought	• Cross-cutting problem that affects all the above-mentioned issues

UPDATING THE TDA

EXERCISE A:

- Review and update list
- Define geographic scope
- Environmental impact
- Socio-economic impact

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WHY PRIORITISE?

- Environmental issues in transboundary water basins are often abundant and complex, while financial and human resources are limited
- Prioritisation enables governments and other stakeholders to focus limited financial and human resources on key environmental issues and maximise impact

RATING CRITERIA FOR PRIORITISATION

SEVERITY: The **level of damage to the Lake Baikal transboundary basin** that can reasonably be expected within 10 years under current circumstances - given continuation of the problem.

TAKE INTO ACCOUNT THE FOLLOWING CRITERIA:

- Expected future risk of the problem
- Relationship with other transboundary problems
- Expected multiple benefits that might be achieved by addressing the problem
- Lack of perceived progress in addressing or solving the problem at national level
- Recognised multi-country water conflicts
- Reversibility / irreversibility of the problem

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RATING CRITERIA FOR PRIORITISATION

SEVERITY: The **level of damage to the Lake Baikal transboundary basin** that can reasonably be expected within 10 years under current circumstances - given continuation of the problem.

4: Very High	Likely to destroy or eliminate part of the ecosystem
3: High	Likely to seriously degrade part of the ecosystem
2: Medium	Likely to moderately degrade part of the ecosystem
1: Limited	Likely to only slightly impair part of the ecosystem

Table 1: Simple rating form for prioritization of transboundary issues that affect the Lake Baikal basin

ISSUE	SEVERITY	SCOPE	OVERALL RATING
Issue 1			
Issue 2			
Issue 3			
Issue 4			
Issue 5			

RATING CRITERIA FOR PRIORITISATION

SCOPE: Most commonly defined spatially as the **geographic scope of impact on the ecosystem** integrity that can reasonably be expected within 10 years under current circumstances given the continuation of existing situation.

4: Very High Likely to be very widespread or pervasive, and affect the ecosystem throughout the entire basin

3: High Likely to be widespread in its scope and affect the ecosystem in many parts of the basin

2: Medium Likely to be localized in its scope and affect the ecosystem in some parts of the basin

1: Limited Likely to be very localized in its scope and affect the ecosystem only in limited parts of the basin

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RATING CRITERIA FOR PRIORITISATION

OVERALL RATING: The overall rating is derived by combining the results of the severity and the scope.

⇒ It is important that you can provide technically sound arguments for your rating

EXERCISE B:

- Conduct a prioritisation of the transboundary problems identified for the Baikal Basin

SEVERITY \ SCOPE	4: Very high	3: High	2: Medium	1: Limited
4: Very high	8	7	6	5
3: High	7	6	5	4
2: Medium	6	5	4	3
1: Limited	5	4	3	2

PART 3

Joint fact finding:

Causal Chain Analysis

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WHY IMPLEMENT A CAUSAL CHAIN ANALYSIS ?

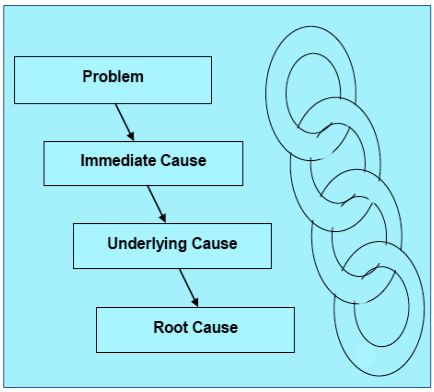
" Environmental problems should be dealt with at their roots, irrespective of sectoral or geographical boundaries "

1992 UN Conference on Environment and Development

⇒ Need for a holistic approach to integrated natural resource management

WHAT IS A CAUSAL CHAIN ANALYSIS ?

- Ordered series of statements/facts that link the causes of problems with their effects
- Each link in the chain is formed by answering the question **WHY**?
  - Why does this problem exist?
  - Why is it caused?



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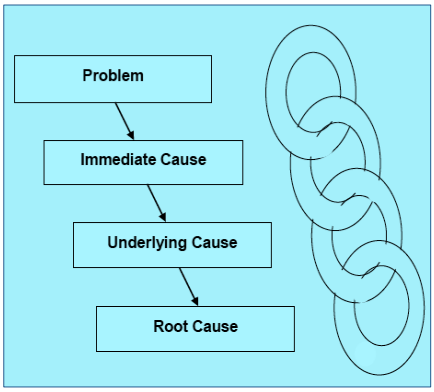
WHAT IS AN IMMEDIATE CAUSE ?

- Immediate causes are typically **direct technical causes** of the problem
- Predominantly tangible, visible
- Distinct areas of impact (exceptions: atmosperic deposition, climate change, etc.)



Problem	Immediate cause
Modification of stream flow	**Changed diversions:** Domestic and industrial water supply Agricultural uses Trans-basin transfers
	Changes in storage: Reservoirs Lakes
	Changes in land use: Deforestation Changes in agricultural practice Artificial banking of rivers
Chemical pollution	**Pollution from diffuse sources** Runoff Emissions from storage of chemical products Solid waste, liquid wastes Emissions from transport Accidental releases (e.g. shipping, industry)
	Pollution from point sources Operational discharge of liquids and gaseous effluents Emissions from storage of chemical products Solid waste, liquid wastes Emissions from transport)
Loss or modification of ecosystems	**Loss or modification of aquatic habitats**
	Changes in land use (Urbanisation, agro-forestry, etc.)
	Introduced species
	Changes in the sediment transport regime

EXAMPLES OF IMMEDIATE CAUSES

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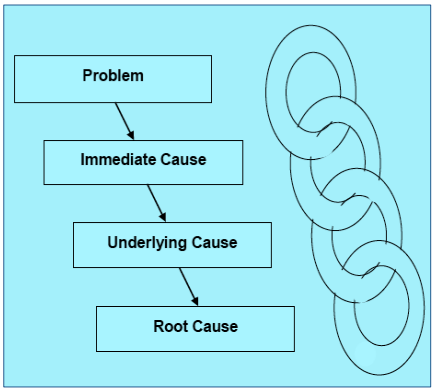
WHAT IS AN UNDERLYING CAUSE ?

- Underlying causes **contribute** to the immediate causes
- Broad definition:
  "*Underlying resource uses and practices, and their related social and economic causes*"



UNDERLYING CAUSES

RESOURCES USES AND PRACTICES can include:

-- land use
-- waste discharges
-- damaging or unsustainable practices
-- uses of water (diversion, storage etc)

SOCIAL AND ECONOMIC CAUSES can include:

-- increased sectoral development
-- investment, operation and maintenance
-- waste minimisation procedures
-- demand and supply side management, etc

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EXAMPLES OF UNDERLYING CAUSES THAT CONTRIBUTE TO EUTROPHICATION

RESOURCE USES & PRACTICES:

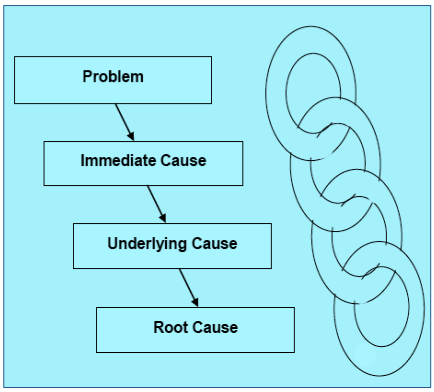
- Inefficient agricultural practices
- Inadequate waste management
- Lack of cultivation margins around the lake and rivers in the catchment
- Concentration of agro-industrial facilities and livestock production

SOCIAL, ECONOMICAL, LEGAL & POLITICAL ISSUES:

- Lack of human / technical capacity
- Limited capital investment
- Lack of incentives (subsidies)
- Inadequate economic sanctions (taxes)
- Deficiencies in implementation of regulations, monitoring and enforcement
- Ineffective national / regional policies

WHAT IS A ROOT CAUSE ?

- Root causes are often related to **fundamental aspects** of macro-economy, demography, consumption patterns, environmental values, and access to information and democratic processes



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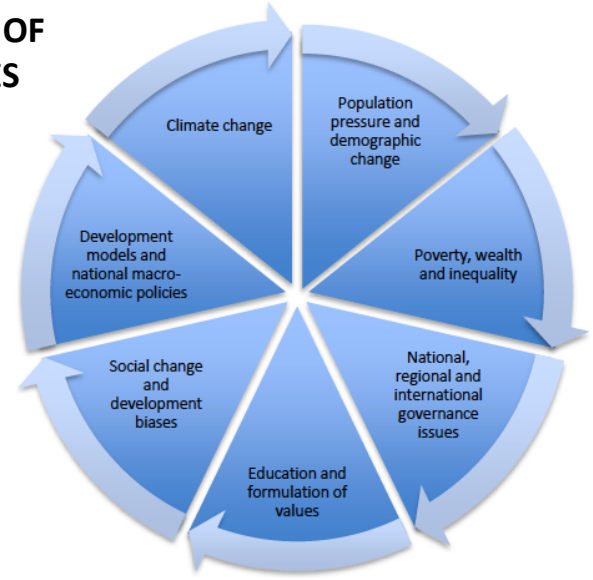
CATEGORIES OF ROOT CAUSES



EXAMPLE OF ROOT CAUSES FOR EUTROPHICATION

- Demographic growth resulting in increased production of domestic sewage, resulting in higher N and P emissions
- Demographic growth causing an increased market demand for farming products, leading to intensification of agriculture, resulting in higher N and P emissions
- Cultural change in diet leading to increased market demand for meat, leading to intensification of animal farming, resulting in higher N and P emissions

TRANSBOUNDARY DIAGNOSTIC ANALYSIS
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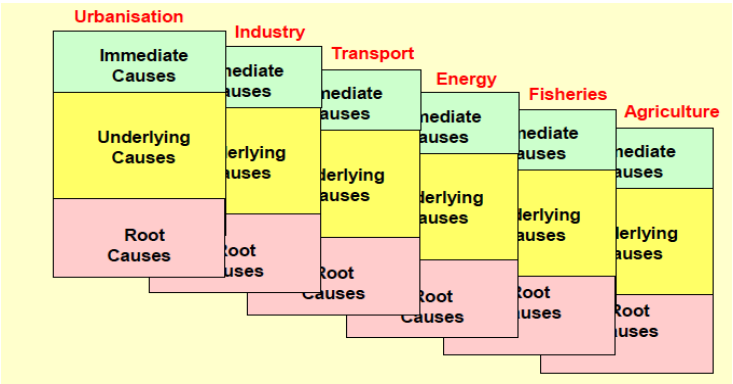
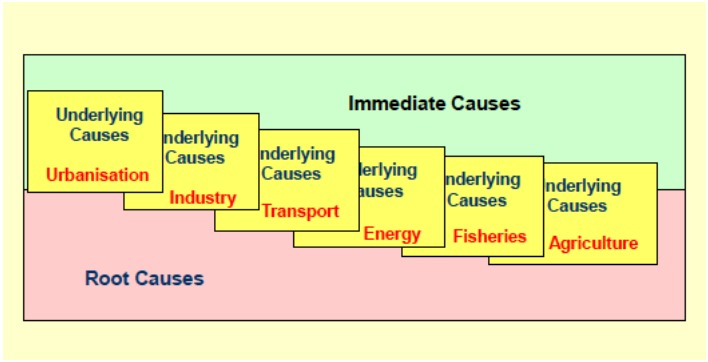
SECTORAL DIMENSIONS OF A CAUSAL CHAIN

- Each of the sectors involved in transboundary issues will have a causal chain, which may be connected to the chain of another sector



SECTORAL DIMENSIONS OF A CAUSAL CHAIN

- Immediate and root causes may span several sectors
- Underlying causes often show more clear sectoral distinction



CAUSAL CHAIN ANALYSIS PROCESS

IDENTIFY **IMMEDIATE CAUSES** OF EACH PRIORITISED ISSUE
&
IDENTIFY THE **SECTORS** THAT CONTRIBUTE TO THE ISSUE

↓

FOR EACH SECTOR, IDENTIFY **UNDERLYING RESOURCE USES AND PRACTICES** THAT CONTRIBUTE TO EACH IMMEDIATE CAUSE
&
IDENTIFY THE **UNDERLYING SOCIAL, ECONOMIC, LEGAL AND POLITICAL CAUSES** OF EACH IMMEDIATE CAUSE

↓

DETERMINE **ROOT CAUSES** OF EACH PRIORITISED ISSUE
&
LINK RESOURCE USES AND PRACTICES,
AND SOCIAL, ECONOMIC, LEGAL AND POLITICAL CAUSES

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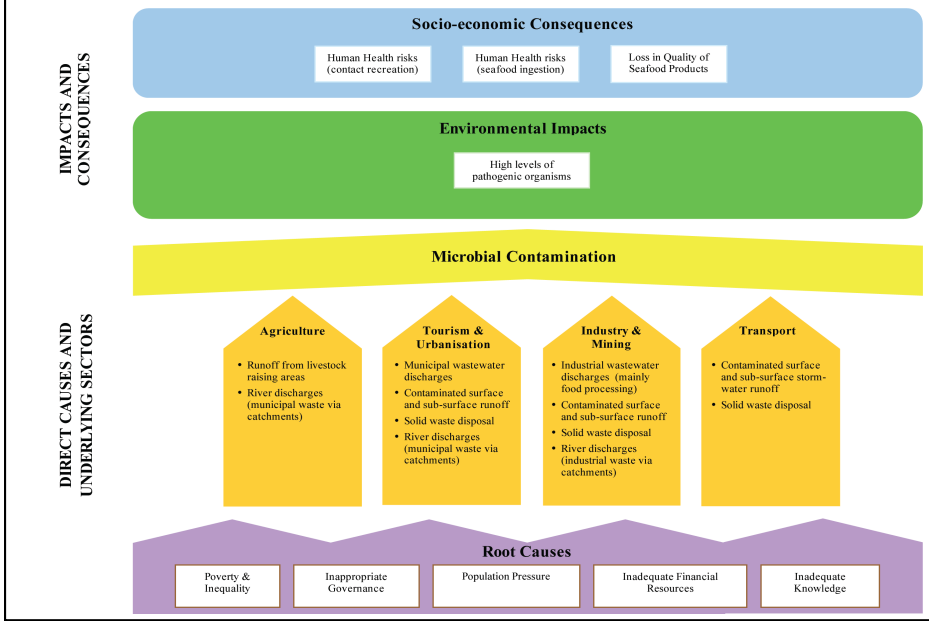

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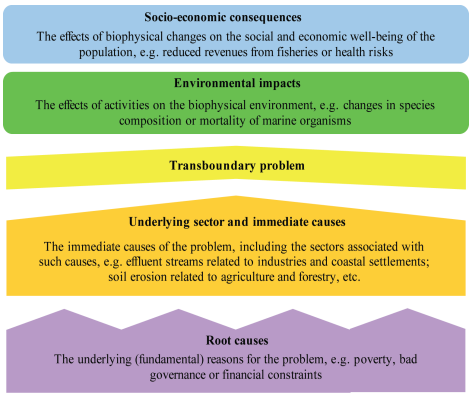
CCA PROCESS FOR LAKE BAIKAL BASIN

EXERCISE C:

- Conduct a Causal Chain Analysis for each priority issue
- Start with the immediate causes
- Determine underlying resource use practices, and identfiy the relevant sectors
- Determine the underlying socio-economic, legal and policy issues, and identify the relevant sectors
- Determine the root causes



PART 4

Joint fact finding:

Governance Analysis

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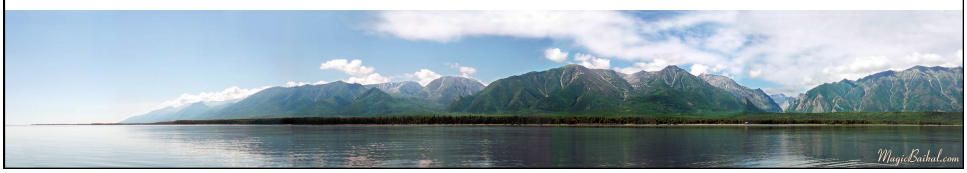
WHY CONDUCT A GOVERNANCE ANALYSIS ?

The water crisis is often a crisis of governance.

GWP Framework for Action, 2000 World Water Forum



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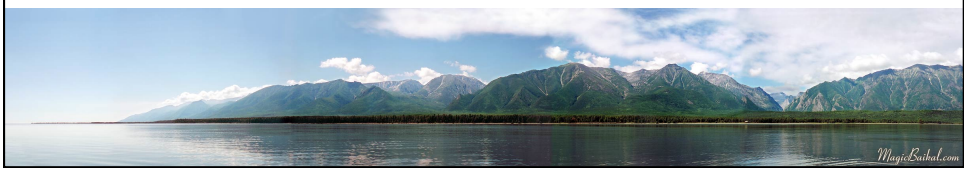
WHY CONDUCT A GOVERNANCE ANALYSIS ?

- Not all public policy or sustainable development issues can be solved by governments – power and decisions are also exercised by social organisations and other actors from civil society
- Governance frameworks provide the context within which human actions (whether as drivers or as responses) take place
- Important characteristic of governance analysis is to find out where decisions are made, how decisions work in practice, and how they are supposed to work in theory
- Governance analysis can be considered one of the cornerstones of sustainability and effectiveness of the TDA-SAP process



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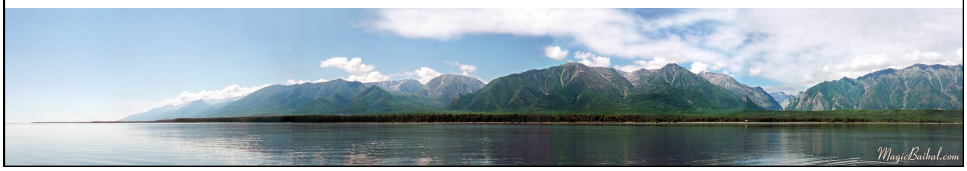
WHY CONDUCT A GOVERNANCE ANALYSIS ? [continued]

- Without a basic understanding of the existing policy/legal frameworks, institutional relationships and responsibilities at all levels, decisive issues may be overlooked or wrongly perceived, and impractical recommendations may emerge
- Governance analysis should describe the dynamic relations within political and social structures that underpin legislative and regulatory frameworks, decision-making processes and budgetary allocations
- Important to know if relevant other projects, programmes or investments have been approved or are in the pipeline for the next decade (current development portfolios should become integral part of TDA)



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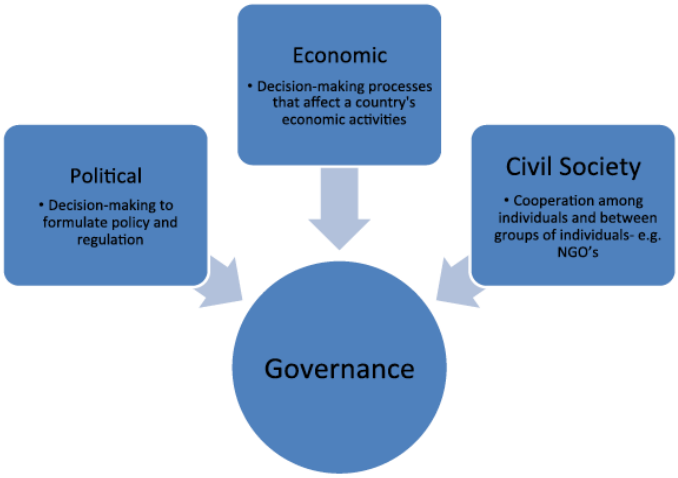
KEY GOVERNANCE MECHANISMS



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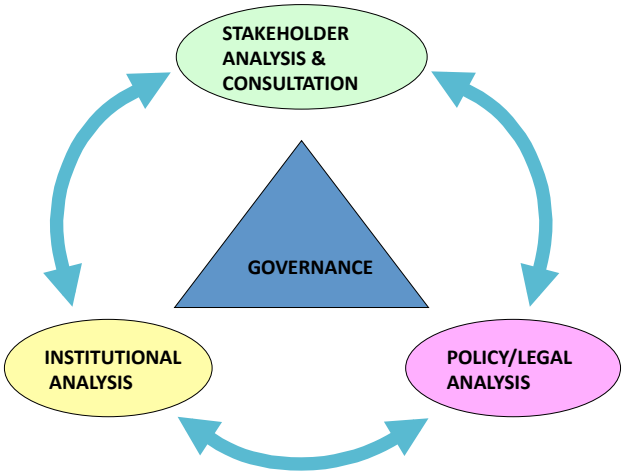
KEY ELEMENTS OF GOVERNANCE ANALYSIS



IMPORTANCE OF GOVERNANCE ANALYSIS IN TDA-SAP PROCESS

- Consultation with all stakeholders dominates entire TDA/SAP process
- Understanding of policy and institutional frameworks (including budgetary) provides crucial information for SAP formulation and implementation
- Enables SAP elaboration process to keep in touch with the reality and main interests of the key stakeholders

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EXAMPLE OF CROSS-CUTTING CAUSES IDENTIFIED AS GOVERNANCE ISSUES

UNDERLYING CAUSES OF EUTROPHICATION

- Ineffective national/regional policies or management plans
- Deficiencies in institutional capacity
- Deficiencies in legislation
- Deficiencies in enforcement

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GOVERNANCE ANALYSIS IN BAIKAL TDA CONTEXT

- Workshop participants conduct **Stakeholder Analysis**
- Legal expert (consultant) conducts **Policy and Institutional Analysis**

- SAG reviews outcomes of overall governance analysis prior to finalising and submitting TDA to Project Steering Committee

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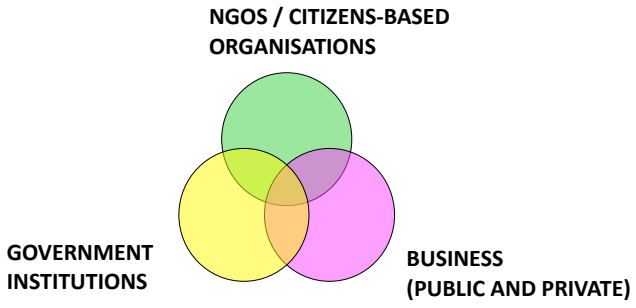
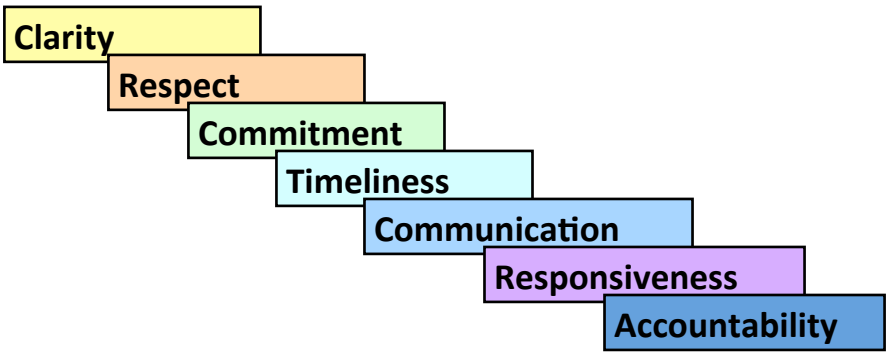
STAKEHOLDERS OF THE TDA-SAP PROCESS

- A stakeholder is any party involved and affected by an environmental issue
- A wide range of stakeholders are typically involved in TDA-SAP process
- Stakeholders should be independently identified, fully involved in TDA and fully consulted throughout SAP formulation process



GUIDING PRINCIPLES OF STAKEHOLDER INVOLVEMENT



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IDENTIFICATION & CONSULTATION WITH STAKEHOLDERS

KEY OBJECTIVES:

- Identify the main persons with power to resolve the issues and problems
- Identify stakeholders not appearing in preliminary TDA

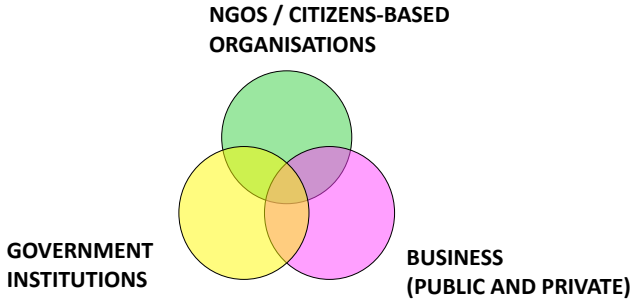

Table 4-13 Analysis of sectors and stakeholder groups causing (C) transboundary marine pollution problems as well as those impacted (I) by pollution.

Sector	Stakeholder	Transboundary problem									
		Micro-biological contaminants		Eutrophication (nutrient enrichment)		Marine Litter (solid waste)		Suspended solids		Chemical pollution	
Fisheries and Aquaculture	Artisanal fishers				I				I		I
	Industrial fishers				I				I		I
	Seaweed farmers				I				I		I
	Industrial prawn farmers			C	I			C	I		I
	Fish and shellfish farmers		I	C	I			C	I		I
Agriculture and Forestry	Charcoal makers			C				C			
	Small-scale loggers			C				C			
	Industrial loggers			C				C			
	Small-scale farmers			C				C		C	
	Large-scale farmers			C				C		C	
	Pastoralists	C		C							
	Ranchers										
	Poultry farmers	C		C							
	Dairy farmers	C		C							
	Beekeepers										
Tourism	Tourists		I		I	C	I		I		I
	Hotel owners/operators		I	C	I	C	I		I		I
	Small-scale traders					C					
	Tourist boat/SCUBA operators		I		I	C	I		I		I
Mining	Coral/lime miners							C			
	Sand miners							C			
	Small-scale salt producers		I		I				I		I
	Industrial salt works		I		I				I		I
	Small-scale miners							C		C	
	Industrial mining companies							C		C	
	Fuel suppliers and stations									C	
	Oil and gas production									C	
Industry	Heavy manufacturing					C		C		C	
	Light manufacturing					C		C		C	
	Agro-processing industries	C		C			I		I		I
	Oil refining									C	
Transportation	Ports	C			I	C	I		I	C	
	Dredging companies							C		C	
	Clearing and forwarding										
	Railway										
	Roads (incl. traffic)									C	
	Airports										
	Airlines										
	Shipping						I			C	

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STAKEHOLDER ANALYSIS

EXERCISE D:

- Conduct a Stakeholder Analysis using the Exel table provided
- For each sector, identify the associated governing institutions, and identify the relevant stakeholder groups as well as their relationship with the problem (cause and/or impacted by),

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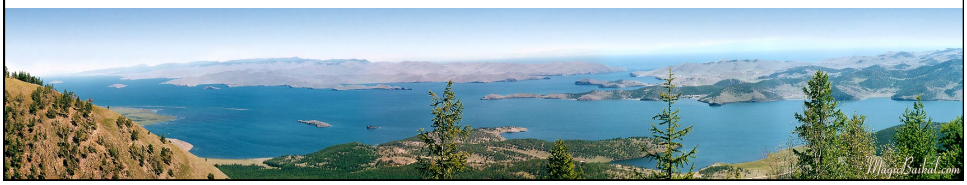
LAKE BAIKAL BASIN

FINALISING THE TDA FOR THE BAIKAL BASIN

TRANSBOUNDARY DIAGNOSTIC ANALYSIS
LAKE BAIKAL BASIN

Subject	Responsible	Date
Executive summary		
Glossary		
Main text		
Maps & illustrations		
Contents lists		
Acknowledgements		
Language		
PSC meeting		

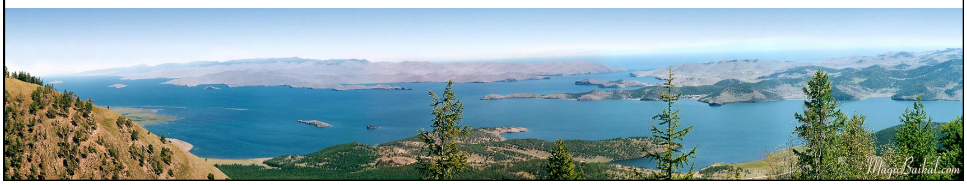
FINALISING BAIKAL BASIN TDA



TRANSBOUNDARY DIAGNOSTIC ANALYSIS
LAKE BAIKAL BASIN

Subject	Responsible	Date
Annex I: Contributing Experts		
Annex II: Identified Stakeholders		
Annex III: Baseline data topic X (Technical Report A)		
Annex IV: Baseline data topic X (Technical Report B)		
Annex V: Baseline data topic X (Technical Report C)		
Annex VI: Baseline data topic X (Technical Report D)		

FINALISING BAIKAL BASIN TDA



– Большое спасибо – Маш их баярлалаа – thank you very much –