Identification of Objectives/Criteria

- ☆ Number of objectives/criteria should be sufficient to adequately characterise the projects being evaluated

- ☆ Though no hard and fast rules, about 7 to 10 is perhaps sufficient, 20 might be considered too many

- ☆ Criteria should be

  - **complete** (*that is, all important aspects of projects should be covered*)
  - **operational** (*criteria should be meaningful to those interest groups involved in the evaluation process*)
  - **nonredundant** (*criteria should not contain redundancies in the form of conceptualising or measuring essentially the same thing in different ways*)
  - **decomposable** (*such that performance on different criteria can be assessed independently*)
  - **minimal** (*the number of criteria should be as few as possible; rule of thumb that the number of criteria should not exceed 10*)

- ☆ Literature is limited on how to select criteria or to know when a set of criteria adequately characterises an evaluation problem

☆ Suggestions include:

– **examination of relevant literature**, **analytical study** (constructing a system model and identifying relevant input and output variables which may suggest objectives, perhaps omitted by oversight or intention, which may be more significant than originally thought)

– **casual empiricism** (including observing how choices between projects are currently made)

☆ Theoretically, identification of criteria may be carried out either

– **deductively** starting from an all inclusive criterion (e.g. *improve community living standards*) and progressively generating more specific criteria

– **inductively**, by examining all aspects of a development planning situation and progressively aggregating them into comprehensive criterion (e.g. in assessing public transport projects, *mean travel time per passenger*, *number of transfers per passenger*, and *average transfer delay per passenger* might be identified at the lowest level and **aggregated** into the more comprehensive criterion of *public transport service effectiveness*)

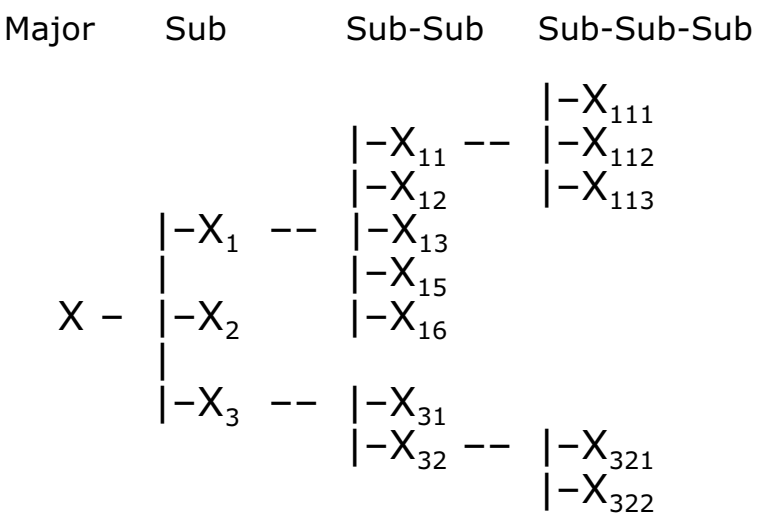
- ☆ In practice, a mixture of both approaches is often used

- ☆ Process of generating criteria is the most creative, least systematically explored aspect of multi-criteria evaluation and is a part of the 'art' of evaluation

- ☆ Not possible to be certain that the set of criteria designed, created, invented, or selected for evaluation is the single best set

- ☆ Consequences of missing important criteria can frequently result in the selection of inferior alternatives

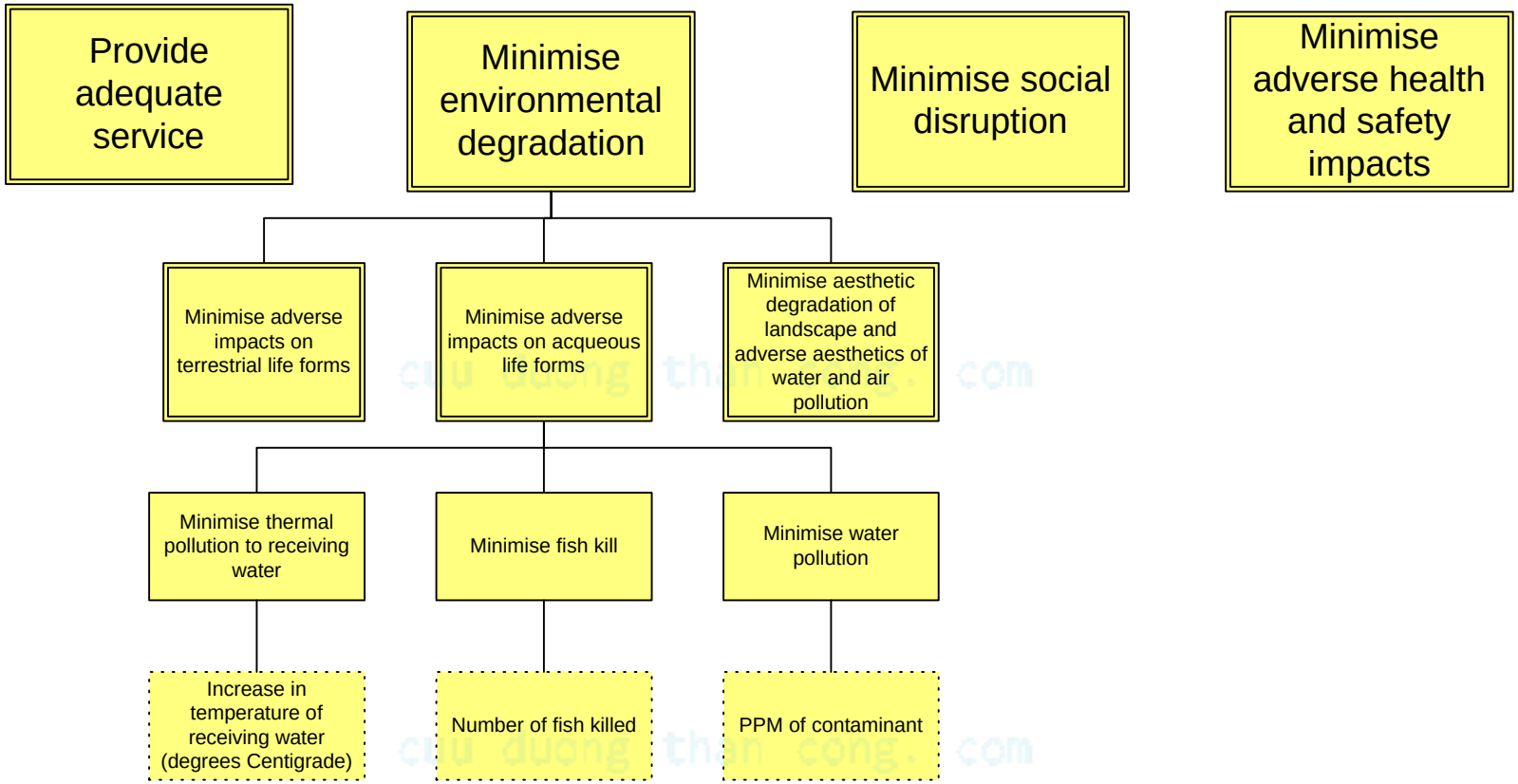
☆ Often a 'goals' hierarchy is developed



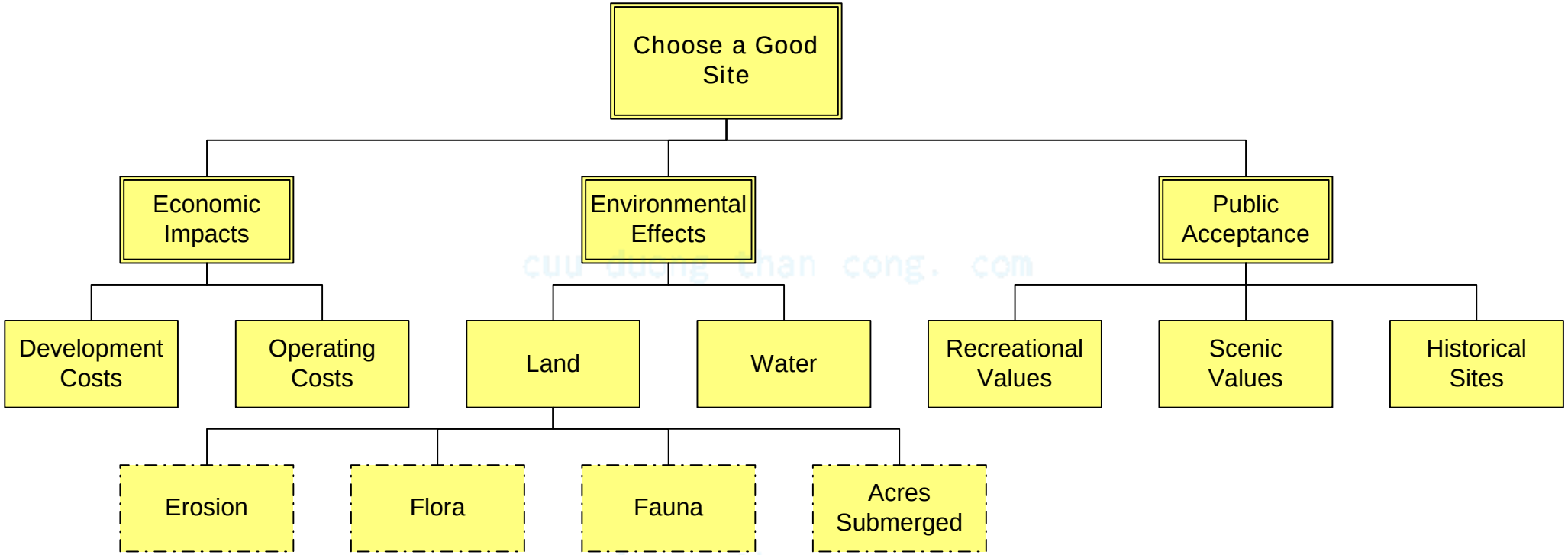
☆ The goals at the top of the hierarchy are quite abstract and become less so as we move down the hierarchy

☆ Major and sub goals/criteria should not exceed about 7 at any level

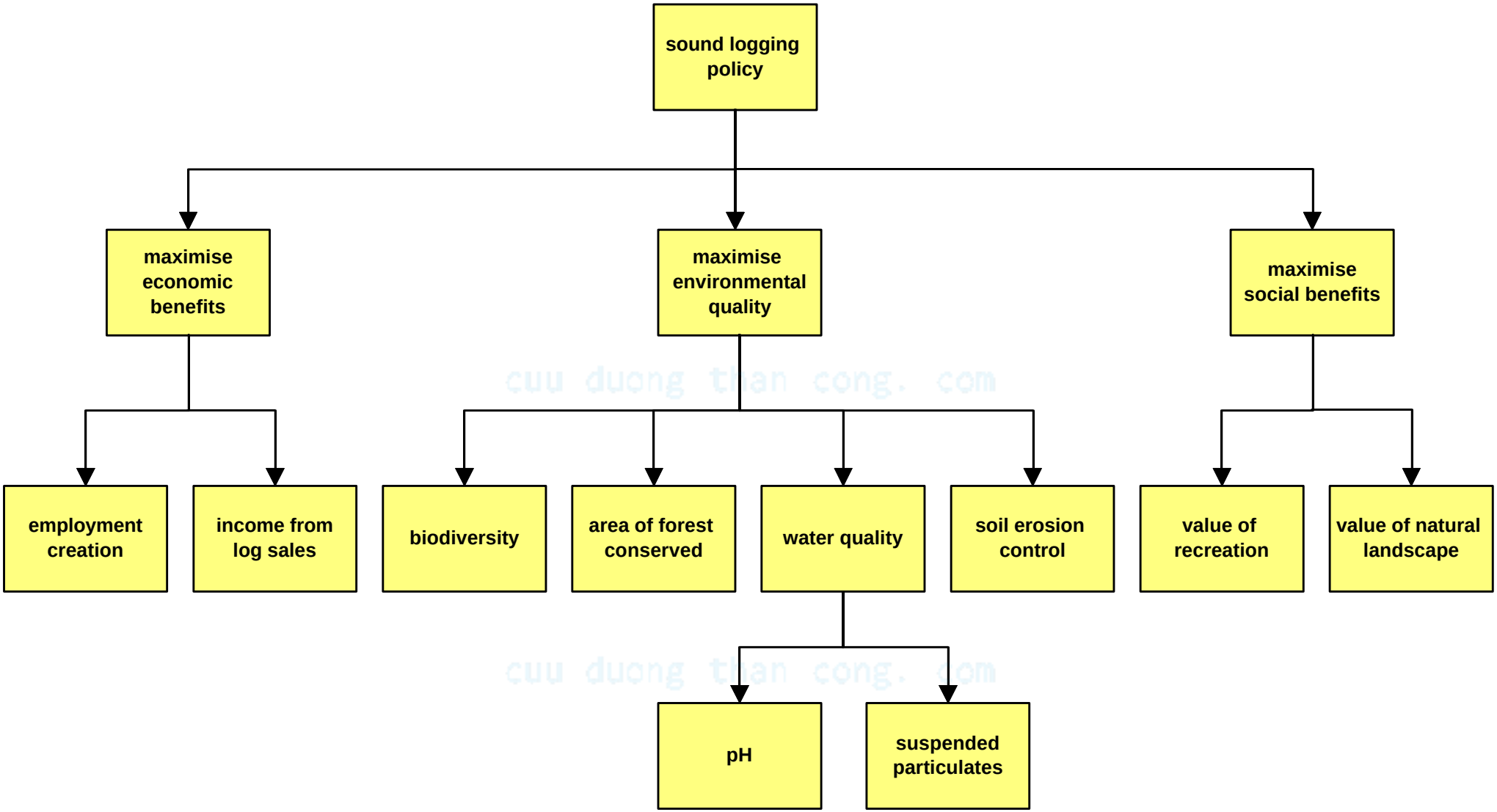
OBJECTIVE HIERARCHY FOR NUCLEAR POWER PLANT

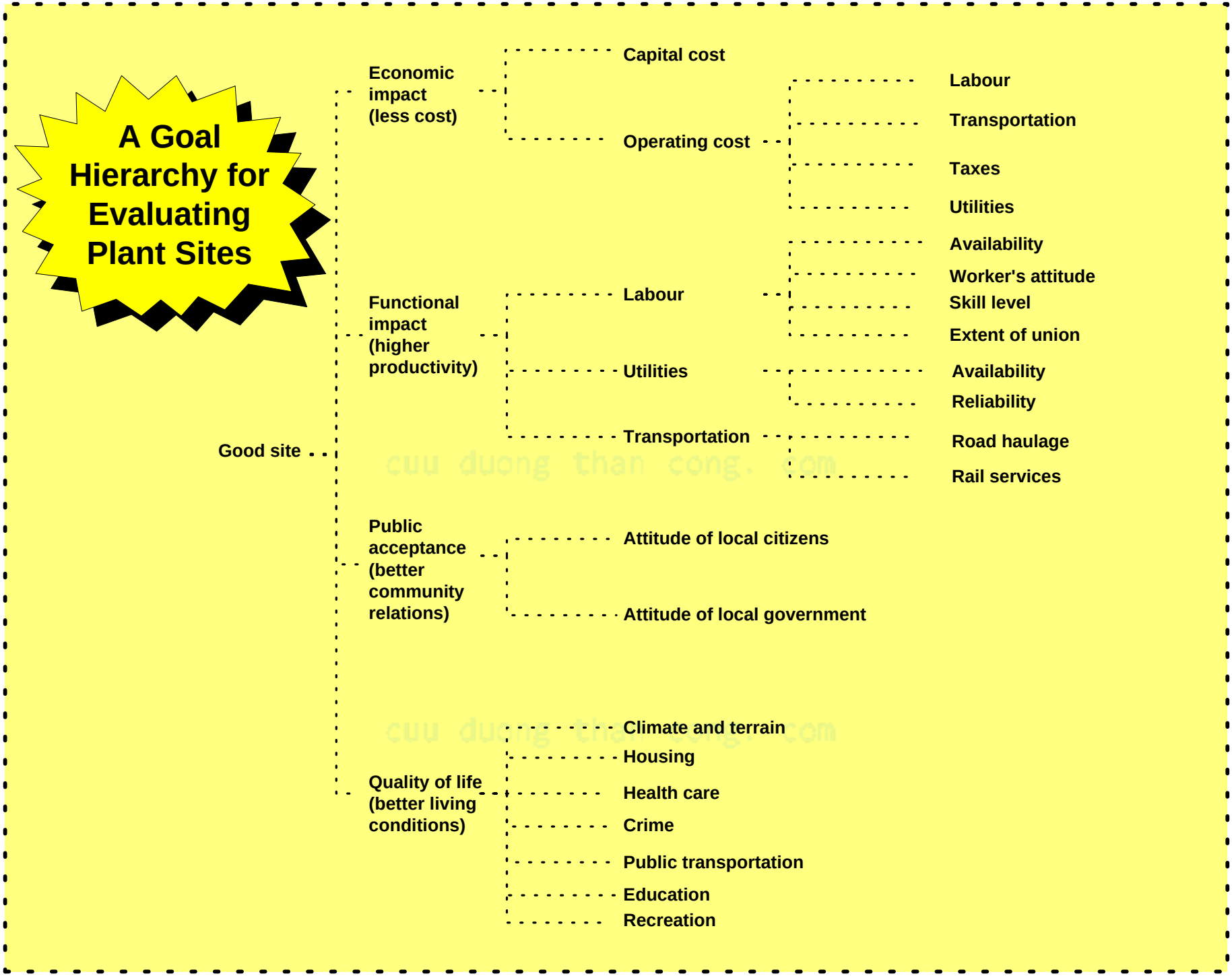


Hierarchical structure of Criteria for A Site selection Problem (for a pumped storage station)



Forest Resource Management





Fourfold Classification of Multi-Criteria Methods

		Weights	
		Ordinal	Cardinal
Outcomes	Ordinal	O/O	O/C
	Cardinal	C/O	C/C

Extended Classification

		Weights	
		Ordinal	Cardinal
Outcomes	Ordinal	O/O	O/C
	Cardinal	C/O	C/C
	Mixed	M/O	M/C