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Revegetation activities in the Mediterranean areas as influenced by the definition of forest

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Paper outline

A. INTRODUCTION

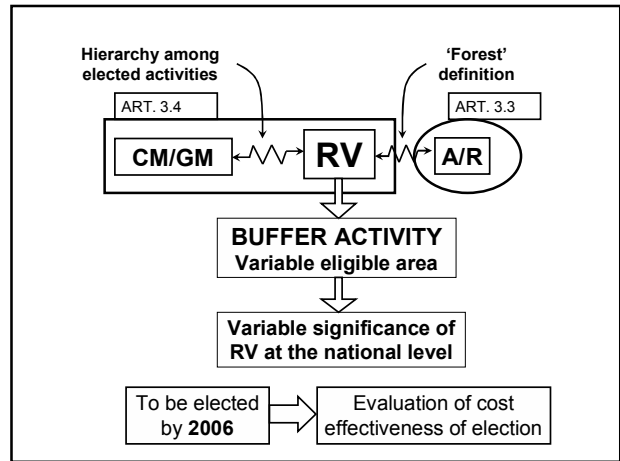
B. CRITERIA THAT INFLUENCE AREA ELIGIBLE FOR REVEGETATION (RV)
→ SIGNIFICANCE OF RV in the MEDITERRANEAN AREA

C. PRELIMINARY STUDY TO EVALUATE RV SIGNIFICANCE AT THE NATIONAL LEVEL

- Area Change (EU CORINE Land Cover)
- C -Accumulation Rates (influencing factors)
- Costs connected to RV election under KP's Art. 3.4

→ benefits vs. costs = cost effectiveness of RV election

A. Introduction



MEDITERRANEAN AREA

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VEGETATION EXPANSION IN ABANDONED AGRICULTURAL LAND COULD ASSUME SIGNIFICANCE TO ACHIEVE THE KP COMMITMENTS (UNDER BROAD ASSUMPTIONS/DEFINITIONS)

Years	EU (million ha)	EU Mediterranean area (million ha)
1965	103.2	36.5
1970	106.9	39.5
1975	109.6	41.1
1980	110.9	42
1985	111.4	42.3
1990	112.7	43.1
1994	113.3	43.7
2000	113.9	44.3
2005	114.9	44.8
2008	115.2	45
2010	115.4	45.1
2012	115.6	45.3
1965-2012	12.4	8.8
1990-2012	2.9	2.2
2008-2012	0.4	0.3

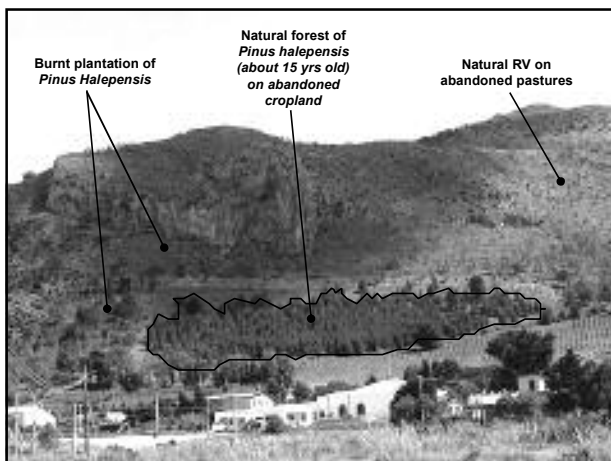
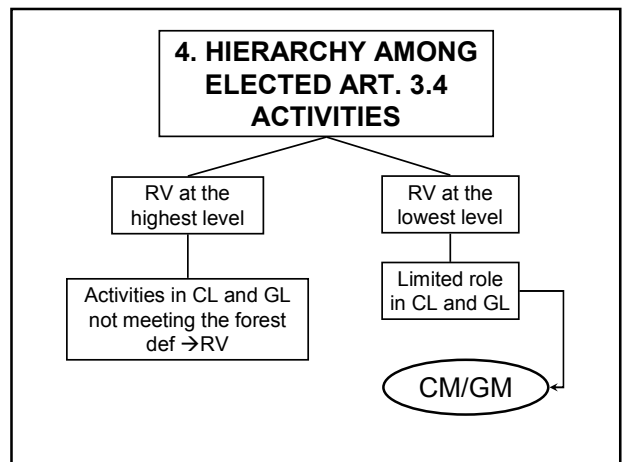
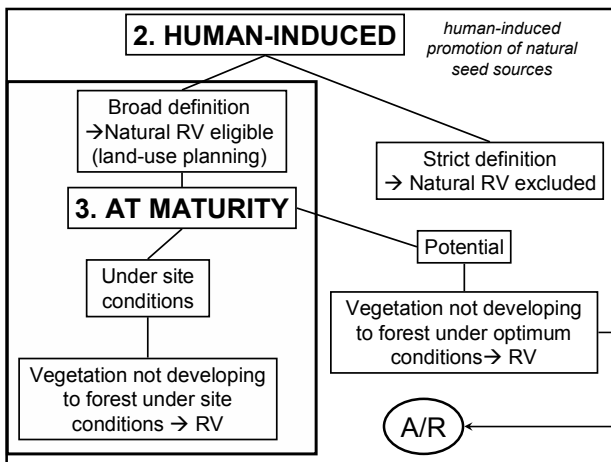
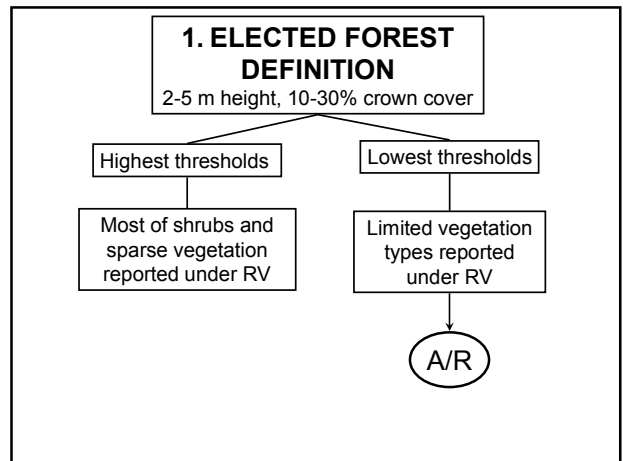
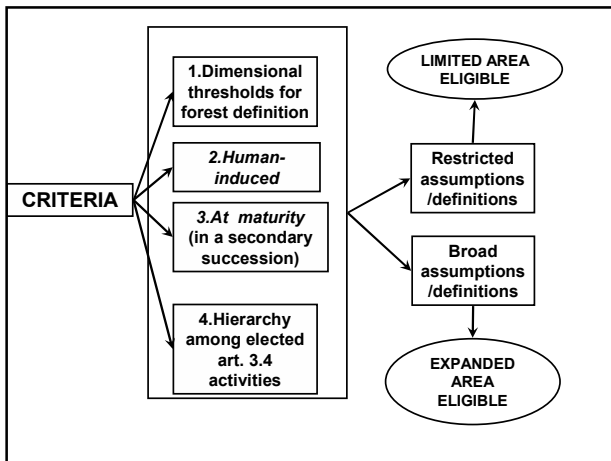
Forest expansion (1965-1994, FAO):
- EU : 10,1 Mha
- Mediterranean area: 7,2 Mha (70%)

ABANDONMENT of AGRICULTURAL AREA

- FOREST EXPANSION
- SHRUBLAND EXPANSION (MAQUIS) → RV

Lack of data

B. CRITERIA THAT INFLUENCE AREA ELIGIBLE FOR REVEGETATION (RV)



The activities eligible for RV affect types of vegetation that are usually not monitored at the national level (NFIs, large-scale surveys, national statistics, etc.)

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PRELIMINARY STUDY on the significance of the activities at the national level should be promoted in order to estimate the **COST EFFECTIVENESS** of the election of RV by a Party

C. PRELIMINARY STUDY TO EVALUATE RV SIGNIFICANCE AT THE NATIONAL LEVEL



- DEFINE ACTIVITIES ELIGIBLE FOR RV according to NATIONAL DEFINITIONS
- EVALUATION of AREA AFFECTED BY RV ACTIVITIES (Corine Land Cover, National Land-Use Maps, National Statistics)
- EVALUATION of CARBON SINK (default rates of carbon change)
- ERRORS/UNCERTAINTIES EVALUATION
- ASSESSMENT OF MONITORING COSTS
- COSTS/BENEFITS COMPARISON

LAND-USE CHANGE

CORINE LAND COVER: 1990 ↔ 2000
(where national databases are not available)

NO LAND COVER CLASS REPRESENTS RV
(Transitional woodland/shrubland = revegetation + degradation)

TRACKING of LAND-USE CHANGES BETWEEN CATEGORIES IS NEEDED
(Approach 2, IPCC GPG)

DEVEGETATION PROCESSES MUST BE TAKEN INTO ACCOUNT (adverse land-use changes) TO AVOID OVERESTIMATES



National data, Italy (Source: Corine land Cover)

AR= 103814 ha	RV= 88415 ha
DF= 16871 ha	DV= 4675 ha
Net-AR= 120685 ha → 12068.5 ha/year	Net-RV= 83740 ha → 8374 ha/year

2.4 Heterogeneous agricultural areas	33889	6386	5295	660	667	7416	86	31317	13163	13	67	276	
3.1 Forests	1466	1024	46	88	1048	354	639	46	3793	8387	76	122	426
3.21 Natural grassland	977	2213	7	240	1276	16	513	1918	6269				
3.22 Moors and heathland													
3.23 Sclerophyllous vegetation	973	301	5	18	4180	64		169	833	947		14	
3.24 Transitional woodland/shrub	231	16	7	26	420	88770	113	14	1280	163	265	430	46
3.31 Beaches, dunes, and sand plains	125	25	7	5	154		123	7	389		208		231
3.32 Bare rock									52		366		
3.33 Snow													
3.34 Ice													
4 Wetlands													
5 Water bodies													
9 Unknown													
Total													

→ Abandonment leads to the development of forests mainly in alpine regions; RV processes affect the Mediterranean area

Carbon accumulation rates

HIGH UNCERTAINTIES

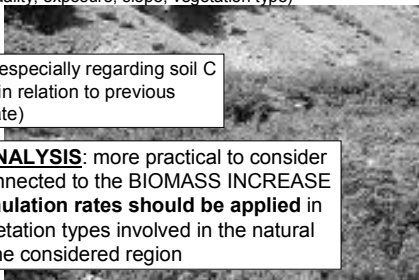
Carbon changes due to natural RV on abandoned agricultural land don't follow a single occurrence.

Several factors drive the carbon dynamics during a secondary succession:

- climate
- physiography (soil quality, exposure, slope, vegetation type)
- the former land-use
- disturbances

→ variable results especially regarding soil C changes (variability in relation to previous conditions and climate)

PRELIMINARY ANALYSIS: more practical to consider only the C sink connected to the BIOMASS INCREASE
Specific C accumulation rates should be applied in relation to the vegetation types involved in the natural recolonisation in the considered region



ERRORS / UNCERTAINTIES

AREA EVALUATION (CLC):

- MINIMUM AREA: 25 ha (grid cell size 6.25 ha), 5 ha for land-use change
- FOREST DEFINITION: tree height 5 m, crown cover 30%
- LAND COVER CLASSES (no clear definitions for the identification of land undergoing RV process)
- PROJECTIONS to FIRST COMMITMENT PERIOD (1990-2000 → 1990-1st CM)

Additional information (country-level data) could be needed to correct the RV area

ERRORS / UNCERTAINTIES

C ACCUMULATION RATES:

- VARIABLE BIOMASS INCREASING RATES according to vegetation typology and site conditions
- VARIABLE C ACCUMULATION RATES IN SOILS (possible C depletion → degradation due to land abandonment)

ASSESSMENT of MONITORING COSTS

AREA

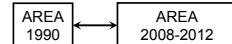
NATIONAL INVENTORIES AND DATABASES PROVIDE SCARCE INFORMATION ABOUT LAND-USE CHANGES ELIGIBLE FOR RV
→ evaluation of the available tools and data for the monitoring at national scale should be provided

COSTS CONNECTED TO THE AVAILABLE INFORMATIONS

ITALY:

- First NFI (1985): forest definition → no tree height
- New NFI: forest definition is changed → not comparable

Implementation of the net-net accounting



New NFI	Costs (€/point)	N. of points
1 st stage: Forest/not forest (remote sensing)	0.72 (1point/Km2)	300 000
2 nd stage: definition of forest category (expeditious field survey)	72 (probably higher: 140)	100 000
3 rd stage: Biomass measures (field survey)	288	33 000

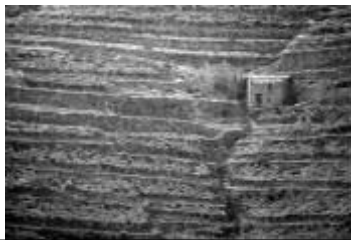
25-47 €/Km2

ASSESSMENT of MONITORING COSTS

C accumulation rates

Detailed C accumulation rates should be provided for different RV typologies according to:

- anthropogenic disturbances
- site quality
- climatic factors



CONCLUSIONS

• RV significance is highly dependent on national definitions

• RV plays a role in the Mediterranean area under a broad definition:

- Restricted assumptions → shrubland plantations (not forest) = very limited area affected
- Expanded assumptions → natural RV, linear plantation = significance to be evaluated

→ a preliminary study on the RV significance should be developed on the basis of available national databases

