



Good afternoon ladies and gentlemen, my name is Christos Kolovos and I will present you a paper on Corporate social responsibility and the future of mining in Greece. I am very glad to present it here, at the magnificent island of Milos, since my last visit here was more than thirty years ago, as a mining student !

Mining projects meet growing opposition by local communities around the globe. This is now widely acknowledged by the industry itself, by financial institutions and by governments.

Convincing Corporate Social Responsibility (CSR) actions in existing mining projects constitute a key element in obtaining social acceptance for future projects.

This paper presents the development of the Mavropigi lignite mine in the Western Macedonia Region from both the technical and the social sector point of view and the experience gained, valuable for future reference in all new mining projects.

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As an introduction to the main idea of my paper:

Mining projects meet growing opposition by local communities around the globe and this is now widely acknowledged by the industry itself, by financial institutions and by governments. If mining companies are to avoid reputational risk, costly delays and the potential loss of mining projects resulting from local opposition they need a so-called “social license to operate”. Although local, such conflicts are increasingly catching the attention of the major media, the administration, as well as of law-makers and investors. Mining companies are also increasingly facing public hearings and innovative legal challenges.

Convincing corporate social responsibility (CSR) actions in existing mining projects constitute a key element in obtaining social acceptance for future projects.

As a case study, this paper presents the development of the Mavropigi lignite mine in the Western Macedonia Region from both the technical and the social sector point of view and the experience gained, valuable for future reference in all new mining projects.

## What is CSR ?

CSR means **the ethics a business uses for its relations with society**.

A more simplified and recently introduced by the European Commission approach defines CSR as **“the responsibility of enterprises for their impacts on society”**.

Three commonly accepted points:

- the voluntary character of CSR,
- its close relation to the concept of sustainable development, and
- that it should be strategic choice of the company and not simply a secondary temporary one.

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Now, let's first see what is CSR. CSR means **the ethics a business uses for its relations with society**. Although used globally, CSR has not a commonly accepted meaning, due to its complex character. Authorities and organizations have suggested their own meaning and the diversity is associated with the differences in culture, the level of development of each country, the priorities different regions set, etc.

CSR was approached by the European Commission in 2001 as **“a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis”**.

A more simplified approach introduced also by the European Commission in 2011, defines CSR as **“the responsibility of enterprises for their impacts on society”**.

The Hellenic Network for Corporate Social Responsibility defines CSR as **“the voluntary commitment of businesses to also include in their business practices, social and environmental activities beyond their legal obligations and are related to those that directly or indirectly are affected by their operations”**.

Despite the different terms there are three commonly accepted points:

the voluntary character of CSR, its close relation to the concept of sustainable development, and that it should be strategic choice of the company and not simply a secondary temporary one.

It must be clear that compliance to legislation **is not** CSR. Philanthropy, commercial sponsorship or public relations are not CSR either. On the contrary, CSR is **devotion to transparency and continuous dialogue, connection of values and business strategies**, emphasis on what creates **added value** and **long-term perspectives** and investment in integrity and trust.



Public Power Corp. of Greece SA (PPC in brief), the biggest utility company in Greece, is a major lignite surface mine operator. The total PPC lignite production for 2012 reached 61.74 million tons in 2 major lignite-mining complexes: 52.14mt in the Western Macedonia (Northern Greece) and 9.6mt in the Peloponnese (Southern Greece) areas.

Lignite is used for power generation, contributing to 50% of the national demand. Three small local minor producers in the Western Macedonia area sell also mostly to PPC Power Plants.

The size of the deposit in the Western Macedonia area, its energy importance and the oil crises in the 1970's led to the further development of the exploitation. In 2002 a peak production of 55.8mt was achieved in the PPC's Western Macedonia Lignite Center (WMLC in brief).

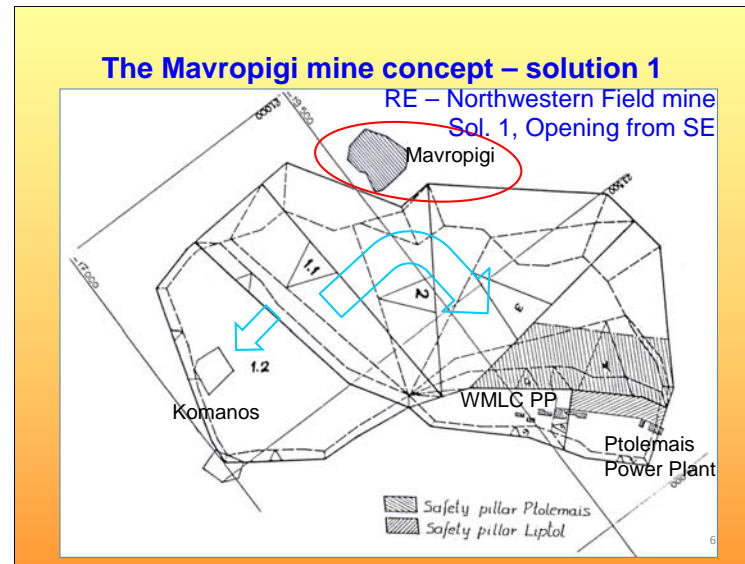


The main activity takes place in the basin between the towns of Kozani and Ptolemais, where three main and some minor mines are developed, while another mine is developed further north in the Amynteon basin, between the towns of Ptolemais and Amynteon.

Mining in PPC mines employs bucket wheel excavators (BWE) for both the soft overburden and the multi-layer lignite deposit. Harder overburden formations are handled with blasting and shovel + heavy truck systems or contractor operations. Contractor backhoes have also excavated an increasing proportion of the lignite deposit during the last years.

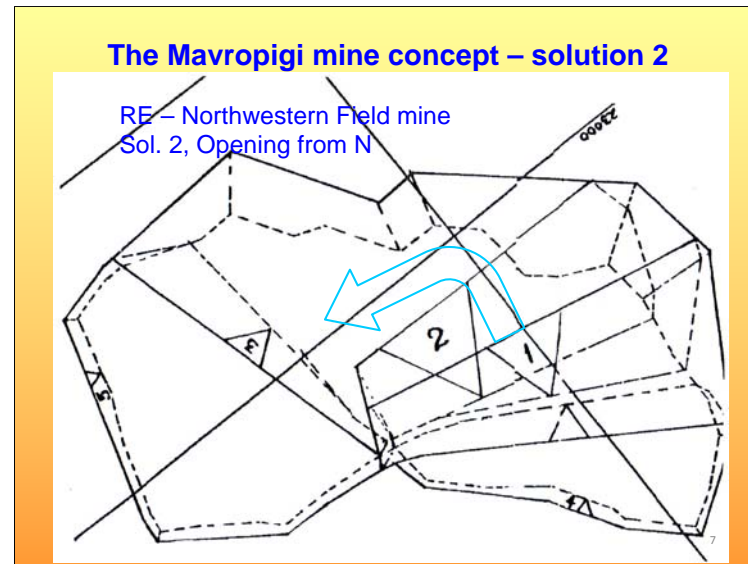
The Mavropigi lignite mine is located in the northwestern part of the Kozani-Ptolemais basin, Western Macedonia, Northern Greece.

The decision to develop the mine was made in 1995 in order to replace the North Field and the Komanos Field mines in the same area, after their close-down due to exhaustion of their reserves (PPC SA-RE, 1996). PPC had been planning the Komnina mine at the Amynteon area for several years in the late 80's and both a detailed mine study and an environmental study had already been prepared by 1991. However the decision was never implemented, due to the very promising borehole results at the Western Field of the Kozani-Ptolemais basin.

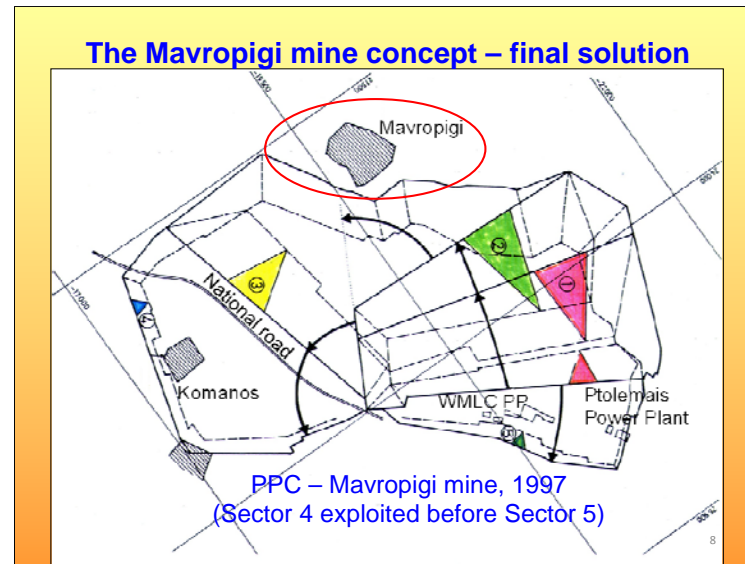


Rheinbraun Engineering, (a subsidiary of the German energy company RWE), undertook the initial design & planning of the new mine as a part of the Western Macedonia Technical Mine Master Plan Project.

According to the RE planning (in 1995-96), the Mavropigi mine was initially scheduled to open from the SE side and advance in a clockwise slewing operation to the north, producing up to 6million tons per annum. The main advantage of this solution was the capability for an early build of the internal dump. The main disadvantages were low production and the early disruption of the Mavropigi village connecting road.



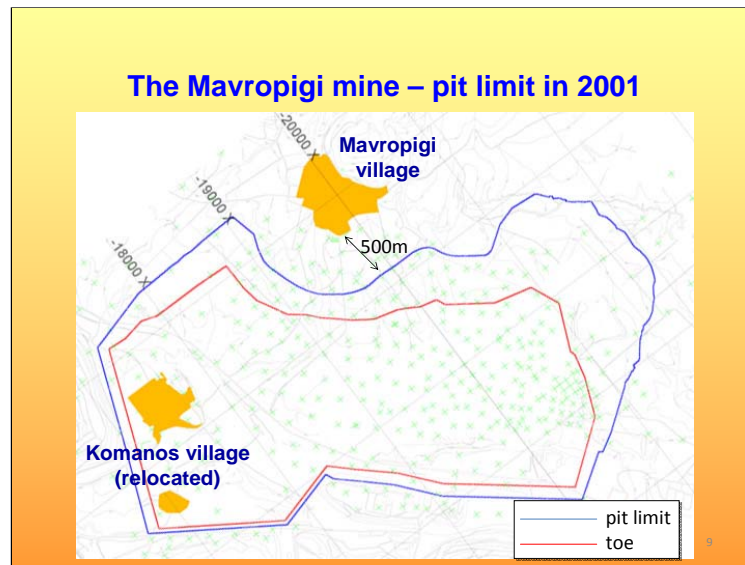
After an extensive discussion with PPC, an alternative solution was adopted in 1996, to open the mine from the northern side and advance anti-clockwise to the south, in order to obtain a more stable production rate for a longer period. The excavation of the Mavropigi village connecting road area was also postponed for some years.



The key point for the adoption of the second solution was the result of the geotechnical stability studies, which indicated that a much smaller than the originally anticipated pillar could be abandoned towards the nearby Ptolemais Power Plant.

As soon as it became public knowledge that PPC intended to open the Northwestern Field mine, the residents of the Mavropigi village sent 2 letters to the Ministry for Development (July and October 1996) asking for an early relocation of the village and employment of the unemployed by PPC, since the pit would be at a very close proximity to the village and the biggest part of the Mavropigi agricultural land would be expropriated. It must be noted that other villages in the area (Kardia, Harafgi, Komanos, etc.) had been relocated in the past in order to exploit underlying lignite deposits and many of their residents were in priority employed by PPC under a provision of the law.





At the same period the oil price level was very low (Brent oil at 10US\$/bbl in Nov. 1996) and PPC decided to avoid paying for the relocation, in order to keep the cost of the run-off-mine (ROM) lignite as low as possible. So in November 1996, PPC informed officially the Mavropigi Community that the new mine would start operations in January 1999, the pit limit would be at a “safe” distance from the village and no relocation of the village had been planned.

The final pit limits that were originally drawn by RE at a distance of 38m from the village cemetery had to be redrawn in 1997 and moved further away from the village, at the distance permitted by the Greek Mining Regulation, (minimum 250m from the village and cemetery perimeter).

In an effort to reassure the safety of the village, PPC unilaterally decided in Jan. 2002 to move the final pit limit at a distance of 500m away from the village perimeter, double than the minimum distance permitted by the Greek Mining Regulation.

The environmental study for the mine area was submitted to the authorities in May 1996, but the corresponding permit was finally issued in Sep. 2001.

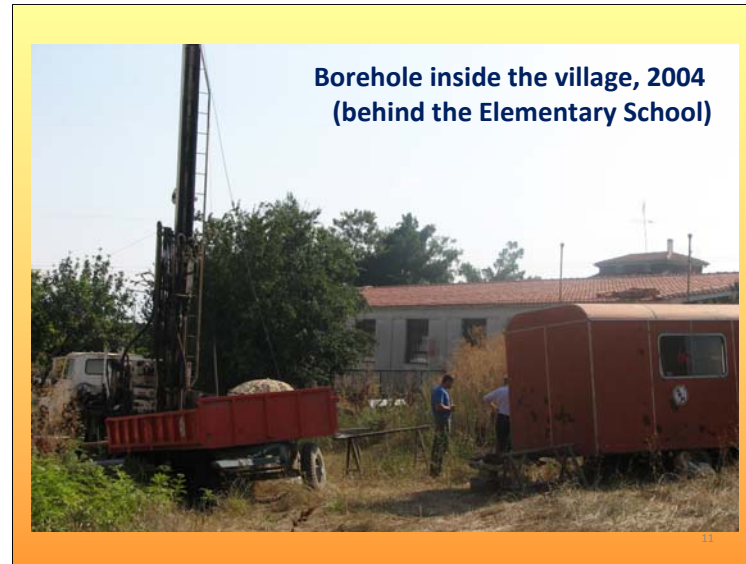
Although the residents had made clear that they would not allow the opening of the mine without a prior decision to relocate the village, on Oct. 4th 2001 the excavators (contractor backhoes) were set on the field to start digging the initial box-cut, i.e. the location of the belt distribution point and the formation of the 1st bench floor levels. When the first backhoe started digging, the residents rushed in the area and tried to stop it. Special Police Forces deployed in the area used tear gas and stun grenades to turn the villagers away. Some of the residents were arrested, but they were set free later the same day. After a couple of days the residents decided to continue their case in court and a normal mining operation was attained.



The almost 3-year delay in opening the Mavropigi mine resulted in production issues for the entire WMLC and the box-cut was redesigned in order to accelerate lignite production. The initial design aimed at the least possible contractor works. The new design altered the shape of the box-cut, extending it to the north and lowering the levels of the 1st bench to deeper horizons. These actions resulted in a lignite production of 1 million tons already in the very first year (2002) of the mine life. The lignite was transported by trucks to the nearby Ptolemais Power Plant, since a ROM stockyard had not yet been prepared. The location for a big ROM stockyard was established in Oct. 2001, at the area between the pit limits and the WMLC headquarters. Construction of the stockyard commenced later in 2003 and was completed in 2006.

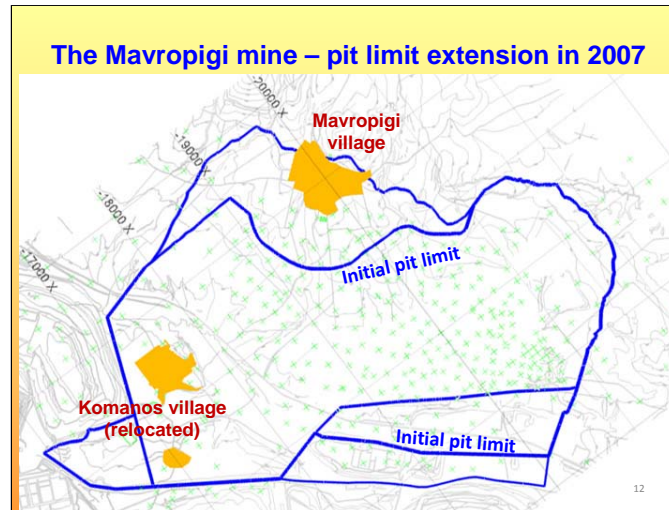
The redesigning of the initial box-cut enlarged the excavation quite enough to permit a different approach to the deployment of the bucket wheel excavators. The usual case in similar worldwide BWE lignite exploitations is to deploy one BWE per year, because every BWE prepares the floor of the next bench. However, in the case of the Mavropigi mine four BWEs were deployed in 2003-2004 within a 13-month period. This very rapid development of the mine was acknowledged in PPC as an internationally best practice and was proudly mentioned in the 2004 Annual Report.

At first, the initial box-cut was redesigned in order to accelerate the deployment of the first BWE. All the soft waste rocks excavated from the box-cut via diesel equipment (contractor works) were temporarily deposited at short distances, in order to speed up the opening phase. The BWEs were then able to remove these waste rocks in small doses and at a later stage. Some hard formations which were found in the box-cut had to be transferred further away, at a small external dump, which also worked to protect a nearby PPC settlement from mine noise and dust. The redesigned box-cut combined with the favorable surface morphology permitted the deployment of the first BWE in June 2003 and the fourth BWE started operations in July 2004.



In June 2004, a new draft reserves calculation, based on newer boreholes, proved that the decision to move the final pit limit at a distance of 500m away from the village perimeter resulted in leaving a serious quantity of lignite unexploited. The new study suggested the immediate investigation of the extension of the deposit with boreholes inside the village. These boreholes proved that the deposit extended up to the first houses, including the church and the cemetery. A major faulted zone, passing through the village in NW-SE direction, disrupted the deposit sharply at the western rim of the Kozani-Ptolemais basin. The minable reserve beyond the pit limit was at least 25mt. There was a high probability that surface cracks could appear at the faulted zone, when the mine approached the final pit limits as had happened in other occasions in the past. The study clearly warned for cracking, possible damages to housing and social unrest.

In April 2005, the Supreme Administrative Court of Greece recalled the environmental permit of the mine because it did not answer the relocation of the village topic. The loss of the environmental permit led to the inability of further expropriation of the land, necessary to advance the mine, until a new permit would be issued. The new permit was issued in February 2006; however the expropriation of the land was delayed for three years.



In 2007, a newly appointed PPC CEO asked for a reevaluation of all the lignite reserves in order to decide on a new investment program. The reevaluation of the Mavropigi deposit, based on a wide set of boreholes, a detailed tectonic study of the area and by using Maptek Vulcan software, resulted in 40mt of minable reserves beyond the pit limits and under the village, at a favorable stripping ratio. Combined with new minable lignite deposit discovery at the Southwestern Field, PPC announced that it “would invest in a new Power Plant in Ptolemais and relocate the Mavropigi and Pontokomi villages, in order to exploit the lignite deposits under the villages”. A letter from the PPC President to the Secretary of the Western Macedonia Region asked for the relocation to be completed by 2013, but this posed a reasonable doubt on whether the time would be enough.

### Mavropigi mine - June 2009 situation



In 2008, a new pit was developed at the eastern part of the Mavropigi mine (former Komanos village area) to support the nearby Kardias mine which suffered a major decrease in production. A little later, one more pit was developed south of the Mavropigi Mine distribution point area.



Then, in July 2010, surface cracks started to appear NW of the Mavropigi village on pre-existing faults, triggered by the mine expansion.



The cracking expanded quickly towards the houses, causing social anxiety, and once again the Mavropigi village case was in the front pages.



The cracks showed a clear both vertical and horizontal movement towards the pit and since then they have been continuously monitored in order to avoid a disastrous major mine slope failure.



May 2012 – Local press

**“The residents of the Mavropigi village must leave from their homes”, say the professors from the Aristotle University of Thessaloniki**

**ΟΙ ΚΑΤΟΙΚΟΙ ΤΗΣ ΜΑΥΡΟΠΗΓΗΣ ΘΑ ΠΡΕΠΕΙ ΝΑ ΕΓΚΑΤΑΛΕΙΨΟΥΝ ΤΑ ΣΠΙΤΙΑ ΤΟΥΣ ΛΕΝΕ ΟΙ ΕΠΙΣΤΗΜΟΝΕΣ ΤΟΥ ΑΠΘ**

Τετάρτη, 09 Μάιος 2012 16:53 | 



Εκτίθενται συνειδητά στον κίνδυνο σε μια ύστατη προσπάθεια να τραβήξουν το βλέμμα της πολιτείας πάνω τους, ώστε να δρομολογηθεί μια λύση στο πρόβλημα που...αντιμετωπίζουν, βλέποντας καθημερινά τα σπίτια τους να ραγίζουν λόγω του ρήγματος που εκδηλώθηκε το καλοκαίρι του 2010. Οι κάτοικοι της Μαυροπηγής, στη Δυτική Μακεδονία έχουν ενημερωθεί από τους επιστήμονες του Αριστοτελείου Πανεπιστημίου Θεσσαλονίκης (ΑΠΘ) ότι θα πρέπει να εγκαταλείψουν τα σπίτια τους μέχρι το ερχόμενο φθινόπωρο καθώς κινδυνεύει η σωματική τους ακεραιότητα αλλά και η ζωή τους, από τα κατολισθητικά φαινόμενα.

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In May 2012, professors from the School of Geology of the University of Thessaloniki, after working for months at the cracked area on behalf of the local authorities, stated clearly that the residents must evacuate the area due to safety reasons.

**Sep 2012 – Local press**

**“The slope failure at the Mavropigi mine is only a matter of time”, say the professors from the Aristotle University of Thessaloniki**

*Ρεπορτάζ - 15/09/2012*

ΣΥΝΕΔΡΙΑΣΕ Η ΕΠΙΤΡΟΠΗ ΠΑΡΑΚΟΛΟΥΘΗΣΗΣ ΤΟΥ  
ΦΑΙΝΟΜΕΝΟΥ

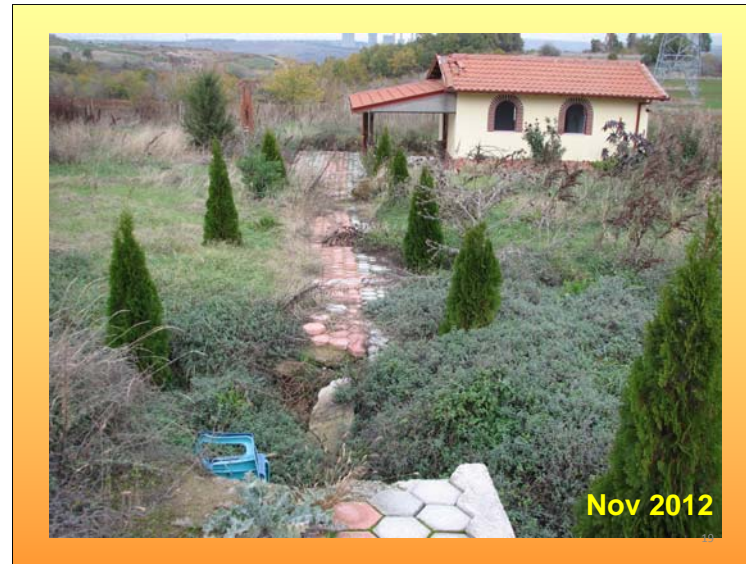
**Θέμα χρόνου η κατολίσθηση στο  
ορυχείο της Μαυροπηγής**

Οι επιστήμονες εκτιμούν ότι απομακρύνεται προσωρινά ο κίνδυνος για το χωριό,  
αλλά θεωρούν αναμενόμενη μεγάλη κατολίσθηση μέσα στο ορυχείο

**(But it has not happened yet)**

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Finally, in September 2012 the mine could no longer operate accordingly to the basic planning towards the village area and the Professors stated that a major slope failure is only a matter of time. However, it has not happened yet and it may never happen.



Meanwhile the cracking keeps evolving, as we can see in this picture. The small church has only minor damage, but it cannot be approached. The affected area extends more than one Km in length.



The situation in the village playground in January.



And a few days ago.



One of the cracks in March 2013 with the village in the background.



Some buildings have been more than significantly affected, as this warehouse at the edge of the village towards the pit.



But this building, in a vineyard just opposite from the warehouse, shows only minor damage.





This house, at the NW edge of the village was the first to be affected already by August 2010 and the residents have now abandoned it for safety reasons. Since more than two years now, PPC has started to compensate properties and many residents have left the village and moved to the nearby town of Ptolemais.

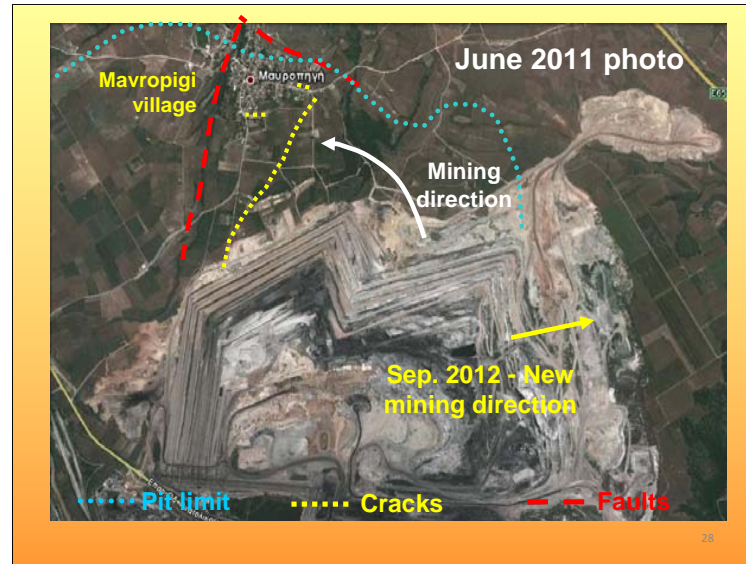


Some more photos of the village exhibiting the land creeping. The fencing has taken some inclination

...



And this road, located between the mine and the village has subsided more than 2 meters in a few months.



As a result of the delayed expropriation of the village and the instability issue, the mine had to change mining direction and turn to the west. The excavation side has now four conveyor belts per bench instead for the originally planned two belts per bench.



The two extra conveyor belts per bench result in unavoidable losses of operational time and unnecessary belt length. The lignite is also deeper in this area, the mine is actually moving mainly the overburden, so production issues have arisen.

## CONCLUSIONS

- Open pit mining in isolated areas is only a technical, economical and paperwork issue. However, in populated areas, it is a completely different situation because it has an impact on peoples' lives.
- Transparency in decision making, devotion to continuous dialogue, investment in integrity and trust, all key aspects of CSR, are essential.
- Early action may safeguard both the mine production and the social acceptance. Special attention should be given in mine design and planning, as well as at public hearings on the environmental permit.
- CSR is a connection of business values and strategies.

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So, let's see what we can learn from the aforementioned : Open pit mining in isolated areas, like some places in Australia, Canada, Chile, etc. is only a technical, economical and paperwork issue. However, in populated areas, like most places in Greece, it is a completely different situation because it has an impact on peoples' lives. Agricultural land is expropriated and the compensation is never considered to be enough, because often this land is the only means of survival for the local residents. The open pits are at short distances from inhabited areas, therefore dust, noise, heavy traffic and vibrations from detonations -if applicable- are an everyday nuisance. The roads that the residents use become slippery or get destroyed due to mine traffic. The quality of drinking water may be affected. Finally, as in the Mavropigi case, cracks may appear on the houses, even if the mine is at a "long" and "safe" distance, because the cracks trigger pre-existing faults. If mining is to have a future in Greece, then local societies in the mining areas need special attention and their interests should be specially addressed.

The Mavropigi case proved that **transparency in decision making, devotion to continuous dialogue, investment in integrity and trust, all key** aspects of CSR, are essential.

**Early action** may safeguard both the mine production and the social acceptance. Special attention should be given in mine design and planning, as well as at public hearings on the environmental permit.

There was a clear warning in 2005 on the probability of house cracks at Mavropigi and a major social unrest, but it was neglected. Although by 2005 oil price level was increased and the lignite to be extracted from the village area would pay for the relocation, a decision was not made until 2007. In the Mavropigi case the residents had asked for the relocation and the employment of the unemployed. If the decision on the relocation had been made earlier, it could have also contributed to the decrease of the village's unemployment rate. So business strategy up to 2007 was not justified and it should be constantly kept in mind that **CSR is a connection of business values and strategies.**

- Since CSR is voluntary, mining companies should constantly keep their eyes and ears widely open to the needs of the nearby societies and act in advance.
- If a Police enforcement of the law on behalf of the mining company becomes necessary, then the mining project is more likely not to be as profitable as it could.
- If a mining project is to be accepted by the local society, then the mining company must always try to create mutually beneficial situations. Emphasis on what creates added value and long-term perspectives.
- A full compliance to the law, which is not CSR, should be number one priority and the terms imposed by the environmental permit should be carefully kept.

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Since CSR is voluntary, mining companies should constantly keep their eyes and ears widely open to the needs of the nearby societies and act in advance. If a Police enforcement of the law on behalf of the mining company becomes necessary, then the mining project is more likely not to be as profitable as it could. Moreover, the concept of the stakeholders' interests should be kept in mind, not just that of the shareholders.

If a mining project is to be accepted by the local society, then the mining company must always try to create mutually beneficial situations. What brings profit to a mining company or the State usually leaves the mining areas residents untouched. Emphasis should be paid on what creates added value and long-term perspectives.

A full compliance to the law, which is not CSR, should be number one priority and the terms imposed by the environmental permit should be carefully kept.

**The Fraser Institute Survey of Mining Companies, 2012/2013 Report, Feb 2013.**

**Mining companies representatives think that:**

**We are about to experience a mining renaissance around the globe. A solution for many crisis affected areas of the world is to permit projects expeditiously.**

**The industry needs **smaller** footprint, higher grade projects with **less** impact that are easier to permit in **GOOD** countries.**

**Social and community problems will be the permanent preoccupation for new investments in the mining sector.**

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And before closing this presentation, let's see what the Fraser Institute Survey of Mining Companies reported just this February. The Fraser Institute is an independent Canadian public policy research and educational organization with active research ties with similar independent organizations in more than 80 countries around the world. The 2012 Survey was sent to approximately 4,100 exploration, development, and other mining-related companies world-wide. The survey represents responses from 742 of those companies, which have provided sufficient data to evaluate 96 jurisdictions.

So, the companies who responded at the Survey are **very optimistic**, that we are about to watch a mining renaissance around the globe, **But:**

The industry needs **smaller footprint** and **higher** grade projects with **less impact**, which will be **easier to receive a permit** in **GOOD** countries.

**Social and community problems** will be the **permanent** preoccupation for new investments in the mining sector, so we must constantly keep the CSR principle in our minds.



Corporate social responsibility and the future of  
mining in Greece

Thank you for your attention



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