APPENDIX 1

POTENTIAL DECISION CASCADE FOR GENE CONSERVATION UNDER CLIMATE CHANGE: MEASURES, INDICATORS (vers.1.2: Rough draft to give an idea of the recommended decision cascade, detailed indicators for measures have to be elaborated)

o = obligatory indicator (AND); xx/yy/zz = alternative indicators (OR); >%/>>%/>>>%= level of population decline %

Level/ Step	Measures	Indicators											
		Relevant forest genetic resource (national data)	Conservation unit minimum requirements (EUFGIS, Koskela *et al* 2013)	Criteria for core network (deVries *et al* 2015)	Criteria for conservation unit genetic monitoring (Aravanopoulos *et al* 2015)	Criteria for complementary genetic monitoring of the units (this report)	Relative number of reproducing trees declining (% per 10 years)	Absolute number of reproducing trees declining under < minimum requirement	Specific pest, invasive neophyte	Lack of regeneration over > 10 years	Migration barriers, exhausted vertical buffers	High probability for genetic drift	Danger of extinction
0 general													
	prevention from habitat destruction (or rehabilitation)	o											
	restriction against introduction of pest, invasive neophyte etc.	o											
1. *in situ* conservation in genetic conservation units													
	unit establishment	o											
	EUFGIS record		o										
	unit demographic monitoring		o										
	unit included in core network			o									
	unit target of genetic monitoring				x	x							
2. *in situ* silvicultural measures in genetic conservation units													
	regulation of competition or pathogenes		o				>%	y	y				
	artificial regeneration		o							o			
3. *in situ* replacement/reorganisation of genetic conservation units													
	replacement by existing equivalent unit within country x zone		o	o			>> %	y	y	o			
	duplication of unit within surroundings/habitat		o	o			>> %	y	y	o			
	recombining duplicates of similar/near unit within surroundings/habitat		o	o			>>> %	y	y	o		o	
4. *ex situ* assisted migration of genetic conservation units													
	duplication of unit in direction of expected change (2x)			x		x	>>> %	y	y	o	z	z	
	recombining duplicates of unit in direction of expected change (2x)			x		x	>>> %	y	y	o		o	
5. *ex situ* preservation in field													
	genotype collections in conservation orchards, botanical garden networks			x		x		o		o		o	
6. *ex situ* preservation in stasis													
	seed bank, cryoconservation, in vitro conservation			x		x		o		o		o	o