

## CeTAmb

Research Center for Appropriate Technologies  
for Environmental Management in  
resource-limited Countries

### XI International Summer School

**Appropriate technologies  
for sustainable development:  
a focus on low and middle income  
countries**

*Coordinators:*

*Prof. Sabrina Sorlini  
Prof. Mentore Vaccari*

**20<sup>th</sup> - 24<sup>th</sup> June 2022**

University of Brescia - DICATAM  
Via Branze 43 Brescia (Italy)  
Room B.05

**Participation:  
In person and remote mode**

**[Access link, click here](#)**

### CeTAmb

Research center of University of Brescia supported by Fondazione Cogeme, Museke, Sipek and Tovini. CeTAmb aims to build knowledge and develop research on appropriate technical solutions for the management of environmental issues in Low and Middle Income Countries. CeTAmb collaborates with NGOs', universities and secondary schools to carry out research and education activities. So far, several projects have been implemented and developed on water, sanitation and energy in different countries.

### GETTING THERE

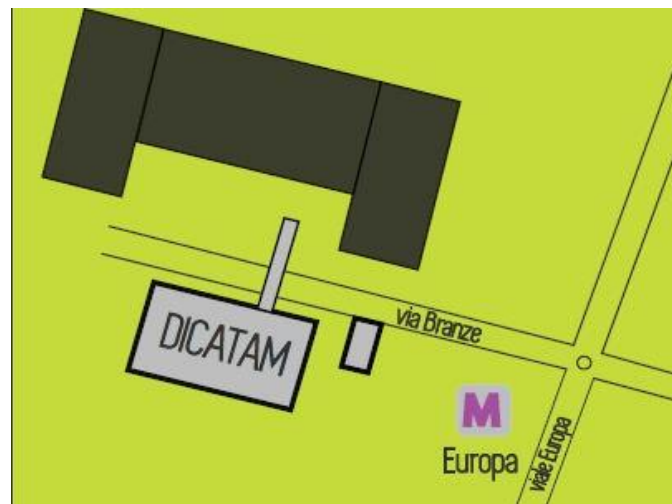
#### **by car**

Highway A4 Milano-Venezia

- from Milano, exit A4 at "Brescia Ovest" and follow indications to "stadio" (stadium) or "ospedale" (hospital) (North direction). Pass the hospital and turn right from via Triumplina to via Branze
- from Verona or Piacenza, exit A4 at "Brescia Centro" and follow indications to "stadio" or "ospedale".

#### **by train**

At Brescia station take the metro towards "Prealpino", stop at "Europa" then see the map below.



### Presentation of the summer school

This Summer School will highlight the role of APPROPRIATE TECHNOLOGIES in promoting SUSTAINABLE DEVELOPMENT at local and global level. The course focuses on appropriate technologies for improving environmental and health conditions in resource limited countries. The course program will include:

- Introduction to the concept **appropriate technologies** and their sustainability in low income countries,
- Focus on appropriate technologies for **water, wastewater** and **solid waste** management,
- Presentation of **case studies**,
- **Group work** on choice and development of appropriate technologies in selected contexts.

The course is relevant to:

- Practitioners in International Development Cooperation;
- Undergraduates, MSc and PhD students;
- Researchers, professors and other interested persons.

Participation is free of charge but **registration** is required by sending an e-mail to the organizing secretariat with your full name, affiliation, address, e-mail and phone within the **6<sup>th</sup> of June 2022**.

*A maximum number of 30 people* will be accepted to participate in class.

A certificate of attendance will be issued for students attending at least 75% of the course.

Students enrolled at University of Brescia in Civil Engineering, Land and Environmental Engineering or Architectural Engineering degree courses can get n. 3 ECTS, if Summer School has been chosen in the study plan.

#### **School Coordinators**

Sabrina Sorlini, Mentore Vaccari  
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#### **Organizing secretariat**

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<http://cetamblab.unibs.it/>

# APPROPRIATE TECHNOLOGIES FOR SUSTAINABLE DEVELOPMENT: a focus on low and middle income countries

## Monday 20<sup>th</sup> June

### Morning session

**09:00** Participant registration and welcome

**10:00** Presentation of the Summer School - *S. Sorlini*

**10:15** Presentation of the PhD course - Curriculum "Appropriate Methodologies and Techniques in International Development Cooperation": opportunities for students and impact on projects - *S. Sorlini*

**10:30** The experience of the PhD students

### Technological Track

Safety, sustainability and valorization of residues in the agro-industrial and livestock sector on low and middle income countries - *A. Wijepala*

Integrate Nature-based solutions (NBS) in the sanitation sector in Jordan - *A. Masoud*

Bioremediation of soil contaminated with petroleum hydrocarbons: process evaluation through bioslurry reactor and bioelectrochemical system approaches - *T. Ambaye*

Rural systems, higher education and international cooperation: demonstration farms in Africa - *M. Bonetti*

Sustainable mining: recovery of critical raw materials from batteries using environmentally friendly technologies - *D. Premathilake*

### Health Track

Global Health: exploring connections among infectious diseases, social determinants and lifestyles - *G. Di Rosario*

**12:00** Discussion and participant presentation

**13:00** Lunch

### Afternoon Session

**14:30** Introduction to the session - *M. Vaccari*

**14:45** Introduction to appropriate technologies - *C. Lüthi*

**15:15** The role of appropriate technologies in water, sanitation and solid waste for sustainable development

- Appropriate technologies in health in resource limited settings - *A. Matteelli*
- Social aspects - *M. G. Cassa*
- Economic aspects - *D. Castellani*

**16:15** Compendium and selection of technologies - *C. Lüthi*

**18:00** Discussion and conclusion

## Tuesday 21<sup>st</sup> June

**09:00-13:00** Appropriate SANITATION SYSTEMS for developing countries - *C. Lüthi*

- Planning & implementing sanitation solutions
- Case study Arba Minch (Ethiopia) and Raipur (India)

**13:00** Lunch

**14:00-17:00** Group work

**17:30** Visit to the old town

## Wednesday 22<sup>nd</sup> June

**09:00-13:00** Appropriate technologies for WATER SUPPLY - *G. Cissé*

- Health, wellbeing and changing structure of communities
- Water supply, hygiene, climate change and disasters
- Appropriate technologies for water treatment and health protection

**13:00** Lunch

**14:00-16:00** Group work

**16:00-18:00** Assessing the effectiveness of environmental interventions in low-income settings: water, sanitation and indoor air pollution - *T. Clasen*

## Thursday 23<sup>rd</sup> June

**09:00-13:00** Technological alternatives for the treatment and deposition of SOLID WASTE - *S. Salhofer*

- Circular solutions for municipal waste
- Sustainability in solid waste management

**13:00** Lunch

**14:00-17:00** Case studies and Group work

**17:00-18:00** Aerated landfill - *R. Raga*

## Friday 24<sup>th</sup> June

**9:00-13:00** Case studies from Ghana, Colombia e Rwanda

- Solid waste management in Ghana: the way forward - *H. Alhassan*
- Effect of compost from faecal sludge and agricultural waste on the yield of select vegetable - *N. Amisshah*
- Appropriate technologies for wastewater management in Jordan - *M. Halalshesh*
- Research experiences in technologies for environmental management in Colombia: UNIPAZ university - *M. Pacheco and A. Cervantes*
- Sustainability of architecture in Africa and the role of Higher Education - *M. Michieletto*

**13:00** Lunch

**14:00-18:00** Visit to CeTAmb laboratory of appropriate technologies, DICATAM Department

## EXTRA ACTIVITIES

- Visit to CeTAmb laboratory of appropriate technologies, DICATAM Department
- Visit to the old town center of Brescia, organized with the collaboration of Amici del FAI - Brescia

## SPEAKERS

<b>Hamdiyah Alhassan</b>	University for Development Studies (GH)
<b>Naalamle Amisshah</b>	University of Ghana (GH)
<b>Maria Giovanna Cassa</b>	PhD, Antropologa (IT)
<b>Davide Castellani</b>	University of Bergamo (IT)
<b>Angélica Cervantes</b>	UNIPAZ (CO)
<b>Gueladio Cissé</b>	University of Basel (CH)
<b>Thomas Clasen</b>	Emory University (USA)
<b>Maha Halalshesh</b>	University of Jordan (JO)
<b>Christoph Lüthi</b>	Sandec/EAWAG (CH)
<b>Alberto Matteelli</b>	University of Brescia (IT)
<b>Manlio Michieletto</b>	University of Rwanda (UR)
<b>Mónica Maria Pacheco</b>	UNIPAZ (CO)
<b>Roberto Raga</b>	University of Padova (IT)
<b>Stefan Salhofer</b>	University of Vienna (AT)
<b>Sabrina Sorlini</b>	CeTAmb, University of Brescia (IT)
<b>Mentore Vaccari</b>	CeTAmb, University of Brescia (IT)

## PhD Students

<b>Teklit Ambaye</b>	CeTAmb, University of Brescia (IT)
<b>Mariachiara Bonetti</b>	CeTAmb, University of Brescia (IT)
<b>Gianluca Di Rosario</b>	University of Brescia (IT)
<b>Ahmed Masoud</b>	CeTAmb, University of Brescia (IT)
<b>Dilshan Premathilake</b>	CeTAmb, University of Brescia (IT)
<b>Asanka Wijepala</b>	CeTAmb, University of Brescia (IT)