

Annex 3: Framework for reporting identified practices

	Section	Risk Analysis
1	Title of the practice	Bulgarian hail suppression system
2	Precise theme/ issue tackled by the practice	Analysis of real time meteorological radar information for suppression of hail-storms
3	Objectives of the practice	<ul style="list-style-type: none">  To analyse real time meteorological radar information in order to predict hail storms and combat them  To reduce the damage on agricultural crops  To secure fast reaction against hails by delivering reagent - artificial ice-forming nucleus (Agl) in clouds by means of rockets
4	Location	17 000 sq.m from the territory of Bulgaria and especially 8 regions with heavy hail-storm damages (Vidin, Montana, Vratsa, Pleven, Pazardjik, Plovdiv, Stara Zagora and Sliven)
5	Detailed description of the practice	<ul style="list-style-type: none">  The Bulgarian hail suppression system was set up in 1968 as a structure of the Ministry of Agriculture. The Agency carries out its activities by analysing and monitoring the weather conditions using MRL5-IRIS Doppler radars and cloud seeding.  In Bulgaria, the method of delivery of reagent - artificial ice-forming nucleus (Agl) in clouds by rockets has been adopted. It enables the direct and continuous dispersion of reagent in seeding cloud areas at regular intervals during the whole period of hail danger.  The overall hail suppression activity is carried out by the RAPIRA system. The system is designed to process and display the weather radar information from MRL5-IRIS, to process the aerological sounding data, to command and control the cloud seeding with seeding reagent and to command the anti-hail rockets launching.  Real time meteorological radar information is transferred to the National Civil Protection Service and the Air Force.  In order to prevent hail damages, it is necessary to transform the dangerous convective clouds so as not to allow the formation of large hailstones.  Seeding increases significantly the ice embryos concentration so that the artificial and natural ice particles compete with each other for available liquid water. The supercooled water redistributes between all ice embryos and thus resulting hailstones are small. Falling to the

		<p>ground, they melt to rain or sleet – this is called beneficial competition</p> <ul style="list-style-type: none"> MRL5-IRIS is a modern Doppler radar system for automatic volumetric scanning of the atmosphere and data archiving. The system includes three radar stations and an information centre in Sofia, fitted up with IRIS Analysis and 6 remote posts with IRIS Display. Real time volumetric radar information is transmitted to other command posts and the information centre in Sofia.
6	Evaluation	<ul style="list-style-type: none"> The geographical location and diverse terrain of Bulgaria characterise it as one of the most hail-stormy countries in Europe. The method proved its effectiveness for more than 40 years. Expensive method in terms of administration involved
7	Lessons learnt from the practice	<ul style="list-style-type: none"> Preliminary research and analysis where to place the radar stations and the anti-hail rocket launches in order to have best results for protection of the agricultural crops.
8	Contact information	<p>Hail Suppression Agency Address: 17, “Hristo Botev” blvd., 1606 Sofia, Bulgaria Tel. - +359 2 9152952 Fax - +359 2 9516597 e-mail: agency@weathermod-bg.eu</p>
9	Other possible interesting information	<p>http://www.weathermod-bg.eu</p>