

Environmental Impact Assessment (EIA)

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**Office of Natural Resources and Environmental Policy and Planning
(ONEP)**

Training Course on “Environmental Goods Service and Services Negotiation”

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Topics

- 1 Impacts from development activities
- 2 Definition & principle of EIA and procedure
- 3 Importance of EIA relating Environmental Goods & services
- 4 Obstacles & Challenges

Impacts from Development Activities



Industrial air pollution



Industrial Waste



Impacts from Development Activities

Mining



Dust, Noise, Vibration





ใส่หมวกทำวัตร : พระอธิการวิรัตน์ อินทปัญญา เจ้าอาวาสวัดถ้ำยอดทอง ม.8 ต.ทุ่งหลวง อ.ปากท่อ จ.ราชบุรี เผยว่าวัดแห่งนี้ตั้งอยู่ใกล้กับโรงโม่หินเขาสามง่าม ต.ทุ่งหลวง อ.ปากท่อ จ.ราชบุรี ซึ่งมีการระเบิดหินเป็นประจำ โดยเฉพาะเวลาทำวัตรเย็นนั้นจะตรงกับช่วงเวลาที่ระเบิดหินญาติโยมที่มาทำบุญจึงเกรงว่าพระจะได้รับอันตรายจึงซื้อหมวกกันน็อกมาถวายให้พระใส่เพื่อไม่ให้หินตกใส่หัวแตก

Sky train Projects

-Pollution from dust, traffic congestion during construction)





Condominium
- Domestic Wastewater

Pollution on surface water quality





**Impacts from taking off
& landing of aircrafts at the
airport
(Damage from Turbulence)**



Noise pollution from aircrafts



Definition & principle of EIA and procedure

EIA is the study for forecasting the environmental impacts, both negative and positive impacts from development projects or significant activities. EIA has been used to establish the appropriate mitigation measures for preventing and mitigating environmental impacts for these projects or activities.



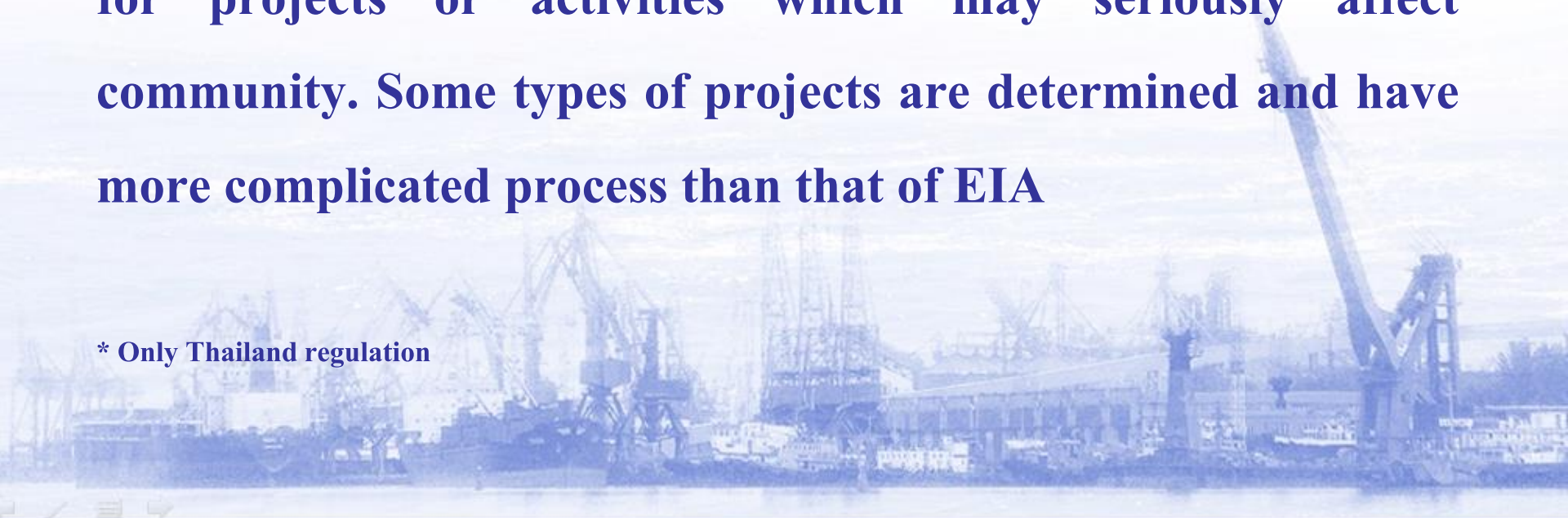
Definition & principle of EIA and procedure

EHIA *

- EHIA (Environmental & Health Impact Assessment)

EHIA is the study for forecasting the environmental impacts for projects or activities which may seriously affect community. Some types of projects are determined and have more complicated process than that of EIA

*** Only Thailand regulation**



Definition & principle of EIA and procedure

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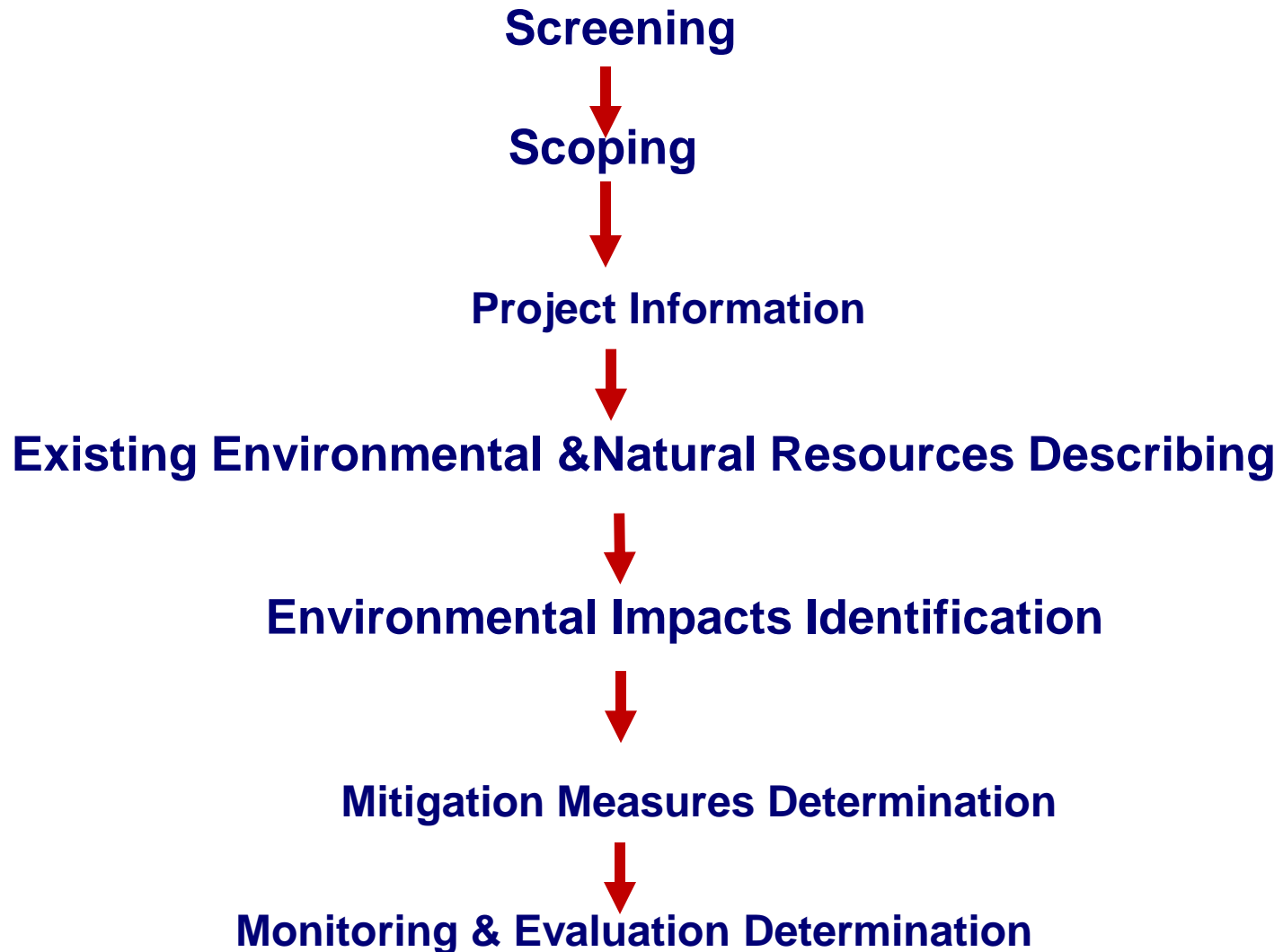
Definition & principle of EIA and procedure(con.)

IEE (Initial Environmental Examination)

IEE is the initial study for forecasting the environmental impacts. IEE normally uses primary data or available data. In Thailand, IEE has been used for the small projects or the projects that have less impacts



Procedure of EIA



Procedure of EIA

- **Screening**

Screening is the determination of whether an EIA is needed. Screening should be based on magnitude of possible impacts may arise from development projects or activities. *In Thailand, lists of projects or activities required EIA has been used as a screening tool.*



Examples of Types and sizes of projects/activities required EIA reports in Thailand

Item	Types of Projects or Activities	Size
1	Mining as defined by the Mineral Act 1.1 Mining Project as follows : 1.1.1 Coal Mining 1.1.2 Potash Mining 1.1.3 Rock Salt Mining 1.1.4 Limestone Mining for Cement industry 1.1.5 All Metal Mining	All sizes
	1.2 Underground Mining Projects	All sizes
	1.3 All Mining Projects located in the following area : 1.3.1 Class I Watershed areas according to Cabinet Resolution 1.3.2 Sea 1.3.3 Conservation Forests added by the Cabinet Resolution 1.3.4 RAMSA Sites	All sizes

Examples of Types and sizes of projects/activities required EIA reports in Thailand (Con.)

Item	Types of Projects or Activities	Size
	1.3.5 Areas adjacent to the Ancient Remains, Archaeological Resources, Historical Sources or Historical Parks as regulated by Ancient Monuments, Antiques and National Museums Act or the World Heritage Sites inscribed on the World Heritage List according to World Heritage Convention within a distance of 2 kilometers	
	1.4 Mining Projects utilizing explosive materials	All sizes
	1.5 Other Mining Projects as specified by the Mineral Act exempt for Item 1.1, Item 1.2, Item 1.3, and Item 1.4	All sizes * required only IEE

Examples of Types and sizes of projects/activities required EIA reports in Thailand (Con.)

Item	Types of Projects or Activities	Size
2	Petroleum Development 2.1 Petroleum Exploration by means of geophysical drilling 2.2 Petroleum Production	All sizes
3	Petroleum and fuel pipeline system	All sizes
4	Industrial estate as defined by the Industrial Estate Authority of Thailand Act or projects with similar feature or Land Allocation Project for Industrial development	All sizes
5	Petrochemical industry using chemical process for production	production capacity of 100 tons/day or more
6	Petroleum Refining Industry	All sizes
7	Natural Gas Separation Industry or Natural Gas Reforming Industry	All sizes

Examples of Types and sizes of projects/activities required EIA reports in Thailand (Con.)

Item	Types of Projects or Activities	Size
8	Chlor-alkaline industry requiring sodium chloride (NaCl) as raw material for production of sodium carbonate (Na_2CO_3), sodium hydroxide (NaOH), hydro chloric acid, chlorine (Cl_2), sodium hypo-chloride (NaOCl), and bleaching powder	Production capacity of each or combined products of 100 tons/day or more
9	Cement industry	All sizes
10	Pulp industry	Production capacity 50 tons/day or more
11	Pesticide Industry or Industry producing active ingredient by chemical process	
12	Chemical Fertilizer Industry using chemical process	All sizes
13	Sugar industry 13.1 producing raw sugar, white sugar, refined sugar 13.2 producing glucose, dextrose, fructose or other product s alike	All sizes Production capacity of 20 tons/day

Examples of Types and sizes of projects/activities required EIA reports in Thailand (Con.)

Item	Types of Projects or Activities	Size
14	Iron or Steel Industry	Production capacity of 100 tons/day or more
15	Mineral Smelting Industry, Mineral Dressing Industry or Metal Melting Industry other than Iron or Steel	Production capacity of 50 tons/day or more
16	<p>Liquor and Alcohol Industries including Beer and Wine</p> <p>16.1 Liquor and Alcohol Industries</p> <p>16.2 Wine Industry</p> <p>16.3 Beer Industry</p>	<p>-Production capacity of 40,000 liters/month or more (calculated at 28 degrees)</p> <p>-Production capacity of 600,000 liters/month or more</p> <p>-Production capacity of 600,000 liters/month or more</p>

Examples of Types and sizes of projects/activities required EIA reports in Thailand (Con.)

Item	Types of Projects or Activities	Size
17	Central Waste Treatment Plant as defined by the Factory Act	All sizes
18	Thermal Power Plant	Production capacity of 10 MW or more
19	Expressway as defined by the Expressway and Rapid Transit Authority of Thailand	All sizes
20	Highway or road as defined by Highway Act, passing through following areas:- 20.1 Wildlife sanctuaries and wildlife non-hunting areas as defined by the Wildlife Conservation and Protection Act 20.2 National Park as defined by the National Park Act 20.3 Watershed area classified as class II by the Cabinet Resolution 20.4 Mangrove forests designated as the National Forest Reserve	All sizes

Examples of Types and sizes of projects/activities required EIA reports in Thailand (Con.)

Item	Types of Projects or Activities	Size
	<p>20.5 Coastal area within 50 meters of highest sea level</p> <p>20.6 Areas adjacent to RAMSA Sites or World Heritage Sites inscribed on the World Heritage List according to World Heritage Convention within a distance of 2 kilometers</p>	
21	Rail-Type Mass Transit System	All sizes
22	Port	With capacity for vessels of 500 gross tons or more or with total length of the front port of 100 meters or more or with the total port areas of 1,000 m² or more
23	Recreation Port	With capacity for 50 vessels or more or with the total port areas of 1,000 m² or more

Definition & Principles

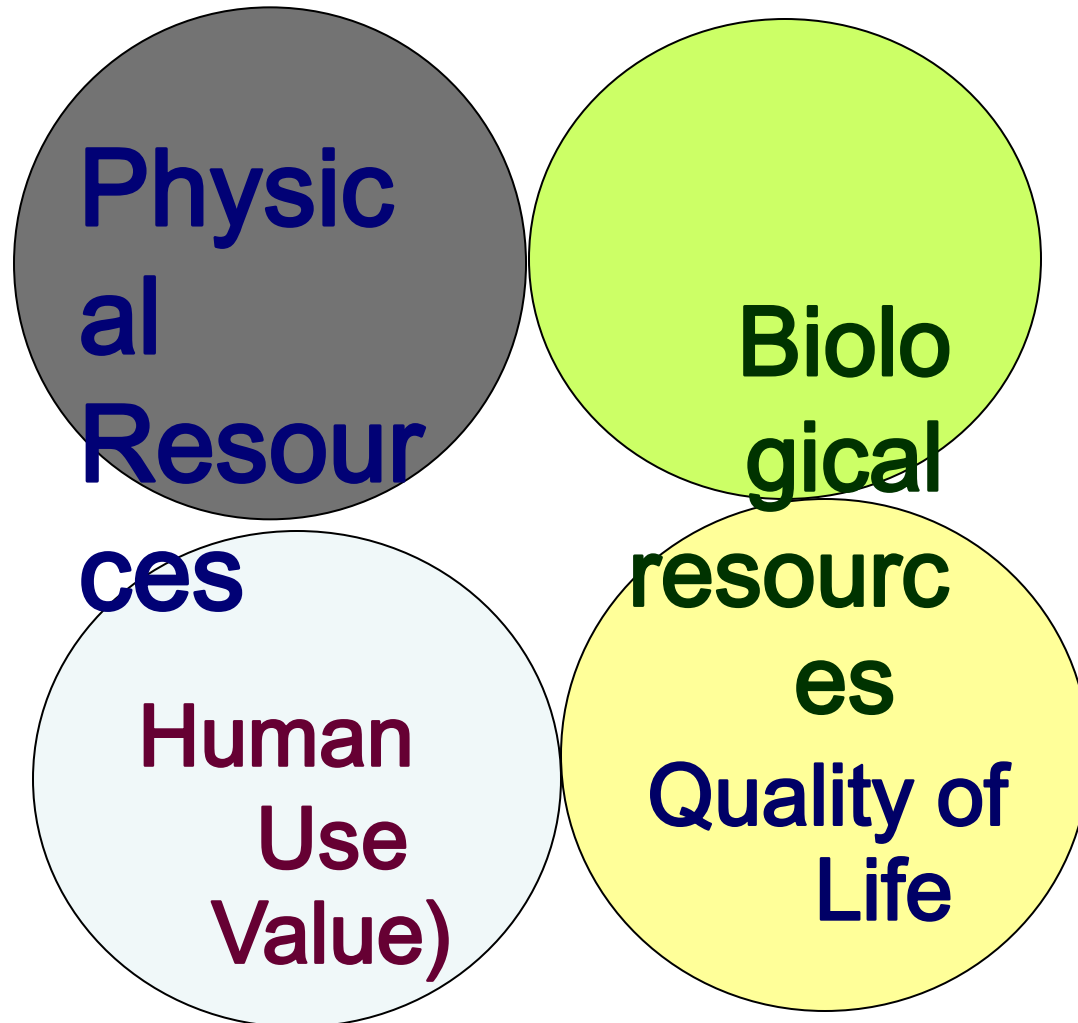
- **Scoping**

Scoping is the stage of identification impacts needed to be assessed. Scoping will narrow down EIA study into the significant issues



Procedure of EIA (con.)

4 Tiers of Environmental Impacts



Procedure of EIA (con.)

Elements	Scope of Study
1. Abiotic resources	
1.1 In land Geomorphology Soil	Topography Elevation Unique physical feature e.g. island, cliff, etc. Profile of soil type and extent of each, sedimentation, erosion physical and chemical characteristics Geology Resources General description of geology of the site Seismicity Type and quantity of Mineral resources, in the project site and surrounding area

Procedure of EIA (con.)

Elements	Scope of Study
1. Abiotic resources (Physical)	
1.2 Aquatic	Surface & underground water Sea water Air Noise Water source, quantity, quality and flow rate Oceanographic characteristic Water quality and current Water stratification Climatic characteristic (rainfall, intensity, temperature) Incidence of inversions, fog, storm Air quality Intensity and frequency

Procedure of EIA (con.)

Elements	Scope of Study
2. Biotic resources (Biological)	
	Animal/plant Rare species Ecology, species, number, distribution Habitat and migration Species, number and its importance

Procedure of EIA (con.)

Elements	Scope of Study
3. Human use value	
	Drinking/domestic water Transport Electricity and energy Sources, quantity, quality and adequacy Route (highway, railway, water route) Sources, kind, type, adequacy Flood control/drainage Agriculture activities Industry

Procedure of EIA (con.)

Elements	Scope of Study
3. Human use value(con.)	
	<p>Mining System and efficiency Agriculture development / promotion Agriculture Irrigation system Reforestation</p> <p>Type of industry</p> <p>Type of mining Recreation Land use</p> <p>Type and use of the green area Recreation area, green area Existing land use Area specific zoning</p>

Elements	Scope of Study
4. Quality of life value	
	<p>Socio-economic</p> <p>Health</p> <p>Occupational health</p> <p>Historical</p> <p>Recreational value</p> <p>Information on population (occupation, income, language, religion)</p> <p>Sickness rate, infectious diseases, endemic sickness, health services</p>

4. Quality of life value ¹ต่อ

Elements	Scope of Study
4. Quality of life value	
	Occupational disease, work related accident Health risk Historical site, archaeological site Traditional custom, traditions and culture Beauty value of recreational area Important natural landmark Preservation or conservation area.

EIA Process (Preparation)

EIA Preparation

- **Guidelines**
 - **General Guideline**
 - **Sector Guideline ; for examples**
 - Guideline for Industry
 - Guideline for Transportation
 - Guideline for Power Plant
 - Guideline for Water Resources
 - **Specific Guideline**
 - Guideline for Public participation in EIA
 - Guideline for Health Impact Assessment in EIA

EIA Process (Preparation)

Main Report

1. Introduction : purpose of the project, justification and essence of project operation, objective of report preparation
2. Project description
 - Detailed information shall include project type, project location
 - Assess alternatives for project operation and evaluate any impact which may arise from project operation

EIA Process (Preparation)

Main Report (cont.)

- 3. Existing environmental condition**
- 4. Environmental impact assessment**
- 5. Environmental impact reduction and preventive measures and compensation**
- 6. Environmental impact inspecting and review programs**

EIA Process (Reviewing)

9 Expert Review Committees

1. Mining, Mineral Smelting Industry
2. Petroleum Industry
3. Petroleum Refining Industry, Natural Gas Separation Industry
4. Industry and utilities
5. Building, Land Allocation, Hospital, Hotel, Resort
6. Thermal Power Plant
7. Water Transportation
8. Land and Air Transportation
9. Dam, Reservoir, Irrigation

EIA Process (Reviewing)

Expert Review Committees

- | | |
|---------------------------------------------------------------|-------------|
| 1. ONEP Secretary General | Chairman |
| 2. Permitting Agency
or representative | Committee |
| 3. Experts or Specialists up to
9 persons appointed by NEB | Committee |
| 4. ONEP Official | Secretariat |

EIA Process (Reviewing)

- Review, Approve/Disapprove by the Committee
- Technical experts related to project's impacts
- Professor in the university or experts/specialists from the government agencies
- Consider additional comments during review process
- EIA approval or disapproval is an administrative order, hence lawsuits can be filed against ERCs to the Administrative Court

EIA Process (Reviewing)

EHIA Process

- **Independent Organization reviews and makes comments after EIA approved by ERC**

Independent Organization

- 1. Representatives from private environmental and health organizations**
- 2. Representatives from higher education institutions providing education in environmental, natural resources or health**

EIA Process (Reviewing)

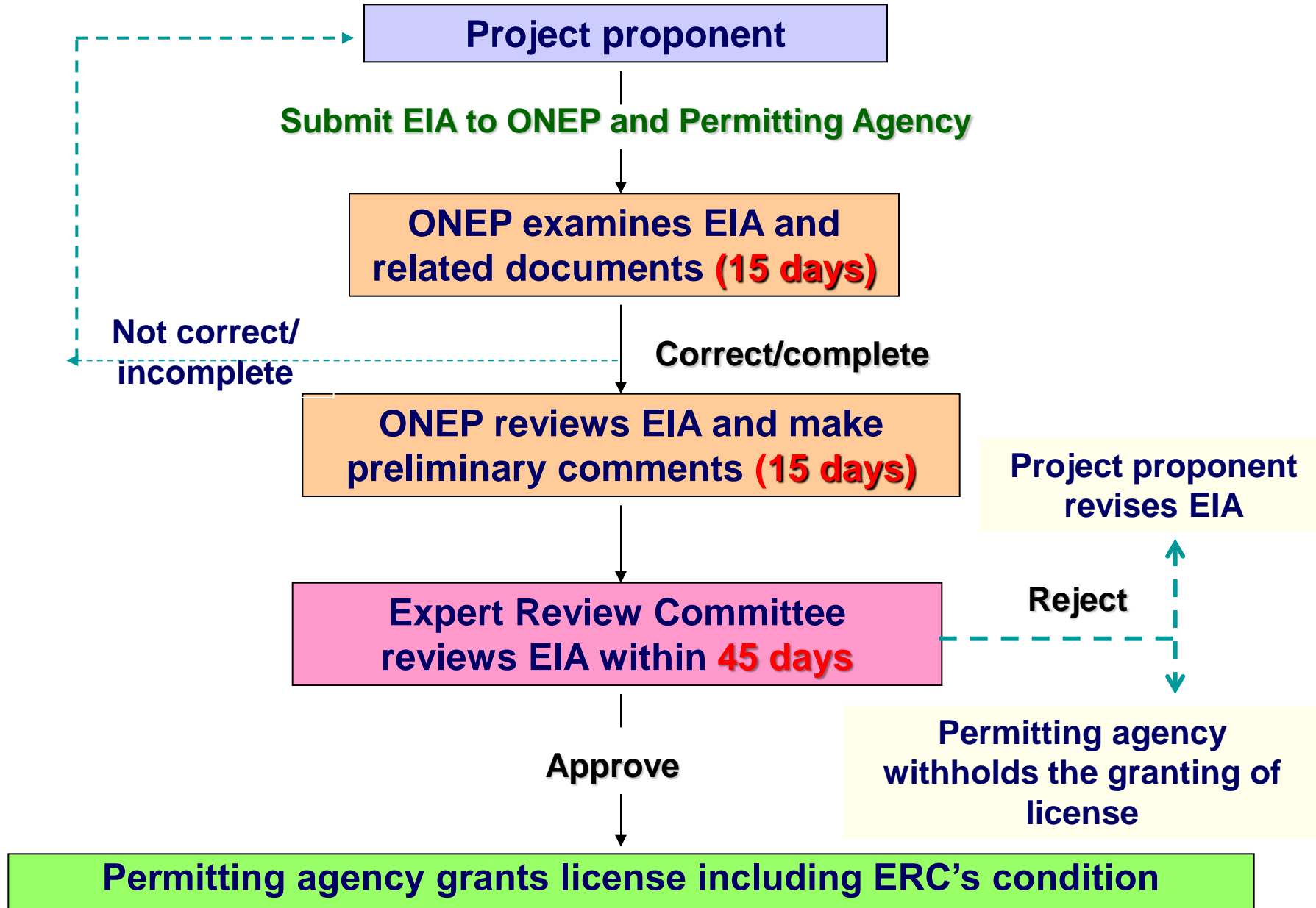


EIA Process (Reviewing)

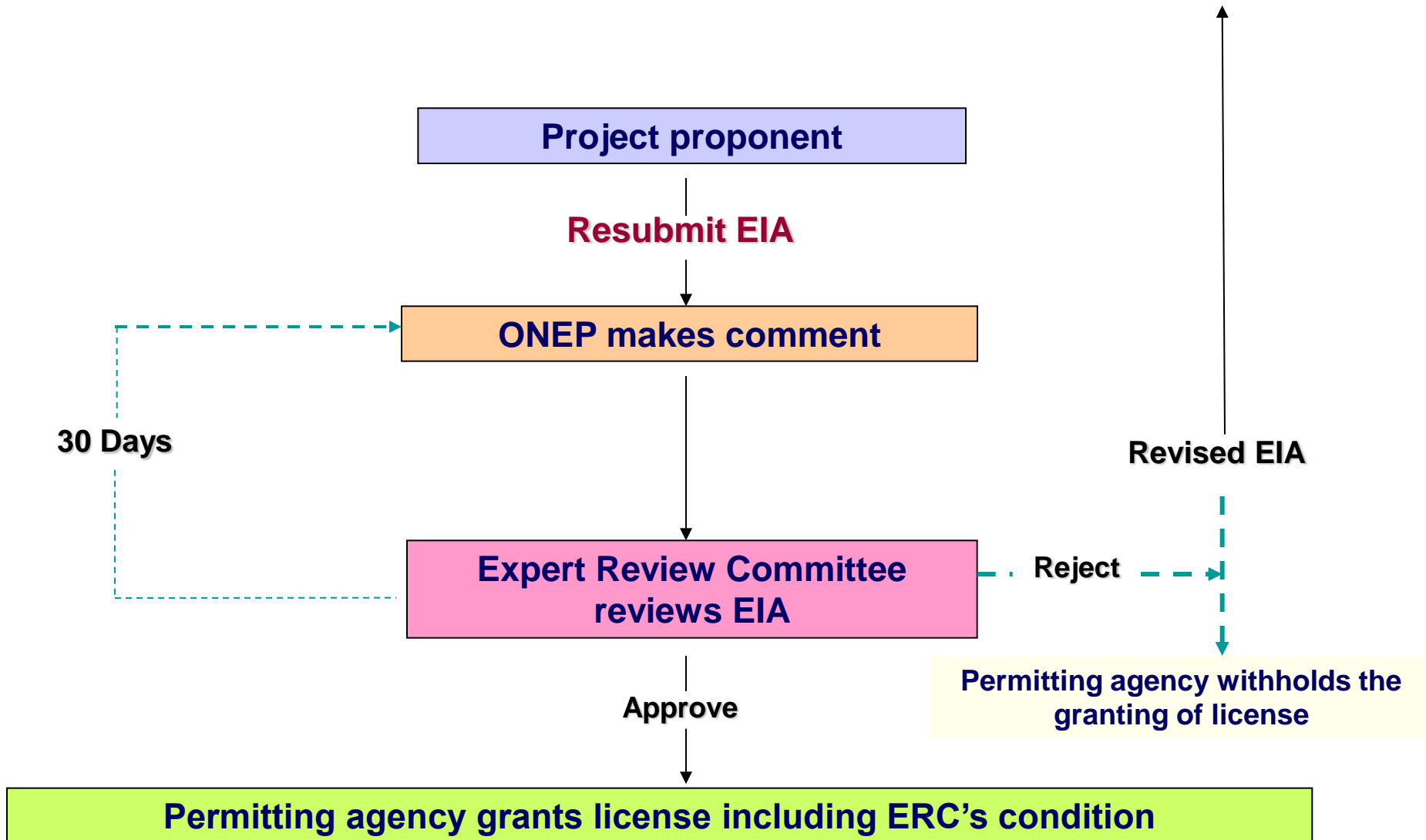
EIA / EHIA

- Approval process for EIA for general projects
- Approval process for projects required the approval of the Cabinet

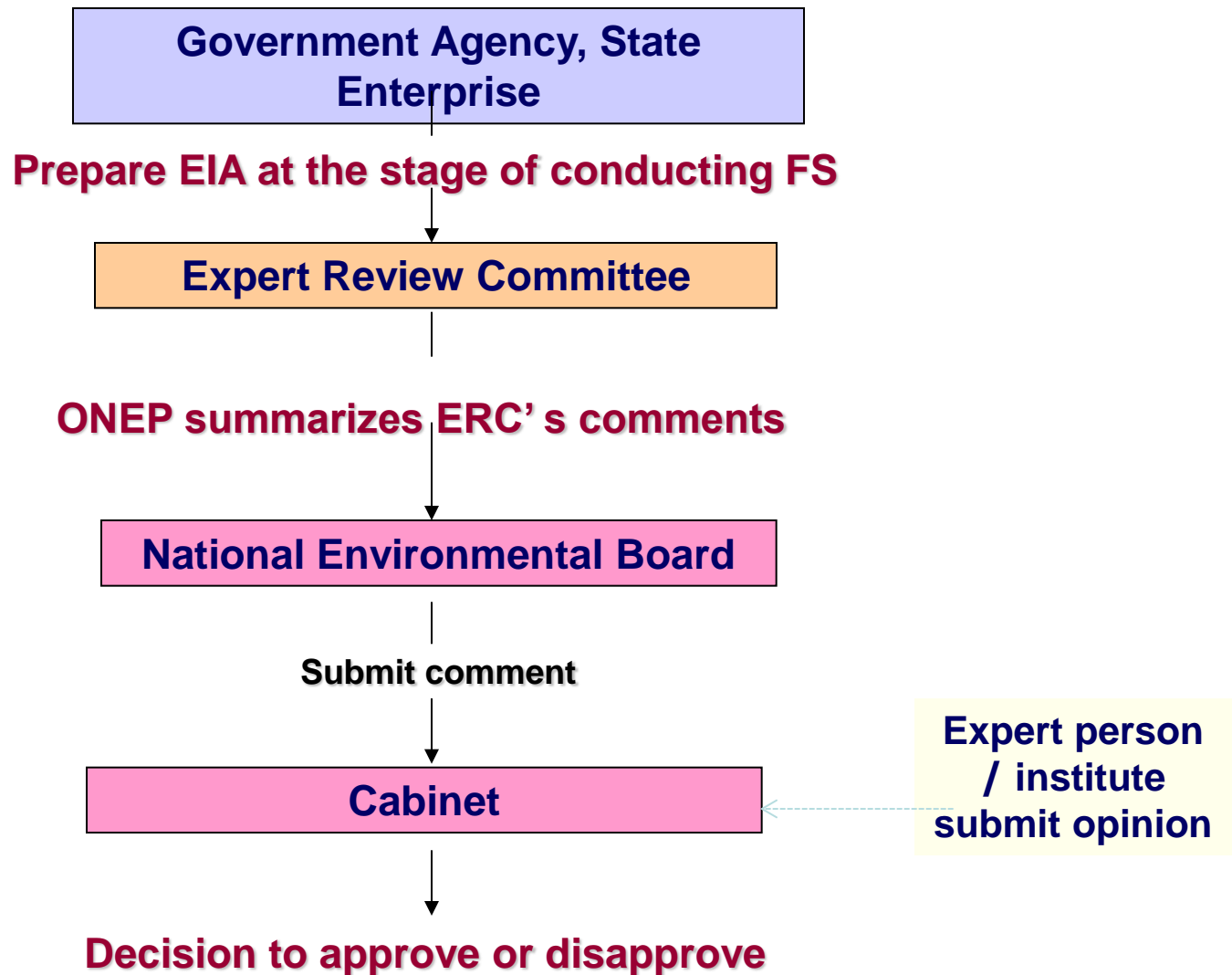
Approval process for EIA for general projects



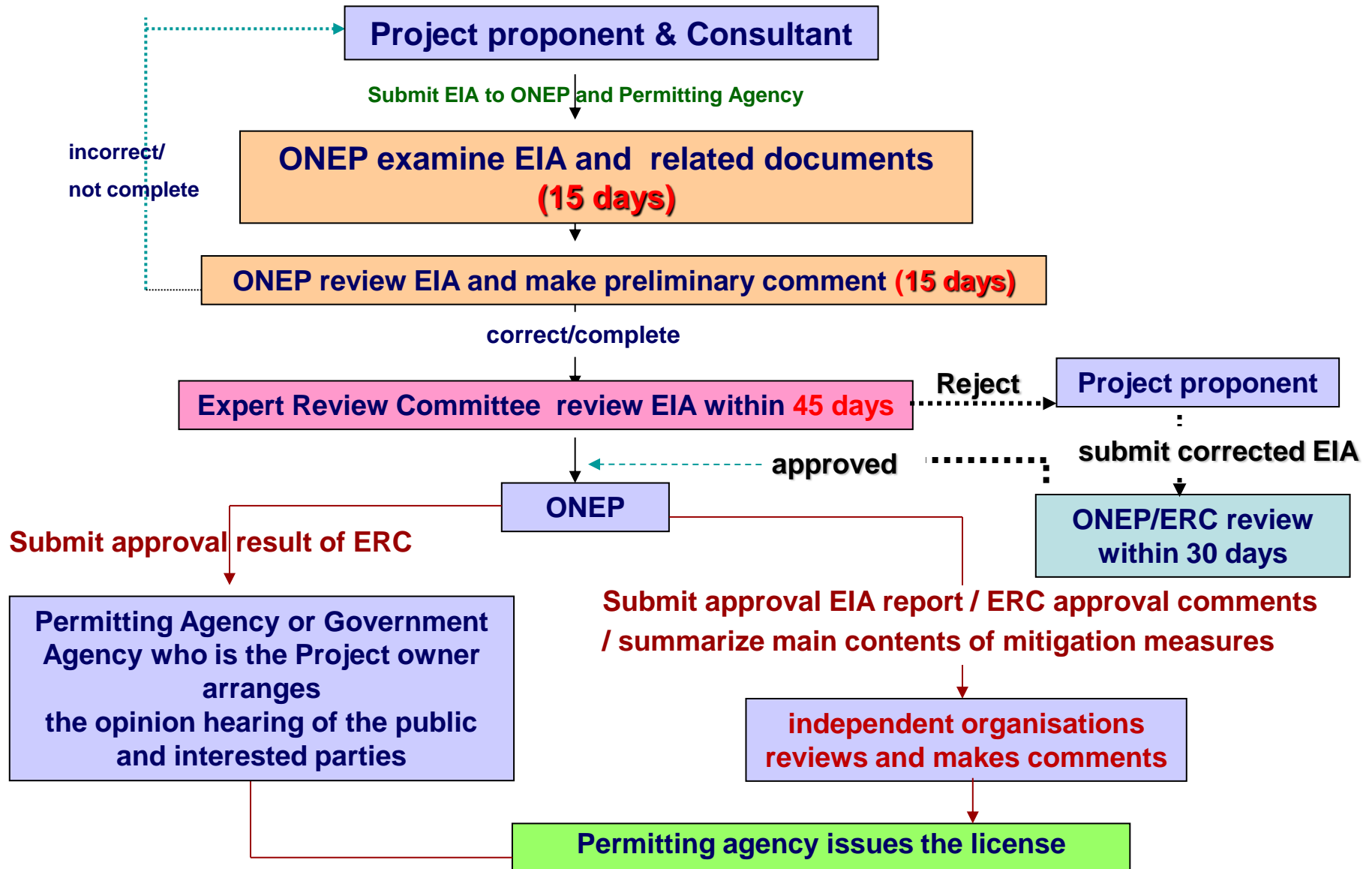
Approval process for EIA of general projects (revision process)



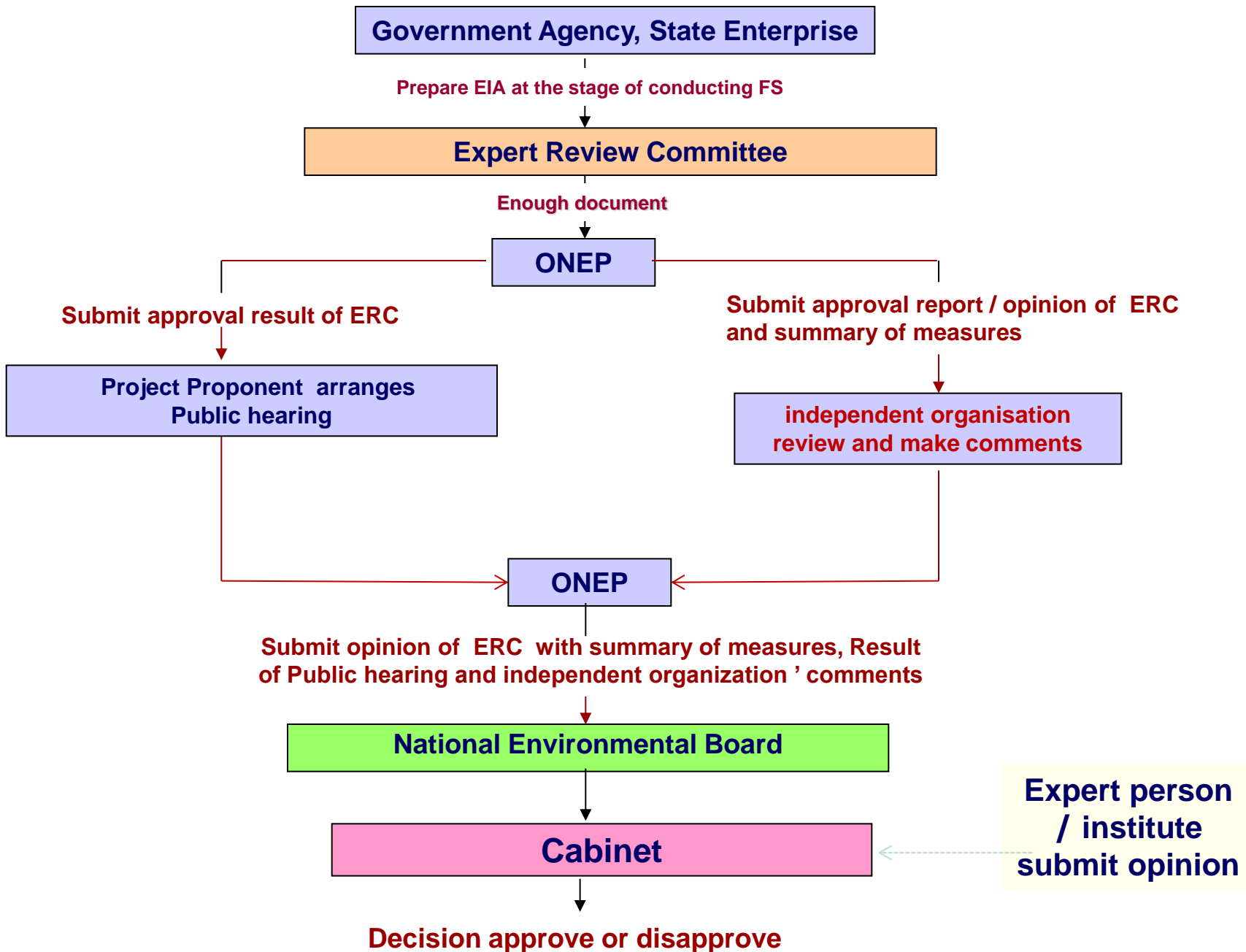
Approval process for projects required the approval of the Cabinet



Approval process for EHIA (private sector)



Approval process for EIA required the approval of the Cabinet



EIA Process (Monitoring)

- **The permitting agency has to hold granting license until EIA report will be approved by the Expert Review Committee**
- **The permitting agency has to bind EIA measures to the license the private project.**
- **The project proponents must submit monitoring report to ONEP and permitting agency twice a year**
- **EIA & Monitoring database (eia.onep.go.th)**
- **SMART EIA**

Public Participation in EIA

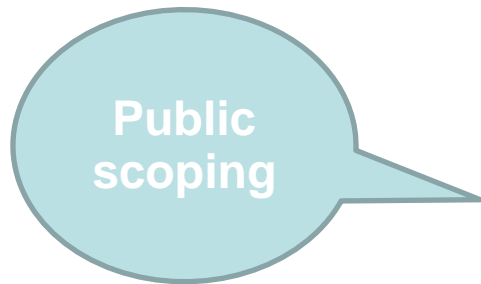
EIA Process : at least 2 steps

1. Scoping : For preparing scope of study
2. Draft EIA : Public comment Draft EIA with mitigation measures

EHIA Process : at least 4 steps

1. Scoping : For preparing scope of study
2. EIA preparation : Focus group
3. Draft EIA : Public comment Draft EIA with mitigation measures
4. Decision Making : Permitting agency organize public hearing

EIA Process



Screening



Preparing scope of study



Scope of study



Assessment



Preparing mitigation measure



Preparing EIA report submit to
ONEP



The expert review committee
approve EIA report



Permitting agency



EHIA Process

Public
scoping

Screening

Preparing scope of study

Focus
Group

Scope of study

Assessment

Public
review

Preparing mitigation measures

Preparing EIA report submit to
agencies

Public
hearing

The expert review committee
approve EIA report

Permitting agency

Independent organization



Public Participation in EIA



EIA Disclosure by Official Information Act (1997)

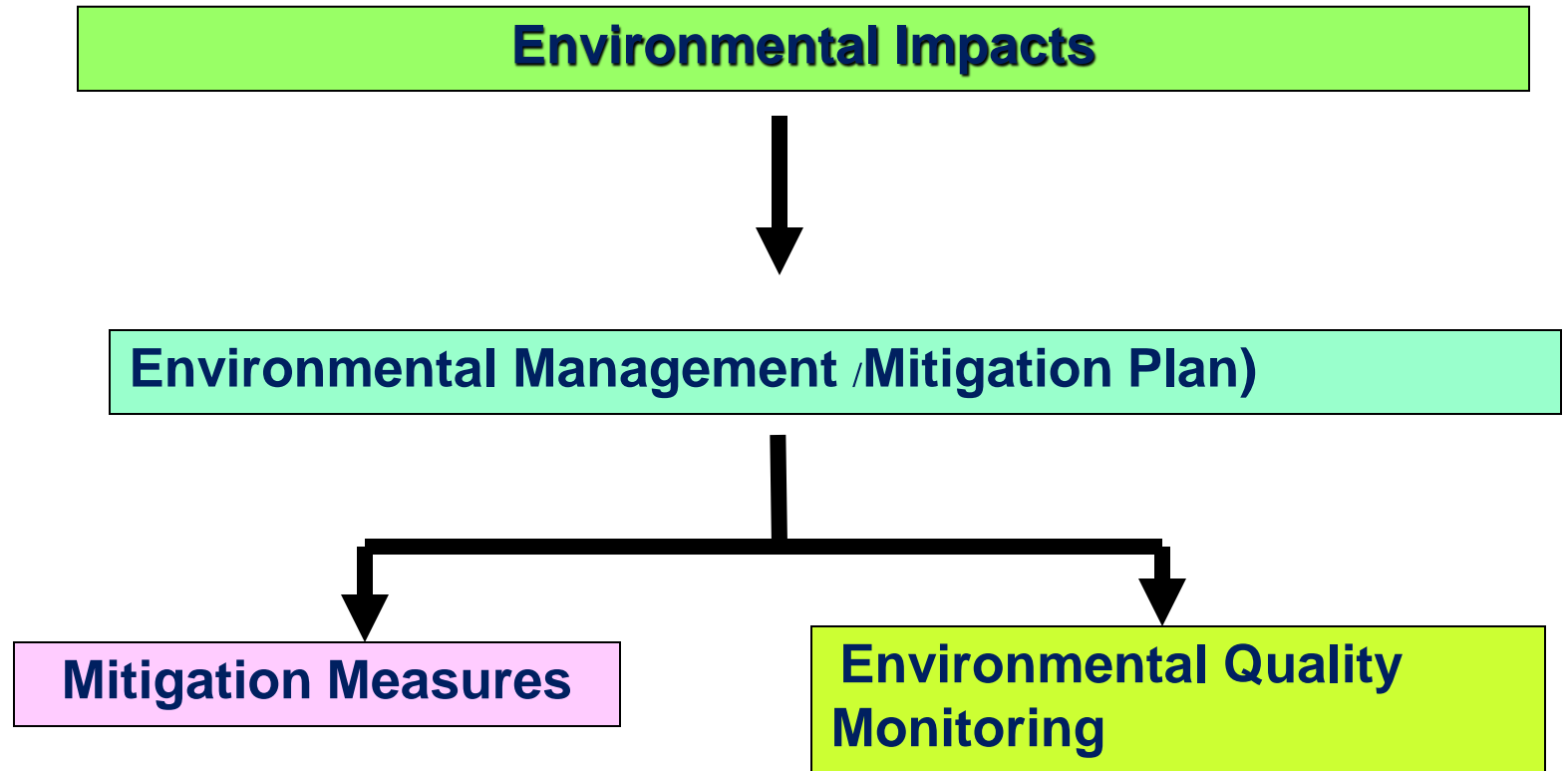
Information

- **Result of consideration or a decision which has a direct effect on a private individual**
- **Report and information related to Environmental, Health and Social impact assessment including public hearing report**
- **Mitigation measure implementation and monitoring report**

Report disclosed (Thai)

- **Minutes of ERC 's meeting**
- **EIA report**
- **Monitoring report**

OUTPUT from EIA



Example of Mitigation measures

: Cement Factory

B. operation period

Environmental Issues	Significant impacts	Mitigation and correction measures	Environmental impact monitoring
Physical	1) Air pollution nitrogen oxides(NO_x), sulphur dioxide (SO_2), carbon oxides (CO and CO_2) and dust from the processes	<ul style="list-style-type: none"> -control of stack emissions (e.g. Cyclones, fabric filters and scrubbers) and limit concentration and loading of emission - control in fuel input control of optimised kiln operation - control of fugitive emissions (e.g. Covering conveyors, waterspraying etc.) 	Total Suspended Solid (TSP) at 4 nitrogen oxides(NO_x), sulphur dioxide (SO_2), carbon oxides (CO and CO_2) at emission stacks and the points in community

Example of Mitigation measures

: Cement Factory

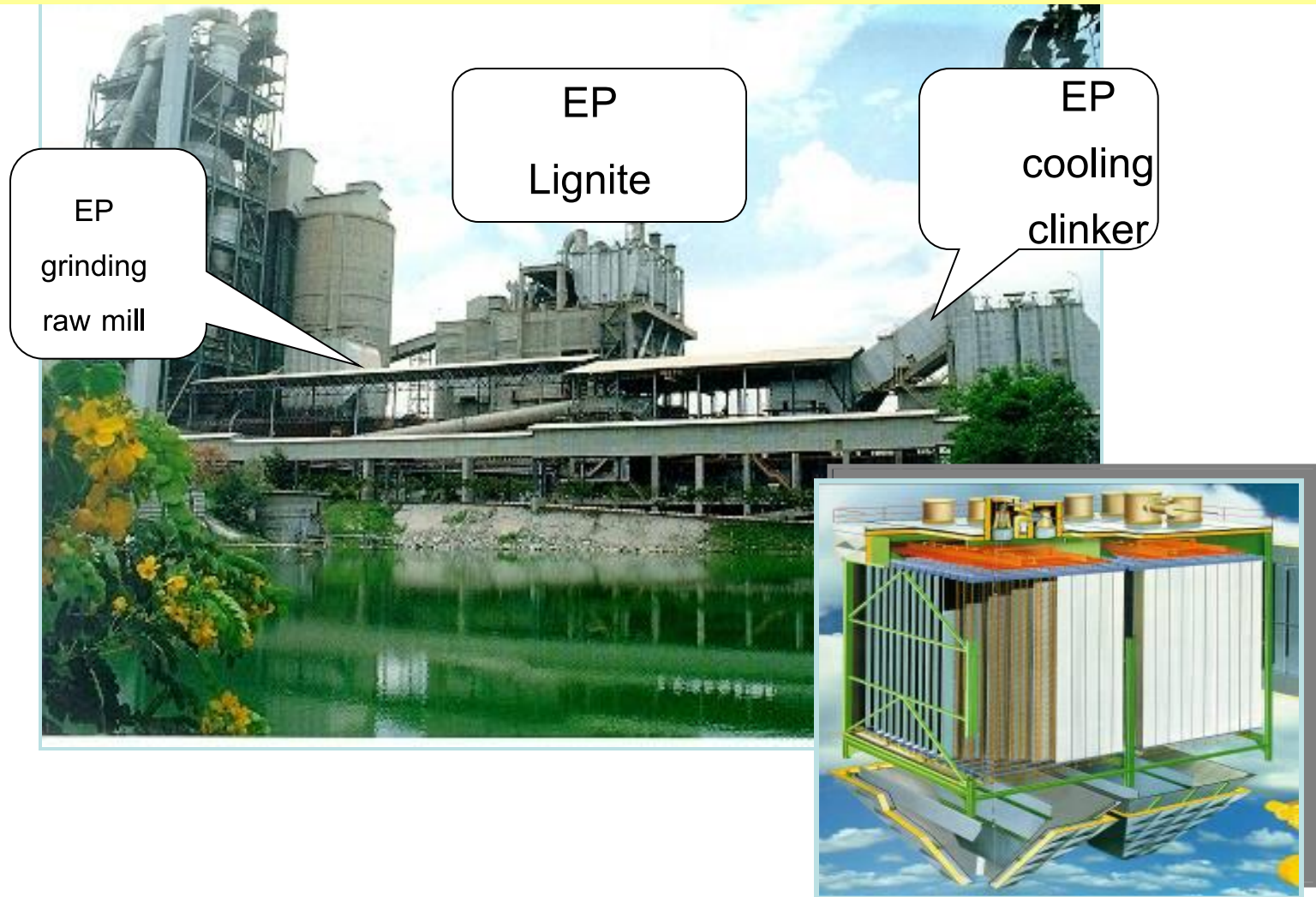
B. operation period(con.)

Environmental Issues	Significant impacts	Mitigation and correction measures	Environmental impact monitoring
Human values	Nuisance and health may come from pollution	<p>-Set up tripartite committee compose of representatives from communities nearby , permitting agencies and project owners to cooperate and monitor implementation conforming to mitigation measures in EIA</p> <p>and to solve the problem and compensate or curing the impacts if it come from the factory</p>	Heath status surveillance in communities

Dust Control Equipment from cement plant

(Electrostatic precipitator & bag filter*)

* Cement Plant



Wastewater Treatment*

(Example : *pulp production factory)



Noise control equipment



Importance of EIA relating Environmental Goods & services

Driving demand for environmental goods and services

1. Global warming impacts

International agreement , sustainable development

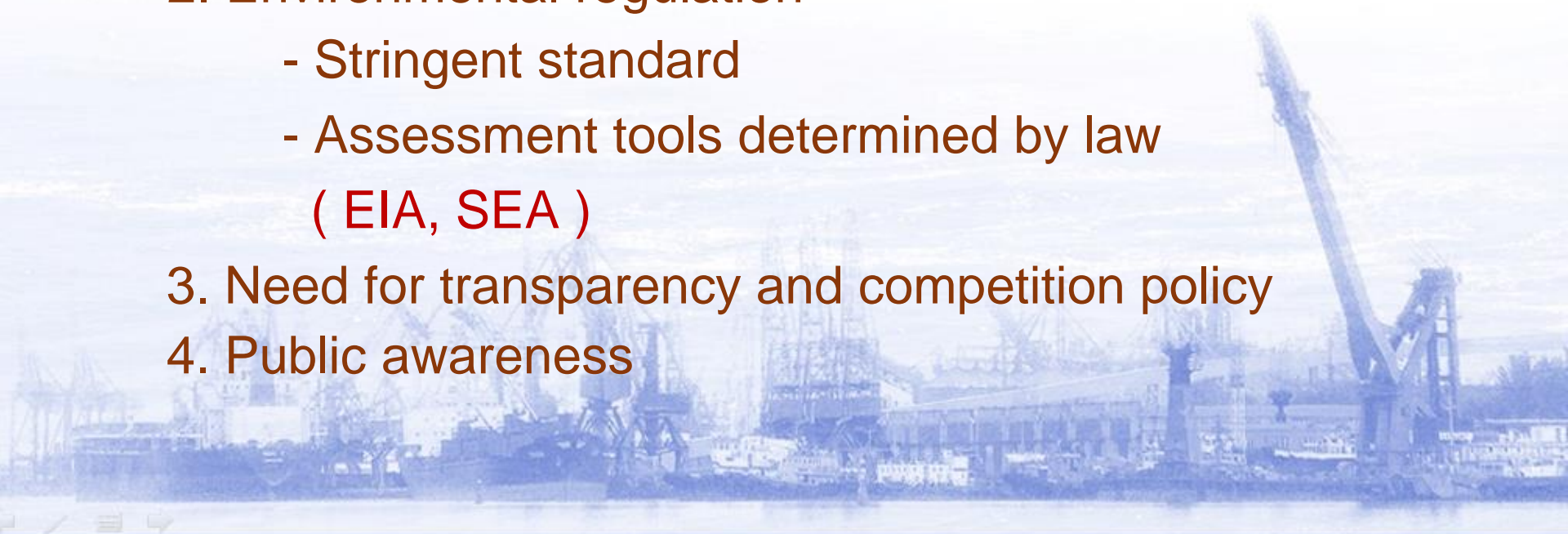
2. Environmental regulation

- Stringent standard
- Assessment tools determined by law

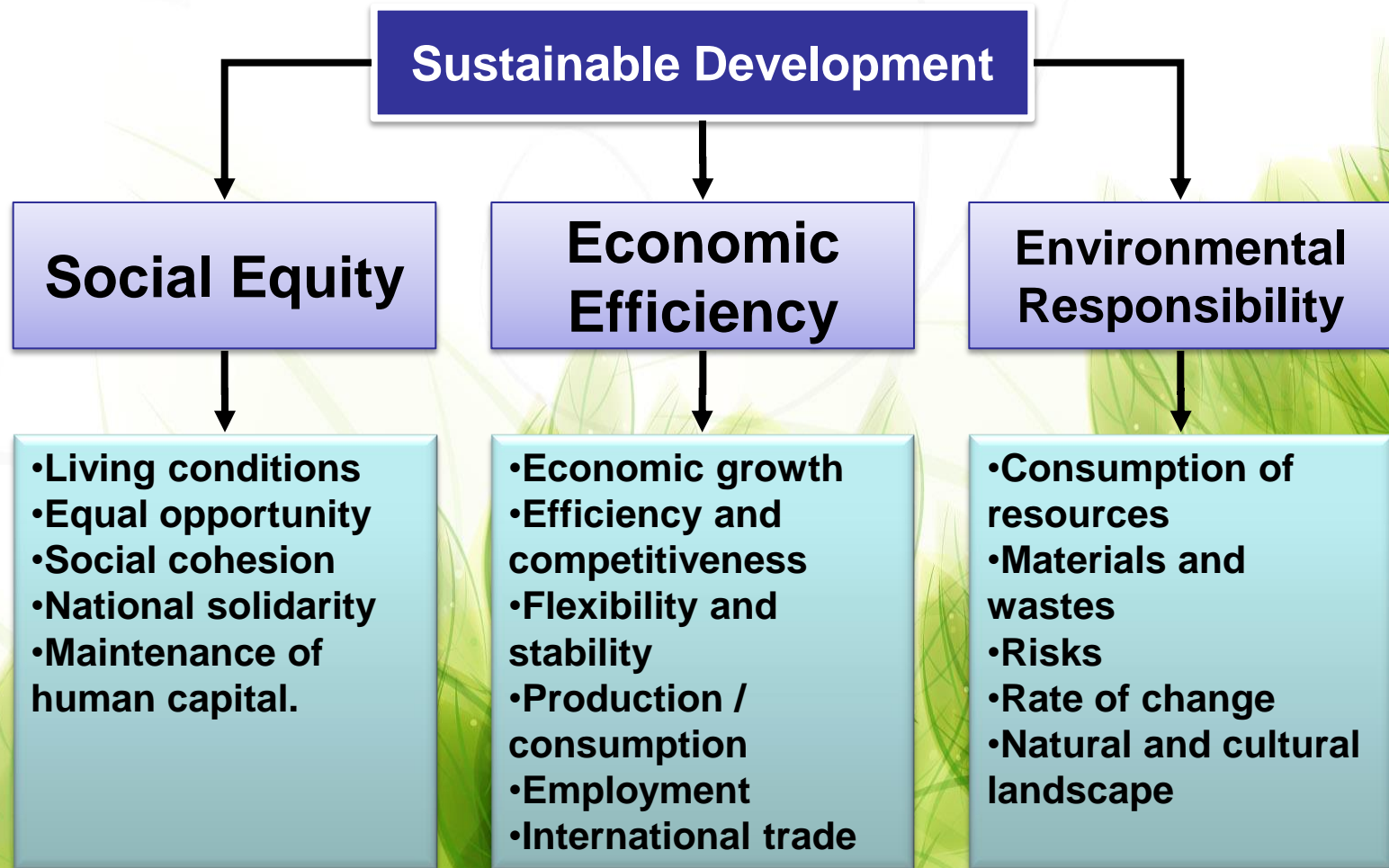
(EIA, SEA)

3. Need for transparency and competition policy

4. Public awareness



Importance of EIA relating Environmental Goods & services(con.)



Importance of EIA relating Environmental Goods & services(con.)

EIA report preparation & mitigation measures determined by EIA



Environmental goods	Environmental services
Pollution Control equipment (air water)	Solid waste /hazardous waste management services
Environmental Quality Monitoring Equipment	Wastewater management services
Personal Protective Equipment	Consulting & engineering

Importance of EIA relating Environmental Goods & services(con.)

Environmental goods	Environmental services
Pollution Modeling Software	Remediation/Industrial services
Process & prevention technology	Analytical services
Waste management equipment	Human resources development services





Vapor control

**Dust control on
belt conveyor**



Ambient Air Quality Monitoring Systems (AAQMS)



Ambient air quality analysers



Obstacles & Challenges

1. Project developers /investors perceive that EIA procedure and implementation following EIA mitigation measures make cost burden
2. Unacceptance of Public participation process in EIA preparation/ Overexpectation that EIA mitigations might be “Universal drug” to cure their impacts
3. Poor quality of Consultant / lack of expertise
4. Weak enforcement for EIA non-complying implementation
5. EIA is a tool at project approach level, need other tools such as SEA (Strategic Environmental Assessment) to manage environmental problem issues at policy , program level
6. Lack of appropriate Incentive measures to contribute investors such as tax reduction 7
7. Trade barriers

THANK YOU



THE END