Factsheet for new measures under Article 13 of Marine Strategy Framework Directive 2008/56/EO

This measure fact sheet is the result of coordination between the UBA project Implementation of the Marine Strategy Framework Directive (MSFD) in Bulgaria – Development of Programmes of Measures under Article 13', carried out by Fresh Thoughts/Intersus, and the EC project (DG Environment) 'Technical and administrative support for the joint implementation of the Marine Strategy Framework Directive (MSFD) in Bulgaria and Romania – Phase 2', carried out by ARCADIS-Belgium.

Measure characteristics	**Management area:** - ***Black Sea***	**Code:** **BLKBG** **No. of measure: 6**
Measure title	**Awareness building (educational campaigns) of and advisory services for Fisheries Local Action Groups (FLAGs) regarding effective use of environmentally friendly fishing techniques and equipment**	

Short, precise description of the measure	This measure is developed as common (coordinated) measure with Romania in the scope of EC project (DG Environment) "Technical and administrative support for the joint implementation of the Marine Strategy Framework Directive (MSFD) in Bulgaria and Romania – Phase 2". The measure could be considered as a step in the process of improving of the dialog and effective collaboration between the government and fishery sector. In Bulgaria mainly the Ministry of Agriculture and Food and its structural unit National Agency for Fisheries and Aquacultures (NAFA) carry out the coordination and negotiations between the government and Fisheries Local Action Groups (FLAGs) for Fisheries and Aquacultures. The Ministry of Environment and Waters supports this process for some particular issues. This measure is in line with the adopted in November 2015 Operational Programme (OP) Maritime and Fisheries Programme 2014-2020 for Bulgaria. The Program follows the priorities of the European Maritime and Fisheries Fund (EMFF), the EU's Common Fisheries Policy and Integrated Maritime Policy. The measure will contribute to promote environmentally sustainable use of marine resources, innovative and competitive fisheries and aquaculture and it is in line with Blue growth initiative. The measure consists of the following actions: 1. Annual capacity building events with local fisheries groups (at least 2 times per year) regarding effective use of environmental friendly fishing techniques. 2. Preparation of information materials (posters, brochures, etc). One of the most significant potential directions of development related to this measure is the introduction of new techniques such as "pingers" (acoustic repellent audible devices for warning of dolphins). Dolphins often hang around fishing nets, rip them and eat trapped fish that infringes fisherman's interests and causes damages and losses. This conflict can be settled by introducing innovative equipment as pingers, which repulse dolphins and prevent their attacks. Damage to fishing nets caused by marine mammals is at the basis of the conflict between them and the fishermen that often ends with the dolphins' death. Using environmentally friendly techniques as pingers reduces the accidents of dolphin attacks on trap fishing nets, as well as help reducing their accidental catches, injury or death and discard on the coast / beaches. (Source: pilot study by the NGO Balkani Wildlife Society carried out in the period April – June 2015 as a part of project "Dolphins and people – co-existence in the sea").
EU measure category	*Categorisation of the measure in accordance with the "PoM Recommendations":* **2a**
Key Types of	*KTMs as defined in the „PoM Recommendations". Measures can be*

Measures	*categorised in one or multiple KTMs.* **KTM 35 Measures to reduce biological disturbances in the marine environment from the extraction of species, including incidental non-target catches** Other relevant KTM under Directive WFD 2000/60/EC: KTM 20 Measures to prevent or control the adverse impacts of fishing and other exploitation/removal of animal and plants
Environmental targets	*Categorisation of the measures in accordance with the nationally defined operational environmental objectives.* **Descriptors 1,4,6** **Targets according to Art. 10 of the MSFD** **1.1.1, 1.1.2, 1.1.3 Target: Maintain or increase the distribution range (and pattern within the latter) of the typical zoobenthos and phytobenthos species in the MSFD predominant habitat types, relevant habitats under the Habitats directive and the associated national biotopes, according to the Bulgarian report under Art. 10 of the MSFD:** • Chthamalus stellatus (MSFD: Mediolittoral rocks. Habitats Directive: 1170; National biotope: Upper mediolittoral with Chthamalus stellatus, Melaraphe neritoides и Ligia italica) • Donacilla cornea (MSFD: Mediolittoral sediments. Habitats Directive: 1140; National biotope: Coarse and medium mediolittoral sands, exposed to wave action with Donacilla cornea и Ophelia bicornis) • Cystoseira barbata and Cystoseira crinita (MSFD: Shallow rocks and biogenic reefs. Habitats Directive: 1170; National biotope: Infralittoral seabed with perennial associations of Cystoseira spp.). • Phyllophora crispa (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: lower infralittoral with Phyllophora crispa). • Mytilus galloprovincialis and Mytilaster lineatus (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: infralittoral rocks encrusted with black mussels Mytilus galloprovincialis и Mytilaster lineatus). • Zostera marina and Zostera noltei seagrasses (MSFD: Shallow sands. Habitats Directive: 1110; National biotope: Seagrass meadows). • Donax trunculus (MSFD: Shallow sublittoral sands. Habitats Directive: 1110; National biotope: coarse and medium sands with Donax trunculus). • Lentidium mediterraneum (MSFD: Shallow sublittoral sands; Habitats Directive: 1110; National biotope: fine and medium sands with Lentidium mediterraneum). • Arenicolla marina (MSFD: Shallow sublittoral sands; Habitats Directive:

	1110; National biotope: sand with Arenicolla marina и Callianassa spp.). • Chamelea gallina. (MSFD: Shallow sublittoral sands; Habitats Directive: 1110; National biotope: sands with Chamelea gallina). • Upogebia pusilla. (MSFD: Shallow sublittoral sands; Habitats Directive: 1110; National biotope: muddy sands with Upogebia pusilla). **1.2.1 Maintain the abundance and biomass of the typical zoobenthos and phytobenthos species by preventing the deterioration of marine environment resulting from sealing, nutrient enrichment , smothering, abrasion and extraction of living or non-living resources according to the threshold values specified in the Bulgarian Art. 10 MSFD Report:** • Abundance (Donacilla cornea) > 4500 individuals /m^2; Biomass (Donacilla cornea) > 2500 individuals/m^2 (Table I.2.5 of the Bulgarian MSFD Art. 10 report)(MSFD: Mediolittoral sediments. Habitats Directive: 1140; National biotope: Coarse and medium mediolittoral sands, exposed to wave action with Donacilla cornea и Ophelia bicornis) • Abundance and biomass of Cystoseira barbata (thresholds: horizontal coverage: 12500 cm^2 per m^2., average dry biomass: 600 g per m^2; average fresh biomass: 3000 g per m^2); Cystoseira crinita (thresholds: horizontal area covered: 15000 cm^2 per m^2., average dry biomass: 500 g per m^2; average fresh biomass: 2500 gper m^2)(MSFD: Shallow rocks and biogenic reefs. Habitats Directive: 1170; National biotope: Infralittoral seabed with perennial associations of Cystoseira spp.). • Biomass as wet weight (Mytilus galloprvincialis) > 20000 g/m^2; biomass as wet weight (Mytilaster lineatus) > 3000 g/m^2 (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: infralittoral rocks encrusted with black mussels Mytilus galloprovincialis и Mytilaster lineatus). • Abundance(Phyllophora crispa): horizontal area cover > 3800 cm^2/m2; average dry biomass > 70 g/m^2; average wet biomass > 180 g/m^2 (Source: Table I.2.12 of the Bulgarian MSFD Art. 10 report) (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: lower infralittoral with Phyllophora crispa). • Abundance (Chamelea gallina) > 400 individuals/m^2; biomass > 300 g/m^2 (Source: Table I.2.18 of the Bulgarian MSFD Art. 10 report). Abundance (Upogebia pusilla) > 90 individuals per m^2; biomass (Upogebia pusilla) > 100 g per m^2 (threshold > 100 g/m^2) (Table I.2.18 of the Bulgarian GES report)(MSFD: Shallow sublittoral sands; Habitats Directive: 1110; National biotope: sands with Chamelea gallina). • Abundance (Donax trunculus) > 175 individuals per m^2 and biomass (Donax trunculus) > 350 g/m^2 (Source: Table I.2.16 of the Bulgarian MSFD Art. 10 report) (MSFD: Shallow sublittoral sands. Habitats Directive: 1110; National biotope: coarse and medium sands with Donax trunculus). • Abundance (Lentidium mediterraneum) > 4500 individuals per m^2; biomass > 250 g/m^2 (Source: Table I.2.17 of the Bulgarian MSFD Art. 10

	report) (MSFD: Shallow sublittoral sands; Habitats Directive: 1110; National biotope: fine and medium sands with Lentidium mediterraneum). • Abundance (Zostera noltii, Zostera marina) > 500 ind./m^2); Biomass, dry (Zostera noltii, Zostera marina) > 60 g/m^2 (MSFD: Shallow sands. Habitats Directive: 1110; National biotope: Seagrass meadows). • Average biomass of the Mytilus galloprovincialis: CPUA (Cape Kaliakra) = 61.337 ± 54.755 kg/ha; CPUA (Balchik) = 701.108 ± 636.879 kg/ha; CPUA (Cape Emine) = 655.208 ± 349.593 kg/ha; CPUA (Cape "Maslen Nos") = 300.291 ± 203.687 kg/ha (Source: Table I.2.21 of the Bulgarian MSFD Art. 10 report) (MSFD Shelf sublittoral rocks and biogenic reefs, HD: 1170) **1.3.1 Maintain the population demographic characteristics of the benthic habitat defining species according to the threshold values defined in Bulgarian MSFD Art. 10 report:** • Maintain the population demographic characteristics of the typical species (Chthamalus stellatus, Melaraphe neritoides, Ligia italica, Mytilaster lineatus, Mytilus galloprovincialis) within their threshold values (operational by 2018)(MSFD: Mediolittoral rocks. Habitats Directive: 1170; National biotope: Upper mediolittoral with Chthamalus stellatus, Melaraphe neritoides и Ligia italica) • Length (Donacilla cornea) > 16 cm (MSFD: Mediolittoral sediments. Habitats Directive: 1140; National biotope: Coarse and medium mediolittoral sands, exposed to wave action with Donacilla cornea и Ophelia bicornis) • Maintain the condition of the Cystoseira barbata and Cystoseira crinita at the present state of unaffected areas (Cape "Maslen Nos", reef of Kiten) (MSFD: Shallow rocks and biogenic reefs. Habitats Directive: 1170; National biotope: Infralittoral seabed with perennial associations of Cystoseira spp.). • Average size of Mytilus galloprvincialis is ≥ 26.5 cm (1.2.1) and the average size of Mytilaster lineatus is ≥ 9.0 cm (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: infralittoral rocks encrusted with black mussels Mytilus galloprovincialis и Mytilaster lineatus). • Average body size in the population of Donax trunculus is maintained above the threshold values indicative of the reference condition (reference area: Veleka River mouth). • Maintain the average population density of Arenicolla marina is maintained above the threshold values indicative of the reference

	condition (reference area: "Cape Emine-Irakli" protected area) • Average shell length Mytilus galloprovincialis is within the threshold values specified in Table I.2.22 of the Bulgarian MSFD Art. 10 GES report). **1.4.1 The decline of the range of the MSFD predominant habitat types, relevant habitats under Habitats directive and associated national biotopes listed in the Bulgarian MSFD Art. 10 report should approximate zero by 2020 by implementation of appropriate management measures on sealing by man-made structures, nutrients input, associated eutrophication and bottom hypoxia, smothering by dumping, and seabed abrasion by dredging and extraction of marine living and (if applicable) non-living resources.** **1.5.1 The area of the MSFD predominant habitat types is stable or increasing and not smaller than the baseline values (Favourable Reference Area for Habitats Directive habitats), listed in the Bulgarian MSFD Article 10 Report. Indicators:** • Maintain the habitat area of the shallow sublittoral sands above the following threshold values (Source: Table I.2.15 of the Bulgarian MSFD Art. 10 report): • Sivriburun-Kaliakra Assessment Area >= 32.46 km^2; Kaliakra-Galata Assessment Area >= 43.89 km^2; Galata-Emine Assessment Area >= 35.46 km^2; Emine-Sozopol Assessment Area >= 70.71 km^2; Sozopol-Rezovo Assessment Area >= 36.11 km^2." • Maintain the habitat area of the mediolittoral rocks above the following threshold values (Table I.2.1, Bulgarian Art. 10 GES report): Sivriburun-Kaliakra Assessment Area (BLKBG-Sivriburun-Kaliakra) >= 2.162 km^2; Kaliakra-Galata Assessment Area (BLKBG-Kaliakra-Galata) >= 4.058 km^2; Galata-Emine Assessment Area (BLKBG-Galata-Emine) >= 1.762 km^2; Emine-Sozopol Assessment Area (BLKBG-Emine-Sozopol) >= 11.363 km^2; Sozopol-Rezovo Assessment Area (BLKBG-Sozopol-Rezovo) >= 3.649 km^2" • Maintain the habitat area of the mediolittoral sediments above the following threshold values (Table I.2.4, Bulgarian Art. 10 GES report): Sivriburun-Kaliakra Assessment Area (BLKBG-Sivriburun-Kaliakra) >= 3.854 km^2; Kaliakra-Galata Assessment Area (BLKBG-Kaliakra-Galata) >= 4.261 km^2; Galata-Emine Assessment Area (BLKBG-Galata-Emine) >= 67.893 km^2; Emine-Sozopol Assessment Area (BLKBG-Emine-Sozopol) >= 8.827 km^2; Sozopol-Rezovo Assessment Area (BLKBG-Sozopol-Rezovo) >= 2.146 km^2; • Maintain the habitat area of the shallow sublittoral rocks above the following threshold values (Table I.2.7. of the Bulgarian Art. 10 GES Report): Sivriburun-Kaliakra Assessment Area (BLKBG-Sivriburun-Kaliakra) >= 42.82 km^2; Kaliakra-Galata Assessment Area (BLKBG-Kaliakra-Galata) >= 5.06 km^2; Galata-Emine Assessment Area (BLKBG-Galata-Emine) >= 11.07 km^2; Emine-Sozopol Assessment Area (BLKBG-Emine-Sozopol) >= 81.04 km^2; Sozopol-Rezovo Assessment Area (BLKBG-Sozopol-Rezovo)

	>= 20.79 km^2" • Maintain the area of the habitat of Modiolula phaseolina above the following reference/threshold values (per assessment area): 2626.906 km^2; • Maintain the habitat area of the shelf sublittoral muds above to the following reference/threshold values: reference area ≥ 8753.368 km^2. • Maintain the habitat area of shelf sublittoral sands above the following reference/threshold values (per assessment area): Area (Northern shelf AA) = 32.131 km^2; Area (Central shelf AA) = 78.300 km^2; Area (Southern shelf AA) = 61.275 km^2; **1.6.1. Maintain the condition of the typical communities of Mytilus galloprovincialis and Mytilaster lineatus within the threshold values at an unaffected region (Aladja banka): Mytilus galloprovincialis (average wet weight ≥ 20000 g/ m^2; average body length ≥ 26.5 mm); Mytilaster lineatus (average wet weight ≥ 3000 g/ m^2; average body length ≥ 9.0 mm).** **1.6.1. Maintain the condition of the typical communities of Phyllophora crispa in line with the conditions in relatively unaffected reference area - the Kiten reef. Threshold values: horizontal area cover ≥ 3800 cm^2/. m^2; average dry biomass ≥ 70 g/ m^2; average wet biomass ≥ 180 g/. m^2 (Source: Table I.2.12 of the Bulgarian MSFD Art. 10 report).** **1.6.3 Maintain the physico-chemical conditions of the MSFD predominant habitat types, relevant habitats under Habitats directive and associated national biotopes listed in the Bulgarian MSFD Art. 10 report in the coastal waters within the threshold values in Ordinance No. N-4 of 14/09/2012 on the characterization of surface waters Annex № 6 from Article12 (4) (according to the requirements of the Water Framework Directive).** **6.1.1 Targets**: The area of the mediolittoral rocks and sediments, affected by human-induced change in hydrographical conditions, sealing, smothering and abrasion stays below the following threshold values (Table I.2.3 in Bulgarian MSFD Article 9 Report): Sivriburun-Kaliakra Assessment Area < 10 %; Kaliakra-Galata Assessment Area - maintain the present state; Galata-Emine Assessment Area < 10 %; Emine-Sozopol Assessment Area - maintain the present state; Sozopol-Rezovo Assessment Area - maintain the present state. **6.1.1 Target**: In the MSFD predominant habitat types, relevant habitats under Habitats directive and associated national biotopes listed in the Bulgarian MSFD Art. 10 report, the pressure from abrasion from active fishing gear should decrease by 2020 below the following threshold values: Within Natura 2000 protected areas: 0% of the habitat area affected; Outside Natura 2000 protected areas: <= 20 % of the habitat area; **6.2.1 Target**: Maintain the presence of the particularly sensitive species in the structure of macrozoobethos according to the threshold values in the Bulgarian MSFD Article 10 report. • Patella ulyssiponensis, Chthamalus stellatus, Melaraphe neritoides (MSFD: Mediolittoral rocks. Habitats Directive: 1170; National biotope:

	Upper mediolittoral with Chthamalus stellatus, Melaraphe neritoides и Ligia italica) • Ophelia bicornis, Donacilla cornea (MSFD: Mediolittoral sediments. Habitats Directive: 1140; National biotope: Coarse and medium mediolittoral sands, exposed to wave action with Donacilla cornea и Ophelia bicornis) • The relative abundance of the sensitive species from I ecological group % ESC IA => 30 % (MSFD: Mediolittoral sediments. Habitats Directive: 1140; National biotope: Coarse and medium mediolittoral sands, exposed to wave action with Donacilla cornea и Ophelia bicornis) • Maintain the presence of sensitive species in the benthic communities • Particularly sensitive species of macroalgae % ESC IA => 60 % (Source: Table I.2.9 of the Bulgarian MSFD Art. 10 report)(MSFD: Shallow rocks and biogenic reefs. Habitats Directive: 1170; National biotope: Infralittoral seabed with perennial associations of Cystoseira spp.). • Apoglosium ruscifolium and Polysiphonia elongata (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: lower infralittoral with Phyllophora crispa). • The relative abundance of sensitive species (% ESG IA) of macroalgae (Apoglosium ruscifolium and Polysiphonia elongata) => 60 % of the total biomass of the species of macroalgae (Source: Table I.2.9 Bulgarian MSFD Art. 10 report)((MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: lower infralittoral with Phyllophora crispa).) • Lepidochitona caprearum, Lepidochitona cinerea, Acanthochitona fascicularis, Gibbula divaricata, Eriphia verrucosa, Pilumnus hirtellus, Pachygrapsus marmoratus, Xantho poressa, Pisidia longicornis, Clibanarius erythropus, Palaemon adspersus, Palaemon elegans, Hippolyte leptocerus, Athanas nitescens (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: infralittoral rocks encrusted with black mussels Mytilus galloprovincialis и Mytilaster lineatus).. • Hesionura coineaui, Magelona papillicornis, Microphthalmus similis, Scolelepis squamata, Eurydice dollfusi are present in the benthic communities(MSFD: Shallow sublittoral sands. Habitats Directive: 1110; National biotope: coarse and medium sands with Donax trunculus). • Pestarella (Callianassa) candida, Tellina tenuis, Hesionura coineaui, Magelona papillicornis, Scolelepis squamata (MSFD: Shallow sublittoral sands; Habitats Directive: 1110; National biotope: fine and medium sands with Lentidium mediterraneum). **6.2.2 Target.** Multimetric indexes show high biodiversity and domination of the sensitive and tolerant species over the opportunistic species, according to the threshold values of the Bulgarian MSFD Article 10 report**.**

	• In 95 % of the area of infralittoral rocks and biogenic reefs, the multi-metric indexes are within the following GES threshold values: EEI = 6, EEI-c = 6, according to table I.2.10 the Art. 10 MSFD report (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: lower infralittoral with Phyllophora crispa). • Multi-metric indexes: AMBI < 3.3; Average species abundance S < 14 species/0.1 m^2; M-AMBI≤0.85; Shannon biodiversity index H' < 2.44 (MSFD: Mediolittoral sediments. Habitats Directive: 1140; National biotope: Coarse and medium mediolittoral sands, exposed to wave action with Donacilla cornea и Ophelia bicornis) • In 80 % of the national area of the habitats, the multi-metric indexes are within the following GES threshold values: average species abundance S ≥ 40 species/0.1 square meters; Shannon biodiversity index H' ≥ 2.5; AMBI (Borja et al. 2000) ≤ 3.3; M-AMBI (Muxica et al. 2007) ≥ 0.55. Reference conditions in the end of 1990-s and the beginning of 2000-s (Source: Table I.2.20 of the Bulgarian MSFD Art. 10 report) (MSFD: Mediolittoral sediments. Habitats Directive: 1140; National biotope: Coarse and medium mediolittoral sands, exposed to wave action with Donacilla cornea и Ophelia bicornis) • Ecological Evaluation Index (EEI) (Panayotidis et al., 2004) > 6; Ecological Evaluation Index-continuous formula (EEI-c) (Orfanidis et al., 2011) > 6; (Source: Table I.2.10 of the Bulgarian MSFD Art. 10 report)(MSFD: Shallow rocks and biogenic reefs. Habitats Directive: 1170; National biotope: Infralittoral seabed with perennial associations of Cystoseira spp.). • The average species richness per 0.1 cm^2 (S) and the index of Shannon in the shallow sublittoral rocks and biogenic reefs with Mytilus galloprvincialis and Mytilaster lineatus within the reference/threshold values of an unaffected area (operational by 2018) (MSFD: Shallow rocks and biogenic reefs; Habitats Directive: 1170; National biotope: infralittoral rocks encrusted with black mussels Mytilus galloprovincialis и Mytilaster lineatus). • In 95 % of the area of the shallow sublittoral rock and biogenic reefs, the multi-metric indexes are within the following GES threshold values: Ecological Evaluation Index (EEI) (Panayotidis et al., 2004), EEI > 6; Ecological Evaluation Index-continuous formula (EEI-c) (Orfanidis et al., 2011), EEI-c>6 (Source: Table I.2.10 of the Bulgarian MSFD Art. 10 report) (MSFD: Shallow rocks and biogenic reefs. Habitats Directive: 1170; National biotope: Infralittoral seabed with perennial associations of Cystoseira spp.). • Multi-metric indexes: S ≥ 15 species/0.1 square meters; Shannon biodiversity index H' ≥ 2.9; AMBI ≤ 3.3; M-AMBI >= 0.85 (MSFD: Shallow sublittoral sands. Habitats Directive: 1110; National biotope: coarse and medium sands with Donax trunculus); • Multi-metric indexes (MSFD: Shallow sublittoral sands; Habitats Directive:

	1110; National biotope: fine and medium sands with Lentidium mediterraneum) are within the following GES threshold values: Species abundance S ≥ 17 species/0.1 square meters; Shannon biodiversity index H' ≥ 2.1; AMBI ≤ 3.3; M-AMBI ≥ 0.85. • In 95 % of the habitat area of the shelf sublittoral mixed sediments , the multi-metric indexes are within the following GES threshold values: S ≥ 22 species/0.1 square meters; Shannon biodiversity index H' ≥ 2.7; AMBI ≤ 3.3; M-AMBI ≥ 0.55 (Source: Table I.2.26 of the Bulgarian MSFD Art. 10 report) (MSFD: Shelf mixed sediments; National biotope: shelly muds with Modiolula phaseolina). • In 80 % of the shelf sublittoral muds, the multi-metric indexes are within the following GES threshold values: S ≥ 31 species/0.1 square meters; Shannon biodiversity index H' ≥ 2.5; AMBI ≤ 3.3; M-AMBI ≥ 0.55 (Source: Table I.2.24 of the Bulgarian MSFD Art. 10 report) (MSFD: Shelf muds; National biotope: shelf muds with Nephthys, Pitar, Spisula, Abra). • In 95 % of the shelf sublittoral muds, the multi-metric indexes are within the following GES threshold values: the average species abundance S ≥ 22 species/0.1 square meters; Shannon biodiversity index H' ≥ 2.6; AMBI (Borja et al. 2000) ≤ 3.3; M-AMBI (Muxica et al. 2007) ≥ 0.55 (Source: Table I.2.25 of the Bulgarian MSFD Art. 10 report). (MSFD: Shelf muds; National biotope: muds of the lower circalittoral with Terebellides stroemi). • In 95 % of the shelf sublittoral sands, the multi-metric indexes are within the following GES threshold values: the average species abundance S ≥ 50 species/0.1 m^2; Shannon biodiversity index H' ≥ 3.1; AMBI (Borja et al. 2000) ≤ 3.3; M-AMBI (Muxica et al. 2007) ≥ 0.55 indicative of the reference conditions identified in the Veleka River mouth (Source: Table I.2.19 of the Bulgarian MSFD Art. 10 report)(MSFD: Shallow sublittoral sands; Habitats Directive: 1110; National biotope: sands with Chamelea gallina). **D3 – State of commercial fish and shellfish stocks** **Pressure targets** **3.1.1 Fishing Mortality (F) by reduced fishing effort are listed below referring to the concerned species:** • Reducing fishing effort to F<= FMSY =0.4 (whiting) • Reducing in fishing effort to F <= FMSY = 0.15 (turbot) • Reducing fishing effort in the wintering areas (horse mackerel) • Reducing fishing effort to F<= FMSY =0.54 (anchovy) • Reducing fishing effort to F<= FMSY =0.18 (dogfish) • Reducing fishing effort to F<= FMSY =0.46 (red mullet) **3.1.2. Catch/biomass ratio index – maintain the threshold value of**

	catch/biomass ratio less than: • Catch-biomass ratio <= 0.082 (sprat) • Catch-biomass ratio <= 0.033 (turbot) **State targets** **3.2.1. Spawning stock biomass of sprat** - STECF EWG 13-12 (Sampson et al., 2013) does not offer reference points as regards SSB for the sprat stock but according to the results from the regional assessment SSB varied between 200 000 and 500 000 tons. The proposed trend for this indicator is increasing of the SSB at regional level; The indicator needs additional development and will be operational at regional level toward 2018 (Population size (spawning stock biomass - SSB) of sprat (thousand tons)). **3.2.1. Spawning stock biomass (SSB**) - increasing the SSB at regional level at the level of Black Sea region for whiting (Merlangius merlangus euxinus), turbot (Psetta maxima), horse mackerel (Trachurus mediterraneus ponticus), anchovy (Engraulis encrasicolus), dogfish (Squalus acanthias), red mullet (Mullus barbatus ponticus) (thousand tons). **3.2.2. Biomass indexes** - maintain increasing trend of the biomass values above the reference level of 55 thousand tons (sprat) in front of Bulgarian Black Sea coast. Basic reference state was for 2007-2011.The indicator needs additional development and will be operational at national level toward 2014 (Species abundance (biomass) of sprat (Sprattus sprattus) (CPUE, kg/h)). **3.2.2. Biomass indexes** - increasing trend of the values of the biomass indices at national level. Levels of the index should not be lower than reference level of 1700 tons (turbot) (Species abundance (biomass) of turbot (Psetta maxima) (CPUE, kg/h)). **3.2.2 Biomass indices are listed below referring to the concerned species (Species abundance (biomass) of Sprat (Sprattus sprattus) and turbot (CPUE, kg/h))**: Maintaining the sprat stock at values of approximately 60000 tonnes at the Bulgarian littoral; Recovery of the turbot stock to value of 1500-2000 tonnes at the Bulgarian littoral. **3.3.1.Proportion of fish (sprat) larger than the mean size of first sexual maturation** – The trend to sustain of the proportion at reference level of 68 % (sprat).Basic condition for calculations of the limit reference points the contemporary state of the populations have been used. The indicator needs of additional development and will be operational toward 2014 (Size of individuals of sprat (Sprattus sprattus), cm) **3.3.1. Proportion of fish (turbot) larger than the mean size of first sexual maturation** - The proportion of fish with length higher than the mean at sexual maturation (42 cm), and to be over the reference value of 74 % (Size of individuals of turbot (Psetta maxima), cm) **3.3.1. Mean length of fish (turbot)** in the catch should not be under the reference level of 56 cm (± 10 %) (Size of individuals of turbot (Scophthalmus/Psetta maxima), cm).

	3.3.3. 95 % from the observed length structure of the species (sprat) in the research surveys– the indicator needs of additional development and will be fully operational at national level toward 2018. The main lack of data and knowledge is the inability to calculate this indicator before 2012, due to the differences of the length structure and methodological issues. The lack of the genetic effects on the population due to overexploitation are also obstacles (Size of individuals of sprat (Sprattus sprattus), cm). **3.3.3**. 95 % percentile from the observed length structure of the species (turbot) in the research surveys – 95 % percentile from length structure of the population to show stable trend with mean reference value of 62 cm for turbot (Size of individuals of turbot (Psetta maxima) (cm). **Relevant MSFD targets defined in the Article 10 reporting of Bulgaria under Descriptors 1, 4 – Biodiversity (Non-commercial fish species)** **State targets** 1.1.1 Targets – Distribution of Round goby (Neogobius melanostomus) and other demersal fish species is not significantly affected by human activities: the geographic and depth distribution of sensitive fish should meet individual indicator targets in a statistically significant proportion of species monitored. 4.3.1 Targets: Abundance of the Round goby (Neogobius melanostomus) is not negatively affected by human activities. 6.2.2 Targets. Coastal assessment area: Population abundance of non-commercial fish species is above the following threshold values, indicative of GES: • Total number of species (S) > 10 • Shannon index H' (log2) > 1,454 • Fisher's alpha (a) > 0,486 • Gini-Simpson (1- a) > 0,514 • Taxonomic distinctness (Δ*) > 79,58 6.2.2 Targets. Shelf assessment area: Population abundance of non-commercial fish species is above the following threshold values, indicative of GES: • Total number of species (S) > 7.204 • Shannon index H'(log2) > 0.896 • Fisher's alpha (a) > 0.694 • Gini-Simpson (1- a) > 0.306 • Taxonomic distinctness (Δ*) => 89.18 **Impact targets** Reduction of the by-catch mortality

	State / Impact targets under Descriptor 1, 4 - Biodiversity (Marine mammals): 1.1.1. Target: Preserve the existing distribution range of the three species of marine toothed whales by implementing appropriate management measures. 1.2.1 Target: Positive trend in the population abundance of the three species of marine toothed whales (*Phocoena phocoena, Turciops truncatus, Delphinus delphis*). 4.3.1 Target: Positive trend in the population abundance of the three species of marine toothed whales (*Phocoena phocoena, Turciops truncatus, Delphinus delphis*). **Environmental targets under Descriptor 1, 4 - Biodiversity (Seabirds):** Environmental target on criterion 1.3 "Condition of the population", indicator 1.3.1: The number of registered cases of injured and dead birds as a result of the negative impact of human activities decreases.
Descriptors	*Categorisation of the measures to the descriptors in lined with Annex 1 MSFD. The descriptors are identified by their short form:* D1- Biodiversity (Marine mammals and seabirds) D2 – Non-native species D3 – State of commercial fish and shellfish stocks D4 – Food web D6 – Sea - floor integrity
Main pressures	*Using the analysis carried out in 2012 as a basis, categorisation of the measures in accordance with the pressures defined in Annex 3 MSFD, Table 2:* • Biological disturbances as selective extraction of species, including incidental non-target catches (e.g. by commercial and recreational fishing). • Physical damage - abrasion (e.g. impact on the seabed of commercial fishing, boating, anchoring); - selective extraction (e.g. exploration and exploitation of living and non-living resources on seabed
Main drivers	*The sectors/activities targeted by the measure* **Fishery sector**
Characteristics	*Using the analysis carried out in 2012 as a basis, categorisation of the measures in accordance with the characteristics defined in the "PoM Recommendations":* - Fish

	- Benthic habitats - Pelagic habitats - Marine mammals - Marine birds
Link to other directive/legislation/policy	*Aligning objectives with other legal commitments* Convention on Biological Diversity Convention for the Protection of the Black sea against pollution Strategic Action Plan for the Environmental Protection and Rehabilitation of the Black Sea (2009) The Black Sea Biodiversity and Landscape Conservation Protocol to the Convention on the protection of the Black sea against pollution, 2002 (for Bulgaria in force from 20 June 2011). Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and Contiguous Atlantic Area(ACCOBAMS) Water Framework Directive 2000/60/EC EU Blue growth initiative Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning Integrated Maritime Policy **Commission Implementing Regulation (EU) 2015/1962** of 28 October 2015 amending Implementing Regulation (EC) № 1224/2009 of 20.11.2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy **Regulation (EU) 1380/2013** of 11 December 2013 on the Common Fisheries Policy, amending Council Regulations (EC) № 1954/2003 and (EC) No 1224/2009 and repealing Council Regulations (EC) No 2371/2002 and (EC) No 639/2004 and Council Decision 2004/585/EC and its related legislations amending Regulation (EC) № 26/2004 on the Community fishing fleet register **Council Regulation (EC) № 1224/2009** of 20.11.2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy, amending Regulations (EC) № 847/96, (EC) № 2371/2002, (EC) № 811/2004, (EC) № 768/2005, (EC) № 2115/2005, (EC) № 2166/2005, (EC) № 388/2006, (EC) № 509/2007, (EC) № 676/2007, (EC) № 1098/2007, (EC) № 1300/2008, (EC) № 1342/2008 and repealing Regulations (EEC) № 2847/93, (EC) № 1627/94 and (EC) № 1966/2006 Commission Regulation (EC) № 1799/2006 of 6 December 2006 **Regulation (EU) № 508/2014** of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund and repealing Council Regulations (EC) № 2328/2003, (EC) № 861/2006, (EC) No 1198/2006 and (EC) № 791/2007 and Regulation (EU) № 1255/2011 of the European Parliament and of the Council **COM Delegated Regulation (EU) 2015/531** of 24.11.2014 supplementing Regulation (EU) № 508/2014 of the European Parliament and of the Council by identifying the costs eligible for support from the European Maritime and Fisheries Fund in order to improve hygiene, health, safety and working conditions of fishermen, protect and restore marine biodiversity and

	ecosystems, mitigate climate change and increase the energy efficiency of fishing vessels **<u>National legislation:</u>** Fisheries and Aquaculture Act Environmental Protection Act Biological Diversity Act Protected Areas Act Water Act and relevant regulations
Necessity for transnational regulation	*Information as regarding the necessity for regulations at EU, regional and international level to achieve MSFD environmental objectives.* No
Instrument for implementation/ Mode of action	*Stating the implementation process in line with the „PoM Recommendations"; multiple options possible:* • Policy driven
Implementation zones	*i.e. the spatial impact of the measure: MS land/FW, WFD TW, WFD CW, Territorial waters, EEZ, CS (beyond EEZ), Beyond MS waters* coastal waters (WFD CW*)*, territorial waters and exclusive economic zone (EEZ) of Republic of Bulgaria
Contribution of the measure to achieving the target	*– using technical information* **Benefits** Awareness building of and advisory services for Fisheries Local Action Groups (FLAGs) regarding use of environmental friendly fishing techniques and equipment will contribute to: - achieving sustainability of fish populations, protection of their habitats, respectfully achieving of sustainable stocks of the Black sea fish species. - protection of the Black sea dolphin populations and reducing damages caused by dolphins on commercial fishing. - decreasing of indirect negative effect on seabirds by incidental catches. The measure is expected to have **medium** contribution for achieving the environmental targets under Descriptors 1 (Biodiversity), 2 (Non-indigenous species), 3 (State of commercial fish and shellfish stocks), 4 (Food web) and 6 (Sea - floor integrity).
Transboundary impact	*Information on the impact of the measures on transboundary neighbours* The implementation of the measure is not expected to have negative effects on the marine environment of neighbours. Instead of this, implementation of the measure will have positive results.

Costs	**First rough assessment: low < 50.000 €** 1. Costs for capacity building events (meeting / seminars) with local fisheries groups, regarding their encouragement for effective use of environmentally friendly fishing techniques and equipment 2. Preparation of information materials (posters, brochures, etc). **Total one off costs within MSFD cycle (6 years): < 4000 €**
Effectiveness	*Effectiveness of the measure in reaching targets (either qualitative description, or according to indicators: indicators for environmental targets and for GES, proposal for statistical indicators in support of Art. 18 interim reports* The measure is directly linked to the achievement of defined environmental targets for GES under Descriptors 1 (Biodiversity), 2 (Non-indigenious species), 3 (State of commercial fish and shellfish stocks), 4 (Food web) and 6 (Sea - floor integrity). The implementation of this measure will contribute to decreasing of commercial fishing pressure on Black sea fish stocks, conservation / gradual restoration of seabed habitats affected by trawling in medium and long term period. Also the measure will contribute to decreasing of human pressure on Black sea marine mammals, respectfully decreasing of conflicts between fishermen and dolphins. The measure is expected to have **medium** effectiveness for achieving of these targets.
Indicator(s) to measure effectiveness	*Should be based on existing indicators.* 1. Number of conducted information meetings per year. 2. Number of distributed brochures and materials on a theme “Marine litter”. 3. Number of conducted tender procedures for buying and setting up of new equipments as pingers per year. 4. Number of fishermen / fishing associations with initiatives taken for introduction of environmentally friendly fishing techniques and equipment.
Socio-economic assessment	**Cost Effectiveness Assessment:** Cost effective **Cost Benefit Assessment: medium** **Negative side effects:** The implementation of the measure is not expected to have negative effects on the marine environment. The measure will help for more sustainable exploatation of Black sea fish stocks, respectively development of the fishery sector and improvement of quality of life of local people related with the sector. The measure will contribute for reducing the conflicts between fishery sector and the protection of Black sea marine mammals.
Coordination level	*Selection of the governance level that will coordinate the implementation of the measures, i.e. Local, Sub-national, National, Bilateral, Sub-regional, Regional, EU level, International*

	at local level at national level at bilateral level with Romania
Technical feasibility	*Options:* • Frequently applied; extensive experience / evidence of good practice
Body responsible for the measure implementation	**Bulgaria:** Ministry of Agriculture and Food, National Agency for Fisheries and Aquaculture (NAFA), NGOs, Fisheries local action groups (FLAGs)
Financing opportunities	*Including EU-cofinancing* Public funds; EU funds (Horizon 2020 Program, European Maritime and Fisheries Fund (EMFF)
Temporal coverage	**Start : 2017** **End: 2021**
Difficulties in implementation	*Provide information on the potential challenges that could likely faced in implementation.* Difficulties to reach the target results from the measure without introducing mechanisms for financial incentives.