

Teaching module 6

Environmental projects management

6.2 Resources management. Risk management

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Topics



Resource management



Resource allocation and leveling

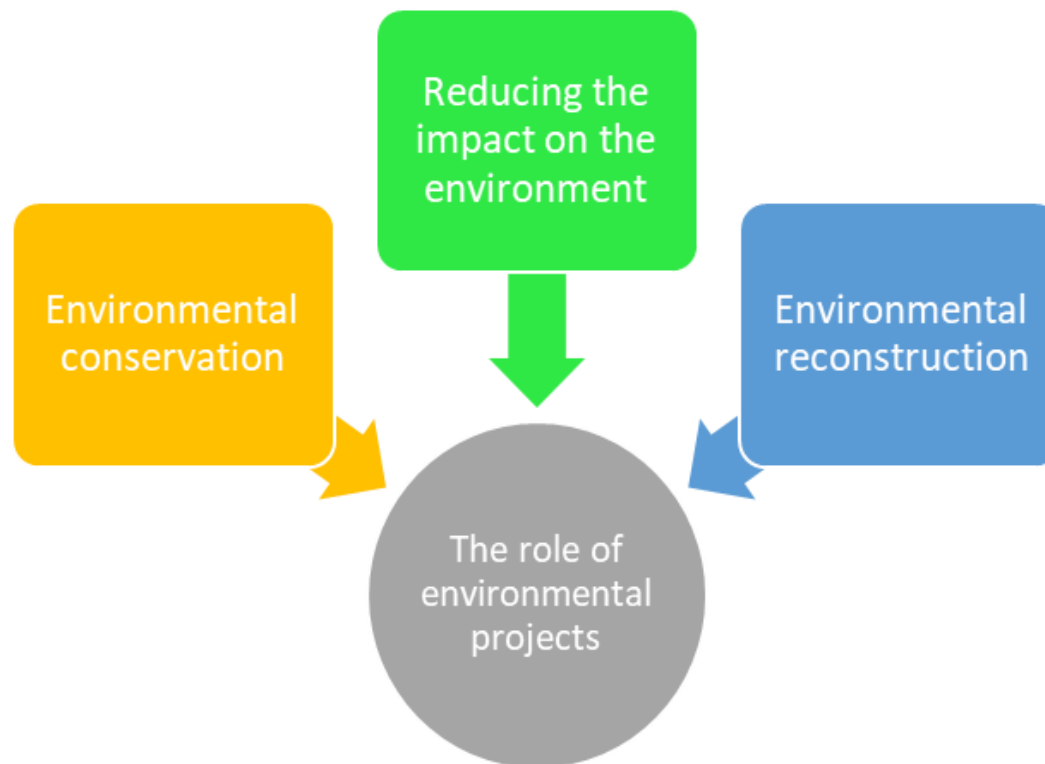


Risk management in environmental
projects

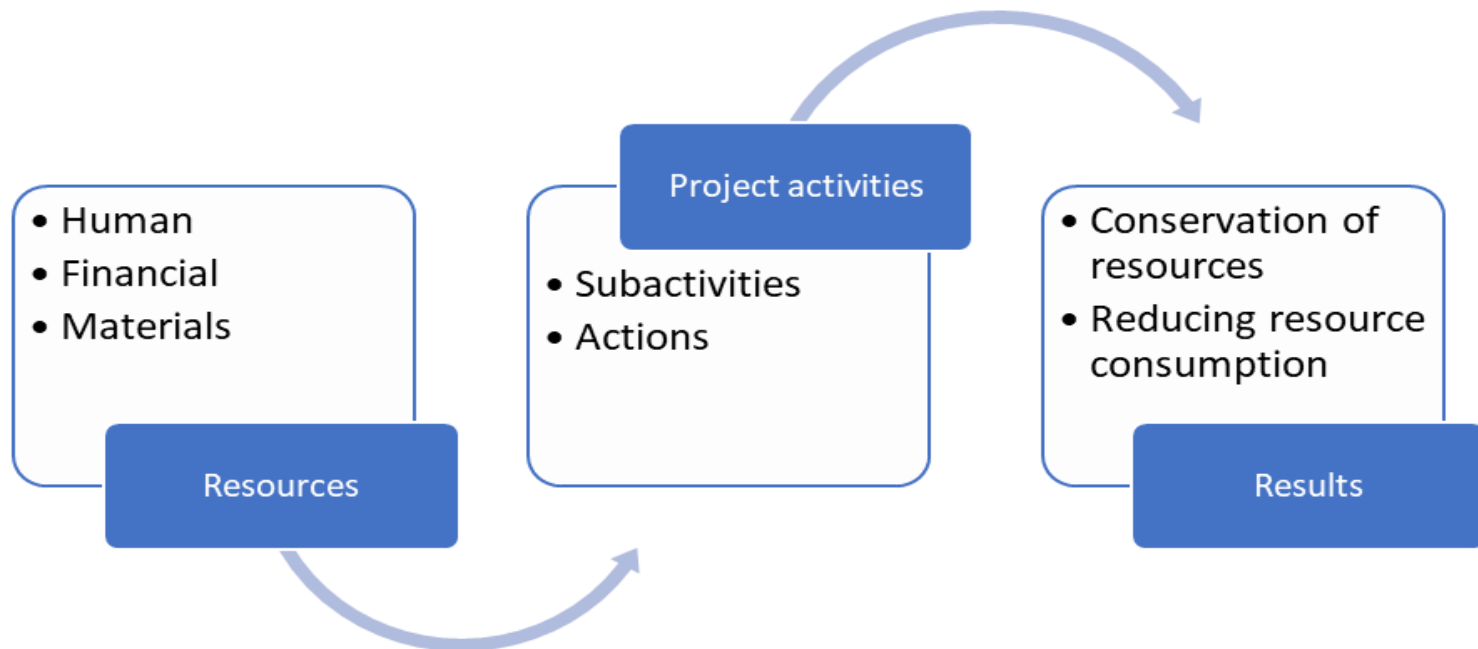


Stages of the risk management process.
Specific methods and techniques

The role of environmental projects



The role of resources in environmental projects



The main categories of resources

Energy resources

- Oil
- Gas
- Coal
- Air (wind)
- The water
- Sun
- Biological
- Nuclear

Technological resources

- Ore extraction equipment
- Material processing equipment
- Resource recovery equipment

Material resources

- Raw materials;
- Materials;
- Supplies.

The establishment of the necessary resources

- The establishment of the necessary resources and details of these resources are carried out starting from the activities to be carried out in order to achieve the objectives proposed by the project.
- Starting from the project graph that highlights the activities, the plan for the acquisition and use of resources is built.


Example of staggering of the acquisition and use of resources in environmental projects

No.	Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																		
1	Providing the necessary material resources	█																																									
	Resource 1		█	█								█	█		█	█																											
	Resource 2			█			█						█							█																							
	Resource n				█	█																																					
2	Field studies (soil, water, temperature, wind, etc.)				█	█	█																																				
	Resource 1				█	█																																					
	Resource 2				█	█																																					
	Resource n																																										
3	Specific activity 1							█	█	█																																	
	Resource 1																																										
	Resource 2							█	█	█																																	
	Resource n							█	█	█																																	
4	Specific activity 2										█	█	█																														
	Resource 1																																										
	Resource 2																																										
	Resource n										█	█	█																														
5	Specific activity 3													█	█	█																											
	Resource 1													█	█	█																											
	Resource 2													█	█	█																											
	Resource n																																										
6	Specific activity 4																█	█	█																								
	Resource 1																█	█	█																								
	Resource 2																																										
	Resource n																	█	█	█																							
7	Specific activity 5																				█	█	█																				
	Resource 1																					█	█	█																			
	Resource 2																					█	█	█																			
	Resource n																						█	█																			
8	Reporting																						█	█																			

Graph of the acquisition and use of resource

No.	Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Providing the necessary material resources	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
	Resource 1		60									120		90											
2	Field studies (soil, water, temperature, wind, etc.)			■	■	■																			
	Resource 1			20	20	20																			
5	Specific activity 3													■	■	■									
	Resource 1													40	40	40									
6	Specific activity 4																■	■	■						
	Resource 1																30	30	30						

List of resources in MS Project for the recycling project

	 Resource Name	Type	Material Label	Initials	Group	Max. Units	Std. Rate	Ovt.	Cost/Use
1	Underground ecological island K10	Work		I		2%	\$0.00/hr	\$0.00/hr	\$0.00
2	Ecolbell 3 mc	Work		E		3%	\$0.00/hr	\$0.00/hr	\$0.00
3	Compostainers 310 l	Work		C		700%	\$0.00/hr	\$0.00/hr	\$0.00
4	Bins 120 l	Work		P		700%	\$0.00/hr	\$0.00/hr	\$0.00
5	Compactor K Solar 10 mc	Work		C		4%	\$0.00/hr	\$0.00/hr	\$0.00
6	Bell IGLUS 3 m3	Work		B		15%	\$0.00/hr	\$0.00/hr	\$0.00
7	Consultant	Work		C		2%	\$0.00/hr	\$0.00/hr	\$0.00
8	Project Manager	Work		P		100%	\$0.00/hr	\$0.00/hr	\$0.00
9	Designer	Work		D		100%	\$0.00/hr	\$0.00/hr	\$0.00
10	Worker	Work		W		500%	\$0.00/hr	\$0.00/hr	\$0.00

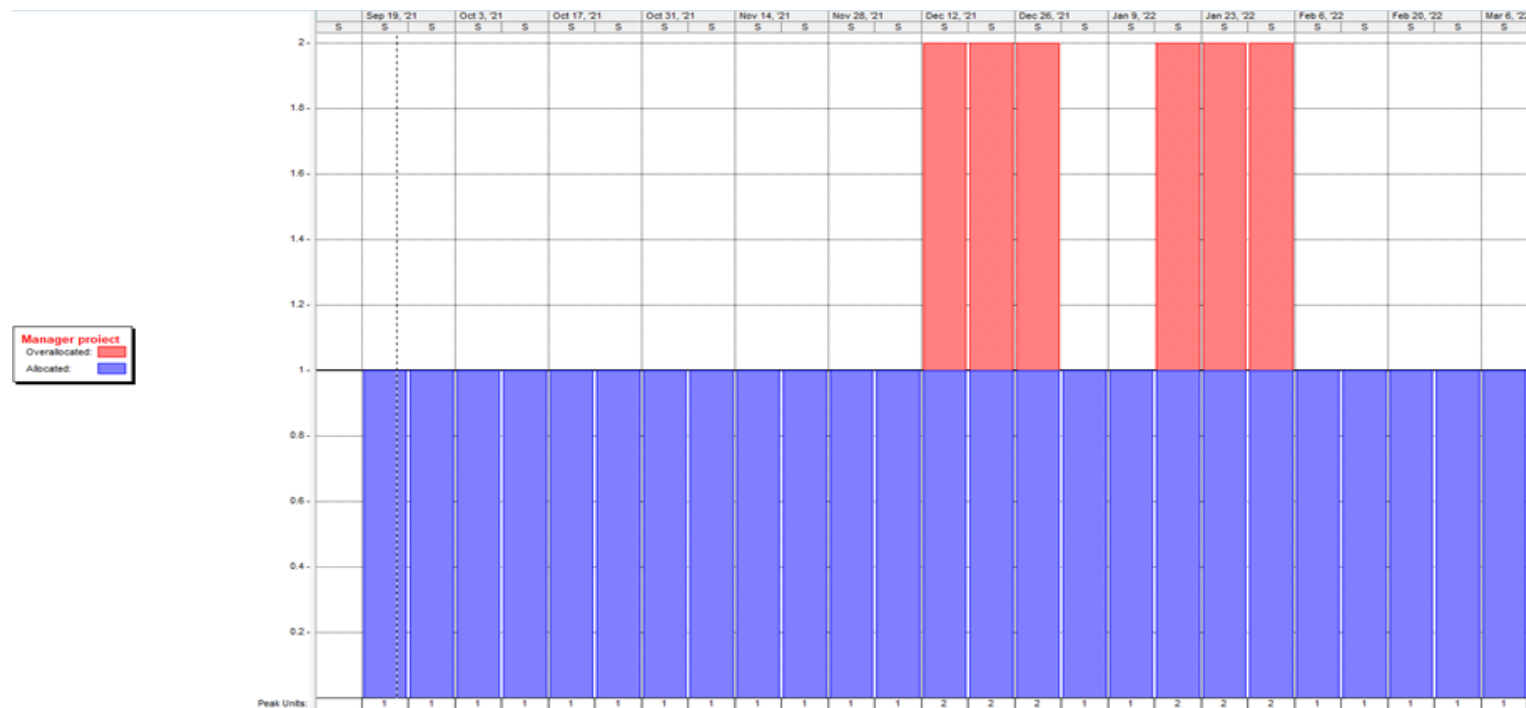
Resource usage chart in MS Project for the recycling project

Resource Name	Work	Details	Jan 23, '22			
			T	F	S	S
Staff training for exploitation	112 hrs	Work				
Final documentation	56 hrs	Work				
Project manager	1176 hrs	Work	16h	16h		
Documentation	160 hrs	Work				
Lands	320 hrs	Work				
Machinery and equipment contracting	112 hrs	Work				
Water supply	56 hrs	Work				
Construction works	160 hrs	Work	8h	8h		
Electrical installations	96 hrs	Work	8h	8h		
Installation of technological equipment	160 hrs	Work				
Staff training for exploitation	112 hrs	Work				
Designer	216 hrs	Work				
Documentation	160 hrs	Work				
Final documentation	56 hrs	Work				
Worker	1888 hrs	Work	64h	64h		
Construction works	800 hrs	Work				
Electrical installations	288 hrs	Work	24h	24h		
Installation of technological equipment	800 hrs	Work	40h	40h		

Resource allocation in environmental projects

- aims at obtaining some programs with the minimum execution time, taking into account the existing (available) amounts of resources.
- implies the distribution of existing resources so that the profile of the required resources does not exceed the profile of the available resources, the duration of the project being within the limit of the critical path.

Graphical overallocation of the "project manager" resource in MS Project for the recycling project



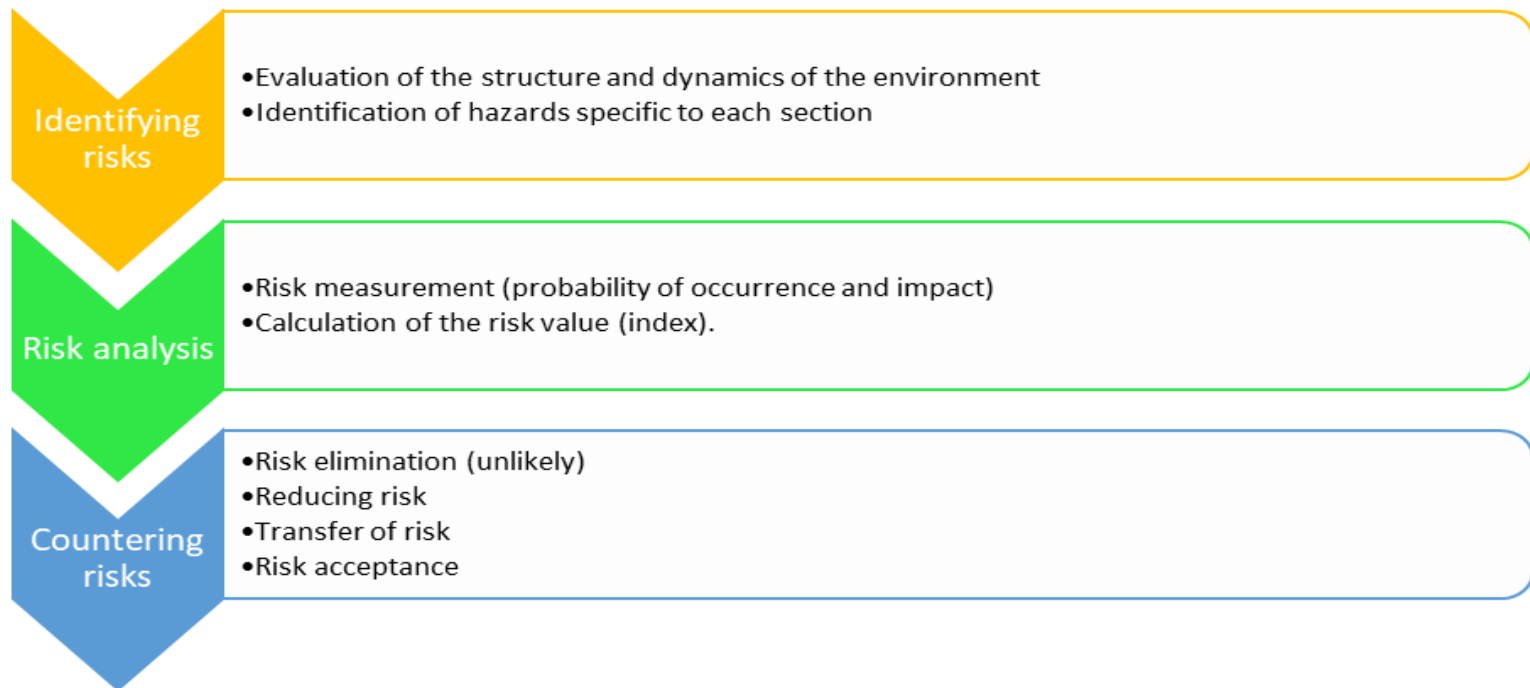
The leveling of the use of resources

- aims at obtaining minimum durations for the realization of the projects, under the conditions of equalizing the consumption of resources for the entire duration of the execution of the project, or for determined time intervals;
- it consists in establishing a work program whose duration does not exceed the length of the critical path but which presents an improved profile of resource consumption .

Risk in environmental projects

- *“an event or an uncertain condition that, if it occurs, has a positive or negative effect on the project's objective... Project risk includes both threats to the project's objectives and opportunities to improve these objectives” (Project Management Institute, 2013)*

Stages in the management of risks specific to environmental projects



Main risk sources for environmental projects

External

Environment (soil, water, air, mineral resources, etc.)

Social (demographic, cultural, etc.)

Economic (profitability, added value, etc.)

Technological (equipment, machines, technologies, know-how, etc.)

Legal (legislation, policy)

Internal

Resources (material, human, financial)

Processes and procedures

Management

Methods used to identify risks

- risk control lists;
- risk table;
- the logical tree of the hazard;
- using the intuitive experience of managers;
- standard questionnaires completed by the people involved in the project activities;
- fault tree analysis;
- structured interviews;
- the risk breakdown structure.

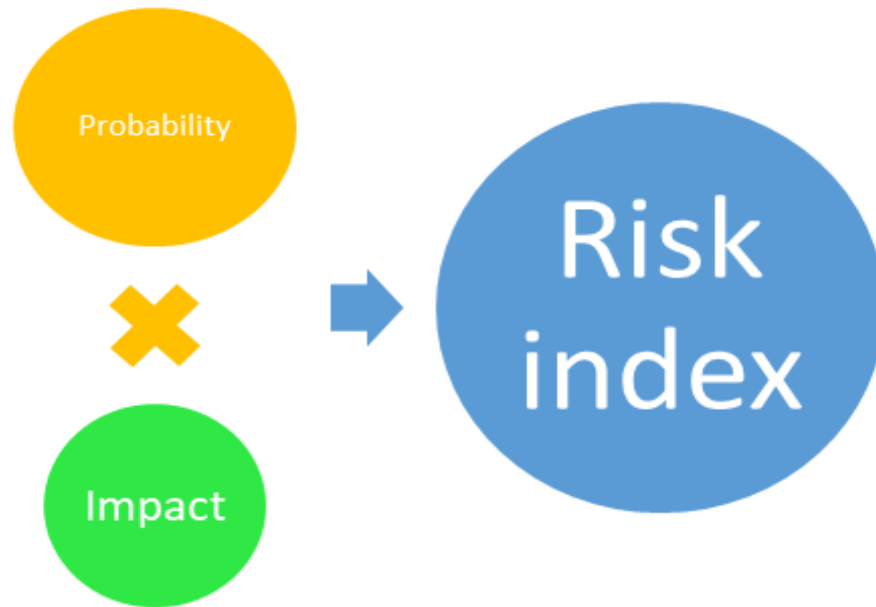
Risk analysis

- requires the use of mathematical and statistical models or calling on specialists to determine the probability of the occurrence of risks;
- (probability) is quantified with values between 0 and 1 or 0 and 100%.

Determining the impact of the risk manifestation on the project

- using a scale with values from 1 to 5;
- using percentages to determine the impact on the project structure (quality, time, budget;
- the use of a system for quantifying the impact strictly in money.

Determination of the risk index



Risk countering



Risk register

- Identified and analyzed risks can be entered into databases and/or risk registers so that their tracking and response actions are facilitated.
- Risk registers can have various forms and fields depending on the organization's experience in risk management and the specifics of the environmental projects being implemented.

Risk register for the composting project

No.	Description of the risk	Project activity affected	Probability	Impact (euro)	Expected value	Response actions
1.	Difficulties in recruiting the technical responsible for the project	Personnel recruitment for the project team	10%	1000	100	Allocations by expenditure chapters in the project budget
2.	Repetition of the procurement procedure due to non-compliance of offers	Procurement procedure for composting containers and facilities	20%	500	100	Introduction of a clarification period for the offers received
3.	Delay in landscaping works	Arrangement of composting spaces	10%	1500	150	Delay penalties provided for in the contract
4.	Incomplete reporting on the results of the monitoring process	Monitoring the composting process	30%	500	150	Restructuring of project progress reports

Thank you!



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