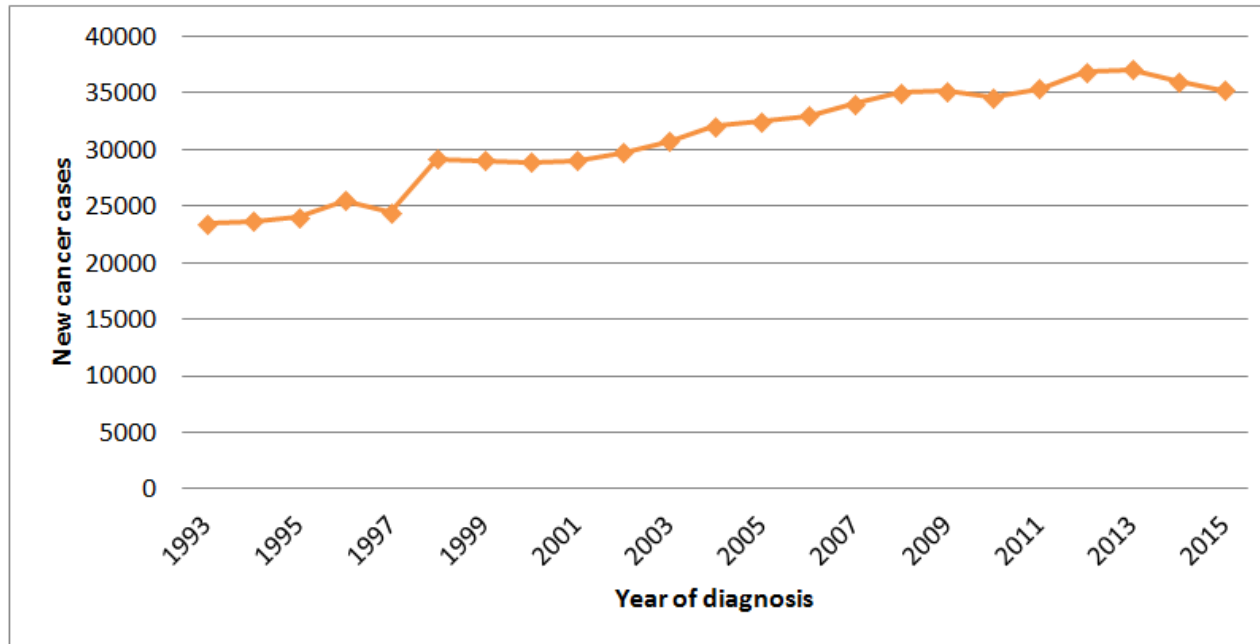


# Expected number of patients in the region

**L. Litov**  
**Sofia University**

# Increasing number of new cases

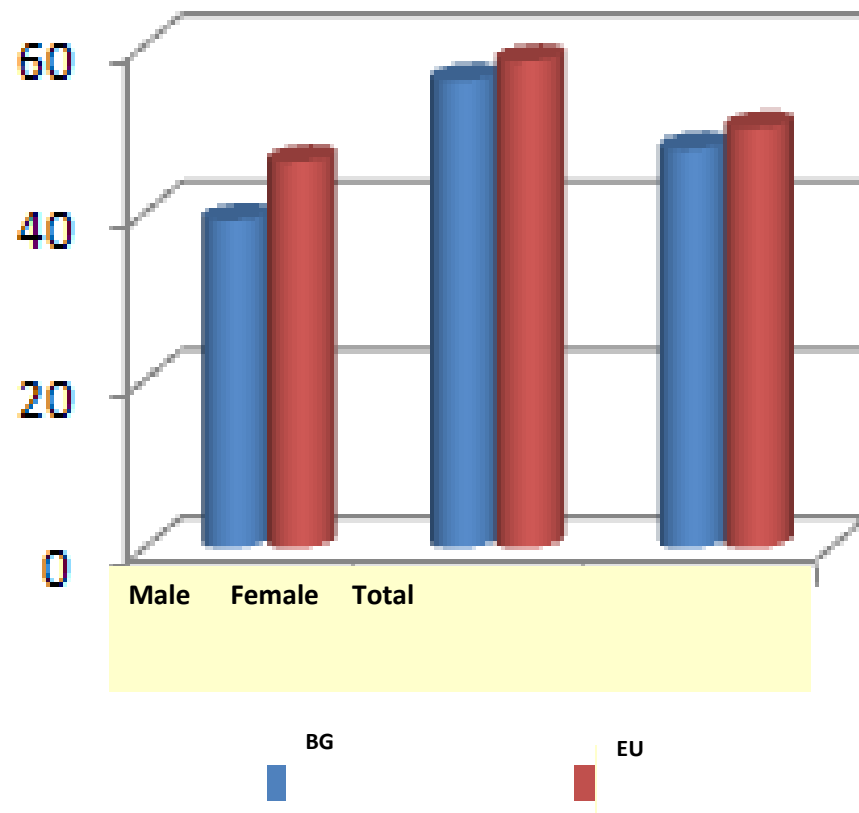
Tendency of increase of the new cancer cases and dead cases in the region



Bulgarian data, to be normalized to the decreasing number of population

5-year survival rate for malignant diseases

	male	female	total
<b>Bulgaria</b>	<b>39.1</b>	<b>55.8</b>	<b>47.6</b>
<b>EU</b>	<b>46.1</b>	<b>58.1</b>	<b>50.1</b>

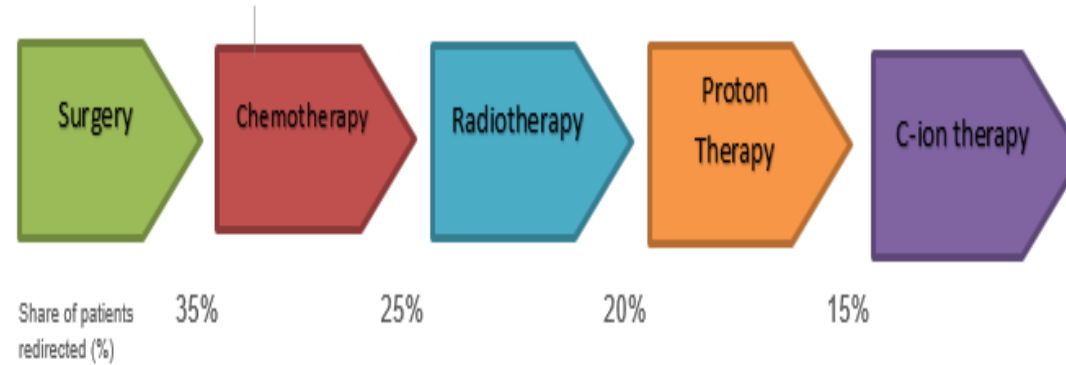


Practically unavailable for the citizens of the region

## Particle therapy in Europe - 2017



Very expensive – 50 000 Euro at HIT



- **Surgery**
- **Chemotherapy**
- **Radiotherapy**
- X-ray or electrons
- Proton
- C-ion

- ❑ **Depends on**
  - Type of the cancer
  - Stage of the cancer
  - National protocols
  - Available equipment and protocols
  - National Health Insurance system
- ❑ **All these parameters should be taken in to account**

## Distribution of the most common cancer sites by sex and age group in Bulgaria, 2015

	Male	Female
0 – 14 years	60 cases	31 cases
15-29 years	148 cases	154 cases
30-44 years	607 cases	1283 cases
45 – 59 years	3232 cases	3684 cases
60-74 years	8248 cases	6185 cases
75+ years	3952 cases	3529 cases



# Distribution of new cases - Female



Female	0-14 years	15-29 years	30-44 years	45-59 years	60-74 years	75+ years
Breast	-	9,1 %	37,5 %	31,4 %	25,9 %	20,9 %
Cervix uteri	-	11,7 %	17,3 %	11,2 %	5,0 %	2,7 %
Thyroid gland	-	16,2 %	7,5 %	2,4 %	-	-
Ovary	3,2 %	7,1 %	6,3 %	6,8 %	5,2 %	4,5 %
Corpus uteri	-	-	3,7 %	9,8 %	10,2 %	5,3 %
Trachea, Lung	-	-	3,0 %	5,5 %	6,0 %	5,4 %
Colon	-	-	2,2 %	5,2 %	9,4 %	11,2 %
Rectum and anus	-	-	1,9 %	4,1 %	5,9 %	6,7 %
Stomach	-	2,6 %	1,9 %	2,2 %	3,1 %	6,6 %
Pancreas	-	-	-	2,4 %	4,1 %	5,7 %
Bladder	-	-	-	-	3,1 %	3,6 %





# Distribution of new cases - Female



Female	0-14 years	15-29 years	30-44 years	45-59 years	60-74 years	75+ years
Brain and CNS	9,7 %	11,0 %	1,7 %	-	-	-
Melanoma of skin	3,2 %	6,5 %	-	-	-	-
Non-hodgkin's lymphoma	9,7 %	4,5 %	-	-	-	-
Lymphoid leukaemia	16,1 %	2,6 %	-	-	-	-
Hodgkin's disease	-	9,1 %	-	-	-	-
Myeloid leukaemia	6,5 %	-	-	-	-	-
Bone and articular cartilage	12,9 %	-	-	-	-	-
Kidney etc.	12,9 %	-	-	-	-	-
Leukaemia of unspecified cell type	6,5 %	-	-	-	-	-
Other endocrine glands	6,5 %	-	-	-	-	-
Others	12,9 %	19,5 %	17,1 %	18,9 %	22,1 %	27,5 %



# Distribution of new cases - Male



MALE	0-14 years	15-29 years	30-44 years	45-59 years	60-74 years	75+ years
Prostate	-	-	-	5,9 %	16,6 %	24,9 %
Colon	-	-	6,6 %	7,3 %	9,4 %	12,3 %
Trachea, Lung	-	2,7 %	9,6 %	22,9 %	20,8 %	12,2 %
Bladder	-	6,1 %	5,3 %	7,2 %	8,5 %	9,2 %
Rectum and anus	-	-	6,1 %	6,8 %	7,1 %	7,4 %
Stomach	-	-	-	4,9 %	5,4 %	7,2 %
Pancreas	-	-	-	4,4 %	3,6 %	3,8 %
Kidney	3,3 %	-	4,8 %	4,5 %	3,0 %	2,3 %
Liver and intrahepatic bile ducts	-	-	-	-	2,1 %	2,0 %
Melanoma of skin	-	2,7 %	4,4 %	-	-	1,5 %

# Distribution of new cases - Male

MALE	0-14 years	15-29 years	30-44 years	45-59 years	60-74 years	75+ years
Larynx	-	-	-	5,5 %	3,4 %	-
Brain and CNS	16,7 %	12,2 %	7,4 %	2,6 %	-	-
Non-hodgkin lymphoma	10,0 %	9,5 %	4,0 %	-	-	-
Testis	3,3 %	26,4 %	15,3 %	-	-	-
Thyroid gland	-	-	4,0 %	-	-	-
Myeloid leukaemia	3,4 %	6,7 %	-	-	-	-
Bone and articular cartilage	4,1 %	3,3 %	-	-	-	-
Peripherale nerves, connective and soft tissue	5,4 %	-	-	-	-	-
Hodgkin's disease	8,8 %	8,3 %	-	-	-	-
Leukaemia of unspecified cell	1,7 %	-	-	-	-	-
Others	18,3 %	18,9 %	32,6 %	27,9 %	20,0 %	17,2 %



# Stage of the cancer



<b>Breast cancer</b>	N	P = Ni/N
I case	1100	0.287
II case	1620	0.423
III case	889	0.232
IV case	221	0.058
Total	<b>3830</b>	
<b>Prostate cancer</b>	N	P = Ni/N
I case	452	0.198
II case	1229	0.537
III case	325	0.142
IV case	281	0.123
Total	<b>2287</b>	

<b>Lung cancer</b>	N	P = Ni/N
I case	253	0.086
II case	286	0.097
III case	971	0.329
IV case	1445	0.489
Total	<b>2955</b>	
<b>Head and neck</b>	N	P = Ni/N
I case	159	0.227
II case	124	0.177
III case	142	0.203
IV case	274	0.392
Total	<b>699</b>	

Based on Bulgarian statistics and protocols for cancer treatment

Cancer	Patients	Percent	For Radio therapy	Percent for PT or CI	Patient for PT or CI	Percent of total number
Breast cancer	3830	42,3%	1620	5 %	81	26.4%
Prostate cancer	2287	15,8 %	361	10 %	36	11.8%
Lung cancer	2955	10,1%	298	15 %	45	14.7%
Head and neck cancer	699	45,8%	320	45 %	144	47,1%
				Total number of patient:	306	

Based on Bulgarian statistics and Dutch protocols for cancer treatment

Cancer	Patients	Percent	For Radio therapy	Percent for PT or CI	Patient for PT or CI	Percent of total number
Breast cancer	3830	83%	3179	5 %	159	26,4%
Prostate cancer	2287	60 %	1372	10 %	137	11,9%
Lung cancer	2955	54%	1596	15 %	239	14,6%
Head and neck cancer	699	92%	643	45 %	289	47,1%
				Total number of patient:	824	



# Available protocols



Cancer	Proton protocols	Carbon ion protocols
Lung cancer	19	3
Head and neck	15	13
Breast cancer	10	1
Sarcoma cancer	8	4
Pediatrics	7	-
Prostate cancer	15	5
Liver cancer	13	6
Pancreas	7	3
Rectum	5	2
Esophageal and gun	4	1
CNS	9	4
Eye	3	-
Hodgkin lymphoma	2	-
	117	42
	Number of total protocol : 159	



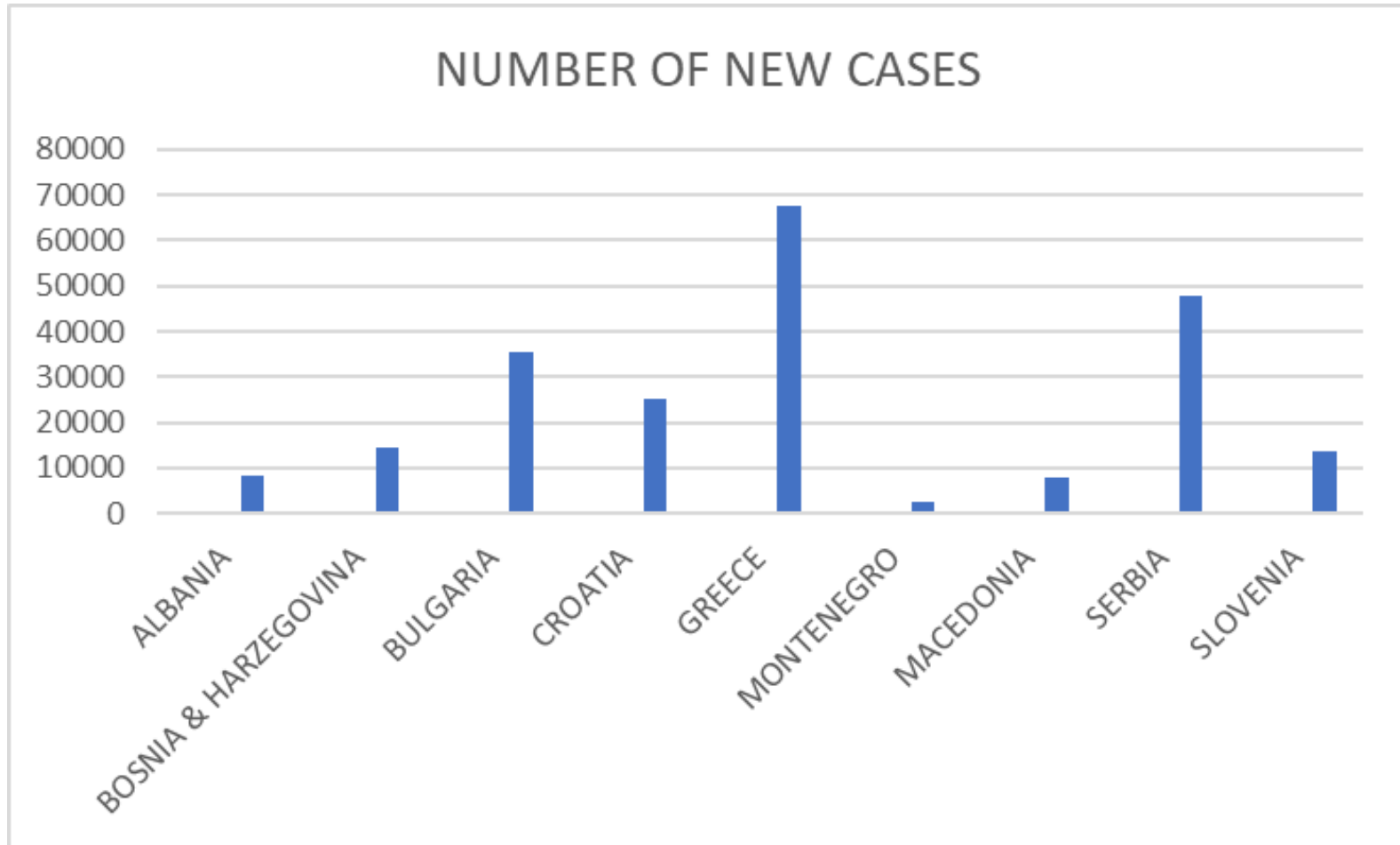
# Balkan Countries WHO data 2018



COUNTRIES	NUMBER OF NEW CASES	%
ALBANIA	8294	0.037
BOSNIA & HARZEGOVINA	14385	0.065
BULGARIA	35378	0.159
CROATIA	25221	0.113
GREECE	67401	0.303
MONTENEGRO	2366	0.011
MACEDONIA	7807	0.035
SERBIA	47960	0.216
SLOVENIA	13503	0.061

**Total 222315**





**Total 222315**



# Balkan Countries WHO data 2018



## ALBANIA

TAB.10 BG	Patient	for RT	for PT	%
Breast	973	412	21	0.425
Prostate	658	104	10	0.215
Lung	1148	116	17	0.360
			48	

## BOSNIA AND HERZEGOVINA

TAB.10 BG	Patient	for RT	for PT	%
Breast	1386	586	29	0.363
Prostate	936	148	15	0.183
Lung	2424	245	37	0.454
			81	



# Balkan Countries WHO data 2018



<b>CROATIA</b>				
TAB.10				
BG	Patient	for RT	for PT	%
Breast	2856	1208	61	0.421
Prostate	2346	370	37	0.259
Lung	3021	305	45	0.320
			143	
<b>GREECE</b>				
TAB.10				
BG	Patient	for RT	for PT	%
Breast	7734	3271	164	0.393
Prostate	6457	1020	102	0.245
Lung	9964	1006	151	0.362
			417	



# Balkan Countries WHO data 2018



## NORD MACEDONIA

TAB.10 BG	Patient	for RT	for PT	%
Breast	1000	423	21	0.424
Prostate	706	112	11	0.224
Lung	1158	117	18	0.352
			50	

## SERBIA

TAB.10 BG	Patient	for RT	for PT	%
Breast	5809	2457	123	0.419
Prostate	3183	503	50	0.172
Lung	7912	799	120	0.409
			293	

<b>MONTENEGRO</b>				
TAB.10 BG	Patient	for RT	for PT	%
Breast	420	178	9	0.484
Prostate	197	31	3	0.170
Lung	418	42	6	0.346
			18	
<b>SLOVENIA</b>				
TAB.10 BG	Patient	for RT	for PT	%
Breast	1377	582	29	0.366
Prostate	1759	278	28	0.350
Lung	1488	150	22	0.284
			79	



# Balkan Countries WHO data 2018



<b>BULGARIA</b>					
TAB.10 BG	Patient	for RT	for PT		%
Breast	4016	1699	85		0.392
Prostate	4256	672	67		0.311
Lung	4250	429	64		0.297
			216		

**Total number 1346**  
**This is a lower limit!**



# Conclusions



- The population of the 9 countries in the project – 33 million
- If Greece joins – 43 million
- Population of Balkan peninsula (including European part of Turkey) – 75 millions
- Estimated number of expected patients
  - ✓ SEEIIST member states > 1000
  - ✓ + Greece > 1400
  - ✓ Balkans > 2450
- Numbers strongly depend from the national protocols for cancer treatment and can vary significantly
  - ✓ The above numbers should be considered as a lower limit
- The SEEIIST HT center will not cover the needs of the region