CNL(13)62

NASCO Implementation Plan for the period 2013-18

EU – Spain (Asturias)

CNL(13)62

NASCO Implementation Plan for the period 2013-18

The main purpose of this Implementation Plan is to demonstrate what actions are being taken by the jurisdiction to implement NASCO Resolutions, Agreements and Guidelines.

Questions in the Implementation Plan refer to the following documents:

- *NASCO Guidelines for Management of Salmon Fisheries, CNL(09)43 (referred to as the 'Fisheries Guidelines');*
- *Minimum Standard for Catch Statistics, CNL(93)51 (referred to as the 'Minimum Standard');*
- *NASCO Guidelines for Protection, Restoration and Enhancement of Atlantic Salmon Habitat, CNL(10)51(referred to as the 'Habitat Guidelines');*
- *Williamsburg Resolution, CNL(06)48; and*
- *Guidance on Best Management Practices to address impacts of sea lice and escaped farmed salmon on wild salmon stocks (SLG(09)5) (referred to as the 'BMP Guidance').*

Party:	**European Union**
Jurisdiction/Region:	**Spain (Asturias)**

1. Introduction

1.1 What are the objectives for the management of wild salmon? *(Max 200 words)*

In Asturias, the management of wild salmon is carried out within the framework of the Principality of Asturias Law 6/2002 of 18 June, on the protection of aquatic ecosystems and regulation of continental water fishing, which establishes as a general principle (and, consequently, as an objective) of the management of resources (including salmon) that: "The management of continental aquatic resources will be carried out in accordance with the general principles of rational use of natural resources, such as maintaining essential ecological processes, preserving genetic diversity, using resources in an organised manner, sustainably exploiting species and ecosystems, and preserving the variety and uniqueness of natural ecosystems and the landscape, as well as the continual rehabilitation of continental aquatic ecosystems damaged by human actions (article 7)".

In brief, the aim is for the stocks to become self-sustainable and, in that context, to achieve sustainable use for the purposes of fishing.

1.2 What reference points (e.g. conservation limits, management targets or other measures of abundance) are used to assess the status of stocks? *(Max 200 words)*

(Reference: Sections 2.4 and 2.5 of the Fisheries Guidelines)

In order to assess the status of stocks in Asturias, the following methods are currently being employed:

1. Catch index: data concerning fishing catches in all Asturian rivers have been collected since 1949.
2. Salmon counters: electronic and photographic counting devices have been installed in certain rivers. Currently, there are three counters installed (in the Eo, Sella and Cares

rivers). In any case, it must be taken into account that the counters are not positioned at river mouths and that, consequently, in addition to other limitations, they do not count the salmon present along the length of the river.

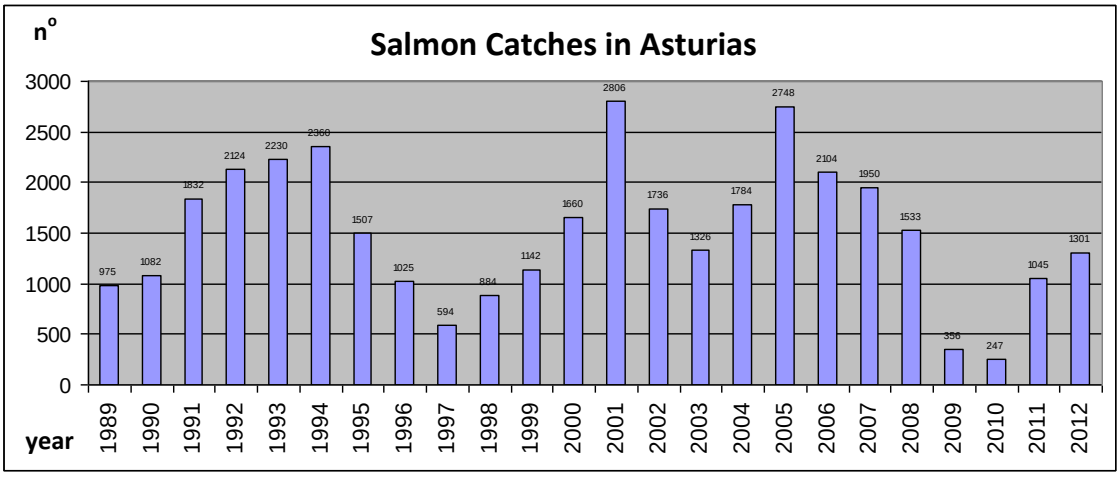
3. Direct counting of specimens at the end of August by means of diving and observation from the banks: this type of census has been carried out in 2010, 2012 and 2013 (in progress) in the Eo, Esva, Narcea, Sella and Cares-Deva rivers.
4. Estimation by applying genetic techniques: an evaluation of stocks in the Eo, Esva, Narcea, Sella and Cares-Deva rivers has been carried out based on the variation of allele frequencies in caught salmon using two different statistical techniques.
5. Electrofishing: occasionally low-frequency monitoring of natural reproduction is carried out in the Sella, Narcea and Esva river basins.
6. Fish marking: during juvenile restocking that is to affect all river basins, approximately 15% of the animals released are marked by clipping the adipose fin.

1.3 To provide a baseline for future comparison, what is the current status of stocks relative to the reference points described in 1.2, and how are threatened and endangered stocks identified?

Category	Description of category and link to reference points	No. rivers
1	In the rivers classified in the NASCO database as NOT THREATENED WITH LOSS, the systems described in section 1.2 are being implemented as explained therein.	The five main Asturian rivers (Eo, Esva, Narcea, Sella and Cares – Deva), including the main water course and the tributaries where the species can be found, and the Porcía river.
2	The Navía river would be in the category THREATENED WITH LOSS. In this river, only technique 1 of section 1.2 is being implemented.	The area of the Navia river accessible to salmon is limited to ten kilometres, due to the existence of a reservoir through which the species cannot pass.
3		
4		
TOTAL:		

Additional comments:

1. Salmon catches in Asturias for the set of rivers.
   Displaying data from 1989 to 2012.



2. Salmon counters:

The most comprehensive results collected to date from the counters are from the year 2010. These counters were located on ladders in the middle stretches of the Sella, Eo and Cares rivers. The results are shown in the following tables:

CAÑO- RIVER SELLA			
YEAR 2010	**1SW**	**MSW**	**TOTAL**
17/04/10 to 30/04/10	0	0	0
01/05/10 to 31/05/10	11	11	22
01/06/10 to 30/06/10	35	4	39
01/07/10 to 31/07/10	94	10	104
TOTAL	**140**	**25**	**165**

NISERIAS- RIVER CARES			
YEAR 2010	**1SW**	**MSW**	**TOTAL**
17/04/10 to 30/04/10	0	0	0
01/05/10 to 31/05/10	3	7	10
01/06/10 to 30/06/10	88	29	117
01/07/10 to 31/07/10	86	8	94
01/08/10 al 31/08/10	26	2	28
TOTAL	**203**	**46**	**249**

SALTADOIRO- RIVER EO			
YEAR 2010	**1SW**	**MSW**	**TOTAL**
17/04/10 to 30/04/10	2	9	11
01/05/10 to 31/05/10	5	44	49
01/06/10 to 30/06/10	40	46	86
01/07/10 to 22/07/10	34	17	51
01/08/10 to 31/08/10	11	3	14
TOTAL	**92**	**119**	**211**

3. Direct counting of specimens by means of diving and observation from the banks:

YEAR 2010	TOTAL Nº SALMON	1SW	MSW
ESVA BASIN	187	102	85
NARCEA BASIN	1022	488	490
SELLA BASIN	1464	558	880
CARES BASIN	1073	502	571
TOTAL	**3711**	1650	2026

The data from the 2012 count are more limited, in that they do not provide information on yearlings and specimens that have spent several years at sea, but instead give the total number of salmon:

YEAR 2012	TOTAL Nº SALMON
ESVA BASIN	260
NARCEA BASIN	702
SELLA BASIN	1101
CARES BASIN	No data
TOTAL	**2063 (without data from Cares)**

4. Estimation of the minimum population size in each river using genetic techniques

Estimations were made for the 1993-1999 and 2002-2007 periods with the following results for these Asturian rivers:

	*1993-1999**		*2002-2007*	
River/Method	***M. B. T.***	***tm3.1***	***M. B. T.***	***tm3.1***
Eo	-	81 [50-123] *	47.2 [28.1-85.6]	70.8 [31.8-202.3]
Esva	75.1 [33.2-627.2]	63.9 [32.3-165.3]	95.6 [47.5-308.7]	163.6 [0.0-1941.4]
Narcea	113.9 [42.0-3693.3]	≈ 200	47.2 [29.0-82.5]	49.5 [33.5-71.0]
Sella	106.5 [39.1-9396.4]	≈ 200	73.3 [41.5-153.6]	55.5 [36.2-85.9]
Cares	96.6 [40.0-507.5]	76.4 [38.8-202]	36.6 [23.7-58.4]	57.9 [33.3-77.2]

Table 4.1.1. Estimated effective population size *Ne* (number of breeding individuals) for the five main Asturian salmon stocks in the last two decades. Two different statistical methods have been employed: MBT and TM3.1 (see Appendix I). The range of variation is shown between square brackets.
* Estimates for the 1993-1999 period were carried out by other authors and have already been published. River Eo: Ribeiro et al. 2008; Esva, Narcea, Sella and Cares rivers: Borrell et al. 2007.

	1993-1999		2002-2007	
River/Method	***M. B. T.***	***tm3.1***	***M. B. T.***	***tm3.1***
Eo	-	736 (405-4050)	427 (236-2360)	645 (354-3540)
Esva	682 (376-3755)	582 (320-3195)	869 (478-4780)	1487 (818-8180)
Narcea	1036 (570-5695)	1818 (1000-10000)	429 (236-2360)	450 (248-2475)
Sella	968 (533-5325)	1818 (1000-10000)	666 (367-3665)	505 (278-2775)
Cares	882 (483-4830)	695 (382-3820)	333 (183-1830)	526 (290-2895)

Table 4.2.1. Estimates of census population size assuming *Ne*/N = 0.11 (Frankham 1995); shown in brackets are the range of estimates assuming *Ne*/N= 0.02 (Consuegra et al. 2002) and *Ne*/N = 0.20 (Palstra & Ruzzante 2008).

The authors of these estimates accept that the results for the river ESVA do not reflect reality and that the error arises from the considerable variance in the estimates of effective population size for this river, owing to the low number of samples obtained.

Explanatory note: Given that each method has its own limitations, we shall now proceed to data integration. For this, the 2010 data obtained from the electronic counters and the absolute count (observers and divers) in rivers where this was possible were used, yielding the following salmon stock numbers at the end of August:

RIVER	BEFORE THE COUNTER		AFTER THE COUNTER	
	1SW	MSW	1SW	MSW
SELLA	1050	188	165	29
CARES	596	135	221	50

Taking into account the year-on-year fluctuations of effective populations and the fact that we are referring to different dates, one can observe that the scale of figures of "large" salmon is similar to that yielded by genetic methods for the "effective population" of both rivers. Likewise, it is significant that the genetic estimates yield a final figure close to 3,700 individuals for the average annual salmon population in Asturian rivers in the 2002-2007 period and that this same figure was also obtained by direct count in 2010.

1.4 How is stock diversity (e.g. genetics, age composition, run-timing,etc.)taken into account in the management of salmon stocks? *(Max 200 words)*

According to the studies conducted, there is good genetic diversity in the Asturian stocks and genetic introgression from previous restocking efforts is not excessive. Within one Cantabrian unit, three different genetic lineages have been identified using the data collected from Asturian rivers, which could correspond to three possible genetic units.

Information on age class structures can be taken from the censuses shown in the previous section, although it should be noted that, over the years, there has been a decrease in the number of large-sized specimens and specimens that have spent more years at sea.

1.5 To provide a baseline for future comparison, what is the current and potential quantity of salmon habitat? *(Max 200 words)*
(Reference: Section 3.1 of the Habitat Guidelines)

The Asturian hydrographic network that can be colonised by salmon slightly exceeds 440 linear kilometres across the main rivers. There are breeding stocks of salmon in the following river basins:

	Basin area (km^2)	Main river length	Length potentially useable in Asturias	Length accessible in 1989	Length accessible in 2000	Length accessible in 2010	Increase in main river length 1989-2010 (km)	Increase in tributary length 1989-2010 (km)
Navía	2552	128	70	13	13	13	0	
Porcia	143	31	25	3	12	15	12	
Esva	464	58	48	35	35	35	0	
Narcea	1850	112	85	33	33	33	0	10
Nalon	3043	105	85	35	45	59	24	20+15
Bedón	80	16	9	8	8	8	0	6
Sella	1278	70	68	50	60	60	10	10
Cares	496	59	53	42	42	42	0	8
			373	219	248	265	46	

Currently, around 60% of the potential area is accessible to salmon, having gradually increased since 1989 by virtue of certain actions having been carried out.

1.6 What is the current extent of freshwater and marine salmonid aquaculture?

Number of marine farms	No marine salmonid aquaculture in place
Marine production (tonnes)	0 tonnes
Number of freshwater facilities	Salmon is farmed purely for restocking purposes. In order to limit impact, the Government of the Principality of Asturias uses only native varieties for restocking and only once health analyses have been carried out. To this end, all ichthyological centres have an analytical system in place to control diseases in accordance with Council Directive 2006/88/EC of 24 October 2006, on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals (transposed by Royal Decree 1614/2008). There is also a monitoring programme that focuses on the notifiable viral diseases IHN and VHS in particular.
Freshwater production (tonnes)	Freshwater production only for restocking. Fewer than 5 tonnes. Number of fry restocked: 2009: 308,659 2010: 149,436 2011: 299,500 2012: 852,527

There are wild native salmon hatcheries for restocking purposes in: Sella (Cangas de Onís), Narcea (Pravia) and Esva (Trevías).

Maps showing the locations of freshwater aquaculture facilities are not available.

1.7 To aid in the interpretation of this Implementation Plan, have complete data on rivers within the jurisdiction been provided for the NASCO rivers database? *Yes/*

Yes. In the current NASCO rivers database, they are classified as NOT THREATENED WITH LOSS. Keeping this classification is advisable.

2. Fisheries Management:

2.1 What are the objectives for the management of the fisheries for wild salmon? *(Max. 200 words)*

The Principality of Asturias Law 6/2002, of 18 June, on the protection of aquatic ecosystems and regulation of continental water fishing, establishes that any exploitation of the species must be governed by the principle of sustainability.

Pursuant to this regulation, both the Salmon Management Plan for Asturias (in development) and the annually approved Fishing Regulations demonstrate that fishing is sustainable, introducing measures that guarantee sufficient capacity for natural restocking of the species in the rivers (seasons, quotas, sizes, bait...). In addition, where required, restocking is carried out using indigenous genetic material.

2.2 What is the decision-making process for fisheries management, including predetermined decisions taken under different stock conditions (e.g. the stock level at which fisheries are closed)? *(Max.200 words)*
(Reference: Sections 2.1 and 2.7 of the Fisheries Guidelines)

Fishing has been prohibited in rivers with low fish stocks; fishing is only possible in the Eo, Esva, Narcea-Nalón, Sella and Cares-Deva rivers. The annual fishing regulations for 2013 have reduced the length of the fishing season (1 May until 15 July), allowing catch-and-release fishing up until 31 July.
The 2010 regulations reduced the number of days when fishing is permitted to five per week: two days per week are designated as rest days (Mondays and Thursdays).
An extensive system of preserves and reserves (fully private areas and refuges for breeding individuals) has been set up, as well as considerable restriction on fishing in areas of free access. The quota per fisherman is one salmon per day up to a maximum of three salmon per season.
In forty percent of the fishing areas in each river, the fishing season is from 16 June until 31 July.

2.3 Are fisheries permitted to operate on salmon stocks that are below their reference point and, if so, how many such fisheries are there and what approach is taken to managing them that still promotes stock rebuilding?*(Max 200 words.)*
(Reference: Section 2.7 of the Fisheries Guidelines)

No. Fishing is prohibited in rivers with low fish stocks.

2.4 Are there any mixed-stock salmon fisheries and, if so, (a) how are these defined, (b) what was the mean catch in these fisheries in the last five years and (c) how are they managed to ensure that all the contributing stocks are meeting their conservation objectives? *(Max. 300 words in total)*
(Reference: Section 2.8 of the Fisheries Guidelines)

There are no mixed-stock salmon fisheries.

2.5 How are socio-economic factors taken into account in making decisions on fisheries management? *(Max. 200 words)*
(Reference: Section 2.9 of the Fisheries Guidelines)

Stakeholder participation occurs through the Fishing Advisory Council, although fishing is public.

In addition, it is taken into account that salmon fishing in rivers is a development factor of riverside economies and, at the same time, the species' existence itself is representative of the quality of the rivers and regional river ecosystems. This is why fishing is organised and managed under the principles of sustainability and responsible fishing, and is understood to be an asset that must survive into the future.

2.6 What is the current level of unreported catch and what measures are being taken to reduce this? *(Max. 200 words)*
(Reference: Section 2.2 of the Fisheries Guidelines and the Minimum Standard)

There are no unreported catches. All catches are recorded by the Government, although poaching does occur.

2.7 What are the main threats to wild salmon and challenges for management in relation to fisheries, taking into account the Fisheries Guidelines and the specific issues on which action was recommended for this jurisdiction in the Final Report of the Fisheries Management FAR Review Group, (CNL(09)11)?

Threat/ challenge F1	Reducing illegal catches (poaching).
Threat/ challenge F2	Working on annual quotas per fisherman or per river.
Threat/ challenge F3	
Threat/ challenge F4	

2.8 What actions are planned to address each of the above threats and challenges in the five year period to 2018?

Action F1:	Description of action:	Increase surveillance to reduce poaching.
	Planned timescale:	Efforts should be constantly maintained until circumstances improve.
	Expected outcome:	Relieve pressure due to poaching.
	Approach for monitoring effectiveness & enforcement:	Co-ordination of information between river basins and rivers bordering autonomous communities is necessary to improve surveillance.
Action F2:	Description of action:	Regulate river catches to avoid overfishing.
	Planned timescale:	Efforts should be maintained until circumstances improve.

	Expected outcome:	Relieve the pressure of fishing.
	Approach for monitoring effectiveness & enforcement:	Quotas and fishing seasons have been reduced. Preserves and reserves have been created.
Action F3:	Description of action:	
	Planned timescale:	
	Expected outcome:	
	Approach for monitoring effectiveness & enforcement:	
Action F4:	Description of action:	
	Planned timescale:	
	Expected outcome:	
	Approach for monitoring effectiveness & enforcement:	

3. Protection and Restoration of Salmon Habitat:

3.1 How are risks to productive capacity identified and options for restoring degraded or lost salmon habitat prioritised, taking into account the principle of 'no net loss' ?*(Max. 200 words)*
(*Reference: Section 3 of the Habitat Guidelines)*

Habitat management falls under the scope of the objectives and actions of the Water Framework Directive (WFD), whose main aim is to achieve a "good status" for all waters by a set deadline. The Cantabrian Hydrological Plan (approved in 2013) summarises these objectives for Asturias.
At an autonomous level, an inventory of river obstacles has been taken and, in recent years, procedures for the construction of fish ladders have been carried out. Furthermore, numerous water treatment plants have been built, which have contributed to the improvement in water quality.
Other initiatives related to the conservation of rivers and salmon habitats (river bank cleaning, reconditioning of spawning grounds...), often developed in conjunction with fishing associations, will result in the improvement of spawning habitats.

3.2 How are socio-economic spawning escapement factors taken into account in making decisions on salmon habitat management?*(Max. 200 words)*
(Reference: Section 3.9 of the Habitats Guidelines)

Socio-economic factors are taken into account with regard to the application of the WFD and the Habitat Directive, in that all measures must be entirely based on local consent and support. Stakeholder participation occurs through the Fishing Advisory Council.

Furthermore, it is taken into account that salmon fishing in rivers and well maintained salmon habitats are development factors of riverside economies and, at the same time, the species' existence itself is representative of the quality of the rivers and regional river ecosystems. This is why fishing is organised and managed under the principles of sustainability and responsible fishing, and is understood to be an asset that must survive into the future. Equally, recreational activities (sailing) have been regulated in order to avoid interference with the species and to make them compatible with fishing.

3.3 What are the main threats to wild salmon and challenges for management in relation to estuarine and freshwater habitat taking into account the Habitat Guidelines, and the specific issues on which action was recommended for this jurisdiction in the Final Report of the Habitat Protection, Restoration and Enhancement FAR Review Group,(CNL(10)11)?	
Threat/ challenge H1	Ladders are necessary to ensure the movement of salmon upstream.
Threat/ challenge H2	As the southern limit of salmon in Europe lies exactly in the Cantabrian-Galician region, this suggests that climate change is having a significant effect, which is difficult to resolve.
Threat/ challenge H3	Widen knowledge of the distribution area in the river.
Threat/ challenge H4	

3.4 What actions are planned to address each of the above threats and challenges in the five year period to 2018?		
Action H1:	Description of action:	An annual programme of cleaning and maintenance of the ladders in mini plants, removing obstacles impeding the movement of salmon upstream.
	Planned timescale:	In order to be effective, this cleaning must be carried out annually.
	Expected outcome:	Increase accessibility and spawning habitats for juveniles.
	Approach for monitoring effectiveness & enforcement:	Verify accessibility, particularly in the months when breeding salmon swim upstream.
Action H2:	Description of action:	Increase awareness of the problem that the southern limit of salmon in Europe lies exactly in the Cantabrian-Galacian region, suggesting the significant effect of climate change, which is difficult to resolve.
	Planned timescale:	Measures should be continued until circumstances improve.
	Expected outcome:	Heightened awareness in order to increase conservation with regard to the fragility of the salmon region through being at the outer limit of its distribution.
	Approach for monitoring effectiveness & enforcement:	Information in this regard should be monitored.

Action H3:	Description of action:	An up-to-date inventory of river obstacles that impede passage in the river network will be carried out.
	Planned timescale:	Measures should be continued until circumstances improve.
	Expected outcome:	Awareness and actions carried out so as to increase spawning habitats.
	Approach for monitoring effectiveness & enforcement:	Possible alterations to the spawning and distribution area should be monitored.
Action H4:	Description of action:	
	Planned timescale:	
	Expected outcome:	
	Approach for monitoring effectiveness & enforcement:	

4. Management of Aquaculture, Introductions and Transfers, and Transgenics:

4.1 What is the approach for determining the location of aquaculture facilities in (a) freshwater and (b) marine environments to minimise the risks to wild salmon stocks? *(Max. 200 words for each)*

There is no commercial salmon farming.

The locations of ichthyological centres producing fry for restocking purposes are chosen according to the water quality and proximity to the rivers where the specimens are to be used for restocking, respecting existing genetic lines.

In any case, in accordance with article 6 of the Habitats Directive, all plans and projects that may have a significant effect on the Natura 2000 network (protected by the Habitats Directive) will be subject to an impact study, taking into account the areas' conservation goals.

4.2 What progress can be demonstrated towards the achievement of the international goals for effective sea lice management such that there is no increase in sea lice loads or lice-induced mortality of wild stocks attributable to sea lice? *(Max. 200 words)*
(Reference: BMP Guidance)

There is no commercial aquaculture that would result in their presence.

4.3 What progress can be demonstrated towards the achievement of the international goals for ensuring 100% containment in (a) freshwater and (b) marine aquaculture facilities? *(Max. 200 words each)*
(Reference: BMP Guidance)

There is no commercial aquaculture.

4.4 What progress has been made to implement NASCO guidance on introductions, transfers and stocking? *(Max. 200 words)* *(Reference: Articles 5 and 6 and Annex 4 of the Williamsburg Resolution)*
No introductions are carried out. Restocking only is carried out by breeding wild salmon, and the rule of reintroducing the fry to the river basin from which the breeding salmon were taken is respected.
4.5 What is the policy/strategy on use of transgenic salmon? *(Max. 200 words)* *(Reference: Article 7 and Annex 5 of the Williamsburg Resolution)*
There are no transgenic salmon.
4.6 What measures are in place to prevent the introduction or further spread of *Gyrodactylus salaris*? *(Max. 200 words)*
No non-native roe or fish are introduced.
4.7 What are the main threats to wild salmon and challenges for management in relation to aquaculture, introductions and transfers, and transgenics, taking into account the Williamsburg Resolution, the BMP Guidance and specific issues on which action was recommended for this jurisdiction in the Final Report of the Aquaculture FAR Review Group, (CNL(11)11)?

Threat/ Challenge A1	No changes are anticipated in this respect.
Threat/ challenge A2	
Threat/ challenge A3	
Threat/ challenge A4	

4.8 What actions are planned to address each of the above threats and challenges in the five year period to 2018?		
Action A1:	Description of action:	
	Planned timescale:	
	Expected outcome:	
	Approach for monitoring effectiveness:	
Action A2:	Description of action:	
	Planned timescale:	
	Expected outcome:	
	Approach for monitoring effectiveness & enforcement:	

Action A3:	Description of action:	
	Planned timescale:	
	Expected outcome:	
	Approach for monitoring effectiveness & enforcement:	
Action A4:	Description of action:	
	Planned timescale:	
	Expected outcome:	
	Approach for monitoring effectiveness & enforcement:	