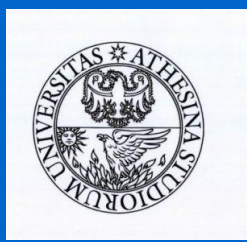




G.P. "OPENLOC"



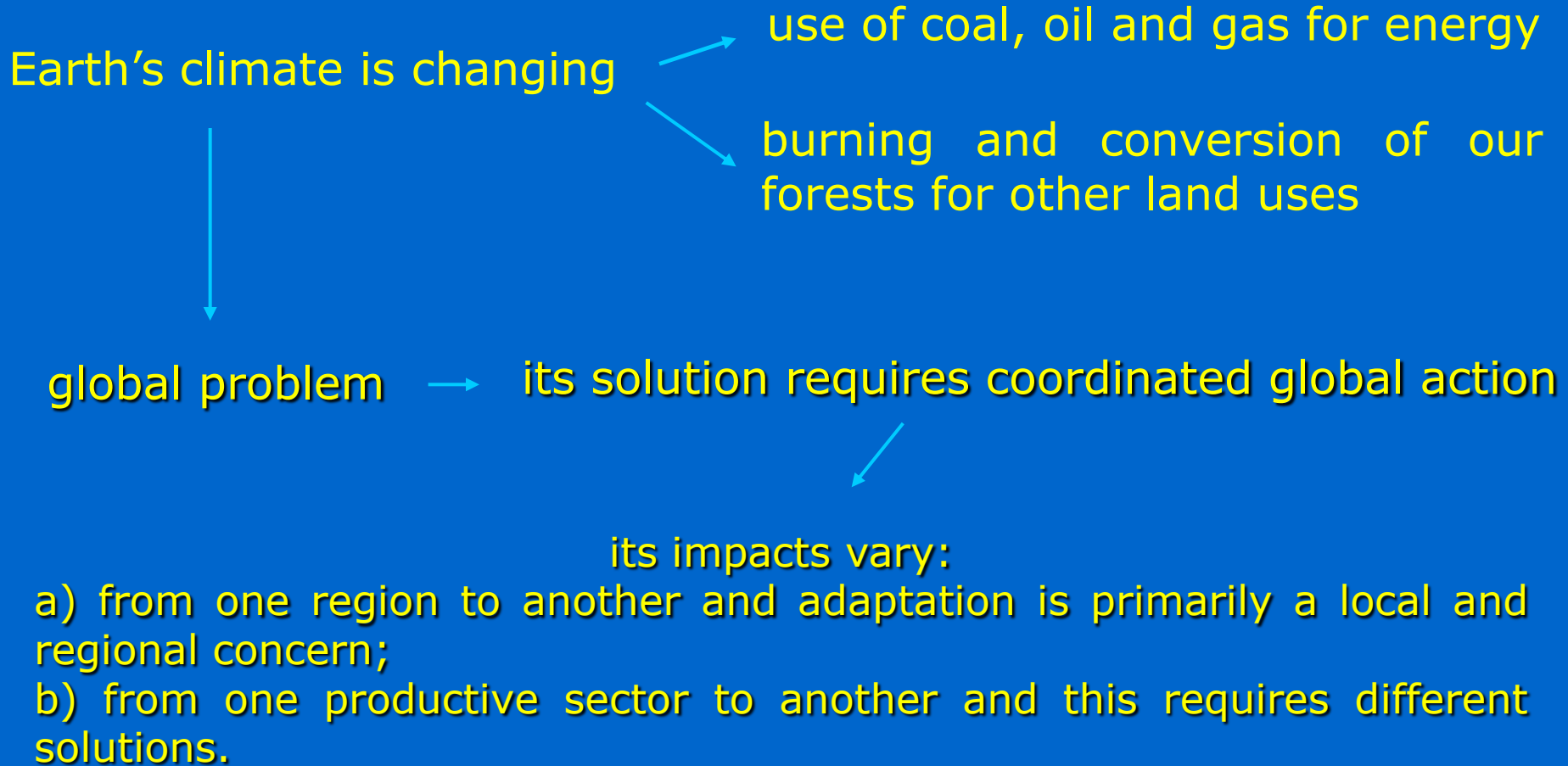
CLIMATE CHANGE: MULTIPLE EFFECTS ON ALPINE FORESTS

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CLIMATE CHANGE





CASE STUDY



FOREST SECTOR

plays an important role in the global climate change debate: 1) the sector influences the global carbon cycle; 2) the sector is influenced by possible global climate change caused by increased concentrations of greenhouse gases.





CASE STUDY



AUTONOMOUS PROVINCE of TRENTO (PAT)

Total surface (he): 620,668

WOODLAND AREA (he): 345,293
500 mt < 322,819 he < 2000 mt

TYPOLGY

High Forest 78% Coppice 22%

SUBDIVISION

Protection 20%

Production 80%

PROPERTY

Public Authorities and other public bodies 74%

Private 23%

State Forest 3%

- % of forest area: 56%
- for inhabitant: 0.75 he
- pasture land > 1800 mt: 46,718 he



HEIGHT and SPECIES OF TREES





PAT: PRESENT SITUATION



	Surface (> 500 and < 2,000 mt, he)	Carbon Stock (ton)	Prescribed cut (m³/he)
HIGH FOREST:			
Beech + broadleaved stand	30,108	5,449,548	28,443
Pine stand	14,937	2,838,030	27,251
Fir stand	55,398	14,514,276	55,412
Spruce stand	123,150	26,969,850	305,727
Larch stand	30,833	8,602,407	85,409
Cembra Pine stand	9,095	2,537,505	5,921
Total	263,521	60,911,616	508,163
COPPICE			
	59,298		72,969
Total	59,298		72,969



PAT: PRESENT SITUATION



ITEM	Overall value* (€)	Percentage of total
Production value, as in standard national accounting	24,001,593	18.91
Added production value, as in national green accounting	15,750,339	12.45
Landscape-recreational value	14,252,459	11.27
Carbon fixing value	4,067,519	3.22
Hydro-geological protection value	68,498,964	54.15
TOTAL	126,570,874	100.00

* Value for surface > 500 metres and < 2000 metres



SIMULATION: HYPOTHESIS



INCREASE of TEMPERATURE

One degree



100 metres vegetational height
limit above the actual limit



Two degrees



150 metres vegetational height
limit above the actual limit



1. To divide woodland area (> 500 metres and $< 1,800$) in space of 100 and 150 meters
2. To value % of different species of trees on total surface in each space
3. To apply each % to the total surface of the superior space, last space is pasture land (we considered 60% (28,030 he) of pasture land $> 1,800$ metres)
4. To obtain the new surface for different species of trees



RESULTS OF THE SIMULATION



	Surface (> 500 and < 2000), ha		Carbon Stock (ton)		Prescribed cut (m ³ /ha)	
	1 degree	2 degrees	1 degree	2 degrees	1 degree	2 degrees
HIGH FOREST						
Beech + broadleaved stand	30,931	35,317	5,598,511	6,392,377	29,220	33,364
Pine stand	19,052	21,185	3,619,880	4,025,150	34,758	38,649
Fir stand	43,501	55,097	11,397,262	14,435,414	43,512	55,111
Spruce stand	124,130	106,084	27,184,470	23,232,396	308,159	263,359
Larch stand	31,409	25,966	8,763,111	7,244,514	87,005	71,927
Cembra Pine stand	16,290	12,259	4,544,910	3,420,261	10,606	7,982
Total	(263,521) 265,313	255,908	(60,911,616) 61,108,144	58,750,112	(508,163) 513,260	470,392
COPPICE	51,905	47,457	(now 59,298 and 72,969)		63,872	58,398
Total	51,905	47,457			63,872	58,398

RESULTS OF THE SIMULATION



ITEM	Overall value* (€)		
	Present situation	1 degree	2 degrees
Production value, as in standard national accounting	24,001,593	23,585,158	22,551,188
Added production value, as in national green accounting	15,750,339	15,477,066	14,801,178
Landscape-recreational value	14,252,459	14,005,175	13,393,565
Carbon fixing value	4,067,519	3,996,947	3,822,399
Hydro-geological protection value	68,498,964	67,310,487	64,371,019
TOTAL	126,570,874	124,374,833	118,943,349

* Value for surface > 500 metres and < 2000 metres



ROLE of LOCAL AUTHORITY



The silvicultural aspects of forest management in Autonomous Province of Trento have, for decades, been modelled on naturalistic methods of silviculture. But the management is mainly connected to the use of wood and not to other functions.



a) To pursue a multi-functional approach

b) Possible reduction in revenues for forest owners (generally public)

c) The change in the beneficiaries of forest value



1) To remunerate forest owners/producers for the services produced,

2) To outline suitable policy and action

3) To use an inter-sectorial approach



ROLE of LOCAL AUTHORITY



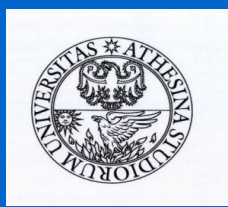
The prospects of a changing climate have a variety of implications for all levels of government which have to consider possible climate change implications when planning their actions, projects and decisions



1. Enhancing research and technology transfer
2. Understanding better how climate change may impact different sectors
3. Detecting early impacts of climate change
4. Defining strategies to minimize impacts and realize benefits
5. Defining strategies to educate and engage managers, policy makers at different level and the general public.



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Thanks for your kind attention