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# ROLE OF CABLE TRANSPORT IN THE MANAGEMENT AND DEVELOPMENT OF THE MOUNTAIN AREAS

Grzegorz Olszyna, Tomasz Rokita, Andrzej Tytko, Marian Wójcik

**Summary**

Cable transport has been used for a long time to move people in difficult terrain, mostly mountainous. Since the beginning of the 20th century, this means of transport is inextricably linked to mountain tourism, especially skiing. Cable cars and ski lifts have become the only means of transport for skiers in ski resorts.
The article describes the development of cable transport in mountain areas and the benefits that followed. It also presents two examples of ski resorts, which had a significant contribution to development of tourism and skiing in mountain areas.

**Keywords**

cable ways • cable transport in the mountains • mountaneering

## 1. Introduction

Cable transport has been known since the ancient Times. However, its rapid development started in the beginning of the 20th century and it was related mostly to skiing.

Although skiing owed its development mostly to mountain-climbers who used skis during their winter expeditions, crowds of enthusiasts were growing each year. The number of people interested in this new form of recreation kept growing, and more skiers appeared on Polish slopes each year [Baran 1987].

An evident development of various forms of skiing occurred in the interwar period. This form of activity spread to all Polish mountains. Skiing started to become a popular sport. It simply became a new trend. A new era began, which lasts till present day, in which the ski tourism was dominated by downhill skiing, which enjoys to the fullest extent cable cars and ski lifts and specially prepared ski slopes.

Development of skiing was accompanied by an inflow of many technological innovations and development of infrastructure – cable cars and ski lifts, followed by lighting and snowmaking systems.

In the middle of 1960s, mass skiing began in Western Europe. Ski resorts appeared in the Alps along with a large number of ski slopes located close to each other, equipped

with ski lifts and cable cars (mostly double-seat chairlifts). Classic gondola lifts, funiculars or bi-cable gondola lifts were not very popular, and usually were used to transport skiers to higher slopes [Rokita and Wójcik 2007]. Visitors of ski resorts experienced a higher level of comfort every year. Poland had to wait another thirty years or so for such conveniences.

## 2. Cable transport in Poland

In Poland the "cable transport era" began on February 26th 1936. On this day, the first cable car arrived at Myślenickie Turnie. First passengers got to Kasprowy Wierch on Sunday, 15 March 1936 [Rokita and Wójcik 2007]. Construction of the cableway in Zakopane took 227 days, which was a world record back then.

Before outbreak of the Second World War two funiculars were built: On Góra Parkowa in Krynica (opened on December 8th 1937) and on Gubałówka in Zakopane (opened on 20 December 1938, another record: only 167 days of construction) and two sledge lifts: in Kocioł Gąsienicowy and in Sławsk in Eastern Bieszczady.

In the late 1960s and early 1970s decisions were made to build new ski resorts. First were the so called miners' ski resorts. They were equipped only with ski lifts, but they offered a quite interesting (for that time) diversity of slopes. The main achievements were the miners' ski resorts in Szczyrk and on the slopes of Pilsko in Korbielów.

In the eighties first private ski lifts emerged. Some of them have kept operating till present day, and their technical condition is unfortunately poor.

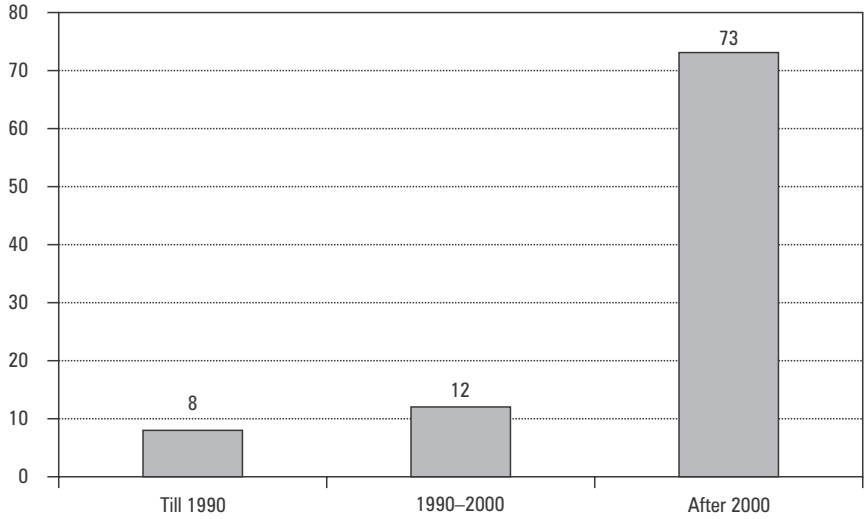
Western Europe, in the same period, introduced ski slope maintenance devices, the snow groomers. New ski lift technologies were developed (e.g. detachable gondolas) faster, more comfortable and having greater capacity.

The political changes which started in the year 1989 and the reforms aiming to realignment the exchange rate of zloty and its exchangeability created the possibility for Poland to import necessary machinery and equipment for the ski slopes [Rokita and Wójcik 2005]. The existing ski slopes were reconstructed and new ski resorts were created. Some of the investors imported new devices; others bought used machinery, which went out of use in the Alps during modernizations. In the new ski resorts, snow-making equipment became essential.

Since the year 1990 the following ski resorts have developed (opening date in parentheses): Palenica in Szczawnica (1991), Szrenica in Szklarska Poręba (after modernization in 1993), Szymoszkowa Zakopane (1994), Czarna Góra near Lądek Zdrój (1996), Jaworzyna Krynicka in Krynica Zdrój (1997), Wierchomla (1998), Kluszkowce near Czorsztyn (1998), Białka Tatrzańska (2001), Laskowa-Kamionna near Limanowa (2003), Harenda Zakopane (2003), Mosorny Groń in Zawoja (2003), Małe Ciche (2004), Kiczera in Puławy Górne (2004), Winterpol Zieleniec (2005), Chełm in Myślenice (2005), Jastrzębia Góra in Rytro (2005), Czarna Góra and Jurgów near Bukowina Tatrzańska (2006), Łysa Góra Limanowa (2007), Świeradów Zdrój (2008), Wisła Nowa Osada (2009), Rusiński Wierch in Bukowina Tatrzańska (2009), Magura Małastowska Małastów (2010), Mały Rachowiec Zwardoń (2012), Suche Poronin (2012), Złoty Groń

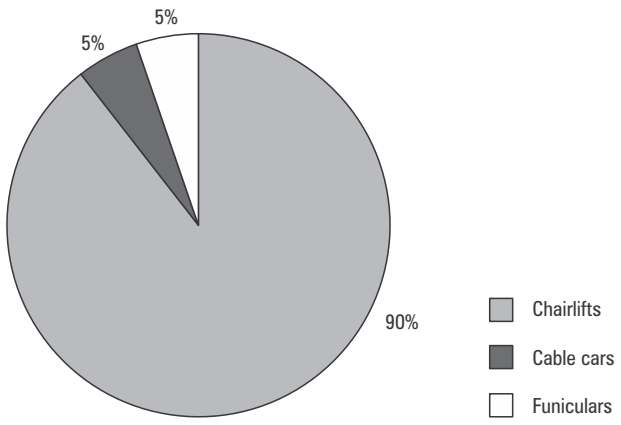
in Istebna (2012). Apart from the aforementioned, other, previously operating ski resorts have expanded, such as Ski Resort Azoty and ski resort Słotwiny in Krynica Zdrój. The above list is of course incomplete. These are only examples of ski resorts.

Currently (October 2013) there are 94 cable car systems and a few hundred of ski lifts. Most of them are chairlifts, used to transport the skiers uphill. Below, Figures 1 to 4 show the statistics regarding various systems.




Source: authors' study

**Fig. 1.** Number of ropeways built in Poland in subsequent years (since 1990)

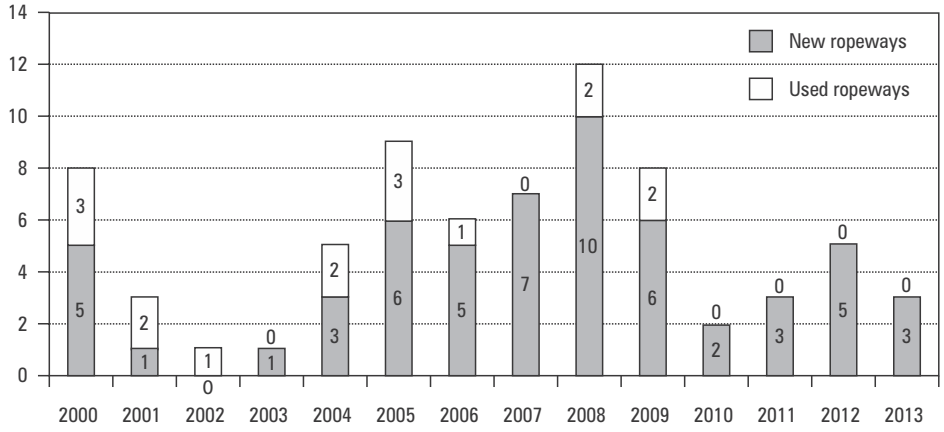



Source: authors' study

**Fig. 2.** Ropeway types in Poland

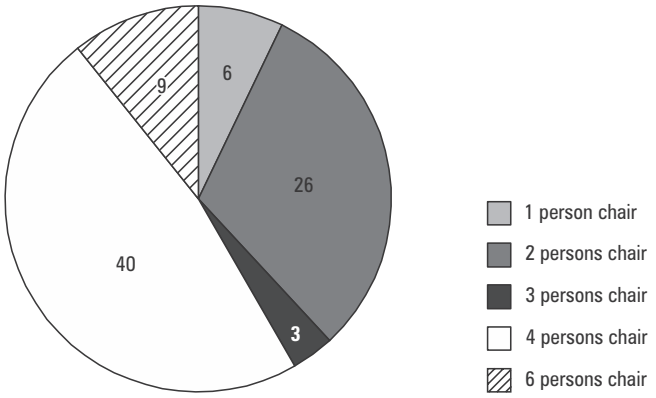
Figure 1 clearly indicates that construction of new cableways started after the year 1990 and a real investment boom started around the year 2000. Majority of cableways in Poland (Figure 2) are chairlifts (90%). It can be concluded, that the cableways are mainly for skiers.

Since the year 2000, up to a dozen cableways get built each year (Figure 3). It is worth mentioning, that the percentage of used (imported) cableways is decreasing. This shows strong improving of technical standards in our ski and tourist centers. The new systems are chairlifts with carriers for at least 4 passengers (Figure 4). Majority of double chairlifts are mostly old (from before 1990). As a part of customer care, the owners try introducing new solutions, tested in the Alps or Dolomites, such as detachable carriers or windshields and heated seats for the chairs.




Source: authors' study

**Fig. 3.** Chairlifts built in Poland in subsequent years (since 2000)




Source: authors' study

**Fig. 4.** Chairlifts in Poland

## 3. Influence of construction of cable transport infrastructure on the development of mountain areas

Investments in skiing and investments in cable transport that followed, had a huge impact on the development of mountains areas, which can be shown on two examples, presented below. The first example describes a large ski resort; the second describes a small one.

### 3.1. Example of a big ski resort

Białka Tatrzańska can undoubtedly be an example of success related to ski tourism. Individual ski lifts have been operating here since the seventies, but they did not play a significant role. A real "leap forward" was the foundation of Kotelnica Białczańska Ski Center Ltd. This center was launched and has been operating since 8 December 2001. Starting with one ski lift imported from Italy (already highly exploited) and two other ski lifts thanks to the investments that followed it became the largest ski resort in Poland, attracting thousands of skiers and providing jobs for hundreds of people. Below, subsequent stages of ski lift development and center expansion are presented.

#### 2001

The triple chairlift with non-detachable chairs is opened. It has the length of 1380 m and elevation difference of 210 m, capacity of 1380 people · hour$^{-1}$ and velocity of 2.2 m · s$^{-1}$. This chairlift was previously used in Italy.

Additionally, two T-bar ski lifts were set up, each 690 m long with the elevation difference of 155 m, capacity of 2 × 1000 people · hour$^{-1}$ and velocity of 3.2 m · s$^{-1}$.

It was the first operating season Kotelnica Białczańska Ski Center and it came out to be very successful in terms of number of skiers who used this infrastructure.

#### 2003

A chairlift with four passengers, non-detachable carriers was built. The chairlift is 800 m long and has the elevation difference of 170 m, capacity of 2000 people · hour$^{-1}$ and maximal velocity of 2.6 m · s$^{-1}$. It was new, produced by Doppelmayr, Austria (Figure 5).

#### 2005

A chairlift with 6 passenger detachable carriers was constructed. It is 1350 m long and has the elevation difference of 200 m, capacity of 3000 people · hour$^{-1}$ and maximum velocity of 5 m · s$^{-1}$, This chairlift reduces the travel time to 4 minutes and 30 seconds. It was new, also produced by Doppelmayr, Austria.

#### 2006

A platter lift was built. It has the length of 300 m, 60 m of elevation difference, and capacity of 800 people · hour$^{-1}$ at the speed of 2.2 m · s$^{-1}$. A professional snowpark was built nearby.

Photo by Olszyna

**Fig. 5.** Chairlift Kotelnica II in ON Kotelnica

Source: www.bialkatatrzanska.pl

**Fig. 6.** "Pasieka Express" chairlift in Kotelnica ski resort

2007

A chairlift with four passenger non-detachable carriers was built. It has the length of 540 m, the elevation difference of 150 m, and the capacity of 2300 people · hour$^{-1}$. It was a new chairlift, also produced by Doppelmayr, Austria.

2011

In this year, new areas were opened for skiing, and a chairlift with 6 passenger detachable carriers was built, equipped with windshields and heated seats. It is 1090 m long with the elevation difference of 175 m, the capacity of 3000 people · hour$^{-1}$ and travel time of 4 minutes at the maximum speed of 5 m · s$^{-1}$. This time, it was manufactured by Leitner, Italy (Figure 6).

By 2015

It is planned to continue to expand the Kotelnica Ski Center by launching 2 new six passenger ski lifts with detachable carriers along with new slopes. Figure 7 presents the map of slopes in Kotelnica Białczańska.

It is worth mentioning, that although Kotelnica is the largest ski center in Białka Tatrzańska, it is not the only one. Other ski centers include most of all Kaniówka and Bania, neighboring with Kotelnica.

In the year 2012 Kaniówka Ski Center was modernized. Currently it has a 4 passenger chairlift (made by LEITNER), which is equipped with the KID-STOP® system, to ensure the safety of children. It is 450 m long and the elevation difference is 90 m. It has the capacity of about 2200 people · hour$^{-1}$. The travel time is 3 minutes at the velocity of 2.3 m · s$^{-1}$.

Moreover, Kaniówka has 3 T-bar lifts whose summed capacity is about 2500 people · hour$^{-1}$ and a ski tow for the youngest skiers, 65 m long with the elevation difference of 5 m.

Bania Ski Center is located in the immediate vicinity of Kotelnica Ski Center. It is equipped with:

- 3 ski lifts for children and beginners,
- skiing kindergarten and a winter carousel for kids,
- a 4 passenger chairlift with non-detachable carriers, built in 2006 (made by Doppelmayr),
- snowtubing lift and track.

The impact of the ski centers described above on the development of the towns or the region is reflected by the number of guesthouses or retail and service points. During the last five years, only in Białka, over a dozen of large objects were built, such as guesthouses, hotels, ski rentals. At the end of 2012 a 4 star hotel was built, providing the tourists with a very high standard of service. The population of Białka Tatrzańska is about 2000 people, and it is estimated, that it offers more than 10 000 beds for tourists and skiers. Expansion of ski resorts is followed by an increased number of jobs, which is very important for the region.

It is also worth mentioning, that the members of the local communities, who work in the ski centers, constantly increase their qualifications as a result of working with advanced technology (ski lifts, snowmaking devices, snow groomers, etc.).

Still, actions are being taken in order to stimulate ski resorts before and after the winter season. They regard, among others, building summer objects such as thermal pools or adapting the ski lifts to transport e.g. bicycles and other vehicles, which can be used for downhill riding [Rokita 2013, Jiricka 2013].

The attractiveness of Białka Tatrzańska and Bukowina Tatrzańska has significantly increased after the thermal pools in water parks were opened.


Source: www.bialkatatrzanska.pl

**Fig. 7.** Kotelnica Białczańska ski trail map

### 3.2. Small ski resort

Puławy Górne is a village located in Podkarpackie voivodeship, in the district of Krosno, municipality of Rymanów on Wisłok river, and in the nearby valley of a small creek. Before the year 2004 it was known to few tourists from as a quiet place for agritourism and walks in Beskid Niski. In 2002 the Beskid Tourist Association "Przełom Wisłoka" was founded by the member of the local community. The association's purpose was to draw a larger number of tourists into this beautiful Polish region also in winter. An idea of creating a ski resort was born.

Source: www.kiczerapuławy.pl

**Fig. 8.** An overview of "Kiczera SKI" in Puławy

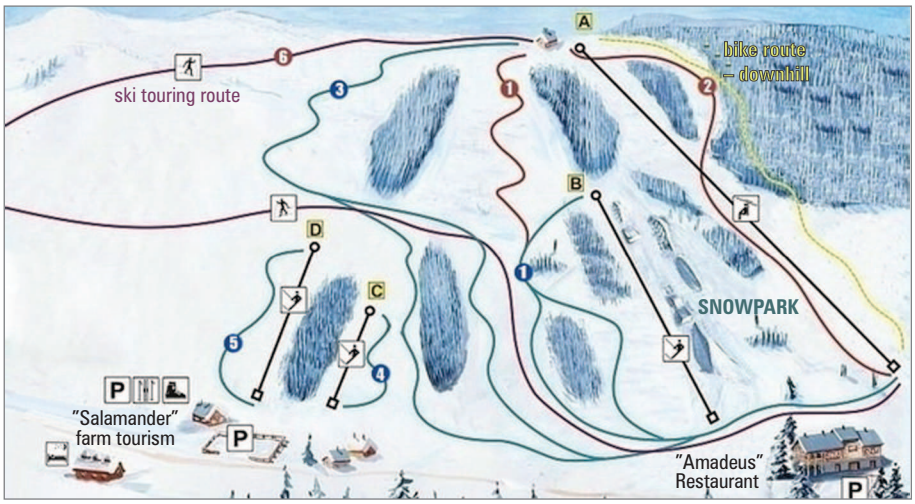
Source: www.kiczerapulawy.pl

**Fig. 9.** The ski slope in Puławy Górne

Firstly, a ski lift was built. To lower the costs, a used, double chairlift with non-detachable carriers was imported from Alps. After necessary modernization performed under supervision of the Faculty of Cable Transport of AGH University of Science and Technology in Krakow, it was set up in Puławy Górne during winter season 2004/2005. This ski lift is called "Kiczera" and it can transport 1200 people · hour$^{-1}$. Travel time is 5 minutes and 40 seconds.

The ski center Kiczera Ski in Puławy Górne is located in the eastern part of Beskid Niski, at the foot of Bukowica mountain range (Figure 8). The ski slope is located on Kiczera mountain, which is 640 m high (Figure 9). There are three downhill trails and one ski-touring trail. There is also a snow park and two platter lifts, one of them for beginners, the so called Baby-lift. Figure 10 presents a scheme of "Kiczera SKI" ski center in Puławy.

After the dusk, artificial lighting makes it possible to continue skiing. The trails are equipped with snowmaking machines. Next to the slope one can find: a ski rental, restaurant, skiing school, free parking lot. In the village and its neighborhood there are some tourist farms and private rooms offering accommodations.




Source: www.kiczerapuławy.pl

**Fig. 10.** Scheme of "Kiczera SKI" ski center in Puławy

## 4. Conclusion

- Investments in cable transport in mountains areas result in economic stimulation of these areas. The examples of mountain towns, which invested in ski lifts, presented in the article clearly show a rapid increase of standard of living of the local community by providing money for further investments and creating jobs.

- Currently, the operating basis for tourism and ski resorts is the winter season. The actions taken in favor of so called summer investments will undoubtedly allow to increase the attractiveness of mountain towns in the summer.
- Examples of summer stimulation of mountain towns are the municipalities in Tirol, where the tourist traffic is more evenly distributed between summer and winter.
- Downhill skiing during last four decades was the main factor that contributed to development of cableways, as well as the development and stimulation of mountain towns that followed.

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Prof. dr hab. inż. Andrzej Tytko
AGH Akademia Górniczo-Hutnicza
Wydział Inżynierii Mechanicznej i Robotyki
Katedra Transportu Linowego
30–059 Kraków, al. Mickiewicza 30
e-mail: tytko@agh.edu.pl

Dr hab. inż. Marian Wójcik, prof. AGH
AGH Akademia Górniczo-Hutnicza
Wydział Inżynierii Mechanicznej i Robotyki
Katedra Transportu Linowego
30–059 Kraków, al. Mickiewicza 30
e-mail: marianw@agh.edu.pl

Dr inż. Tomasz Rokita
AGH Akademia Górniczo-Hutnicza
Wydział Inżynierii Mechanicznej i Robotyki
Katedra Transportu Linowego
30–059 Kraków, al. Mickiewicza 30
e-mail: rokitom@agh.edu.pl

Mgr inż. Grzegorz Olszyna
AGH Akademia Górniczo-Hutnicza
Wydział Inżynierii Mechanicznej i Robotyki
Katedra Transportu Linowego
30–059 Kraków, al. Mickiewicza 30
e-mail: olszyna@agh.edu.pl