

**ACTIONS  
FOR THE CONSERVATION  
OF COASTAL DUNES WITH  
JUNIPERUS spp. IN CRETE  
AND THE SOUTH AEGEAN  
(GREECE)**

LIFE07NAT/GR/000296



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Forest Directorate of Lasithi

***Action A.6  
Deliverable A.6.1.1***

# **STAKEHOLDER CONSULTATION & COMMUNITY SURVEY FOR CHRYSI ISLAND**

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**"Actions for the conservation of coastal dunes with  
*Juniperus* spp. in Crete and the South Aegean (Greece)"  
- JUNICOAST -**

**Action A.6:** Stakeholder Consultation

**Deliverable A.6.1.1:** Stakeholder consultation and community survey for  
Chrysi Island

**Responsible beneficiary:** Mediterranean Agronomic Institute of Chania  
(MAICh)

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## Executive summary (in Greek)

### ΠΕΡΙΛΗΨΗ

Η νήσος Χρυσή, η οποία διοικητικά ανήκει στο Δήμο Ιεράπετρας και στη Νομαρχία Λασιθίου, έχει έκταση 6.300 στρέμματα και έχει χαρακτηριστεί ως περιοχή του δικτύου ΦΥΣΗ 2000 με κωδικό GR4320003. Η κυριώτερη δραστηριότητα στο νησί είναι ο τουρισμός, αν και στο παρελθόν στο νησί υπήρχε κτηνοτροφία και γεωργία. Μεγάλος αριθμός επισκεπτών προέρχεται από ημερήσιες εκδρομές, που οργανώνονται από την Ιεράπετρα, ενώ ένας επίσης μεγάλος αριθμός επισκεπτών κάνει ελεύθερη κατασκήνωση για μεγαλύτερο χρονικό διάστημα. Από το 1991 μέχρι το 2002, η κίνηση των επισκεπτών παρουσίασε σταδιακή αύξηση. Από 17.271 το 1991, οι επισκέψεις ανήλθαν στις 81.838 το 2002, ενώ το διάστημα 2003-2008 η κίνηση κυμαίνεται κατά μέσο όρο στις 65.000 ανά έτος. Οι μήνες με την μεγαλύτερη κίνηση είναι ο Ιούλιος, ο Αύγουστος και ο Σεπτέμβριος με 22,87%, 40,64% και 16,11% αντίστοιχα.

Η επιτυχία διαφόρων μέτρων προστασίας και διατήρησης ειδών ή οικοτόπων σε περιοχές του δικτύου Natura 2000, όλο και περισσότερο αναγνωρίζεται, ότι απαιτεί πρώτιστα την ενεργό συμμετοχή των ανθρώπων που κατοικούν μέσα ή γύρω από τις περιοχές αυτές ή εξατρώνονται από αυτές.

Για την επιτυχία των δράσεων του προγράμματος "Junicoast" και την μακροχρόνια προστασία και διατήρηση του οικοτόπου 2250\*, στα πλαίσια της δράσης Α6, υιοθετήθηκε και εφαρμόστηκε μια στρατηγική διαβουλεύσεων με τους εμπλεκόμενους φορείς και την τοπική κοινωνία, τα αποτελέσματα της οποίας παρουσιάζονται στη παρούσα αναφορά.

Με την έναρξη του προγράμματος, παράλληλα με τις προσωπικές επαφές και τις τηλεφωνικές συνεντεύξεις με τους αρμόδιους φορείς, διοργανώθηκε στο ΜΑΙΧ ημερίδα, με όλους τους εμπλεκόμενους φορείς, ενώ για την διερεύνηση του επιπέδου των γνώσεων της τοπικής κοινωνίας σχετικά με το αντικείμενο του προγράμματος, αλλά και των απόψεών της, χρησιμοποιήθηκε η μέθοδος των ερωτηματολογίων.

Για τη νήσο Χρυσή ως κυριώτερη αξία αναγνωρίστηκε από τους φορείς η αισθητική αξία των κέδρων, ενώ σημαντική είναι και η αρχαιολογική αξία της περιοχής. Κατά

τη συνάντηση με τους φορείς, τονίσθηκε ότι το νησί της Χρυσής έχει σημαντική οικονομική αξία, λόγω του ότι αποτελεί σημείο προσέλκυσης τουρισμού, από τον οποίο ο Δήμος επωφελείται οικονομικά μέσω των εισιτηρίων των πλοιαρίων και των ενοικίων από τις ταβέρνες και τις ομπρέλες στις ακτές. Ωστόσο, για την τοπική κοινωνία, η οικονομική αξία του νησιού είναι σημαντική μόνο για ένα μικρό ποσοστό του πληθυσμού, ενώ ως σημαντικότερη αξία αναγνωρίζεται η αναψυχή (59%) και η φυσική κληρονομιά (55%), παρόλο που 19% του πληθυσμού δεν έχει ποτέ επισκεφθεί το νησί, ενώ η πλειοψηφία των ερωτηθέντων (36%) έχει επισκεφθεί το νησί μόνο μία φορά. Σχετικά με τις δραστηριότητες που κάνουν στο νησί, 35% των ερωτηθέντων απάντησε ότι κάνει ελεύθερη κατασκήνωση, 31% ψάρεμα ενώ οι κυριότερες είναι το κολύμπι και ο περίπατος 70% και 57.9% αντίστοιχα. Επίσης 12% δήλωσαν ότι έχουν ανάψει φωτιά, γεγονός που υποδεικνύει τον κίνδυνο έναρξης πυρκαγιάς.

Για την παρούσα κατάσταση του οικοτόπου 2250\* και τις τυχόν αλλαγές που συνέβησαν τα τελευταία 5 χρόνια, η πλειονότητα των εκπροσώπων των φορέων διατύπωσε την άποψη ότι ο οικοτόπος βρίσκεται σε καλή ή σχεδόν καλή κατάσταση. Αξιοσημείωτο είναι ότι σε εθνικό ή περιφερειακό επίπεδο οι αρμόδιοι φορείς δήλωσαν ότι δεν γνωρίζουν, γεγονός που καταδεικνύει την ανάγκη καλύτερης πληροφόρησης στο επίπεδο αυτό. Αναφορικά με τις αλλαγές στα τελευταία 5 χρόνια, οι ερωτώμενοι απάντησαν ότι, είτε δεν υπάρχουν αλλαγές, είτε υπάρχει κάποια υποβάθμιση, η οποία δικαιολογείται από το γεγονός ότι στο διάστημα αυτό δεν έχουν γίνει κάποιες απαραίτητες δράσεις, ενώ γίνεται και αναφορά στην αύξηση του αριθμού των επισκεπτών. Η εντύπωση της τοπικής κοινωνίας είναι, ότι ο οικοτόπος βρίσκεται σε καλή (26%) ή σχεδόν καλή (46%) κατάσταση, ενώ για τα τελευταία 5 χρόνια 31% δήλωσαν ότι δεν παρατηρούν αλλαγές, 14% ότι η κατάσταση έχει βελτιωθεί, 31% ότι έχει χειροτερέψει και 24% απάντησαν ότι δεν γνωρίζουν. Σημαντική θεωρείται η πληροφορία που προέκυψε από συνεντεύξεις επισκεπτών, οι οποίοι επισκέπτονται το νησί για πολλά χρόνια, σχετικά με τις εκτεταμένες συλλογές κοχυλιών στη βόρεια ακτή που έγιναν στη δεκαετία του 1990. Αναφέρθηκε επίσης, το πρόβλημα της διάβρωσης και της αποκάλυψης των ριζών των κέδρων εξαιτίας της διαταραχής που προκαλείται από την κίνηση των επισκεπτών, κατά μήκος των κύριων μονοπατιών. Επίσης αναφέρθηκε η αύξηση του αριθμού των επισκεπτών και κυρίως των κατασκηνωτών και η έλλειψη πληροφόρησης και ευαισθητοποίησης.

Οι κυριώτερες απειλές για τον οικοτόπο 2250\*, αλλά και γενικότερα για το φυσικό περιβάλλον του νησιού, που αναφέρθηκαν και συζητήθηκαν κατά τη διάρκεια της

ημερίδας με τους εμπλεκόμενους φορείς, σχετίζονται με την αύξηση του αριθμού των επισκεπτών τους καλοκαιρινούς μήνες και κυρίως των κατασκηνωτών, αν και οι ημερήσιοι επισκέπτες είναι αναλογικά περισσότεροι. Τα απορρίμματα, το κόσψιμο των κλαδιών των κέδρων και ο κίνδυνος πυρκαγιάς είναι οι κυριώτερες απειλές που αναφέρθηκαν. Τόσο κατά την ημερίδα όσο κατά την κοινωνική έρευνα, τονίστηκε το πρόβλημα των ανθρωπίνων απορριμμάτων, λόγω της έλλειψης επαρκών εγκαταστάσεων υγιεινής. Η συλλογή κοχυλιών, το παράνομο κυνήγι κατά τους χειμερινούς μήνες και η εισαγωγή ξενικών ειδών είναι επίσης απειλές που αναφέρθηκαν. Η έλλειψη ευαισθητοποίησης του κοινού προσδιορίστηκε ως απειλή από τους κατοίκους της Ιεράπετρας, ενώ δεν αναφέρθηκε ως τέτοια κατά τη διάρκεια των συνεντεύξεων με τους εμπλεκόμενους φορείς.

Σχετικά με το εάν η μέχρι τώρα διαχείριση της Χρυσής είναι αποτελεσματική για την προστασία της, η τοπική κοινωνία και οι φορείς απάντησαν αρνητικά.

Οι δημόσιοι φορείς ερωτήθηκαν, εάν το υπάρχον δυναμικό τους επαρκεί για να εκπληρώσουν τα καθήκοντά τους σε σχέση με το νησί. Η πλειοψηφία των ερωτηθέντων θεωρεί ότι έχει δυσκολίες. Εθνικές και περιφερειακές αρχές διακήρυξαν μεγαλύτερες δυσκολίες, αν και εμπόδια αναφέρθηκαν επίσης και από τις τοπικές δημόσιες αρχές. Οι κυριώτερες δυσκολίες σχετίζονται με θέματα διοίκησης, όπως ασαφή διοίκηση και διαχείριση, έλλειψη γνώσης σχετικά με το δίκτυο NATURA 2000 και τις διαδικασίες για τη διαχείριση μιας προστατευόμενης περιοχής, καθώς και διαδικαστικά εμπόδια σχετικά με την έλλειψη προσωπικού και την ανεπάρκεια πόρων. Η πλειοψηφία των θεμάτων σχετίζεται με την έλλειψη πολιτικής βούλησης και δέσμευσης για την προστασία του περιβάλλοντος.

Σχεδόν όλοι οι εμπλεκόμενοι φορείς (87%) συμφωνούν ότι, η μέχρι τώρα διαβούλευση και συνεργασία μεταξύ τους, δεν είναι επαρκής για την διαχείριση και την αποτελεσματική προστασία του φυσικού περιβάλλοντος της Χρυσής. Η έλλειψη συνεργασίας οφείλεται κυρίως στη μη συμμετοχή όλων των φορέων στη λήψη των αποφάσεων και στην έλλειψη διαφάνειας, στην ασάφεια και στην αλληλεπικάλυψη των αρμοδιοτήτων των φορέων, στη μη δημοσιοποίηση των αποφάσεων και στην έλλειψη ανταλλαγής δεδομένων και πληροφοριών. Σχετικά με την εμπλοκή της τοπικής κοινωνίας στη λήψη των αποφάσεων για τη διαχείριση του περιβάλλοντος, η πλειοψηφία των φορέων συμφωνεί ότι δεν είναι αποτελεσματική. Στην έρευνα της τοπικής κοινωνίας 87% των ερωτηθέντων απάντησαν ότι δεν έχουν ρωτηθεί ποτέ σχετικά με την προστασία της Χρυσής, ούτε είναι ικανοποιημένοι από την μέχρι τώρα εμπλοκή τους ή ενημέρωσή τους για το θέμα αυτό.



Σχετικά με τη γνώση που υπάρχει για το καθεστώς προστασίας της Χρυσής, από τις συνεντεύξεις με τους εμπλεκόμενους φορείς, προέκυψε ότι ο κάθε φορέας γνωρίζει τον χαρακτηρισμό που υπάρχει ανάλογα με το αντικείμενό του, π.χ. η Αρχαιολογική Υπηρεσία γνωρίζει ποιά περιοχή έχει χαρακτηριστεί ως αρχαιολογικός χώρος κλπ. Μόνο η Διεύθυνση Δασών Λασιθίου έχει ολοκληρωμένη γνώση όλων των σχετικών χαρακτηρισμών. Η πλειοψηφία (70%) των φορέων, γνωρίζει ότι η περιοχή έχει χαρακτηριστεί ως περιοχή NATURA2000, ωστόσο το 80% εξέφρασε ανοιχτά άγνοια σχετικά με το τι πραγματικά σημαίνει αυτό και τι συνέπειες έχει όσον αφορά τις δραστηριότητες που επιτρέπονται ή απαγορεύονται. Από τους ενδιαφερόμενους φορείς που λόγω της επαγγελματικής τους ιδιότητας εμπλέκονται με το δίκτυο NATURA2000, εκφράστηκε μια αρνητική άποψη, σύμφωνα με την οποία ο χαρακτηρισμός και μόνο της Χρυσής ως περιοχή NATURA2000, όχι μόνο δεν είχε καμία πρακτική συνέπεια στην προστασία του νησιού, αλλά μπορεί να επέφερε αντίθετα αποτελέσματα, εξαιτίας της έλλειψης αρμόδιου Φορέα Διαχείρισης και σχεδίου διαχείρισης για την περιοχή καθώς και εξαιτίας διοικητικής ή νομοθετικής ασάφειας. Η γνώση της τοπικής κοινωνίας σχετικά με το καθεστώς προστασίας της Χρυσής είναι ελλιπής, 73% των ερωτηθέντων απάντησαν ότι η Χρυσή δεν προστατεύεται ή δεν γνώριζαν αν προστατεύεται, 30% θεωρούν ότι είναι Εθνικός Δρυμός και μόνο 38% γνωρίζουν ότι έχει χαρακτηριστεί ως περιοχή NATURA2000.

Στην ημερίδα με τους εμπλεκόμενους φορείς, στις συνεντεύξεις, στις προσωπικές επαφές και στην έρευνα της τοπικής κοινωνίας διατυπώθηκαν αρκετές προτάσεις, σε σχέση με την διοίκηση και τη διαχείριση της Χρυσής. Οι εμπλεκόμενοι φορείς υπογράμμισαν την ανάγκη αποσαφήνισης του ιδιοκτησιακού καθεστώτος ως βασική προϋπόθεση για την επιτυχή εφαρμογή οποιονδήποτε μέτρων προστασίας. Πρωταρχικής σημασίας επίσης είναι η δημιουργία φορέα διαχείρισης με σαφείς αρμοδιότητες, στελεχομένος με το κατάλληλο προσωπικό και ο οποίος θα διαθέτει τους απαραίτητους πόρους. Όλες οι επόμενες προτάσεις, είναι ειδικού χαρακτήρα όσον αφορά συγκεκριμένες ενέργειες και θα πρέπει να συμπεριλαμβάνονται σε ένα ολοκληρωμένο διαχειριστικό σχέδιο.

Από τις συνεντεύξεις με τους φορείς, την ημερίδα και την έρευνα της τοπικής κοινωνίας, έγινε φανερό ότι υπάρχουν δύο διαφορετικές προσεγγίσεις σχετικά με τις μεθόδους παρέμβασης και προστασίας του περιβάλλοντος του νησιού. Το ποιά προσέγγιση θα υιοθετηθεί είναι πολιτική και διοικητική απόφαση που απαιτεί δέσμευση για την μακροχρόνια εφαρμογή της. Η πρώτη προσέγγιση αναφέρεται στη λήψη νομοθετικών μέτρων, στην ανάγκη εφαρμογής των νόμων και στην απαγόρευση κάποιων δραστηριοτήτων, ενώ η δεύτερη επικεντρώνεται στην

προστασία του περιβάλλοντος μέσω της διαχείρισης. Θα πρέπει να αναφερθεί ότι σχετική νομοθεσία για την προστασία του περιβάλλοντος ήδη υπάρχει και αρκετές από τις δραστηριότητες που λαμβάνουν χώρα στο νησί απαγορεύονται. Από όλους επισημάνθηκε η ανάγκη ύπαρξης μόνιμων φυλάκων στο νησί με στόχο την αποτελεσματική εφαρμογή των απαγορεύσεων και των μέτρων προστασίας.

Σχετικά με τις προτάσεις που διατυπώθηκαν, όλοι συμφωνούν ότι θα πρέπει να ρυθμιστεί ο αριθμός των επισκεπτών. Κάποιοι φορείς προτείνουν την μείωση των επισκεπτών και την απαγόρευση της κατασκήνωσης, ενώ άλλοι την βελτίωση της διαχείρισης των επισκεπτών και την δημιουργία των απαραίτητων υποδομών. Αυτό που τονίστηκε από όλους είναι ότι η φέρουσα ικανότητα του νησιού δεν είναι γνωστή και ότι είναι αναγκαία η εκπόνηση ειδικής μελέτης, η οποία θα εξετάσει συνολικά το θέμα, με πρωταρχικό στόχο την εξασφάλιση της προστασίας του περιβάλλοντος.

Στην ημερίδα τονίστηκε ότι η ελεύθερη κίνηση των επισκεπτών στον οικότοπο καθώς και η κατασκήνωση προκαλούν διαταραχή στις αμμοθίνες μέσω της συμπίεσης του εδάφους και προτάθηκε η δημιουργία ζωνών, στις οποίες θα επιτρέπεται ή θα απαγορεύεται η πρόσβαση, καθώς και η οριοθέτηση των μονοπατιών. Επίσης προτάθηκε η τοποθέτηση ξύλινων διαδρόμων στα κυριότερα μονοπάτια πρόσβασης.

Ο κίνδυνος πυρκαγιάς θεωρήθηκε ως μια σημαντική απειλή. Από τις συνεντεύξεις με την Πυροσβεστική Υπηρεσία, κατέστη σαφές ότι η κατάσβεση τυχόν πυρκαγιάς στο νησί είναι προβληματική λόγω έλλειψης νερού και δυσκολίας πρόσβασης, υπογραμμίζοντας την ανάγκη πρόληψης και συνεχούς επιτήρησης.

Η διαχείριση των απορριμμάτων και των αποβλήτων είναι ένα από τα κυριότερα προβλήματα που επισημάνθηκε. Η μέχρι τώρα εργολαβική συλλογή και απομάκρυνση των σκουπιδιών σχολιάστηκε αρνητικά ως μη αποτελεσματική. Προτάθηκε να γίνει εκστρατεία ενημέρωσης των επισκεπτών με κεντρικό σύνθημα "Πάρτε τα σκουπίδια μαζί σας" σε συνδιασμό με την δημιουργία χώρων συγκέντρωσης των απορριμμάτων που θα παραμένουν και την τοποθέτηση κάδων απορριμμάτων σε κατάλληλες θέσεις.

Όσον αφορά τα ανθρώπινα απόβλητα και την αποχέτευση τους, από τους τοπικούς φορείς και από την τοπική κοινωνία τονίστηκε η ανάγκη κατασκευής αποχωρητηρίων στη βόρεια παραλία. Ωστόσο, από ορισμένες πλευρές η πρόταση

αυτή απορρίπτεται ως παράνομη και ως πηγή περαιτέρω ρύπανσης. Η επίλυση του προβλήματος έγκειται στον προσδιορισμό της κατάλληλης τεχνολογίας για τις τουαλέτες, το φορτίο των επισκεπτών, τις συνθήκες του οικοτόπου καθώς και την εξασφάλιση συνεχούς καθαρισμού και συντήρησης.

Η εισαγωγή ξενικών ειδών που έχει ήδη γίνει στο νησί, εξηγήθηκε ως προσπάθεια σταθεροποίησης των αμμοθινών. Η πρόταση που υπάρχει στο πρόγραμμα για την φύτευση τοπικών ειδών έγινε αποδεκτή.

Από όλους τονίστηκε η ανάγκη βελτίωσης της πληροφόρησης των επισκεπτών και αύξησης της περιβαλλοντικής ευαισθητοποίησης μέσω φυλλαδίων πινακίδων κλπ, καθώς και η ανάγκη ενημέρωσής τους πριν από την άφιξή στο νησί.

Η δράση της περιβαλλοντικής εκπαίδευσης και των δραστηριοτήτων εθελοντισμού έτυχε ευνοϊκής αντιμετώπισης καθώς 50% των ερωτηθέντων δήλωσαν προθυμία να συμμετέχουν σε εθελοντικές δράσεις προστασίας.

Οι εκπρόσωποι τουριστικών γραφείων επισήμαναν την ανάγκη πληροφόρησης και κατάρτισης όσων ασχολούνται με τον τουρισμό (γραφεία, ξεναγοί κλπ), καθώς και την ανάγκη διαφορετικής προσέγγισης των Ελλήνων και των ξένων τουριστών.

Βάσει των αποτελεσμάτων της διαβούλευσης με τους εμπλεκόμενους φορείς και την τοπική κοινωνία:

- οι απειλές που σχετίζονται κυρίως με τον τουρισμό γίνεται αντιληπτό ότι θέτουν σε κίνδυνο τον οικοτόπο, αν και η πλειοψηφία θεωρεί ότι ο οικοτόπος βρίσκεται σε καλή κατάσταση.
- οι επιπτώσεις των επισκεπτών στον οικοτόπο πρέπει να διερευνηθούν και να προταθούν τα κατάλληλα διαχειριστικά μέτρα.
- η υφιστάμενη διαχείριση της Χρυσής θεωρείται ως ανεπαρκής ή αναποτελεσματική.
- διοικητικά προβλήματα αποδεικνύονται εμπόδιο για την αποτελεσματική διαχείριση του νησιού.
- υπάρχει πεδίο για καλύτερη συνεργασία μεταξύ των εμπλεκόμενων φορέων και τη συμμετοχή της τοπικής κοινωνίας.
- είναι ανάγκη να αυξηθεί η ευαισθητοποίηση των φορέων και της τοπικής κοινωνίας όσον αφορά τις αξίες, τις απειλές και το καθεστώς προστασίας.

- συστηματική παρακολούθηση καθώς και δεδομένα σχετικά με τον οικότοπο προς το παρόν είναι περιορισμένα ή δεν υπάρχουν.
- υπάρχει περιθώριο για τη δημιουργία ομάδων εθελοντών και τη συμμετοχή των παιδιών με σκοπό την αύξηση της ευαισθητοποίησης για τη διατήρηση του οικοτόπου.
- δράσεις διαχείρισης των επισκεπτών θα πρέπει να συζητηθούν από κοινού με τους ενδιαφερόμενους φορείς για να διασφαλιστεί η σκοπιμότητά τους, η μακροχρόνια συντήρηση των υποδομών και η εξεύρεση των απαραίτητων οικονομικών πόρων .
- η πληροφόρηση των επισκεπτών θεωρείται πρωταρχικής σημασίας .

Συμπερασματικά, ο οικότοπος 2250\* στη νήσο Χρυσή δέχεται ολοένα και περισσότερες πιέσεις. Τεχνικές για την επίλυση πολλών προβλημάτων είναι διαθέσιμες και μέσω του προγράμματος “Junicoast” υπάρχει η δυνατότητα να αναγνωρισθούν και να χρηματοδοτηθούν στο μέτρο του δυνατού οι απαραίτητες δράσεις προστασίας. Ωστόσο, η απόφαση σχετικά με τον τρόπο διαχείρισης, τη συντήρηση και την μακροχρόνια προστασία του νησιού είναι πολιτική. Το πρόγραμμα μπορεί να αυξήσει την ευαισθητοποίηση και να προτείνει λύσεις για την αντιμετώπιση των προβλημάτων αλλά δεν μπορεί να πάρει τις απαραίτητες αποφάσεις ούτε να τις επιβάλλει.

## 1. Introduction

It is increasingly recognized that successful implementation of conservation measures on the areas designated as Natura 2000 primarily necessitates active involvement of people inhabiting these areas or depending on them (Paavola, 2004). Participation is purported through the Habitats Directive, Aarhus Convention and Public Participation Directive 2003/35/EC. Participation here within is defined as, “*forms of exchange that are organised for the purpose of facilitating communication between stakeholders regarding a specific decision*” (Webler and Renn 1995), thus including both decision making stakeholders as well as the public living within or around the 2250\* habitats of this project. Borrini- Feyberabend (1996) demonstrates how the underestimation of the needs, aspirations and perceptions of local populations is one of the main causes of failure in the effective management of protected areas. In fact, according to Harrison *et al*, (1998) and Eben (2006) should the needs of the local population not be considered during the institution/ designation, of a protected area, or during the implementation of measures for biodiversity conservation, these policies and measures will have little chance to achieve their objectives.

Thus, with the aim of ensuring the long term sustainability and success of JUNICOAST’S actions for the conservation of priority habitat 2250\*, a consultation strategy was adopted and implemented, the results of which are presented in this report. The purpose of this action was to establish stakeholders’ level of awareness, perceived values, threats and recommendations for conservation of the habitat in their localities. Secondary, indirect aims of this action were to raise awareness and support, regarding the project and its actions, as well as obtain feedback with regard to the feasibility and long term sustainability of proposed concrete conservation actions.

This approach was based on the presumption, that decision making stakeholders, have an experiential understanding of the issues and practical difficulties within their localities as well as knowledge of procedural, and administrative mechanisms and barriers for the long term maintenance of proposed concrete conservation actions. The rationale for contacting the lay local communities was two-fold. Primarily to establish what their relationship with the specific areas is, which in turn affects their attitudes

towards protection initiatives (Bonaiuto et al 2002). Secondly to establish levels of environmental awareness which in turn would help design, a targeted, and effective communication strategy and education campaign (D Actions).

Based on the above, consultation was carried out with stakeholders and local communities for each of the four Cretan Sites. In this report are presented the results of the consultation activities carried out for Chrysi island under Action 6. In Section 2, a brief overview of Chrysi island is presented, which helped formulate the research design, methodology and stakeholder analysis presented in Section 3. In Sections 4 to 10 the results of the consultations are summarised with regard stakeholder and community perceptions of Chrysi islands:

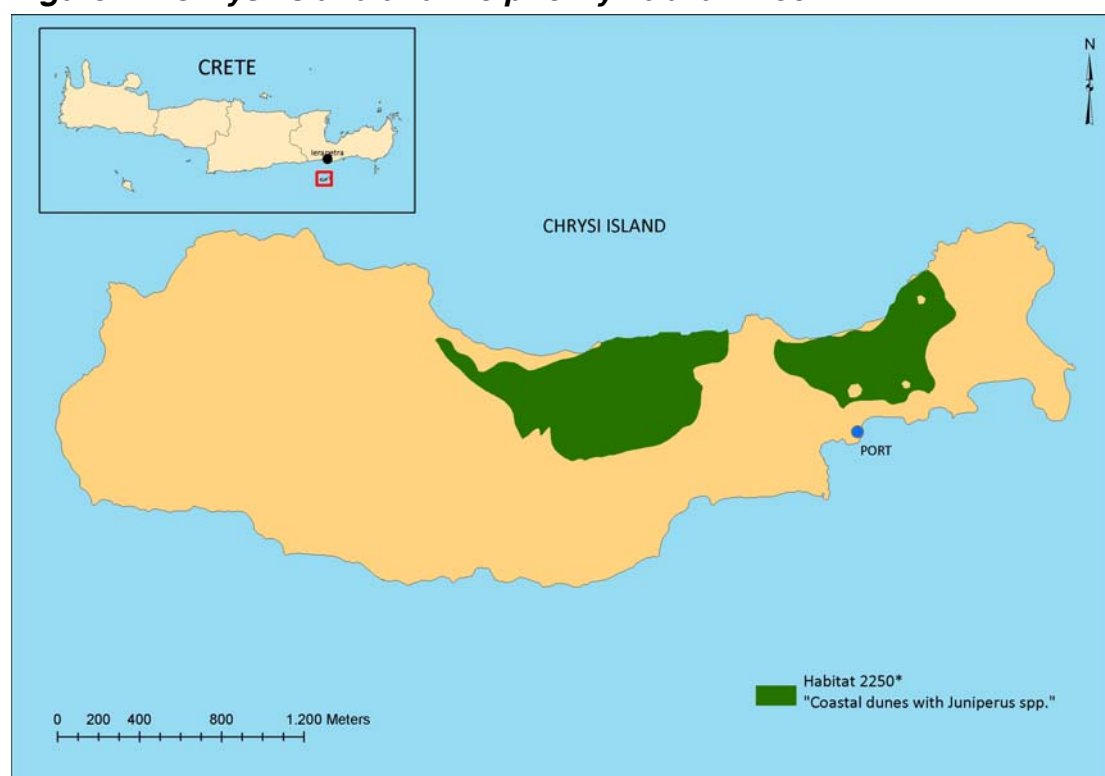
- values and relationship to protected area (Section 4)
- environmental status and trends (Section 5)
- threats (Section 6)
- existing management and protection effectiveness (Section 7)
- Participation and engagement opportunity adequacy (Section 8)
- Existing protection designations, reasons for them and implications regarding prohibited activities. (Section 9)
- Necessary environmental protection measures (Section 10)

This report concludes with a discussion and recommendations for improvement of proposed JUNICOAST actions, both concrete and dissemination, in light of obtained results, to be taken into consideration when developing specifications for concrete conservation actions (A.8) as well as communication strategy (D.1).

## 2. Chrysi island- contextual background.

Chrysi Island, or as named locally (Gaidouronisi- donkey island) is located southeast of Crete (N 25 42'50'' E34 51' 40''), and 15km south of the municipality of Ierapetra, Lasithi Prefecture, which it administratively belongs to (See Figure 2.1).

**Figure 2.1 Chrysi Island and the priority habitat 2250\***



Chrysi Island is a designated Natura2000 site code GR4320003, covering an area of 630.65ha. It is also subject to numerous national legal designations, aimed at the protection of its natural and cultural features. Indicatively, the island has been declared as<sup>1</sup>:

- an area of outstanding natural beauty (ΥΠ.Π.Ε 9597/70 666/23.9.70)
- archeological site α/φ 31/24456/183 π.ε. 5-5-1976 published in (ΦΕΚ 699 τ. Β'/23-9-1970)

<sup>1</sup> A full analysis of the legal framework is presented in Action 9 report.

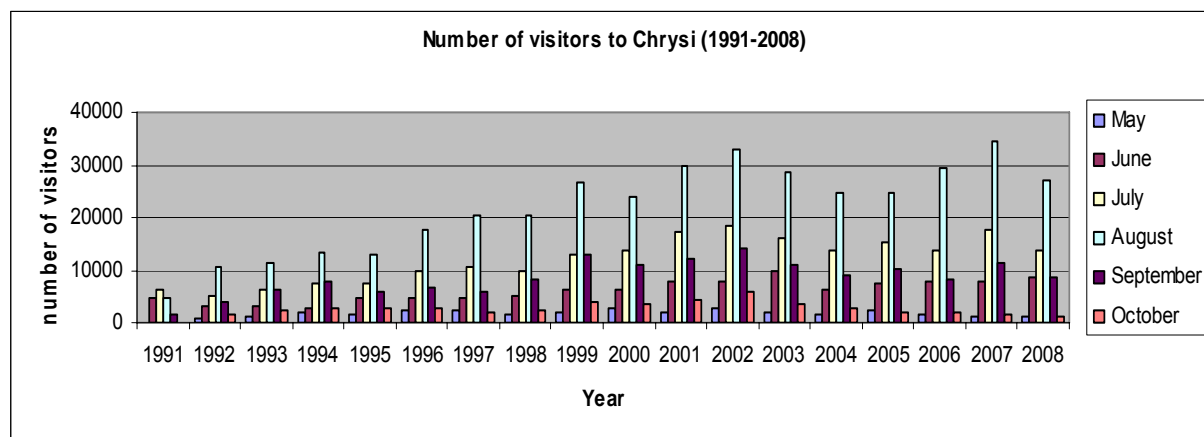
- a forest and reforestation area (prohibiting, construction and infrastructure development)
- wildlife refuge (ΦΕΚ 562,β/1983) prohibiting hunting
- Lasithi Forest Directorate decision banning grazing (2/12/1983)

The ownership status of the island has been in dispute for many years and remains unsolved, presenting a potential source of conflict and barrier to the protection of the natural and cultural features of the island. The island is only accessible by sea, with the main passenger port located on the south east coast (Figure 2.1). Privately owned boats conduct day trips to the island during the summer months (May to October). Three main paths exist on the island which are used also by motorized vehicles such quad-bikes. Buildings include one house; a church and light house North West of the island. A refectory with toilets by the SE port, and a bar and second tavern on the NE popular beach of the island.

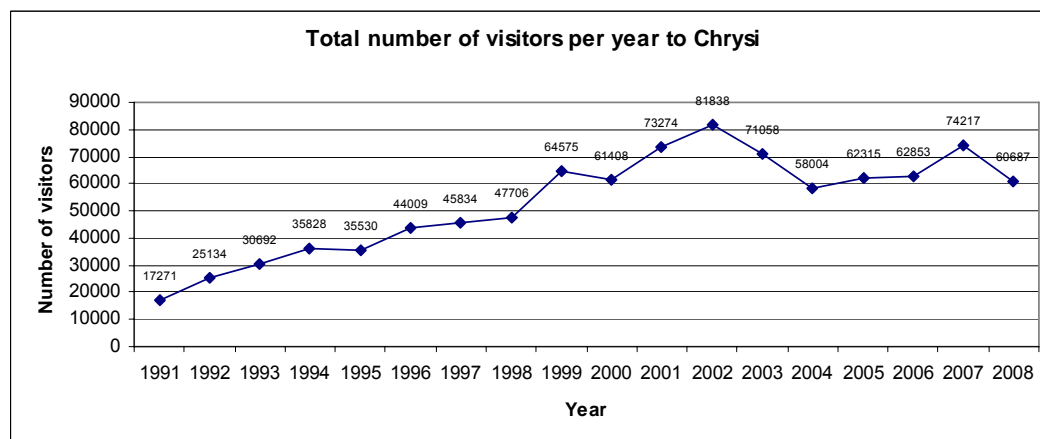
The island used to be used for grazing and agriculture, although such activities are assumed to have ceased. The main present use of the island consists of recreation, consisting of daily excursions of a large number of visitors during the summer months (See Figure 2.2, & 2.3), and free camping. However, the extent of use and relationship of the local population of Ierapetra, with the island, to date has not been established, and thus is examined through this action (Section 4).

Ierapetra has a population of 14159 consisting of 4939 households (2001, National Census), its main demographic characteristics are presented in Table 2.1 (2001, National Census). This contextual information, is useful for interpreting results presented in sections (4 to 10)

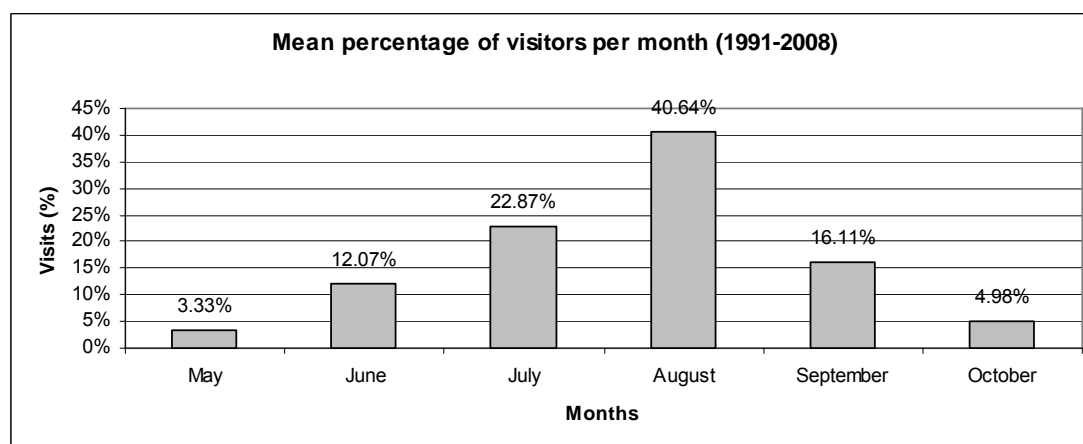


**Figure 2.2 Number of Visitors per month (1991-2008)**

(source: Ieraptera Port authority)

**Figure 2.3 Total number of visitors per year (1991–2008)**

(source: Ieraptera Port authority)

**Figure 2.4 Mean percentage of visitors per month (1991–2008)**

(source: Ieraptera Port authority)

Table 2.1 Main household occupation- Census 2001

Census 2001 data on Main household occupation		Households
Γεωργία, κτηνοτροφία, θήρα, δασοκομία.	Agriculture, hunting and forestry	2,832
Αλιεία.	Fishing	72
Ορυχεία και λατομεία.	Mining and quarrying	6
Μεταποιητικές βιομηχανίες.	Manufacturing	300
Παροχή ηλεκτρικού ρεύματος, φυσικού αερίου και νερού.	Electricity, gas and water supply	51
Κατασκευές.	Construction	577
Χονδρικό και λιανικό εμπόριο, επισκευή αυτοκινήτων, οχημάτων, μοτοσυκλετών και ειδών ατομικής και οικιακής χρήσης.	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	972
Ξενοδοχεία και εστιατόρια.	Hotels and restaurants	585
Μεταφορές, αποθήκευση και επικοινωνίες.	Transport, storage and communication	232
Ενδιάμεσοι χρηματοπιστωτικοί οργανισμοί.	Financial intermediation	139
Διαχείριση ακίνητης περιουσίας, εκμισθώσεις και επιχειρηματικές δραστηριότητες.	Real estate, renting and business activities	334
Δημόσια διοίκηση και άμυνα, υποχρεωτική κοινωνική ασφάλιση.	Public administration and defence; compulsory social security	280
Εκπαίδευση.	Education	389
Υγεία και κοινωνική μέριμνα.	Health and social work	272
Δραστηριότητες παροχής υπηρεσιών υπέρ του κοινωνικού ή ατομικού χαρακτήρα.	Other community, social and personal service activities	166
Ιδιωτικά νοικοκυριά που απασχολούν οικιακό προσωπικό.	Activities of households	82
Ετερόδοκοι οργανισμοί και όργανα.	Extra-territorial organizations and bodies	2
Δήλωσαν ασαφώς ή δε δήλωσαν κλάδο οικονομικής δραστηριότητας	missing	345

Table 2.2 Educational level – Census 2001

Age class Census 2001 data	Post secondary non- tertiary education	Tertiary education Phd, MSc BSc	Higher secondary education	Lower secondary education	Primary education	Did not complete primary school but can read & write	Cannot read or write
6-9		0	0	0	0	1	0
10-14		0	0	94	520	9	0
15-19	22	0	204	606	196	7	1
20-24	201	34	380	196	239	5	1
25-29	154	124	430	280	257	7	6
30-34	119	188	440	252	253	10	15
35-39	98	134	362	229	341	8	12
40-44	107	125	336	161	388	4	5
45-49	62	134	278	136	402	11	6
50-54	36	142	121	88	456	10	13
55-59	25	73	97	48	331	20	13
60-64	23	58	94	43	402	64	24
65-69	9	40	62	25	323	123	50
70-74	6	21	38	26	304	116	34
75-79	0	9	23	7	231	55	29
80-84	0	4	14	7	128	46	17
85+	0	5	6	7	97	42	42

### 3. Research Design & Methodology

In this section, the research design and methodology followed is described, including the results of the stakeholder analysis conducted. To begin with a literature review, regarding the state of the art in participation methods for protected area management was conducted.

Participation has different purposes which in turn affect the methods used, stakeholders involved and intensity of involvement. It is therefore important to define the purpose of the participation and subsequent relevant methods which should be used to achieve that purpose.

A number of different hierarchies illustrating the different levels of participation can be found in the literature (Arnstein, 1969; Dorcey *et al*, 1994; Wilcox, 1994; Pretty and Shah, 1994; UNDP, 1997). Arnstein (1969) describes the different levels of participation using the metaphor of the ‘ladder of participation’. The ladder essentially depicts a hierarchy ranging from non-participation and degrees of tokenism, where participants essentially do not have the power to influence a decision, through to the top level of the ladder of citizen power where participants have total control over the decision making process.

One problem with such hierarchies is that they imply that more participation is necessarily better. However, the appropriate level and methods used should reflect the purpose of the participation (see Figure 3.1) (IEMA, 2002). Sanoff (2000, pg 11) describes the different purposes which participation can serve, as:

- *“to generate ideas;*
- *to identify attitudes;*
- *to disseminate information;*
- *to resolve some identified conflict;*
- *to measure opinion;*
- *to review a proposal;*
- *merely to serve as a safety valve for pent – up emotions.”*

One purpose does not necessarily exclude another, and indeed participation can fulfill more than one role. However, according to the defined purpose of the participation

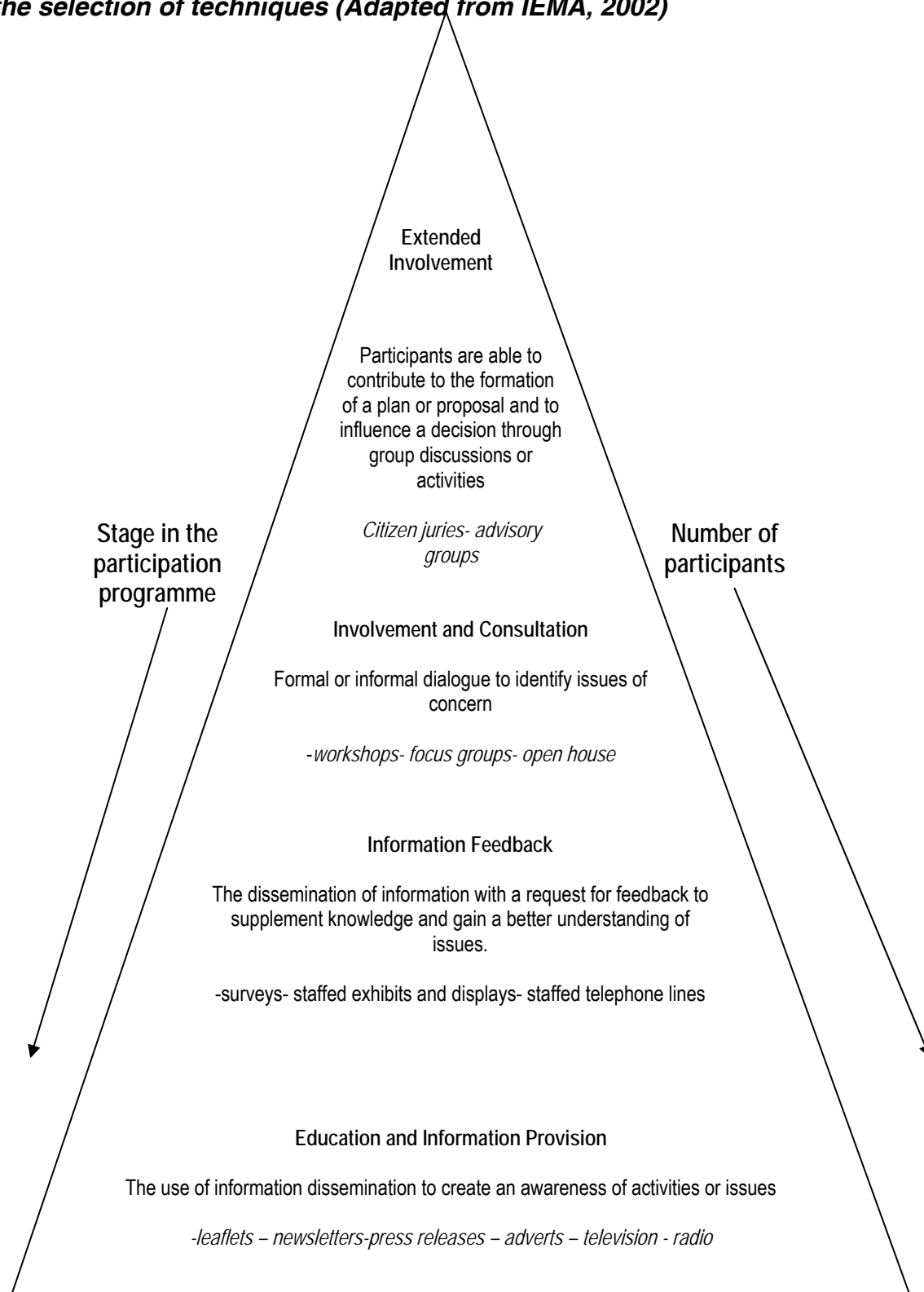
process the methods used will vary, and it is therefore important to recognize the limitations of any one process. With regard to Action 6 and plurality of purposes (see Section 1) it is evident that there was a need to develop a mixed methods participatory approach. As is apparent from Figure 3.1, extended participant involvement requires high interaction methods which are initiated early within the participation programme and which limit the number of participants who can realistically be involved. Therefore, a stakeholder workshop undertaken at the onset of the project was carried out (Figure 3.2) in parallel with individual personal and telephone semi-structured interviews.

Extended participant involvement can have implications with regard to the extent to which the lay public can be involved. In deciding on the participatory strategy the following points were considered based on IEMA, (2002, p. 30):

- *'The purpose and objectives of the participation exercise;*
  - *The degree of interaction required between participants and the extent to which participants are able to influence decisions;*
  - *The timing of use, ie the stage in the decision making process and the time available for participation;*
  - *Resource availability-time, costs;*
  - *The number of participants involved; and*
- The complexity, controversy and level of interest in issues under consideration.'*

Tonn *et al* (2000 pg164) state '*public participation should not be seen as an either or proposition*' but rather propose the consideration of the decision making questions and implications when deciding on the extent and methods of public participation. Considering the purpose of public participation was of investigative nature, rather than active engagement in decision making, it was decided to conduct a community survey, using questionnaires (Figure 3.1).

**Figure 3.1. Levels of participation, techniques and factors influencing the selection of techniques (Adapted from IEMA, 2002)**



**Figure 3.2. Stakeholder workshop in February at MAICH**

### 3.1 Stakeholder Analysis

The definition of stakeholders given by WWF (2005, pg, 1) is: *Any individual, group, or institution who has a vested interest in the natural resources of the project area and/or who potentially will be effected by project area activities and have something to gain or lose if the conditions change or stay.*

When selecting stakeholders to involve in each stage of the participatory process, their legitimacy will have to be considered. If participants are not content with the composition of the group they may doubt the fairness of the process, and the whole participation process could be disrupted (Sanoff, 2000; Seargent and Steele, 199). Therefore, the Environment Council (2002, pg6) guidelines for consideration, were utilized prior to the selection of stakeholders to assess their legitimacy:

- *Who is directly responsible for the decisions on the issues?*
- *Who holds positions of responsibility in stakeholding organizations?*

- *Who is influential in the area, community, organization?*
- *Who will be affected by any decisions around the issue?*
- *Who will promote a decision-provided they will be involved?*
- *Who will obstruct a decision- if they are not involved?*
- *Who has been involved in the issue in the past?*
- *Who has not been involved up to now -but should have been?*

Borrini-Feyerabend, (1996), regarding protected area management propose the consideration of inclusion in participatory processes stakeholder categories outlined in Box 3.1.

Box 3.1: List of potential Protected Area Stakeholders (modified from Borrini Feyerabend, 1996).

- Influential individuals
- Land owners
- Community representatives
- Other representatives (e.g., tourism or farmers representative)
- Local Associations
- Elected representatives
- Relevant PA NGOs
- Agency (with legal jurisdiction or function in PA)
- Business and commercial enterprise individuals or representatives
- University or research organizations working in protected area.
- Staff working in PA management or projects
- Funding organization representatives
- PA user representatives (e.g. hunters or hikers group representatives)
- Religious or cultural heritage local representative
- PA managers
- PA and local community decision makers

Based on the above and through a process of co-nomination a list of 75 potential stakeholders relevant to the project and specific habitat localities were identified and contacted (Appendix A). The participants which attended stakeholder workshop are also listed in (appendix A) whereas in Table 3.1 are listed stakeholder capacity involved through this action- methods of involvement specifically for Chrysi island.

Table 3.1 Stakeholders relevant to Chrysi island contacted and consulted for A.6

Stakeholder capacity	Code	Workshop group attendance	Personal interview	Personal communication
Ministry of environment & public works	PS			
Ministry of Agricultural Development	PS	X	X	X
Region of Crete- Forest Directorate	PSL	X	X	X
Region of Crete- Environment Division	PSL	X	X	X
Lasithi Prefecture Antiquities Directorate	PSL		X	X
Ierapetra Port Authority	PSL	X	X	X
Ierapetra Police Authority	PSL		X	X
Ierapetra Municipality	PSL	X	X	X
Ierapetra Firebrigade Authority	PSL		X	X
Agricultural Police Authority of Lasithi	PSL		X	X
Lasithi Prefecture- Environmental Planning division	PSL		X	X
Lasithi Education Representative	PSL	X		X
Regional Forest Directorate Inspectorate	PSL	X	X	X
Forest Directorate of Lasithi	PSL		X	X
National Greek Tourism Organisation	PSL	X		X
All Primary School Headmasters from Ierapetra	PSL			X
Prefect of Lasithi	PSL			X
Cadastre Authority of Lasithi	PSL			X
Natural History Museum	PSL	X		X
Centre of environmental Education of Ierapetra	PSL			X
Ecological Society of Ierapetra	NGOL		X	X
ΑΡΧΕΛΩΝ- Society for the protection of the carretta carreta turtle	NGO		X	X
Ελλάδα καθαρή	NGO		X	X
WWF	NGO		X	X
Hunters Association of Ierapetra	NGOL		X	X
Σύλλογος ο Κέδρος- chrysi island association	NGOL	X	X	X
Ierapetra fisherman's association	NGOL		X	X
Chrysi island taverna owner	private			X
Chrysi island municipality tavern leaser- and responsible for waste collection	private			X
Chrysi island boat owners and staff	Private			X 5
Chrysi island permanent visitors (ie individuals which have been going to the island at least for over 10 years and staying throughout the year)	Individuals			X 7



### **3.2 Methodology**

Below an outline of the methods utilised to conduct preparatory Action 6 are presented in turn: workshop methodology (3.2.1) stakeholder interviews (3.2.2), personal communications (3.2.3) and community survey (3.2.4). Due to data collection triangulation, and exhaustiveness of stakeholders samples engaged, the robustness of results is strengthened.

#### **3.2.1 Workshop methodology**

In order to maximize stakeholder engagement and potential for input, the workshop utilized different participatory methods, taking into consideration Environment Council (2002) facilitation method guidelines: For a detailed analysis of the workshop methods participant and results refer to Appendix A. Indicatively the workshop procedure is outlined below.

Workshop participants were divided into groups according to capacity and site relevance. Stakeholders participating in Chrysi islands working group are presented in Table 3.1. Following a brief presentation of the JUNICOAST project aims and objectives, as well as the priority habitat, and sites which the project will carry out actions in, stakeholders in their groups were instructed to carry out exercise 1. All participants were handed out a workshop manual in Greek (included in appendix A) which included a brief summary of the project, the agenda as well as a description of all the actions , and exercise instructions. Additional material included a draft educational programme (included in appendix A) for them to review, the draft local community survey (included in appendix A) as well as a workshop feedback form (included in Appendix A) which was completed following the end of the workshop. Facilitators were provided with additional review sheets where stakeholder comments were recorded.

#### **Exercise 1**

This exercise utilized a combined carousel metaplan method, whereby participants in their groups were asked to discuss and write on post it's

- the main values (environmental , social, and economic) of the specific sites
- the main threats to the sites

- the recommendations in order to ensure the preservation of these values and minimizations of the threats
- their expectations and views regarding what they would like to see achieved from the JUNICOAST project

Each group had a facilitator assigned by MAICH which took notes of the conversation as well as stuck the post it notes on the relevant posters. Aerial pictures as well as maps of the habitat were provided to participants where they were asked to draw on them, important features or problem areas.

### **Exercise 2- Review of proposed Actions**

Following a brief presentation of each action (Preparatory A, Concrete C, Dissemination D, and E actions) participants were asked to consult the manual where the detailed description of each action was presented and with the input of the facilitator, detail feedback on each action was obtained.

For each action the following questions were addressed and conclusions noted by facilitators:

- Relevance / importance of proposed action
- Existence of data
- Potential for collaboration and input/ action

### **3.2.2. Stakeholder Interviews**

Following a stakeholder analysis, (20) stakeholders (Table 3.1) were contacted and interviewed. Snowball purposeful sampling was also utilized and data collection stopped only when no new stakeholders were being proposed by interviewees. Only with one of the twenty stakeholders (Ministry of Environment and public works), an interview was not possible, signifying a very robust sample.

Semi-structured interviews including qualitative and quantitative questions were undertaken. In Appendix B questions asked (interview template) is presented. Interviews were recorded and transcribed and content analysis performed for qualitative responses (Sarantakos, 1993), where as descriptive statistics using excel

were performed for quantitative data (De Vaus, 2007). The analysis and discussion of results is presented jointly with workshop and community results in Sections 4 to 10.

### **3.2.3 Personal Communication- Informal interviews**

In many cases formal interviews were not appropriate or essential. However in order to obtain the views of stakeholders relevant to a particular component of the project (e.g. tourism or education) and to establish their collaboration and involvement in the project, personal communication in the form of meetings or telephone conversations was carried out (See Table 3.1).

Headmasters of primary schools were visited in order to determine specifications and practical issues regarding the education campaign as well as level of interest and possibility for school engagement.

Moreover, influential individuals, and people with long term knowledge of Chrysi island were contacted. Specifically, tavern owners, one of which is responsible for waste collection on the island (as of this year) as well as permanent long term visitors, individuals which have been coming to the island for many years. With the latter, walks around the island were conducted, where they pointed out, problems and areas where change had occurred over the years. During all personal communications, the same issues were discussed informally, i.e. values, threats and perceived necessary actions for the environmental conservation of the island and habitat. Feasibility, implementation as well as long term maintenance issues were discussed, opinions which were relevant are included in Section 10.

### **3.2.4 Community survey**

In order to obtain information regarding the local populations’ perceptions of values threats and required activities for the island) as well as levels of environmental awareness, and relationship to the island, a household community survey was conducted (Appendix C).

Random sampling was used, and self completion questionnaires were delivered and collected through schools in Ierapetra municipality enabling an even geographical

coverage. A representative sample at 95% confidence level and under 5% error (confidence interval 5) was obtained with 552 completed questionnaires being obtained.

Data was analysed using excel and SPSS, results of which are presented in the following sections. Content analysis was conducted on open ended questions using codes.

## **4. Stakeholder and Community perceptions of Chrysi island values.**

During the stakeholder workshop and interviews (Section 3) stakeholders were asked to determine the main values of Chrysi island. From interview responses generic reference was made to the Juniper trees and in some cases the archeological importance of the site. During the workshop, however, more details regarding the use and value of the site with reference to the actual population was made.

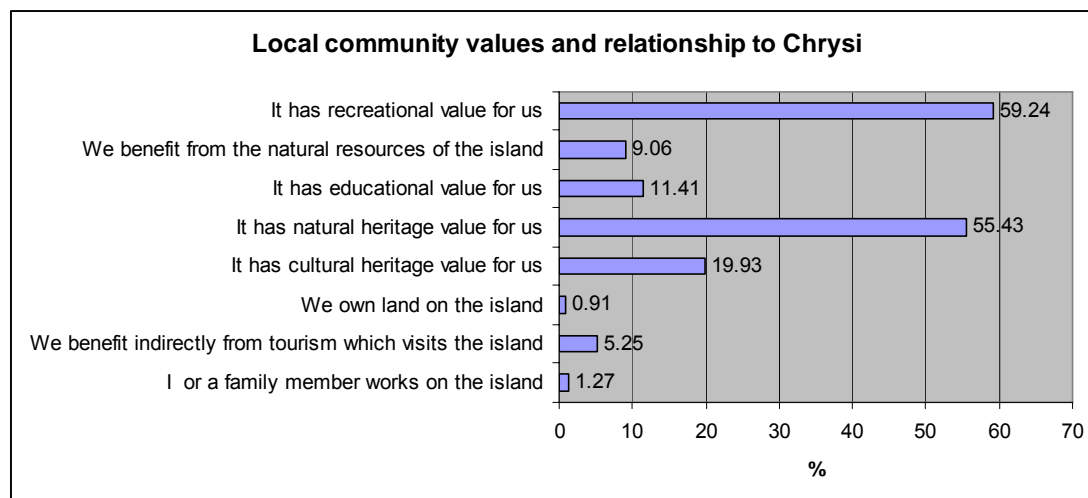
Specifically, the economic importance of the island as a tourism attraction to the municipality of Ierapetra. Of direct economic benefit is the 50cent income per ticket which the municipality obtains from boat tickets as well as money from the leasing of taverna and beach chairs. Due to the fortunate lack of extensive tourism infrastructure development on the island, only few individuals profit directly from visitors (i.e. boat, tavern owners and staff). The question with regard to what extent do visitors to Chrysi indirectly benefit the local community economy is unknown.

However, from the community survey it was established that economic value direct or indirect from tourism is important to only as small % of the population (Figure 4.1), where as the main perceived values being the recreation value (59%) and the inherit natural heritage value of the island at (55%). Considering the predominant occupation sector is agriculture (Section 2) this result is not surprising, yet very important, and should be taken into account by local authorities and elected members, when setting objectives for the management of the site as well as when deciding how to allocate revenues obtained from visitor tickets<sup>2</sup>.

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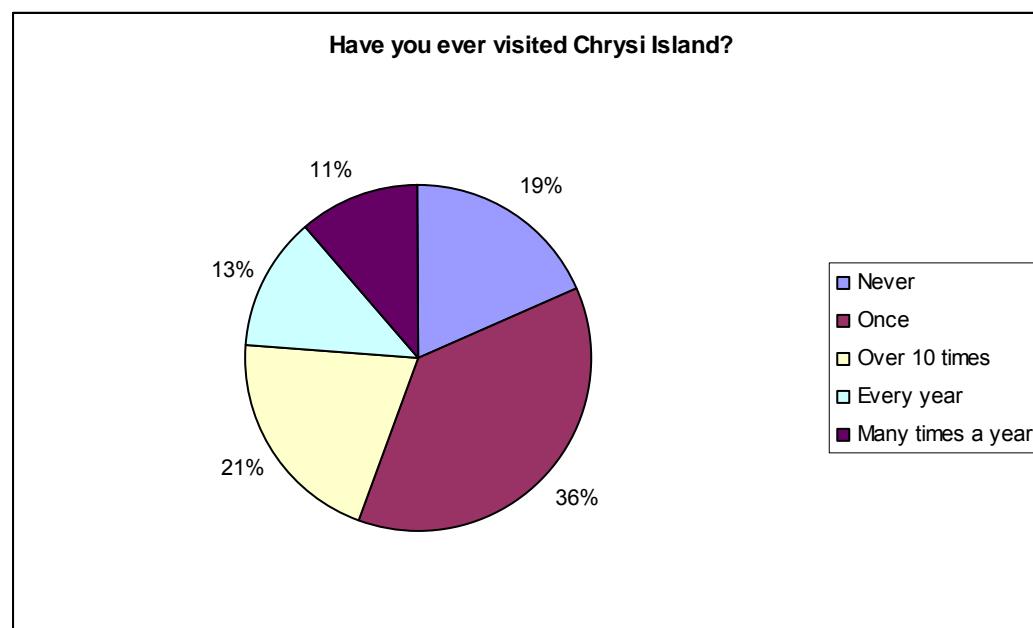
<sup>2</sup> The Municipality of Ierapetra obtains 50 cents per ticket to Chrysi Island, generating significant income revenue. Funds are also obtained from the leasing of refectory and beach chairs. This system however, promotes the increase in visitor numbers.

**Figure 4.1 Local community perceived values and relationship to Chrysi island**



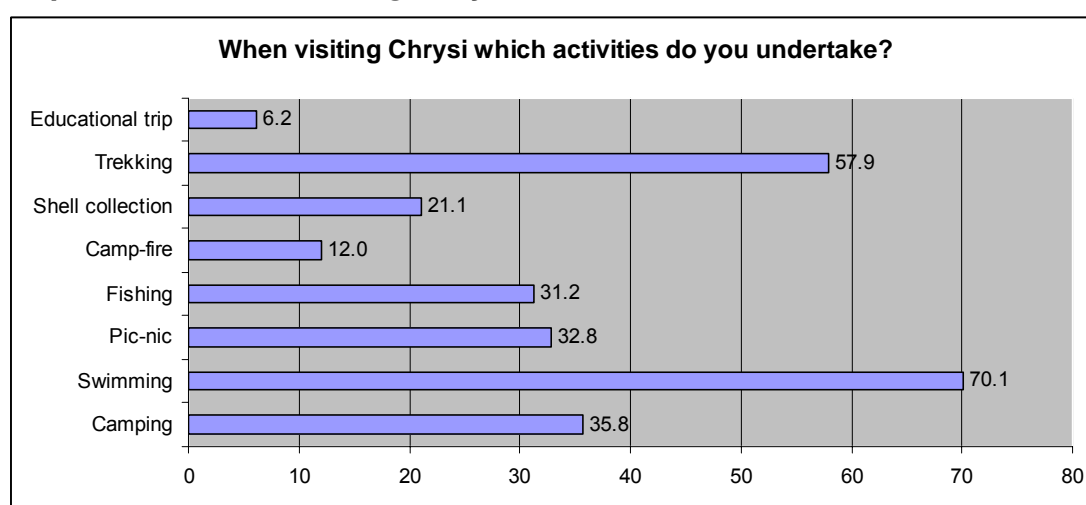
Regarding the recreation value, during the workshop participants commented on the local custom in Ierapetra, whereby high school children at the end of the school year (mid-June) go to do free camping for a week with classmates on the island. Visitation frequency of the local population was established through the community survey (Figure 4.2). It is interesting to note that the majority of respondents (36%) have visited the island only once and 19% never, yet the recreational and inherit existence value of the island is high (Figure 4.1).

**Figure 4.2 Local population visitation frequency of Chrysi Island**



Approximately 9% of respondents proclaimed to benefit from the natural resources of the island which in line with workshop participants comments, that some locals visit the island in the winter for hunting and wild greens gathering using private boats. When questioned about activities carried out in Chrysi (Figure 4.3) 31.2 % of respondents stated that they fish, and that 35% have camped there. The main activities consist of swimming and trekking<sup>3</sup>. Of concern is the fact that 12% of respondents proclaimed to have lit camp fires on the island, indicating the potential risk for fire.

**Figure 4.3 Activities proclaimed to have been carried out by respondents when visiting Chrysi**



It is important to note, that camping, camp fires and hunting are illegal activities by law, yet from the stakeholder and community survey, free camping of high school leavers was presented as a custom, and hunting as a known phenomenon.

**This information indicates the need for detailed study of tourism and camping impact (Action 5) on the habitat, and the potential to raise environmental awareness and volunteering activities to high school leavers.**

<sup>3</sup> Trekking in a Greek sense refers to a simple walk- and not trekking as in the sport

## 5. Habitat Perceived Status and Trends

Stakeholders, during the workshops and in particular through the interviews were asked to state their perceptions of the current habitat status, using a likert scale (Table 5.1) and whether there has been a change over the last 5 years (Table 5.2). The same questions were raised with informal personal communications (see Section 3.2.3) and through community surveys.

During the workshop mixed views regarding the status were presented. The results of the semi- structured interviews indicate that the majority of interviewees perceived that the status was *average* or in *good* condition. However, of concern is the fact that National and regional decision makers stated they *did not know*, indicating the need for greater information at the higher (ministries and regional authority) levels. Interviewees proclaimed either no change or a turn for the worse regarding the environmental status of the island over the last five years. Reasoning was justified, with responses that no actions had been carried out, or for cases where trend was perceived as worsening it was attributed to increased visitation pressure.

Table 5.1 Current Status of Chrysi island- perceived by interviewees

N=19	Excellent	Good	Average	Poor/bad	I don't know
Public Service (National & Regional level)	0	0	0	0	3
Public Service (Local level)	0	4	4	0	2
NGO-(National & Regional level)	0	1	0	0	2
NGO- (Local)	0	0	3	1	0
<b>Total</b>	<b>0</b>	<b>5</b>	<b>7</b>	<b>1</b>	<b>7</b>

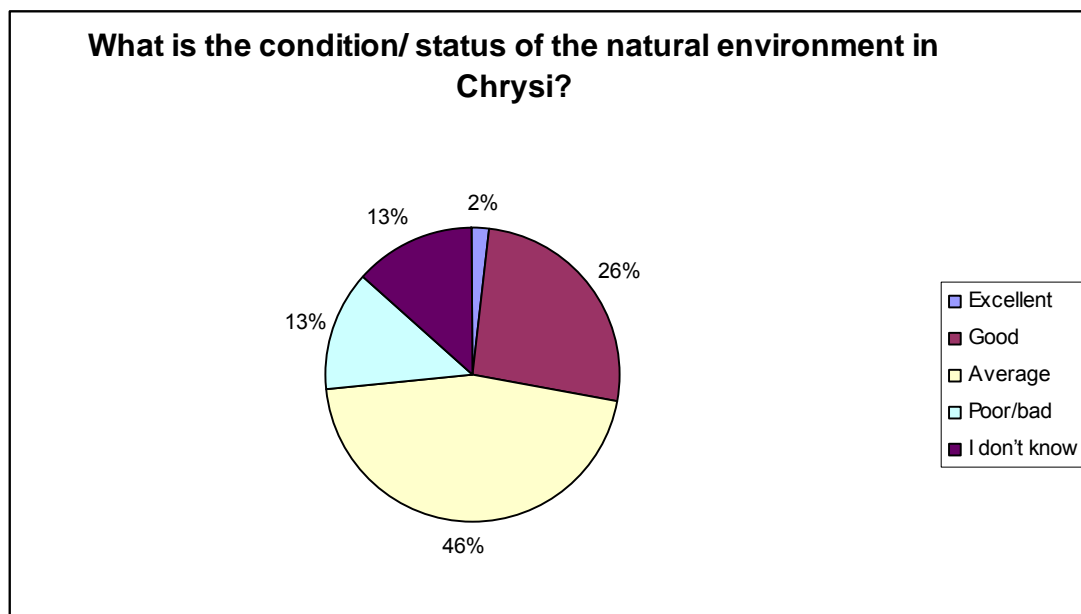
Table 5.2 Status Change of Chrysi island- perceived by interviewees

N=19	Improved	No Change	Worse	I don't know
Public Service (National & Regional level)	0	0	0	3
Public Service (Local level)	0	4	2	2
NGO-(National & Regional level)	0	0	1	2
NGO- (Local)	0	4	0	0
<b>Total</b>	<b>0</b>	<b>8</b>	<b>3</b>	<b>7</b>



The responses obtained from the community survey to the same questions are summarized in Figures 5.1 and 5.2, including justifications provided by those perceiving, that the condition has worsened.

**Figure 5.1 Local community perceptions of condition / status of the natural environment in Chrysi.**



**Figure 5.2 Local community perceptions of environmental status change over the last five years.**

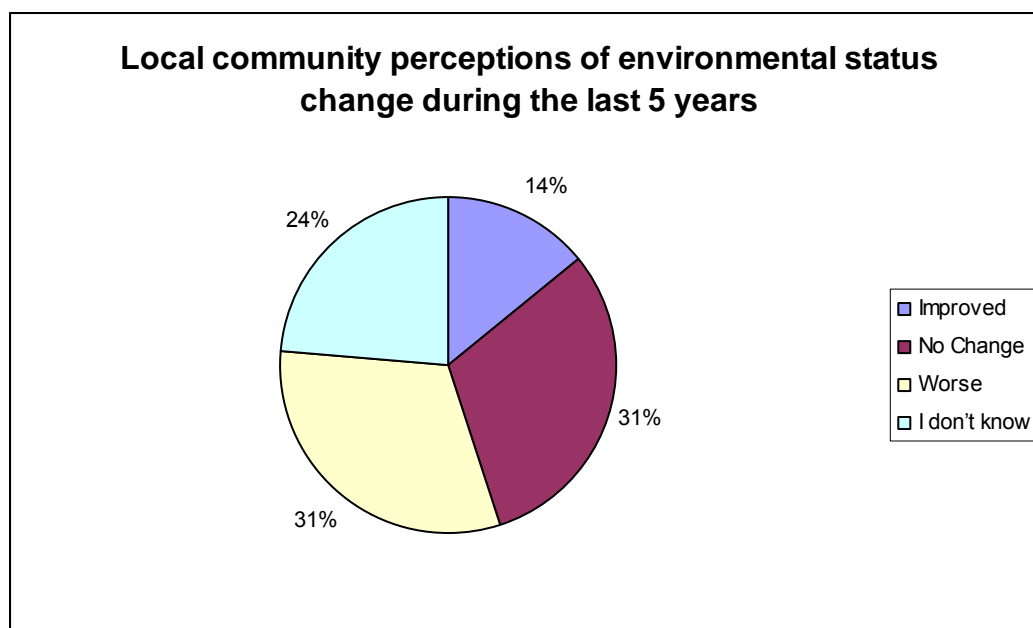


Table 5.3. Local community perceived reasons for habitat status degradation

<b>Local community perceived reasons for habitat status degradation</b>	<b>Frequency</b>
Increase in visitor numbers	35
Increase in rubbish and human waste	25
Lawlessness and lack of control and management by authorities	16
Commercial Overexploitation	12
Increase Juniper damage (cutting of roots and branches)	9
Loss of shells	8
Overgrazing	4

Of particular interest was the information obtained during on site personal communications, with long term visitors and island entrepreneurs (see Section 3). During island walkovers, long term visitors pointed out that shells from the northern beach have disappeared due to extensive collection during the 90s *“people used to collect them in sacks and use them for decoration of hotels, shops etc”* Some visitors stated that shell depth in the 70’s was over 50 cm on the northern beach.

Sand dune erosion and juniper root exposure from trampling along paths – particularly the main paths used by visitors was indicated, and claims of up to 50cm year sand loss from eroded dunes was proclaimed. These are issues which require further scientific investigation. However, for juniper trees in south eastern part of the same habitat which appear to be dryer, it was stated that this condition has been like this as long as people could remember. Changes in the type of visitors, and specifically campers coming during the peak season was mentioned, with reference to their lack of environmental awareness and knowledge of appropriate / sensitive behavior when in the habitat. This issue will thus, be examined through A.5 visitor survey.

## 6. Stakeholder and local community views regarding main threats to Chrysi islands environment.

In this Section the results from the workshop, stakeholder interviews and community survey regarding the perceived threat to the natural environment of Chrysi are presented.

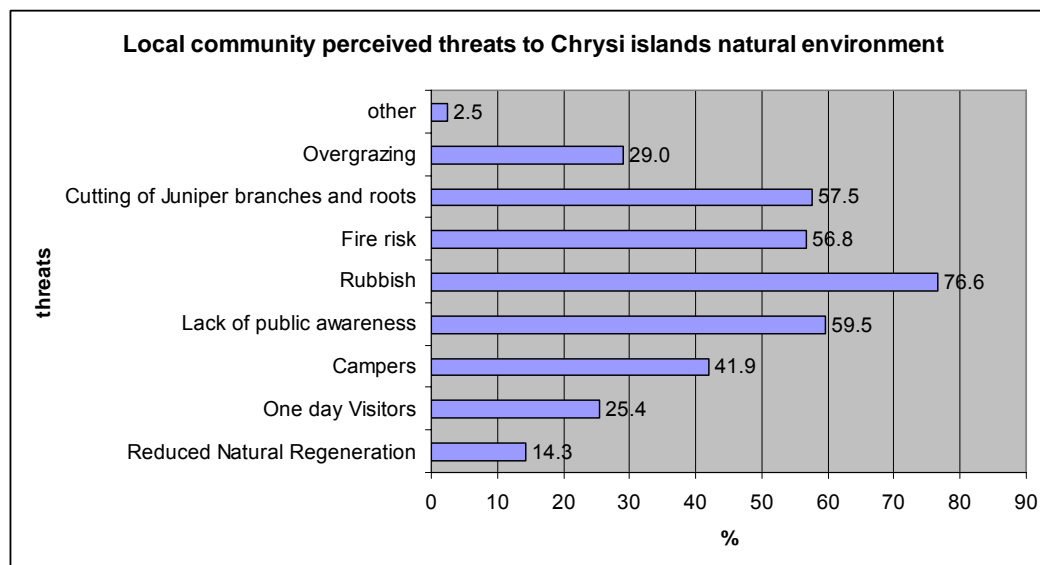
During the workshop extensive dialogue between participants regarding the main threats to the natural environment was carried out and summarized on post it notes. All participants discussed the barrier which the blurry ownership status of the island was causing in the implementation of conservation measures on behalf of the authorities. This was not mentioned during the interviews or community survey (Table 6.1 and Figure 6.1).

The greatest impact was perceived to be arising from, the increasing number of visitors going to the island during the summer months (see Section 2), although participants claimed that they could not quantify the extent or nature of the impact of visitors, and viewed JUNICOAST preparatory actions as useful if this information would be provided.

Table 6.1 Stakeholder perceived threats to Chrysi island

N=20	Public Service (National & Regional level)	Public Service (Local level)	NGO- (National & Regional level)	NGO- (Local)	Total
Don't know	2	1	2	0	5
Reduced Natural Regeneration	0	0	0	1	1
One day Visitors	1	3	1	4	9
Campers	0	8	1	3	12
Lack of public awareness	0	0	0	0	0
Rubbish	0	4	1	2	7
Fire risk	0	6	0	2	8
Cutting of Juniper branches & roots	0	4	1	2	7
Alien species introduction	0	0	1	1	2
Hunting	0	1	0	0	1
Shell collection	0	1	0	1	2
Quadbikes	0	1	0	1	2

**Figure 6.1 Local community perceived threats to Chrysi island natural environment**



Tourism and its related impacts such as rubbish, cutting of juniper branches and fire risk were identified as main threats through the local community survey and a number of actions were proposed to overcome these issues (See section 10). Camping was perceived as being of a greater threat than day visitors although day visitors consist of the majority of tourism visiting the island. This indicates the need for extensive investigation of the actual impacts of the different tourism activities on the habitat.

From both the workshop, and community survey, the problem of human waste- due to the absence of sufficient toilet facilities was underlined. This issue was evidenced during the site visits (Figure 6.2) and requires serious consideration.

**Figure 6.2. Evidence of habitat being used as a lavatory**



Chrysi is famous, and commonly marketed as the island of the shells. Thus continuing shell collection activities by tourists was also mentioned as a threat (Figure 6.3).

**Figure 6.3. Famous Chrysi island Shells**



Introduction of alien to the island species such as rabbits and some colonizing plants were also mentioned (during interviews). Alien planted species by permanent visitors and restaurant owners were identified during site visits (Figure 6.4).

**Figure 6.4. Alien sand stabilizing planted species**



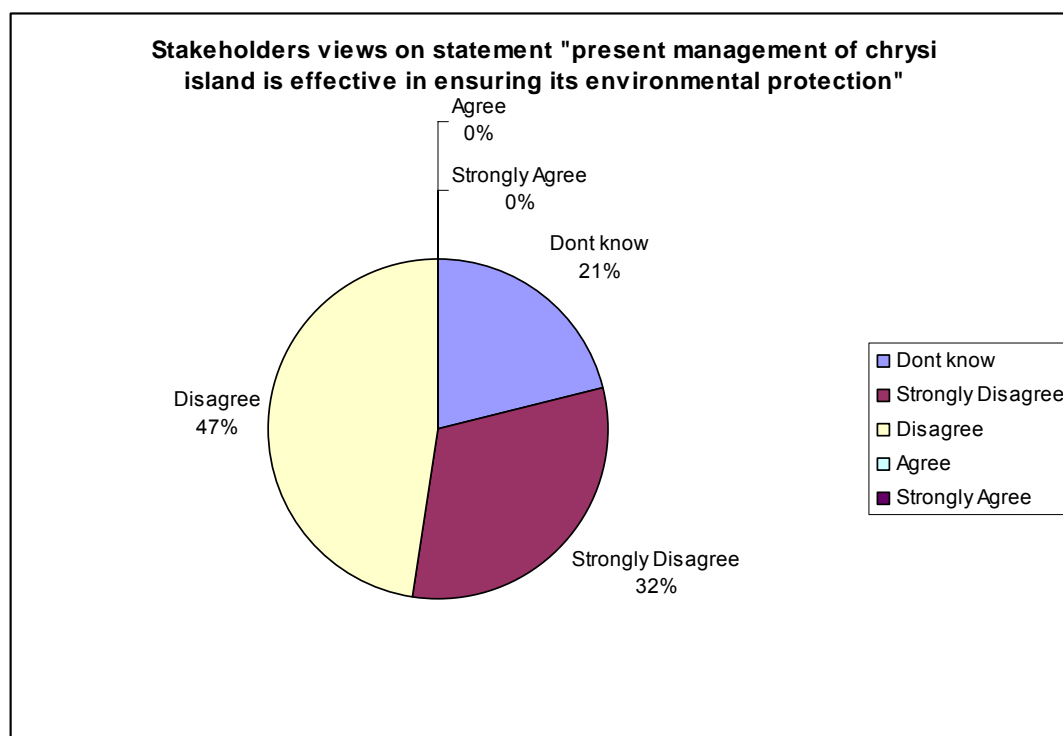
Of interest is the difference between local community and stakeholders views regarding the perceived threat of lack of public awareness. This was not identified as a threat during any of the interviews, where as it consisted of the most important threat according to the people of Ierapetra, signifying the need for emphasis on the D Actions of JUNICOAST.

## 7. Perceived management and conservation effectiveness

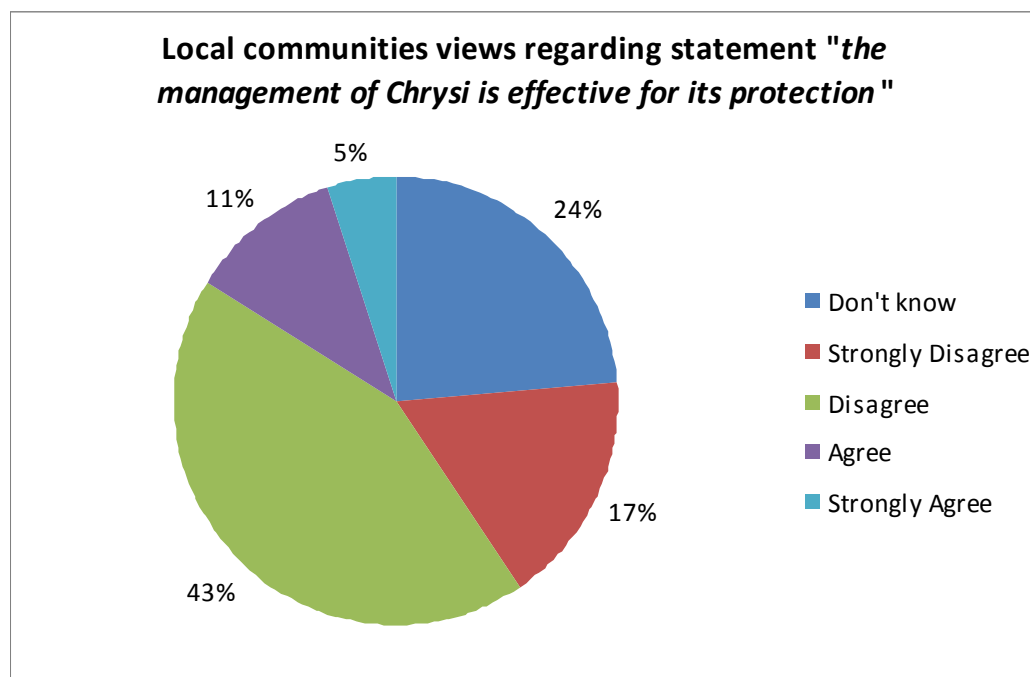
Both the local community and decision making stakeholders were questioned with regard to whether they perceived that present management was effective in ensuring the environmental conservation and protection of Chrysi Island.

Responses from both the community and stakeholders were negative (Figures 7.1, 7.2, 7.3, 7.4). The fact that not a single stakeholder perceived present management operations as effective is of concern, and reasons behind this require further investigation (Action A.9).

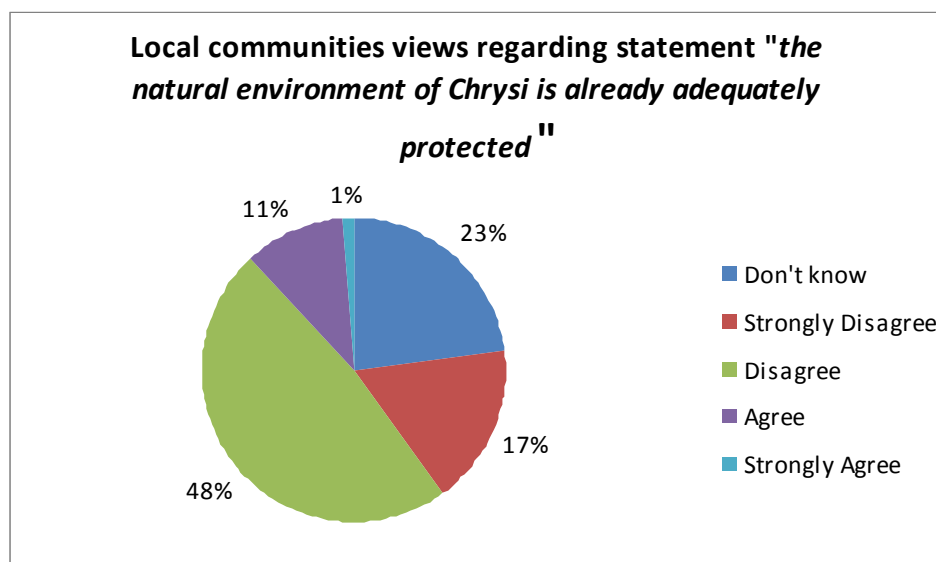
**Figure 7.1 Stakeholder perceptions of existing management effectiveness.**



**Figure 7.2 Local community perceptions of existing management effectiveness**



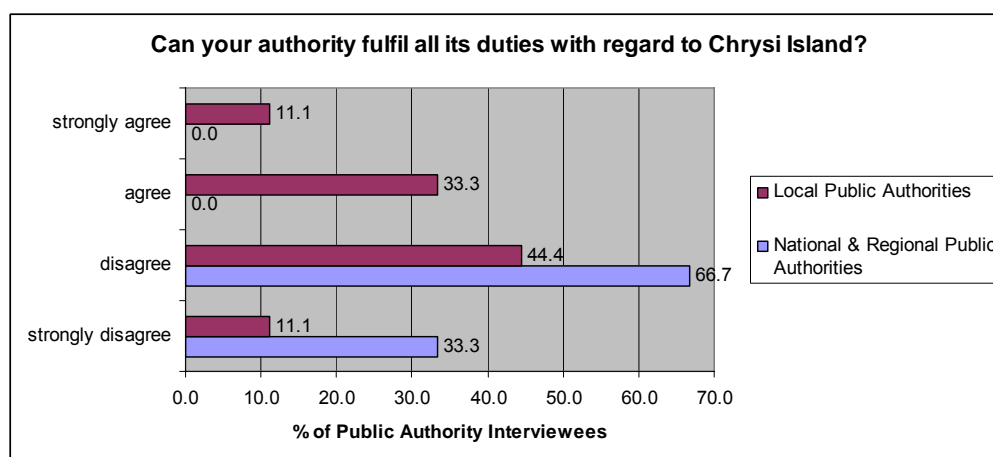
**Figure 7.3 Local community perception regarding Chrysi island environmental protection adequacy**



Public authority stakeholders (PS and PSL Table 3. 1) were questioned with regard to the existing capacity of their authority to fulfill its duties in relation to the island. The majority of interviewees perceived to have difficulties in doing so (Figure 7.4). National and regional authorities proclaimed greater difficulties, although barriers were also mentioned by local public authorities. Mentioned barriers, related to governance issues such as unclear governance and management structures, lack of

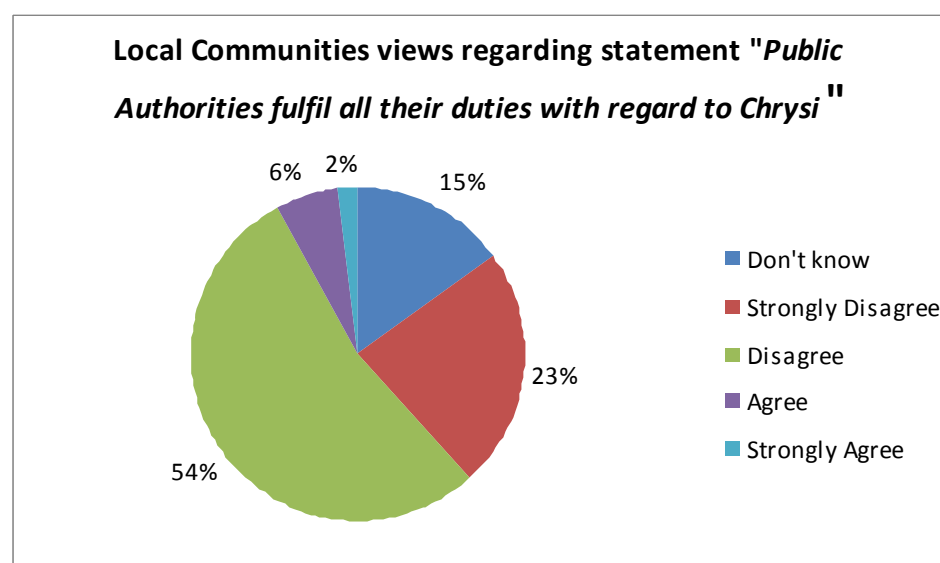
knowledge on NATURA200 and procedures for protected area management, as well as procedural barriers relating to understaffing and inadequate resources. The majority of issues being subsequently attributed to the lack of political willingness for change and commitment to environmental protection.

**Figure 7.4. Stakeholders perceptions of their authorities capacity to fulfil duties with regard to Chrysi island.**



The majority of local community respondents (79%) perceived local authorities not to be fulfilling all their duties with regard to Chrysi island, which was also evident from recommendations for proposed actions (See section 10) whereby 60 specific requests for public authority greater engagement and implementation of the law were made.

**Figure 7.5. Local communities perceptions of public authorities capacity to fulfil duties with regard to Chrysi island.**





This signifies the importance of Action 9 investigation of governance as well as the need for simultaneous stakeholder and community engagement during the dissemination and education campaign (D actions). It also indicates the need to provide information and even sight visit opportunities to National and Regional Level public authorities, which have the decision making influence regarding the area, yet all claimed that they had never been.

## 8. Present stakeholder and local community engagement effectiveness

As mentioned earlier, a participatory approach to protected area management is proported through the Habitats Directive, and subsequently a key component of the JUNICOAST project. However, there is no information on existing NATURA2000 participatory processes and their effectiveness, and neither for this site<sup>4</sup>. Thus, stakeholders and the local community were questioned to establish whether stakeholder and community consultation was being carried with regard to protected area management decision making, and the extent to which they felt they were effective or adequate. Twelve out of the 14 stakeholders did not perceive between stakeholder consultation and collaboration to be adequate (Table 8.1). The issues mentioned to support their views are summarized in Table 8.2

Table 8.1 Stakeholder perceptions of between stakeholder consultation and collaboration adequacy

Present consultation and collaboration between stakeholders is adequate for the effective environmental management and protection of Chrysi Island	Public Service (National & Regional level)	Public Service (Local level)	NGO- (National & Regional level)	NGO- (Local)	Total
Strongly Disagree	0	0	0	2	2
Disagree	2	7	3	0	12
Agree	1	1	0	0	2
Strongly Agree	0	0	0	0	0

Table 8.2 Perceived barriers of between stakeholder collaboration

	Public Service (National & Regional level)	Public Service (Local level)	NGO- (National & Regional level)
Not all stakeholders are included in decision making	0	0	2
lack of decision making transparency	1	1	3
unclear responsibility delegation and accountability regarding decision making	3		1
lack of decision publicity and information sharing		1	1
lack of interest	1	1	
lack of management and decision making protocols		1	

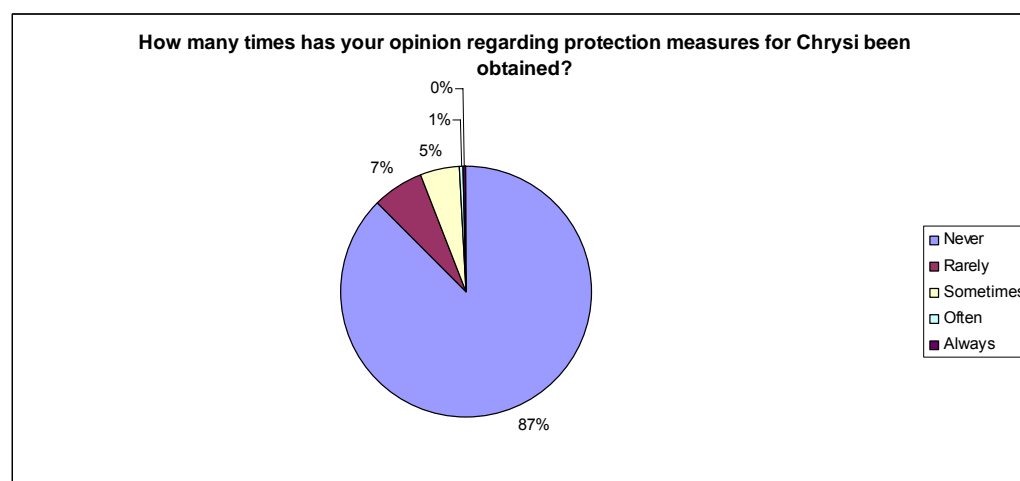
<sup>4</sup> The effectiveness of participation methods employed for A.6 evaluation report – consists of a deliverable in this action.

With regard to the effectiveness of existing local community consultation practice for Chrysi island environmental management decision making, stakeholders views differed with the majority (9) disagreeing (Table 8.3). This problem was confirmed through the community survey whereby 87% of respondents stated *Never* to have been consulted and 7% *rarely*.

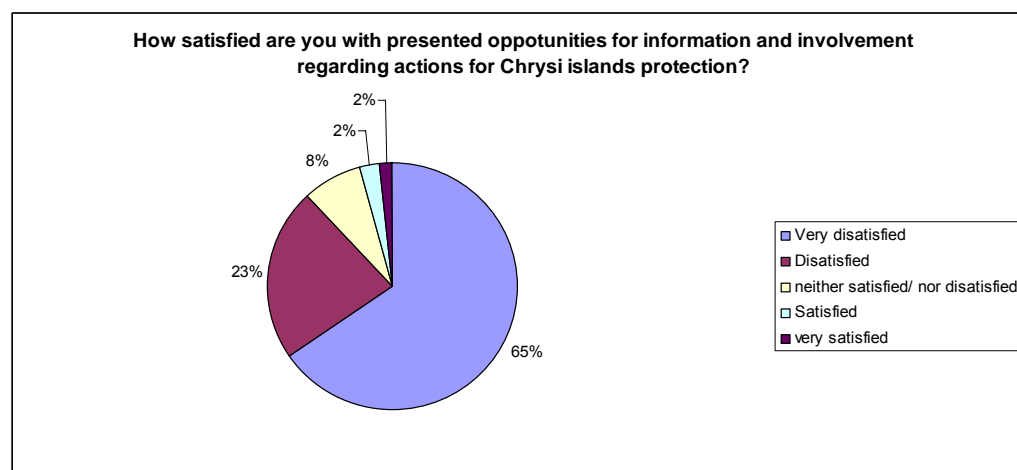
Table 8.3 Stakeholders perceptions of existing stakeholder consultation effectiveness

"Local community consultation regarding environmental management of Chrysi is being carried out effectively"	Public Service (National & Regional level)	Public Service (Local level)	NGO- (National & Regional level)	NGO- (Local)	Total
Dont know	0	1	0	1	2
Strongly Disagree	0	1	2	1	4
Disagree	1	6	1	1	9
Agree	2	1	0	1	4
Strongly Agree	0	0	0	0	0

**Figure 8.1 Extent of community consultation**



**Figure 8.2 Local community satisfaction with existing information provision and consultation opportunities.**



The above results indicate the importance of providing opportunities through JUNICOAST to increase information provision, as well as, the development of a holistic communication strategy and after life communication plan.

## 9. Levels of awareness and information provision

One of the main objectives of this action was to establish current levels of stakeholder and local community awareness regarding priority habitat 2250\* and localities in Crete. Therefore, during interviews stakeholders were asked to specify, which designations was Chrysi island characterized by and the reasons for designation (i.e why is it being protected and as a result what activities are prohibited- what is protected).

What was established from the interviews was that stakeholders knew of designations relevant to their capacity, meaning archeologists knew archeological designations, port authorities knew restrictions according to their domains legislation etc. Only the Lasithi Forest Directorate had an overview of all relevant designations.

The majority (70%) of stakeholders knew that the site was designated as NATURA2000 site. However, 80% openly expressed ignorance with regard to what that actually meant, and what implications this had regarding prohibited activities and management of the island.

For those stakeholders more involved with NATURA2000 due to professional capacity, a negative view was presented, whereby stakeholders felt that the designation did not result in any practical conservation implications. Regarding specifically the designation of Chrysi island as a NATURA2000 site, some authorities commented that due to the continuing absence of structured management plans and management authorities, such legislation was having a negative effect rather than positive - due to governance and legislative confusion.

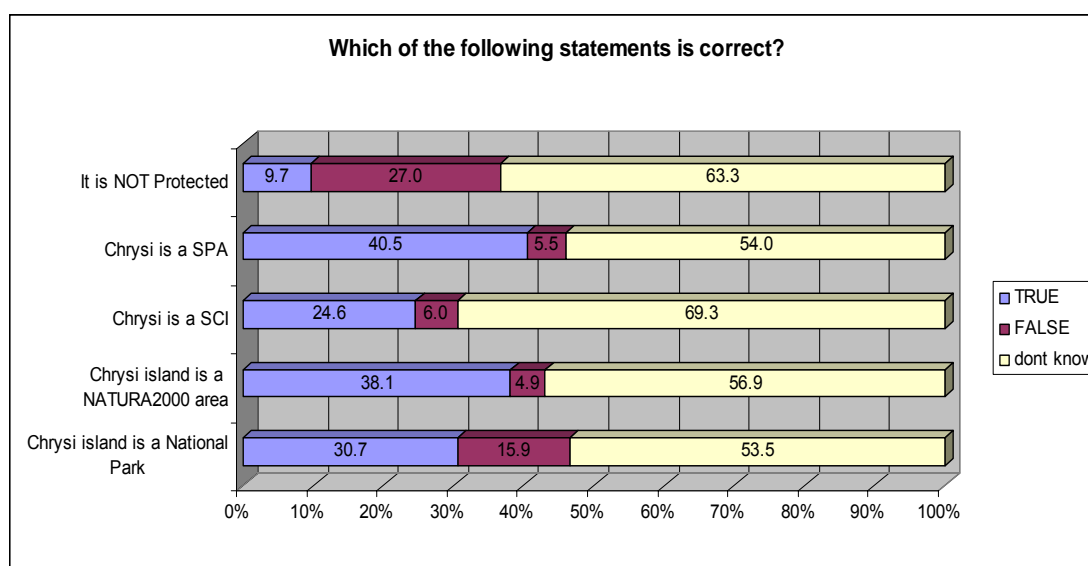
Interestingly regarding environmental protection all but two stakeholders interviewed either did not know what priority habitat 2250\* was or had never heard of this classification before, and considered that environmental protection on the island was for the purpose of protecting solely the juniper trees.

Awareness regarding the environmental protection status and designations of Chrysi island amongst the community also proved to be problematic (Figure 9.1).

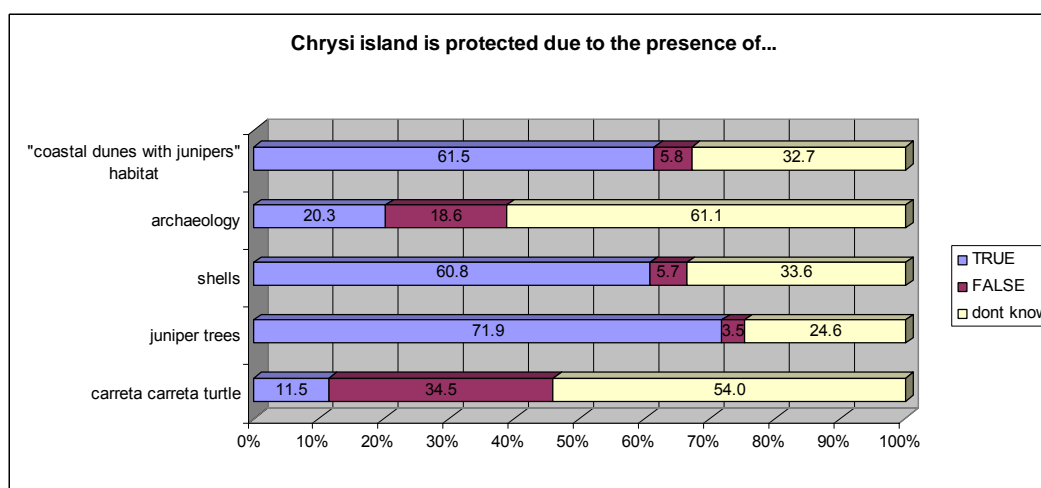
Indicatively for the statement *Chrysi island is not protected* 73% believed that this was the case or were unsure. Similarly only 38.1% knew that the island is designated as NATURA2000 area. Many wrongly believed that the island was either a National Park (30.7%) or an SPA (40.5%). Confusion, regarding reasons for designation and protection was also noted from local community survey (See Figure 9.2)

The above results indicate the need for an integrated communication strategy to both decision making stakeholders, as well as, the local community regarding priority habitat 2250\*, NATURA2000, and its implications for the environmental management and protection of the island.

**Figure 9.1 Local community awareness regarding environmental designations of Chrysi island.**

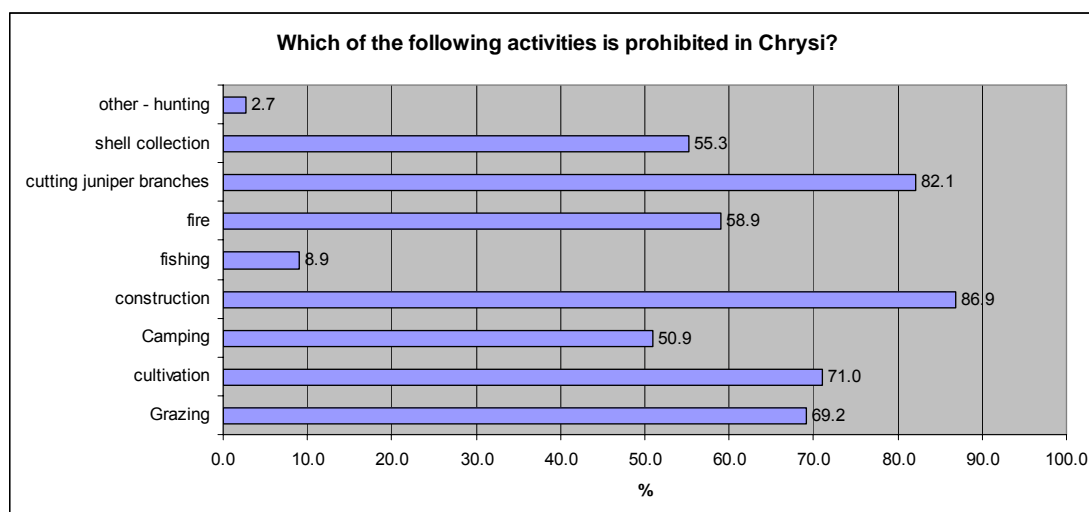


**Figure 9.2 Local community awareness regarding reasons of designation.**



Stakeholders and local community were asked to specify which activities were prohibited on the island. Awareness amongst interviewed stakeholders was in many cases fragmented and responses reflecting stakeholder professional background. In the case of the local communities perceptions with regard to what is prohibited or not on the island (Figure, 9.3) it is evident that more work is required regarding clarification of allowed and forbidden activities. What can be observed that activities respondents have engaged in like camping, camp fire lighting and shell collection, although prohibited legally are not considered as illegal by respondents, yet activities such as cutting of juniper branches, which is not per say stipulated in legislation was considered prohibited.

**Figure 9.3 Local community perceptions of prohibited activities in Chrysi**



Through discussions with permanent of long term visitors – it was indicated that new campers are often informed by long term visitors with regard to not cutting branches and the slow growth rate of this species. This indicates the importance of experiential learning. However, it needs to be underlined that through discussions, permanent visitors commented on how the increasing camper numbers particularly during the peak season, does not allow for individual awareness raising, and that fires and juniper branch burning are occurring, with a need for more formal awareness raising and codes of visitor conduct clarification prior to arrival on the island becoming necessary.

Based on the Habitats Directive, NATURA2000 sites management and status should be subject to regular monitoring. However, based on interview results it was established that apart from the absence of a formal management and action plan, there is not monitoring strategy. Moreover, stakeholders all expressed inability under current conditions to conduct regular monitoring. One off site inspections were being conducted by different local authorities (PSL) and port authorities collected visitation numbers to the island. Of concern is the fact that National and Regional Authorities claimed never to have even visited the site as well as to not obtain any information on it.

Stakeholders, presented the remoteness of Chrysi as a significant barrier to structured monitoring, and commented that monitoring for any protected area is an issue to the lack of specifications, allocated budgets to do so as well as serious staff and funds shortages. This finding has considerable implications regarding Action A.8 specification of monitoring protocols, which although originally intended to develop state of the art indicators to monitor the status and threats to priority habitat 2250\* it is now clear from results, that is monitoring is to have any chance of continuing following the end of this project, simplicity and feasibility issues need to be considered seriously.



## **10. Proposed actions for the environmental protection of Chrysi island**

In this section the results of stakeholder workshop, interviews, personal communications and community survey, regarding their views on what actions should be carried out to protect Chrysi are presented collectively and juxtaposed – were relevant to proposed JUNICOAST actions. Information on regarding recommended actions was obtained from open ended questions to which content analysis using coding was conducted.

From the responses obtained different types of recommendations occur all of which are presented. However, emphasis and detail is placed with regard to recommendations which inform JUNICOAST concrete conservation actions as well as D actions.

A number of recommendations relevant to the governance and management of the island were proposed. In particular, stakeholders during the workshop underlined the need to clarify officially the ownership status of the island. This is not the in the scope or capacity of the JUNICOAST project, however.

The need to instate an official management Authority which would be backed with the necessary funds and trained staff, as well as management and action plan which delegates and clearly specifies activities and different authorities’ responsibilities, was stressed as of paramount importance. All subsequent recommendations are of more specific nature with regard to specific actions or scope which would be covered by the management plan.

From interviews and community workshop, it was evident that two schools of thought regarding intervention and methods of environmental protection of the island exist, each with their strengths and weaknesses, opportunities and threats as well as different management implications (Figure 10.1). However, the decision with regard to which approach to adopt, does not and should not lie, in the team of JUNICOAST.

It is a political and governmental decision, which requires commitment either way of long term implementation and accountability for defined responsibility fulfillment.

Table 10.1 SWOT analysis of two different recommendations of environmental management approaches for Chrysi Island.

SWOT	Legislative restriction based approach	Visitor management approach
Strengths	If law is implemented, all potentially harmful activities, (ie hunting, vehicle movement, camping) bar day trip visitors will cease.	Implementation can be secured through motivation for income generation.
Weaknesses	Difficult to implement, requires all year round, government funded guards (minimum two) and purchase of boats. Trampling and waste issues from day trippers remain unsolved. Visitor management facilities, eg toilets, waste collection site, refectories have to be removed due to illegality according to law. High conflict and resistance arising from permanent and local users, private entrepreneurs (boat owners, refectory owners)	<ul style="list-style-type: none"> <li>Requires, consensus and commitment by stakeholders and instatement of a legally binding management plan.</li> <li>Requires the identification of a sustainable pricing scheme (balance between viable boat ticket pricing- facility pricing, visitor numbers and % for management/ conservation activities)</li> <li>Requires the formation of an accountable management body.</li> <li>Requires independent quality assurance inspections</li> <li>Is contradictory to current legislation.</li> <li>Requires the development a Visitor Management Plan which includes eco-tourism management</li> <li>Requires a Visitor Code of Conduct and promote in appropriate ways.</li> </ul>
Opportunities	Legislation already exists- only approval of action plan remaining from Region of Crete proposed by Forest Directorate (Κανονισμός Λειτουργίας)	<ul style="list-style-type: none"> <li>The island is re-branded and marketed as an exemplar of Sustainable Protected Area management- targeting higher income-quality users (organization of educational trips- environmental events- new growing tourism sector).</li> <li>Strong information and education campaign- with specified codes of visitor conduct.</li> <li>Recreational use of Chrysi Island will be guided by a Visitor Management Plan</li> <li>Visitor management should at all times be consistent with meeting conservation objectives and at no time will contravene key conservation policies and objectives.</li> <li>Recreational activities should be managed to have minimal environmental impact and, as far as practicable, contribute to conservation programs for Chrysi Island in some tangible way.</li> <li>Numbers of users regulated in accordance to carrying capacity. (ticket pricing modified to compensate reduction in numbers)</li> <li>Zonation of visitor areas, limiting access to certain areas.</li> <li>Creation of organized camping- profit based, which will ensure facilities, in non sensitive areas- and will ensure absence of free camping in sensitive areas.</li> <li>Provision of PAY and Use toilet system, ensuring cleanliness of facilities as well as reduction of human waste issue in habitat.</li> <li>Boardwalks to guide visitors to specific zones- reduce trampling.</li> <li>Rubbish management – on site – responsibility of entrepreneurs- shipment responsibility of Municipality</li> </ul>
Threats	Law is not enforced – there is no control thus left open to unregulated exploitation and continuation of current situation	<ul style="list-style-type: none"> <li>If no quality insurance inspections regarding facilities and services is provided.</li> <li>Short term overexploitation and failure of model could take place.</li> </ul>

The first school of thought makes reference to legislative measures and the need for implementation of the law and banning of activities on the island, whereas the second focuses environmental protection through management and education activities.

Regarding the first school of thought it is important to note that specific legislation regarding the environmental protection of Chrysi island exists, for example it is illegal to camp, light fires, construction, grazing of animals, hunting etc. However, these activities confirmed by both authorities and local community and site visits, are prevalent on the island, indicating the weakness of standalone legislative actions.

It is important to note that the local community, perceived public authorities as non adequately protecting the environment of the island 60 of which made specific recommendations and requests for greater activity on behalf of responsible authorities indicatively responses of the type “ authority X should do its job” “authority Y should ban y”.

Local community views (39) made negative reference to phenomena of commercial overexploitation, and municipal authorities’ interest in tourism exploitation rather than environmental protection of the island, indicating a current lack of trust of authorities and elected members.

Regardless of school of thought, all stakeholders and significant number of community respondents dictated the need for permanent guards on the island, what differed according to respondents were proposed responsibilities.

Some stakeholders saw the guards role in implementing the various (camping, hunting lighting fires, illegal fishing, vehicle movement, grazing, etc bans), where as others saw the need for guards in terms of implementing and ensuring correct implementation of protection measures such as (controlling visitor numbers, ensuring codes of visitor practice are adhered too, information provision and awareness raising, maintenance of protection measures etc)

As JUNICOAST proposed actions C & D are related more to non- legislative measures of conservation, detailed results and feedback regarding proposed actions are emphasized in this report, by action category.

All stakeholders and (257) local community respondents proposed the need for improved visitor management through:

- regulation of visitor numbers
- visitor infrastructure provision (path delineation and boardwalks provision, specific organized camping facilities)
- zonation of visitor and high protection areas
- Guarding

Specific recommendations regarding waste management and sanitation issues were proposed during workshop and by 106 local community respondents.

### **Visitor number regulation recommendations**

From all consultations the need to regulate visitor numbers and impacts was underlined. Some stakeholders and community respondents were for the reduction of numbers and banning of camping, whereas other stakeholders were for the improved management of tourism on the island and provision of necessary infrastructure and services, necessary to minimize tourism's environmental impact.

What was stressed by all workshop stakeholders is that the carrying capacity of the island is not known and that scientific input with regard to the maximum number of visitors to the island is necessary. This issue is in part addressed through A.5, however, carrying capacity studies do have limitations (Coccosis & Mexa, 2004) particularly when applied to previously unstudied habitats, in this case priority habitat 2250\*. Therefore, there is first the need to scientifically evaluate the nature and significance of visitor impacts and based on those results consider collectively different management approaches and scenarios with the aim of ensuring environmental protection (e.g. Table 10.1)

Visitor number regulation is feasible from a practical perspective, due to the island remoteness and access only by boat. However, ferry services are private and profit

from increased numbers, with no legal government jurisdiction neither on pricing nor on visitor numbers, in the absence of a legally binding management plan. Moreover, the current capacity of authorities to implement restrictions needs to be examined, as despite the numerous legal bans instated for the island, none are essentially adhered to or enforced successfully.

### **Access and trampling regulation**

What stakeholders and some community respondents pointed out was the current issue of trampling being caused through unrestricted access to the habitat and lack of defined paths.

At the workshop, local authority stakeholders commented on how visitors walk throughout the habitat, without following specific paths, causing trampling disturbance. The same was stated for the free camping whereby the majority of the eastern 2250 habitat trees were stated as camping spots (Spatial Distribution of visitors to be determined through A.5).

Recommendations proposed to overcome these issues, apart from research to establish the significance and actual impacts of trampling and camping, included, the establishment of zones, and delineation of paths.

Zones where no visitor access or camping would be allowed, in combination with specific tourism zones and an organized camping area, with necessary facilities such as toilets in non-fragile areas (i.e. outside the priority habitat) were proposed. Such a zonation system could only work if guards are instated permanently on the island, or better by those managing organized camping facilities, as free camping would reduce their profit, thus ensuring implementation. The marking of central paths through the habitat from south (port) to north beach were deemed necessary to avoid trampling from visitors who get lost.

Moreover, during the workshop stakeholders pointed out that due to the large number of visitor movements (over 1000/day in August see section 2) boardwalk installation on the main access path were presented as necessary (See Figure 10.1). However,

boardwalks require annual maintenance, which if not undertaken, could result in accident hazards and at worse a source of free fire wood, increasing the fire risk on the island, which could be detrimental considering the absence of fire protection on the island.

**Figure 10.1 Trampling erosion and visitors passing through main path (top view visitors passing under juniper- bottom view erosion of sand dune in same location).**



From personal communications with those in charge of waste collection on the island it was established that some paths are used by quad bikes for waste collection, thus

indicating the need to carefully select boardwalk routing, to avoid disturbing waste collection.

It was also pointed out during the meeting and personal communications on the island, that some habitat demarcation and sand stabilization measures had taken place with questionable by stakeholder’s success. Wooden Block sand dune stabilized had been placed, in paths, but as permanent users pointed out, they had had the opposite effect. Quadbikes and visitors had increased erosion around the wooden block to facilitate access, essentially doing more damage than good (Figure 10.2).

**Figure 10.2 Sand dune stabilizing blocks resulting in increased erosion, due to inappropriate use.**



Wooden fences installed to prevent trampling under juniper have resulted in being used as shelters, without any effect in deterring visitor use (Figure 10.3). **This indicates the need to consider the purposefulness, locations and methods for habitat demarcation proposed in JUNICOAST C action.**



**Figure 10.3. Fences and Barriers being used to camp under- not effective protection.**



### **Fire protection recommendations**

The risk of fire was seen as a significant threat, and some management measures proposed. From interviews with fire brigade it was made clear that on site suppression of fire is restricted due to absence of water and remoteness of the island, underlining the need for prevention and 24hour guarding.

### **Waste and sanitation management recommendations**

Waste was one of the main issues addressed by the local community, with a total of 106 respondent recommendations to improve waste management and sanitation on the island being, proposed.

Stakeholders during the workshop openly commented on the issue of the habitat being used as a lavatory (Figure, 10.4) due to the absence of toilets on the main beach on the North. Proposals for portable lavatory installation on the north beach were proposed, although issues of who would be responsible for their cleaning and maintenance were also raised. The opinion of increasing visitor charges to fund annually management and maintenance as well as guarding services was discussed with governance issues regarding accountability and responsibility, being left unsolved.



**Figure 10.4. More evidence that habitat is being used as a lavatory.**



Comments on the inefficient rubbish collection and disposal methods of previously sub-contracted company were also commented negatively. During May visit, for other data collection waste from the previous year, was found uncollected (Figure 10.5). The new person in charge of waste collection was also contacted and problems and limitations discussed, as well as ways in which JUNICOAST could facilitate.

**Figure 10.5. Previous Season waste left uncollected for 9 months.**



Different ideas and measures for dealing with the waste and sanitation problem were proposed, which complement each other. The introduction of a joint information campaign and LEAVE NO TRACE or “Pack it in Pack it out” visitor code conduct implementation, in conjunction with the creation of a shelter for remaining waste collected prior to shipment off the island and installation of appropriate and sufficient number of bins was proposed. Discussions, with current waste collector on site, who is the leaser and manager of refectory, and has taken on waste collection free of charge, and different to previous years contractor, were carried out. The need for a waste collection shelter was identified, as waste shipment which is contracted to a different person does not happen on a regular basis and is also restricted by weather conditions, resulting, in the accumulation of huge volumes of waste which then become a potential pollution, odour and visual detraction (Figure 10.6). A detailed examination, litter survey and waste management facilities recommendations will result from A.5.

**Figure 10.6 Waste accumulated over 3 days due to non arrival of shipment boat.**



With regard to human waste and sanitation issues, local authorities and local community emphasized the need for toilets on the northern beach. However, the

rejection of this idea by a number of stakeholders – stating them as illegal or as a source of further pollution was also noted. The issue lies in identifying the appropriate technology for the toilets, suited to the visitor load, habitat conditions as well as ensuring a method for their continuous cleansing and maintenance<sup>5</sup>. This facility was not included in original project proposal, but from Visitor impact assessment action A.5 the need for it will be examined.

For other activities such as foredune stabilization specific recommendations were not proposed, however when discussed during the workshop, feasibility issues due to beach trampling and beach chairs was raised (Figure 10.7).

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<sup>5</sup> At present, toilets exist at refectories. Southern refectory toilets in August were noticed to overflow and spill into the sea. Apparently, permission for sewage tank installation is not permitted under archeological legislation, despite recognition of visitor loads to the island.



**Figure 10.7 Visitors in area where fore dune stabilization measures may be proposed.**



Regarding the issue of planting of alien species, from discussions the reasoning for the planting was given that they stabilize the sand. The proposal of replacing alien species with local endemic sand stabilizing plants (e.g. Figure 10.8) were proposed, which was welcomed.

**Figure 10.8. Example of local endemic sand stabilizing plant which could be use to replace alien species.**



**Fore all actions, the priority of dealing with governance issues such as development of a management authority or delegation of responsibilities and funds obtainment by a specific stakeholder which would be accountable for effective protection of the island was underlined.**

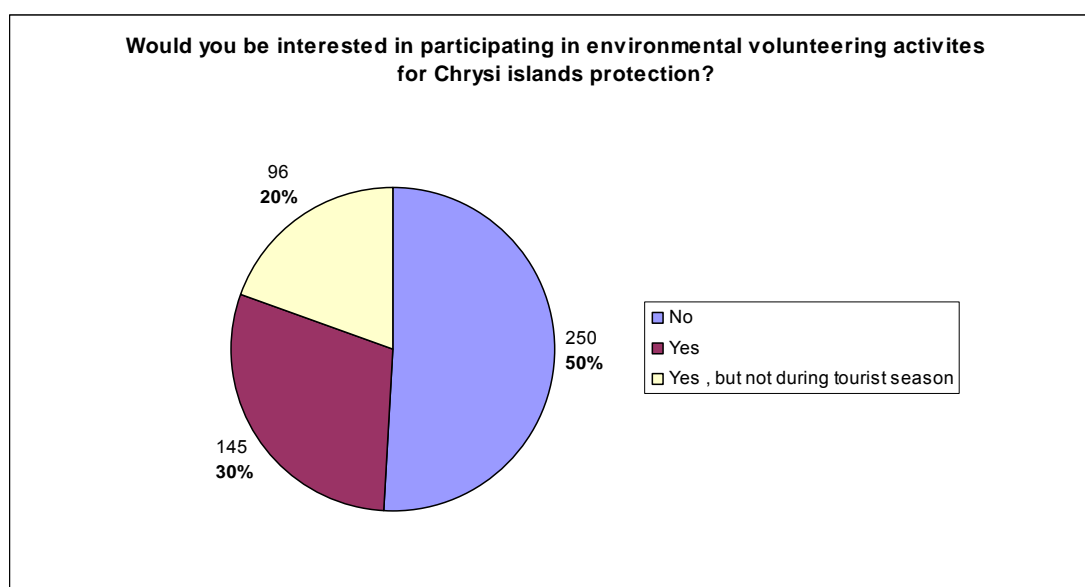
### **Education and information provision recommendations**

Stakeholders and local community respondents emphasized the need for improved information provision and awareness raising using different methods for different audiences.

JUNICOAST proposed awareness raising actions were presented during the workshop and feedback and further ideas proposed. The need for visitor leaflets, signs and a documentary demonstrating the importance of the habitat and appropriate code of conduct was underlined. The need to inform visitors prior to their arrival to the island was also stressed.

The scope for education of younger generations, through educational and volunteering activities was also welcomed. Willingness to volunteer was established as considerable (50%) from the local community survey (Figure 10.9), indicating the potential scope for such an approach.

**Figure 10.9 Stated willingness to volunteer in environmental protection activities for Chrysi Island**



Tourism representative participants in workshop, and through personal communications, indicated the value of providing information and training to tourism guides, as well as the potential scope of having guided educational tours of the island. The need for more information signs in different locations (boats, ports habitat entry points etc) was emphasized. Also the need for a different management approach of Greek and foreign visitors was discussed, and thus requires further investigation through action A.5.

## 11. Recommendations and conclusions

Based on the outcomes of Action A.6 “Stakeholder consultation”, that a number of issues and recommendations have been drawn.

- A number of threats mainly related to tourism are perceived to be compromising the status of the habitat, which overall however is still considered by the majority to be in good condition.
- There is a need to establish the impact of visitors on the habitat scientifically and based on those results propose and implement appropriate yet feasible visitor management and conservation actions.
- Existing management of Chrysi is considered as insufficient or ineffective presently
- Governance issues are proving barrier to the effective management of the island.
- There is scope for greater engagement and collaboration between stakeholders and for the involvement of the local community.
- There is a need to raise awareness of stakeholders and local community regarding the values, threats, designations and appropriate code of conduct on the island- awareness levels were low
- Systematic monitoring and information collection regarding the habitat—is currently limited or non existent
- There is scope for forming volunteer groups and engaging children in awareness raising and conservation actions for the habitat
- Visitor management actions need to be discussed collectively with stakeholders to ensure their feasibility, maintenance and long term feasibility given current absence of management authority and maintenance funds.
- Visitor information opportunities and necessity of such actions is considered of paramount importance.

***To conclude, the Habitat in Chrysi Island is receiving increasing pressure. Technical solutions are available, and through JUNICOAST the opportunity to identify, and partially fund some of the necessary conservation actions are provided. However, the decision regarding the management, maintenance and long term status of the island, is a political one. As JUNICOAST we can raise awareness to the issues and available solutions, but cannot make the decisions or enforce them for that matter.***

## 12. References

- Arnstein, S., 1969, A ladder of citizen participation. *AIP Journal*, July, pp216-224.
- Bonaiuto M, Carrus, G, Martorella H & Bonnes, M., 2002, Local identity processes and environmental attitudes in land use changes: The case of natural protected areas, *Journal of Economic Psychology*, 23 pp631-653
- Borrini- Feyrabend, G, 1996, *Collaborative management of protected areas: tailoring the approach to the context*. IUCN Social Policy Group , Switzerland
- Borrini-Feyerabend, G., Kothari A., and Oviedo, G., 2004, *Indigenous and Local Communities and Protected Areas: Towards equity and enhanced conservation*. IUCN, Switzerland and Cambridge, UK
- Coccosis, H., & Mexa, A., 2004, The challenge of tourism carrying capacity assessment. Theory and Practice, Ashgate Publishing.
- De Vaus, D., 2007, *Surveys in Social research*, 5th edition, Routledge, London
- Dorcey, A.H.J., Doney, L. and Rueggeberg, H., 1994, Public involvement in government decision making. Choosing the right model, Victoria, B.C: The Round Table on the Economy and Environment, cited in Jackson L., 2001, Contemporary Public Involvement: towards a strategic approach. *Local Environment*, 6 (2), pp 135-147.
- Eben M., 2006. Public participation during the sites selection for the Natura 2000 in Germany: The Bavarian case. In Stoll-Kleemann, S., Welp M., eds. *Stakeholder Dialogues in Natural Resources Management: Theory and Practice.*, Springer- Verlag, Berlin, 261-278.
- Environment Council, 2002, *Dialogue for sustainability: Facilitation skills and principles*, Environmental council C1/V1, London.
- Harrison C.M., Burgess J., Clark J., 1998, Discounted knowledge: farmers and residents understanding of nature conservation and policies, *Journal of Environmental Management*, 54, 4. 305-320
- IEMA Institute of Environmental Management and Assessment, 2002, *Perspectives, Guidelines on participation in environmental decision making*, IEMA, Lincoln.



- Paavola, J., 2003/2004, Protected areas governance and justice: theory and the European Unions Habitats Directive. *Environmental Sciences* 1, 59-77
- Pretty, J. and Shah, P., 1994, Soil and water conservation in the twentieth Century: a History of Coercion and Control, University of Reading Rural History Centre Research Series 1. *Tomorrow*, 1999, 3 (IX), May-June.
- Sanoff, H., 2000, *Community participation Methods in Design and Planning*, John Wiley and Sons, USA.
- Sarantakos S., 1993, *Social Research*, McMillan Education, Australia, PTY, LTY
- Seargent J. and Steele, J., 1998, *Consulting the Public. Guidelines and Good Practice*, PSI, London.
- Tonn, B., English, M. and Travis, C., 2000, A framework for understanding and improving environmental decision making, *Journal of Environmental Planning and Management*, 43 (2), pp 163-183.
- UNDP, 1997, Empowering people: a guide to participation, <http://www.undp.org/csopp/CSO/>
- Webler, T. and Renn, O., "A brief primer on participation: Philosophy and Practice" In Renn, Webler, T. and Wiedemann (eds), 1995, *Fairness and competence in Citizen Participation. Evaluating New Models for environmental Discourse*, Kluwer: Boston , pp 17-34.
- Wilcox, D., 1994, *The guide to effective participation partnership*, Brighton
- WWF, (eds) 2005, *Crosscutting tool stakeholders Analysis*, Foundations of success, USA.

## Appendices

**Appendix A:** Report on stakeholder workshop (25/2/2009) and Evaluation of stakeholder engagement methods with the following annexes:

*Annex A: List of all potential stakeholders contacted for involvement*

*Annex B: Greek Summary of Project*

*Annex C: Agenda of Stakeholder meeting and invitation letter*

*Annex D: Participant Booklet provided at workshop*

*Annex E: Draft educational programme for review provided at workshop to stakeholders*

*Annex F: Example of Draft community survey questionnaire provided to participants*

*Annex G: Participant Workshop Evaluation Feedback questionnaire*

**Appendix B:** Stakeholder interview template for Chrysi Island

**Appendix C:** Community survey questionnaire