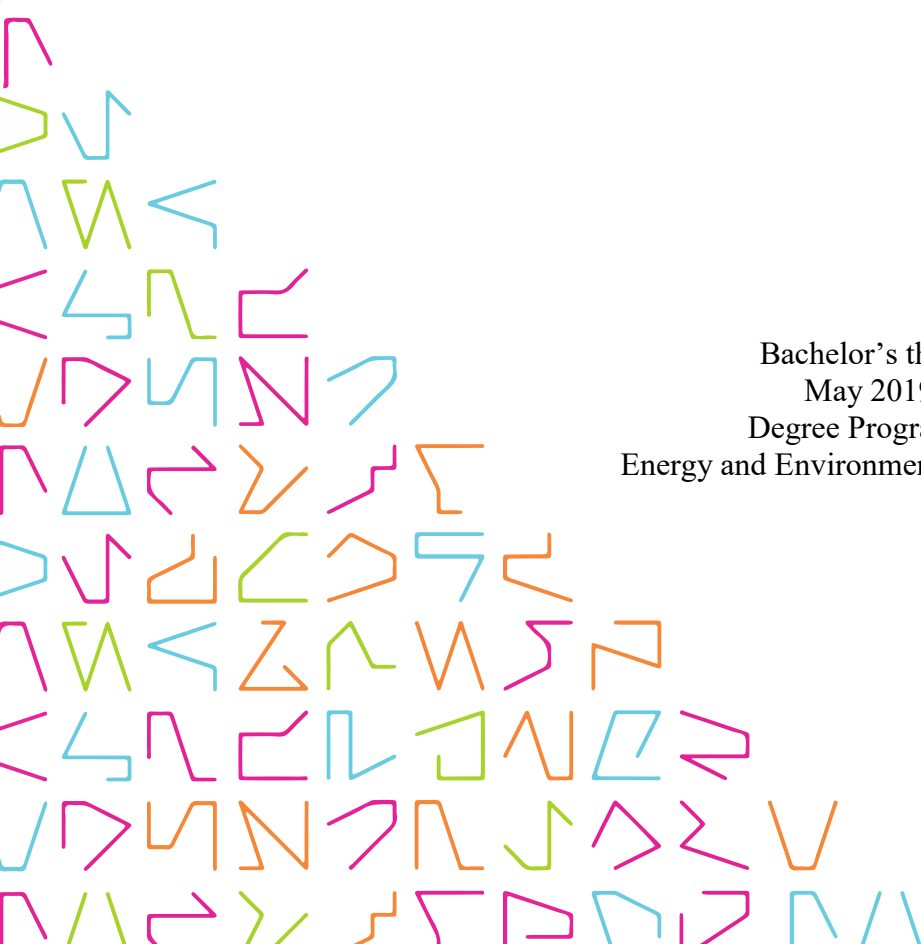


# ENVIRONMENTAL ISSUES OF 10MILA

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## ABSTRACT

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Orienteering is a sport strongly linked with nature. Most of the competitions are organised in forests and, as the number of runners across Europe is significant, there is an obvious threat to our environment in terms of event organisation and impact on nature after the event is over.

The purpose of the study was to gather data from the event of 10 Mila from past several years and provide them to organisers of the Finnish Jukola. The material served to the experience exchange and inspiration.

The data were collected and summarized from old 10 Mila reports, articles, personal experiences and people from the 10 Mila organising team.

It was found that organising an event for over 10 000 people requires long term preparation that normally start a couple of years before the actual event is held. Issues like toilets, water, permits, solid waste had to be planned beforehand and issues that came up during the competition had to be solved efficiently in order to maintain smooth organization. The thesis underlines the necessity to understand that not only data in numbers are important, but data in form of experience are needed, as well.

The findings suggest being well prepared for such a competition is crucial. The results act as a source of information for Jukola organisers if they want to prevent problems. Considerably more work will need to be done in order to summarise other side environmental issues such as length of recovery of the forest after big orienteering events or disturbing of animals in breeding season.

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Key words: orienteering, 10Mila

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## 1 INTRODUCTION

The purpose of this Bachelor's thesis is to analyse big Swedish orienteering competitions (10Mila and O-ringen) from the environmentally-organizational point. The sport "orienteering" is over a century old. Globally, there are only 3 competitions which hosts more than 10 000 people including spectators, that are held in Sweden (10mila, O-ringen) and in Finland (Jukola) (IOF 2018). Main focus of the thesis is put on environmentally related issues of 10Mila such as solid waste management, necessary permits needed, water sources and usage, toilets, electricity and overall economy. Description of orienteering, its history and history of 10Mila is included in the first part.

Considering the number of people that take part in those big orienteering competitions, those events can be easily compared to international music festivals or concerts. Statistically number of competitors and spectators is on raise (10Mila 2018). That determines legal but also logical need for establishing environmental policy for the organizers. Each of the competition has its own environmental policy that is subordinated to the general country's law. Both 10Mila and Jukola have an aspiration to decrease environmental impact that parallely leads to a better economy. This report is commissioned by organizers of Kangasala Jukola 2019 to combine outcome of the research of Swedish 10Mila. Using the results of the research as an advantage is expected subsequently.

The author had the opportunity to witness most of 10Milas and Jukolas from the year 2010 with his own eyes due to his orienteering background so reporting of the thesis is relatively contact rather than imaginary.

## 2 METHODS

The thesis is conceived as a summary of previous final reports from 10Mila and Oringen that are normally published on the websites after the competition. Unfortunately, some of the reports are not available anymore even after contacting the organizers. However, five of them were gathered (from years 2008, 2009, 2010, 2011 and 2014) and these provide rather extensive content.

Additionally, further information was provided by organisers after personal email corresponding along with an interview with organizing team of 10Mila 2014 that was held in Småland, Sweden.

### 3 ORIENTEERING

#### 3.1 General information

Orienteering (from Swedish “orientera”) is an individual sport based on ability to orientate oneself in an unknown terrain using map and compass. Competitors are given a map at the starting point. Control points, that are marked on the map, must be visited in the correct order as quick as competitor’s physical and mental ability allows them to. However, many active orienteers do orienteering, as a leisure time activity with no time measured. Courses are prepared in different difficulties and divided into categories based on gender and age. For example, category D35 (D stands for Swedish “damer” – ladies) is intended for ladies that are over 35 years old, category H18 (H stands for Swedish “herrar” – men) is intended for men up to 18 years of age. Elite categories are H21 and D21 and these are accessible for everybody without age difference.

Orienteering belongs to a family of orienteering sports which associates Ski Orienteering (Ski-O) Mountain Bike Orienteering (MTBO), Trail Orienteering (Trail-O) and Foot Orienteering. Ski-O and MTBO have the same rules as Foot Orienteering except competitors compete on cross-country skis or mountain bike. Trail-O is a relatively new discipline based on precise orienteering.



PICTURE 1. Internationally recognized sign of orienteering

Most of the competitions follow the original rules mentioned above, however, there are several other variations of orienteering such as rogaining or free-order. Both have slightly

different rules but the main though is the same. The competitor has a limited time to pick up as many control points as possible in the free order. In rogaining, each control point bears different number of points based on difficulty. Excessive time is punished by cutting down points.

## **3.2 Types of Foot orienteering**

As the thesis is focused on environmentally-organizational issues of a Foot Orienteering event, only Foot Orienteering event types are presented.

Orienteering, as other sports, is in continuous process of development and new disciplines or their variations are brought up on and off. Here are listed the most established types in which it is competed in World Championships.

### **3.2.1 Long Distance**

The oldest forest discipline (former Classic orienteering) involves a race between 75 and 100 minutes depending on gender. Courses are normally designed so that the fastest route choice is not straightforward to find on the map but requires some route planning skills. Used map scale is usually 1:15.000, exceptionally 1:10.000

### **3.2.2 Middle Distance**

A forest discipline shorter than long with a winning time in the region of 30-40 minutes and with an emphasis more on fine navigation than route-choice. A typical middle distance has more control points than Long Distance regardless of the overall distance and time. Used map scale is usually 1:10.000, exceptionally 1:7.500.

### **3.2.3 Sprint**

The shortest discipline typically organized in urban areas (city centres, parks) but also in forests. Estimated winning time is 12-15 minutes. Control sites can include benches, sculptures, building corners, paths and other objects common to urban parks. Used map scales are usually 1:5.000 or 1:4.000.

### **3.2.4 Sprint relay**

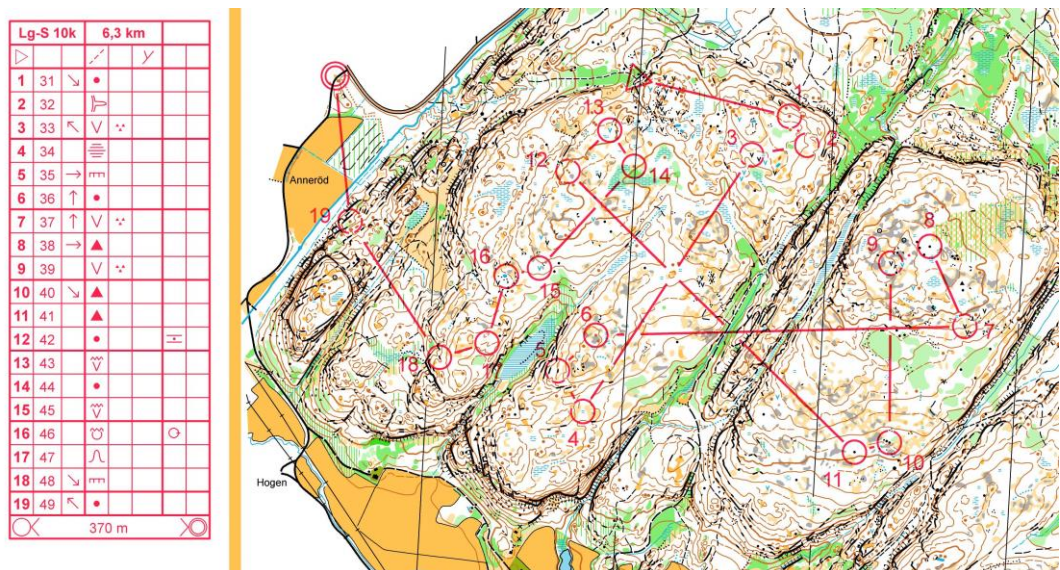
A mix-gender team (2 men and 2 women) competing in sprint orienteering with mass start and change-over after 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> leg. Nowadays very popular for spectators.



Typical winning time of each leg is approximately 10 minutes. Used map scale is the same as for Sprint.

### 3.2.5 Relay

The second oldest forest discipline for team of 3 members (man and women have separated race). First runner of the team starts in mass start and 2<sup>nd</sup> and 3<sup>rd</sup> leg start after each other after change-over of the previous leg. Typical winning time of the whole team is 90 minutes.



PICTURE 2. Training for Middle Distance (Published by [www.omaps.worldofoc.com](http://www.omaps.worldofoc.com))

### 3.3 History of orienteering

Orienteering is considered being born in late 19<sup>th</sup> century in Sweden. Army of Sweden practiced orienteering as part of military training and land navigation. Originally, the meaning of the term was: “Crossing an unknown terrain only with the aid of a map and a compass”. The term was first used in 1886 and it is derived from a word root meaning to find the direction or location. The first open public orienteering competition was held in Norway in 1897.

Throughout the history and on, locations for orienteering sessions have been chosen based on their natural beauty, man-made beauty or simply its interestingness. For example, the first public orienteering competition in Sweden, in 1901, control points included two historic churches, Spånga kyrka and Bromma kyrka (Orienteering USA 2018).

With the invention of rather inexpensive but reliable compasses, the popularity of orienteering increased rapidly during the 1930s.

In 1934, over 250 thousands of Swedes, did orienteering on regular basis, and the sport was spread to Finland, Switzerland, the Soviet Union, and Hungary.



PICTURE 2. An orienteer in 1972 (own archive)

After World War II, orienteering found popularity throughout Europe and to Asia, North America and Oceania. The first international orienteering conference was held in Sweden in 1959, where representatives from 12 countries participated. The countries were Austria, Bulgaria, Czechoslovakia, Denmark, Finland, East and West Germany, Hungary, Norway, Sweden, Switzerland and Yugoslavia.

In 1961, International Orienteering Federation (IOF) was found by 10 of those 12 countries that participated the first conference in Sweden. After that orienteering bases were established in many countries and supported by IOF.

In 2018, IOF associates 70 countries and there are new countries every year. The IOF with support of national federation, developed a system of national and international events such as national and world championships.

After the years, highest popularity of orienteering remained in Nordic countries. Jukola and 10Mila are the oldest races, recurring yearly since 1940s. The biggest individual competition – Oringen, with over 15 000 competitors, recurs since 1965.

From its history, most of orienteering events are organized in wild terrains. In Nordic countries it normally means forest, heathland, open fell, moorland and other mixed terrain. During the last 30 years, sprint orienteering held in urban areas, city centres, parks, etc. has been popularized gradually and new disciplines have been established. Unfortunately, original forest orienteering's popularity has suffered as the newcomer participants prefer shorter and more actiuos sprint orienteering.

### **3.4 10Mila (and Jukola and Oringen) and its history**

#### **3.4.1 10Mila**

Tiomila is a team competition that was first organized in 1945. The original competition is a traditional relay, now called the 10Mila. Teams of 10 co-runners compete after each other during the night, the last leg is scheduled for dawn. One of leg is the called "Long Night" and it is the longest, reaching nearly 20 km of length. The total racing distance is about 100 km. Over the years, a woman and a youth races were added too. Both the men's and the women's race consist of about 350 teams every year (Svensk Orienteering 2018).

The competition is usually held last weekend in April or in early May. Tiomilabud Association, that associates 10 orientation associations in the Stockholm area are chief representatives and recurring main organizers. However, since 2004, other Swedish associations can arrange 10Mila as well. (Svensk Orienteering 2018).

In April 1945, Tiomila was the first public team competition in the orienteering sport. Alvar Kjellström from Lingbo from northern Gästrikland took the initiative and supported by the Stockholm newspaper, organized the first year. Kjellström is the winner of first Swedish championship in orienteering, and his three brothers are founders of a company Silva AB – that is the world's largest compass manufacturer in 2018 (Svensk Orienteering 2018)

The first few years, 10milas were organized mainly around the area Mälaren, north-west from Stockholm.

10Mila in 1962 was cancelled due to a jaundice epidemic and till 2018, it is the only year in 73 years history, that did not take place.

In 1970, 10mila hosted a first competition centre so all runners started from the same place. In the early years, runners had waited somewhere in the forest to do the change-over. In 1977, competition for women was introduced. In the first year, 299 women teams participated. In 1992, time was first measured electronically. The same year, a youth class was also introduced. In 1995, an electronic stamping system (controls were stamped electronically) was introduced. In 2003, there was a big TV screen in the competition centre. This was one of the first times during an orienteering competition. In 2004, 10mila was first organized outside the Stockholm area.

In 2005, 10Mila had GPS tracking at the big TV screen for competitors and spectators to follow. Nowadays, big TV screen is a standard. This was a step in making orienteering a TV sport and to make it more understandable for non-orienteers.

In 2006, 10Mila was the first broadcasted live in STV (Swedish TV). In April 2015, an anniversary edition of 10Mila was organized on the same courses and exactly 70 years after the first edition.



PICTURE 3. Mass start of 10Mila 2013 (Photo taken by Jaroslav Hubacek)

### 3.4.2 Jukola

The Jukola Relay is the biggest orienteering relay race in the world held in Finland since 1949 annually. The race takes place in June in various places across Finland. The name Jukola is a family name of the main characters in the classic Finnish book, "Seven Brothers", written by Aleksis Kivi in 1870. Normally, Jukola is organized in southern Finland. The northernmost location where Jukola took place, has been about 50 km north of the Arctic Circle. In 2020 the race will take place in Rovaniemi.

Compared to 10Mila, Jukola relay has only seven legs from 7 to 15 km in length. The start is organized right after the sunset depending on geographical location. The winning team crosses the finishing line after the dawn the next morning.

For the women, four leg relay-race is organized since in 1981. The woman race, known as Venla relay, takes place the afternoon before the man race.

In 2018 the Jukola relay attracted 1901 teams and the Venla relay 1644. Most of the teams are Finnish and Swedish based but apart from that teams from other 18 countries took part.

Founder of the Jukola relay is association called "Kaukametsäläiset" and it is also the owner of the rights to the Jukola event.

### 3.4.3 Oringen

Oringen is a 5-days race held since 1965 in different parts of Sweden yearly. Runners compete in categories based on their age at 5 individual stages that are evaluated together in the end. For Swedes, winning Oringen in elite category has always bear a significant prestige comparable to winning the World Championships. The highest participant level was in 1985, 25 021 participants. Usual participation is around 15 000.

## 4 WASTE MANAGEMENT OF 10MILA

Big orienteering competitions could be easily comparable to music festivals or events of that kind. From a competitor's point of view, 10Mila is the event that last only about 24 hours, but from organizers perspective it requires 1-2 years of preparations (see the interview with 10Mila 2014 organizers in section X).

Every year, 10Mila is organized by different organizing team in various locations with incomparable accessibility to necessary basics. It includes electricity, water, communications (road capacities), carrier network, internet access etc. Also, apart from providing a good orienteering experience, organizer's responsibility is to arrange the assembly within certain but also unwritten standards with consideration of unlikely natural influences. It requires handling traffic, parking for the competitors and for organizers, toilets, showers, tents, restaurants etc.

### 4.1 Toilets

Providing lavatory by organizers in a certain standard is a must at such events. Lack of toilets might end up by polluting neighbouring parts of the arena. As most of 10Milas are organized in less- or semi-established arenas such as meadows, old runways, biathlon arenas etc., mobile toilets provided by a third part at 10Milas in last several years, number of 100 toilets seems be quite optimal based on the TABLE 1 which is below. The last column of the table mentions number of runners in each studied year, however, the number is not essential as uncountable number of spectators, staff, organizers and media visit 10Mila, so the final number of people might be 3 times higher. My calculations in TABLE 1 do not consider other participants and assume that the number of them is exactly 3x more that number of competitors each year.



PICTURE 4. A queue for toilets (Own archive)

As mentioned, approximate number of 100 toilets (approximate tank volume is 250-320 litres) might cover participant needs but when it comes to reality, not only number but correct distribution around the arena and scheduled emptying of the toilets matters the most as the toilets do fill up sooner or later.

TABLE 1. Number of provided mobile toilets and urinals.

YEAR	Toilets	Urinals	Toilet for disabled	Runners	Toilet per person
2001	100	4	?	6315	63,2
2002	100	2	?	6572	65,7
2003	120	2	1	7116	59,3
2004	80	2	1	7866	98,3
2005	100	2	1	7272	72,7
2006	?	?	?	6935	?
2007	80	0	1	7178	89,7
2008	80	2	1	7015	87,7
2009	?	?	?	6479*	?
2010	85	4	1	6852	80,6
2011	100	2	1	6600*	66,0
2014	100	5	3	6359*	63,6

\*The number is calculated by the author from the number of teams

As seen from the TABLE 1, amongst all studied years, in 10Mila in 2004 (in Kolmården), one toilet was supposed to serve 98,3 runners (249,9 participants). The year before, in 2003, the rate was 59,3 persons per toilet. Urinals are mentioned as too, but the numbers have too many variables as, based on personal experience, many people (mainly males) urinate anywhere possible.

Organizers of 10Mila 2011 experienced the issue of inadequate distribution of toilets which caused filling up part of the toilets too early and part, that was placed slightly further from the arena, was basically unused. After realizing, a service vehicle had to be called and the toilets were emptied, while the other part stayed unfilled till the end of the competition. Organizers, in the final report, regret of not appointing one person to take care of the distribution more seriously. The person would have checked toilets regularly and inform the headmaster to proceed with further steps. Organizers would have avoid paying unspecified extra cost for service that was not ordered. (Slutrapport 2011)

10Mila 2014 organizers had similar issues. They had about 100 toilets, but final report mentions they could have had another 20 as too long queues formed. A certain redistribution should have been made when a larger proportion of caravans and mobile homes arrived against expectations. All toilets were emptied once, but some of them had not been filled up at all. Toilets were sludge-extraction toilets. (Slutrapport 2014)

Organizers of 10Mila 2010 were satisfied with the number of toilets as emptying went as scheduled. The rate of the runner/toilet was 80,6. However, the final report mentioned some other low-capacity toilets of up to 20 pieces provided by army. Then the rate persons/toilet would be 65,2 (195, 6 participants). (Slutrapport 2010)

For comparison, The Government of Canada has guidelines for organizing festivals (mass gatherings, petting zoos and cultural events) published on their website (table 2). The minimum requirement for toilets is, after calculation, 52 toilets for 7000 people. It gives the rate 136,6 runners/toilet which is far less toilets comparing to all studied years of 10Mila.

TABLE 2. Guidelines for number of toilets for festivals in Canada (Manitoba 2019)

ATTENDANCE	TOILETS	HAND WASHING STATIONS
1-50	2	2
51-100	4	2
101-200	6	2
201-300	8	2
301-400	10	2
401-500	12	3
501-600	14	3
601-700	16	3
701-800	18	3
801-900	20	3
901-1000	22	4
More than 100	One additional toilet for every 100 for festivals lasting < 3 hours. One additional toilet for every 200 for festivals lasting > 3 hours	A minimum of 2 stations required. One additional station for every 10 toilets
NOTE: Applies for both permanent and temporary toilets.		
NOTE: A minimum of 1 handicap-equipped toilet must be provided every 10 regular toilets		



Part of every toilet station is a washing station. Nowadays, mostly the hand-sanitizers (no water needed) are in use. Using these, organizers save lots of time as only a new bottle can be brought on place when needed. The hand-sanitizers are relatively cheap as well.

## **4.2 Water**

This section is focused on how water access was handled to be available during the competition for drinking, cooking, hand-washing and showering. Also, it describes the way how waste-water from showering was handled.

### **4.2.1 10Mila 2008**

Water was brought with help of Sigtuna Municipality. So-called water-emergency tanks had continuously been brought (900 litres/tank). In total, 10 000 litres were estimated (2 reserve tanks were present in the arena). Access to water was also found in the organiser's buildings. However, the hot weather caused recalculation and Sigtuna Municipality must have delivered almost twice as much water. In total, 18 000 litres of water were poured into the pipes. As showers were 900m distant from the portable heating source (district heating network), hot water was not available all the time as the water flow were changing with number of people showering.

### **4.2.2 10Mila 2011**

Water access was arranged by Södertörn Municipality so that pipes were connected to the district pipeline.

Showers were placed approximately 700m from the source. Halfway the water was led through a portable heater connected from the district heating network. The district heat exchanger was sponsored by Södertörn's district heating. Thus, perfect pressure and warmth up was provided to the showers.

Due to the location of the arena there was no way to use tap water for drinking purposes. Organizer had 8 m<sup>3</sup> tank as well as 8 pieces of 1 m<sup>3</sup>. These were evenly distributed throughout the arena. The first 1 m<sup>3</sup> tank run out of water already in the evening, but all the tanks had been filled continuously.

### 4.2.3 10Mila 2014

Water was arranged through a water supply network with a total length of approximately 700 meters from its source which was a district pipeline so basically “unlimited” amount of water could have been used if needed. Water tank, that had been filled continuously for preventing shortage at peak hour, was arranged to a slightly further located camping area.

The showers were organized with a good drainage system leading to a public drainage pipeline. Altogether, there was 32 unisex showers (women’s competition takes place at different time).

Approximately 100 m<sup>3</sup> of 32 °Celsius of shower-water was used. 53 m<sup>3</sup> of 72 °C water was delivered by Arla (name of a company) in tanks. This was mixed with cold water to reach the appropriate shower temperature. In addition, about 18 m<sup>3</sup> of hot water was produced for the runners running on Friday and Saturday morning in a water heater connected to the mains. The showers worked without remark throughout the competition.

Information about water in the other available final reports (2009 and 2010) contain either insufficient data or the these are missing completely.

## 4.3 Solid Waste

An environmental policy applies on handling solid waste at 10Mila. The policy is formulated in the Rules of Procedure published during the planning of 10Mila. Normally, special waste management is planned in cooperation with the current municipality. Significant effort must be put into preparation of the plan as total amount of collected waste exceeds 100 m<sup>3</sup> of unspecified waste.

Logically, the environmental policy is under development each year as new recycling technologies and its issues have been introduced in the meantime. Moreover, the EU direction of environmental protection gets stricter yearly so more effort towards recycling is required and expected.

As there is no available data what recycling was 40 years ago at 10Mila like, it cannot be legitimately stated, but presumably a certain difference would be obvious comparing to the studied years in this thesis, plus the general trend (figure 1) would likely match. For

instance, in 10Mila 2014 there was only 4 different recycling bins for combustible waste, glass bottles, cans and plastic bottles (apart from one collection point for batteries and other potentially dangerous waste). The last three items (cans, bottles, glass bottles) can be recycled in every grocery store like in Finland and the flammable waste is transported to the nearest incineration plant, no landfilling.

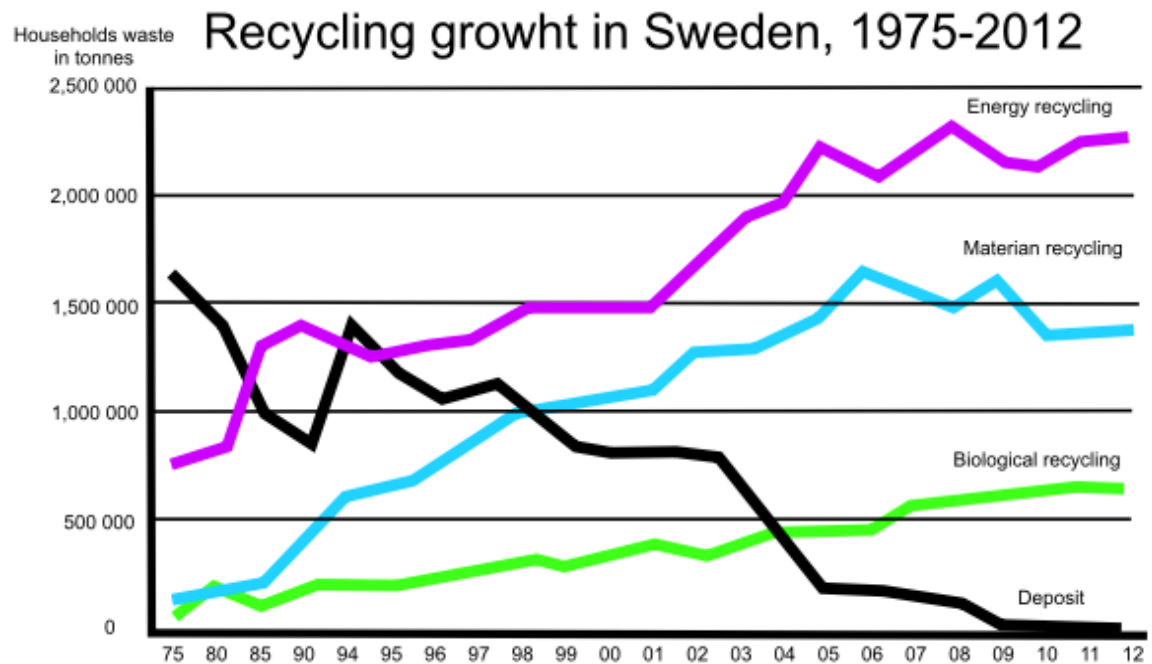


FIGURE 1. Recycling in Sweden (Hinde 2019)

More than 99 % of all household waste is recycled in one way or another. This means that the country has gone through recycling revolution in the last few decades, considering that only 38 per cent of household waste was recycled in 1975 (figure 1). In 2014, Sweden even imported 2.7 million tonnes of waste from other countries. (Fredén 2018)

The graph can supposedly be implemented into comparison in recycling trend between 10Mila 1975 and 10Mila 2014.

#### 4.3.1 10Mila 2010

85 pieces of 190 litre waste bins with combustible plastic bag of 240 litres were used during the competition. Organizers made wooden lids with two holes for cans and PET bottles. These lids were distributed around the arena together with mixed waste bins. The waste bins were placed at the camping, the shower, kiosks, military fields, the staffroom

and the restaurant. Some bins were also placed randomly around the arena. At the restaurant, 6 bins for glass bottles were placed as well. Organizers say they saved a lot of time by building up collecting points for waste behind each kiosk at the arena, so they had many options to throw the filled plastic bags. Likewise, each kiosk could place its waste, which consisted of cardboard, packaging plastics and small sack waste there.

Then a named person could drive with organizer's four-wheeler around and pick the waste up when necessary and move it to the main collection point that was located further from the arena. Organizers expected 6 containers of unspecified volume to be filled at the main collection point, but it ended with a total of 11 pieces. Approximately it was collected 50 m<sup>3</sup> of folded cardboard (mostly came from the sports shop), 80 m<sup>3</sup> of combustive mixed waste, a glass container (coloured and uncoloured), and a half-full container of metal. Organizer is certain that lots of time was saved using the combustive plastic bag inside the bins, so it was no need to clean the bins and it is easy to operate with the plastic bags rather than loads of mixed waste.

Organizer was very happy with the solid waste management. However, there was lower amount of glass and metal waste than expected. Recycling was only possible in the arena, not on the parking lots when only mixed waste bins were placed. The crucial was to handle waste at kiosks and the food services as these produce loads of waste in short period of time and organizer's goal is to avoid making the arena look like a landfill.

#### **4.3.2 10Mila 2011**

Decision was made not to recycle anything else than cans, plastic bottles and glass bottles, so all other waste was the mixed combustive waste. An unspecified sponsor provided 100 cardboard boxes (0,75m x 0.75m x 1,3m) with logo of 10Mila. 1-2 stones were placed on the bottom to avoid the boxes being blown by the wind. Then ordinary black plastic bags of 100-120 litres were placed inside the boxes. 3 containers of 30 m<sup>3</sup> were placed at a waste collection point further from the arena. 2 persons were assigned to be in charge of emptying the bins and changing the plastic bags during the competition. Most were within walking distance, but occasionally four-wheelers were used. Once a plastic bag was filled, it was taped to avoid unwanted spilling. The three containers at the collecting point were finally not enough, but a 4th was brought and filled after the competition. Thus 120 m<sup>3</sup>

of garbage was generated, including all kiosks and sport shops. The solid waste management was evaluated as well functioning!

### 4.3.3 10Mila 2014

For garbage disposal, about 100 waste bins (140-liter and 190-liter) were placed around arena and the campsites. In addition, five bigger waste bins were placed at kiosks, restaurants and some other strategic points. There was a team assigned to continuously look that the bins were emptied. Between the sport shop tents and the restaurant there was a cardboard compactor placed. Containers for collecting the mixed waste plastic bags were placed a bit farther. Only containers for combustible garbage, cans, glass and PET bottles were provided. Unfortunately, as usual, a lot of junk came under the PET bottles. In total, there were about 33 m<sup>3</sup> of garbage and another 20 m<sup>3</sup> of waste produced during the demolition and decommissioning of the arena.

The amount of waste produced during 10Mila 2010 and 10Mila 2011 is very similar (Table 3), however, in 10Mila 2014 the amount of the produced waste was significantly lower. That can be explained by lower amount of runner and visitors but also by presence of the cardboard compactor that is capable to decrease cardboard's volume by up to 90 %. (Cassidy 2018)

TABLE 3. Amount of waste at 10Mila (10 Mila slutrappors 2008-2014)

Year	Details	Number of runners
10Mila 2010	130m <sup>3</sup> of waste collected – 50m <sup>3</sup> of folded cardboard, 80m <sup>3</sup> of mixed combustible waste	6852
10Mila 2011	120 m <sup>3</sup> of garbage was collected	6600
10Mila 2014	53m <sup>3</sup> of waste was collected, 33m <sup>3</sup> of garbage and 20m <sup>3</sup> produced during demolition of the arena	6359

## **4.4 Electricity**

Power is far from a minor consideration for mass event's organisers. In fact, it's one of the five single largest production costs for almost any type of music festival or other mass event. The estimated quantity of electricity and fuel consumed is seen as more or less set fixed for organisers, with very little that can be done to reduce it once the mass event has actually begun. Instead, all the efficiency measures have to be undertaken and mainly not underestimated in the planning, long before all the generators arrive on-site. (Rubberbox 2018)

Inefficient generator use is a major issue for mass event's organisers. They have to take particular care when selecting their generators, as the wrong one for the wrong job could end up being catastrophic in the form of a complete blackout. Those that are too small will obviously struggle to provide the necessary power for all the applications needed, while those that are too powerful can even be damaged if they're consistently running at insufficient capacity. For example, music festivals generally try to keep their power efficiency to between 70% and 80%, but it's a careful art. (Rubberbox 2018)

So, it is a considerable issue when planning mass event such as 10Mila as well. For 10Mila 2014, the total of 10 electricians were hired for work before, during and after the competition. Other 7 people from the 10Mila 2014 volunteers, who were educated electricians, were chosen to be a backup. The report underlines the importance of planning. The electricity group must have taken a huge responsibility as a blackout would mean devastating organizational problems. Otherwise, it was important to have a robust safety precaution. A sudden negative surprise in a form of partial or total blackout was expected at any moment. During the 10Mila 2014 there was only 1 fault. One of a minor ground switch collapsed probably due to the dry weather and dust, however, the problem was solved within few minutes by the electricians.

### **4.4.1 10Mila 2008**

The supply of power was brought from a neighbouring property. The electric current of 192 A was sufficient. For sport shops, it was 32 A available, which was considered on the limit, but no issues appeared. Most of the material for providing electricity provided by sponsors, including lighting bulbs, lighting masts, cable masts and some smaller diesel

power plants. Some smaller backup power supplies were borrowed from a company called RV.

#### **4.4.2 10Mila 2009**

Access to the electricity supply was difficult to establish due to the arena placement. However, a fixed current of 16 A was managed by a company Eon Elnät. Other power had to be managed with diesel-powered generators. In order to get as safe electricity supply as possible, four power aggregators were spread into smaller areas. Power of the aggregators was between 40kVA and 150kVA. At the restaurant and sports tent there was the largest electricity consumption. The computer equipment in the competition secretariat, which was inside a building in three office trolleys, was fed with the current of 16A. In shower tents and healthcare tent, two smaller 230V power plants were used.

#### **4.4.3 10Mila 2011**

Two separate systems were used. One on each side of the arena. The electricity was established by Telge company. It turned out that power usage expectations were heavily overrated. Especially on the north side close to the kiosks and restaurant. That was caused by wrong calculation of the expected amounts of power. The power plant on this site was 400 kVA altogether.

Otherwise everything worked very well during the competition. Only one fault occurred at night on the competition side. It was quickly fixed, and nothing was significantly affected. Over 7 full time electricians worked both before, during and after the competition.

#### **4.4.4 10Mila 2014**

An agency took care of the electricity to be brought to the arena. The electricity grid was powered by 400 kVA transformer that was located at the arena. There was a backup of 250 kVA transformer ready to be used anytime. It was estimated that in case of blackout, it would take 7-10 minutes to be back.

The distribution of the power grid is illustrated in the figure 2.

A large number of wall sockets were required for the press office and for charging mobile phones. These were the subject of underestimation.

A total of 10 electricians worked before, during and after the competition. Seven people were a backup during the race day. The organizer highlights the importance of planning as several issues with electricity were on “the edge” but as preparation was good enough, so all potential issues were solved before these caused serious troubles. The only thing that surprised the organizers appeared in the last minute. It was a failure of one socket stand near showers that, for unknown reasons, collapsed. This was probably caused by the dry and dusty conditions.

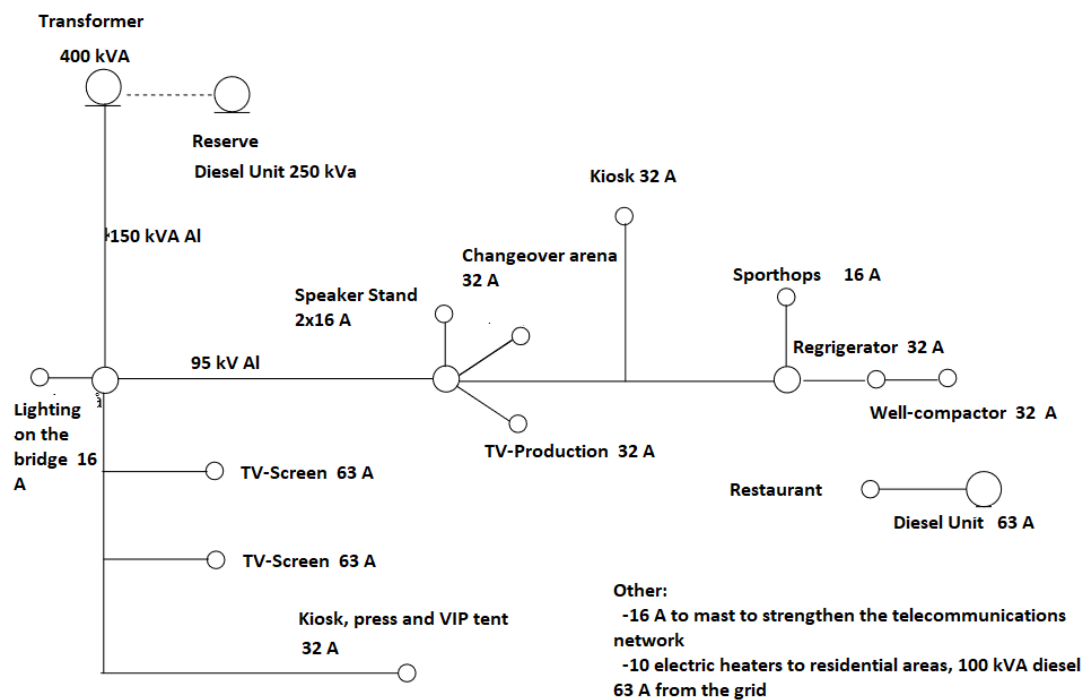


FIGURE 2. Electricity distribution at 10Mila 2014 (Slutrappport 2014)

#### 4.5 Economy

The positive overall economy of such event is a key feature. There are plenty of factors effecting the economic results and these must be planned well ahead – all studied reports mention 2 year of economic planning. Huge costs are spent before registration for the competition starts. Then organizers are dependent on number of entries that are registered. These numbers are quite expectable based on the previous years, but depending on place



of the competition, the number of registered teams may vary by several hundreds. Considering that the base fee for an on-time registration of an adult team is approximately 600 EUR (6500 SEK) and overall income is expected to be over 150 000 EUR (1, 606 mil SEK), then several hundreds of teams down might mean a gap in the overall economy.

However, not only number of registered teams is essential for successfully organized event from the economy point of view. Many sponsors are involved so good deals between them and organizers are important as well. Other big costs come to electricity, water, toilets, transport, land rents, stuff rents, printing of maps etc.

On the other hand, the organizers can count on revenues from the application fees, shops, kiosks, restaurants, TV right, additional services for competitors etc.

At Jukola 2016 in Lappeenranta, it was raining throughout the whole competition and as the arena was built on a meadow, significant problems with running the race appeared. It is publicly known that the economy of that year was a big disaster and the organizing clubs will be paying the debt for many years.

Also, every year, organizers depend on a great number of volunteers without which it would not be possible to organize such event and be in positive values (Sven-Åke Karlsson).

TABLE 4. Economy of 10Mila in studied years

<b>10Mila</b>	<b>Budget</b>	<b>Profit</b>
2008	4 mil. SEK	0.6 mil. SEK
2009	4 mil. SEK	0.66 mil. SEK
2010	4.7 mil. SEK	1.1 mil. SEK
2011	unavailable	1 mil. SEK
2014	unavailable	1.5 mil SEK

\*1 SEK = 0.0947003297 EUR (21.1.2019)

## 5 DISCUSSION

Orienteering is rather an environmentally friendly sport. On a bigger scale, meaning competitions like 10Mila or Jukola, it obviously requires quite a lot to handle long before the actual competition even starts. However, there are guidelines provided to organizers based on the past races, so big problems like serious lack of toilets or blackouts are exceptional and require rather bigger form of underestimation from the organizers.

Organizing an orienteering event on a small scale (competition for up to 1000 people), that the author has an experience with, is difficult as well. However, there is no need for taking environmental issues that seriously as not that much of a solid waste is produced, not much water consumed etc. Also, in big competitions like 10Mila, there should be a pyramid of organizers with different competences lead by the headmaster that has the first and last word. If those follow the provided guidelines, there is no need to bother about unexpectedly appeared issues.

### 5.1 Toilets

Stated in the main part, toilets might become an ordinary part but also a nightmare for organizers. Sufficient number and correct distribution are basically the first and the last thing that organizer must consider.

From the authors point of view, after being part of over ten 10Mila events, there has always been “silent” hours when most of the toilets were empty (during the night) and the “peak” hours when there are significant queues – these are crucial. These peak hours are just before the start of the man’s race (from 7pm to 9pm) and in the upcoming morning (from 6am to 9am). It was discovered, from the studied reports, that rather than the total number of toilets, correct distribution is more essential. It is logical, as the number is provided by guidelines from past years. Indeed, even the correct number of toilets does not need to be enough if excessive number of spectators shows up. The distribution is, however, more variable.

Assigned volunteers take care of emptying and filling with toilet paper every year. Unfortunately, it cannot be said for sure if organizers consider the following ideas, and if, with respect to economic perspective, it is viable, but they can take it as a suggestion.

1. The organizers may consider relocating most of the toilets from the parking lot to the arena after the race is on. The people will urinate on the way from the parking lot to the arena (1,5 km, normally a road or path surrounded by forest) anyway and it is better if they do it on the way than significant queues in the arena during the peak hours.
2. After the first peak hour that is in the evening before the man's race, organizers could relocate the most unused toilets to the place with the highest need and avoid significant queues during the peak hours in the following morning.

## **5.2 Water**

During 10Mila 2014, approximately 118 m<sup>3</sup> of water was used only for showering. It is very questionable if that big amount of water is needed. It is not a secret that not all runners visit shower after the race as many teams stay in nearby hotels.

However, there has not been a single remark in the studied reports about over-usage or prize of the water. The reason might be relatively low prizes of water in Sweden, so it is likely not the most important part of the overall budget (figure 3) (EurEau2017).

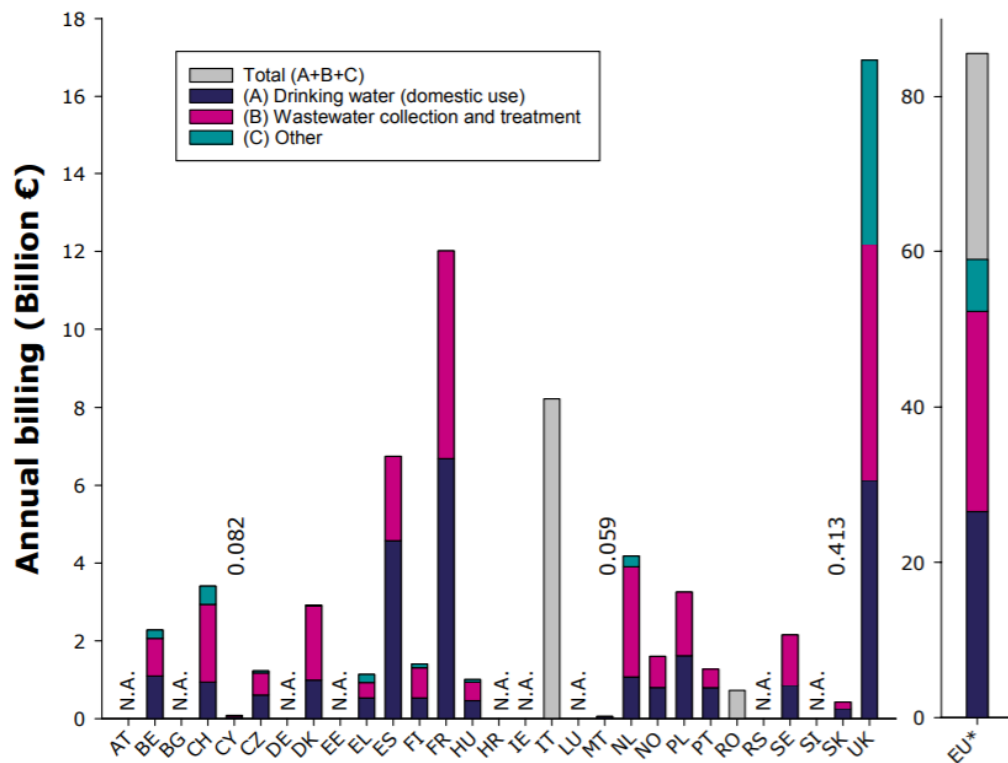
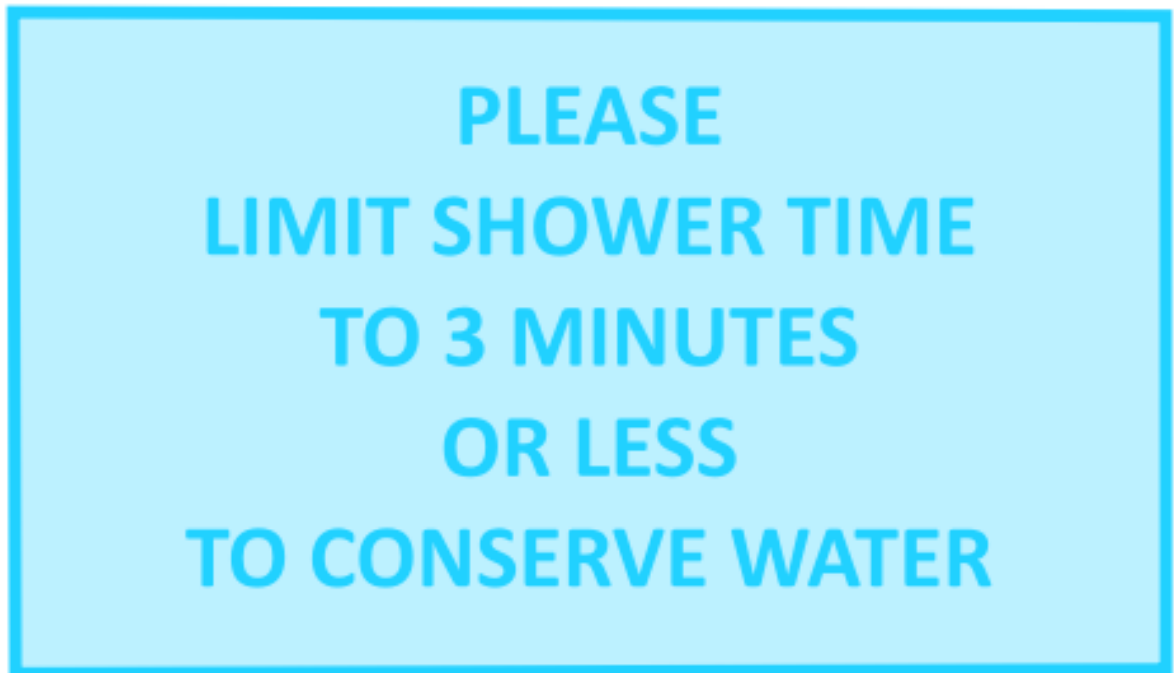


FIGURE 3. Annual amount of revenue collected from the different water services (EurEau 2017)

According to the 10Mila 2014 report, only 11 500 SEK was spent for water, showers, and sauna. For toilets, it was 120 000 SEK, so from the economic point of view, showers are 12x less important than toilets. (Slutrapport 2014).

Nevertheless, lowering the amount of water that is spent during 10Mila can always be boosted by appealing runners not to waste and spend only the necessary time in the shower.



PICTURE 6. The example of an appealing sign for people to save water

When it comes to access to the used water resource for 10Mila as such, it is very questionable if organizer has a choice. Most of the 10Mila arenas are located rather further from residential areas. To bring or lead the water to the arena is always an issue (complicated set of hoses leading through arena, pumps, pressure issues, etc.), which every organizer of event like this, would resolve in the simplest as possible manner.

### 5.3 Solid Waste

In all the studied years, gathering solid waste worked without significant remarks. In 2014, cardboard compactor was used, and it caused lowering the total amount of solid waste to approximately 2/3 comparing to the previous years.

Supposedly, orienteers are tidy and nature-loving people, so no big scale “landfilling” normally happens in the arena. The rest is picked up and cleaned by the clean-up squad after the race is over.

By the experience, a special focus is, however, needed for 2 quite unsecured places:

1. Surrounding of the refreshment stations

These are located in the middle of the forest and serve to runners to be refreshed during their race. Normally, water and other energy drinks are provided in plastic

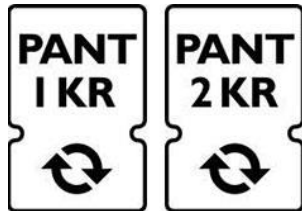
mugs and not all the runners drink in stationary position, so the mugs are dropped in different places around the refreshment station. Most of the mugs are left nearby, but many times mugs can be seen in the middle of the forest even 200m far from the refreshment station. Considering there is 10 000 runners and at least 7 refreshment stations, there are possible threats that number of mugs might end uncollected.

2. The way between the parking lot and the arena

In many cases, length would reach even 3 km of walking for most of the runners. Objectively, there might be some “landfilling” happening if no waste-bins are present.

Also, organizers could start forcing people to keep their plastic bottles and cans (these are returnable in shops in exchange for money) so less responsibility would lay on them. On one hand, organizers may gather some money from the returnable bottles, but after reading the final reports, the collection points for bottles are always filled with loads of other mixed waste so the whole bag ends up in the mixed waste in many cases.

Otherwise, it is surely clever to use combustible plastic bags in waste bins as easy handling is secured and there is no need to bother about spills.



PICTURE 7. Sign of returnable plastic bottles, 1 SEK  $\approx$  0.1 EUR

#### 5.4 Other potential environmental issues

There is number of environmental threats that give appearance during orienteering mass events. It is, however, impossible to unfold all of them in such thesis. Below, there is a list of potentially interesting environmental threats or issues that go alongside with organizing mass events in orienteering:

Oil leakage from cars could be one threat. In many cases, not only in mass events, there are parking lots organized on meadows or fields. How much oil or other potentially dangerous liquids spill and soak up the soil when hundreds of cars park? Will it affect the crops?

Other threat could be forest runways from runners. Orienteering courses tend to be set in certain corridors. There are spots in the forest that are visited by most of the competitors (10 000 at 10Mila). Runners tend to follow the forest runways as these normally lead correctly. Most of orienteers use spiked or studded shoes (picture 8). How fast will these runways recover? May crops be endangered?



PICTURE 8. Studded orienteering shoes (own archive)

## 5.5 Other considerations

For many Swedish clubs, organizing event like 10Mila is a big chance to gather money for running the club for next few years. The exact amount that goes to particular club depends on the overall economy, however, as after a discussion with representatives of an unspecified club that the author represented in the past, organizing O-ringen in 2008

brought over 1 mil SEK which would easily last over 10 years for the club to survive without other sources. Moreover, underestimation or failure to organize the event that ends up in loss is a serious threat. For example, organizers of Jukola 2016 in Lappenranta must have taken a loan to cover up losses. In this case, steady rain during the whole competition multiplied the budget into red numbers.

Unfortunately, rain is unpredictable and once it comes, it will more or less increase the budget unless the arena is located in a well-established area. Situations like towing the cars with a tractor out of the parking lot are not exceptional.



PICTURE 8. A car is towed out of parking lot (own archive)



## 6 CONCLUSION

The main aspect of the thesis was to study reports from big orienteering events from the environmental and organizational point of view. In early stages of writing it appeared that only reports from 10Mila are comprehensive enough to be studied and quoted. Other materials were used as well, however, most of the information were gathered from 10Mila reports.

It is highly positive to be aware that environmental responsibility is a big issue for such big competitions as financing rapidly affects the decision making, and in many cases lower price does not mean the best environmentally friendly solution. Nevertheless, in many of other cases the cheapest solution means the nature-friendliest way.

Unfortunately, studied 10Mila reports are not formulated uniformly and some data from different reports are difficult to compare. Altogether, the reports provide rather extensive picture of the issues that appeared and sum up many of threats that are better to be considered to avoid organizational or economical failure.

In conclusion, certain valuable data were gathered and provided for the Jukola organizers so they can find a use in them. This thesis explored challenges that can be voided next time as they are recognized now.

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## APENDICES

Appendix 1.

1(3)

### **Interview with Sven-Åke Karlsson, the chairman of 10Mila 2014**

1. *Could you please reveal how long in advance did 10Mila 2014 organizing team started with planning? What were the key pillars that decided that it is possible to organize 10Mila (Permits, city department support, sponsors, etc)?*

At the annual meeting of Association of Småland's Orientering that took place 14.3.2007, a request, if the association is to apply for the organization of 10MILA in near future, was submitted. This association consisted of 23 clubs that had organized Oringen 2005, also it was going to organize Oringen 2009 at the same place.

Subcontractors were introduced with the 10MILA management and showed a great interest to outsource the competition outside of the Stockholm area.

This resulted in the agreement, then the chairman of IK Hakarpspojarna wrote a letter to the Association Orientering Småland's presented at Annual Meeting 02.04.2008 to support the application to host 10MILA 2014.

The application was submitted 23.04.2009.

In 2010, we were informed that we will be organizer of 10MILA 2014 and we decided that the competition area will be at the Defense Force's practice area Ränneslätt west of Eksjö, where O-Ringen 2009 was also organized. Arena was decided at the registry's shooting lanes in the eastern edge of the competition area. Authorization was obtained by the Swedish Armed Forces, which became a major sponsor as well as Eksjö municipality.

15.10.2010 was the 10MILA leadership in place and approved the upcoming stadium.

The competition date was decided on 3-4.5.2014.

2. *Sweden is known for quite strong "green policy". Did you face any environmental conditions that were problematic for you to fulfil?*

2(3)

We had organized the Oringen 2009 at the same place with all its environmental requirements, we used the same concept during 10MILA 2014.ě

3. *Could you specify what sorts of permits (environmental permits, city department permits, forest permits, land-owner permits, etc.) did you have to obtain?*

As the race took place entirely inside the area of defence forces, it was only a landowner to negotiate, which facilitated significantly.

The only limitation we had was that we were not allowed to use oil-driven construction tools for the building areas, as they were placed near the municipality's watertight south of the arena, instead we used electric-powered building machines.

4. *Were there any issues with getting the permits (especially land-owner permits)? What were their conditions?*

See answer for question number 3.

5. *What was the plan for waste sorting? Where did you take away the waste?*

All waste was transported to the municipal waste facility and the toilets were slaughtered by sludge vehicles.

6. *Did any kind of “environmental issues” appear before, during or after the race? How did you resolve the problems that appeared?*

There was only the distribution of the toilets, which caused that some toilets had to be emptied during competition one/twice and some of the toilets were not filled nor once.

7. *How would you evaluate the overall economy of 10Mila 2014? Is there anything that you totally failed in, and it projected to the overall economy?*

See pages 36-37 of the Final Report of 10MILA 2014.

3(3)

8. *Could you pick up unexpected problems that appeared and how did you solve it? (supposedly environmentally based)*

There was no electric heater in a few competition tents, so we had to go quite far to find suitable ones.

9. *What was the number of people who organized 10Mila 2014. Could you please define how many fulltime organizers and volunteers did you have?*

During the competition year, it was 20 clubs in the organizers association.

16 people had managerial positions, all of them were volunteers.

About 5000 days worked by the functionaries. The total number of functionaries is estimated to be approximately 700.

10. *What is the main difference between organizing Oringen and 10Mila, if there is any? (Mainly from the environmental point)*

O-ring consists of 6 days, 10MILA 2 days. 10MILA is largely determined in the dark, O-ring only in daylight.

## Appendix 2. Economy results of 10Mila 2014

1(2)



EKSJÖ 2014 | SMÅLAND

## Kalkyl- och likviditetsplan

	jan-14	feb-14	mar-14	apr-14	maj-14	jun-14	jul-14	aug-14	sep-14	Kv 4 2014	SUMMA	BUDGET (tkr)
<b>INTÅKTER</b>	67 700	296 590	2 933 668	583 601	1 415 759	7 270	24 393	204 355	-4 000	88 900	5 803 995	5 799
Anmälaavgift		193 500	1 738 010	105 500	22 000						2 059 010	2 193
Öppna banor					21 250			74 400			95 650	80
SI-pinnar			27 720	24 723	3 527						55 970	54
Logi	47 700	30 000	249 200	98 000	1 150						443 850	280
Tält/vindskydd			833 474	332 000	-50 124	-16 370			-4 000		1 095 480	1 230
Parkering			37 000	8 000	93 500						138 500	168
Träningspaket		33 090			16 000					66 000	115 090	69
Övriga avgifter					14 147						14 147	30
Spon/reklam	20 000	40 000	53 500	15 000	26 000	5 000	2 387				221 887	222
Försäljn K/M				35 955	687 366	1 040					724 361	750
Sportförsäljn								119 214			119 214	125
Streaming					580 943						580 943	450
Övriga intäkter			-11 736	-39 077		17 600	22 006	10 741		22 900	93 894	101
Medlemsavgift			6 500	3 500							46 000	46
<b>Kostnader</b>												
Styrelsen						-1 015				-1 237	-5 000	-6
Org.kom	-1 147	0		-300	-12 605	-407			-3 000		-56 224	-49
Dagverksbetal										-1 468 943	-1 468 943	-2 000
Ekonomi	-788	-406	-1 019	-10 277	-1 730	-4 315		-1 300			-49 787	-5
SOFT/SmOF					-336 530						-336 530	-320
10-mila För						-250 000				-83 447	-333 447	-348
R-räkn Fören					-23 493	-40 295	-2 332	-12 011	-3 108		-81 239	-100
Tävling	0	0	0	-25 257	-1 227 166	-112 240	0	-3 224	-19 200	-2 000	-1 537 092	-1 380
Kartor				-9 021	-12 604						-161 338	
Tryckning					-88 605						-88 605	
Arenaprodukt					-976 925				-19 200		-996 125	
Speaker					-72 020						-72 020	
Tävladm/exp				-7 550	-27 105	-108 990		-3 224		-2 000	-148 869	
Öppna banor					-2 600						-2 600	
Material				-8 136	-24 721	-3 250					-36 107	
Övrigt Tävlng				-550	-22 586						-31 428	
IT	0	0	-13 911	-11 312	-43 331	-5 575	0	-1 970	-400	0	-76 500	-77
Datorer			-13 485		-2 000	-3 070					-18 555	
Tält/Streaming				-9 832	-39 895	-265					-49 993	
Övrigt IT			-426	-1 480	-1 436	-2 240		-1 970	-400		-7 952	
Arena	0	0	0	0	-296 383	-99 338	-11 885	-7 250	0	0	-435 473	-295
Arenabygg					-76 494	-31 692		-7 250			-115 436	
VA/dusch/Bastu						-1 738	-9 685				-11 423	
EL/Tele					-1 625	-33 035	-2 200				-36 860	
Toaletter					-120 323						-120 323	
Tält, Arena					-59 825						-59 825	
Transporter					-32 069	-23 700					-75 173	
Skyltar					-3 313	-9 173					-12 486	
Övrigt Arena					-2 734						-3 947	
<b>Funktionärer</b>	0	0	0	-30 134	-5 797	-2 990	0	0	-1 000	0	-60 523	-49
Utbildning											0	
Funk kläder				-30 134							-46 740	
Övrigt funktionär					-5 797	-2 990			-1 000		-13 783	
<b>Info</b>	0	0	0	0	-53 246	-1 978	0	0	0	0	-63 650	-63
Tidning											0	
Press					-53 246						-53 246	
Övrigt info						-1 978					-10 404	
<b>Marknad</b>	-973	-7 000	-4 000	-1 875	-163 656	-14 154	0	0	0	0	-244 992	-182
Spon/reklam						-9 341					-11 279	
Ceremoni					-3 975	-1 305					-5 280	
Markföring		-7 000	-4 000	-1 875	-24 981	-1 134					-87 230	
Priser					-74 634	-580					-75 214	
VIP					-57 913	-1 794					-59 707	
Övrigt marknad	-973				-2 153						-6 282	
<b>Försäljning</b>	0	0	0	0	-328 701	-26 087	-833	0	0	0	-355 621	-672
Kiosker					-32 943						-32 943	
Måltider					-243 630	-24 587	-833				-269 050	
Tält					-48 428	-1 500					-49 928	
Övrig försäljn					-3 700						-3 700	
<b>Säkerhet/Trafik</b>	0	0	0	0	-203	0	0	0	0	0	-203	-17
Bevakn/brand											0	
Sjukvård					-203						-203	
Trafik/parkering											0	
Samband											0	
Övrigt Säk/trafik											0	
<b>Logi</b>	0	0	0	-121 166	-530 365	-6 244	0	0	0	0	-657 775	-238
Logi lng 2						-2 500					-2 500	
Logi kommun					-9 000	-3 744					-12 744	
Tält/camping				-120 566	-520 477						-641 043	
Övrigt logi				-600	-888						-1 488	
<b>KOSTNAD</b>	-2 908	-7 406	-18 930	-200 321	-3 023 204	-564 638	-15 050	-25 755	-26 708	-1 502 180	-5 762 996	-5 798
<b>RESULTAT</b>	64 793	289 184	2 914 738	383 280	-1 607 445	-557 368	9 343	178 600	-30 708	-1 413 280	41 000	0
<b>Inventarier</b>											0	
Fordran			-22 356	-39 077		1 040				1 040	0	
Skulder					-13 420	-7 400	-600	8 000			13 420	0
Eget Kapital											-63 907	
Lån				300 000							0	
<b>LIKVID</b>	260 578	549 762	3 486 855	3 609 212	2 015 187	1 464 178	1 474 121	1 644 721	1 614 013	188 353		

## Intäkter från deltagaravgifter

2014-09-01

	Efteranmä			Direkt		Budget=2013 siffror			
	Ordinarie	I-ningar	ningar			03-17	04-14	04-30	summa
	anmälan	+50%	+100%						
	14-03-17	14-04-14	14-04-30						
<b>Tävlingsavgifter</b>									
Ungdomslag, antal	266	22	7	---	295	267	18	21	306
Ungdomslag, avgift	420 kr	630 kr	840 kr	---					
Damlag, antal	312	11	6	---	329	330	18	11	359
Damlag, avgift	1 900 kr	2 850 kr	3 800 kr	---					
10-milalag, antal	323	8	1	---	332	308	19	7	334
10-milalag, avgift	3 800 kr	5 700 kr	7 600 kr	50/100 kr					
Öppen banor, antal	---	---	---	1 053	1 053			1000	
<b>Intäkt</b>	<b>1 931 920 kr</b>	<b>90 810 kr</b>	<b>36 280 kr</b>	<b>95 650 kr</b>	<b>2 154 660 kr</b>				<b>2 273 tkr</b>
<b>SI-pinnar, avgift</b>	40 kr	50 kr	50 kr	50 kr					
antal	693	181	184	200	1 258	1000	200	100	1300
<b>Intäkt</b>	<b>27 720 kr</b>	<b>9 050 kr</b>	<b>9 200 kr</b>	<b>10 000 kr</b>	<b>55 970 kr</b>				<b>54 tkr</b>
<b>Logement</b>									
avgift	500 kr	500 kr	500 kr	500 kr					
antal (max250)	157	12	0	0	169	250			250
<b>Hård underlag</b>									
avgift	200 kr	300 kr	400 kr	400 kr					
antal	1 180	-44	-7	3	1 132	550	150	0	700
<b>Intäkt</b>	<b>434 700 kr</b>	<b>5 650 kr</b>	<b>2 300 kr</b>	<b>1 200 kr</b>	<b>443 850 kr</b>				<b>280 tkr</b>
<b>Vindskyddplats</b>									
avgift	500 kr	750 kr	1 000 kr	500 kr					
antal	221	9	3	6	239	200	40	20	260
<b>Intäkt</b>	<b>110 500 kr</b>	<b>6 750 kr</b>	<b>3 000 kr</b>	<b>3 000 kr</b>	<b>123 250 kr</b>				<b>150 tkr</b>
<b>Hyrtaält</b>									
avgift	6 000 kr	7 000 kr	7 000 kr	7 000 kr					
antal, boendetält 3*5	79	12	0	1	152	100	40	18	158
Antal, topptält 5*5	54	6	0						
<b>Intäkt, inkl tillbehör</b>	<b>615 800 kr</b>	<b>223 800 kr</b>	<b>0 kr</b>	<b>7 000 kr</b>	<b>846 600 kr</b>				<b>950 tkr</b>
<b>Miltärtält</b>									
avgift	2 000 kr	3 000 kr	4 000 kr	4 000 kr					
antal	47	4	4	1	56	30	10	10	50
<b>Intäkt</b>	<b>94 000 kr</b>	<b>12 000 kr</b>	<b>16 000 kr</b>	<b>4 000 kr</b>	<b>126 000 kr</b>				<b>130 tkr</b>
<b>Tält alt husvagn inkl bil 10x10</b>									
avgift	800 kr	1 200 kr	1 600 kr	1 600 kr					
antal	31	5	3	1	40	30	20	20	70
<b>Intäkt</b>	<b>24 800 kr</b>	<b>6 000 kr</b>	<b>4 800 kr</b>	<b>1 600 kr</b>	<b>37 200 kr</b>				<b>80 tkr</b>
<b>Stor Buss</b>									
avgift	300 kr	300 kr	300 kr	300 kr					
Antal	9	2	1	1	13	10			10
<b>Intäkt</b>	<b>2 700 kr</b>	<b>600 kr</b>	<b>300 kr</b>	<b>300 kr</b>	<b>3 900 kr</b>				<b>3 tkr</b>
<b>Parkering, bil</b>									
avgift	50 kr	50 kr	50 kr	50 kr					
antal	72	10	2	1 340	1 424	100	200	1 200	1 500
<b>Intäkt</b>	<b>3 600 kr</b>	<b>500 kr</b>	<b>100 kr</b>	<b>67 000 kr</b>	<b>71 200 kr</b>				<b>75 tkr</b>
<b>Parkering, husbil</b>									
avgift	100 kr	100 kr	100 kr	100 kr					
antal	58	24	126	54	262	30	10	60	100
<b>Intäkt</b>	<b>5 800 kr</b>	<b>2 400 kr</b>	<b>12 600 kr</b>	<b>5 400 kr</b>	<b>26 200 kr</b>				<b>10 tkr</b>
<b>Träningspaket</b>	torn jan-14		feb-maj						
avgift	30 kr		30 kr	50 kr					
Antal	1 103		2 200	320	3 623				
<b>Intäkt</b>	<b>33 090 kr</b>		<b>66 000 kr</b>	<b>16 000 kr</b>	<b>115 090 kr</b>				<b>50 tkr</b>
<b>Webbsändning</b>									
Avgift		150 kr	-6 kr						100 kr
Antal		4024	4024		4 024				3906
<b>Intäkt</b>		<b>603 600 kr</b>	<b>-22 658 kr</b>	netto	<b>580 942 kr</b>				<b>375 tkr</b>



