



M.I.R.C. - METSOVION INTERDISCIPLINARY RESEARCH CENTER  
MSc "Environment and Development of Mountain Regions"  
NATIONAL TECHNICAL UNIVERSITY OF ATHENS

# The Metsovion Interdisciplinary Research Center (M.I.R.C.) and the MSc "Environment and Development of Mountain Regions": Research and Education in the Mountain Regions of Greece

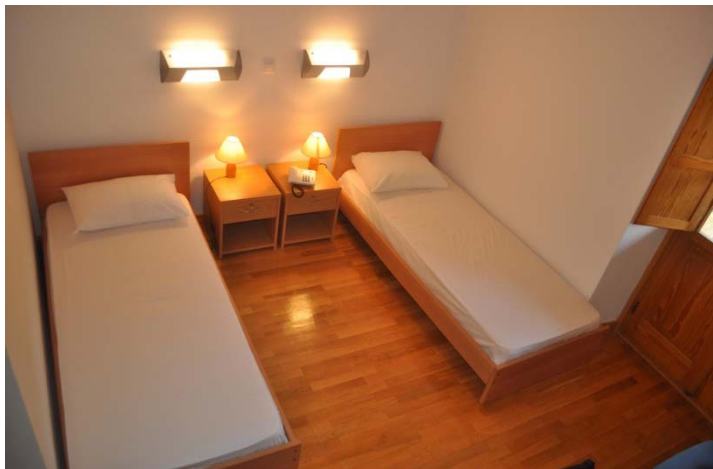
Stella Giannakopoulou  
*Dr Architect Engineer*



## The M.I.R.C. and the MSc in Metsovo

- Greece is among the most mountainous countries in Europe (78%).
- Absence of mountains at academic level.
- The National Technical University of Athens founds the M.I.R.C., in 1993 and the MSc “Environment and Development of Mountainous Areas”, in 2008.
- Both located in Metsovo, Epirus, a town of 3,500 residents at 1,100m in the buildings of NTUA, which construction was completed in 2003.
- M.I.R.C. and MSc form a vivid academic community. A laboratory that builds firm knowledge on the mountainous areas of Greece.



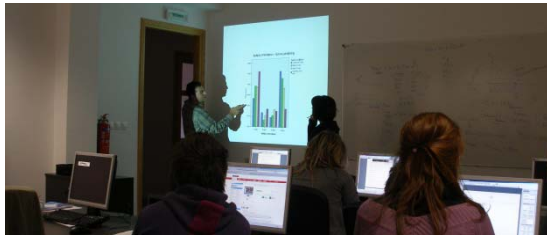


Building facilities in Metsovo

## Why an MSc and a Laboratory for mountains?

- Greeks were living in mountains until the mid 20ies. World War II, Civil War, Immigration led to the depopulation of majority of mountain regions.
- During five centuries, local cultures developed in the mountainous environment.
- **Mountain regions: reservoirs of cultural heritage, architecture, traditions, knowledge.**  
*How people survived in the past? How their communities were structured?*
- Modern society returns to mountains: *natural resources, tourism, living.*
- *What kind of development today?* Balanced, integrated, based on actual human needs...or a cheap, consuming and polluting development?





## What is new and innovative about the Programme?

- **Training on real problems.** Are you a skilled scientist? Can you prove it in real social and environmental problems (and not in laboratory simulations)? Study / Live in the mountains and give solutions to local people.
- **Interdisciplinary approach.** Mountain regions' issues are complicated and require collaboration between different disciplines. Students from a variety of backgrounds: *civil engineers, architects, agriculturalists, geographers, surveyors, economists, sociologists, etc.* Common code of communication.
- **Experimental approach.** Students don't just *learn* about mountains, they *live* in them. *Experience the winter, the isolation, listen to old people, to local myths and fairytales, confront everyday difficulties....*
- **Systematic dissemination of the results.** Diffuse the results to local communities. Seminars, workshops, meetings, conferences, etc. *Knowledge isn't for the PCs and the drawers.*
- **Internationalist character.** There is an invisible line connecting Pindos – Tzoumerka – Andes - Himalayans - .... Mountain regions are a global concern.



## Courses of the MSc

Winter  
semester

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- Introduction to the Mountain Regions' Environment and Society
- Geographic Information Systems and Mountain Environment
- Introduction to the Sciences of the Development and the Environment
- Methods and Techniques of Mountain Environments' Observation and Monitoring
- Methodologies for Environmental Problems Management

Spring  
semester

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- Aquatic Environment and Development
- Introduction to the Environmental Protection Technologies
- Spatial, Economic and Legal Dimensions of Development and Environment of Mountain Areas
- Environmental Economics: Applications in Mountain Regions' Development Issues
- Cadastre, Land use and Policy
- *Diploma Thesis*

## Introduction to the Mountain Regions' Environment and Society

- Main characteristics of the mountainous environments and societies, in the world.
- Focus on the Greek mountain regions \_history, development, environment, culture, etc.
- Each academic year we “adopt” a Greek mountain region.
- Students spend one week visiting the area during winter: walking around the villages, talking with elderly at local coffee houses and with children at schools, learning the area.
- Research, projects, theses derive from systematic study \_dealing with real local issues.
- Annual meeting \_presentations to local people \_publication of books

## Environmental Economics: Applications in Mountain Regions' Development Issues

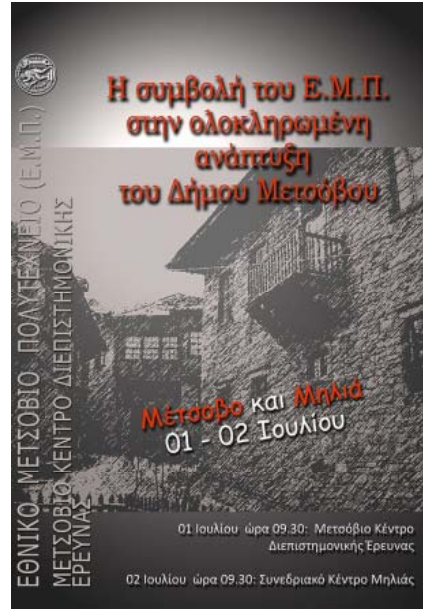
- Methods and Techniques of Environmental and Cultural Economics.
- Implementations in the natural and built environment of mountainous regions:
  - Traditional built environment of Metsovo (three CVM surveys \_habitants and visitors)
  - Traditional built environment of Sirako (two CVM surveys \_habitants and visitors)
  - Energy efficiency of buildings in Metsovo (one CVM survey \_habitants)
  - The Plaka Bridge in Epirus\_(two panhellenic CVM surveys)



Tzoumerka, 2010



Metsovo, 2011



Konitsa, 2012

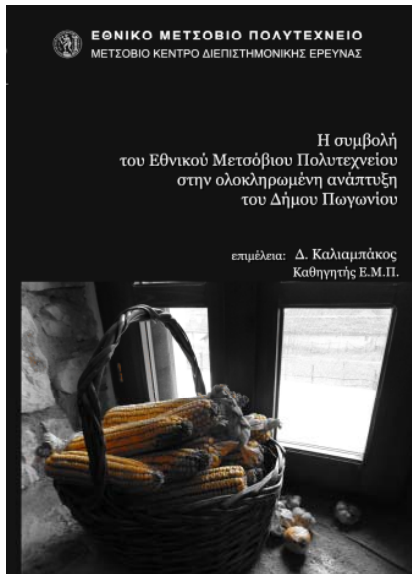


Zagori, 2013



## Educational activities – Annual Meetings - Books

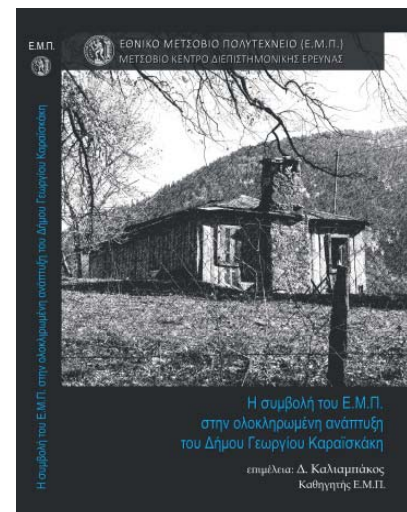
Pogoni, 2014



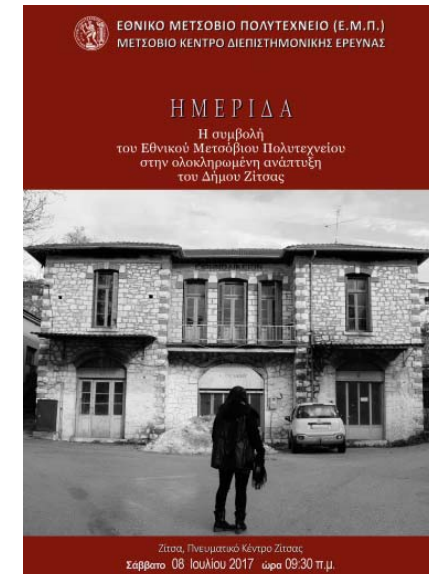
Souli, 2015



G. Karaiskakis, 2016



Zitsa, 2017





# Municipality of Filiates

acad. year: 2017-2018



- Tzoumerka
- Metsovo
- Konitsa
- Pogoni
- Souli
- G. Karaiskakis
- Zagori
- Zitsa



The region of Epirus in Greece

We started from *our home*.. We are planning to *adopt* all mountainous regions of the country in the next years...



# Educational activities - Workshops

- Since 2015, we organize a one-day event during the first week. Students study and present projects on *Mountains of the World*. The event takes place at MIRC and the audience is pupils from local school.

*areas presented: Ararat, Kamchatka, Dolomites, Popocatepetl, Mountains of the Moon, Mauna Loa, Scandinavian Alps, Drakensberg, Apennines, Bolivian Andes*

2015

ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ (Ε.Μ.Π.)  
ΜΕΤΣΟΒΙΟ ΚΕΝΤΡΟ ΔΙΕΠΙΣΤΗΜΟΝΙΚΗΣ ΕΡΕΥΝΑΣ

ΗΜΕΡΙΔΑ

Τα βουνά του Κόσμου ...στο Μέτσοβο

Αραράτ  
Καμτσάτκα  
Δολομίτες  
Ποποκατεπέτλ (Μεξικό)

ΜΕΤΣΟΒΟ  
ΜΕΤΣΟΒΙΟ ΚΕΝΤΡΟ ΔΙΕΠΙΣΤΗΜΟΝΙΚΗΣ ΕΡΕΥΝΑΣ  
Πέμπτη 05 Νοεμβρίου 2015 ώρα 10:00 π.μ.

2016

ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ (Ε.Μ.Π.)  
ΜΕΤΣΟΒΙΟ ΚΕΝΤΡΟ ΔΙΕΠΙΣΤΗΜΟΝΙΚΗΣ ΕΡΕΥΝΑΣ

ΗΜΕΡΙΔΑ

Τα βουνά του Κόσμου ...στο Μέτσοβο

Τα βουνά του Φεγγαριού (Αφρική)  
Ιερά βουνά Κίνας  
Μαuna Loa (Χαβάν)  
Σκανδιναβικές Άλπεις

ΜΕΤΣΟΒΟ  
ΜΕΤΣΟΒΙΟ ΚΕΝΤΡΟ ΔΙΕΠΙΣΤΗΜΟΝΙΚΗΣ ΕΡΕΥΝΑΣ  
Πέμπτη 03 Νοεμβρίου 2016 ώρα 10:00 π.μ.

2017

ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ (Ε.Μ.Π.)  
ΜΕΤΣΟΒΙΟ ΚΕΝΤΡΟ ΔΙΕΠΙΣΤΗΜΟΝΙΚΗΣ ΕΡΕΥΝΑΣ

ΗΜΕΡΙΔΑ

Τα βουνά του Κόσμου ...στο Μέτσοβο

Drakensberg (Αφρική)  
Απέννινα όρη (Ιταλία)  
Βολιβιανές Άνδεις

ΜΕΤΣΟΒΟ  
ΜΕΤΣΟΒΙΟ ΚΕΝΤΡΟ ΔΙΕΠΙΣΤΗΜΟΝΙΚΗΣ ΕΡΕΥΝΑΣ  
Παρασκευή 10 Νοεμβρίου 2017 ώρα 12:00 μ.μ.

## Educational activities - Conferences

- Paying back a part of the debt, *1<sup>st</sup> Interdisciplinary Conference of the MTUA and MIRC - 1995*
- Technology, Culture and Decentralization, *2<sup>nd</sup> Interdisciplinary Conference of the MTUA and MIRC - 1998*
- Integrated Development of Mountainous Regions. Theory and Practice, *3<sup>rd</sup> Interdisciplinary Conference of the MTUA and MIRC - 2001*
- Integrated Development of Epirus, *4<sup>th</sup> Interdisciplinary Conference of the MTUA and MIRC - 2004*
- Education, Research, Technology. From yesterday till tomorrow, *5<sup>th</sup> Interdisciplinary Conference of the MTUA and MIRC - 2007*
- The Integrated Development of Mountainous Areas, *6<sup>th</sup> Interdisciplinary Conference of the MTUA and MIRC - 2010*
- Integrated Development in Greece in an Era of Multidimensional Crisis: Causes, Responsibilities, Proposals, Measures, Actions and Perspectives, *7<sup>th</sup> Interdisciplinary Conference of the MTUA and MIRC - 2013*
- The Integrated Development of Mountainous and Geographically Remote Areas, *8<sup>th</sup> Interdisciplinary Conference of the MTUA and MIRC - 2016*
- *The next Conference will be held in 2019, in Metsovo*

# Educational and Research activities

- Documentary film competitions (2012-2014).
- Participation in the Mountainous Municipalities' Meeting, in Konitsa (2017): *"Policies for the equal participation of the mountainous Municipalities in the developmental reorganization of the country"*.
- Celebration Meeting on the 180 years of NTUA and the contribution of the local Benefactors of Metsovo (2017).
- Lectures from artists, mountaineers, entrepreneurs... living in mountain regions. Cultural events.
- Seminars, workshops, training schools, on a variety of thematic areas.
- Educational excursions during the courses.



# Living and studying in the M.I.R.C.



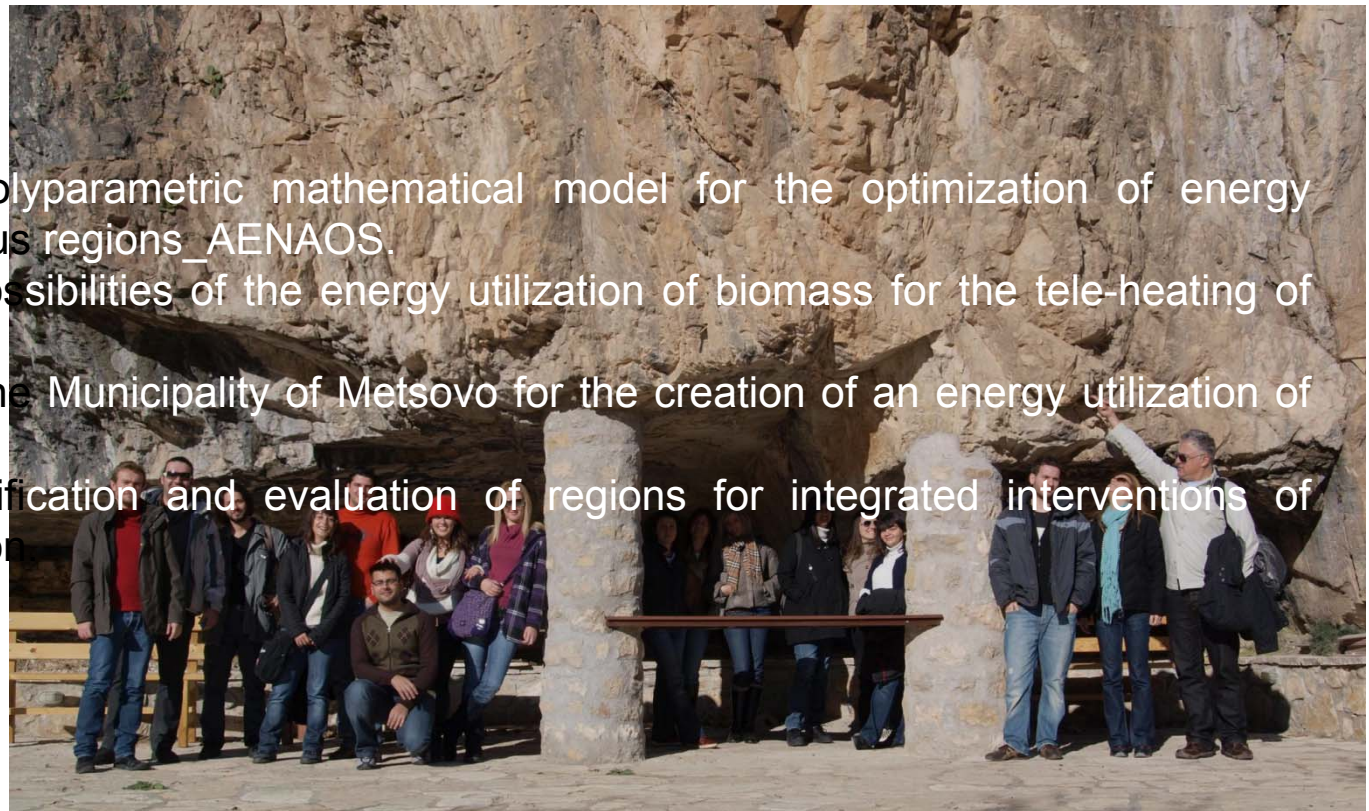


## PHD's

- Development of stochastic model for energy poverty analysis in Greece. The case of mountainous areas \_L. Papada, 2017
- Creation of an integrated system of cadastral infrastructure, environment and development \_V. Kotsios, 2016
- Optimal use of renewable energy sources in mountainous areas. The case of Metsovo, Greece \_N. Katsoulakos, 2013
- Evaluation of the vernacular architecture of mountainous areas using Environmental Economics methods \_S. Giannakopoulou, 2012

## Research Programmes

- Development of a polyparametric mathematical model for the optimization of energy planning in mountainous regions\_AENAOS.
- Investigation of the possibilities of the energy utilization of biomass for the tele-heating of Metsovo.
- Technical support to the Municipality of Metsovo for the creation of an energy utilization of biomass unit.
- Methodology of identification and evaluation of regions for integrated interventions of agricultural revitalization



# Publications

- Dologlou, N., & Kotsios, V. (2015). The Views of Greek Mountain Travelers on Mountain Tourism During Summertime: A Questionnaire Web-Based Analysis. In *Cultural Tourism in a Digital Era* (pp. 3–25). Springer.
- Geronteli, A. (2009). Metsovion Interdisciplinary Research Centre (MIRC) Database. In *Mountain Forum Bulletin, Mountain Biodiversity: Lifeline for the Future*.
- Giannakopoulou, S., Kokkalas, A., & Kaliampakos, D.. (2017). Cultural heritage as an element of regional development. Creating an open-air experience game in the mountains of Souli, Greece.
- Giannakopoulou, S., Damigos, D., & Kaliampakos, D.. (2011). Assessing the economic value of vernacular architecture of mountain regions using contingent valuation. *Journal of Mountain Science*, 8, 629.
- Giannakopoulou, S., & Kaliampakos, D.. (2012). Restoration of traditional architectural character. A cost–benefit analysis in a Greek mountainous town, based on the implementation of CVM. HERITAGE. 3rd International Conference on Heritage and Sustainable Development. Porto, Portugal.
- Giannakopoulou, S., & Kaliampakos, D.. (2016). Protection of architectural heritage: attitudes of local residents and visitors in Sirako, Greece. *Journal of Mountain Science*, 13, 424.
- Giannakopoulou, S., & Kaliampakos, D.. (2012). Cultural Economics: Reliable for Protecting Architectural Heritage. In 17th ACEI International Conference, Kyoto, Japan.
- Giannakopoulou, S., & Kaliampakos, D.. (2016). The social aspects of rural, mountainous built environment. Key elements of a regional policy planning. *Journal of Cultural Heritage*, 21, 849–859.
- Giannakopoulou, S., & Kaliampakos, D.. (2014). Economic crisis threatens vernacular architecture: an evidence using cultural economics. In ACEI 2014, 18th International Conference on Cultural Economics.
- Giannakopoulou, S., Xypolitakou, E., Damigos, D., & Kaliampakos, D.. (2017). How visitors value traditional built environment? Evidence from a contingent valuation survey. *Journal of Cultural Heritage*, 24, 157–164.
- Giannakopoulou, S., & Kaliampakos, D.. (2015). THE ROLE OF ARCHITECTURAL HERITAGE IN THE REGIONAL DEVELOPMENT OF MOUNTAINOUS AREAS EVIDENCE FROM EPIRUS, GREECE. Regional Studies Program.
- Katsoni, V., & Dologlou, N.. (2017). ICT Applications in Smart Ecotourism Environments. In *Smart Cities in the Mediterranean* (pp. 225–244). Springer.
- Katsoulakos, N. M. (2011). Combating energy poverty in mountainous areas through energy-saving interventions: Insights from Metsovo, Greece. *Mountain Research and Development*, 31, 284–292.
- Katsoulakos, N. M., Papada, L., & Kaliampakos, D.. (2014). The problem of energy poverty in mountainous areas. In *Information, Intelligence, Systems and Applications, IISA 2014, The 5th International Conference on. IEEE*.
- Katsoulakos, N. M., & Kaliampakos, D.. (2014). What is the impact of altitude on energy demand? A step towards developing specialized energy policy for mountainous areas. *Energy Policy*, 71, 130–138.
- Katsoulakos, N. M., & Kaliampakos, D.. (2016). Mountainous areas and decentralized energy planning: Insights from Greece. *Energy Policy*, 91, 174–188.
- Kotsios, V. (2016). Integrated development planning in mountainous areas-the case of Konitsa, Greece. *Journal of Mountain Science*, 13, 169–182.
- Kotsios, V. (2017). Erratum: LISADEMAS: A Life Satisfaction Decision-Making System for Integrated Community Development Planning. In *Handbook of Community Well-Being Research* (pp. E1–E1). Springer.
- Michailidou, E., & Rokos, D.. (2011). Greek mountainous areas: The need for a Worthliving Integrated Development. In *Regional studies association annual international conference*.
- Michailidou, E. (2012). Integrated Land Consolidation: A community-based initiative for Greek mountainous regions. *Regional Insights*, 3, 18–20.
- Misthos, L. - M., Nakos, B., Mitropoulos, V., Krassanakis, V., Menegaki, M., & Batzakis, D. - V. (2014). The effectiveness of propagating viewsheds' geovisualization from topographically prominent viewroutes. In 10th international congress of the hellenic geographical society, Thessaloniki.
- Panagiotopoulos, G., Misthos, L. - M., & Kaliampakos, D.. (2016). Beyond Existing e-Tourism for Mountains: Findings from the Case of Zagori, Greece. In *Sustainable Mountain Regions: Challenges and Perspectives in Southeastern Europe* (pp. 123–136). Springer.
- Papada, L., & Kaliampakos, D.. (2017). Energy poverty in Greek mountainous areas: a comparative study. *Journal of Mountain Science*, 14, 1229–1240.
- Papada, L., & Kaliampakos, D.. (2016). Developing the energy profile of mountainous areas. *Energy*, 107, 205–214.
- Papada, L., Katsoulakos, N. M., & Kaliampakos, D.. (2016). Fighting energy poverty by going underground. *Procedia Engineering*, 165, 49–57.
- Papada, L., & Kaliampakos, D.. (2015). Quantifying energy demand in mountainous areas. In *International Workshop on Data Analytics for Renewable Energy Integration*. Springer.





*What have we achieved so far?*

- Knowledge on mountains
- More than 100 postgraduates
- Support to, interaction and connection with local mountainous Municipalities  
*"You changed our everyday talking in the coffee houses"*
- Steady presence at international conferences, meetings, journals, etc.
- Awareness of the Greek mountains – an addition to the global mountainous family



video



*Thank you !*