



Impact Identification, Initiative and Eco-Resilience of Climate Change on Eco-system

—A Questionnaire Framework

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1. Eco-Resilience Orientation Questionnaire Framework

• Eco-resilience Orientation Questionnaire Framework (EQF):

an integrated framework designed to communicate with stakeholders and to assess impact of climate change, challenge and solution for eco-resilience and adaptation of environment.

• Aim:

assess impact of climate change, explore potential strategy and needed corrective actions for adaptation and resilience by access to key stakeholders in selected LivingLabs or regions of Eu and China.

2. Questionnaire framework on identification-Initiative-Resilience



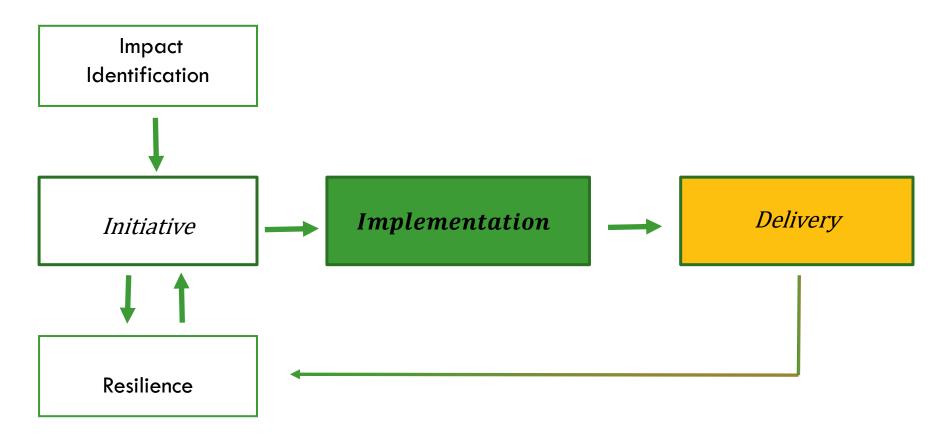


Fig 1. impact identification, initiatives implemented, and improved resilience/adapted ecosystems

3. Access to stakeholders (globally or specifically)



- Stakeholders can be global or specific ones
- Our case is to access to high-level stakeholders/decision-makers for climate change strategy and solution in selected livingLabs of Eu and China.
- Why high-level stakeholders: because of the efficiency, their key roles in the strategy and operation decisionmaking, and our background advantage over the resources of higher-level stakehoders in forestry-related enterprises.

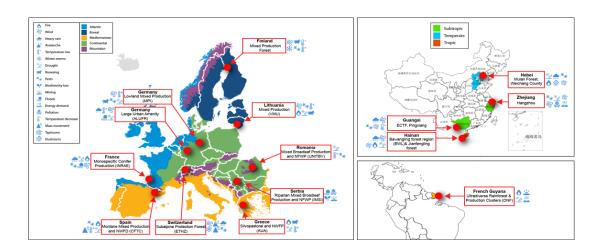


Table 1. access to higher-level stakeholders/decision-makers

Category	0 rg an ization	Position
Pulp/paper groups	W oodfiber-based pulp-paper groups	CEO/GM/leaders of Forests
Tim ber industry	Tim ber/bgs enterprises	Heads/Deputy Heads/Department Heads
Polywood etc	W ood processing enterprises	M anaging D irectors/Forest Heads
SM Es	Private Forestry 0 perators	Heads
Forestry farm s	Large Forestry farm etc	Heads
Forestry Associations	Forest Industry Associations etc	Heads

4. Impact identification



Access to understanding, acknowledge and insight of stakeholders, and to identify impact, challenges, priority and engagement etc towards climate change strategy.

4.1 Questionnaire: global concern

Table 2. global/general concern

	Concorr	challenge										
	Concern	1	2	3	4	5	6	7	8	9	10	com m ents
1	globle environm ent											
2	your regional environm ent											
3	socia Fecological developm ent											
4	bioeconom y											
5	eco-vu herab ility											
6	native/endem ic species at risk											
7	abiotic and biotic hazard											
8	b iod iversity											
9	species invasion											
10	stom s											
11	flood											
12	fire											
13	drought											
14	insect and pathology attack											
15												

Number1: minimum concern of challenge

Number 10: maximum concern of challenge

4.2 Questionnaire: eco-service orientated concern

	Question/concern												
	Question/concern	0 (no)	1	2	3	4	5	6	7	8	9	10	com m ents
	Provisioning service							-				-	
1	tim ber/fibre												
2	food												
3	water												
4	cash crop												
5	m edical												
6													
	Regulating service												
7	climate regulation												
8	water purification												
9	erosion control												
10	natural disaster mitigation												
	Supporting service												
11	soil form ation												
12	nu trient cycling												
13	pho to syn the sis												
14	biodiversity maintenance												
15													
	Cultural service												
16	recreational value												
17	aesthetic enjoyment												
18	spiritual and cultural experience												
19	educational opportunity												





4.3 Questionnaire: specific concern

Table 3. specices-relative concern (Chinese fir, Eucalyptus, Spruce, Birch etc)

	Question/concern	cha llenge											
	Question/concern	0 (no)	1	2	3	4	5	6	7	8	9	10	com m ent
1	Effect on tree grow th		•		•	•	•		•	•			
2	Height												
3	D iam eter												
4	Development (flowering, fiuiting)												
5	Stage of maturity (First-time flowing)												
6	W ood yield												
7													
8	In pacton pest and disease												
9	Pests	T											T
10	D iseases												
11													
12	Im pact on soil		•	•	•	•			•	•	•	•	-
13	Soil microorganisms												
14	So il fertility												
15	So il structure												
16	Soilmoisture												
17	Soil water and nutrient cycles												
18	Soilerosion												
19													
20	Im pact on biodiversity												
21	Species diversity												
22	Native species												
23	Endangered species												
24	Individual abundance												
25													
26	Impact on water resources												
27	Water in-out balance in growing period												
28	Water resource and cycling												
29	W a ter quality												
30													
31	Im pact on forest ecosystem												
32	Challenge on forest ecosystem												
33	Urgentresponse to the in pact												
34	,												
35	W hat to do for challenge and resilience												
36	Keym easures to reduce in pact	1	-				1	1					-
37	Exam ples and results of action taken												



5. Initiative/action and Delivery

Questionnaire: Initiative-implementation-delivery

- 1 Can you provide specific examples of initiatives your organization has implemented to improve the resilience of ecosystems?
- 1-1 How have these initiatives positively impacted the ecosystems with another ability to provide services?
- 1-2 Have there been any challenges or obstacles faced during the implementation of these initiatives? If so, please describe how they are addressed?
- 2 How does your organization measure and evaluate the effectiveness of the initiatives in improving ecosystem resilience?
- 2-1 What indicators you have used to measure the health and resilience of ecosystems?
- 2-2 Please, describe how you have monitored the success and illustrate the results and success stories of your efforts?
- 3 Have your organization engaged external stakeholders such as local communities, NGO's or other experts for planning, implementations or evaluation of initiatives aimed at improving ecosystems resilience?
- 3-1 If so, please describe their contribution for the success.
- 4 How have your organization communicated these initiative and results in different media?

6. Questionnaire: initiative/action/suggestion



Table 4. suggestion for solution/action

	Suggestion											
	Suggestion	1	2	3	4	5	6	7	8	9	10	com m ents
1	strategy solutions											
2	governance											
3	law improvement											
4	policy im pact											
5	regulation											
6	guide-line											
7	forestry planning											
8	forest m anagem ent											
9	biophysical im provem ent											
10	integrated multifunctional forest											
11												
12												

• Number 1: minimum expected benefit

Number 10: maximum expected benefit



7. Evaluation for resilience/F-P Model

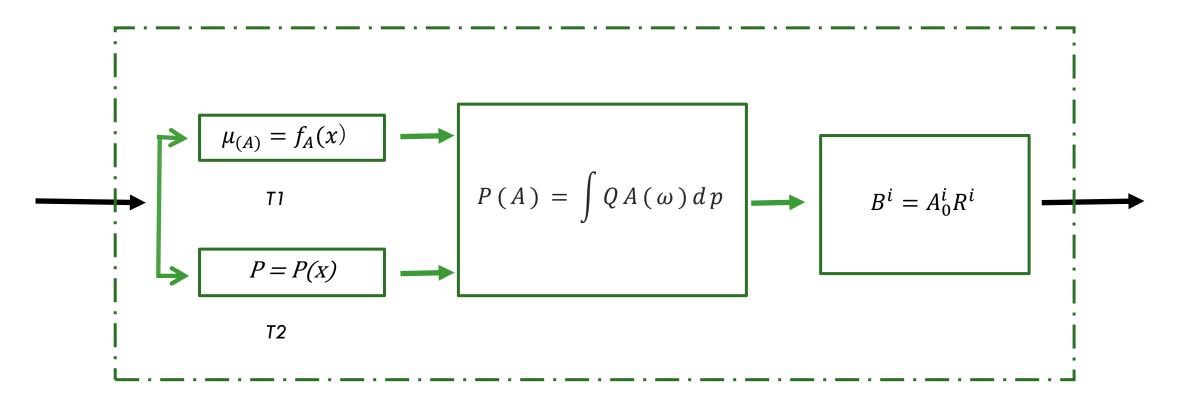


Fig 2. Evaluation and simulation for: impact identification priority in questionnaires, bio-diversity (e.g. native/endemic species at risk), and eco-service etc challenged or impacted from climate change and eco-resilience



Thanks