



WHY A GENDER EQUALITY STRATEGY?

MEDITERRANEAN
NETWORK OF
ENGINEERING
SCHOOLS (RMEI)

TARGET } Taking a Reflexive approach
to Gender Equality for
institutional Transformation

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Introduction

Changing the game of gender equality in Mediterranean Engineering Schools

How to link gender equality to sustainable development in practice: The Mediterranean Network of Engineering Schools knows...

*“Gender equality is
not a women’s issue,
it is a human issue.
It affects us all”*

The Mediterranean Network of Engineering Schools (RMEI) is challenging the melting of traditional boundaries around engineering institutions, by moving from separate bureaucratic centrally managed institutions to interconnected ecologies of self-assembling networking and collaboration with mutually beneficial partnerships, where individual learners are becoming change-agents to kick off the output phase of the other learners’ metabolism and finally create an ecosystem of metabolising learners in Mediterranean Engineering Education, life and societies.

Furthermore, the network aims for technological pathways to be truly sustainable and advance gender equality and human rights, by involving women in engineering schools’ leadership and operation, and other forms of collective action and engagement.

The RMEI network embraces a diversity of cultures, religions, political and socio-economic differences that exist among the Mediterranean countries. Based on a strong set of common values among its members and relations that are based on trust, the network envisions building Sustainable Development (SD) and peace in the Mediterranean region by bringing people together and bridging these differences through common history and values.

Its mission is to help future engineers, scientists and managers (of all genders) to be involved in creative problem-solving and technical innovations at local and global level, that are environmentally and socially responsible.

The network considers several factors including learning, training, research and innovation (R&I), and transformation in the context of co-creation. It aims to contribute to this transformation, acknowledging global challenges are complex and interrelated, requiring interdisciplinary/transdisciplinary and system-thinking approaches and respect of local cultures.

Engineering Higher Education (EHE) in the 21st century calls for respect of ecosystems and for openness towards society, respecting inclusion and diversity. RMEI acts as a Living Lab of people co-learning and co-implementing SDGs Technological Innovations, such as SDG6, SDG7, SDG9, SDG11, SDG12, SDG13, SDG14, SDG15 – innovations directly connected to engineering practices. It also acts as a Social Change Lab of people co-learning and co-changing gender inequality patterns in engineering education in synergy with the implementation of other SDGs.



Figure 1. RMEI's mission for SDGs

In thriving for a sustainable world, gender equality is important for the network because it is recognised as an important social value and human right. Women represent more than half of world's population and they can contribute to a sustainable present and future, hence engineers of all genders need to contribute equally towards bringing sustainable proposals for society.

Ecological unsustainability and social inequalities are being reproduced by development models that support the persistence of unequal power relations between women and men in all sectors, including education. These intersections of unsustainability and gender inequality are pushing planetary boundaries and creating stresses and climate change-based risks.

Mediterranean countries have been characterised as relatively inactive in developing gender equality policies in Engineering Higher Education. Many traditional Engineering Schools across the Mediterranean world are characterised by patriarchal and hierarchical structures of command and control and gender bias.

Gender equality and sustainability can powerfully reinforce each other in complimentary ways. Female engineers' knowledge, agency and collective action are central in managing technological innovations and services towards delivering sustainable livelihood and conservation benefits, scaling up capacity to reduce vulnerabilities to climate change.

The network recognises that gender equality is not only a fundamental human right but is a significant factor for the sustainable and resilient development of societies and for enhancing the performance of businesses and institutions.



Figure 2. The RMEI system includes Gender Equality objectives: Thriving for a sustainable world, gender equality is important for the network.

The network aims to offer support for the creation of a 'gender equality culture' for all involved members (including professors, students and leaders of the participating engineering institutions) and to inspire gender equality at the member institutions (schools) as a fundamental prerequisite to address the pressing global and local challenges of an environmental, climate, economic and social nature that the Mediterranean is facing today.

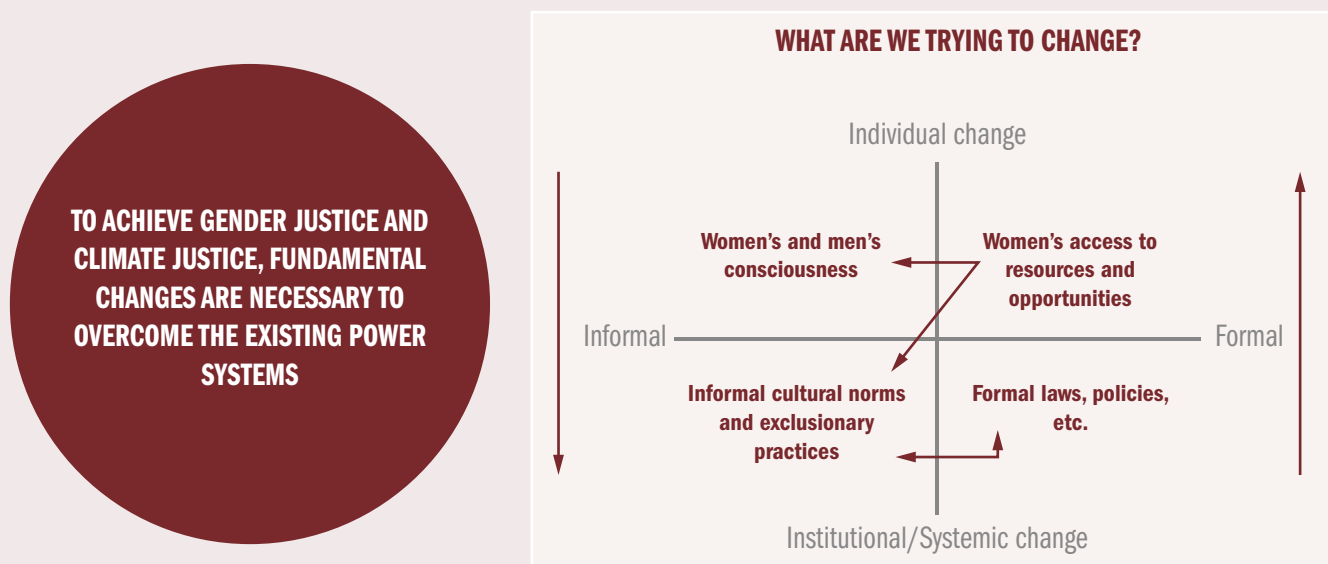


Figure 3. What are we trying to change?

Since 2017, the RMEI network has been the partner of the consortium of project "Taking a Reflexive Approach to Gender Equality for Institutional Transformation" (TARGET) funded under the European Union Horizon 2020 research and innovation programme. This project has helped the RMEI financially and cognitively in conceptualising gender equality learning and system change, and in the development of a gender equality strategy (GES).

Glossary

CoP	Community of Practice	GEWG	Gender equality working group
CBW	Community building workshop	IW	Institutional workshop
FSL	Female soft leadership	HL	Hard leadership
GAME	Young Ambassadors of the Mediterranean (Giovani Ambasciatori Mediterranei)	LMDG	Logic model development guide
GEA	Gender equality audit	MW	Michelangelo workshop
GEC	Gender equality committee	NW	National workshop
GEPS	Gender equality policy statement	SDG	Sustainable Development Goals
GES	Gender equality strategy	SL	Soft leadership
		RMEI	Mediterranean Engineering Schools Network

1. The players

1.1 RMEI

With more than 28 active members across the Mediterranean region, the Engineering Schools Network (RMEI) is the most active network on gender equality in the Mediterranean area.

The TARGET project has provided financial and conceptual support to the RMEI network in the development of a gender equality strategy (GES). A key aspect was conceptualising gender equality learning and system change.

For this social change process, the RMEI network took a context-specific approach based on theory of change and other organisational frameworks and also designed a self-assessment framework and indicators.

The innovative frameworks that RMEI considered are the systemic view of SDG5, horizontally connected to all SDGs; complexity; and transdisciplinary requirements

Starting point and anchor of the process was a tailored GES which was designed, implemented, monitored, self-assessed and evaluated during TARGET.

95 simple, practical and user-friendly indicators were designed, in accordance with the specificities of the Engineering context. For designing the interventions, RMEI took account of the influence of regional and organisational context.

The evaluation supported RMEI for the very successful implementation of the GES and the innovative and effective leadership.

Based on the TARGET project iterative and reflexive process in advancing gender equality at the institutional level, a community of practice (CoP) for gender equality within the RMEI network was built. This CoP remained active during COVID-19 lockdowns because the gender equality working group found other creative ways to collaborate and co-work.

1.2 The GAME students' sub-network within RMEI

GAME is an acronym that stands for Giovani Ambasciatori Mediterranei (Italian), translated in English as Young Ambassadors of the Mediterranean. It includes students and ex-students (alumni) from engineering schools members of RMEI.

GAME was founded in 2011, during the 1st Michelangelo Workshop (MW), at the Forte Michelangelo of Civitavecchia, Rome, Italy. Its mission is to support personal development; help students to express themselves through art-based activities; and develop character and social skills to 'break down silos' across disciplines, nationalities and perspectives.

It offers opportunities for students to meet in different Mediterranean countries and familiarises engineering students with the Mediterranean cultures. It guides students towards being aware of their role in society and prepares them for the future, inspiring practical and collaborative learning on gender equality.

GAME's decisions and actions are always in line with its vision on diversity and equality for Mediterranean societies. Gender equality fits GAME's line of interest because it is committed to provide an embedded and embodied learning of gender equality by listening to the testimonies of professionals and by involving students in dedicated initiatives.

1.3 The TARGET project

TARGET is a Horizon 2020 project that aims to contribute to the advancement of gender equality in academia, research and innovation (R&I), under reflexive feedbacks. TARGET supported the advancement of a gender equality strategy (GES) at RMEI financially and cognitively.

TARGET proposes a circular/reflexive learning (loop-learning), questioning the role of the framing, and learning systems which underlie actual goals and strategies. The circular way is preferred because it is more creative and reflexive.

TARGET supported the consortium partners (and RMEI) in knowledge building (as a pre-condition for success) for cultural change (as the final desirable outcome).

More particularly, one TARGET partner with extensive expertise in gender equality processes has supported RMEI, while financial support by the TARGET project enabled the CoP activities.

TARGET proposed as a roadmap of the process towards gender equality change at RMEI a gender equality audit; the design of a GES; and the implementation, monitoring and evaluation of the GES.

The Logic Model Development Guide (LMDG) was proposed by the TARGET project at the different steps of the process, aiming to provide the RMEI network with a sequence of related events connecting the need for a planned programme with the programme's desired results.

TARGET used a novel evaluation approach that requires reflection on: existing structures and practices regarding an inherent gender bias; development and implementation of alternative practices; and assessment of gendered effects of such interventions. Monitoring and self-assessment provided the basis for the evaluation.

2. Overview of experiences

2.1 RMEI GES

The RMEI-GES evaluation has revealed that the RMEI network has:

1. Achieved the accomplishment of its visions,
2. Made the 'passage from theory to praxis' towards change for gender equality,
3. Effectively developed meaningful processes/structures,
4. Formulated a policy statement,
5. Built a community of practice (CoP),
6. Achieved trustful relationships,
7. Inspired outputs,
8. Used effective communication and sharing of information and resources,
9. Inspired social responsibility and commitment to SDG5.

2.2 The Intergenerational RMEI-CoP for gender equality

The assessment of the CoP activities carried out in the period June 2017–December 2021 has helped RMEI to take action to sustain the CoP.

The RMEI CoP is formed by people from various engineering schools of European, North African and Middle Eastern countries, of different ages (students, faculty) who were engaged in the process of gender equality within the RMEI. They all are bound together by a common vision and values, and trustful relations. This CoP is multigenerational as it consists of students and faculty members of all ages. It is a multinational and multicultural, regrouping 28 Engineering Schools from 12 Mediterranean countries.

The RMEI-CoP was built around 3 key elements: Domain, Community, and Practice.

The Domain was defined as advancing gender equality in the Engineering Higher Education Institutions, where lack of gender equality is an issue of fairness and signals a large absence of potential for growth and innovation (pool of talent), resulting in missed opportunities.

The Community was defined as the Mediterranean region. Gender equality learning was regarded as essential to enable understanding of the challenges and to build a capacity for mainstreaming gender equality strategies into the Mediterra-

nean institutions.

The Practice gave emphasis on the RMEI common vision, values, goals and mutual influence, and encouraged dialogue and open communication with interpersonal interactions. Different types of workshops were organised, including capacity building workshops (CBWs), national workshops (NWs), and the Michelangelo Workshops (MWs) co-organised with GAME.

2.3 Theory of change

A theory of change framework was created by the RMEI to model the complex process of gender equality. The change theory for transformative processes at collective and individual level encompasses ways of self-organising, self-learning and self-catalysing.

A systemic approach was taken, considering that the RMEI network is an organism, engaging CoP's members voluntarily while they experience a personal development exercise.

A dialogical, down-top approach to formulate the sustainability strategy was undertaken with more importance given to the views and experiences of the participants, rather than seeking to impose a view upon the situation.

The commitment of institutions' top management to SDGs was essential for approving the gender equality statement.

2.4 Achievements

RMEI achieved a learning potential, inspired, and catalysed cultural and structural changes for gender equality to its member institutions with the effective support of the TARGET project.

The creation of a CoP was enabled by taking a synergetic approach with other SDGs and integrating gender equality in interventions for climate change, water, waste and energy, sustainability, and peace for the region, and by mobilising the network's human resources from academic leaders to students.

Gender equality was considered as a critical goal because its implementation can foster positive cascading effects on the achievement of all SDGs, directly connected to sustainability.

Cognitive and affective trust in relationships with others, joy shared among the key members of the network, and feeling of belonging to the same family were deep emotional drivers.

In some institutions a structural change started by organising Gender Equality Centres or Committees with the initiation of professors participating in the RMEI Gender Equality Working Group and with the commitment of the top management of the institutions. The number of these institutions that paved the way are 12, so far. Of course, this is an ongoing process and other institutions will be inspired to take the leap.

However, although the network can inspire and stimulate the genesis of change on gender equality in the member institutions – the responsibility for creation – continuation depends on the member institution's top management willingness to follow up.

The CoP was based on tailor-made activities and a continuous, open and critical discussion of developments. A dynamic, comprehensive and iterative process about gender equality was adopted which can serve as a model or starting point for action regarding the other institutions, while an ongoing discourse on gender equality and the role of engineers was opened.

The network became a living lab for gender equality learning, encouraging member institutions to challenge and question their informal norms. It also created the potential for direct and indirect structural change related to gender equality, through the creation of formal rules and culture aimed at fostering gender equality among the network's representatives, boards and working groups.

The GES application provided training of young students through workshops, summer schools and activities in an interdisciplinary context. Engineering Schools' students learned to act with the principle of SDG5, by submerging in living-learning in connection with the network and digesting their universities' practices through interaction with a learning community of RMEI.

Students became 'learners' and acted as change-agents, advancing their knowledge by sharing and interconnecting with others in the network and having the opportunity to participate and learn from workshops, seminars and schools organised by the network.

What differentiates RMEI from other networks is that it envisions sustainability through education and men and women to work together towards a sustainable world, proposing sustainable innovations for the Mediterranean environmental challenges. It envisions women engineers to be considered equal to men at all levels of their activities and life and calls for action to pursue SDGs to strengthen peace, stability and prosperity in the Mediterranean region.

It is relevant that this mission was assumed by the professors and students who took part in the workshops and activities, creating a sense of meaning for the people concerned – a higher goal that transcends the horizon of the individual – as well as participants expressing enthusiasm, joy, satisfaction and a feeling of family.

The novelty, applicability, and significance of the proposed GES enabled the network's transformation at the level of its governance and values, and provided the inspiration, catalyst and the basis for an ongoing gender equality change at member institutions, underpinning members' participation in activities, networks and projects of SDG5 of a Mediterranean without borders.

The more tangible achievements are:

- 1.** Creation of the Gender Equality Working Group (GEWG) within RMEI.
- 2.** Development of a gender equality policy and statement (GEPS) for RMEI.
- 3.** Open presentation of the GEPS at the General Assembly of the network and unanimous adoption by the institutions' leaders.
- 4.** Adoption of the GEPS in their strategy by 12 Engineering Schools (so far)

- 5.** Creation of institutional gender equality committees (GECs) within 12 interested engineering schools members of RMEI.
- 6.** Organisation of TARGET workshops with local stakeholders where the gender equality issues and barriers were discussed.
- 7.** Active and continuous communication with members participating in the GEWG.
- 8.** A Living Lab was created for knowledge consolidation and sustainability.
- 9.** A Soft and Female leadership framework developed and implemented at RMEI.
- 10.** Knowledge consolidation and collaboration under 15 papers in international peer-review journals.

2.5 COVID-19 pandemic impacts

COVID-19 has impacted the activities of the TARGET project for the RMEI network, especially those that are related with travels, displacements, meetings, and organisation of workshops and conferences.

The disrupted activities were:

- 1.** The TARGET workshop organised by ENISo-Tunisia (March 2020) to take place a day before the General Assembly of the network, to reach the leaders of the RMEI institutions.
- 2.** The TARGET workshop at An-Najah National University, Nablus, Palestine, organised to take place in May 2020, devoted to open the discussion to the local CoP.
- 3.** The Michelangelo Workshop 2020, co-organised by GAME and RMEI on Gender Equality and Resilience. The GAME – the RMEI's Youth –organised the Michelangelo Workshop to take place in July 2020 with the support of the working group of the TARGET project and the leadership of prof Massimo Guarascio. The workshop complied with the TARGET project objectives, making possible the creation of awareness and culture for the young Mediterranean engineers and empowering them towards applying gender equality in their future work and life.
- 4.** The 3rd Institutional Workshop (IW) organised in March 2020, in Tunisia was cancelled due to COVID-19.
- 5.** The devoted workshop and symposium on Sustainability and Gender equality, organised to take place on the Nisyros island of Greece in July 2020, was cancelled.
- 6.** Meetings of members of the CEWG on gender equality with the RMEI office at the network's premises in Marseille were online.
- 7.** The gender equality and agriculture summer school, organised in Tunisia for June 2020, was cancelled.
- 8.** Capacity Building meetings and study visits were online.

3. Lessons learned

With the RMEI CoP, a dialogical, down-top approach to formulate the strategy was undertaken with more importance given to the views and experiences of the participants, rather than seeking to impose a view upon the situation. For adopting the gender equality policy statement, the commitment of institutions' top managers to SDG5 was essential.

A participatory approach was used in all activities to pursue RMEI-CoP objectives:

- » Institutional Workshops (IWs) helped in gradually building competence and expertise which is a process and a journey. They provided the working group of the RMEI with knowledge about gender analysis, structure of a gender equality audit (GEAT), structure of a gender equality strategy (GES), and monitoring.
- » National Workshops (NWs) gave publicity within each institution. They brought into discussion various stakeholders – from ministers, academia, associations, and industry – towards formalising a common will on national policies for gender equality. The methodology of organising NWs must be participatory and stakeholder based, for opening a dialogue at national level for cultural and institutional change on gender equality.
- » Michelangelo Workshops (MWs) aimed to broaden students' horizons and promote the significance of a 'Common Mediterranean Vision' emerging from the 'Common history' and envisioning a more inclusive and sustainable development. Art and cultural issues were considered the most effective tools for allowing engineering students from different national contexts (different languages and inherited cultures) to understand gender inequality. The gender equality topic was also discussed in connection with ancient Mediterranean civilisations. Interactive forums on Mediterranean cultures were organised, with gender equality and climate change risks addressed by the GAME students, providing real examples of natural hazards and the lack of gender equality preparedness in climate change hazards.

It was made clear that with few women in decision-making roles, engineering schools are lacking inspirational female leaders that is one of the most formative learning experiences, along with mentoring and widening the belief systems of young people.

By encouraging and developing new ways of thinking through CoPs and supporting change -agents, students can engage with others to tackle gender imbalances throughout their lives and in future profession.

Creating an effective and strong CoP takes several years. One of the biggest challenges remains the need to change the deep culturally embedded gender stereotypes in academia.

In the following we will give a more detailed account of the most significant lessons learnt.

Table 1: Lessons learnt for the period from June 2017 to December 2021 (RMEI)

University barriers:

- » The effectiveness of the CoP depends on the active role network's members take on board (although around 90 Mediterranean engineering schools are members of RMEI, only 12 are active in the CoP for gender equality). The activation of the others (passive members) depends on efforts the network put to inspire them towards boosting the willingness of faculty members to work for subjects that are not in the core of their scientific interest which is the engineering education and research.
- » In addition, some faculty members do not get actively involved in the CoP because they feel lacking knowledge on gender equality change processes and in general on social innovations.
- » Many young faculty members are at the tenure o'clock phase; they do not dedicate time for outreach activities, that do not count for promotion criteria and requirements. Instead, they need time and energy to prepare their academic promotion and recognition which requires a heavy teaching load, administrative, scientific and research effort.
- » Students of the CoP, as soon as they graduate, move progressively towards their professional path, unless they wish to stay connected as alumni. The continuation of CoP activities, then, requires a continuous effort to inspire new students to join the CoP.
- » Very important issue is that the participation in the CoP is an unpaid activity or at least is not financially rewarded. CoP is based on volunteer work which sometimes takes a heavy toll, needing paid personnel for organisational support. The lack of funding is a great limitation for the effectiveness and sustainability of the CoP. Members of the CoP are volunteers, giving their time and energy for the activities, not because they are paid but because they believe in the need for change. This often creates a limitation because many people prioritise their financial needs instead of volunteering social work.

Need for support: Support received by TARGET partners and framework

- » It was made evident that advancing with gender equality measures in HEIs requires considerable investment of resources, time, knowledge, skills, and institutional accountability to track progress. It was therefore understood that gender equality transformation is a long-term strategic process which also requires sustained commitment and efforts along with specific competences, which tend to be lacking in faculty members at the engineering education.
- » To perform CoP activities there was a need for financial support to cover mobility, meetings expenses, catering, invited experts' expenses, publication fees etc. Third-party funding projects like the EU TARGET can provide financial resources for the duration of the project. Without the TARGET financial support, the CoP would have been weak and limited.

Need for a new gender competent leadership

- » By enlarging the CoP, attitudes towards gender equality, reflections and feedbacks from subjects would possibly vary. A gender competent leadership and understanding the 'spillover' phenomenon will help in homogenising the CoP.
- » The gender competent leader should be able to create strategies to support gender equality, analyse gender imbalances, report related activities, utilise resources in effective ways, communicate online, focus on group discussion, communicate via interviews, videos, and digital means.
- » Gender competent leadership must provide a more profound understanding of individual's attitude towards gender equality and the CoP. Usually, people construct gendered meanings in each situation based on the expectations they bring into the situation. A gender competent leader needs to be aware of the expectations that people bring to a situation. The competent leader needs to recognise when someone's expectations cloud their ability to make meaning and to help people through the difficult process of aligning their expectations with their espoused commitments.
- » Flexibility, team spirit, keeping balance in heterogeneity, distributing responsibilities accordingly to people's character, empower, take a win-win approach and support sustainability, are all elements of a transformative leadership. Additionally, the CoP facilitator should prove the added value of being active member of the CoP (e.g., promising to help in publications writing of collaborative projects, consortium development, networking activities, project partners matching activities), all of which will help members in academic promotions, etc).

Competence building

- » The CoP participants can deepen their understanding of systemic inequality, and inquire, challenge, inspire each other's to make progress towards a collective change. CoP members begin a journey of looking inward when it comes to gender equality. They integrate a mindful learning and respect for the cultural differences and move towards gender-sensitive actions.
- » Becoming an embodied change-agent is like learning from the beginning something that is new and thus it takes time and a different effort than the knowing in universities methods. With art- and game-based collective learning (GAME and MWs approaches), gender equality can be felt better and embodied especially by young students.
- » Through dedicated workshops and training CoP members can take a closer look at examining why many equality actions do not bring a sustainable outcome and how by opening hearts with the help of performing theatrical-related scenes, by poetry and philosophy (that past Mediterranean civilisations and ancient communities offered to the occidental world and globally) can help to experience the importance of active and collective learning.

Facing the disruptions

- » Covid-19 pandemic limited physical meetings of the RMEI-CoP. The difficulties have been overcome by taking an engineering approach of problem-solving. At the RMEI, CoP activities did not stop but took an alternative pathway during the lockdowns, the pathway of knowledge consolidation.
- » The CoP members collaborated in preparing interdisciplinary and intersectional publications for peer-review journals and dissemination via online tools and digital platforms.

4. Prospects for sustainability strategy

One of the biggest challenges remains the need to change the deep culturally embedded gender stereotypes in academia.

Critical aspects for the future are:

- » The in-depth analysis of issues linked to the existence of gender-based stereotypes and bias in engineering schools in the Mediterranean region, which entails tackling gender ideologies concerning the whole social system and existing structures.
- » The questioned sustainability of gender equality structures created at the member institutions with the network's support.
- » Sustainability is dependent on the willingness of each institution's leadership to continue/advance with gender-sensitive strategies in the institution.
- » For institutional change to occur, the development of 'change-agents' and leaders are the cornerstone of a change in each RMEI engineering school member.
- » New third-party financial support is necessary for sustaining the CoP.
- » RMEI-CoP achievements to be widely disseminated within the RMEI network member-institutions.

4.1 RMEI Sustainability Strategy

Our sustainability strategy has 3 pillars:

1. Introducing new forms and space of gender equality learning
2. Creating Change Agents for gender equality
3. Developing Soft Skills and a Female and Soft Leadership Framework

4.2 The RMEI Living Social Lab for Sustainability

The first pillar of RMEI's sustainability plan is active learning and the consolidation of knowledge acquired in gender equality change by organising a Lab.

A living lab has been organised at RMEI, to be the vehicle for gender equality systemic change, offering space for collaboration and innovation. In RMEI we believe that educating students to understand the dynamics of complex systems and acting with responsibility and equality in their professional/private life is pivotal. Implementing social changes in higher engineering education institutions is a challenge. Therefore, a living lab can assure sustainability of the CoP.

For sustaining the CoP and GES, RMEI has created an empirically grounded Living Gender Equality Change Lab. This Lab is embedded in the network of Mediterranean engineering schools. The RMEI Change Lab benefits from existing co-sharing and established collaboration conditions within the network's members. It aims at generating cultural and institutional structural changes at the engineering schools in Mediterranean countries, by involving a range of stakeholders (policy-makers, practitioners, administrators, researchers, etc.).

This Lab is within the sustainability strategy of RMEI. The mission of the Lab is to mainstream gender equality, develop structures, overcome some of the known limitations, and to continue by developing change-agents for gender equality.

The purpose of the creation of the Lab within RMEI was to develop a 'space' that elaborates gender equality solutions in engineering schools of the Mediterranean.

We used action research and practical learning in our methodology. The Lab is not like the traditional research labs that universities operate. A key difference in our methodology is the incorporation of people and stakeholders from different schools from Mediterranean countries with different perceptions, cultures and level of advancement of the gender equality principle in their country. These stakeholders were already in direct connection with RMEI activities for the SDGs in the Mediterranean territory. Stakeholders from member-institutions provided access to domain reference data on the status quo of gender equality in their institutions. Scientists and practitioners of RMEI Lab provide information and knowledge for gender equality interventions to be adopted by the network's members.

The Lab envisions to inspire a growing importance of gender equality in many sectors of engineering practices, including education, research, business and governance due to the behavioural spillover phenomenon.

It envisions to convince members that gender equality is a critical SDG because its implementation can foster positive cascading effects on the achievement of all SDGs, and it is directly connected to the nexus of education sustainability. Increasing gender equality will result in a positive impact on productivity, problem-solving and innovation, all of which are essential outcomes for tackling the great challenges we are facing, from health to food security, from climate change to sustainable communities.

The living lab was very effective during the disruption that the COVID-19 pandemic has brought, ensuring efficient communication despite closed borders. It offered the virtual space for interacting and collaborating towards the consolidation of knowledge in gender equality (14 collaborative papers were submitted to peer review journals).

4.3 Creating change agents

The second pillar of RMEI's sustainability strategy is to create change-agents.

A clear vision for a desirable future based on common values must be created. Willing to sustain the gender equality change at the RMEI network, we created a clear vision of the type of change we want and how to change the culture of leadership. To this end, we work on the basis of mutual respect and trust, empowering others to become 'change-agents' at their institutions and their lives.

The lack of gender equality at the domain of engineering education is an issue of fairness which also signals a large absence of the potential for growth and innovation (pool of talents), resulting in missed opportunities.

While RMEI continues their efforts for gender equality – cultural change within a complex system across various parts of the system, creating change-agents – engineering schools must adopt an approach of ‘whole-institution change’, including transformative leadership and a new mindset in their domain.

The change-agents are being created within the RMEI network and GAMe (Young Ambassadors of the Mediterranean) by offering personal development, giving students’ the character and social skills necessary to ‘break down silos’ across disciplines, nationalities and perspectives.

4.4 Soft skills and female leadership development

The third pillar of our sustainability strategy is to create leaders while respecting the existing cultures of the RMEI-CoP, creating a feeling of family and being part of the decision-making process for its members.

In RMEI we believe that ethics and values as agencies must be integrated in policy planning towards the acceleration of fundamental changes for a sustainable and equitable life.

The new toolbox we developed offers RMEI’s own values in the domain of sustainable development, as shared with other individuals and the collective.

The set of soft skills we try to develop include Character, Charisma, Conscience, Conviction, Courage, Communication, Compassion, Commitment, Consistency, Consideration and Contribution. If 6 of them are met in a leadership process, then the leadership can be characterised as Soft Leadership.

The type of leadership we applied was a combination of a female leader with soft skills. We call it ‘Female Soft Leadership’ (FSL). This is an empirical leadership framework for gender equality that is contextual. Contextual Leadership is based on network development to bring a transformation, by using knowledge and information to guide actions, focusing on systemic thinking and change.

The FSL framework worked well with the multicultural and multigenerational Mediterranean CoP, mainly allowing people to decide how to act according to their beliefs and shared values.

The FSL leader compelled a strong set of common values and created relations that are based on trust and commitment.

The adoption of a GES statement was the result of members’ commitment to common values. Gender equality is an ethical concept, with values and beliefs underpinning it.

The FSL is used for the first time within RMEI and it closely connects to the system’s view of life. Although context-specific, the FSL framework can be chosen for other leading groups, institutions, organisations, etc., at any scale.

Annex I: Publications and conferences

A Scientific publications 2021

1. Boiron, Olivier; Deumie, Carole; Raviol, Lena (2021). Gender & Curricula at Centrale Marseille, a higher education institution specialised in engineering. TARGET book, under review.
2. Chouari, Monia; Ghiss, Moncef; Zabaniotou, Anastasia (2021). Academic promotion and leadership: 'moving the needle' for the enhancement of gender equality in Tunisian higher education institutional members of the RMEI network following the TARGET project. In: Open Research Europe 1(14), 14.
3. Demaidi, Mona N.; Al-Sahili, Khaled (2021). Integrating SDGs in Higher Education—Case of Climate Change Awareness and Gender Equality in a Developing Country According to RMEI-TARGET Strategy. In: Sustainability, 13(6), 3101.
4. Essoukri Ben Amara, Najoua; Zabaniotou, Anastasia (2021). Distance education: A survey-based investigation of the distance education impact on female academic at Arab and European Mediterranean universities during the Covid-19 lockdown. In: World development Journal, submitted.
5. Zabaniotou, Anastasia (2021). [The COVID-19 lockdowns brought to light the challenges that women face in Mediterranean universities](#), 3, 119-125
6. Zabaniotou, Anastasia (2021). Impacts of Covid-19 pandemic on Mediterranean women of the academic community in the Mediterranean region (in Greek: Επιπτώσεις της πανδημίας COVID-19 στις γυναίκες της ακαδημαϊκής κοινότητας της Μεσογείου). Published in the Special Volume of Covid-Research, Aristotle University of Thessaloniki, Greece.
7. Zabaniotou, Anastasia (2021). [Soft female leadership \(SFL\) framework for driving the gender equality change in engineering education: learning outcomes of leader and leadership development](#). Open Research Europe 1 (63), 63
8. Zabaniotou, Anastasia (2021). Mediterranean Engineering Schools-members of RMEI network are taking a reflexive approach to gender equality with the support of the TARGET project. In: GALILEO MAGAZINE. – Rivista del Collegio degli Ingegneri di Padova.
9. Zabaniotou, Anastasia; Boukamel, Oumaïma; A Tsirogianni, Aigli (2021). Network assessment: Design of a framework and indicators for monitoring and self-assessment of a customised gender equality plan in the Mediterranean Engineering Education context. In: Evaluation and Program Planning, 87, 101932
10. Zabaniotou, Anastasia; Pritsa, Anastasia; Kyriakou, E-A (2021). Observational Evidence of the Need for Gender-Sensitive Approaches to Wildfires Locally and Globally: Case Study of 2018 Wildfire in Mati, Greece. In: Sustainability 13(3), 1556
11. Zabaniotou, Anastasia; Tsirogianni, Aigli; Cardarilli, Monica; Guarascio, Massimo (2021). An intergenerational ne-

work-based community of practice for gender equality at the Mediterranean engineering schools. TARGET book, under review.

B Scientific publications 2020

1. Zabaniotou, Anastasia (2020). New forms of social learning in Mediterranean higher engineering education: Change lab for gender equality transformation, methodology, design principles. In: Sustainability, 12(16), 6618.
2. Zabaniotou, Anastasia (2020). The Value of a Sustainable Development Network in Advancing Gender Equality at Higher Engineering Education. In: Modern Environmental Science and Engineering, 6(1).
3. Zabaniotou, Anastasia (2020). Towards Gender Equality in Higher Education Institutions: Equal Female Academics in the Mediterranean during and after the COVID-19 pandemic. In: Global University Network for Innovation (GUNI). [<http://www.guninetwork.org/report/towards-gender-equality-higher-education-institutions-equal-female-academics-mediterranean>] (Accessed 03.11.2021).
4. Zabaniotou, Anastasia (2020). Towards gender equality in Mediterranean Engineering Schools through networking, collaborative learning, synergies and commitment to SDGs-The RMEI approach. In: Global Transitions 2, 4-15.

C Conferences

1. Zabaniotou, Anastasia (2021). 2nd ACT International Synergy Conference. Online, 11-12 February 2021.
2. Zabaniotou, Anastasia (2021). Planning and monitoring of gender equality activities by the Mediterranean Engineering Schools network (RMEI), guided and supported by the TARGET project. XI European Conference of Gender Equality in the Higher education. Online, 15-17th September 2021.
3. Zabaniotou, Anastasia (2021). Research Speaker: Post Pandemic higher educational experience and Gender (In) equality. OURS2021 Organised by the Open University of Sri Lanka. Online, 17 September 2021.
4. Zabaniotou, Anastasia (2021). The role of RMEI in Sustainable Development Goals and in SDG5. Union for the Mediterranean (UfM). Online, 14-15 April 2021.
5. Zabaniotou, Anastasia (2021). What lessons we can take from the COVID-19 experience on women faculty and researchers in the Mediterranean Engineering Education. WREN20-World Renewable Energy Congress. Online/Lisbon, Portugal, 25-30 July 2021.
6. Zabaniotou, Anastasia (2021). Women in Academia, EU Gender Equality for Academia, The role of Mediterranean Engineering Schools Network. The 1st International Conference "Women in Academia". Amman, Jordan, 20-21 January 2021.
7. Zabaniotou, Anastasia (2020). Gender Equality through Networking, Collaborative Learning, Synergies and Commitment to SDGs-The Mediterranean Engineering Schools network approach and the EU TARGET project. 4th Euro-Me-

Mediterranean Conference “Visioning MED 2000+”. Athens, Greece, 9-10 October 2020.

- 8.** Zabaniotou, Anastasia (2020). Learning and Capacity building on Gender Equality – the Paradigm of a Mediterranean Network and TARGET project. 10th International Conference of Engineering Education for Sustainable Development (EESD2020/21). University of Cork, Ireland, June 2020.
- 9.** Zabaniotou, Anastasia (2020). MED in Transition – Equal Female in the Mediterranean for Strengthening Resilience to Climate Change-based Disasters. 4th Euro-Mediterranean Conference “Visioning MED 2000+”. Athens, Greece, 9-10 October 2020.
- 10.** Zabaniotou, Anastasia (2020). The Mediterranean Engineering Schools Network Advances Changes in Gender Equality at the Mediterranean Higher Engineering Education. 20th International Symposium on Environmental Pollution and its Impact on Life in the Mediterranean Region (MESAEP). Online, 26-27 October 2020.
- 11.** Zabaniotou, Anastasia (2020). The Role of the RMEI Network as Living Lab for Sustainable Development and Gender Equality in Mediterranean Higher Engineering Education with the Support of TARGET project. 4th Euro-Mediterranean Conference “Visioning MED 2000+”. Athens, Greece, 9-10 October 2020.
- 12.** Zabaniotou, Anastasia (2019). Communities of Practice for Accelerating Gender Equality and Institutional Change in Research and Innovation across Europe. 1st ACT International Synergy Conference. Brussels, Belgium, 25 February 2019.
- 13.** Zabaniotou, Anastasia (2019). The role of RMEI in Sustainable Development Goals and SDG5 of the Mediterranean Countries. BUA 2019 Conference. 5th Meeting of the Balkan Universities Association. Thessaloniki, Greece, 16-18 April 2019.
- 14.** Zabaniotou, Anastasia (2019). The role of RMEI network in Sustainable Development Goals at the Engineering Schools of the Mediterranean Countries, in synergy with Gender Equality in academia - The TARGET project. Acceptability Study (SAS) Network and Collaboration for the International seminar ‘Towards sustainable tomorrows (TST): From sound concepts to sound practice’ Espoo, Finland, 31 October – 1 November 2019.

Annex II:

Gender Equality Plan

RMEI

Mediterranean Network of Engineering Schools (RMEI)

Introduction

Changing the game of gender equality in Mediterranean Engineering Schools

**How to link gender equality to sustainable development in practice:
The Mediterranean Network of Engineering Schools knows...**

*“Gender equality is
not a women’s issue,
it is a human issue.
It affects us all”*

The Mediterranean Network of Engineering Schools (RMEI) network is challenging the melting of traditional boundaries around engineering institutions, by moving from separate bureaucratic centrally managed institutions to interconnected ecologies of self-assembling networking and collaboration with mutually beneficial partnerships, where individual learners are becoming change-agents to kick off the output phase of the other learners’ metabolism and finally create an ecosystem of metabolising learners in Mediterranean Engineering Education, life and societies.

Furthermore, the network aims for technological pathways to be truly sustainable and advance gender equality and human rights, by involving women in engineering schools’ leadership and operation, and other forms of collective action and engagement.

The RMEI network embraces a diversity of cultures, religions, political and socio-economic differences that exist among the Mediterranean countries. Based on a strong set of common values among its members and relations that are based on trust, the network envisions building Sustainable Development (SD) and peace in the Mediterranean region by bringing people together and bridging these differences through common history and values.

Its mission is to help future engineers, scientists and managers (of all genders) to be involved in creative problem-solving and technical innovations at local and global level, that are environmentally and socially responsible.

The network considers several factors including learning, training, research and innovation (R&I), and transformation in the context of co-creation. It aims to contribute to this transformation, acknowledging global challenges are complex and interrelated, requiring interdisciplinary/transdisciplinary and system-thinking approaches and respect of local cultures.

Engineering Higher Education (EHE) in the 21st century calls for respect of ecosystems and for openness towards society, respecting inclusion and diversity. RMEI acts as a Living Lab of people co-learning and co-implementing SDGs Technological Innovations, such as SDG6, SDG7, SDG9, SDG11, SDG12, SDG13, SDG14, SDG15 – innovations directly connected to engineering practices. It also acts as a Social Change Lab of people co-learning and co-changing gender inequality patterns in engineering education in synergy with the implementation of other SDGs.



Figure 1. RMEI's mission for SDGs

In thriving for a sustainable world, gender equality is important for the network because it is recognised as an important social value and human right. Women represent more than half of world's population and they can contribute to a sustainable present and future, hence engineers of all genders need to contribute equally towards bringing sustainable proposals for society.

Ecological unsustainability and social inequalities are being reproduced by development models that support the persistence of unequal power relations between women and men in all sectors, including education. These intersections of unsustainability and gender inequality are pushing planetary boundaries and creating stresses and climate change-based risks.

Mediterranean countries have been characterised as relatively inactive in developing gender equality policies in Engineering Higher Education. Many traditional Engineering Schools across the Mediterranean world are characterised by patriarchal and hierarchical structures of command and control and gender bias.

Gender equality and sustainability can powerfully reinforce each other in complimentary ways. Female engineers' knowledge, agency and collective action are central in managing technological innovations and services towards delivering sustainable livelihood and conservation benefits, scaling up capacity to reduce vulnerabilities to climate change.

The network recognises that gender equality is not only a fundamental human right but is a significant factor for the sustainable and resilient development of societies and for enhancing the performance of businesses and institutions.



Figure 2. The RMEI system includes Gender Equality objectives: Thriving for a sustainable world, gender equality is important for the network.

The network aims to offer support for the creation of a 'gender equality culture' for all involved members (including professors, students and leaders of the participating engineering institutions) and to inspire gender equality at the member institutions (schools) as a fundamental prerequisite to address the pressing global and local challenges of an environmental, climate, economic and social nature that the Mediterranean is facing today.

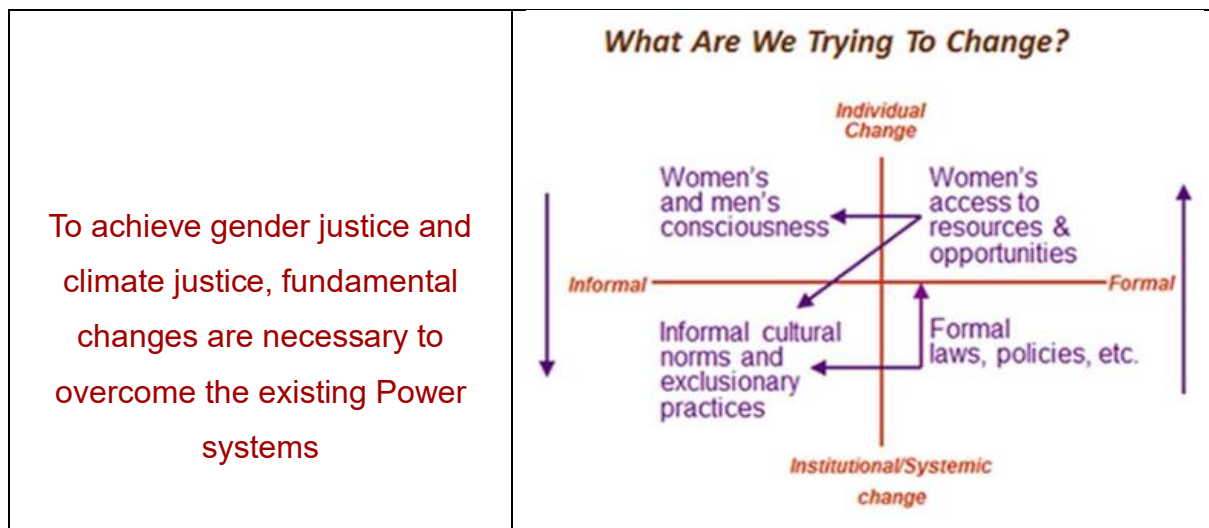


Figure 3. What are we trying to change?

Since 2017, the RMEI network has been the partner of the consortium of project “Taking a Reflexive Approach to Gender Equality for Institutional Transformation” (TARGET) funded under the European Union Horizon 2020 research and innovation programme¹. This project has helped the RMEI financially and cognitively in conceptualising gender equality learning and system change, and in the development of a gender equality strategy (GES).

¹ <http://www.gendertarget.eu>

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Glossary

CoP	Community of Practice
CBW	Community building workshop
FSL	Female soft leadership
GAME	Young Ambassadors of the Mediterranean <i>(Giovani Ambasciatori Mediterranei)</i>
GEA	Gender equality audit
GEC	Gender equality committee
GEPS	Gender equality policy statement
GES	Gender equality strategy
GEWG	Gender equality working group
IW	Institutional workshop
HL	Hard leadership
LMDG	Logic model development guide
MW	Michelangelo workshop
NW	National workshop
SDG	Sustainable Development Goals
SL	Soft leadership
RMEI	Mediterranean Engineering Schools Network

1 The players

1.1 RMEI

With more than 28 active members across the Mediterranean region, the Engineering Schools Network (RMEI) is the most active network on gender equality in the Mediterranean area.

The TARGET project has provided financial and conceptual support to the RMEI network in the development of a gender equality strategy (GES). A key aspect was conceptualising gender equality learning and system change.

For this social change process, the RMEI network took a context-specific approach based on theory of change and other organisational frameworks and also designed a self-assessment framework and indicators.

The innovative frameworks that RMEI considered are the systemic view of SDG5, horizontally connected to all SDGs; complexity; and transdisciplinary requirements

Starting point and anchor of the process was a tailored GES which was designed, implemented, monitored, self-assessed and evaluated during TARGET.

95 simple, practical and user-friendly indicators were designed, in accordance with the specificities of the Engineering context. For designing the interventions, RMEI took account of the influence of regional and organisational context.

The evaluation supported RMEI for the very successful implementation of the GES and the innovative and effective leadership.

Based on the TARGET project iterative and reflexive process in advancing gender equality at the institutional level, a community of practice (CoP) for gender equality within the RMEI network was built. This CoP remained active during COVID-19 lockdowns because the gender equality working group found other creative ways to collaborate and co-work.

1.2 The GAMe students' sub-network within RMEI

GAMe is an acronym that stands for *Giovani Ambasciatori Mediterranei* (Italian), translated in English as *Young Ambassadors of the Mediterranean*. It includes students and ex-students (alumni) from engineering schools members of RMEI.

GAMe was founded in 2011, during the 1st Michelangelo Workshop (MW), at the Forte Michelangelo of Civitavecchia, Rome, Italy. Its mission is to support personal development; help students to express themselves through art-based activities; and develop character and social skills to 'break down silos' across disciplines, nationalities and perspectives.

It offers opportunities for students to meet in different Mediterranean countries and familiarises engineering students with the Mediterranean cultures. It guides students towards being aware of their role in society and prepares them for the future, inspiring practical and collaborative learning on gender equality.

GAME's decisions and actions are always in line with its vision on diversity and equality for Mediterranean societies. Gender equality fits GAME's line of interest because it is committed to provide an embedded and embodied learning of gender equality by listening to the testimonies of professionals and by involving students in dedicated initiatives.

1.3 The TARGET project

TARGET is a Horizon 2020 project that aims to contribute to the advancement of gender equality in academia, research and innovation (R&I), under reflexive feedbacks. TARGET supported the advancement of a gender equality strategy (GES) at RMEI financially and cognitively.

TARGET proposes a circular/reflexive learning (loop-learning), questioning the role of the framing, and learning systems which underlie actual goals and strategies. The circular way is preferred because it is more creative and reflexive.

TARGET supported the consortium partners (and RMEI) in knowledge building (as a pre-condition for success) for cultural change (as the final desirable outcome).

More particularly, one TARGET partner with extensive expertise in gender equality processes has supported RMEI, while financial support by the TARGET project enabled the CoP activities.

TARGET proposed as a roadmap of the process towards gender equality change at RMEI a gender equality audit; the design of a GES; and the implementation, monitoring and evaluation of the GES.

The Logic Model Development Guide (LMDG) was proposed by the TARGET project at the different steps of the process, aiming to provide the RMEI network with a sequence of related events connecting the need for a planned programme with the programme's desired results.

TARGET used a novel evaluation approach that requires reflection on: existing structures and practices regarding an inherent gender bias; development and implementation of alternative practices; and assessment of gendered effects of such interventions. Monitoring and self-assessment provided the basis for the evaluation.

2. Overview of experiences

2.1 RMEI GES

The RMEI-GES evaluation has revealed that the RMEI network has:

1. achieved the accomplishment of its visions,

2. made the ‘passage from theory to praxis’ towards change for gender equality,
3. effectively developed meaningful processes/structures,
4. formulated a policy statement,
5. built a community of practice (CoP),
6. achieved trustful relationships,
7. inspired outputs,
8. used effective communication and sharing of information and resources,
9. inspired social responsibility and commitment to SDG5.

2.2 The Intergenerational RMEI-CoP for gender equality

The assessment of the CoP activities carried out in the period June 2017–December 2021 has helped RMEI to take action to sustain the CoP.

The RMEI CoP is formed by people from various engineering schools of European, North African and Middle Eastern countries, of different ages (students, faculty) who were engaged in the process of gender equality within the RMEI. They all are bound together by a common vision and values, and trustful relations.

This CoP is multigenerational as it consists of students and faculty members of all ages. It is a multinational and multicultural, regrouping 28 Engineering Schools from 12 Mediterranean countries.

The RMEI-CoP was built around 3 key elements: Domain, Community, and Practice.

The Domain was defined as advancing gender equality in the Engineering Higher Education Institutions, where lack of gender equality is an issue of fairness and signals a large absence of potential for growth and innovation (pool of talent), resulting in missed opportunities.

The Community was defined as the Mediterranean region. Gender equality learning was regarded as essential to enable understanding of the challenges and to build a capacity for mainstreaming gender equality strategies into the Mediterranean institutions.

The Practice gave emphasis on the RMEI common vision, values, goals and mutual influence, and encouraged dialogue and open communication with interpersonal interactions. Different types of workshops were organised, including capacity building workshops (CBWs), national workshops (NWs), and the Michelangelo Workshops (MWs) co-organised with GAME.

2.3 Theory of change

A theory of change framework was created by the RMEI to model the complex process of gender equality. The change theory for transformative processes at collective and individual level encompasses ways of self-organising, self-learning and self-catalysing.

A systemic approach was taken, considering that the RMEI network is an organism, engaging CoP's members voluntarily while they experience a personal development exercise.

A dialogical, down-top approach to formulate the sustainability strategy was undertaken with more importance given to the views and experiences of the participants, rather than seeking to impose a view upon the situation.

The commitment of institutions' top management to SDGs was essential for approving the gender equality statement.

2.4 Achievements

RMEI achieved a learning potential, inspired, and catalysed cultural and structural changes for gender equality to its member institutions with the effective support of the TARGET project.

The creation of a CoP was enabled by taking a synergetic approach with other SDGs and integrating gender equality in interventions for climate change, water, waste and energy, sustainability, and peace for the region, and by mobilising the network's human resources from academic leaders to students.

Gender equality was considered as a critical goal because its implementation can foster positive cascading effects on the achievement of all SDGs, directly connected to sustainability.

Cognitive and affective trust in relationships with others, joy shared among the key members of the network, and feeling of belonging to the same family were deep emotional drivers.

In some institutions a structural change started by organising Gender Equality Centres or Committees with the initiation of professors participating in the RMEI Gender Equality Working Group and with the commitment of the top management of the institutions. The number of these institutions that paved the way are 12, so far. Of course, this is an ongoing process and other institutions will be inspired to take the leap.

However, although the network can inspire and stimulate the genesis of change on gender equality in the member institutions – the responsibility for creation – continuation depends on the member institution's top management willingness to follow up.

The CoP was based on tailor-made activities and a continuous, open and critical discussion of developments. A dynamic, comprehensive and iterative process about gender equality was adopted which can serve as a model or starting point for action regarding the other institutions, while an ongoing discourse on gender equality and the role of engineers was opened.

The network became a living lab for gender equality learning, encouraging member institutions to challenge and question their informal norms. It also created the potential for direct and indirect structural change related to gender equality, through the creation of formal rules and culture

aimed at fostering gender equality among the network's representatives, boards and working groups.

The GES application provided training of young students through workshops, summer schools and activities in an interdisciplinary context. Engineering Schools' students learned to act with the principle of SDG5, by submerging in living-learning in connection with the network and digesting their universities' practices through interaction with a learning community of RMEI.

Students became 'learners' and acted as change-agents, advancing their knowledge by sharing and interconnecting with others in the network and having the opportunity to participate and learn from workshops, seminars and schools organised by the network.

What differentiates RMEI from other networks is that it envisions sustainability through education and men and women to work together towards a sustainable world, proposing sustainable innovations for the Mediterranean environmental challenges. It envisions women engineers to be considered equal to men at all levels of their activities and life and calls for action to pursue SDGs to strengthen peace, stability and prosperity in the Mediterranean region.

It is relevant that this mission was assumed by the professors and students who took part in the workshops and activities, creating a sense of meaning for the people concerned – a higher goal that transcends the horizon of the individual – as well as participants expressing enthusiasm, joy, satisfaction and a feeling of family.

The novelty, applicability, and significance of the proposed GES enabled the network's transformation at the level of its governance and values, and provided the inspiration, catalyst and the basis for an ongoing gender equality change at member institutions, underpinning members' participation in activities, networks and projects of SDG5 of a Mediterranean without borders.

The more tangible achievements are:

1. Creation of the Gender Equality Working Group (GEWG) within RMEI.
2. Development of a gender equality policy and statement (GEPS) for RMEI.
3. Open presentation of the GEPS at the General Assembly of the network and unanimous adoption by the institutions' leaders.
4. Adoption of the GEPS in their strategy by 12 Engineering Schools (so far)
5. Creation of institutional gender equality committees (GECs) within 12 interested engineering schools members of RMEI.
6. Organisation of TARGET workshops with local stakeholders where the gender equality issues and barriers were discussed.
7. Active and continuous communication with members participating in the GEWG.
8. A Living Lab was created for knowledge consolidation and sustainability.
9. A Soft and Female leadership framework developed and implemented at RMEI.

10. Knowledge consolidation and collaboration under 15 papers.

2.5 COVID-19 pandemic impacts

COVID-19 has impacted the activities of the TARGET project for the RMEI network, especially those that are related with travels, displacements, meetings, and organisation of workshops and conferences.

The disrupted activities were:

1. The TARGET workshop organised by ENISO-Tunisia (March 2020) to take place a day before the General Assembly of the network, to reach the leaders of the RMEI institutions.
2. The TARGET workshop at An-Najah National University, Nablus, Palestine, organised to take place in May 2020, devoted to open the discussion to the local CoP.
3. The Michelangelo Workshop 2020, co-organised by GAME and RMEI on Gender Equality and Resilience. The GAME – the RMEI's Youth –organised the Michelangelo Workshop to take place in July 2020 with the support of the working group of the TARGET project and the leadership of prof Massimo Guarascio. The workshop complied with the TARGET project objectives, making possible the creation of awareness and culture for the young Mediterranean engineers and empowering them towards applying gender equality in their future work and life.
4. The 3rd Institutional Workshop (IW) organised in March 2020, in Tunisia was cancelled due to COVID-19.
5. The devoted workshop and symposium on Sustainability and Gender equality, organised to take place on the Nisyros island of Greece in July 2020, was cancelled.
6. Meetings of members of the CEWG on gender equality with the RMEI office at the network's premises in Marseille were online.
7. The gender equality and agriculture summer school, organised in Tunisia for June 2020, was cancelled.
8. Capacity Building meetings and study visits were online.

3 Lessons learned

With the RMEI CoP, a dialogical, down-top approach to formulate the strategy was undertaken with more importance given to the views and experiences of the participants, rather than seeking to impose a view upon the situation. For adopting the gender equality policy statement, the commitment of institutions' top managers to SDG5 was essential.

A participatory approach was used in all activities to pursue RMEI-CoP objectives:

- IWs helped in gradually building competence and expertise which is a process and a journey. They provided the working group of the RMEI with knowledge about gender

analysis, structure of a gender equality audit (GEAT), structure of a gender equality strategy (GES), and monitoring.

- NWs gave publicity within each institution. They brought into discussion various stakeholders – from ministers, academia, associations, and industry – towards formalising a common will on national policies for gender equality. The methodology of organising NWs must be participatory and stakeholder based, for opening a dialogue at national level for cultural and institutional change on gender equality.
- MWs aimed to broaden students' horizons and promote the significance of a 'Common Mediterranean Vision' emerging from the 'Common history' and envisioning a more inclusive and sustainable development. Art and cultural issues were considered the most effective tools for allowing engineering students from different national contexts (different languages and inherited cultures) to understand gender inequality. The gender equality topic was also discussed in connection with ancient Mediterranean civilisations. Interactive forums on Mediterranean cultures were organised, with gender equality and climate change risks addressed by the GAME students, providing real examples of natural hazards and the lack of gender equality preparedness in climate change hazards.

It was made clear that with few women in decision-making roles, engineering schools are lacking inspirational female leaders that is one of the most formative learning experiences, along with mentoring and widening the belief systems of young people.

By encouraging and developing new ways of thinking through CoPs and supporting change - agents, students can engage with others to tackle gender imbalances throughout their lives and in future profession.

Creating an effective and strong CoP takes several years. One of the biggest challenges remains the need to change the deep culturally embedded gender stereotypes in academia.

In the following we will give a more detailed account of the most significant lessons learnt.

Table 1: Lessons learnt for the period from June 2017 to December 2021 (RMEI)

University barriers:
• The effectiveness of the CoP depends on the active role network's members take on board (although around 90 Mediterranean engineering schools are members of RMEI, only 12 are active in the CoP for gender equality). The activation of the others (passive members) depends on efforts the network put to inspire them towards boosting the willingness of faculty members to work for subjects that are not in the core of their scientific interest which is the engineering education and research. • In addition, some faculty members do not get actively involved in the CoP because they feel lacking knowledge on gender equality change processes and in general on social innovations.

- Many young faculty members are at the tenure o'clock phase; they do not dedicate time for outreach activities, that do not count for promotion criteria and requirements. Instead, they need time and energy to prepare their academic promotion and recognition which requires a heavy teaching load, administrative, scientific and research effort.
- Students of the CoP, as soon as they graduate, move progressively towards their professional path, unless they wish to stay connected as alumni. The continuation of CoP activities, then, requires a continuous effort to inspire new students to join the CoP.
- Very important issue is that the participation in the CoP is an unpaid activity or at least is not financially rewarded. CoP is based on volunteer work which sometimes takes a heavy toll, needing paid personnel for organisational support. The lack of funding is a great limitation for the effectiveness and sustainability of the CoP. Members of the CoP are volunteers, giving their time and energy for the activities, not because they are paid but because they believe in the need for change. This often creates a limitation because many people prioritise their financial needs instead of volunteering social work.

Need for support: Support received by TARGET partners and framework

- It was made evident that advancing with gender equality measures in HEEIs requires considerable investment of resources, time, knowledge, skills, and institutional accountability to track progress. It was therefore understood that gender equality transformation is a long-term strategic process which also requires sustained commitment and efforts along with specific competences, which tend to be lacking in faculty members at the engineering education (Zabaniotou 2020).
- To perform CoP activities there was a need for financial support to cover mobility, meetings expenses, catering, invited experts' expenses, publication fees etc. Third-party funding projects like the EU TARGET can provide financial resources for the duration of the project. Without the TARGET financial support, the CoP would have been weak and limited.

Need for a new gender competent leadership

- By enlarging the CoP, attitudes towards gender equality, reflections and feedbacks from subjects would possibly vary. A gender competent leadership and understanding the 'spillover' phenomenon will help in homogenising the CoP.
- The gender competent leader should be able to create strategies to support gender equality, analyse gender imbalances, report related activities, utilise resources in effective ways, communicate online, focus on group discussion, communicate via interviews, videos, and digital means.
- Gender competent leadership must provide a more profound understanding of individual's attitude towards gender equality and the CoP. Usually, people construct gendered meanings in each situation based on the expectations they bring into the situation. A gender competent leader needs to be aware of the expectations that people bring to a situation. The competent leader needs

to recognise when someone's expectations cloud their ability to make meaning and to help people through the difficult process of aligning their expectations with their espoused commitments (Argyris, 1991). Flexibility, team spirit, keeping balance in heterogeneity, distributing responsibilities accordingly to people's character, empower, take a win-win approach and support sustainability, are all elements of a transformative leadership. Additionally, the CoP facilitator should prove the added value of being active member of the CoP (e.g., promising to help in publications writing of collaborative projects, consortium development, networking activities, project partners matching activities), all of which will help members in academic promotions, etc).
Competence building
- The CoP participants can deepen their understanding of systemic inequality, and inquire, challenge, inspire each other's to make progress towards a collective change. CoP members begin a journey of looking inward when it comes to gender equality. They integrate a mindful learning and respect for the cultural differences and move towards gender-sensitive actions. - Becoming an embodied change-agent is like learning from the beginning something that is new and thus it takes time and a different effort than the knowing in universities methods. With art- and game-based collective learning (GAME and MWs approaches), gender equality can be felt better and embodied especially by young students. - Through dedicated workshops and training CoP members can take a closer look at examining why many equality actions do not bring a sustainable outcome and how by opening hearts with the help of performing theatrical-related scenes, by poetry and philosophy (that past Mediterranean civilisations and ancient communities offered to the occidental world and globally) can help to experience the importance of active and collective learning.
Facing the disruptions
- Covid-19 pandemic limited physical meetings of the RMEI-CoP. The difficulties have been overcome by taking an engineering approach of problem-solving. At the RMEI, CoP activities did not stop but took an alternative pathway during the lockdowns, the pathway of knowledge consolidation. - The CoP members collaborated in preparing interdisciplinary and intersectional publications for peer-review journals and dissemination via online tools and digital platforms.

4 Prospects for sustainability strategy

One of the biggest challenges remains the need to change the deep culturally embedded gender stereotypes in academia.

Critical aspects for the future are:

- The in-depth analysis of issues linked to the existence of gender-based stereotypes and bias in engineering schools in the Mediterranean region, which entails tackling gender ideologies concerning the whole social system and existing structures.
- The questioned sustainability of gender equality structures created at the member institutions with the network's support.
- Sustainability is dependent on the willingness of each institution's leadership to continue/advance with gender-sensitive strategies in the institution.
- For institutional change to occur, the development of 'change-agents' and leaders are the cornerstone of a change in each RMEI engineering school member.
- New third-party financial support is necessary for sustaining the CoP.
- RMEI-CoP achievements to be widely disseminated within the RMEI network member-institutions.

4.1 RMEI Sustainability Strategy

Our sustainability strategy has 3 pillars:

1. Introducing new forms and space of gender equality learning
2. Creating Change Agents for gender equality
3. Developing Soft Skills and a Female and Soft Leadership Framework

4.2 The RMEI Living Social Lab for Sustainability

The first pillar of RMEI's sustainability plan is active learning and the consolidation of knowledge acquired in gender equality change by organising a Lab.

A living lab has been organised at RMEI, to be the vehicle for gender equality systemic change, offering space for collaboration and innovation. In RMEI we believe that educating students to understand the dynamics of complex systems and acting with responsibility and equality in their professional/private life is pivotal. Implementing social changes in higher engineering education institutions is a challenge. Therefore, a living lab can assure sustainability of the CoP.

For sustaining the CoP and GES, RMEI has created an empirically grounded Living Gender Equality Change Lab. This Lab is embedded in the network of Mediterranean engineering schools. The RMEI Change Lab benefits from existing co-sharing and established collaboration conditions within the network's members. It aims at generating cultural and institutional structural changes at the engineering schools in Mediterranean countries, by involving a range of stakeholders (policymakers, practitioners, administrators, researchers, etc.).

This Lab is within the sustainability strategy of RMEI. The mission of the Lab is to mainstream gender equality, develop structures, overcome some of the known limitations, and to continue by developing change-agents for gender equality.

The purpose of the creation of the Lab within RMEI was to develop a 'space' that elaborates gender equality solutions in engineering schools of the Mediterranean.

We used action research and practical learning in our methodology. The Lab is not like the traditional research labs that universities operate. A key difference in our methodology is the incorporation of people and stakeholders from different schools from Mediterranean countries with different perceptions, cultures and level of advancement of the gender equality principle in their country. These stakeholders were already in direct connection with RMEI activities for the SDGs in the Mediterranean territory. Stakeholders from member-institutions provided access to domain reference data on the status quo of gender equality in their institutions. Scientists and practitioners of RMEI Lab provide information and knowledge for gender equality interventions to be adopted by the network's members.

The Lab envisions to inspire a growing importance of gender equality in many sectors of engineering practices, including education, research, business and governance due to the behavioural spillover phenomenon.

It envisions to convince members that gender equality is a critical SDG because its implementation can foster positive cascading effects on the achievement of all SDGs, and it is directly connected to the nexus of education sustainability. Increasing gender equality will result in a positive impact on productivity, problem-solving and innovation, all of which are essential outcomes for tackling the great challenges we are facing, from health to food security, from climate change to sustainable communities.

The living lab was very effective during the disruption that the COVID-19 pandemic has brought, ensuring efficient communication despite closed borders. It offered the virtual space for interacting and collaborating towards the consolidation of knowledge in gender equality (14 collaborative papers were submitted to peer review journals).

4.3 Creating change agents

The second pillar of RMEI's sustainability strategy is to create change-agents.

A clear vision for a desirable future based on common values must be created. Willing to sustain the gender equality change at the RMEI network, we created a clear vision of the type of change we want and how to change the culture of leadership. To this end, we work on the basis of mutual respect and trust, empowering others to become 'change-agents' at their institutions and their lives.

The lack of gender equality at the domain of engineering education is an issue of fairness which also signals a large absence of the potential for growth and innovation (pool of talents), resulting in missed opportunities.

While RMEI continues their efforts for gender equality – cultural change within a complex system across various parts of the system, creating change-agents – engineering schools must adopt an approach of ‘whole-institution change’, including transformative leadership and a new mindset in their domain.

The change-agents are being created within the RMEI network and GAME (Young Ambassadors of the Mediterranean) by offering personal development, giving students’ the character and social skills necessary to ‘break down silos’ across disciplines, nationalities and perspectives.

4.4 Soft skills and female leadership development

The third pillar of our sustainability strategy is to create leaders while respecting the existing cultures of the RMEI-CoP, creating a feeling of family and being part of the decision-making process for its members.

In RMEI we believe that ethics and values as agencies must be integrated in policy planning towards the acceleration of fundamental changes for a sustainable and equitable life.

The new toolbox we developed offers RMEI’s own values in the domain of sustainable development, as shared with other individuals and the collective.

The set of soft skills we try to develop include Character, Charisma, Conscience, Conviction, Courage, Communication, Compassion, Commitment, Consistency, Consideration and Contribution. If 6 of them are met in a leadership process, then the leadership can be characterised as Soft Leadership.

The type of leadership we applied was a combination of a female leader with soft skills. We call it ‘Female Soft Leadership’ (FSL). This is an empirical leadership framework for gender equality that is contextual. Contextual Leadership is based on network development to bring a transformation, by using knowledge and information to guide actions, focusing on systemic thinking and change.

The FSL framework worked well with the multicultural and multigenerational Mediterranean CoP, mainly allowing people to decide how to act according to their beliefs and shared values.

The FSL leader compelled a strong set of common values and created relations that are based on trust and commitment.

The adoption of a GES statement was the result of members’ commitment to common values. Gender equality is an ethical concept, with values and beliefs underpinning it.

The FSL is used for the first time within RMEI and it closely connects to the system’s view of life. Although context-specific, the FSL framework can be chosen for other leading groups, institutions, organisations, etc., at any scale.

Annex 1 – Publications and conferences

Scientific publications 2021

Boiron, Olivier; Deumie, Carole; Raviol, Lena (2021). Gender & Curricula at Centrale Marseille, a higher education institution specialised in engineering. TARGET book, under review.

Chouari, Monia; Ghiss, Moncef; Zabaniotou, Anastasia (2021). Academic promotion and leadership: ‘moving the needle’ for the enhancement of gender equality in Tunisian higher education institutional members of the RMEI network following the TARGET project. In: Open Research Europe 1(14), 14.

Demaidi, Mona N.; Al-Sahili, Khaled (2021). Integrating SDGs in Higher Education—Case of Climate Change Awareness and Gender Equality in a Developing Country According to RMEI-TARGET Strategy. In: Sustainability, 13(6), 3101.

Essoukri Ben Amara, Najoua; Zabaniotou, Anastasia (2021). Distance education: A survey-based investigation of the distance education impact on female academic at Arab and European Mediterranean universities during the Covid-19 lockdown. In: World development Journal, submitted.

Zabaniotou, Anastasia (2021). Challenges for the female academic at the Mediterranean Universities Covid-19 lockdown brought into relief. In: Journal of Global Transitions, under review.

Zabaniotou, Anastasia (2021). Impacts of Covid-19 pandemic on Mediterranean women of the academic community in the Mediterranean region (in Greek: Επιπτώσεις της πανδημίας COVID-19 στις γυναίκες της ακαδημαϊκής κοινότητας της Μεσογείου). Published in the Special Volume of Covid-Research, Aristotle University of Thessaloniki, Greece.

Zabaniotou, Anastasia (2021). Learning outcomes of leader and leadership development: a method for a soft and female leadership (SFL) empirical framework for driving the gender equality change in Mediterranean engineering education [version 3]. In: Open Research Europe, under open review.

Zabaniotou, Anastasia (2021). Mediterranean Engineering Schools-members of RMEI network are taking a reflexive approach to gender equality with the support of the TARGET project. In: GALILEO MAGAZINE. – Rivista del Collegio degli Ingegneri di Padova.

Zabaniotou, Anastasia; Boukamel, Oumaïma; A Tsirogianni, Aigli (2021). Network assessment: Design of a framework and indicators for monitoring and self-assessment of a customised gender equality plan in the Mediterranean Engineering Education context. In: Evaluation and Program Planning, 87, 101932

Zabaniotou, Anastasia; Pritsa, Anastasia; Kyriakou, E-A (2021). Observational Evidence of the Need for Gender-Sensitive Approaches to Wildfires Locally and Globally: Case Study of 2018 Wildfire in Mati, Greece. In: Sustainability 13(3), 1556

Zabaniotou, Anastasia; Tsirogianni, Aigli; Cardarilli, Monica; Guarascio, Massimo (2021). An intergenerational network-based community of practice for gender equality at the Mediterranean engineering schools. TARGET book, under review.

Scientific publications 2020

Zabaniotou, Anastasia (2020). New forms of social learning in Mediterranean higher engineering education: Change lab for gender equality transformation, methodology, design principles. In: Sustainability, 12(16), 6618.

Zabaniotou, Anastasia (2020). The Value of a Sustainable Development Network in Advancing Gender Equality at Higher Engineering Education. In: Modern Environmental Science and Engineering, 6(1).

Zabaniotou, Anastasia (2020). Towards Gender Equality in Higher Education Institutions: Equal Female Academics in the Mediterranean during and after the COVID-19 pandemic. In: Global University Network for Innovation (GUNI). [<http://www.guninetwork.org/report/towards-gender-equality-higher-education-institutions-equal-female-academics-mediterranean>] (Accessed 03.11.2021).

Zabaniotou, Anastasia (2020). Towards gender equality in Mediterranean Engineering Schools through networking, collaborative learning, synergies and commitment to SDGs-The RMEI approach. In: Global Transitions 2, 4-15.

Conferences

Zabaniotou, Anastasia (2021). 2nd ACT International Synergy Conference. Online, 11-12 February 2021.

Zabaniotou, Anastasia (2021). Planning and monitoring of gender equality activities by the Mediterranean Engineering Schools network (RMEI), guided and supported by the TARGET project. XI European Conference of Gender Equality in the Higher education. Online, 15-17th September 2021.

Zabaniotou, Anastasia (2021). Research Speaker: Post Pandemic higher educational experience and Gender (In)equality. OURS2021 Organised by the Open University of Sri Lanka. Online, 17 September 2021.

Zabaniotou, Anastasia (2021). The role of RMEI in Sustainable Development Goals and in SDG5. Union for the Mediterranean (UfM). Online, 14-15 April 2021.

Zabaniotou, Anastasia (2021). What lessons we can take from the COVID-19 experience on women faculty and researchers in the Mediterranean Engineering Education. WREN20-World Renewable Energy Congress. Online/Lisbon, Portugal, 25-30 July 2021.

Zabaniotou, Anastasia (2021). Women in Academia, EU Gender Equality for Academia, The role of Mediterranean Engineering Schools Network. The 1st International Conference “Women in Academia”. Amman, Jordan, 20-21 January 2021.

Zabaniotou, Anastasia (2020). Gender Equality through Networking, Collaborative Learning, Synergies and Commitment to SDGs-The Mediterranean Engineering Schools network approach and the EU TARGET project. 4th Euro-Mediterranean Conference "Visioning MED 2000+". Athens, Greece, 9-10 October 2020.

Zabaniotou, Anastasia (2020). Learning and Capacity building on Gender Equality – the Paradigm of a Mediterranean Network and TARGET project. 10th International Conference of Engineering Education for Sustainable Development (EESD2020/21). University of Cork, Ireland, June 2020.

Zabaniotou, Anastasia (2020). MED in Transition – Equal Female in the Mediterranean for Strengthening Resilience to Climate Change-based Disasters. 4th Euro-Mediterranean Conference “Visioning MED 2000+”. Athens, Greece, 9-10 October 2020.

Zabaniotou, Anastasia (2020). The Mediterranean Engineering Schools Network Advances Changes in Gender Equality at the Mediterranean Higher Engineering Education. 20th International Symposium on Environmental Pollution and its Impact on Life in the Mediterranean Region (MESAEP). Online, 26-27 October 2020.

Zabaniotou, Anastasia (2020). The Role of the RMEI Network as Living Lab for Sustainable Development and Gender Equality in Mediterranean Higher Engineering Education with the Support of TARGET project. 4th Euro-Mediterranean Conference “Visioning MED 2000+”. Athens, Greece, 9-10 October 2020.

Zabaniotou, Anastasia (2019). Communities of Practice for Accelerating Gender Equality and Institutional Change in Research and Innovation across Europe. 1st ACT International Synergy Conference. Brussels, Belgium, 25 February 2019.

Zabaniotou, Anastasia (2019). The role of RMEI in Sustainable Development Goals and SDG5 of the Mediterranean Countries. BUA 2019 Conference. 5th Meeting of the Balkan Universities Association. Thessaloniki, Greece, 16-18 April 2019.

Zabaniotou, Anastasia (2019). The role of RMEI network in Sustainable Development Goals at the Engineering Schools of the Mediterranean Countries, in synergy with Gender Equality in academia - The TARGET project. Acceptability Study (SAS) Network and Collaboration for the International

seminar ‘Towards sustainable tomorrows (TST): From sound concepts to sound practice’ Espoo, Finland, 31 October – 1 November 2019.

Annex 2 – Statement on Gender Equality Policy



Statement on Gender Equality Policy

March 2019

RMEI Statement on Gender Equality Policy (GEP)

Approved by the General Assembly of RMEI, March 2019

Mediterranean basin has been the cradle of important civilizations, it is an exceptional eco-region, has unique natural and cultural heritage, and the feeling shared by its inhabitants of belonging to 'the same sea' (Mare Nostrum).

At the crossroads of three continents, the Mediterranean Sea brings together countries and peoples of various levels of economic and social development, different religions, languages and cultures, who share a common civilization.

Mediterranean region is the interface of North and South, East and West. People of Mediterranean wish to embrace common values of equity among countries and generations, mutual respect between people, solidarity, and peace.

Mediterranean is nowadays in front of great challenges. These challenges are environmental, economic, and social.

Sustainable development, including economic vitality, based on green economy, social cohesion, gender equality, environmental protection, sustainable management of natural resources, to meet the needs of the present generation without compromising the ability of futures, is the vision of RMEI.

The main mission of RMEI is to enhance the ethics of responsibility of Mediterranean Youth through Education and Culture.

Universities play a key role in contributing to Social Transformation and Sustainable Development through Education, Research, and Innovation. This role is fully reflected in the formulation of Sustainable Development Goals (SDGs) of the United Nations.

Universities-members of RMEI express their commitment to embed the UN world agenda 2030, at the center of their missions and, develop their activities within this framework.

The GEP of RMEI complies with the vision for a Sustainable Development, where engineers, scientists, managers (men and women) play a major role. Women need to be considered equal to men at all levels of activities and life, and gender

dimension in teaching, research and innovation related to Sustainable Development, should be strengthened.

The RMEI GEP calls for education strategies and related actions to pursue SDGs.

RMEI invites all members-Universities to endorse this statement, work on SDGs and implement GEP in their Institutions.

TARGET } Taking a Reflexive approach to Gender Equality for institutional Transformation



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