SUSEDI

Route to Transformation of Educational Institutions through a Whole Institution Approach to Sustainability

(SUStainability EDucational Institutions)

SYSTEMIC FRAMEWORK TO ACHIEVE SUSTAINABLE EDUCATIONAL INSTITUTIONS THROUGH WHOLE INSTITUTION APPROACH

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Preamble: Forming the sustainable Educational Institution through WIA

SUSEDI targets all Educational Institutions and aims to transform them into adopting the Whole Institution Approach (WIA) to sustainability. The aim of SUSEDI is to support educational institutions to adopt the WIA through a series of transformational steps, in accordance with the systemic framework for WIA to sustainability, and to certify them on achieving milestones. Additionally, SUSEDI aims to develop the sustainability competence of educators/leaders/administrative staff as their role is critical for institutions in terms of adopting WIA. One of the specific objectives of the project is to develop a Systemic Framework for WIA (Whole Institution Approach) to Sustainability with pillars (i.e. areas of work such as SOCIAL, PEDAGOGICAL and ORGANISATIONAL) and domains within each pillar. The present document presents this systemic framework, which emerged as a result of analysis of best practices and interviews with experts in the field of ESD globally. This analysis enabled our research team to realize that not all aspects of the sustainable Educational Institution are emphasized equally through the WIA. Therefore, all stakeholders involved in the functioning of these organizations need to be aware of all domains that they need to invest their efforts on to create the sustainable Educational Institution. The proposed systemic framework provides a foundation on which specific guidelines as to how to implement WIA for creating the sustainable Educational Institution. Further steps involve creating specific guidelines or rubrics according to which educational institutions can evaluate their work in each domain and identify weaknesses and strengths. Certification criteria for educational institutions as sustainable can also consider this framework, which combines domains of work for a sustainable Educational Institution (social, pedagogical, organization), with Wals and Mathie's (2022) model for Whole Institution Approach for sustainability.

What is WIA and how is it relevant to the sustainable Educational Institution?

The Whole Institution Approach (WIA), even though as a term it has been adapted and described in the new implementation framework of the UNECE ESD Strategy 2021-2030 (UNECE 2022) aiming to explain that ESD goes beyond Education Institutioning, its roots can be traced in the term of Whole Institution Approach which, in the context of Education for Sustainable Development, can be traced back to the 1990's. It is recognized that

environmental issues' inextricable links to a multitude of socioeconomic and political issues (Henderson and Tilbury, 2004) and should be reflected with a holistic-systemic view into educational reforms (Wals and Mathie, 2022). Sustainability is addressed through a range of complex and diverse aspects in educational institutions' operations, such as curriculum and pedagogy, governance, sustainable consumption, connection with the community, the educational institutions' collaborations with other stakeholders and infrastructure. The daily Education Institution practices consider sustainability, also in the non-formal or hidden curricula (Ferreira et al., 2006). The WIA covers all levels of formal and non-formal education and provides a framework under which an Educational Institution can move towards sustainability. A WIA is a concept in which several subjects can be addressed concurrently under the overall banner of 'sustainability' or 'sustainable development,' not as 'learning tasks,' but as entry points to different ways of working and living in light of current conditions worldwide difficulties (Mathie and Walls 2022).

The importance of WSA and the need for a coherent framework for organizing its dimensions, is documented by literature, through several WSA models, devised by researchers and organizations, with the intention to support its implementation by educational institutions and institutions: the OECD Model (Mathar, 2013); the UNESCO model, (UNESCO, 2014; p. 89); the NGA and NAAE model (NGA and NAAE, 2022); the conceptual framework of an ESD effective Education Institution (Verhelst, Vanhoof and Van Petegem, 2022); the "flower model" (Wals and Mathie, 2022). The models converge to the dimensions and aspects of WSA, they differ though, in the way they are developed. The variety of WSA/WIA models proves that its application is neither linear nor static, but constitutes a dynamically evolving process, which can be applied in various ways and at multiple levels in each organization.

Overview of proposed strategic framework

The proposed strategic framework is based on a model that is also depicted in the form of a flower. The framework is theoretically founded on Wals and Mathie (2022) flower model presenting six parameters of WSA, namely pedagogy and learning, institutional practices, capacity building, curriculum and community connections, all focused around the Educational Institution's vision, ethos, leadership and coordination. The selection of the flower model for developing the systemic framework, amongst others, is because from our perspective it is

more dynamic, more flexible and captures in a unified way the dimensions of WSA/WIA. The proposed framework reflects to WIA (including WSA) since can be applied to every organization, institution in formal and non-formal education including educational institutions as well as communities that envision to become organizations and communities of learning for sustainability.

Figure 1. The Wals and Mathie (2022) flower model for the WIA to sustainability

A Whole School Approach to Sustainability
Source: Wals & Mathie, 2022

In the center of the aforementioned flower model (Wals and Mathie, 2022) is the organization's vision, ethos, along with leadership and coordination. All practices within an organization should be guided to achieve a well-defined vision towards sustainability, which is governed by an ethos perceived by all stakeholders involved. Ethos entails values and core principles of sustainability. Leadership is a vital element creating and promoting policies and practices related to the materialization of the transition of the Educational Institution to sustainability. Leadership supports the setting of a well-defined vision which is aligned with the local and national specificities and incorporates coordination as a vital element for the

successful implementation of all ESD-related actions within an Educational Institution. The petals of the flower depict parameters of WIA which should be considered to create the sustainable Educational Institution. These include capacity building, which refers to the continual professional development of all staff, community connections, which refer to Educational Institution collaborations with other stakeholders outside the Educational Institution to promote sustainability and achieve its vision, curriculum, involving its design, content and assessment. In the curriculum, sustainability is infused horizontally within Educational Institution subjects and covers both formal and non-formal education implemented within the Educational Institution. In addition, Wals and Mathie's (2022) flower model refers to pedagogy and learning, which includes new and alternative pedagogies and learning processes, and to institutional practices, which refer to creating sustainability on location and learning from it. This is a concept which is highly related to the Educational Institution infrastructure and how it relates to the creation of the sustainable Educational Institution longitudinally by effecting Educational Institution functions and, in turn, the culture of the sustainable Educational Institution and the quality of life of all stakeholders involved in it.

Based on the aforementioned flower model, Wals and Mathie (2022) suggest that several initial questions be addressed by the Educational Institution community in their efforts to implement ESD-related WIA/WSA, such as:

- What is taught (curriculum; concealed curriculum)?
- Where does learning occur (classroom, Educational Institution buildings, campus, community)?
- From whom do we learn (teachers, Educational Institution personnel, parents, partnerships)?
- How does learning occur (action learning, participatory learning, critical reflective learning, values clarification)?
- Is there a sustainable culture?
- Can staff, students, and members of the broader community recognize the connection between what, where, who, and how?

The input document also includes a five-point description, based on Henderson and Tilbury (2006), of what makes a WSA strategy and vision effective. Therefore, as proposed by Wals and Mathie (2022), effective ESD-related WIA should be

- Relevant to the institution's mission, regional and national educational priorities, community identity, and environmental priorities.
- Resourced with physical resources and technologies, expertise and funding opportunities to accomplish ideas.
- Reflective, which refers to its attribute for promoting critical reflection and review at all levels, as well as promoting the development of critical thinking skills, digital, and sustainability skills in all its stakeholders,
- Responsive, which refers to adopting a flexible structure and adjusting to local and cultural differences. Under a responsive WIA, students are empowered to recognize the complexity and the ever-changing nature of sustainability concerns and to reject one-size-fits-all solutions to sustainability.
- Reformative, which means that the WIA entails redefining the entire educational experience rather than simply adding environmental or SDG issues to the curriculum.

Based on the Wals and Mathie (2022) model, a systemic framework on how to create the sustainable Educational Institution using WIA as a vehicle was created under the SUSEDI project, presented in Figure 2. The model has sustainability in its heart, with ethos and culture in its center. The culture and ethos are realized through three main pillars, the organizational, the social and the pedagogical. Each pillar is analyzed in the petals of the flower, each of which is further analyzed into parameters which were identified through the best cases and interviews analyzed under SUSEDI WP2.
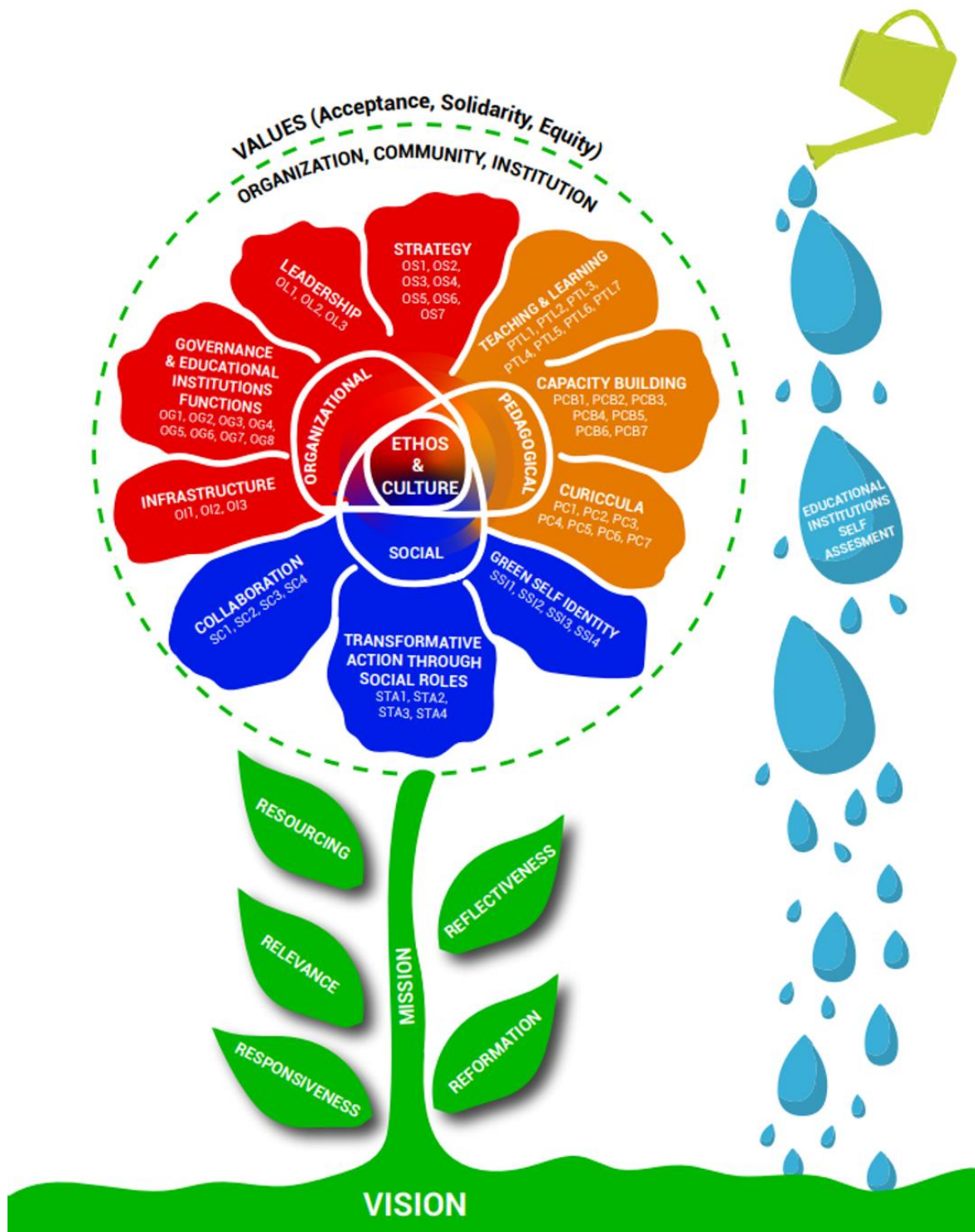
Figure 2. Proposed systemic framework

The roots of the flower represent the vision of the sustainable Educational Institution. The vision nurtures the creation of the sustainable Educational Institution through a mission set, firstly with the aim to develop the Educational Institution ethos and culture towards sustainability. Each organization sets its mission based on its local specificities and contexts. Therefore, the mission has to incorporate the 5Rs and therefore be responsive, relevant, resourced, reflective and reformative.

The three main pillars of the flower are intertwined and merge to the Educational Institution ethos and culture. Based on the analysis of good practices conducted under WP.2. several parameters- or petals- were identified for each of the pillars. Specifically, under the organizational pillar the petals are strategy, leadership, governance and Educational Institution functions and, infrastructure. Under the pedagogical pillar, the petals are teaching and learning, capacity building and curricula. Under the social pillar, the petals are collaboration, transformative action and self-identity. Each of the petals is further analyzed into parameters which were identified through the best cases. The flower is applicable to the organization, community and institution. It is guided by overarching values, such as acceptance, solidarity and equity. The process of forming the sustainable Educational Institution through WIA is, of course, dynamic and nurtured through practice. Therefore, as indicated on the model, ESD Educational Institution self-assessment is required to examine the degree to which the vision is realized and, in turn, to make appropriate adjustments and changes to the functioning of the Educational Institution, based on the described flower model.

Methodology

The starting point of the proposed systemic framework is Wals and Mathie's (2022) flower model. After collecting primary research data on how WIA is implemented across the world by Educational Institutions, the model was broken down to its components and systematically analyzed to understand how these components are realized through ESD-related WIA good practices and experts in the field. Therefore, the proposed systemic framework is based on the outcomes of the analysis of the good practices regarding the sustainable Educational Institution and of the interviews with experts in the field presented as part of SUSEDI WP2.

Specifically, 26 best cases and 14 interviews with experts were presented and systemically analyzed. Best practices were also evaluated as to the degree to which they are relevant, responsive, reflective and resourced, and recommendation for future practice were identified.

Based on the results of this analysis, Wals and Mathie's (2022) WIA flower model was further analyzed and expanded to incorporate elements identified in our primary data which can contribute to enabling educational institutions address each of the WIA components more effectively, understand the overarching values of their WIAs and nurture their vision by making appropriate adjustments on their practices to further achieve their vision after a reflective and thorough self-evaluation.

Analysis of systemic framework

The Educational Institution vision and mission at the foundation of the sustainable Educational Institution's ethos and culture.

Growing and greening a sustainable Educational Institution culture is a multifaceted endeavour that entails embracing a mission to achieve sustainability, aligning financial and policy decisions with ecological principles, and actively participating in local, national and global sustainability policies. A clear vision and an analogously aligned mission that prioritize environmental stewardship are the foundation for every sustainable Educational Institution ethos and culture. Educational institutions should embrace a vision in which concepts related to the pillars of sustainability (the social, the pedagogical and the organizational) are integrated into all parts of their instruction and Educational Institution functions. This vision should go beyond the surface, with the goal of instilling in students a deep grasp of the interdependence of human actions and the environment. Through the good practices presented under SUSEDI WP2 it was evident that certain Educational institutions or networks (i.e. Drobak Montessori Secondary Educational Institution, Norway, Green Free Educational Institution, Netherlands, ESENRED network, Spain) emphasize the development of practical skills to their students that will enable them to not only understand this relation but also to adjust their actions, lifestyles, choices etc., based on the changes occurring in the environment.

A sustainable Educational Institution's philosophy and pedagogical practice blend academic learning with environmental, social, and cultural awareness (Henderson & Tilbury, 2004). The sustainable Educational Institution values students' personal and emotional growth, as well as their potential to positively influence the world around them. The WIA is the vehicle through which the Educational Institution's ethos and culture are shaped, through a clearly defined vision. Students learn both in formal and non-formal settings, engage with nature and the local community, and improve their interpersonal, creative, and problem-solving abilities. For example, the Cyprus Environmental Education Network is a comprehensive horizontal structure working in collaboration with educational institutions to provide them with the opportunity to study issues of their interest in different non-formal settings across the country and integrate those activities in their sustainable environmental education policy which is focused on an issue of local interest to the Educational Institution.

A sustainable Educational Institution's vision is essentially to contribute to the co-creation of a future in which all students can learn in an environment that values and respects nature. Based on local and national specificities, this vision can be specified according to the needs of the institution and focused on specific aspects of sustainability where more needs are identified locally. Networks of educational institutions or networks between educational institutions and other organizations (e.g., Okayama ESD Network- Japan, ESenRED- Spain, ECO Educational institutions, Cooperatie Leren voor Morgen, Netherlands) provide space for the creation of a common vision of sustainable development for educational institutions, always adaptable to the specificities of the local context, and opportunities for coordination, networking, and exchange of expertise. The WIA/WSA can also help identify which elements in a Educational Institution have already advanced and which require extra attention. For example, at the university level, the orientation of Frederick University in Cyprus towards a WIA to ESD is clearly reflected in its vision, which is to advance knowledge for the good of the society through the provision of holistic education to students so that they can face the global challenges and become agents of change. This vision is structured around four main axes, namely Research, Teaching, Outreach and Governance.

As with every educational reform, it is important to take all necessary measures for creating common ground, a shared goal, and attempting to overcome skepticism/working with criticism, while also ensuring that not all time and energy resources are focused on convincing

the small minority that opposes change to join in (Wals & Mathie, 2022). Therefore, the vision should be long-term and should be analytical in the sense that it should clearly contain what the Educational Institution aspires to achieve in the short and in the long-term concerning its transition towards sustainability. The vision is materialized through a clearly defined mission, which refers to promoting a sustainable education that equips students to be thoughtful and responsible citizens or even leaders in their communities and around the world.

Overarching values

Understanding and aligning with core sustainability values pervades the sustainable Educational Institution and significantly impacts attitudes and behaviors of all stakeholders involved in the Educational Institution. Core values are fundamental beliefs and guiding principles shaping our choices, decisions and behaviors (Schwartz, 1992). Embracing sustainability means to integrate its economic, social and environmental aspects, and to adopt a holistic approach to a sustainable lifestyle (Corner, Markowitz & Pidgeon, 2014). Values such as respect, equity and collaboration empower people realize the effect of their choices, decisions and lifestyles on the environment and the well-being of present and future generations. Core values have also a great impact on decision making and guide policies related to Educational Institution functioning. A positive change for the planet and ourselves depends on embracing sustainability values.

Analysis of the Social, the Organizational and the Pedagogical Pillars

A. Social pillar

S O C I A L (S)	SC	Collaboration	STA	Transformative action through social roles	SSI	Green self-identity
	SC1	Among Educational Institution stakeholders	STA1	Responsibility for promoting sustainability in the community	SSI1	Developing strong sense of self-worth
	SC2	Among Educational Institution and local community	STA2	Active role of students for Educational Institution functioning	SSI2	Clear understanding of meaningful roles in society
	SC3	Among Educational Institution and labor market	STA3	Students as leaders in Educational Institution operations	SSI3	Connection of one's self with place and space
	SC4	Established networking mechanisms	STA4	Educating to manage socio-environmental issues and transform society	SSI4	Connection of one's self with the nature

Table 1: Social Pillar

The social pillar (S) is comprised of three main petals, namely collaboration (SC), transformative action (STA) and self-identity (SSI).

Collaboration

Collaboration is analyzed in four parameters, each depicting the stakeholders among which such collaborations are targeted and the respective networking mechanisms. Specifically, there are collaborations among Educational Institution stakeholders (SC1), among the Educational Institution and the local community (SC2), and among the Educational Institution and the labour market (SC3). Finally, under the WIA, best cases showcased established networking mechanisms (SC4). For example, in Japan's Okayama ESD Network there are specific services offered to educational institutions through local authorities facilitating the formation of collaborations among educational institutions and other organizations such as local enterprises. In this practice, services are offered through local authorities. On a global scale, the Eco-Educational institutions initiative is aimed at the entire Educational Institution community (students, teachers, parents, and Educational Institution personnel) and is intended to motivate the entire Educational Institution to organize and take action for the environment. It also promotes collaboration among kids, teachers, parents, and members of the local community in order to achieve more effective environmental action.

Transformative action through social roles

The second petal of the social pillar is transformative action through social roles. Specifically, this petal depicts how sustainability is promoted in the local community (STA1). This parameter refers to interventions initiated and materialized by the Educational Institution in the community to promote sustainability and to increase people's quality of life. In order for such actions to be successfully implemented, this requires that students have an active role for the Educational Institution functioning (STA2). As evident through the best cases, the sustainability of an Educational Institution is ensured when students take active roles in everyday Educational Institution operations including but not limited to caring for Educational Institution spaces, cleaning, preparing Educational Institution meals etc. Students have to take action as leaders in Educational Institution operations (STA3) and should not be passive recipients of the end product of education either this be knowledge, skills, experiences, etc. Therefore, in a sustainable Educational Institution, students are viewed in equal terms as adults employed at the Educational Institution in terms of contributing to Educational Institution functions in a fair, of course, manner, based on their own developmental characteristics.

Indicatively, concerning transformative action through social roles, the Green Free Educational Institution in Denmark is an Educational Institution that goes beyond the educational context and into the lives of all people who are affiliated with it. The Educational Institution fosters a sense of community among parents and families, with the goal of realizing the Educational Institution's mission for adults as well. This community is made up of a parental network, which creates and maintains the physical framework of the Educational Institution, social activities for children and adults with a focus on community, and a parenting academy, which engages the Educational Institution's adults in a common learning and development process with a focus on green transition and linked with innovation projects. In Japan's Okayama ESD Network, through joint actions of educational institutions with local community centers called Kominkans, ultimately, the promotion of civic collaboration to solve regional issues, deepen learning, and carry out activities reflecting local life is envisioned.

Finally, under transformative action through social roles within the Educational Institution, special emphasis is provided in educating all stakeholders in the Educational Institution to manage socio-environmental issues and transform society (STA4). This is also a vital attribute for the citizens of today and future generations to come since the effects of environmental issues have a crucial social impact that inevitably forces people to manage and adapt to change.

Green self-identity

The concept of "green self-identity" is used in literature on sustainable consumption behavior, including green products and sustainable food choices, to explain how individuals describe themselves in terms of their environmental friendliness, green values, and behaviors (Neves & Oliveira, 2021). In the context of sustainable consumerism, green self-identity is thought to be important for distinguishing oneself from others and adhering to the green values and behaviours of the group to which one wishes to belong. It is clear from previously discovered theories of identity and self-congruity that there is a relationship between individuals' self-concepts and product consumption (Gravelines et al., 2022). In this framework, several good practices emphasized how developing a sense of self-worth (SSI1) for each individual within an organization is achieved, as this has a direct effect on lifestyle and everyday decisions. Indicative actions (i.e. Drobak Montessori Secondary Educational Institution- Norway, Okayama ESD Network- Japan, Green Free Educational Institution- Denmark) include

allocating substantial responsibilities to students for the functioning of the Educational Institution, implementing specific year-long programs to facilitate new coming teachers to get familiarized with the community, empowering students implement actions and interventions in the community that have a substantial impact on the quality of life of the people, such as Educational Institution-initiated community transformations occurring in the Okayama region in Japan. Promoting a clear understanding of meaningful roles in the society (SSI2) is also a vital element of constructing the green self-identity. This is achieved partly through collaborations of the Educational Institution with other stakeholders such as enterprises, local authorities and regional NGOs.

One of the major findings of our analysis of good practices is that green self-identity is a broad concept, which cannot be seen apart place and space (SSI3) and with the nature (SSI4). For example, students' engagement with the land in Drobak Montessori Secondary Educational Institution empowers students develop a relationship with nature and define themselves in connection with the local surroundings. Students cultivate the land, use the produce and, when environmental changes pose challenges for their cultivations, they are trained to adjust to other kinds of species and to mitigate i.e. to climate change. Also, students in this Educational Institution have the opportunity to engage in novel methods of agricultural production, such as sea-weed, which may prove useful in the future. In this context, green entrepreneurship is also promoted, with the implementation of agriculturally sustainable methods of production. Similarly, in Green Free Education Institution in Denmark, students are trained to make the most out of the goods they have at their disposal. In this context, they are trained to prolong the lives of these goods i.e. by maintaining them or by fixing them. In this way they place themselves in nature in a specific way, realize that natural resources are finite and are trained to be active participant in a society that follows a circular financial model. Through such experiences, students of the present are trained to be active citizens, leaders and policy makers of tomorrow, facilitate the implementation of circular models of production and consumption and overall promote a lifestyle that is defined by a closer and more sustainable relation with nature and the environment.

B. Organisational pillar

The organisational pillar (O) is realized through four petals, namely infrastructure (OI), governance and Educational Institution functions (OG), leadership (OL) and strategy (OS).

O	O	Infrastructure	OG	Governance & Educational Institution functions	OL	Leadership	OS	Strategy
ORGANIZATIONAL (O)	OI1	Creating & mobilizing sustainability on location	OG1	Taylor-made administrative tasks	OL1	Youth leaders	OS1	Adjustability
	OI2	Outdoor spaces as classrooms	OG2	Policy formation	OL2	Participatory decision making	OS2	Facilitates collaborations
	OI3	Building local energy sources	OG3	Monitoring mechanisms	OL3	Role models	OS3	Commits teachers to engage in ESD
			OG4	Coordination mechanisms			OS4	Integrates non-formal education
			OG5	Networking mechanisms			OS5	Promotes accountability as to how ESD-related WIA is implemented
			OG6	Top-down support			OS6	Alignment with Agenda 2030
			OG7	Allocated time for ESD-related actions			OS7	Educational Institution action plans

Table 2:Organisational Pillar

Infrastructure

Educational Institution buildings, classrooms, playgrounds and libraries are the most important aspect of Educational Institution infrastructure. Infrastructure, apart from its undoubtedly crucial role in ensuring the quality of life of the people with the organization, can also work as a good example for the community and provide paradigms for the students which will be called upon living in a more sustainable world in the future. Educational institutions and campuses should be green and, where possible, specific interventions can be made in the Educational Institution spaces to create sustainability on site, such as installation of solar plants, waste management solutions, provisions for eco-friendly transport, etc. Indicatively, under Italy's Multicampus Sostenibile initiative, the University of Bologna implements a program to equip 83 university buildings with remote management systems for energy containment. At the same institution, initiatives for greening mobility are taking place,

such as, for example, through the implementation of policies motivating people to use bicycles and public transport. At the University of Padova there are specific policies in place to make the university campus go plastic-free.

Students should have facilities for study in green lush environments inside the campus. Indoor and outside spaces should be nature friendly. Management of an Educational Institution should also align with sustainability. For example, what the Educational Institution consumes should be eco-friendly and from ethical sources. Through a number of best cases, the value placed on creating and mobilizing sustainability on location (OI1) was showcased. Examples included creating and using alternative energy sources on campus (i.e. solar and geothermic energy), taking provisions for creating buildings that in the course of their use will have produced more energy than the energy consumed, such as the buildings of Drobak Montessori Secondary Educational Institution in Norway, promoting eco-friendly transportation on campus through specific policies encouraging the use of bicycle and mass transport etc (i.e. University of Bologna). Outdoor spaces used as classrooms and learning spaces (OI2) is another vital element of sustainable infrastructure. The outdoors, either in the Educational Institution grounds or near the Educational Institution, can provide a plethora of learning opportunities and most importantly promote sustainable living attitudes. Finally, making interventions on Educational Institution infrastructure to produce energy, thus building local energy sources (OI3) is another distinctive parameter indicating that a sustainable Educational Institution cannot exist without appropriate infrastructure.

Governance and Educational Institution functions

In practice, implementing WIA to create a sustainable Educational Institution requires including sustainable development through integrated administration and governance of the institution. In the proposed model, governance and Educational Institution functions (OG) comprise a vital organizational part of the Educational Institution. Through the best cases, partners specifically emphasized that a sustainable Educational Institution has the freedom to create its own localized policy (OG2) which is always aligned with national policies. For example, in Cyprus, the Sustainable Environmental Education Policy (SEEP) is planned and implemented by each primary Educational Institution, integrating the short- and long- term goals of the organization to reach sustainability following WIA/WSA including curricula/content, capacity building, infrastructure, non-formal education and education

material. ESD is infused horizontally in all Educational Institution subjects and the SEEP offers a holistic framework of objectives, actions and pedagogies aiming to transform the Educational Institution towards sustainability through actions targeted to solve issues at the local level.

Administrative tasks should be tailor-made (OG1) based on the specificities of each organization. For example, there are organizations that require a higher degree of distribution of tasks among stakeholders within an Educational Institution compared to others or there are organizations that due to their specific circumstances require a higher degree of autonomy to set their policies compared to others. For example, in Drobak Montessory Secondary Educational Institution in Norway, elements of the Educational Institution are non-hierarchical, especially in the classroom, the aim is to work side by side with the student. All the teachers and Educational Institution leaders eat, play sports and free-time games with the students, there is no separate "teachers' lounge".

Monitoring (OG3) and coordination (OG4) mechanisms need to be in place so that there is accountability on how the vision and mission of the Educational Institution are materialized. Governance and Educational Institution functions should be structured in ways that facilitate networking mechanisms (OG5) within and- most importantly- outside of the Educational Institution. Top-down support (OG6) was also pointed out as a vital element of governance that should be visible in Educational Institution functions. For example, teachers need support in their initiatives to promote actions fostering sustainability in an Educational Institution. Support could be in the form of policy formation, resources and other kinds of support. Allocated time for ESD-related actions (OG7) within an Educational Institution facilitates the implementation of sustainability-related actions both in the Educational Institution as well as in the community. For example, best cases included initiatives under which students had the opportunity to do internships in local businesses through allocated Educational Institution time on a regular basis, such as in the Yakage Lower Secondary Educational Institution in Okayama, Japan or Frederick University, Cyprus. In these cases, learners have the opportunity to both detect the employment needs in their own communities as well as realize needs for promoting sustainability in specific areas.

Leadership

With WIA, the institution's vision, policy, programs, and practices will all be reoriented toward sustainability. Sustainability must be at the heart of any institution's mission. To achieve substantial paradigm shifts that are based on sustainability as a guiding principle, leaders at all levels and across all departments will be required. An interagency mechanism within the UN identified leadership elements based on the following characteristics: norm-based, principled, inclusive, accountable, multi-dimensional, transformative, collaborative, and self-applied (United Nations, 2017).

If we are to fully comprehend the present risks to our earth and humanity, Educational Institutions, especially at the tertiary level, must undertake leadership and move forward to deliver cutting-edge scientific recommendations to address sustainability issues. From the early stages in education, good practices highlighted the importance of nurturing youth leaders (OL1). This is a process that is inevitably undertaken due to the way Educational Institution functions are structured in a sustainable Educational Institution. These functions involve the student as an integral part of Educational Institution operations and equal contributor to Educational Institution function.

Students undertake responsibilities in everyday tasks of the Educational Institution that empower some of them to take the lead in some of its actions. Indicatively, in Drobak Montessory Secondary Educational Institution in Norway, students are considered as equal members of Educational Institution community, meaning that they have substantive responsibilities and are accountable for their actions for the functioning of the Educational Institution.

Participatory decision making (OL2) throughout the whole structure of the organization also facilitates the materializing of the Educational Institution vision. Effective leadership and student participation in all Educational Institution functions also promotes the creation of role models for sustainability (OL3). Indicatively, Indicatively, the ESENRED network, promotes decision-making from the students in a collaborative and democratic way. Students propose and implement transformative actions in their local contexts, select stakeholders from the local community to propose collaborations with the Educational Institution, and take

collective action to improve their local communities, but with distinct roles and responsibilities, fostering a distributed and shared leadership.

Strategy

Strategy is the blueprint of each organization's ESD-related actions. It is a guide of how sustainability is exemplified in the organization's operations. A major point that emerged through the interviews with experts refers to the fact that the national policies and regulatory measures vary across European countries, leading to gaps in the implementation of ESD in the different countries. The foundation of a universal, clearly defined strategy promotes the exploration of various aspects of sustainability through teaching, learning, Educational Institution operations and research. Major challenges in effectively implementing WSA/WIA refer to the lack of strategies and policy frameworks referring to all levels of education and non-formal education structures, lack of coordination within the organization and with stakeholders outside the organization and practical ways as to actions to effectively promote the Educational Institution vision for sustainability. Achieving the viability of WIA/WSA and ESD requires the existence of policy frameworks supporting the systemic implementation of the Educational Institution vision and ethos on sustainability.

Good practices studied, converged to the fact that the strategy should be adjustable (OS1) to the needs of the institution and its local specificities. Moreover, it can be adjustable on the go, to align better with the institution's vision and mission. The strategy should also encourage and facilitate the establishment of collaborations (OS2). It should commit teachers to engage in ESD (OS3). For example, in Green Free Educational Institution in the Netherlands teachers are committed to engage in ESD related activities and non-formal education through their employment contract. Integration of non-formal education in ESD-related activities is also vital (OS4). The strategy should also include provisions to establish accountability as to how ESD-related activities are implemented through WIA (OS5). Alignment of the institutional strategy with the SDGs and Agenda 2030 (OS6) was showcased in several best practices (i.e. University of Lodz, University of Padua, University of Bologna, Frederick University). In the case of Educational Institution education, the establishment of Educational Institution action plans (OS7) is also widely used as a measure to ensure that educational institutions gradually move towards sustainability through WIAs (i.e. CEIP Maestro Moreal in Spain, Cyprus Primary Educational institutions).

C. Pedagogical pillar

The pedagogical pillar of the systemic framework can be viewed through Curricula (PC), Capacity Building (PCB) and Teaching and Learning (PTL).

P E D A G O G I C A L (P)	Curricula (PC)		Capacity building (PCB)		Teaching and learning (PTL)	
	PC1	Interdisciplinary, horizontal, coherent	PCB1	Employability	PTL1	Formal & non-formal
	PC2	SDGs integration	PCB2	Scaling of skills (different sets and levels) i.e. Teachers, Educational Institution leaders, ESD coordinators	PTL2	Connection to labour market
	PC3	Skills for the future	PCB3	Monitoring	PTL3	Student-led
	PC4	Localized/ adaptable	PCB4	Mentoring	PTL4	Promotes awareness of changes on the planet and impact on human life
	PC5	Promotes critical thinking	PCB5	Facilitating teachers' integration in community-Shaping of social identity of professional	PTL5	Practical, hands-on experiences
	PC6	Extracurricular ESD activities	PCB6	Sustainability of Educational Institution actions through time	PTL6	PTL6 Alternative learning processes
	PC7	ICT	PCB7	Recognition of work	PTL7	PTL7 Multimodal learning environments

Table 3:Pedagogical Pillar

Curricula define the content, which is examined through the courses, modules, lessons taking place within an institution. Seven parameters were identified as to how curricula are understood through an ESD-related WIA. Specifically, curricula should be interdisciplinary, horizontal and coherent (PC1), having a clear connection with the SDGs (PC2) and strongly emphasizing skills for the future (PC3). In addition, curricula should be localized (PC3) meaning that they should be integrated to the specificities of the area and aligned with regional, national and international requirements. Indicatively in the case of universities, practices refer to their commitment to implementing Agenda 2030 and aligning with the SDGs (UniBo, UniPadova, FU, Lodz University of Technology, University of Lodz, University of Galway), referring to both the sustainable upgrade of their infrastructures and the development of knowledge and expertise through research and innovation, as well as its dissemination locally and internationally. Curriculum and course content alignment with the SDGs has been extensively highlighted in universities from which best practices were presented. Critical thinking is a vital element promoted through curricula (PC5). In a holistic view of education

such as the one promoted through ESD-related WIA it is important to emphasize the opportunities for and the content of extracurricular activities (PC6) as well as ICT and multi-modal learning environments (PC7).

Capacity (PCB) building can refer to teachers, policy makers and Educational Institution leaders. It may integrate a variety of parameters. For example, capacity building for teachers should amplify their employability (PCB1) meaning that is should be aligned with teaching competencies needed now and, in the future, so that teachers can be empowered to promote sustainability within an Educational Institution in various ways, and so that they are equally effective in a variety of contexts in terms of how they promote ESD. Integrating training seminars for teaching staff (e.g., FU, University of Lodz), required courses on WIA/WSA for sustainability for Educational Institution administrators and other government officials (e.g., Cyprus, Germany, Spain) are among the practices shown. Workshops, training seminars, mentoring, sustainability network meetings, guidebooks, and other forms of capacity building are all possible. Networking among stakeholders both inside and outside the Educational Institution fosters knowledge transfer and capacity building.

In addition, through the good practices examined, it was suggested that scaling of skills needs (PCB2) to be integrated within capacity building practices. This means that different sets and levels of skills are needed for different kinds of teachers, Educational Institution leaders, policy makers, administrators, ESD coordinators etc. require differed skill sets and at different levels. Capacity building should also integrate monitoring (PCB3) meaning that monitoring facilitates a diagnosis of what is further needed in terms of capacity building actions. Also, capacity building can take the form of mentoring (PCB4), from more experienced ESD educators to newer ones, or the form of actions oriented towards facilitating new coming teachers get familiar with the specificities of the local community (PC5) so that new coming teachers can realize the connection of work done inside the education organization with the outside world either this be the local community, the labor market etc. Such actions to facilitate the integration of the new coming teacher to the Educational Institution firstly ensure the continuation of actions undertaken within an Educational Institution over time and on the other hand help shape the social identity of the processional inside the community and the Educational Institution (PCB6). Finally, capacity building should incorporate motives and recognition of individual and collective work done to move an organization towards

sustainability (PCB7). Through interviews with experts, it was pointed out that lack of sufficient and systematic coaching of the educational and administrative staff in an organization can be a major challenge in resourcing ESD-related WIA.

The third petal of the pedagogical pillar (P) is Teaching and Learning (PTL). Teaching and learning refers to methods, techniques and learning outcomes referring to both formal and non-formal education (PTL1). Pedagogy and learning were mostly explicitly referred to best practices identified at the Educational Institution level (i.e. Drobak Montessori Secondary Educational Institution, CEIP Maestro Moreal, Okayama ESD Network, Green Free Educational Institution, Cyprus Public Primary Educational institutions). Pedagogies vary from project-based, to inquiry-based, modelling, debates, fieldwork, etc. Non-formal education, as demonstrated through the best practices examined, has a vital role in WIA. Both the Educational Institution grounds as well as places outside the Educational Institution setting such as local community centers, enterprises, places of natural interest etc. are used as learning spaces and are integrated in the Educational Institution schedule on a regular basis. In some instances, teachers are committed to regularly integrate ESD in non-formal settings through mandates in their employment contracts.

A second aspect of teaching and learning is the connection of Educational Institution actions to the labor market (PTL2). For example, in Yakage Secondary Educational Institution in Japan, there is specific time allocated for students to spend in local enterprises. This is done with the purpose to firstly make students aware of sustainability needs in their community and secondly to help them discover their professional orientation. As pointed out in the interviews with experts in the field of ESD-related WIA, acknowledging the role of non-formal education in forming the sustainable Educational Institution is vital, as non-formal structures work under more flexible frameworks allowing for multidisciplinary action within and outside the Educational Institution organization.

A strong commitment to student-centered, student-led teaching and learning processes was showcased (PTL3). Indicatively, education at Frederick University in Cyprus takes a holistic approach to prepare students to address the SDGs in their present or future jobs. To reinforce this priority even further, Frederick University created "FULL," which stands for Frederick University Living Lab and is a pedagogical project based on a student-centered learning and teaching method. It seeks to provide FU students with the essential information (brain),

abilities (hands), and care (heart) so that upon graduation, they would be able to face the turbulent future ahead and have the drive to become change agents. Through community ties and partnerships, FULL integrates project-based, participatory, and experiential learning. Students are encouraged to put their discipline knowledge, skills, and competencies to use through interdisciplinary techniques and activities, to address real-world problems and difficulties in real-world professional situations. FULL initiatives are inspired by the United Nations' Sustainable Development Goals (SDGs).

Furthermore, teaching methods are such that facilitate learners and other stakeholders in the Educational Institution to develop awareness of the changes on the planet and their impact on human life (PTL4). This includes, for example, realizations about how climate change affects agricultural production and about the need to adjust to those changes through changes in production and consumption patterns. Another element emphasized regarding teaching and learning was practical, hands-on experiences (PTL5). Activities relevant to 'the era of R' (re-use, repair, remanufacture) and 'the era of D' (de-construct, de-coat, de-laminate, and so on)', with the former focused on prolonging the service life of items and the latter on employing inventive modern processes to recover materials for re-use (UNESCO-UNEVOC, 2023). Initiating these eras will require policies and practices that support relevant education and skills while also encouraging innovation.

Alternative learning processes (PTL6) are also required to move to the sustainable Educational Institution. Such processes refer, for example, to actions addressing different learning styles and types of intelligence, and a variety of teaching approaches for the learning material. Multimodal learning environments (PTL7) refer to learning environments that provide each learner with specific learning opportunities according to their different learning styles and individual characteristics. Such environments incorporate different elements or means to reach each of the senses and provide a well-rounded education experience. Examples include writing and print, movement, illustrations, speech, gestures, colors, expressions etc., which provide different kinds of stimuli and address the different kind of learners more effectively. Such multimodal learning environments have been developed and implemented by STEMFreak in Cyprus. STEAMFreak is a Cyprus-based nonprofit that works alongside educational institutions to develop sustainable practices through teaching programs and on-site experimentation. The institution's operations are sustainable, and its programs

emphasize hands-on learning experiences, including engineering into STEAM through authentic scenarios.

The 5Rs

Relevance

In order to achieve a sustainable Educational Institution, WIA has to incorporate practices that are relevant to several elements in the proposed model and primarily to the Educational Institution ethos and culture, national educational priorities, community identity and environmental priorities in the Educational Institution's region. Through the field and desk research that was conducted it was evident that relevance is perceived differently and refers to specific aspects of WIA as emphasized through each practice. Relevance of an ESD-related WIA can be analyzed in the following parameters:

a. Alignment with institutions' overall strategic commitment to values (i.e. values deriving from Agenda 2030).

b. Applicability of WIA actions in practice, adaptations and dynamic adjustments in WIA implementation based on quality ESD Educational Institution evaluation.

c. Involvement of all stakeholders in the Educational Institution (i.e. teachers, students, staff) and outside of the Educational Institution (i.e. local community, businesses) in ESD-related activities and actions. Stakeholders within an Educational Institution (i.e. students, teachers, staff) have substantial responsibilities as to how ESD-related activities are implemented and, in turn, regarding Educational Institution functions. By actively being involved in all Educational Institution functions they are empowered to develop a sense of how their actions are relevant to the Educational Institution's orientation towards sustainability.

d. Participatory decision making as to how WIA is implemented so that the stakeholders have ownership over and are accountable for the decisions taken. For example, participation can be ensured through the establishment of councils within educational institutions, HEIs or networks in which all stakeholders are represented and through which the implementation of WIA in ESD is monitored and coordinated.

e. The Educational Institution's vision and mission are relevant to the SDGs. This is underlined in the case of HEIs by revising course or module curricula to demonstrate how material is linked with each of the SDGs. In the case of Educational Institution

organizations this is addressed through multidisciplinary actions in which the Educational Institution serves as a catalyst and agent of change, recognizing the capacity of students to transmit values to those around them, which can be a key to change.

Reflectiveness

Reflective practices of WIA for ESD refer to practices skilled in critical reflection and evaluation at all levels, and to the degree to which they develop critical thinking competences in organizations' staff and students. Being constantly engaged in a process of critical reflection, organizations can review their ESD-related WIA actions and adjust them in ways that promote the Educational Institution vision to achieve sustainability more effectively. This can be understood as:

a. Initiatives to restructure the curricula of courses so as to reflect specific SDGs, especially at the tertiary level. The alignment of courses with the SDGs, on one hand, demonstrates universities' intention to comply with Agenda 2030 and, on the other hand, their commitment to create a culture of learning and employability for all their students.

b. Promoting institution-wide understanding of sustainability through stakeholders' involvement in ESD-related activities. Such activities may address issues of lifestyle, production and consumption, energy, conservation of natural resources and biodiversity, the role of business, etc.

c. Empowering stakeholders realize the complexity of environmental issues and that dealing with challenges at their immediate surroundings (e.g. Educational Institution, local community etc.) will require complex actions and multi stakeholder collaborations. Activities to achieve this empowerment result in developing skills necessary for learners, teachers, community members etc., to be agents of change in their communities.

d. Providing stakeholders with opportunities to develop competencies that will allow them to tackle present and future challenges related to the environment and sustainability, to increase their quality of lives.

e. Awareness of green self- identity for the stakeholders within an education organization and of their great potential to contribute to the course of the Educational Institution towards sustainability personally and collectively. Evidently, for most of the education organizations presented, part of their vision and mission is to assist learners to develop a strong sense of self-worth, identity and awareness of their meaningful role in the society at large. Students develop skills, such as autonomy and critical thinking, with equality, solidarity, freedom and democracy at the heart of the Educational Institution's value system.

f. Reflecting upon how an Educational Institution's vision is materialized through its mission facilitates organizations to identify strengths and weaknesses in relation to sustainability and to acquire knowledge and expertise allowing them to remain adaptive, innovative and lead a sustainable lifestyle.

Resourcing

Resourcing, both in material and in expertise, is vital for achieving the sustainable Educational Institution through ESD-related institutional approaches. Improving Educational Institution infrastructures, capacity building for teachers and Educational Institution leaders, eco-friendly consumption norms within an Educational Institution, implementation of ESD-related initiatives inside and outside of Educational Institution, all require resources (i.e. funding, materials, expertise, etc.). From the desk and field study it was evident that resourcing should arise from multiple sources (e.g. regional, institutional, EU structural funds, etc.), which often requires redesigning institutional practices, rethinking organizational structures and management models, and integrating planning, control and accountability towards all stakeholders. Resourcing can be understood differently across different levels of education:

a. In HEIs, increase of funding for research is of utmost importance in terms of how relevant actions can be applied more effectively and in terms of assessing how and to what degree actions undertaken within HEIs promote the sustainability of the organizations. Furthermore, funding for universities can be used to transform campuses towards sustainability by improving infrastructure (i.e. through installation of smart and renewable energy sources, by improving mobility within the Educational Institution and the community, by the energy upgrading of university buildings, etc.).

b. In Educational Institution education, ESD-related activities are funded usually through national governments or local authorities, which provide the necessary sources for the functioning of the educational institutions and, in some cases, fund the functioning of structures of non-formal education, such as environmental education or community centers.

c. Regardless of education level and structure (formal/ non-formal) the use of existing resources either in material form or in the form of knowledge and expertise should be considered during the design phase of an organizations ESD-related WIA. Educational Institution or community transformations aspired through ESD-related WIA can often be achieved through existing financial resources. Nevertheless, networking platforms facilitate collaborations, which allow for more efficient use of existing resources and, in some cases, pave the way for corporate funding for educational institutions. In terms of knowledge and expertise, emphasis should be placed on promoting interactions and collaborations of experts in various fields to achieve a common vision for the organization.

Responsiveness

A practice is characterized as responsive when it embraces a flexible structure and adapts to local and cultural settings; develops learner capabilities that help recognize complexity as well as the changing nature of sustainability challenges and rejects a one size fits all approach to sustainability. In this framework, ESD-related WIA should be focused on or adjusted towards the specificities of the local context. Lack of reflectiveness concerning ESD-related WIAs makes the organization ignorant to the need of its stakeholders. In addition, if the WIA is not a reflective process, then it can also be non-responsive.

Responsiveness should characterize all aspects of ESD-related WIA.

a. Specifically, curricular responsiveness is focused on the Educational Institution and the students' needs. As an education organization gradually opens towards society (i.e. through the implementation of actions connecting the Educational Institution to the labour market or through collaborations with various stakeholders outside the field of education), then the need to review its curricula in a responsive way is more prevalent: Curricular responsiveness does not only refer to content but also to the way the content is approached.

b. Furthermore, social responsiveness refers to going outside the walls of the institution to local communities, the industry, administration and government to consider how ESD-related WIAs implemented at Educational Institution are relevant or improve the functioning of other stakeholders. This firstly requires that the Educational Institution is responsive to itself in terms of governance, oversight and quality control (Stoessel, 2016).

In the case of educational institutions, practices were led by Educational Institution-wide environmental education policies aimed at addressing sustainability challenges within the Educational Institution or community context, or by project-based approaches aimed at addressing local challenges. The goal of these programs was to promote sustainability and well-being within the Educational Institution and community in a comprehensive manner.

Similarly, in higher education, practices are associated with the implementation of institutions' strategic sustainability planning, which is connected with the SDGs and, of course, with the universities' organizational frameworks. The practices provided by HEIs aim to highlight universities' roles as reference points on environmental and sustainability concerns, as well as to boost their participation in national and international networks and platforms focused on SDG implementation.

Monitoring and assessment to diagnose the effectiveness of specific operations and actions, play a critical role in determining how WIA is most effectively implemented to promote environmental sustainability inside an education organization. The function of research is stressed in this framework to empirically root the effectiveness of all measures implemented and to modify practices to dynamically changing organizational situations.

Reformation

Reformation refers to an ESD-related WIA is not simply one of adding on environmental or SDG themes to the curriculum, but that of reframing the entire educational experience. Best practices presented clearly demonstrate a strong commitment to change the institutions but also the local communities towards sustainability and a focus to increase the well-being of each stakeholder involved. Reformative ESD-related WIAs can be seen in relation to:

a. Alignment with the SDGs and Agenda 2030 (i.e., integrating SDGs in university/ Educational Institution life and in each of the main pillars of their functioning including teaching, research, mission and institution).

b. Reorganizing the Educational Institution's functioning at all levels, including governance, teaching content and methods, teacher capacities, collaborations, non-formal education programs, etc.

c. The aspiration to transform the whole community through actions and projects undertaken by educational institutions. Therefore, Educational Institution-initiated changes towards sustainability in the community are of utmost importance.

d. A strong focus on active learning through hands-on action, integrating flexible approaches to student learning based on the realities of their local setting. A strong orientation of the teaching content to practical skills (e.g. skills related to circular economy) in order to achieve transformation towards sustainability.

e. Facilitating the Educational Institution to integrate all aspects of sustainable development in their operations and in all areas affecting learning, including the Educational Institution environment, curricula, professional development, administration, teaching and pedagogical processes.

ESD Educational Institution Self- Assessment

As an indicator of Educational Institution improvement, Educational Institution self-evaluation on ESD-related actions under WIA, may contribute to providing educational institutions with an informed focus for enhancing the transformation of the Educational Institution to sustainability. Self-assessment is not a prescription for what to do. It is just a tool for critical examination that educational institutions can use to improve. When used correctly, it can be quite useful. The Educational Institution self-assessment process can potentially become a partner in the development of growing Educational Institution effectiveness (Ryan and Telfer, 2011). When self-assessment is viewed as an opportunity to investigate an Educational Institution's progress and practice in relation to student success, it has the potential to become an effective instrument for influencing targeted change (McNamara et al., 2011).

ESD Educational Institution self-assessment refers to processes upon which an Educational Institution collects data from all areas of ESD-related actions, which are under the umbrella of WIA, and reviews them with the aim to better achieve its vision towards sustainability. As Mogensen et al. (2005) suggest, data on ESD processes and learning opportunities are difficult to get since they are rarely reported in sufficient detail in the literature. There is a wealth of information accessible about the specific objectives and outcomes of projects, but there is a notable dearth of statistics to demonstrate how these objectives and outcomes are met. This relatively new discipline is still in its early stages of producing the type of comparative and evaluative overview that provides a picture of efficacy.

Our framework suggests that the WIA is the vehicle through which the sustainable Educational Institution is achieved so the Educational Institution should reflect upon the ESD processes and actions implemented and, based on this reflection, nourish its vision and further align it with creating the sustainable Educational Institution based on the local specificities. In turn, the nourishment of the vision is required to make relevant adjustments to the mission and all ESD-related actions of the Educational Institution, which are based on the three pillars (pedagogical, organizational and social). Therefore, through the results of the ESD Educational Institution self-assessment, ESD-related WIAs become dynamic and provide the organization with opportunities to adjust its vision, mission and ESD-related actions to circumstances that change over time in the local, national and international context. Analogously, ESD Educational Institution self-assessment provides the opportunities to reflect upon what has been achieved and how the Educational Institution can further achieve its transformation to sustainability by focusing on specific areas that need further work.

Specifically, clearly set goals included in the Educational Institution mission, which is the vehicle to specify the Educational Institution vision, provide a solid basis for reflection over how WIA is implemented and whether actions set to achieve the vision were adequately efficient. ESD Educational Institution self-assessment can be documented with examples of good performance or of examples of actions that were not as efficient as intended for implementing the Educational Institution mission. Guidelines or criteria are needed, therefore, to evaluate the degree to which transformation within an organization towards the sustainable Educational Institution is reformative, reflective, responsive and resourced. Criteria to identify good practices or actions undertaken within WIA can be set internally

within the Educational Institution or they can be set in collaboration with other stakeholders involved with the Educational Institution in the framework of their ESD-related WIA. Opportunities for adjustments in the way WIA is implemented to promote more effectively the vision for the creation of a sustainable Educational Institution can subsequently be created and nourish the whole WIA process.

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