Dam Inspection and Safety Guidance and Tools

an NCEA capacity building course

Tbilisi, Georgia
6 - 13, November, 2015

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ENVIRO-DEV, Norway

Environmental and Social Aspects of Concern

Objectives

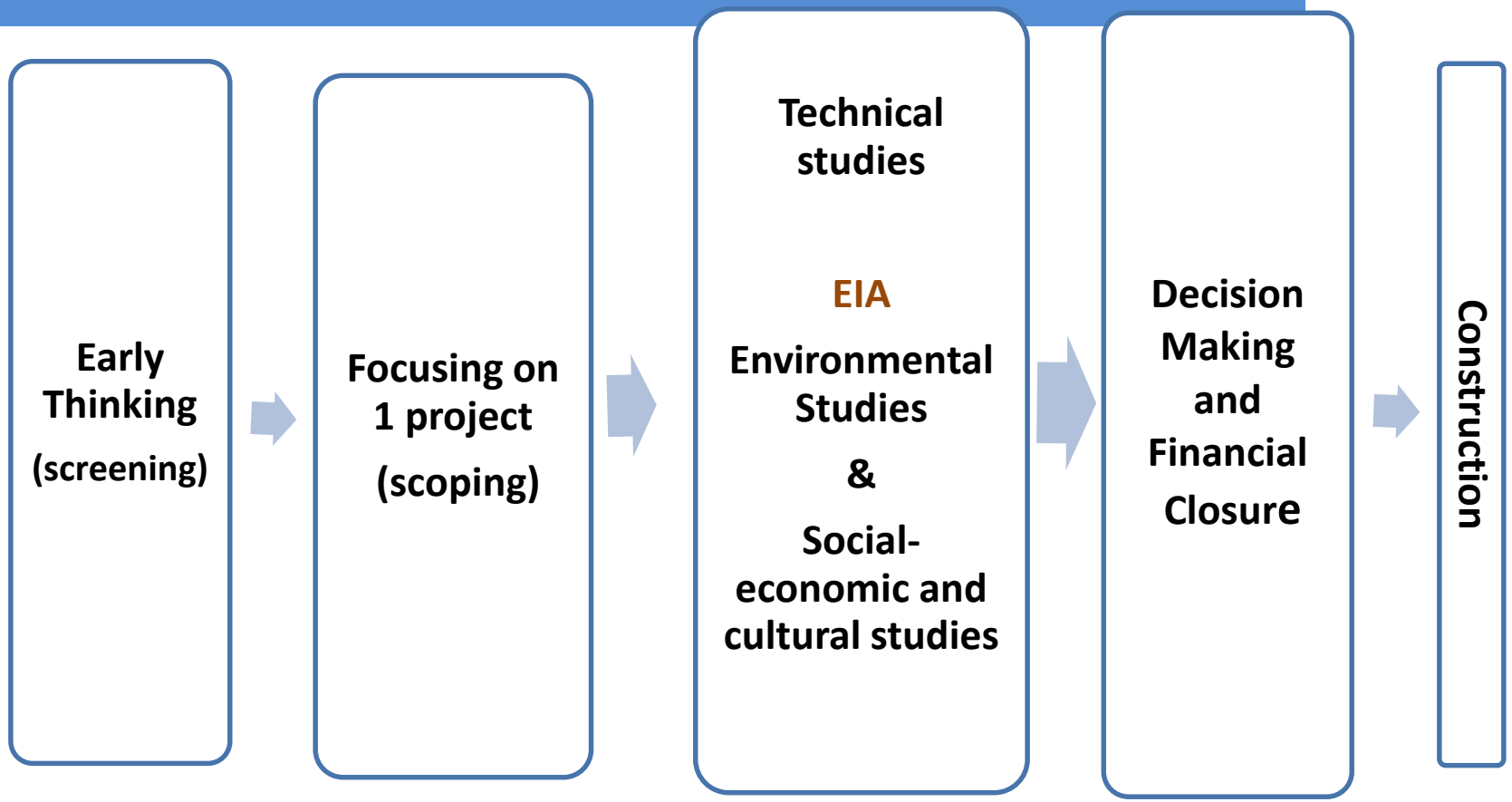
1- Themes which need consideration

2- What to look for?

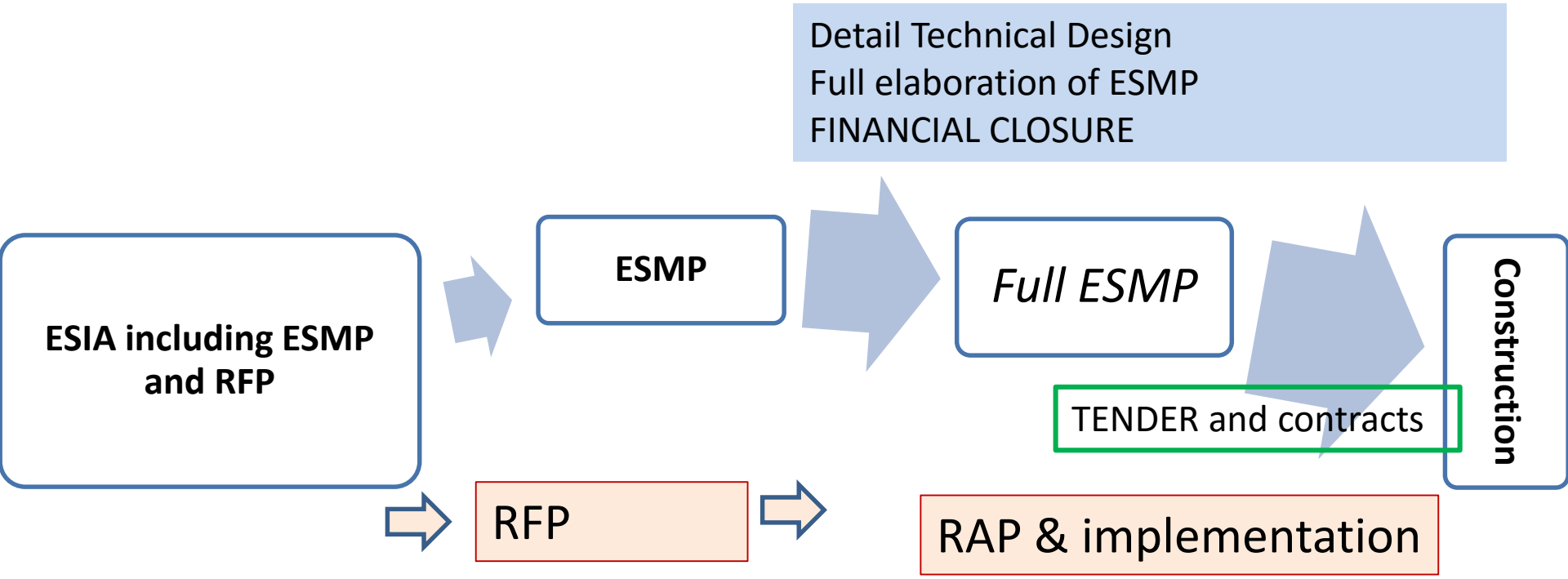
Environmental, Health and Safety (EHS) aspects


What to inspect for?
Technical
Envrionmental
Social

Broad time-line for project development



Reports which give rise to documents to be used for inspection-monitoring



ESMP = environmental and social management plan
RFP = Resettlement Framework Policy (includes land acquisition policy, resettlement framework and process)
RAP = Resettlement Action Plan (includes land acquisition policy)

Reports which give rise to documents to be used for inspection-monitoring

ESMP

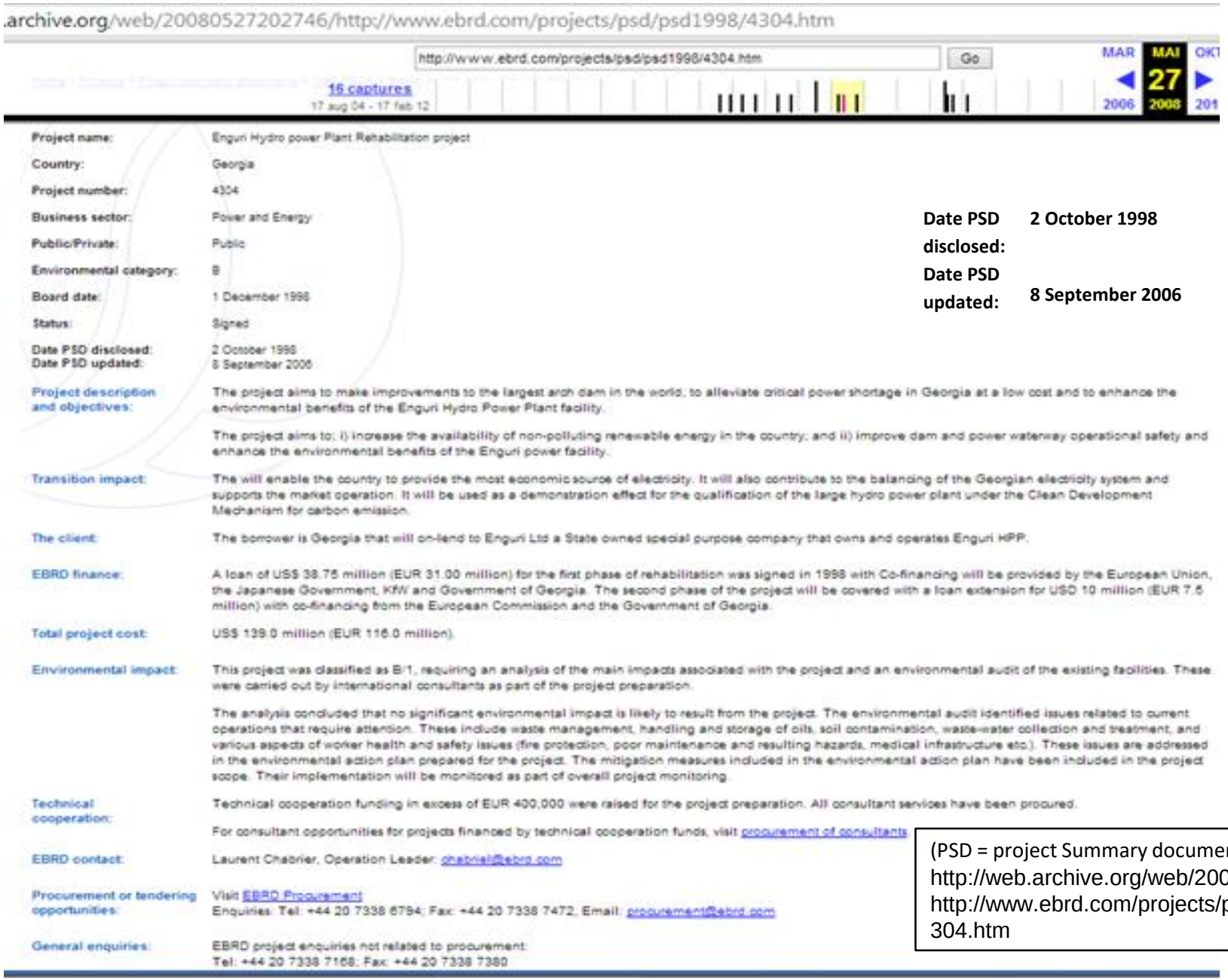
- Has themes
- Has indicators and standards

RAP

- Has measures
- Has indicators based on social-economic assessment and livelihoods

ESMP = environmental and social management plan
RAP = Resettlement Action Plan (includes land acquisition policy)

Practice, e.g., EBRD



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Project name:	Enguri Hydro power Plant Rehabilitation project
Country:	Georgia
Project number:	4304
Business sector:	Power and Energy
Public/Private:	Public
Environmental category:	B
Board date:	1 December 1998
Status:	Signed
Date PSD disclosed:	2 October 1998
Date PSD updated:	8 September 2006

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Project description and objectives:

The project aims to make improvements to the largest arch dam in the world, to alleviate critical power shortage in Georgia at a low cost and to enhance the environmental benefits of the Enguri Hydro Power Plant facility.

The project aims to: i) increase the availability of non-polluting renewable energy in the country; and ii) improve dam and power waterway operational safety and enhance the environmental benefits of the Enguri power facility.

Transition impact:

The will enable the country to provide the most economic source of electricity. It will also contribute to the balancing of the Georgian electricity system and supports the market operation. It will be used as a demonstration effect for the qualification of the large hydro power plant under the Clean Development Mechanism for carbon emission.

The client:

The borrower is Georgia that will on-lend to Enguri Ltd a State owned special purpose company that owns and operates Enguri HPP.

EBRD finance:

A loan of US$ 38.75 million (EUR 31.00 million) for the first phase of rehabilitation was signed in 1998 with Co-financing will be provided by the European Union, the Japanese Government, KfW and Government of Georgia. The second phase of the project will be covered with a loan extension for USD 10 million (EUR 7.5 million) with co-financing from the European Commission and the Government of Georgia.

Total project cost:

US$ 139.0 million (EUR 116.0 million).

Environmental impact:

This project was classified as B/1, requiring an analysis of the main impacts associated with the project and an environmental audit of the existing facilities. These were carried out by international consultants as part of the project preparation.

The analysis concluded that no significant environmental impact is likely to result from the project. The environmental audit identified issues related to current operations that require attention. These include waste management, handling and storage of oils, soil contamination, waste-water collection and treatment, and various aspects of worker health and safety issues (fire protection, poor maintenance and resulting hazards, medical infrastructure etc.). These issues are addressed in the environmental action plan prepared for the project. The mitigation measures included in the environmental action plan have been included in the project scope. Their implementation will be monitored as part of overall project monitoring.

Technical cooperation:

Technical cooperation funding in excess of EUR 400,000 were raised for the project preparation. All consultant services have been procured.

For consultant opportunities for projects financed by technical cooperation funds, visit procurement of consultants.

EBRD contact:

Laurent Chabrier, Operation Leader: chabriel@ebrd.com

Procurement or tendering opportunities:

Visit EBRD Procurement
Enquiries: Tel: +44 20 7338 6794; Fax: +44 20 7338 7472; Email: procurement@ebrd.com

General enquiries:

EBRD project enquiries not related to procurement:
Tel: +44 20 7338 7168; Fax: +44 20 7338 7380

(PSD = project Summary document)
http://web.archive.org/web/20080527202746/http://www.ebrd.com/projects/psd/psd1998/4304.htm

practice: e.g., EBRD

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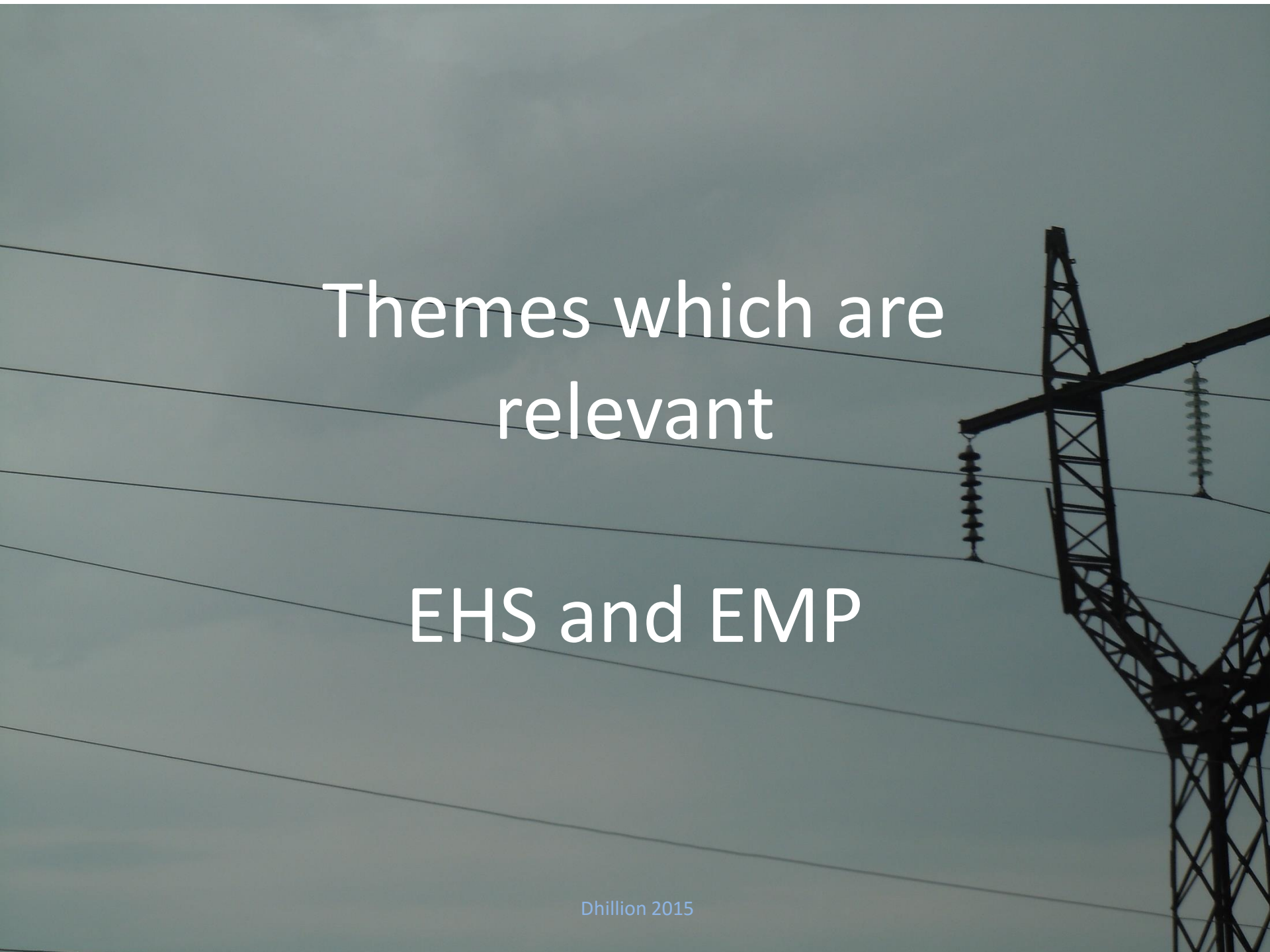
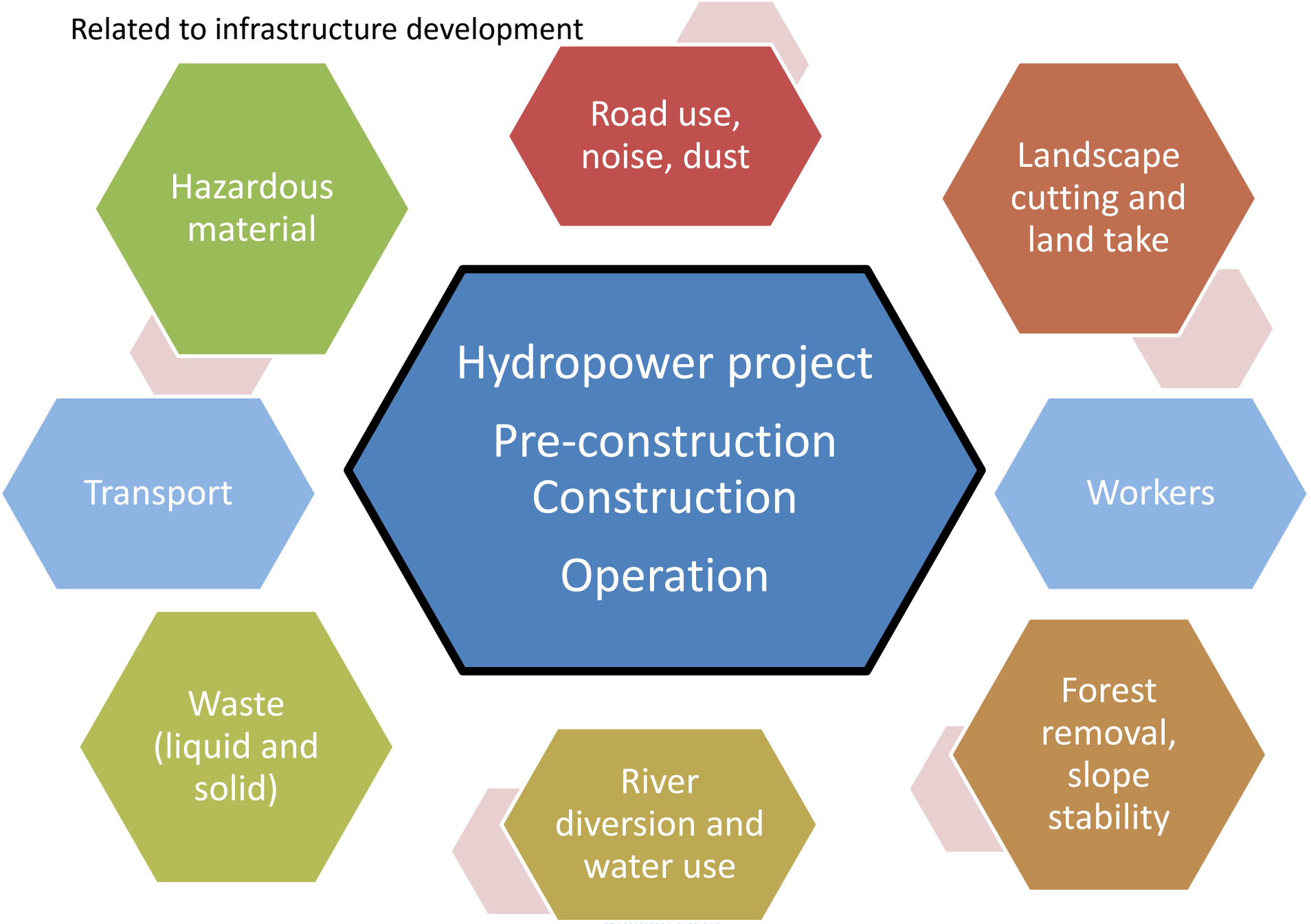


Themes which are relevant

EHS and EMP


Dam Safety (inspection)
vs
EMP (ESMP) [Project monitoring and evaluation (M&E)]

Related to infrastructure development



General Environmental, Health and Safety Guideline (EHSG)

1. Environmental

- 1.1 Air Emissions and Ambient Air Quality
- 1.2 Energy Conservation
- 1.3 Wastewater and Ambient Water Quality
- 1.4 Water Conservation
- 1.5 Hazardous Materials Management
- 1.6 Waste Management
- 1.7 Noise
- 1.8 Contaminated Land

2. Occupational Health and Safety

- 2.1 General Facility Design and Operation
- 2.2 Communication and Training
- 2.3 Physical Hazards
- 2.4 Chemical Hazards
- 2.5 Biological Hazards
- 2.6 Radiological Hazards
- 2.7 Personal Protective Equipment (PPE)
- 2.8 Special Hazard Environments
- 2.9 Monitoring

3. Community Health and Safety

- 3.1 Water Quality and Availability
- 3.2 Structural Safety of Project Infrastructure
- 3.3 Life and Fire Safety (L&FS)
- 3.4 Traffic Safety
- 3.5 Transport of Hazardous Materials
- 3.6 Disease Prevention
- 3.7 Emergency Preparedness and Response

4. Construction and Decommissioning

- 4.1 Environment
- 4.2 Occupational Health and Safety
- 4.3 Community Health and Safety

What supporting documents do you need?

Policy and Standards? (national) practice?

What supporting documents do you need?

EMP / ESMP / RAP

- Biodiversity (water and plants)
- Slope vulnerability (sensitive areas, roads)
- Noise, air, water and waste (solid and liquid)
- Public safety
- Social mitigation (livelihood, health, services resettlement)

Concession / License Agreement (permit)

- ?
- ?

Contractor's Responsibilities

- Labour, and workforce. Camps.
- Public safety (roads and project site)
- Environmental
- Social and Health

Related to infrastructure development

Pre-Construction

Construction

- Slope stability
- Roads (types?)
- Waste (Liquid and solid) and Hazardous Material
- Noise and Air Quality
- Water quality
- Community Safety
- Labour and Safety
- Biodiversity Issues
- Social
- Cultural Heritage

Related to infrastructure developed

Operation Phase

- Slope stability
- Roads (Transmission Lines)
- Waste and Hazardous Material
- Water quality
- Community Safety
- Biodiversity Aspects
- Social

Related to infrastructure developed

Social-Economic and Cultural Aspects

(direct and in-direct scales)

- **Social – economic.** Livelihoods - Income levels, access to natural resources, food security (indicators)
- **Health** – ailment types and changes, dental, childbirth, nutrition levels
- **Safety and awareness**

Baseline levels – VITAL for developing measureable indicators to monitor/inspect

Related to infrastructure developed

Social-Economic and Cultural Aspects
(direct and in-direct scales)

- **Services.** Distances, clinics/hospital, schools, road networks. (indicators)
- **Social Fabric/Networks and local institutions** – intactness (indicators), role of clergy and agreements
- **Cultural Heritage** sites of worship, sacred places and cemeteries

Baseline levels – VITAL for developing measureable indicators to monitor/inspect

Related to infrastructure developed

Resettlement
(direct)

- **All social aspects, health, safety, services, social networks and cultural heritage. Influence of work force.**
- **Central is LIVELIHOOD and food security. (indicators vital)**
- **Idea of WELL-BEING!**

Baseline levels – VITAL for developing measureable indicators to monitor/inspect

Related to infrastructure developed

Stakeholder Communication

- **Central aspect to inspect across themes, particularly natural resource (water, forest) and affected people!**

Process followed and recorded by developer

Established standards and establishing standards for compliance or measurement.

Depends on variable / aspect in question!

Baseline levels from ESIA – VITAL for developing measureable indicators to monitor/inspect

High dependence on robustness of ESIA process and baseline data

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Monitoring (inspecting) is dependent on a time scale

When do you come in to monitor? At all phases?

Time period for inspection?

Time period for inspection?

e.g.,
Water
Fish
Slope stability

Related to infrastructure developed

Time period for inspection?

e.g.,
Social
Resettlement

Livelihoods
Health


Dam Safety (inspection)
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recording and reporting

forms and checklists


Thank you
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