

# Tourism on the carbondioxid -based therapy.

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*Healthy life and health tourism, closing conference*  
(HEAL-ALL ID: KA203-19A5CC6E)

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23.08.2023.

Cite: József Lehota, Zsuzsanna Lehota, Tourism on the  
carbondioxid - based therapy. Heal All closing conference,  
2023.08.23. Nyíregyháza, Hungary,  
<https://healall.eu/home/closing-conference/>



Erasmus+

KA2 Strategic Partnerships 2020  
Project reference number: 2020-1-HU01-KA203-078799  
HEALTHy Life ALLiance for Health Tourism Education  
Development and Reorganisation

***Call 2020 Round 1 KA2 - Cooperation for innovation  
and the exchange of good practices KA203 - Strategic  
Partnerships for higher education***

***ID: KA203-19A5CC6E***

*The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.*

# Role of carbon-dioxid therapy in Hungarian medicine

- ▶ Anti-virus, anti-inflammatory, traditional used (16. th), natural, non-toxic and chemically flammable medicinal gas.
- ▶ Widely used in medical operations and complementary (not alternative) medicine, but niche market.
- ▶ Positive health effects: improves human organs and blood oxygen supply, lung function, high blood tolerance (natural parts of blood), immune system, effects of antibiotic and medicine therapies.
- ▶ Therapy for locomotor (pains in waist, spine), osteoporosis, diseases of heart and vascular (capillary) system, nervous system.
- ▶ Professional overload and preventions (vasoconstriction, high blood pressure, natural Viagra) .

## Positive and negative external effects of carbondioxid theraphy

- ▶ Decrease feeling of pains, leg numbness, walking distance, healing of leg ulcer.
- ▶ Decrease the outpatient and inpatient therapy days (hospital days, and number of cures).
- ▶ Decrease medicine use (in quantity and costs).
- ▶ Improve quality of life (self-care, human performance, mood).
- ▶ Negative effects, risks: above 15-20 % concentration level (in blood), dificculty breathing, death of suffocation.
- ▶ Negative external effect: cheap and low costs ?, compliance of evidence - based medicine criterions.

# Supply side of carbon-dioxid therapy in Hungary

- ▶ **Medical water bathes** 106, **muds** 6, **climates** 4, **caves** 5, **gases** 2 (**total bathes** 586/2012 428/2021=73,0%).
- ▶ **Medical tourism:** reahabilitation hospitals: 6, Kapuvár/from 1957, Győr, Nagykanizsa, Parád, Tata, Visegrád (medical gas: mist, tub and cabin).
- ▶ **Natural carbon-dioxid mofetta:** Mátraderecske and Parád hospitals.
- ▶ **Carbon-dioxid bath tub** 96 spas, for example in Hajdúszoszló spa, 12 cabins.
- ▶ **Private-healthcare, gas-cabin:** 3, Balatonfüred, Székesfehérvár, Szombathely hospitals.
- ▶ **Carbon-dioxid (dry) bag:** 1 , Harkány spa, 4 bags, Gyügy/Dudince carbod-dioxid water and dry gas (bags).
- ▶ **Carbon-dioxid injection:** 2, Hévíz spa, Pécs university hospital.

# Demand-side of carbon-dioxid therapies in Hungary

- ▶ **Demand-trend** in carbon-dioxid medicine: increasing average age, appreciation of health value in lifestyle, health value - health costs contradiction.
- ▶ **Lifestyle deseases causes:** lack of regular movement, WHO standards 40-70 % according age groups, smoking, I. and II. type diabetes, nutrition problem (high blood presure, obesity, osteoporosis), stress mood (firm expectations, decreasing and inregular leisure, weakening family and group relations).
- ▶ **High cronic deseases:** 8-32 % (diabetes-high blood pressure), subjective mobility impairment(15-, 75- years 10-61 %, use of medical aid 15-, 75-years 20-42 %), postponement of therapy: financial reasons 35,7 %, long waiting list 31,2 %, great geographical distances 6,7 %).
- ▶ **Health market research:** market potential estimation 2,5-3,0 million people, patients (two times/years), covered market: number of treatmenths 25-30.000 /year (1-2 %).

## Size of covered medical water and dry bath market (2021)

- ▶ OEP budget: in and outpatient care, medicines 93 %, long-term care 4 %, preventions 3 % in 2019. (Carbon-dioxid OEP financing 2011).
- ▶ **Market size** of medical water and dry bath industry: direct and indirect 300 billion Ft (similar market size Poland and Czech Republic), 11 % tourism revenues.
- ▶ **Total revenues** of water and dry bathes 120 billion Ft (Budapest 13,9 %), medical and health care revenues 6,2 billion Ft (5,2 %). **Micro businesses:** 60 million Ft/year/bath. **Dawnward trend 2017-2021 45 %.**
- ▶ **Medical and health care services:** medical examination 86 (20,1 %), medical treatments 121 (28,3 %), wellness services 212 (48,4 %).
- ▶ **Medical (wet and dry) bathes in regions:** Northern-Hungary 8 medical bathes (4 wet and 2 dry)/Heves county 5 bathes (3 wet and 2 dry), no positive effects on economic development of settlements (Zsarnóczy,2017).

# Carbon-dioxid therapy service industry structure

- ▶ **Number of market participants:** atomistic market, mainly price coordination, intense competition.
- ▶ **Service products homogeneity and low heterogeneity:** mofettas and cabin, bath, bag and etc, differentiation on additional medical and non-medical services.
- ▶ **Service product characteristics:** mainly experience characteristics, low information searching characteristics (evidence-based), high trust characteristics and Potemkin characteristics.
- ▶ **Low coordination level between market participants:** informal coordination/sharing, common/collective marketing, local and regional clusters.
- ▶ **Relative low entry and exit costs,** high market fluctuation.
- ▶ **Limited and asymmetrical information supply:** doctor and patient hierarchical relations, unilateral patient dependency.



# To overcome of atomistic market structure disadvantages.

- ▶ **Individual small and medium firm strategy:** lack of resources, uncoordinated firm behavior, high financial risks.
- ▶ **Collective marketing types:** non-profit organisational coordination, resources concentration and sharing, improving of market expences and costs.
- ▶ **Individual dominant company coordination:** administrative coordination, high corporate conflicts, franchising system (capital strong firm, strong competences, legal and business guarantees).
- ▶ **Main problems of coordination:** free-rider, financial problems (national and private health founds, external financial sources, company-size problems, selection of corporate form).

# Collective marketing forms

- ▶ **PROMOTION BOARD:** common communication.
- ▶ **MARKETING BOARD type:** common service development, quality management, quality assurance (ISO, Europa-Spa-MED, Fürdő́k Nemzeti Tanácsa trademark), service promotion, common advertising.
- ▶ **COOPERATIVE-TYPE:** service cooperative (non-profit, voluntary cooperative).
- ▶ **PROFIT-BASED:** collective service promotion organisation.

## Regional cluster on medical spas and gases (Kim-Wick).

- **Service demand trends**, consumer/patient segments.
- **Key resources and attractiveness**: service excellence, capital, human resources, competencies.
- **Strategy and goals of market participants**, medical service firms.
- **Complementer and supportive services**: accomodation, hospitality, patient transport, culture and free-time (key barriers-free forms).
- **Competitiveness of cluster**: long-term natural, location competitiveness advantages, service-differentiations, cost and price competitiveness, promotion and advertising.

## Mátra region spa and medical gas cluster

- ▶ **Mofettas:** Parádfürdő 2013. (hospital) and Mátraderecske, 1992. (mofetta)
- ▶ **Spa and wellness bathes:** Mezőkövesd, Egerszalók, Demjén, Bükkszék, Bogács, Gyöngyös, Eger.
- ▶ **Other wellness forms:** Parádsasvár, old age wellness,
- ▶ **Natural health resorts:** Mátraháza and Kékestető.

# Potential consumer and patient segments

- ▶ **Home and foreigner tourists** (inbound tourism spendings: medical and health spendings, 2022, one-day inbounds 15 %, more-day inbounds 8,5 %, **together 10 %, 2.**).
- ▶ **Motivates:** fun, occasionally pampering, rest, peace –seeker, beauty-seeker, **asking for help tourists.**
- ▶ **Motivates :** Active young people, fun-seeker, health conscious young, *health preserver, middle-age with family*, **health conscious, rehabilitations after surgery, wanting to heal elderly people .**
- ▶ **Demographic segments:** old and middle aged people.
- ▶ **Income segments:** middle and low income.
- ▶ **Settlements segments:** small and middle town, capital.

# Case-study: Mátraderecske mofetta

- ▶ **Founded:** 1992, wood-building , development 2000, new buildings.
- ▶ **Health certifications:** medicinal gas 1999, medical gas bath 2006, medicinal water 2011 (now closed).
- ▶ **Composition of mofetta gas:** carbon-dioxid 86 %, nitrogen 7 %, methane 5 %, oxygen 2 %, radon ions, 125 kBq/m<sup>3</sup>.
- ▶ **Health services:** medicinal gas treathment, internal medicine, rheumathology, diabetology, medical (urine, blood, EKG, doppler, neuropatric, wound cares), massage (lymph, face and head, neck, limbs, hip, back), gymnastics (individual and group), physiotherapy, other treathments (solarium).
- ▶ **Economics and financial data:** employed numbers( 8 heads): patient numbers: annual treathments numbers (next tables and graphs): yearly sales revenue (2019, 72,6, 2022, 57,9 million forints): handling fees: OEP supported, self-cost

# Role of education in carbon-based therapy

- ▶ Educational materials in university notes and handbooks of medical and touristic vocational secondary schools.
- ▶ Educational materials in university notes and handbooks of medical universities (MSc) and colleges (BSc).
- ▶ Educational materials in university notes and handbooks in touristic BSc and MSc.
- ▶ Educational materials in university notes and handbooks in medical and touristic courseworks and training (obligatory training courses of doctors and professional staffs in hungarian healthcare).
- ▶ Topic announcements in BA/BSc and MSc thesis and diploma thesis of medical and touristic educational courses and trainings, and doctoral trainings.
- ▶ Organisation practical places and interships program in water and gas baths and hospitals.

# Number of patients in Mátraderecske mofetta 2007-2022

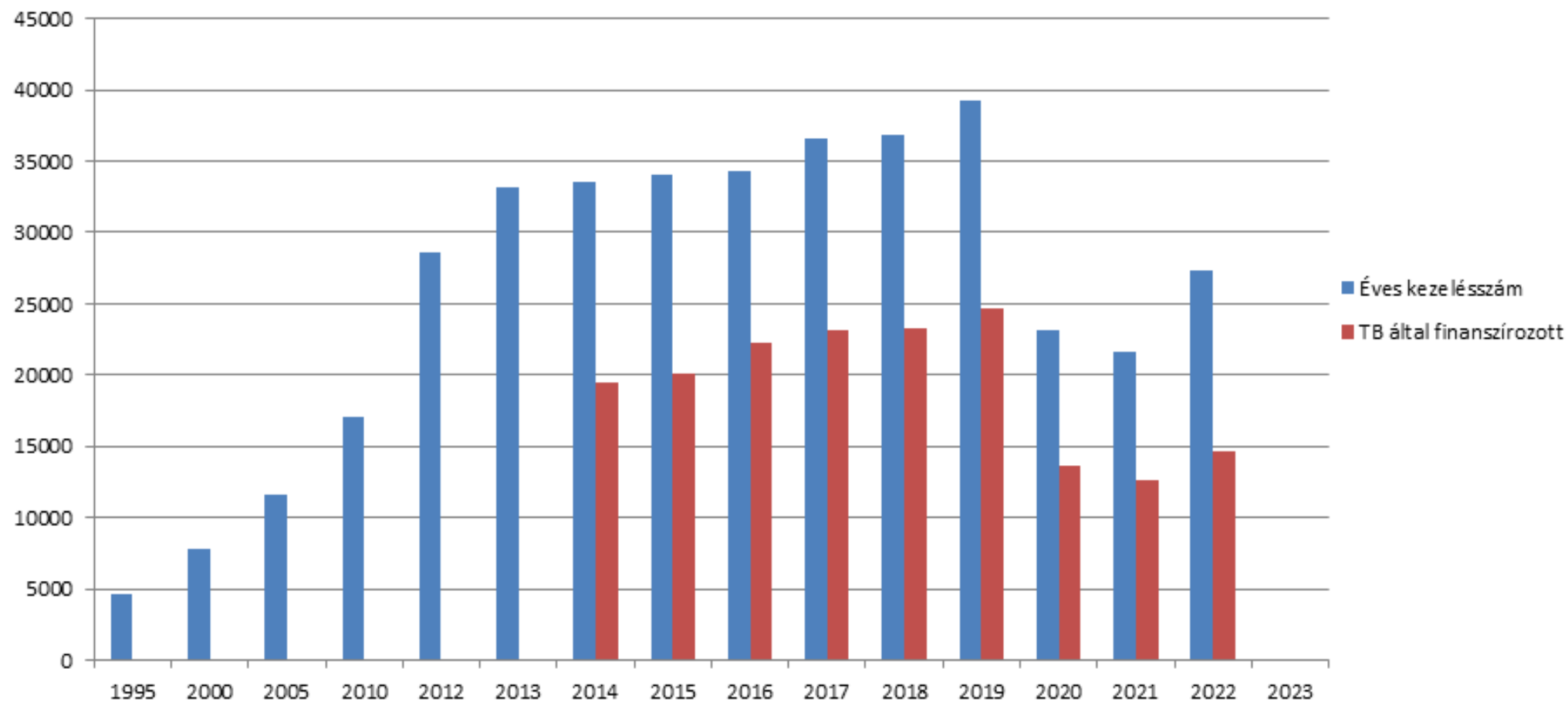
Years	Cure/Heads	Test/heads	Group/heads	Total/Heads
2007	1663	727	498	2888
2008	1818	1131	758	3707
2009	1619	1293	938	3850
2010	1708	1240	833	3781
2011	1890	839	580	3309
2012	2253	1512	1370	5135
2013	2327	1628	1470	5425
2014	2005	1705	1347	5457
2015	2480	1921	1426	5827
2016	2488	1937	1400	5825
2017	2521	1986	1486	5993
2018	2502	2008	1407	5917
2019	2692	2636	560	5888
2020	1485	2611	555	4651
2021	1450	1950	169	3569
2022	1749	2798	375	4922
<b>Index</b>	<b>106,0/161,9%</b>	<b>384,9/362,6</b>	<b>75,3/112,4%</b>	<b>170,4/203,9</b>



# Number of treatment in Mátraderecske mofetta 2007-2022

Years	Cure/number	Test/number	Group/number	Total/number
2007	18511	727	498	19736
2008	21107	1131	758	22996
2009	18009	1298	938	20240
2010	17468	1240	833	19541
2011	22311	839	580	23730
2012	25667	1512	1370	28548
2013	30031	1628	1470	33129
2014	30508	1705	1347	33600
2015	30707	1921	1426	34054
2016	31000	1945	1400	34345
2017	32457	2621	1486	36564
2018	33107	2311	1407	36825
2019	35626	3034	560	39220
2020	19645	3006	555	23206
2021	19183	2246	169	21598
2022	23140	3420	429	27357
Index	125,0/192,5%	470,4/417,3%	86,1/112,4 %	138,6/198,7 %

# Number of treatment in Mátraderecske mofetta (1995-2022)



**Thank you for your attention.**

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