



ΜΕΤΑΠΤΥΧΙΑΚΗ ΕΡΓΑΣΙΑ

Μελέτη για τη συμβολή των πρωτοβουλιών και συμπράξεων του ιδιωτικού τομέα στην ευρύτερη δημόσια υγεία και στην επίτευξη του Στόχου Βιώσιμης Ανάπτυξης 3 των Ηνωμένων Εθνών.

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Ευχαριστίες

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Περίληψη Μεταπτυχιακής Εργασίας

Τίτλος εργασίας:

Μελέτη για τη συμβολή των πρωτοβουλιών και συμπράξεων του ιδιωτικού τομέα στην ευρύτερη δημόσια υγεία και στην επίτευξη του Στόχου Βιώσιμης Ανάπτυξης 3 των Ηνωμένων Εθνών.

Της:

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Υπό την επίβλεψη των: 1. Ε. Πιτέλου

2. Χ. Λιονή

Ημερομηνία: Ιανουάριος 2023

Γενικά: Οι 17 Στόχοι Βιώσιμης Ανάπτυξης (ΣΒΑ) που περιλαμβάνονται στην Ατζέντα 2030 αποτελούν επείγουσα έκκληση για δράση προς όλα τα έθνη ώστε να διαμορφώσουν μια παγκόσμια σύμπραξη με κοινή γλώσσα, ευθυγραμμισμένες στρατηγικές για τη βελτίωση της υγείας, της εκπαίδευσης, τη μείωση των ανισοτήτων και την προώθηση της οικονομικής ανάπτυξης, διασφαλίζοντας παράλληλα την περιβαλλοντική βιωσιμότητα και αναλαμβάνοντας αποτελεσματική δράση για την καταπολέμηση της κλιματικής αλλαγής. Ένας από τους πιο καθολικούς Στόχους Βιώσιμης Ανάπτυξης είναι ο ΣΒΑ3 για τη «Διασφάλιση υγιούς ζωής και την προώθηση της ευημερίας για όλους και σε όλες τις ηλικίες». Οι πρωταρχικοί στόχοι του ΣΒΑ3 είναι η υγεία και η ευημερία, αλλά λειτουργεί επίσης ως οριζόντια προτεραιότητα που συνδέεται με όλους τους άλλους στόχους που υποστηρίζουν την πρόοδο των ανθρώπων σε μια σειρά κοινωνικών, οικονομικών και παραγωγικών τομέων. Ο ορισμός της «υγείας» υπερβαίνει απλώς την απουσία ασθένειας. Η υγεία καθώς και η κοινωνική δυναμική της κοινωνικής οργάνωσης, του τρόπου ζωής και των καταναλωτικών προτύπων επηρεάζονται από το βιοφυσικό περιβάλλον. Η συμβατική γεωργία βασίζεται στη χημική παρέμβαση για την καταπολέμηση παρασίτων και ζιζανίων και για την παροχή θρέψης των φυτών. Αυτό σημαίνει χρήση συνθετικών φυτοφαρμάκων, ζιζανιοκτόνων και λιπασμάτων. Από την άλλη, η βιώσιμη γεωργία βασίζεται σε φυσικές αρχές όπως η βιοποικιλότητα και η κομποστοποίηση για την παραγωγή υγιεινών, άφθονων τροφίμων. Εξαλείφοντας τη χρήση συνθετικών φυτοφαρμάκων, μπορούμε να μειώσουμε αρκετούς κινδύνους για την υγεία των παραγωγών και των τελικών χρηστών, που σχετίζονται με τη μακροχρόνια έκθεση σε φυτοφάρμακα. Η πρωτοβουλία «Υγεία σε όλες τις πολιτικές» (HiAP) αφορά την ολοκληρωμένη διακυβέρνηση για την προώθηση της υγείας και των δίκαιων στόχων, επιτυγχάνοντας παράλληλα αμοιβαία επωφελή αποτελέσματα για τους συνεργαζόμενους τομείς. Επιπλέον, ο ΠΟΥ ξεκίνησε την Πρωτοβουλία «Μία Υγεία» για την ενοποίηση των προσπαθειών για την υγεία των ανθρώπων, των ζώων και του περιβάλλοντος σε ολόκληρο τον Οργανισμό και πιο πρόσφατα έχει δοθεί έμφαση σε έναν αποκατεστημένο και ασφαλή φυσικό κόσμο για όλη τη ζωή στο πλαίσιο της οικονομίας της ευημερίας. Ο δημόσιος και ο ιδιωτικός τομέας θα πρέπει επίσης να καταβάλουν πολύ περισσότερες προσπάθειες στην έρευνα, την ανάπτυξη προϊόντων, δοκιμές και καταχώριση προϊόντων και εφαρμογή στρατηγικών χρήσης φυτοφαρμάκων. Θα πρέπει επίσης να υποστηρίξουν τη δημόσια εκπαίδευση σχετικά με τα φυτοφάρμακα. Αυτό περιλαμβάνει κυβερνητικές και μη κυβερνητικές οργανώσεις (ΜΚΟ) και κατασκευαστές. Έμφαση σε αυτές τις πτυχές έχει επίσης δοθεί στις ευρωπαϊκές πολιτικές, και ως μέρος των πολιτικών της Ευρωπαϊκής Επιτροπής, κλιμακωτά στις εθνικές πολιτικές σε όλα τα κράτη μέλη, συμπεριλαμβανομένης της Ελλάδας.

Η Κρήτη είναι το πέμπτο μεγαλύτερο νησί της Μεσογείου και αντιπροσωπεύει το νοτιότερο σημείο της Ευρώπης. Ως το νοτιότερο σημείο της Ευρώπης, το νησί απολαμβάνει ένα ήπιο και ηλιόλουστο κλίμα που έχει βοηθήσει να μετατραπεί η Κρήτη σε σημαντικό γεωργικό παραγωγό και ταυτόχρονα σε κορυφαίο τουριστικό προορισμό. Πράγματι, το νησί έχει γνωρίσει μια άνθηση του τουρισμού τα τελευταία χρόνια, δεδομένων των παραλιών του και μιας πλούσιας πολιτιστικής ιστορίας.

Οι επιχειρήσεις έχουν την ικανότητα να λαμβάνουν αποφάσεις που μπορούν να επηρεάσουν τη συμπεριφορά τους και να έχουν αντίκτυπο στην κοινωνία και το περιβάλλον.

Ο κύριος στόχος αυτής της διατριβής είναι να διερευνήσει το βαθμό στον οποίο οι πρωτοβουλίες και οι συμπράξεις του ιδιωτικού τομέα μπορούν να συμβάλουν σε ευρύτερες προτεραιότητες δημόσιας υγείας και τελικά στον ΣΒΑ 3 των Ηνωμένων Εθνών.

Μεθοδολογία: Χρησιμοποιήθηκε μια διττή προσέγγιση για την εξέταση του ευρύτερου θέματος. Πρώτον, πραγματοποιήθηκε βιβλιογραφική ανασκόπηση για να ενημερωθεί η επιλογή των περιπτώσιολογικών μελετών και να αξιολογηθεί η σχέση μεταξύ της αειφόρου γεωργίας και της μείωσης των κινδύνων για την υγεία, ιδίως στο πλαίσιο της εξάλειψης των φυτοφαρμάκων. Δεύτερον, επιλέχθηκε μια περιπτώσιολογική μελέτη για ανάλυση προκειμένου να προσδιοριστεί σε ποιο βαθμό η ατζέντα των ΣΒΑ 2030 είχε επηρεάσει την ανάπτυξή της και τη σημασία της εφαρμογής της όσον αφορά τον τρόπο με τον οποίο οι προσπάθειες του ιδιωτικού τομέα στη βιώσιμη γεωργία μπορούν να συμβάλουν στην επίτευξη των ΣΒΑ, και ιδίως του ΣΒΑ3, για την υποστήριξη των προτεραιοτήτων στον τομέα της δημόσιας υγείας. Η ανάλυση της μελέτης περίπτωσης βασίστηκε στα βασικά θέματα που προέκυψαν από τη θεματική ανάλυση. Οι εκθέσεις βιωσιμότητας και το υλικό που είναι διαθέσιμο στην ιστοσελίδα του οργανισμού χρησιμοποιήθηκαν για να διαπιστωθεί ο βαθμός στον οποίο οι διάφορες προσπάθειες που εντοπίστηκαν συνέβαλαν στη βιώσιμη ανάπτυξη. Πιο συγκεκριμένα, ο τρόπος μέτρησης και παρακολούθησης των πρωτοβουλιών και των πρακτικών και ο βαθμός στον οποίο οι βασικοί δείκτες επιδόσεων (ΒΔΕ) ήταν συναφείς για την επαρκή αποτύπωση της προόδου και του συνολικού αντίκτυπου. Από αυτές τις προσπάθειες 3 πρωτοβουλίες προσδιορίστηκαν ως επιλέξιμες όσον αφορά την υποστήριξη διατομεακών συνεργασιών και ανθρώπινης υγείας και ευημερίας, με επίκεντρο τη βιώσιμη γεωργία, δηλαδή το Phāea Farmers, τη βιώσιμη διαχείριση του τοπίου και το Plan bee.

Αποτελέσματα: Η βιβλιογραφική ανασκόπηση έδειξε ότι τα βασικά αναδυόμενα θέματα ήταν η σημασία της χρήσης γης, η υπεύθυνη χρήση φυτοφαρμάκων στη γεωργία και οι ΣΒΑ, η σημασία των διατομεακών συνεργασιών, ο ΣΒΑ3 και η βιώσιμη γεωργία. Η εξέταση των φυτοφαρμάκων θεωρήθηκε εξαιρετικά σημαντικό θέμα, καθώς ο χειρισμός και ο ψεκασμός στις γεωργικές εκμεταλλεύσεις οδηγούν σε πολλούς θανάτους εκτός από τις βραχυπρόθεσμες και μακροπρόθεσμες ασθένειες που προκαλούνται από την έκθεση σε φυτοφάρμακα. Συγκεκριμένα, η έκθεση σε φυτοφάρμακα συνδέεται με ασθένειες όπως ο Καρκίνος, το Άσθμα, ο Διαβήτης, η νόσος του Πάρκινσον, η Λευχαιμία. Η ανάλυση της μελέτης περίπτωσης έδειξε ότι παρόλο που οι πρωτοβουλίες ξεκίνησαν ακριβώς πριν από την πανδημία του κορονοϊού (COVID-19), όχι μόνο διατηρήθηκαν, αλλά η ανάκτηση της δυναμικής αυξήθηκε σημαντικά το 2021 και το 2022, δείχνοντας ότι έχουν δυνατότητες να αναπτυχθούν ακόμη περισσότερο, σύμφωνα με τα στοιχεία που παρείχε η Επιτροπή Βιωσιμότητας του Phāea Resorts. Οι πρωτοβουλίες που αναλύθηκαν δείχνουν ότι οι στρατηγικές βιώσιμης ανάπτυξης που βασίζονται στη βιώσιμη γεωργία και διατροφή είναι άρρηκτα συνδεδεμένες με την ανθρώπινη και πλανητική υγεία, καθώς και με τον ΣΒΑ3, και όταν αναπτύσσονται και αναπτύσσονται συστηματικά μπορούν να συμβάλουν ουσιαστικά στην προαγωγή της υγείας και της ευημερίας. Επιπλέον, παρουσιάζουν μια ανοδική τάση που τις καθιστά βιώσιμες και βιώσιμες όχι μόνο από κοινωνική και περιβαλλοντική άποψη αλλά και από οικονομική άποψη, συμβάλλοντας σε μια

ευρύτερη οικονομία ευημερίας, διευκολύνοντας τόσο την αποκατάσταση της φύσης όσο και την απελευθέρωση πόρων που μπορούν να επενδυθούν περαιτέρω για τη στήριξή τους και τη συνέχιση της επέκτασής τους.

Συμπεράσματα: Παρά την εκτεταμένη ερευνητική βάση για τις βλάβες των φυτοφαρμάκων, δηλαδή υπάρχουν πολυάριθμοι κίνδυνοι για την υγεία που συνδέονται με τα φυτοφάρμακα και μια μεγάλη βάση τεκμηρίωσης εδώ και δεκαετίες, οι συστηματικές προσπάθειες για την εξάλειψή τους παραμένουν κατακερματισμένες, ενώ οι τεκμηριωμένες πρωτοβουλίες του ιδιωτικού τομέα παραμένουν κατακερματισμένες, αντιπροσωπεύοντας μεμονωμένες περιπτώσεις. Όσον αφορά τον ΣΒΑ3, οι κίνδυνοι για την υγεία συνδέονται πλήρως με τη χρήση φυτοφαρμάκων στη συμβατική γεωργία και την ευημερία των ανθρώπων, αλλά και με όλες τις πτυχές της βιώσιμης γεωργίας, όπως η υγεία του νερού και του εδάφους. Η ισχυρή δέσμευση της διοίκησης για στρατηγικές βιώσιμης ανάπτυξης και η ευθυγράμμιση των δεσμεύσεων βιωσιμότητας του οργανισμού με τις στρατηγικές τακτικές που υιοθετούνται, φαίνεται να είναι βασικοί παράγοντες επιτυχίας για την ανάπτυξη και την απόδοση των πρωτοβουλιών βιώσιμης ανάπτυξης. Οι δράσεις των ΣΒΑ μπορούν να υποστηριχθούν από πρωτοβουλίες του ιδιωτικού τομέα, ωστόσο, η μέτρηση και η παρακολούθηση των αντίστοιχων ΒΔΕ είναι ως επί το πλείστον ανεπαρκής. Οι περισσότερες πρωτοβουλίες δεν ευθυγραμμίζονται με τους ΣΒΑ και ο αντίκτυπός τους δεν μελετάται συστηματικά όσον αφορά την υποβολή εκθέσεων σχετικά με ευρέως αποδεκτούς δείκτες. Επιπλέον, οι πολιτικές των κρατών μελών φαίνεται να στερούνται συγκεκριμένων κινήτρων και στήριξης για συστηματικές διατομεακές εταιρικές σχέσεις προς αυτή την κατεύθυνση, γεγονός που απαιτεί επείγουσα επανεξέταση των πολιτικών, των κινήτρων και των πρακτικών.

Λέξεις κλειδιά: βιώσιμη γεωργία, στόχοι βιώσιμης ανάπτυξης, δημόσια υγεία, υγεία του πλανήτη.

Abstract

Title: A study on the contribution of private sector initiatives and partnerships towards broader public health priorities and towards meeting Sustainable Development Goal 3 of the United Nations

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Date: January 2023

Background: The 17 Sustainable Development Goals (SDGs) included in the 2030 Agenda represent an urgent call to action for all nations to form a global partnership with a shared language, aligned strategies for improving health, education, reducing inequality, and promoting economic growth while ensuring environmental sustainability and taking effective action to combat climate change. One of the most universal Sustainable Development Goals is SDG3 to "Ensure healthy lives and promote wellbeing for all at all ages". The primary aims of SDG3 are health and wellbeing, but it also acts as a cross-cutting priority that is connected to all other goals that support people's advancement in a range of social, economic, and productive realms. The definition of "health" goes beyond merely the absence of disease. Health as well as social dynamics of social organization, lifestyles, and consumption patterns are influenced by the biophysical environment. Conventional agriculture relies on chemical intervention to fight pests and weeds and to provide plant nutrition. This means use of synthetic pesticides, herbicides, and fertilizers. On the other hand, sustainable agriculture relies on natural principles like biodiversity and composting to produce healthy, abundant food. By eliminating the use of synthetic pesticides, we can reduce several health risks to the producers and end-users, related to the long-term exposure to pesticides. The Health in All Policies (HiAP) initiative is about integrated governance to advance health and equitable aims while also achieving mutually beneficial results for partnering sectors. Moreover, WHO started the One Health Initiative to unify efforts on human, animal, and environmental health throughout the Organization, and more recently emphasis has been placed on a restored and safe natural world for all life in the context of wellbeing economy. The public and private sectors should also put much more effort into research, product development, product testing and registration, and implementation of pesticide use strategies. They should also support public education regarding pesticides. This includes governmental and non-governmental organizations (NGOs) and manufacturers alike. Emphasis on these aspects has also been placed in European policies, and as part of the European Commission's policies, cascading down to national policies across Member-States, including Greece.

Crete is the fifth largest island in the Mediterranean and represents the southernmost point of Europe. As the southernmost point of Europe, the island enjoys a mild and sunny climate that has helped turn Crete into a major agricultural producer and at the same time a top tourism destination. Indeed, the island has seen a boom in tourism in recent years given its beaches and a rich cultural history.

Businesses have the ability to make decisions that can influence their behaviour and have an impact on society and environment.

The main objective of this thesis is to investigate the extent to which private sector initiatives and partnerships can contribute to broader public health priorities and ultimately to the United Nations SDG 3.

Methods: A two-prong approach was utilised to examine the broader subject. First, a literature review was conducted to inform the choice of case studies and to evaluate the relationship between sustainable agriculture and the reduction of health hazards, particularly in the context of pesticides elimination. Second, a case study was chosen for analysis to determine to what extent the SDG 2030 agenda had influenced its development and the relevance of its implementation in terms of how private sector efforts in sustainable agriculture can contribute to meeting SDGs, and in particular SDG3, in support of public health priorities. The

case study's analysis was based on the key themes that emerged from the thematic analysis. Sustainability reports and material available in the organisation's website was utilised to establish the extent to which the several efforts identified were contributing towards sustainable development. More specifically, the way initiatives and practices were measured and monitored and the extent to which Key Performance Indicators (KPIs) were relevant to adequately capture progress and overall impact. From these efforts 3 initiatives were identified as eligible in terms of supporting cross-sectoral collaborations and human health and wellbeing, focused on sustainable agriculture i.e., Phāea farmers, Sustainable landscape management and Plan bee.

Results: Literature review indicated that the key emerging themes were the importance of land use, responsible use of pesticides in agriculture and SDGs, importance of cross-sectoral collaborations, SDG3 and sustainable agriculture. Considering pesticides was deemed an extremely relevant topic, as handling and spraying on farms results in many deaths in addition to the short- and long-term ailments brought on by exposure to pesticides. Specifically, exposure to pesticides is linked with diseases like Cancer, Asthma, Diabetes, Parkinson's disease, Leukaemia. The Case study analysis showed that although the initiatives started right before the coronavirus (COVID-19) pandemic, they were not only sustained, but regaining momentum grew substantially in 2021 and 2022, showing that have potentials to grow even more, according to the data provided by Phāea Resorts' Sustainability Committee. The initiatives that were analysed show that sustainable development strategies based on sustainable agriculture and nutrition are inextricably linked with human and planetary health as well as SDG3, and when developed and deployed systematically they can contribute substantially towards promoting health and well-being. Furthermore, they present an upward trend which makes them durable and sustainable not only from the social and environmental aspect but from the economic aspect as well, contributing to a broader wellbeing economy, facilitating both nature restoration and freeing resources that can further be invested to support them, and to continue expanding them.

Conclusion: Despite the extensive research base into the harms of pesticides, i.e., there are numerous health hazards associated with pesticides and a large evidence base for decades, systematic efforts to eliminate them remain fragmented, whereas evidence-informed private sector initiatives remain fragmented representing isolated cases. In terms of SDG3, health risks are completely linked with the use of pesticides in conventional agriculture and wellbeing of people but also with all the aspects of sustainable agriculture like water and soil health. The strong management commitment on sustainable development strategies and the alignment of organization's sustainability commitments with the strategic tactics adopted, seem to be key success factors for the development and the performance of sustainable development initiatives. SDGs actions can be supported by private sector initiatives, however, the measurement and monitoring of the respective KPIs is mostly inadequate. Most initiatives lack alignment with the SDGs and their impact is not studied systematically in terms of reporting on broadly accepted indicators. Additionally Member-State policies appear to be lacking concrete incentivisation and support for systematic cross-sectoral partnerships to this direction, necessitating an urgent re-examination of policies, incentives and practices.

Keywords: sustainable agriculture, sustainable development goals, public health, planetary health.

Introduction

1. Key concepts and definitions

1.1 Sustainable Development and Sustainability

The idea of linking social, environmental, and economic issues started to emerge and develop during the United Nations (UN) International Development Strategy for the 2nd UN Development Decade and the UN Conference on the Human Environment (Howes, 2017). The goal of development is to increase opportunities for everyone to live better lives, to achieve a more equitable distribution of income and wealth for promoting social justice and production efficiency, to significantly increase employment levels, to increase income security, to improve and expand facilities for social welfare, housing, health, and education, and to protect the environment. (United Nations, "International Development Strategy for the 2nd United Nations Development, Decade", 1970)

The term "sustainable development" was introduced in the context of the report generated for the World Conservation Strategy and World Business Council for Sustainable Development. The report influenced "Our Common Future," also known as the "Brundtland Report" (1987), laying the foundations for defining and contextualising sustainable development. Arguing that for development to be sustainable it also needs to support conservation rather than hinder it, it defines sustainable development as a type of improvement that encounters the requirements of the present without endangering the ability of the future generations to meet their requirements (International Union for Conservation of Nature and Natural Resources, ed. World Conservation Strategy: Living Resource Conservation for Sustainable Development. (IUCN-UNEP-WWF, 1980).

The protection of the environment has become one of the most significant concerns worldwide, requiring increased awareness and cross-sectoral collaboration. Even though environmentalists and scientists have identified the size and the importance of issues regarding the environment, it is only in the last ten years that the media has started to emphasize the relevance of concerted efforts to ensure events such as the Bhopal Tragedy in India, the emergence of the Minamata disease in Japan are avoided with integrated policies encompassing global public health priorities to effectively address the greenhouse effect, global warming, deforestation and waste generation. Thus, the creation of a sustainable environment must be applied like a responsive plan (Khalil, 2011).

To better understand the concept of environmental sustainability, it is necessary to revisit the concept sustainability.

Sustainable development necessitates the development and adoption of an integrated approach taking into consideration environmental concerns along with economic development. In 1987, the UN Brundtland Commission (Brundtland, 1987) defined sustainability as the ability of future generations to meet their own demands without jeopardizing the ability to meet those of the present (United Nations, Sustainability, 2022), highlighting the need to develop concrete actions to ensure development today does not compromise the future of people or adversely impact future generations. Succinctly put, given how important the environment is in terms of urban and rural public health, and the implications of the environment for individual health and wellbeing too, environmental sustainability is the long-term maintenance of the practices and the factors which contribute to a quality environment representing a solid investment for the future. In 1990, one of the earliest pioneers of ecological sustainability, made the following proposal for pollution: The assimilative capacity of the environment should not be exceeded by the rates of waste generation from projects (Daly, 1990). So, environmental sustainability is the relational ratio between renewable resource harvest, pollution creation and non-renewable resource depletion that can be

continued forever. In the cases when they are not capable of being continued forever then they are not sustainable (Sekar, 2017).

The principle of the three pillars of sustainability considers that the complete sustainability problem can be solved only if all the three pillars (social sustainability, environmental sustainability, economic sustainability) are sustainable (Sekar, 2017).

- **Social sustainability.** Nowadays, the environment has become an enormous limitation on human progress. When there is hunger, people focus on food and not on environment awareness. Poverty eradication is the main goal of sustainable development, so in the future it must come from redistribution and from qualitative development.
- **Economic sustainability.** It entails the stability of economic capital and sets the way for traders to take a detailed look into the environment. Since the Middle Ages, economic sustainability refers to the ability of traders to know the amount of money that they can spend without minimizing their capability to continue trading.
- **Environment sustainability.** People must learn and get used to living by the limitations of the biophysical environment. Environment sustainability is necessary for humanity, and it was initiated by variable social concerns. So, environmental sustainability attempts to ameliorate human welfare by protecting the sources of raw materials that are used for human needs and ensuring that sinks for human wastes are not exceeded (Sekar, 2017).

Sustainable development is a broader idea than merely sustainability. Sustainable development is a process towards a new normative horizon and implies a paradigm shift from a development based on inequity and overexploitation of natural resources and environmental services to one that requires new forms of responsibility, solidarity, and accountability. **Sustainability** is frequently understood as properties of, or indicators of, program implementation. (WCED, 1987; Olsen, 2007; Shiva, 2005)

1.2 The 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs)

In 2015, all the UN Member-States adopted the Agenda 2030 for Sustainable Development (United Nations, 2015), which provides a shared design plan for peace and prosperity for people and the planet today and in the future. This Agenda is a set of goals for people, planet and economic development. It also aims to promote universal peace within a greater context of freedom. It is recognized that ending poverty in all its forms and dimensions, including severe poverty, is the most pressing global challenge and a prerequisite for long-term development (Sullivan, 2003; Weiland S. H., 2021). At its heart are the 17 Sustainable Development Goals (SDGs), (*Figure 1*) which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests. (United Nations, 2015)

The 2030 Agenda includes 17 Sustainable Development Goals (SDGs) representing an urgent call for action by all countries to come together in a global partnership with common language and aligned strategies on health, education, inequality reduction and towards economic growth whilst ensuring environmental sustainability and adequate measures to tackle climate change. Implementation and the progress towards meeting the 17 SDGs is monitored and measured via an extensive reporting system for 169 targets across these 17 SDGs, these being used as a global reference point for the devolution to sustainability (UN, SDGs, 2022) They strike a balance between the social, economic and ecological components of sustainable development, and for the first time, they put poverty fight and sustainable development on the same agenda.

The Agenda accepts that varied issues such as poverty, health, hunger, education, environmental degradation, gender equality, etc. are inextricably linked and can, therefore, only be adequately addressed when examined and tackled in a comprehensively aligned manner (Sullivan, 2003; Weiland S. H., 2021)



Figure 1 The 17 Sustainable Development Goals (United Nations, 2015)

1.3 SDGs Indicator Framework

In 2015, during its forty-sixth session, the UN's Statistical Commission created the Inter-agency and Expert Group on SDG Indicators (IAEG-SDGs), with Member-States, and regional and international agencies as observers. The IAEG-SDGs was tasked to develop and implement the global indicator framework for the SDGs and their targets. This the Global Indicator Framework for the SDGs was approved at the forty-eighth session of the UN's Statistical Commission's (United Nations, 2017)The UN General Assembly, reaffirming its resolution (A/RES/71/313), by which the 2030 Agenda for Sustainable Development had been adopted. It also reaffirmed that the 2030 Agenda for Sustainable Development is a plan of action for people, planet, and prosperity. It is people-centered, universal, and transformative. Its SDGs and targets are integrated and indivisible and balance the three dimensions of sustainable development (economic, social, and environmental) (United Nations, 2015). Critically, the link to health and wellbeing was made across the SDGs, with SDG3 capturing the overarching themes for health wellbeing.

1.4 SDG3 and Global Public Health

SDG3 “Ensure healthy lives and promoting well-being for all at all ages” is one of the most transversal goals. Health and wellbeing are the core objectives of SDG3, but it also serves as a cross-cutting priority interlinked to all other targets that help individuals advance in a variety of social, economic, and productive spheres (Guegan, 2018).

Health is a precondition, indicator and outcome of sustainable development. Like all the SDGs, Goal 3 is interwoven throughout the Agenda (Figure 2), with its targets directly linking to targets in other goals including 2.2 (end all forms of malnutrition) 4.1 (free, equitable and good-quality secondary education), 4.2 (good-quality early childhood development), 4.7 (knowledge and skills for sustainable development), 5.2 (eliminate all forms of violence against women and girls in the public and private spheres), 5.3 (eliminate all harmful practices, including female genital mutilation), 5.6 (universal access to sexual and reproductive

health and reproductive rights, 6.1 (access to drinking water), 6.2 (access to sanitation), 7.1 (access to modern energy services), 9.5 (enhance scientific research /increase number of R&D workers), 11.6 (air quality and municipal waste), 13.1 (resilience to natural disasters), and 16.1 (reduce violence and related death rates), among others. These interlinkages confirm that progress in health outcomes will only be achieved with progress in other related sectors, including fiscal and finance policy (e.g. taxing schemes to discourage unhealthy behaviors), nutrition, water and sanitation, air quality, road safety, education, gender equality and the empowerment of all women and girls, migration and peace and security (United Nations, 2022).



Figure 2 SDG 3 and health-related linkages with the other SDGs (WHO, 2017)

1.5 Corporate Social Responsibility (CSR)

During the past five decades scholars have discussed thoroughly the definition of **Corporate Social Responsibility (CSR)**. As a result, a variety of adopted definitions have emerged, by different groups of people and according to their own purposes and interests. One of the early authors who wrote about the definition of CSR is Howard Bowen (1953). Bowen believed that businesses carry a decision-making power that can affect their actions and have an impact on society and that social responsibility aims to act as a mechanism to help businesses and not to be the solution of businesses’ and society’s problems (Isa, 2012). As mentioned before, there are a lot of similar definitions of Corporate Social Responsibility (CSR) but no one is perfect. The basic points of CSR model that is considered to be worthy mentioned in this thesis are the following:

- CSR is considered as a process that deals with handling the stakeholders of a company or an organization ethically or responsibly. “Ethically or responsibly” signifies handling basic stakeholders in a way that is considered acceptable according to the international rules.

- The word “Social” involves financial, economic and environmental responsibility. The basic stakeholders subsist into a firm or an organization and outside of them. The word “Corporate” signifies any private or public organization, or Non-Profit Organization.
- Creating continuously higher and higher standards of sustainable living for peoples in and out of entities, with parallel preservation of the company’s profitability or the organization’s integrity, is the wider aim of social responsibility. The solution is not pursuing profits at any cost, but the way that profits are made.
- CSR is considered as a procedure of achieving sustainable development within society (Hopkins, 2006)

In conclusion, for-profit and not-for-profit organizations are accountable for CSR concerning their impact on natural environment, stakeholders, and society. CSR focalizes on responsibility and transparency of corporate actions including mainly voluntary social, environmental, ethical and economic efforts. The World Business Council for Sustainable Development defines CSR as the incessant commitment of organizations to have an ethical behavior and to contribute to economic development, while meliorating the quality of life of the personnel and their families, the local community and society (Riano, 2019).

1.6 Relation between Corporate Social Responsibility and Sustainability

As mentioned before, CSR can be conceptualized as an international private business **self-regulation** and an application of the broad SDGs in the general context of business. Sustainable development and sustainability are distinct, as the first term is an international public policy initiative that has no direct relation on businesses and the second term is only an instruction that is based on production and consumption which aims to preserve the ecology (Sheehy, 2021).

There are some differences between CSR and sustainability. The main difference is that sustainability is a broad term that can be applied to every activity, actor or thing, but on the other hand CSR can only be applied to businesses. CSR is a legal and moral responsibility, and it designates a specific duty bearer, an actor who is accountable. Furthermore, unlike sustainability, CSR relates solely to activities carried out by businesses and is focused on the outcomes of their operations (Sheehy, 2021)

Furthermore, unlike sustainability, CSR relates solely to activities carried out by businesses and is focused on the outcomes of their operations. Indeed, any organization, activity, or thing can theoretically be classified as either sustainable or unsustainable. While the term sustainability is useful for combining activities, approaches or actors, it lacks the detail needed to help with discussions about businesses and their operations. Finally, CSR is limited by the incentive for profit in terms of business and by the law. However, it makes a significant contribution to the global sustainability agenda as an organizational policy based on international principles, it is in no way a substitute for the work of government and non-profit organizations (NPOs) and non-governmental organizations (NGOs) (Sheehy, 2021)

1.7 Public health, the environment and planetary health

The annual World Health Day (April 2022) had as its theme "Our planet, our health". Human health and the future health of the earth are inextricably intertwined. If excessive consumption and reliance on fossil fuels are not reduced, it is projected that 13 million fatalities per year are linked to avoidable environmental factors. (WHO, World Health Day, 2022) Also, there is evidence of the harmful effects of pesticides on human health and the environment, and it is widely recognized that excessive pesticide application can make

agricultural systems more susceptible to insect outbreaks and ensure a continuous reliance on their use. (Jepson et al, 2020)

It is time for educators, policymakers, and others to take action to limit the use of pesticides while also preserving the ability to manage pests sustainably. Enough is known about the health and environmental effects of pesticides, as well as the inadequacy of relying solely on regulatory mechanisms. (Jepson et al, 2020)

The potential synergies and financial savings between sustainability and health are widely documented, and public health plays a significant role in creating a sustainable future. For instance, active transportation interventions can boost physical activity levels and mental health while lowering energy use, greenhouse gas emissions, and air pollution. Helping food producers and consumers make the shift to more environmentally friendly diets can lower the risk of cardiovascular disease and unhealthy weight while reducing greenhouse gas emissions and land- and water-use. Though there are numerous obstacles standing in the way of achieving the twin objectives of universal health coverage and the shift to a sustainable society, some of them include a lack of political will to engage in prevention and disparities in access, power, and money. (The Lancet, 2022)

1.8 Socio-ecological understanding of health and the duality of health

The term "health" has a broader meaning than simply the absence of sickness. The biophysical environment affects health as well as social dynamics of social organization, lifestyles, and consumption patterns. Therefore, a person's unique qualities and behaviours, as well as the social and economic system, biophysical environment, and other factors, all play a role in determining their health. A paradigm shift toward a socio-ecological understanding of health that emphasizes strength, resilience, and assets to health is implied by health promotion, which moves away from the bio-medical approach that views health as the absence of sickness (Hancock, 1993; Hancock, 1999; Kickbusch, 2010; WHO, 1986)

Furthermore, understanding and creating a conceptual framework for the fusion of health promotion and sustainable development strategies is made possible by the concept of duality (*Figure 3*). The following graphic demonstrates how thinking in terms of a duality between sustainability and health has an impact on how we perceive how environmental, social, and economic development interact. (Bente Kjærgård, 2014)

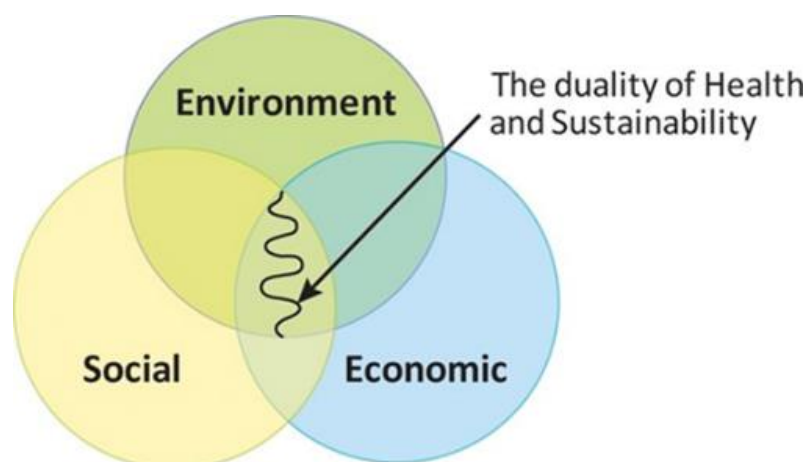


Figure 3 The duality of Health and Sustainability (Bente Kjærgård, 2014)

1.9 European Union, Sustainable Development, and the SDGs

1.9.1 The European Union and the SDGs

In the European Union (EU), the European Commission has initiated an effort so that all major projects, sectoral programs, and initiatives have all mainstreamed sustainable development objectives, which have long been at the centre of European policymaking and are firmly rooted in the European Treaties. Global attempts to achieve sustainable development have received a fresh impetus as a result of the UN's adoption of the 2030 Agenda for Sustainable Development and its 17 SDGs in September 2015. According to "The European Green Deal" and the staff working document "Delivering on the UN's SDGs — A comprehensive approach" the EU has fully committed to carrying out the 2030 Agenda and its implementation. (Eurostat, 2018)

1.9.2. The case of Greece

Greece's ideals of environmental preservation are ingrained in the constitution, and it was one of the first nations in the world to adopt a framework law on environmental protection (Environment, 1986)

Eight nationally agreed-upon goals for SDG action served as the foundation for Greece's 2018 Voluntary National Review (VNR), the reporting mechanism by which UN Member-States report on progress towards meeting the SDGs. (Bruckner et al, 2018) The sixth national goal is to strengthen the preservation and sustainable management of natural resources as a foundation for social prosperity and the transition to a low-carbon economy (European Environment Agency, 2020).

SDGs 6, 7, 11, 12, 13, 14 and 15 that have an environmental component are those given priority based on the idea that Greece's natural environment not only contributes to the nation's identity but also serves as a significant resource for development. As a result, environmental protection is seen as the cornerstone for ensuring sustainable economic growth. This can be done, for instance, through quality travel and the production of high-quality food and agricultural products, which are the two mainstays of the Greek economy and depend on the state of the environment. Additionally, because it protects residents' access to high-quality environmental and ecosystem services as well as their health, this is the cornerstone of social well-being (European Environment Agency, 2020).

The World Tourism Organization (UNWTO) is the UN agency responsible for the promotion of responsible, sustainable and universally accessible tourism (UN, 2022).

Since its establishment in 1975, the UNWTO has grown to include 156 member States, six associate members, and 500 affiliate members. Since 1975, Greece has been a full member of the UNWTO and has been re-elected to serve as Chair of the UNWTO Commission for Europe for the 2021-2023 period, highlighting the country's commitment to international cooperation and to sustainable and responsible tourism.

1.10 Sustainable Agriculture

An agriculture that can consistently produce food and other resources for a population that is expanding over the world is essential to human existence and, by extension, to any human activity. Climate change, a high rate of biodiversity loss, land degradation due to soil erosion, compaction, salinization, and pollution, the depletion and pollution of water resources, rising production costs, an ever-declining number of farms, and, associated with that, poverty and a decline in the rural population are just a few of the issues that pose a threat to agriculture's ability to meet human needs now and in the future. In addition to having

to deal with these concerns, agriculture is a key contributor to them all due to the way it has been performed over the past few decades (Velten, 2015).

Since the Brundtland Report was published in 1987 (Brundtland, 1987), the notion of sustainable agriculture has become more well-known in response to these difficulties, along with the general notion of sustainable development.

The Health in All Policies (HiAP) initiative emphasizes that policies that guide actions outside of the health sector, not merely through health sector programs, have a substantial impact on population health. By focusing on policies that affect areas including transportation, housing and urban planning, the environment, education, agriculture, finance, taxation, and economic development, a HiAP strategy seeks to improve these areas' support for public health and health equality. HiAP is about integrated governance to advance health and equitable aims while also achieving mutually beneficial results for partnering sectors. (Kimmo Leppo, 2013)

1.11 Coordinated Efforts

The relationship between public health priorities and sustainability has been the subject of debate for many years, both under the direction of the WHO and in larger scientific communities. According to some, promoting health requires sustainability—defined as environmental sustainability—as a structural precondition. Additionally, it has been stated that in order to achieve sustainable development, good health must be prioritized (Hancock, 1999; Hancock, 1993; Kickbusch, 2010).

To coordinate efforts on human, animal, and environmental health across the UN structure, WHO established the One Health Initiative, an approach to the pursuit of public health and well-being that recognizes the interconnections between people, animals, plants, and their shared environment. (Hoffmann, 2022) If governments make the political choice to follow a One Health approach as part of broader systemic transformations to end the triple planetary crisis of climate change, nature and biodiversity loss, and pollution and waste, we can heal the planet and ourselves (Kickbusch I., 2022). As part of the One Health Quadripartite, the WHO collaborates with the Food and Agriculture Organization of the UN (FAO), the UN's Environment Programme (UNEP), and the World Organization for Animal Health (WOAH).

The World Tourism Organization (UNWTO) is the UN organization in charge of promoting ethical, environmentally sound, and widely accessible travel. The UNWTO now has 156 member States, six associate members, and 500 affiliate members since it was founded in 1975. Greece has been a full member of the UNWTO since 1975, and its re-election to chair the UNWTO Commission for Europe for the years 2021–2023 highlights the nation's dedication to both international cooperation and ethical and sustainable travel.

1.12 Aim and Objectives

As international policy provides both a framework and a point of reference, as for example via UN resolutions and other policy documents, for the development of regional and local strategies and activities. Utilizing this prism in terms of examining the relevance of these efforts for public health, cross-sectoral collaboration progress towards SDG3, the main objective of this thesis is **to investigate the extent to which private sector initiatives and partnerships can contribute towards addressing broader public health priorities and ultimately contribute to the UN's SDG3**. For this purpose, the research work was developed around two research questions (RQs) that were formulated:

RQ1. Does sustainable agriculture contribute towards broader public health priorities and how?

RQ2. Do private agricultural initiatives contribute to public health and, ultimately, SDG3?

Given the fact that responsible pesticide use is one of the prerequisites of sustainable agriculture, and the pesticides impact on human health has been thoroughly investigated during the past decades (Velten, 2015), the method selected to examine the evidence base in terms of reports on the impact of sustainable agriculture to public health (RQ1) was literature review with a focus on pesticide elimination. This review would also serve to inform a thematic analysis as a tool to identify a case study in the region of Crete in Greece, in terms of cross-sectoral initiatives.

More specifically, as private sector has been recognized as an important contributor for achieving SDGs and cross sectoral collaborations has proven to be essential, a thematic analysis of three private sector initiatives focused on sustainable agriculture, adopted by a Group of 5-star hotels in Crete in collaboration with agronomists, in order to assess the extent to which private sector initiatives contribute to public health and SDG3 (RQ2).

2. Methodology

The overarching topic was approached in a two-prong manner. First, the connection of sustainable agriculture to the decrease of health risks was examined, particularly in the context of eliminating the use of pesticides, by **literature review** and also to inform the case study selection. Secondly, the **thematic analysis** was performed and on the basis of the key themes emerging from the literature review, a **case study was selected** to analyse the extent to which the SDG 2030 agenda had informed the development of this effort and the relevance of its implementation in terms of how private sector efforts in sustainable agriculture can contribute towards meeting SDGs and in particular SDG3, in support of public health priorities.

2.1 Screening criteria and search strategy

This literature review was conducted in five steps according to the methodological framework for scoping studies (Arksey, 2005) and using a PRISMA flow chart (*Figure 4*) by following the following steps, i.e., identify the research question (as described in Chapter 1), establish selection criteria (exclusion/inclusion), identify relevant articles, select articles according to predefined criteria, extract relevant data, classify the data, summarize and reporting the results. The steps of the review are described in detail below.

The first step of the research process consisted of a literature search and initial screening, using the PubMed Central electronic database. The search strings for the scientific article database were built into an algorithm to query the database. Terms were selected from standardized terminologies (Medical Subject Headings: MeSH) based on Boolean logic (*Table 1*)

sustainability	"sustainability"[All Fields]
sustainable development goal	"sustainable development"[MeSH Terms] OR ("sustainable"[All Fields] AND "development"[All Fields]) OR "sustainable development"[All Fields] OR ("sustainable"[All Fields] AND "development"[All Fields] AND "goal"[All Fields]) OR "sustainable development goal"[All Fields]
agriculture	"agriculture"[MeSH Terms] OR "agriculture"[All Fields]
health	"health"[MeSH Terms] OR "health"[All Fields]
pesticides	"pesticides"[All Fields] OR "pesticides"[MeSH Terms] OR "pesticides"[All Fields]
European Union	"european union"[MeSH Terms] OR ("european"[All Fields] AND "union"[All Fields]) OR "european union"[All Fields]

Table 1 MeSH Terms and Boolean operators for logic caption and algorithm development

((("sustainability"[All Fields] AND ("sustainable development"[MeSH Terms] OR ("sustainable"[All Fields] AND "development"[All Fields]) OR "sustainable development"[All Fields] OR ("sustainable"[All Fields] AND "development"[All Fields] AND "goal"[All Fields]) OR "sustainable development goal"[All Fields])) AND ("agriculture"[MeSH Terms] OR "agriculture"[All Fields])) AND ("health"[MeSH Terms] OR "health"[All Fields])) AND ("pesticides"[All Fields] OR "pesticides"[MeSH Terms] OR "pesticides"[All Fields])) AND ("european union"[MeSH Terms] OR ("european"[All Fields] AND "union"[All Fields]) OR "european union"[All Fields]) AND ("2016/01/01"[PubDate] : "2021/12/31"[PubDate])

Taking into account that one of the fundamental principles of sustainable agriculture is the responsible use of pesticides, this study identified, retrieved, and evaluated information from peer-reviewed articles that examined the impact of pesticides in human and planetary health. Search terms employed in database searches included 'sustainable development goal' and 'agriculture' or 'agriculture' and 'health' in combination with 'pesticides' (as per above). All articles included in the review were published between 2016 and 2021, as EU presented its response to the SDGs and the 2030 Agenda on November 2016 and adopted a sustainable development package - Sustainable Development: EU sets out its priorities. (EU, 2016)

Inclusion and exclusion criteria (*Table 2*) were established as follows:

INCLUSION CRITERIA	EXCLUSION CRITERIA
The topic is agricultural practices in relation to public health; there is mention of pesticides and relevance for Europe	Articles that refer solely to other regions outside Europe
There is mention of the 2030 Agenda/SDGs	Articles written in languages other than English
Primary and secondary research, including qualitative and/or quantitative studies	Editorials and perspectives, summaries of workshops and conference abstracts
Articles written in English	
Full-text articles	

Table 2 Inclusion and exclusion criteria

Regarding the criterion “primary and secondary research”, this was independent of the type of research methodology utilized (i.e., inclusion irrespective of whether the methodology was qualitative or quantitative methodology). Some articles that were included in the classification process did not primarily aim to investigate the impact of pesticides in human or planetary health, but some of their data addressed sustainable development issues or policies. Only articles for which the full text was retrievable were included.

The final sample of articles were classified in the following categories, according to relevance and to extract any relevant information:

- 1) Association of pesticides and health risks
- 2) Policy documents
- 3) Private sector reporting
- 4) Sustainable agriculture and environment

The articles classified in the category Association of pesticides and health risks, were included in the literature review analysis.

The analysis of the qualitative data of this thesis was conducted by the method of Thematic Analysis (TA). TA is a method of identifying, analyzing and interpreting meanings within qualitative data (Braun & Clarck, Thematic analysis, 2017). Qualitative approaches are extremely complex and diverse and thematic analysis is considered as a fundamental method for qualitative analysis with the main advantage of the flexibility it offers (Braun & Clarck, 2006). Although the researcher can identify a variety of meanings, he focuses and encodes those that respond to his research questions (Braun & Clarke, 2012).

According to (2006) the thematic analysis follows the following stages:

1. familiarizing oneself with the data,
2. generating codes,
3. constructing themes,
4. reviewing potential themes,
5. defining and naming themes

6. producing the report.

The articles, apart from the ones classified in the association of pesticides and human health, that were classified in the other thematic aspects as per following criteria were used to inform the discussion and the overall context and content of the paper as well as to select the case study.

- The article's includes public health or planetary health
- Practices of sustainable agriculture in terms of the absence of pesticides
- Policy Documents
- Identification of efforts in relation to pesticides
- Private sector initiatives that cascade towards elimination of pesticides
- Reporting on implementation of efforts towards pesticides elimination

2.2 Case study selection

The case study selection was based on the Key emerging themes from the thematic analysis, as per above i.e. private sector initiatives focused in sustainable agriculture that cascade towards elimination of pesticides, supporting cross-sectoral collaborations. The case study of PHAEA Resorts, a Group of 5-star hotels in Crete, in the second part of the thesis aims to demonstrate in practice how after careful consideration of relevant frameworks and policies, businesses can carry out positive strategies and initiatives which can also be beneficial for public health and support SDG3 through strategic partnerships. The evaluation of these is done according to the impact created both on health and in terms of sustainable development.

The empirical results were obtained from two sources. On one hand, the information was collected a content analysis of the website of the headquarters and individual hotels. In the content analysis, we attempt to answers the following issues:

Does the company's website address issues related to sustainability, health and well-being, nutrition and agriculture?

Are there initiatives supporting human and planetary health related with agriculture and nutrition?

Do these initiatives support cross-sectoral synergies?

The impact of a Group of 5-star hotels with more than 200 rooms is significant, so it is certainly justified to investigate in this field.

While analysing the website, the following assessment criteria were observed: the existence of CSR activities, the existence of a climate strategy, the existence of initiatives that support human health and wellbeing through nutrition, initiatives that are related to agriculture, the subsidiary company climate communication, measuring and monitoring of objectives, top management commitment to objectives, the context of the sustainability report.

On the other hand, we acquired more information and Key Performance Indicators for the initiatives as well as the sustainable development strategy of PHAEA Resorts, through collaboration with the organization's Sustainability Committee.

Based on this evaluation the health and well-being-oriented initiatives can be examined in a Cretan Group of 5-star hotels.

3. Results

3.1 Output of the search strategy

From the initial search 543 articles derived, after screening according to the inclusion and exclusion criteria (Table 2). 77 articles were found to be eligible for inclusion on the basis of abstract review. Upon review of the full text retrieved, 32 of these articles were deemed to be eligible for inclusion in the review and the rest were classified as per Table 2 *Eligible articles classification* according to relevance and used to inform the discussion and the overall context and content of this thesis.

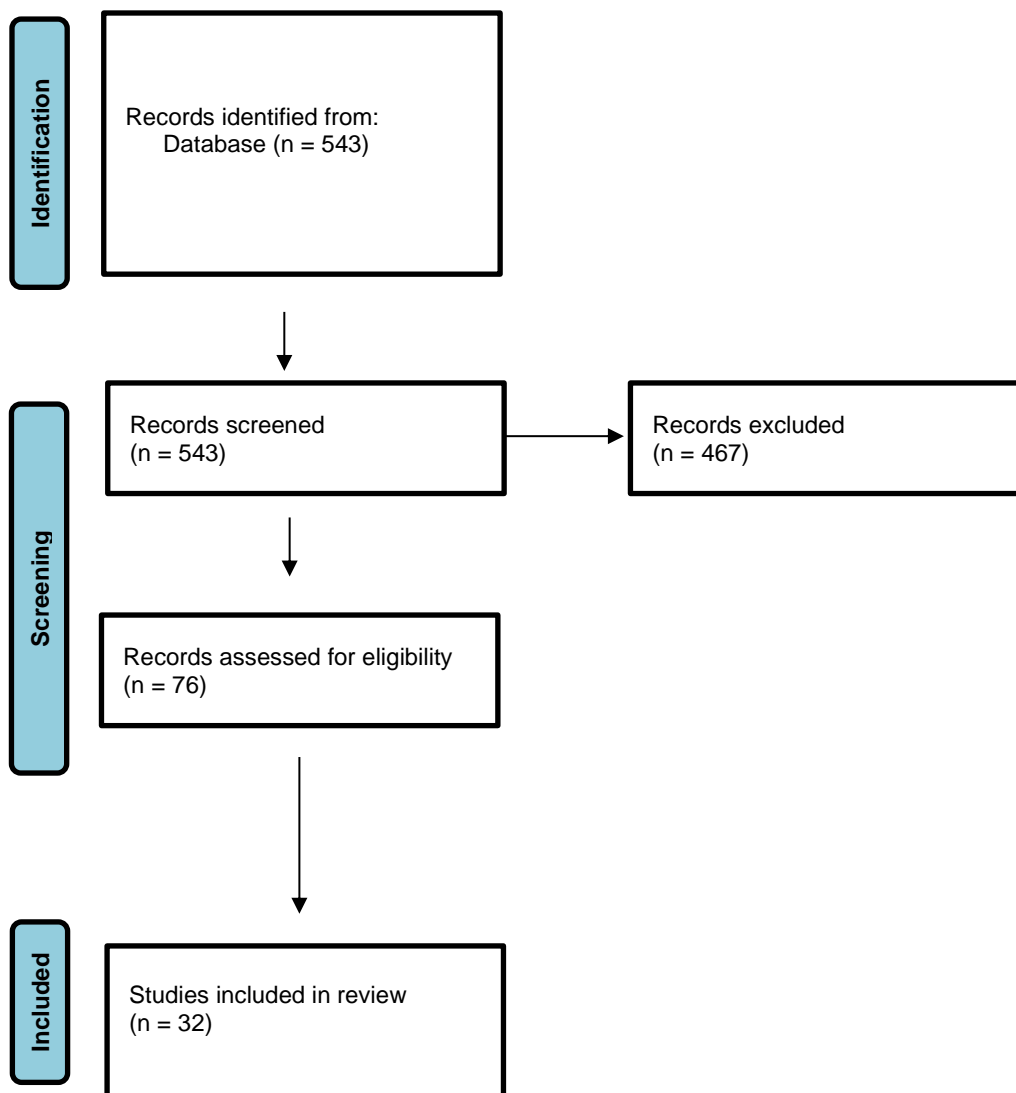


Figure 4 Systematic scoping review flow chart: the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow chart detailing the records identified and screened, the number of full text articles retrieved and assessed for eligibility, and the number of studies included in the review

As per our inclusion and exclusion criteria, 76 articles found to be eligible. 42% of the eligible articles proves the association of pesticides with increased health risks, 37% proves that sustainable agriculture has positive impact on the environment compared to conventional agriculture, 21% of the eligible articles examine the policies and framework development in order to achieve SDGs from the health aspect. Finally, according to our research, there was not found any article related to private sector initiatives that cascade the elimination of pesticides through sustainable agriculture initiatives. (Figure 5)

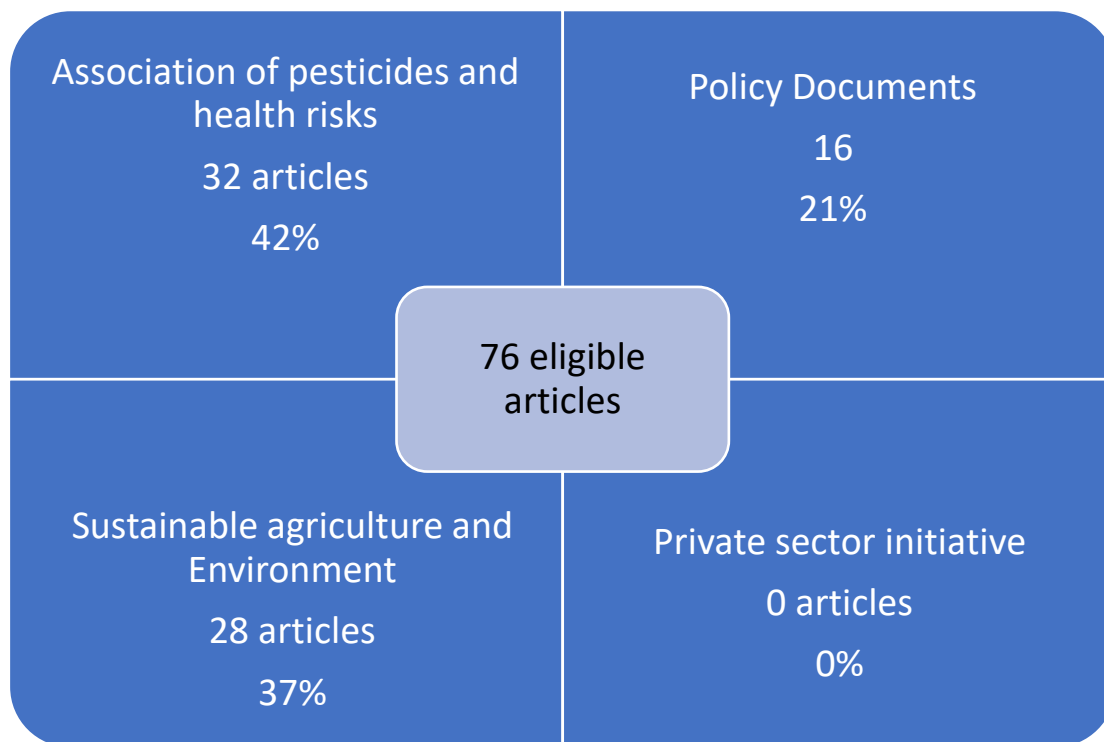


Figure 5 Eligible articles classification

3.1.1 Social-ecological system Framework

The relationship between human health and well-being, biodiversity, ecosystem services, and agriculture has been supported by a growing body of theoretical and empirical research over the past two decades. Even though social-ecological system frameworks (SES) are being used more frequently in integrated approaches to health, scientists and practitioners continue to face significant obstacles to implementing this framework (De Garine-Wichatitsky M, 2021).

A potent strategy to frame sustainable development interventions is to emphasize health as both a necessary desired state of social-ecological systems and an anticipated result of their sustainable functioning. It is expected that the sectoral interventions in ecosystem management, biodiversity conservation, and public and veterinary health will be more closely aligned as a result of this focus on health as a powerful and widely accepted leverage point for collective activities toward sustainable development (De Garine-Wichatitsky M, 2021).

3.1.2 Importance of land use

Human health, well-being and, overall, life on earth depend on land resources. In addition to offering environmental services, land also offers social, cultural, spiritual, and economic advantages that enhance human health and well-being. Food and other essential nutrients, pure water and air, shelter, medications and medicinal compounds, wood, fuel, and fiber, as well as livelihoods, cultural, spiritual, and recreational

enrichment, as well as the regulation of risks associated with natural hazards and diseases, are all vital resources provided by ecosystems. Other advantages are connected to biodiversity, which includes variety within and among ecosystems and species that are crucial to the maintenance of human health and well-being as well as to the functions and services provided by ecosystems (Sena A, 2021).

3.1.3 Responsible use of pesticides in agriculture and SDGs

Pesticides are one of the few poisonous substances that are intentionally put into the environment to kill living things, such as weeds (herbicides), insects (insecticides), fungus (fungicides), and rodents (rodenticides). Despite the fact that the term "pesticide" is frequently misconstrued to just refer to insects, it also includes herbicides, fungicides, and many other substances used to control pests (Kim, 2017)

To minimize potential negative impacts on human health and the environment, it is crucial to increase the precision and accuracy of pesticide quantification combined with enhanced safety profiles. Finding out which chemical formulas or chemical kinds are the best tools for managing pests in an ecological and environmental manner should also be a priority. Therefore, natural bio-control agents such as nematodes, viruses, insects, and beneficial bacteria should be used in agriculture. (Kim, 2017)

The agricultural activities must be conducted with the aim of assisting in the achievement of the SDGs. Agriculture involves and has an impact on both people and the environment. In addition to other unexplained causes of declining human well-being, the indiscriminate use of pesticides in prior decades must have caused other ecological problems (Gandhi, 2021)

3.1.4 Importance of cross-sectoral collaborations

Additionally, both the public and private sectors, including government organizations, non-governmental organizations (NGOs), and manufacturers, should exert much more effort in research, product development, product testing and registration, and implementation of pesticide use strategies, while also supporting public education regarding pesticides. (Kim, 2017)

3.1.5 SDG3 and sustainable agriculture

The SDGs 2 aiming at zero hunger requires food security to meet the needs of all. Keeping the SDG 12 [Responsible Production and consumption] in mind, we should limit the use of agricultural chemicals especially those which pose a threat to sustainability. This will help us achieve SDG 8 [Decent work and economic growth]. We can prevent farmers deaths caused due to the acute toxicities and chronic exposures of many such pesticides or their adjuvants to the producers and end- users. Implementing sustainable agricultural practices will ultimately lead to SDG 3 on good health and well-being for all and improved Life below water and life on Land and [SDG 14 and 15, respectively (Gandhi, 2021)

3.1.6 Pesticides and human health

Exposure to pesticides while handling and spraying on farms results in many deaths in addition to the short- and long-term ailments brought on by exposure to pesticides (Kim, 2017)

The main impact of pesticide uses in human health as they were identified according to literature review are described below:

➤ Cancer

Numerous studies have documented the connection between pesticides and cancer. Results of prospective cohort research involving 57,310 pesticide applicators in the USA showed that bladder cancer is completely connected with two imidazolinone herbicides (imazethapyr and imazaquin). Moreover, bladder cancer and colon cancer were linked with imazethapyr as well (Kim, 2017). One last example of herbicides that used in conventional cultivation and caused harm to humans' health is glyphosate. Glyphosate is a widely used herbicide which has been used since the 1970s, and usage has grown over time. This herbicide can cause dysregulation of huge number of genes, and has been connected with the growth of breast cancer cells and the characteristics of an endocrine disruptor in this kind of hormonal environment (Gandhi, 2021)

➤ Asthma

The symptoms of bronchial hyperreactivity and asthma have been linked to pesticide exposure in a number of clinical and epidemiological studies. Moreover, exposure to pesticides may aggravate asthma by inflaming the airways, suppressing the immune system, or upsetting the body's hormonal balance. Childhood asthma is linked with pesticide exposure while a study conducted by Raanan, Harley et al. (2015) shown that early life exposure to Ops lead to respiratory symptoms (Kim, 2017).

➤ Diabetes

New scientific data suggests that exposure to environmental contaminants may have an impact on diabetes. It is believed that exposure to pesticides, especially organochlorines and their metabolites, increases the likelihood of acquiring type 2 diabetes and associated concomitant conditions. Furthermore, Several contaminants, including PCBs, DDT, DDE, oxychlordane, trans-nonachlor, hexachlorobenzene, and hexachlorocyclohexane, as well as a number of organochlorine pesticides, have been linked to diabetes, according to a systematic review of the literature (Kim, 2017).

➤ Parkinson's disease

According to epidemiological research, pesticide exposure at work may raise the chance of Parkinson's disease (PD). In a population-based case-control study conducted in France (Moisan, Spinosi et al. 2015), 133 cases and 298 controls were used to examine quantitative aspects of occupational pesticide exposure in relation to PD. These researchers discovered a positive association between PD and pesticide exposure in vineyards (OR = 2.56; 95% CI: 1.31, 4.98). Similarly, it was discovered that in the Colorado Medicare Beneficiary Database, USA, the risk of PD increased by 3% for every 1.0 g L1 of pesticide in groundwater (OR = 1.03; 95% CI: 1.02-1.04) (Kim, 2017)

➤ Leukaemia

One of the main causes of acute leukaemia is pesticide exposure. The impacts of pesticide exposure on childhood leukemia have been investigated as well in some earlier studies. Childhood leukaemia was positively correlated with exposures to unidentified household pesticides, insecticides, and herbicides during pregnancy. In a case-control study in Iran, an occupational farmer was at a significantly increased risk of developing acute leukaemia in comparison to other jobs, especially for their children due to exposure to pesticides (Kim, 2017)

➤ Other effects

Most pesticides, including those containing organophosphorous components, have an adverse effect on the male reproductive system by reducing sperm activities (such as counts, motility, viability, and density), inhibiting spermatogenesis, reducing testis weights, damaging sperm DNA, and increasing abnormal sperm morphology. Moreover, exposure to pesticides containing organophosphates and organochlorines may increase the likelihood of developing hypospadias. The relevance of genetic variants in pesticide-metabolizing enzymes as indicators for the emergence of negative health effects is also highlighted by pesticide exposure (Kim, 2017)

We could derive that the lower risk from pesticides is partly achieved through the measures taken by the member states in the allowance of substances used in agriculture as well as other cross-disciplinary strategies that have been implemented.

The importance of data aggregation and analysis within appropriate frameworks and guide by adequate policy is reflected in the positive results we encounter.

3.2 Output of the thematic analysis

3.2.1 Phāea Resorts and Sustainability



Figure 6 Case study characteristics

Phāea Resorts owns and operates three 5* hotel properties on the island of Crete, i.e., Blue Palace, Cretan Malia Park and Village Heights Resort. The total number of rooms is 656. (Figure 6)

Through the sustainability report in organisation’s website, several efforts towards sustainable development have been identified, which are measured and monitored with relevant KPIs. (Phāea Resorts , 2022). From these efforts 3 initiatives were identified as eligible by supporting cross-sectoral collaborations

and human health and wellbeing, focused on sustainable agriculture i.e. Phāea farmers, Sustainable landscape management and Plan bee (Figure 9)

Phāea Resorts is dedicated to creating environmentally friendly yet exquisite visitor experiences that respect the community and environment. Despite their status as luxury hoteliers, Phāea Resorts are committed to reducing their environmental and social effect (Figure 7 and 8). There is an adherence to implement innovative and cost saving methods to reduce energy use, eliminate gas emissions, conserve resources, and improve the environment. For example, incorporation of water-saving devices and procedures, improving the efficiency of landscape watering and controlling water leakage to minimize overall water consumption. (Phāea Resorts , 2022)

Phāea Resorts are working towards achieving plastic-free operations. A plastic reduction roadmap was introduced in 2019 to eliminate wasteful consumption (also in accordance with the relevant EU directive (European Union, 2019/904), beginning with the identification of single-use plastic goods already in use by hotel departments. The evaluation of alternatives materials that will replace gradually plastic objects and packaging while meeting guests’ expectations is their next goal. A further objective worth mentioning is also the reduction of use of fossil-fuel-derived plastics and their detrimental effects on ecosystems, climate change, and human health. (Phāea Resorts Sustainability Strategy)

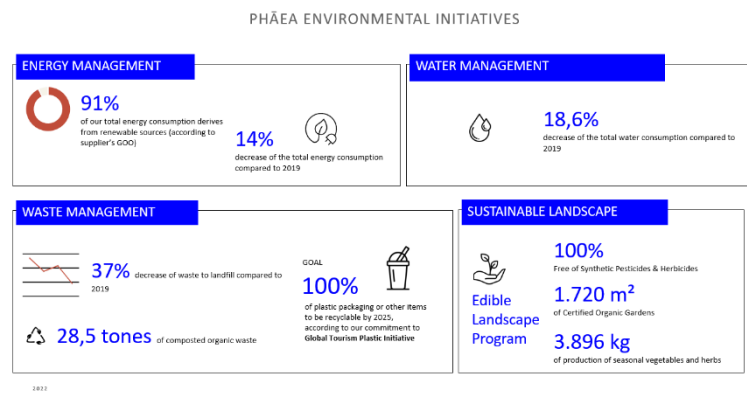


Figure 7 Phāea Resorts environmental initiatives

A comprehensive recycling program was implemented, which resulted in a large reduction in the amount of waste that ended up in landfills. Composting tree trimmings, grass, and organic garbage from restaurants at a facility on the resort's premises is one of the responsible waste initiatives. Also took part in the Food for Feed pilot project, which converted food waste into animal feed and distributed it to nearby farmers.

In addition, there is an operation of own open-air organic vegetable gardens of 1720m2 in addition to the aforementioned. Cultivate a variety of certified fruit trees, lawns, vegetables, and aromatic herbs that are native to the island using a certified organic production process.

Another commitment of the resorts is to take a series of measures that will allow bee pollination. Bees can forage and colonies thrive all year thanks to year-round blooming plants, diverse agriculture, and Crete's moderate environment. Phāea Resorts have also established sustainable purchasing requirements. Committed to using locally sourced products, they work to support the growth of new, long-term local enterprises that can be added to the supply chain. A set of criteria for purchasing food and beverages was established. Purchasing local, seasonal ingredients from certified organic farmers, limiting purchases of endangered fish species, and so forth.

In low season, many people work as farmers in liaison with Phāea Resorts, as Crete is a self-sufficient island noted for its agriculture. In cooperation with agronomists, trainings in organic farming methods and sustainable land use are provided to the Phāea Farmers participants, as part of the Phāea Farmers Program. Finally, the initiative adds value and improves production quality, allowing resorts to purchase the highest quality local products for usage at their properties as well as the Phāea Farmers participants to sell their products in a 20% increased price, compared to the market price.

A variety of products are produced including aloe, grapes, wine, herbs, honey, fruits (apples, pears, strawberries, bananas, citrus (orange, lemons, mandarins), olives/olive oil, seasonal vegetables (tomatoes, bell peppers, zucchini, eggplants, potatoes), dairy products, and raki, a traditional, Cretan grape-based spirit, giving the hotels' guests the opportunity to taste local healthy products, with low environmental impact. Finally, it appears that Phāea Resorts' primary goal is to reduce the use of natural resources and harmful materials, as well as to manage waste and pollutants generated by the resort's operation using the best available environmental options.

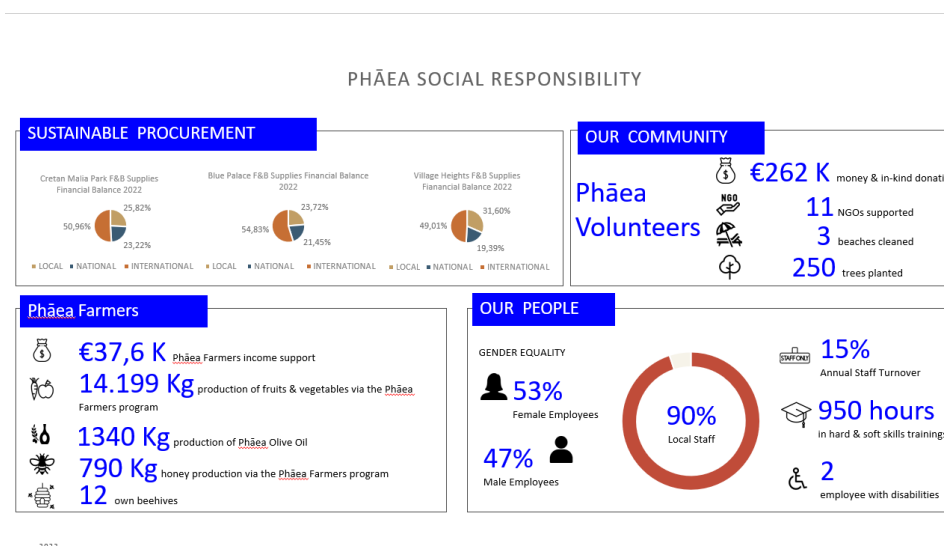


Figure 8 Phāea Resorts social responsibility

3.2.2 Creating cross-industry synergies

LOCAL FOOD EXPERTS® (LFE) is a social enterprise founded in Belgium and established in Crete in 2013. It seeks to create nutritionally self-reliant societies, works for Soil Health, the understanding of Renaissance agriculture and builds Sustainable Entrepreneurship.

The designers of LFE approached hotel owners in the hopes of gradually replacing imported, conventional food provided to hotel guests. They presented hotels with a business case for encouraging local farmers to develop the surrounding land into a sustainable agricultural area embracing natural habitat, and as a result, they were able to gain the cooperation of a regional chain with local farmers who agreed to concentrate on organic food. At the same time, the hotel chain's proprietors were reactivating dormant land to turn it to fallow land for cultivation and proceed to cultivation in a sustainable manner, as they had a large amount of land to develop over time. ([Local Food Experts](#))

LFE is an entity that is trying to build sustainable bridges between the hoteliers and hotel staff, food production units, farmers, and local citizens. The organisation also, attempts to preserve their needs and

understand the whole dimension of sustainability. They focus on finding solutions for farmers and hoteliers to solve their problems in order to produce what is needed - building more locally based, self-reliant food systems.



PHĀEA FARMERS
INITIAL YEAR 2019

PHĀEA SUSTAINABLE
LANDSCAPE
MANAGEMENT
INITIAL YEAR 2020

PHĀEA PLAN BEE
INITIAL YEAR 2021

Figure 9 Phāea Resorts cross-sectoral sustainable agriculture initiatives

3.2.3 Phāea Farmers

The Phāea farmers program focuses on sustainable food production by the Phāea farmers-employees. The objectives of this surprising project are based on the need to reduce the environmental & climate footprint of the supply system (Figure 11) It seeks to strengthen the resilience of the supply chain, protect food security against climate change and protect biodiversity horizontally.

It is a program designed to support resort staff who also farm their land, is creating more value and quality production and the resort can source the highest quality local produce for use in the kitchens. Through collaborations with agronomists, the farmers are trained in sustainable & organic farming methods and sustainable land use.

One Health integration has been hampered by heated arguments between opposing schools of thought in several fields, a delay in the convergence of systemic and participatory modeling techniques, and a lack of productive interdisciplinary and cross-sectoral cooperation. Despite efforts to put One Health concepts into reality, operationalizing health management based on a social-ecological system and resilience framework that acknowledges power dimensions in the "coupling" of human and environmental systems is still urgently needed (De Garine-Wichatitsky M, 2021).

Who are the Phāea Farmers?

Small-scale family farming is supported, and employees are encouraged to produce food for hotels to provide additional income for their families. To do this, the team members are trained in sustainable food farming practices, systematically guided in the implementation of field practices, and supported in the field development of crops, while being given financial incentives. On the other hand, fresh food management procedures are improved as soon as they enter the supply line. Hotel employees are trained, and customers are informed about a better understanding of the project.

By implementing the above, long distances of food transport are reduced, hospitality services are connected with sustainable food production by small producers, incentives are given to the local community for production of local sustainable food and the European Green Agreement along with the strategy “Farm to Fork” are promoted. The Farmers-Employees Project strategy is based on recognizing the value chain of sustainable food systems. It recognizes the interconnected relationship between people, healthy societies, and a healthy planet (Phāea Farmers)

How do Employees become Phāea Farmers?

There are several easy-to-achieve steps in order to become a Phāea Farmer (Figure 10) First, employees are provided with a detailed briefing about the Phāea Farmers program. It is important, as in any common goal, to have common ground and mutual understanding.

**Minimum pre-requirements
for participation in group**


<p>Signed Participation Agreement</p> 	<p>Living Mulch for Soil Cover</p>  
<p>No use of Herbicides</p>  	<p>8% Biodiversity Zones</p>  
<p>No use of Pesticides that Kill Bees</p>  	<p>Organic Fertilizers Rich in Humus</p>  
<p>Active Working Book</p>  	<p>Min 60% Sustainable Practices = Very Good + Excellent</p>  <p>60%</p>

Figure 10 Minimum pre-requirements for participation in Phaea Farmers (Phāea Resorts, Phāea Farmers)

What are the Program’s Benefits?

The program brings benefits for the seasonal farming staff, and also the local community’s health, environment, and economy. The farmers are able to increase their annual income, contribute to the region’s wider economic development whereas training in sustainable land use benefits the soil and discourages the use of dangerous pesticides and chemicals. The health of the employees and the community health as well is a major benefit of this project while the sustainable use of pesticides and the absence of herbicides can support SDG 3. These efforts ultimately offer guests fresh products that are authentically local, nutritional, and environmentally friendly.

Are Employees motivated in this initiative?

There are currently 11 employees in the program cultivating 23 land parcels reaching a total of 12 local communities around Crete. Training programs include how to plant vegetables, theoretical and practical trainings on soil health and sustainable crop management, agriculture productivity and pruning practices in selected olive grove and vineyards. A variety of products are produced including aloe, grapes, wine, herbs, honey, fruits (apples, pears, strawberries, bananas, citrus (orange, lemons, mandarins), olives/olive oil, seasonal vegetables (tomatoes, bell peppers, zucchini, eggplants, potatoes), dairy products, and raki, a traditional, Cretan grape-based spirit.

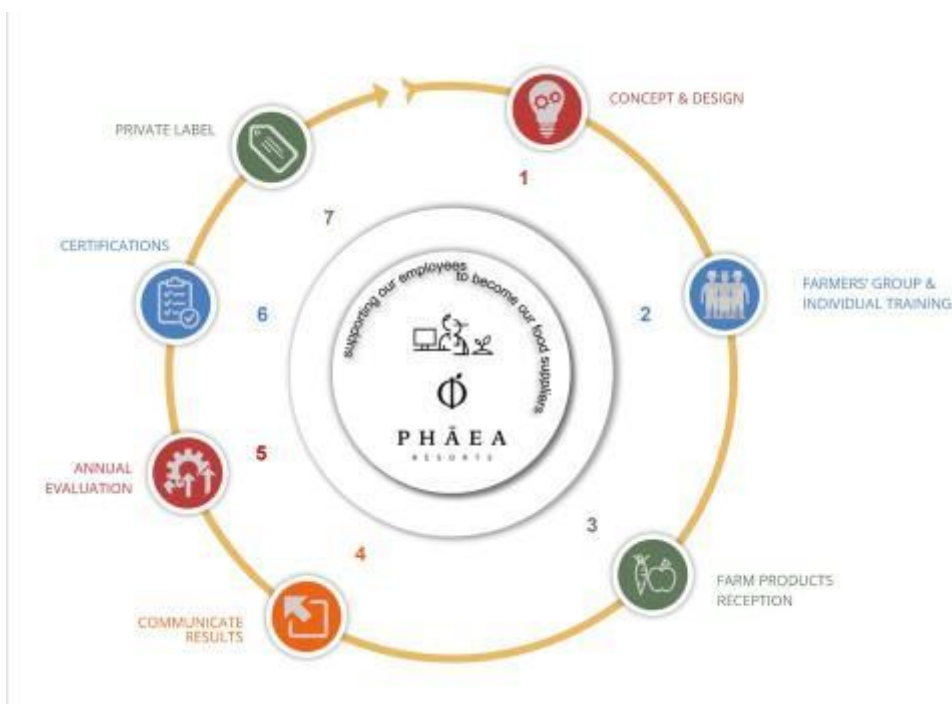


Figure 11 Phāea Farmers strategy (Phāea Resorts, Phāea Farmers)

PHĀEA FARMERS				
Key Performance Indicators (KPIs)	2019	2020	2021	2022
Hours of training	20	24	24	31
Number of participants	3	3	8	11
Land parcels	11	11	18	23
Communities affected	5	5	9	12
Production (kg)	2.050	1.607	13.521	16.329
PHĀEA farmers income support (€)	10.870	2.600	36.900	37.600

Table 3 Phāea Farmers KPIs

According to the data provided by Phāea Resorts' Sustainability Committee (*Table 3*), although the initiative was started right before the coronavirus (COVID-19) pandemic, it was not only sustained, but regaining momentum grew substantially in 2021 and 2022 it has scientifically grown, showing that has potentials to grow even more.

As 2020 was the first year of the COVID-19 pandemic, and due to several restrictions imposed in terms of operation, the hospitality industry was affected by the shorter operating season as well as lower occupancy rates.

3.2.4 Sustainable Landscape

The Phāea Sustainable Landscape Management embraces sustainable practices designed to reduce and lessen the impact of greenhouse gas (GHG) emissions on a local scale. Each Resort monitors, measures, and reports on its GHG emissions. This is one reason why Phāea Resorts embrace technology and actively seek to change ingrained behaviours. The main focus lies on diverting waste from landfills, recycling, food composting, implementing a series of water & energy management actions and moving towards a plastic-less operation. Through the collaboration of each and every one, Phāea Resorts contributes to a healthier environment for future generations (*Figure 12*)

Phāea Sustainable Landscape Management

The Phāea Sustainable Landscape Management program, commenced in 2020, it has been designed to improve soil health, mitigate climate change, and increase energy efficiency in landscape, among others. The program's focus is to implement sustainable practices, moving away from synthetic pesticides, planting endemic and xeriscape-friendly flora species, as well as adopting edible landscape orientation, with certified organic edible plants. The sustainable use of pesticides is a major target as synthetic pesticides can be harmful to human health. Regarding Sustainable Landscape Management, there are three categories in which Phāea Resorts operate.

For Soil's Health, organic fertilizers, micro and macro on-site composting sites and earthworm compost use are of most importance. Maintaining a healthy soil is the integral base of every landscape. As for Water Use, the Phāea Sustainable Landscape Management program recycles water for irrigation (lawns excluded). Through this initiative, the water footprint decreases. Phāea Resorts' Landscapes are pesticide and herbicide free, biodiversity zones are protected and promoted while there is also certification for organic lawn.



Figure 12 Phāea Sustainable landscape management strategy (Phāea Resorts)

Hotel Farming

Phāea Resorts’ Certified Organic Hotel Farming program has raised awareness on the benefits of Hotel Farming and promotes sustainable agriculture in Crete. Open-air organic vegetable gardens, covering an area of 1720m², cultivate many varieties of fruit trees, vegetables and aromatic herbs that are endemic to the island. The home-grown gardens are cared for by a team of avid local gardeners and have produced more than 25 kinds of vegetables, fruits & herbs in the past years, that were sourced to Phāea Resorts’ kitchens. The organic kitchen gardens are open to visitors, while curated awareness activities & experiences, both for children and adults are organized throughout the season.

Edible Landscape

Edible Landscape is the practical integration of plants that produce food in a garden with ornamental use. Among the ornamental plants, there are some food-producing plants to be found like: eggplants, vines, peppers, aromatic plants, sour trees, pomegranates, olives, laurel and many more. This way, an ornamental garden acquires a useful character: the production of food. At the same time, edible plants have a special ornamental value because their fruits are an unusually pleasant surprise to the customer. It arouses the interest to walk through those gardens. Using edible plants, the hotel garden provides a unique decorative element with additional health, aesthetics, and financial benefits.

They’re also a great way to highlight the sustainable policy of Phāea Resorts as plants are marked with signs indicating their identity in different languages. This information is accompanied by a small text

that motivates the customer to seek more information on environmental, local community and sustainable management issues applicable to a hotel unit.

The organic co-cultivated vegetable garden is also part of the edible landscape. More than 40 different kinds of vegetables and herbs are produced. The vegetable garden supplies raw materials for the creation of dishes in the hotel restaurants.

PHĀEA SUSTAINABLE LANDSCAPE MANAGEMENT			
KPIs	2020	2021	2022
Organic gardens (m²)	750	985	1720
Hours of training	40	40	45
Production (kg)	487	1.783	3.896
Number of garden tours for guests	16	20	24
Number of participants in garden tours	80	100	192
Use of synthetic pesticides and herbicides (kg)	0	0	0

Table 4 Phāea Sustainable landscape management KPIs

On the basis of scientific evidence, the real, predicted, and perceived risks that synthetic pesticides pose to human health (occupational and consumer exposure) and the environment are fully justified (Kim, Kabir et al. 2017), so the total absence of synthetic pesticides and herbicides of the gardens support the reduction of health risks to employees as well as guests.

Moreover, according to the data, there appears to be an upward trend, regarding all KPIs additionally to the complete eradication of synthetic pesticides and herbicides consumption since 2020.

3.2.5 Plan BEE

EU Initiative: Halting the loss of Pollinators

In terms of the volume of world agricultural production, 35% come from crops that depend (to a greater or lesser extent) on pollinators, mainly insects (i.e., one third of the human diet comes mainly from plants pollinated by insects). Of the 124 major crops grown for human consumption worldwide, 87 (70%) require insect pollination to produce seeds (e.g., carrots, onions, garlic) and to improve product quality and yield (e.g., coffee, nuts, lots of fruit) (Klein, 2007). Bees provide an ecosystem service in the form of crop pollination estimated at € 153 billion per year worldwide (Gallai N., 2009) and € 22 billion per year in Europe (Gallai N., 2009). Enhanced bee pollination can lead to benefits such as increased production, better crop quality and shelf life, yield stability and higher commercial value for many insect-loving crops e.g., strawberries and apples (Klatt, 2014).

Purpose & Strategy of the Project

Phāea Resorts actively support the rescue of pollinators by placing hives with active bee populations in selected hotels. In collaboration with local beekeepers, they are managed with sustainable beekeeping practices. Thus, the hotels provide a new home for bees, adjacent to gardens rich in flowering plants. Through this partnership, hotels actively support the survival of bees in their area and the conservation of biodiversity.

The purpose of Phāea Resorts is to raise awareness among their people, ie employees, visitors, partner companies and the local community. The aim is also to make future generations aware of the

importance of these insects and the important role of the beekeeper. Therefore, resources are invested in Hotel Beekeeping. The needs of the hotels for honey are partially covered by their own production, however, a substantial part is mainly covered by the cooperation with local beekeepers.

PHĀEA PLAN BEE		
KPIs	2021	2022
Number of beehives	3	12
Hours of training	8	11
Honey production (kg)	40	101

Table 5 Phāea Plan Bee KPIs

Surprisingly, an upward trend can be identified in the KPIs related to Phāea Plan Bee (Table 5) as well, though the initiative begun amidst the COVID-19 pandemic being kicked off on 30 January 2020 (WHO D. , 2020)

Food, fibre, and other supplies are provided by agricultural systems to ensure human existence and wellness. Additionally, they offer significant chances for employment and money, both of which are essential health-related factors. However, agricultural systems can also be hazardous to public health, including infectious diseases, foodborne illnesses, and workplace dangers (Grout L., 2018).

4. Discussion

4.1 Inputs from the literature review

Over the past two decades, a rising corpus of theoretical and empirical research has established the connection between human health and well-being, biodiversity, and agriculture. Despite the fact that social-ecological system frameworks (SES) are increasingly used in integrated approaches to health, scientists and practitioners still encounter considerable challenges when attempting to put this concept into practice (De Garine-Wichatitsky M, 2021)

Emphasising health as both a necessary desired state of social-ecological systems and an anticipated outcome of their sustainable functioning is a powerful method for framing sustainable development initiatives. This emphasis on health as a potent and generally acknowledged leverage point for group efforts toward sustainable development is anticipated to lead to a closer alignment of sectoral interventions in ecosystem management, biodiversity protection, and public and veterinary health (De Garine-Wichatitsky M, 2021)

The traditional equilibrium techniques to managing human, economic, and environmental resources are prone to failure because they do not account for the dynamic interactions between people and the constantly shifting contextual environment. Most of the time, health and environmental concerns can be described as "wicked" or "messy," with high degrees of uncertainties and similarly high stakes. They are frequently entangled in complicated cross scale and cross-sectorial interactions (De Garine-Wichatitsky M, 2021)

The Health in All Policies (HiAP) initiative acknowledges that population health is significantly influenced by policies that direct actions outside of the health sector, not just by health sector programs. Health and health inequality could possibly be impacted by policy in every area of government. Taking a HiAP strategy tries to address policies that have an impact on things like transportation, housing and urban planning, the environment, education, agriculture, finance, taxation, and economic development to make them more

supportive of overall health and health equity. In order to advance health and equitable goals while also achieving mutually beneficial outcomes for collaborating sectors, HiAP is about integrated governance.

Resources from the land are essential to the health, happiness, and overall survival of humans and all other species. Land provides social, cultural, spiritual, and economic benefits that improve human health and well-being in addition to environmental benefits. Ecosystems provide essential resources such as food and other essential nutrients, clean water and air, shelter, medicines and medicinal compounds, wood, fuel, and fiber, as well as livelihoods, cultural, spiritual, and recreational enrichment, as well as the control of risks related to natural hazards and diseases. There are further benefits associated with biodiversity, which includes variability within and among species and ecosystems that are essential to maintaining human health and well-being as well as the functions and services that ecosystems provide. (Sena A, 2021).

Land degradation caused by human activities has a negative impact on biodiversity and ecosystem services. In the context of unsustainable economic growth, factors that contribute to land degradation and biodiversity loss include population growth and expanding urbanization, increased consumption, the expansion of crop and pasture fields, and unsustainable agriculture and forestry practices. Additionally, the state of human and environmental systems can be negatively impacted by climate change, which has a severe effect on sustainable development. (Sena A, 2021)

One of the few poisons that are purposefully released into the environment to kill living organisms, such as weeds (herbicides), insects (insecticides), fungus (fungicides), and rats (rodenticides), are pesticides (rodenticides). Despite the fact that the term "pesticide" is typically interpreted to only relate to insects, it actually encompasses a wide range of compounds used to manage pests, including herbicides and fungicides (Kim, 2017)

It is essential to improve the precision and accuracy of pesticide quantification along with improved safety profiles in order to reduce potential adverse effects on human health and the environment. It should also be a top goal to determine which chemical types or chemical formulas are the most effective means of managing pests in an ecological and environmentally friendly way. Therefore, it is recommended that agriculture use natural bio-control agents including nematodes, viruses, insects, and helpful bacteria. (Kim, 2017)

Agricultural activities must be carried out with the intention of promoting the accomplishment of the SDGs. Agriculture affects and involves both the environment and people. The uncontrolled use of pesticides in earlier decades must have resulted in further ecological issues, in addition to other unexplained causes of diminishing human well-being (Gandhi, 2021)

To achieve the SDG 2 goal of [zero hunger], food security is necessary. We should minimize the use of agricultural chemicals, especially those that represent a danger to sustainability, keeping in mind SDG 12 [Responsible Production and Consumption]. We can attain SDG 8 [Decent work and economic growth] thanks to this. By reducing the acute toxicities and long-term exposures that many of these pesticides or their adjuvants induce in the producers and end-users, we can reduce the number of farmer fatalities. SDG 3 on Good health and well-being for all and improved nutrition will ultimately be achieved by implementing sustainable agriculture methods. Life on land and in the ocean, as well as [SDGs 14 and 15, respectively] (Gandhi, 2021)

The public and private sectors should also put much more effort into research, product development, product testing and registration, and implementation of pesticide use strategies. They should also support public

education regarding pesticides. This includes government organizations, non-governmental organizations (NGOs), and manufacturers. (Kim, 2017)

4.2 Main findings of the case study

The Region of Crete accounts for 19% of the visits recorded in Greece in 2021. In the period 2016-2019, the Region recorded an increase in visits by +17% (from 4.5 million in 2016 to 5.3 million in 2019). (INSETE Intelligence, 2022)

Regarding the percentage distribution of overnight stays in the individual Regions, we observe that the highest percentages are recorded in the South Aegean (23%), Crete (20%), Attica (16%), Central Macedonia (16%) and the Ionian Islands (11%). These 5 Regions represent 87% of overnight stays recorded in Greece in 2021 (INSETE Intelligence, 2022)

A qualitative analysis by Briassoulis (2003) indicates that Crete is affected by tourism applying pressure to develop at an unhealthy rate, and that informal, internal systems within the country are forced to adapt. According to Briassoulis, these forces have strengthened in three stages: from the period from 1960 to 1970, 1970–1990, and 1990 to the present. During this first period, tourism was a largely positive force, pushing modern developments like running water and electricity onto the largely rural countryside. However, beginning in the second period and especially in the third period leading up to the present day, tourist companies became more aggressive in terms of their activity resulting in deforestation and pollution of Crete's natural resources. The country is then pulled into an interesting parity, where these companies only upkeep those natural resources that are directly essential to their industry (Briassoulis, 2003)

Corporate communication of Hotel Groups representing initiatives to support sustainable development generates mostly positive emotions. Businesses could take advantage by becoming leaders in sustainability and creating a positive, climate-friendly image for their companies as well as a healthy environment for their employees and guests.

The initiatives that were analysed through this thesis show that sustainable development strategies based on sustainable agriculture and nutrition can be totally linked with human and planetary health as well as SDG3, promoting health and well-being.

The purpose is the creation of a symbiotic relationship between the land, the people who live on it, the people who visit it, and the people who construct businesses on it. To achieve a truly sustainable system, they should be weaved together in a healthy balance to form a system that benefits everyone. It also shows the influence an institutional buyer can have and acts as a vehicle for systemic change towards more sustainable relations and cooperation.

Furthermore, these initiatives present an upward trend which makes them durable and sustainable not only from the social and environmental aspect but from the economic aspect as well, as resources are invested to support them.

Moreover, the increasing number of hotel guests that are attracted to become more familiar to sustainable agriculture practices, through the garden tours provided by the hotels, shows that well developed initiatives can become a mean of 'public education'.

Finally, the strong management commitment on sustainable development strategies, the establishment of the Phāea Resorts Sustainability Committee and the alignment of organization's sustainability commitments

with the strategic tactics adopted, seem to be key success factors for the development and the performance of these initiatives.

On the other hand, monitoring and measurement of adopted KPIs could be enhanced in order for the organization to have a strongest case. Also, though these initiatives support SDG3, as well as other SDGs, the organization has not linked each initiative with the supported SDGs.

4.3 Impact on public health research

The SDGs are defined by their broad and ambitious scope, universal application across all countries and sectors, and indivisibility from one another.

Health is both a critical input and an outcome of development, and it is an integral part of the SDGs agenda.

An integrated approach to health and development with multistakeholder involvement could only be beneficial towards SDGs achievement as well as public health.

While health experts might approach the SDGs through SDG3, they should recognize their efforts will affect and be affected by private sector's work on all other goals. For example, the importance of access to drinking water and sanitation (encompassed in Goal 6) to improving health, and thus the relevance of sustainable consumption and production (encompassed in Goal 12).

Private sector's initiatives towards sustainable development and their impact on public health as well as health provision and health priorities should be further examined.

4.4 Limitations

The literature review was based on articles published between 1/1/2026 and 31/12/2021. As sustainable development and the evidence body on it are not static, more articles could have been published after this period. Moreover, the search strategy was based on the aspect of human, public and planetary health, with articles that explore impacts of cross-sectoral initiatives on other aspects of sustainable development (social, economic), were not included.

Furthermore, we focused on the European Region and more specifically the EU for identifying relevant reporting, so this study may not be adequately reflecting efforts and research in non-EU regions as per adopted policies and cross-sectoral synergies in achieving SDGs and ultimately SDG3.

Finally, the case study was selected from Crete by scanning webpages and national body dedicated sites, and reporting on sustainability, and involved the tourism and hospitality sectors, so there may be relevant private initiatives that support cross-sectoral collaborations and sustainable agriculture in other regions of Greece or from other sectors that were not studied.

5. Conclusion

In conclusion, there are numerous health hazards associated with pesticides, as previously mentioned. In terms of SDG3 health risks are completely linked with the use of pesticides in conventional agriculture as pesticides can adversely impact the health, causing asthma, leukaemia and many other diseases, and wellbeing of people but also with all the aspects of sustainable agriculture like water and soil health.

Sustainable development is a process that seeks to establish a fresh normative horizon and implies a paradigm shift away from economic growth based on unequal distribution of wealth and excessive exploitation of the environment to growth that calls for new forms of accountability, solidarity, and responsibility.

Cross sectoral collaboration is fundamental when we think of achieving SDGs.

The Agenda recognizes the interconnectedness of a number of challenges, including poverty, health, hunger, education, environmental degradation, gender equality, etc., and that only through thorough examination and thoroughly coordinated approaches can these issues be effectively addressed.

Businesses have the capacity to make decisions that will affect their conduct and have a societal impact. The private sector is a fundamental factor to be taken into consideration as sustainable development is unavoidably impacted by it.

SDGs actions can be supported by private sector initiatives, however, the measurement and monitoring of the respective KPIs is mostly inadequate. Most initiatives lack alignment with the SDGs and can therefore fail to make a strong case.

Focusing on sustainable agriculture and the impact on human health, it's inevitable to ruminate on the risks that pesticides pose in human health.

These practices and indicators that were conceived to support the sustainable utilisation of pesticides and to promote alternative approaches to crop protection can only be successful if applied universally. There needs to be cross sectoral initiatives and a holistic approach to leverage these practices and enable data aggregation on a global scale.

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