

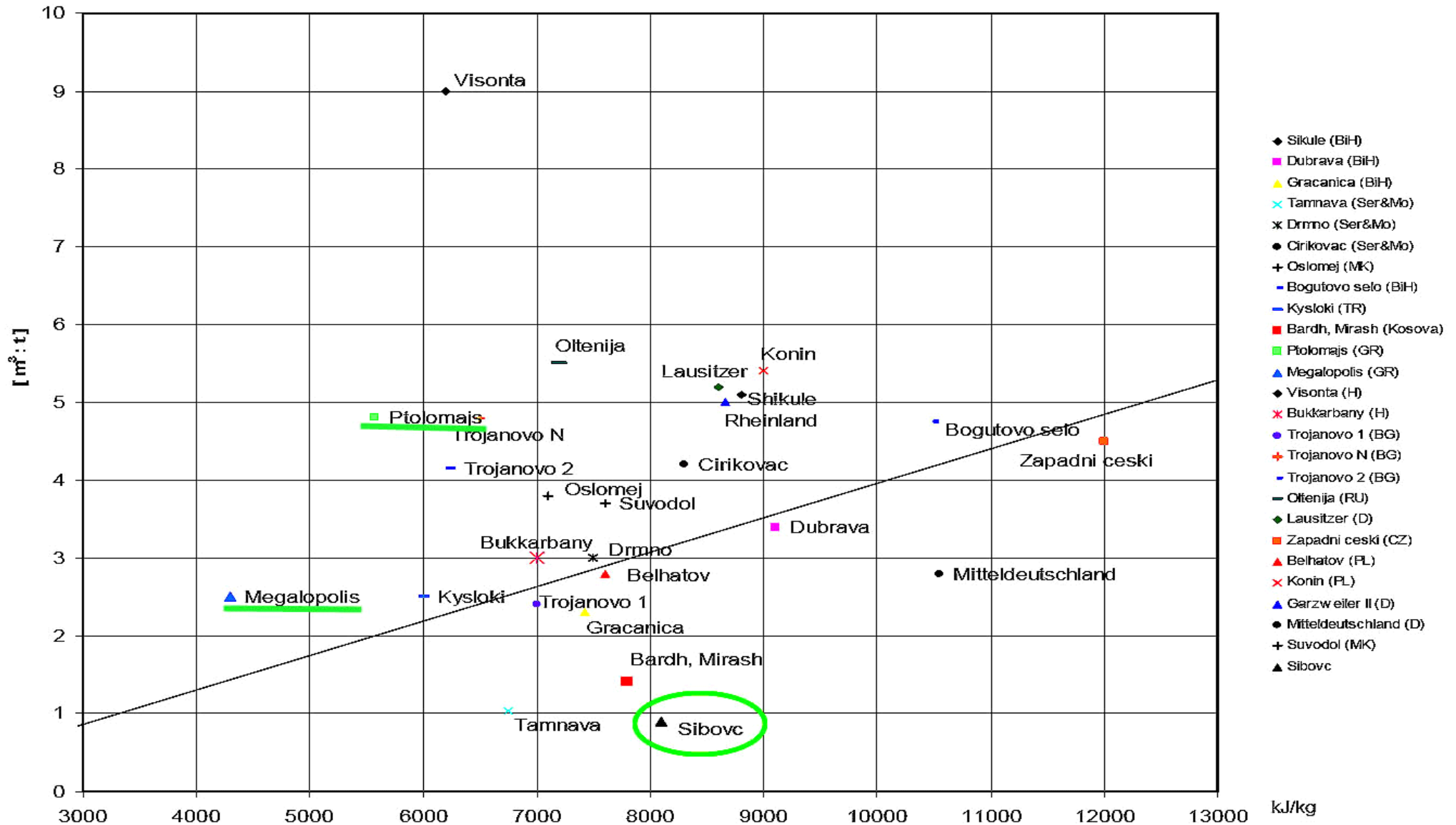
A view from Greece on LCP BREF

Marios Leonardos

11th Coal Dialogue, Brussels, 8 July 2015

European Lignites

Stripping Ratio - Lower Calorific Value (LCV)

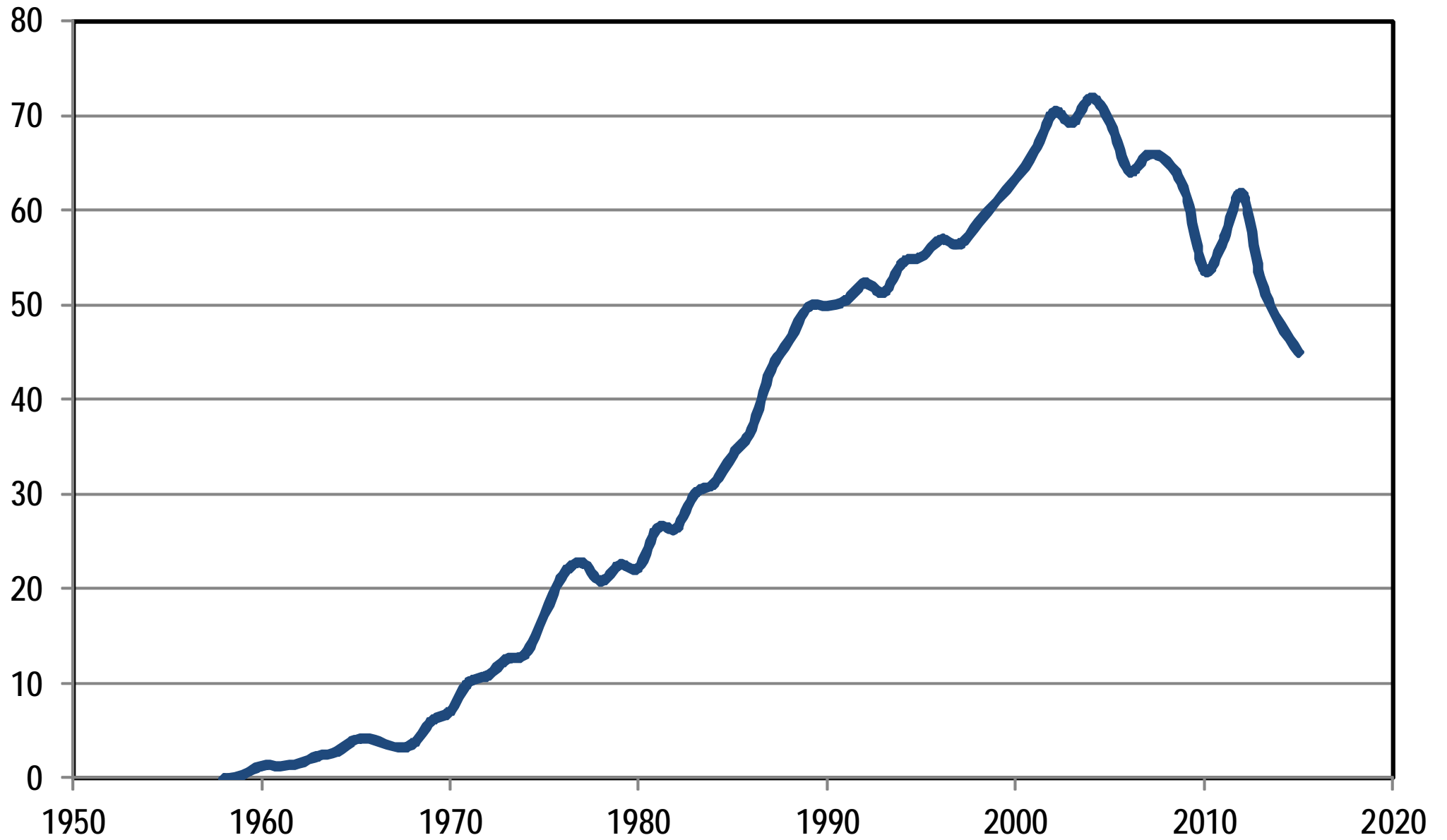


Lignite mining cost benchmarking

Figures as they are - no adjustments

| MINE | PRODUCTION Mt/y | LIGNITE COST €/t | STRIPPING RATIO R t/m ³ | EXCAVATION COST €/m ³ | FUEL HEAT COST €/Gcal |
|--|--------------------|---------------------|--|--|-----------------------------|
| Freedom, North Dakota USA | 15 | 13 | 5,24 | 2,2 | 3,5 |
| MIBRAG (all mines) <i>Operating Cost</i> | 19,6 | 9,96 | 4,02 | 2,05 | 3,8 |
| Schleenhain Mine / Germany | 11 | 12 | 3 | 3 | 4,6 |
| Mini Maritsa Iztok/BG | 33 | 9,8 | 4 | 2,06 | 6,3 |
| Belchatow, Poland | 40 | 9.55 + Depr | 2,6 | 2.92 + Depr | 6,4 |
| Kolubara, Serbia | 30 | 13,3 | 2,2 | 3,83 | 7 |
| Visonta/Bükkabany / Hungary | 81,5 | 15 | 6,9 | 1,96 | 8,8 |
| Rovinari / Romania | 63 | 14,8 | 5,3 | 2,44 | 9,2 |
| PPC, Greece | 52,6 | 15,14 | 5,16 | 2,54 | 12,3 |

LIGNITE PRODUCTION (Mt/year)



Ptolemais basin mining area consisted of several deposits ("Fields"),

scheduled to be mined according to

- Stripping ratio
- Lignite Quality
- Size
- Position and
- Production requirements

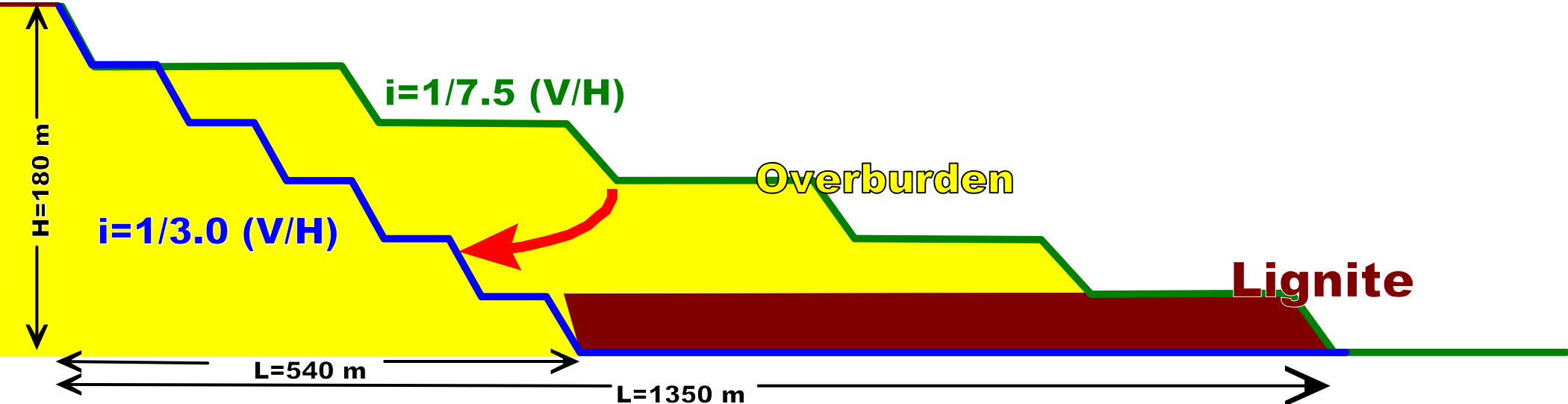
We now exploit the LAST three deposits and

PPC Mines are seeking for a complete deposit exploitation

Reasons:

- Obligation from mining concession
- Lignite cost
- Environment

Mining cost is minimum at the end of a lignite field mining operation



Normal Operating Stripping Ratio = $4.17\text{ m}^3/\text{t}$ overburden/lignite
Final slope Stripping Ratio = $1.67\text{ m}^3/\text{t}$ overburden/lignite

Lignite Cost 10 E/t >>>> 5 E/t

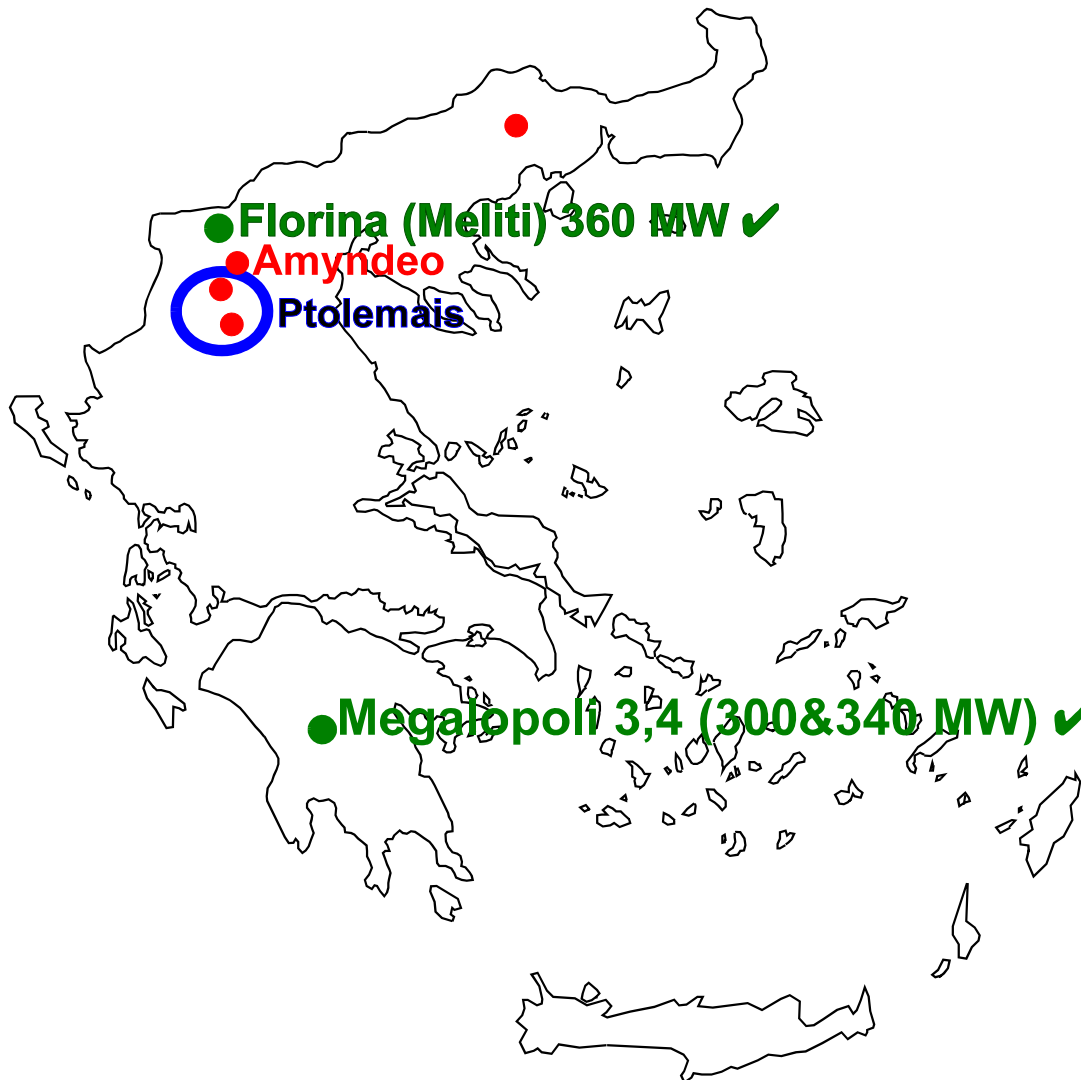


Significant environmental impact for Ptolemais basin region in the case of the planned sequence of the mining fields is not completed smoothly.

The ground surface will not be restored to a usable form.

The Company (or the country) will pay an unbearable cost to correct the situation.

- Amyndeo
- Kardia
- Agios Demetrios



| TPP | COMMISSION | DECOMMISSION | OPERATION YEARS |
|-----|------------|--------------|-----------------|
|-----|------------|--------------|-----------------|

New Unit

| | | | |
|-------|------|------|----|
| PTOL5 | 2019 | 2061 | 45 |
|-------|------|------|----|

Opt out (17500h)

| | | | |
|---------|------|------|----|
| KARDIA1 | 1975 | 2018 | 43 |
| KARDIA2 | 1975 | 2018 | 43 |
| KARDIA3 | 1980 | 2019 | 39 |
| KARDIA4 | 1981 | 2019 | 38 |

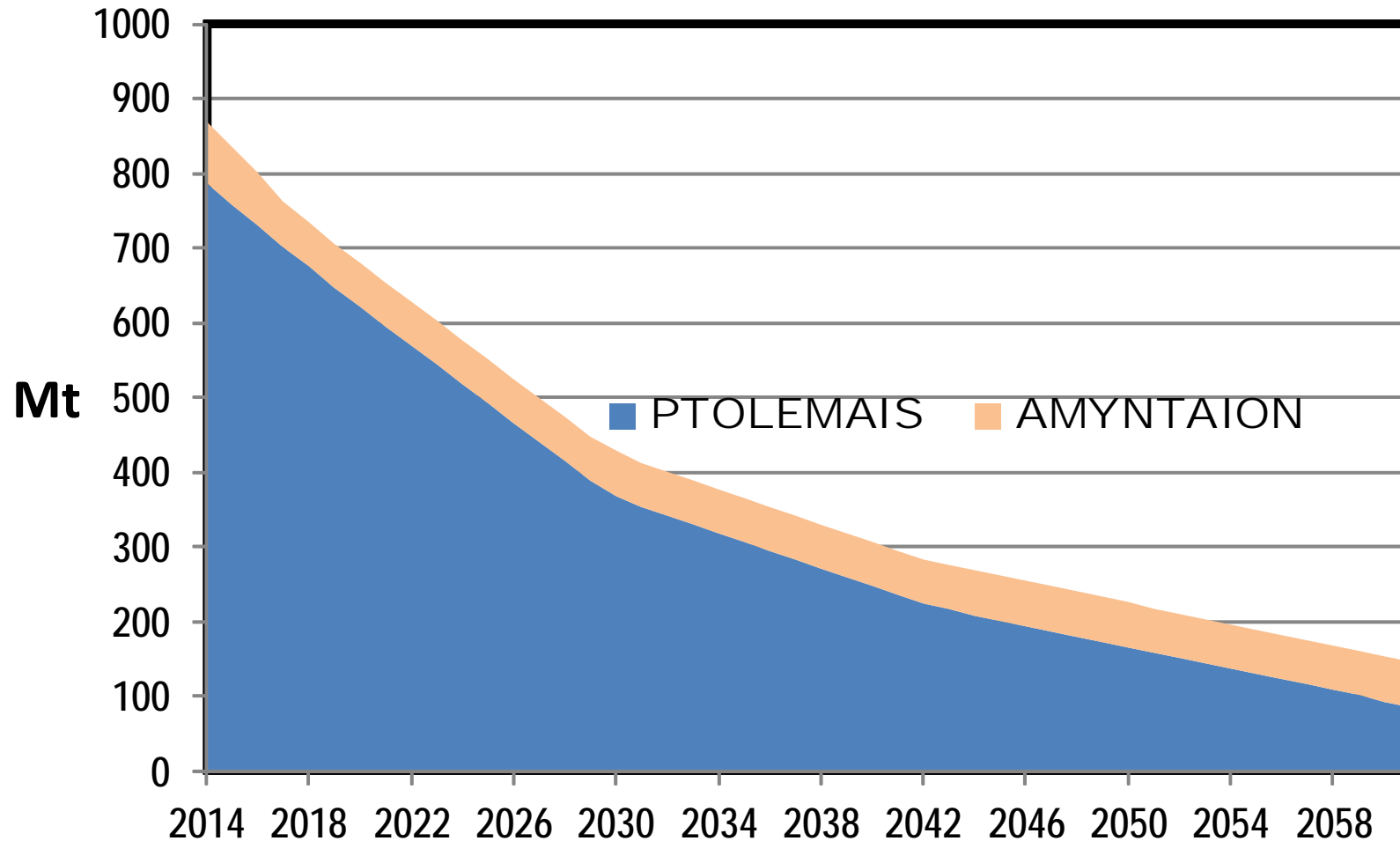
Transitional national plan

| | | | |
|------------|------|------|----|
| AGIOS DEM1 | 1984 | 2029 | 45 |
| AGIOS DEM2 | 1984 | 2029 | 45 |
| AGIOS DEM3 | 1985 | 2030 | 45 |
| AGIOS DEM4 | 1986 | 2031 | 45 |
| AGIOS DEM5 | 1997 | 2042 | 45 |

Opt out (17500h)

| | | | |
|--------|------|------|----|
| AMYNT1 | 1987 | 2018 | 31 |
| AMYNT2 | 1987 | 2018 | 31 |

Depletion of Lignite Deposits in Ptolemais and Amyntaion Basins



| Reserves (Mt) | 2014 | 2020 | 2061 |
|---------------|------|-----------|-----------|
| PTOLEMAIS | 788 | 621 | 87 |
| AMYNTAION | 83 | 60 | 60 |

Problems from the transitional national plan

- Cost of investments for TPPs upgrade (170 M €)
- TPPs Increased operating costs

Other problems from early decommission of Kardias and Amyntaion TPP (March / 2018)

- Power 1800 MW suddenly lost from the system
- Gap in electricity production (PTOL5 to be ready 2019 - 20)
- Decommission before 45 Years
- District heating in Amyntaion area lost
- Gap in district heating Ptolemais city

Solution

Increase in operating hours from 17500 to 32000.