



## »What are the true costs of your mobile phone?« Mining, production, use, discarding and recycling

### Material and suggestions for teachers

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#### Intention of the material

Every day students use electronic devices like mobile phones. In Germany, 90 percent of the students at the age between 12 and 19 years, own a mobile phone. This rate is lower in countries like Namibia. Not many people know about the problems which are connected with the production of these equipments – as for example the environmental and social impact of the mining industry or the poor working conditions in the Chinese mobile phone industry.

The issue of mobile phones is easy to apply for the demonstration of global connections, as the mobile

phone is a global product throughout its life cycle. Additionally, it is used worldwide in different ways. Last but not least, students consider their mobile phone as an important part of their life; they are very fond of their phones. Discussions about mobile phones are interesting for them and at the same time, they learn to understand the global context of its production and use.

Without giving the students a feeling of guilt when using a phone, this material raises awareness about the problems involved. It provides ideas how to discuss the attitudes and behaviour of various stakeholders of the mining and mobile phone industry as consumers, politicians, producers, and activists.

#### Methods

Creative writing, quiz, research

#### Imprint

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Funded by InWEnt gGmbH on  
behalf of the Federal Ministry  
for Economic Cooperation and  
Development

#### Additional didactic

material is provided at the  
EPIZ E-Learning-Center  
www.epiz-berlin.de/moodle

Berlin, 2010

## 1 BACKGROUND INFORMATION FOR TEACHERS

In 2008, 1.18 billion mobile phones were sold worldwide. The supply chain of the mobile phone industry has a high degree of outsourcing. Over the years, production centres have moved from one country to another in search of lower costs and to get closer to booming new markets. A growing proportion of consumer electronics is manufactured in »developing countries« or »countries in transition«. Every second mobile phone is made in China. Most of the workers on the production lines are young women who often carry a heavy burden as the main breadwinners of their families. Yet they are often denied many of their basic rights and earn wages that are very difficult to live on. The most common problems in the manufacture of mobile phones include low wages, excessive working hours, disrespect of union rights, health and safety issues and growing job insecurity through temporary contracts and agency work.

A mobile phone requires around 30 metals to function. For example, half of the world's tin is used in electronic solders, and one fourth of its cobalt is used in portable products such as mobile phone batteries. These metals often come from mines in Africa and Asia. Many miners work in poor and dangerous conditions, and the environment suffers, with subsequent harm to the communities around the mines. In some cases like in the Democratic Republic of Congo, the mining of minerals for the electronics industry has contributed to an ongoing conflict; militias sold the minerals destined for manufacturing electronics, and used the revenues to buy arms.

The increased consumption of electronic items like mobile phones has caused a parallel increase in discarded products. The UN estimates that up to 50 million tonnes of electronic waste, so-called »e-waste«, may be generated worldwide each year. Although they are small, mobile phones contain a vast range of both potentially dangerous substances and precious metals. It is therefore important that the recycling is done properly and thoroughly. If more phones were recycled, fewer metals would have to be mined and there would be fewer dangerous substances harming the environment.

Since several developing countries in Asia and Africa lack proper systems for recycling and disposal, they are presently experiencing increasing problems with handling e-waste. In many of these countries (for example, China and Ghana) e-waste is being handled by unprotected workers in the informal sector, a dangerous situation that also causes great damage to the environment. Yet mountains of e-waste are growing by the day in these countries. The most important reason is that consumption of electronics is increasing. Furthermore, e-waste is illegally exported from the rich world to developing nations.

## 2 SOURCES AND ADDITIONAL INFORMATION

- [www.makeitfair.org](http://www.makeitfair.org)
- [www.germanwatch.org/makeitfair](http://www.germanwatch.org/makeitfair)
- 4 folder on mobile phones, mining of metals, production, e-waste  
<http://makeitfair.org/the-facts/leaflets>
- studies on mining and studies on production of mobile phones  
<http://makeitfair.org/the-facts/reports>
- Rap song download  
[http://makeitfair.org/news\\_listing/the-facts/audio-video/makeitfair-rap](http://makeitfair.org/news_listing/the-facts/audio-video/makeitfair-rap)
- ITC International Telecommunication Statistics 2008  
[www.itu.int/ITU-D/icteye/DisplayCountry.aspx?code=NAM](http://www.itu.int/ITU-D/icteye/DisplayCountry.aspx?code=NAM)
- [www.itu.int/ITU-D/icteye/DisplayCountry.aspx?code=DEU](http://www.itu.int/ITU-D/icteye/DisplayCountry.aspx?code=DEU)
- Ministry of Mines and Energy in Namibia  
[www.gsn.gov.na/pdf/miningjournal.pdf](http://www.gsn.gov.na/pdf/miningjournal.pdf)
- Uranium Network: Human Rights Organization providing country profiles  
[www.uranium-network.org/index.php?option=com\\_content&view=section&id=11&Itemid=32](http://www.uranium-network.org/index.php?option=com_content&view=section&id=11&Itemid=32)

### 3 PEDAGOGICAL SUGGESTIONS FOR TEACHERS

**Total time: 3 x 45 minutes**

| Time | Educational Objective  | Content  | Activities and social forms  | Material/<br>Media  |
|------|--|--|--|---|
| 10'  | – introduction to the issue of mobile phones   | – global aspects of mobile phones – facts and figures                                    | – questions about mobile phones<br>– quiz to identify gaps about mobile phone production   | M1  |
| 10'  | – identifying differences between Germany and Namibia                                | – numbers of fixed line phones and mobile phones per inhabitant                          | – comparison of figures: What are the reasons, what are the consequences?  | M2  |
| 30'  | – analyzing problems based on a song text  | – impacts of globalisation on the mobile phone production<br>– consumers' responsibility | Students listen to the Rapsong<br>1 Listen to get an impression<br>2 Listen to understand the text:<br>Questions:<br>– Who are the various characters in the song?<br>– Describe the differences between the two characters that belong together!<br>– Which problems exist in the global IT supply chain? | M4<br>(first audio version, later to hand out text version) |
| 5'   | – preparation of research questions<br><br>– research at home                        | – use of mobiles in Namibia<br>– mining of metals in Namibia                             | – preparation of homework  | M3  |
| 20'  | – presentation of facts and results  | – presentation of results of home research   | a) mobile phone use in Namibia: compare with results from statistics (and question the role of statistics)<br>b) mining of metals  |   |
| 20'  | – understanding a problem based on a text  | – problems of e-waste  | What do you do with your old phones?<br>– Story of Ibrahim – Reading and discussion  |   |
| 5'   | – preparation of creative home work<br><br>– additional home work: creative activity | – e-waste  | – write a new part for the rap song on e-waste   |   |
| 5'   | – presentation of a new rap  |  |  |   |
| 20'  | – creative writing   | – »I and my mobile phone«  | – write a portrait: »I and my mobile phone«<br>– send the portrait to the fellow students in Namibia   |   |
| 20'  | – identification of possibilities to be active                                       | What can you do against the problems as<br>– Consumer?<br>– Worker?<br>– Citizen?        | – students propose possibilities to act and discuss possibilities<br>– teacher keeps main results at the blackboard  | – sketch on blackboard or make notes                        |

## M1

### Quiz: What do you know about mobile phones?

As a starting point: Who has got a mobile phone? (probably all of them)

- How many mobile phones are sold in Germany per year?
  - 30 million
- How many mobile phones are sold worldwide per year?
  - over 1 billion each year, in 2006 for the first time
- How many people in the world have a mobile phone?
  - For the year 2008, the International Telecommunication Union (ITU) estimated 4.1 billion subscribers
- On average, which percentage of the worlds' population possesses a registered mobile phone?
  - about 61 % in 2008
- How many metals are used to produce a mobile phone?
  - around 30 metals
- How many of the workers in the mining industry, that are also mining metals for IT gadgets, are children?
  - approximately 1,5 million
- Which percentage of mobile phones is produced in China?
  - more than 50 %

## M2

### ICT Statistics 2008

|   | Namibia   | Germany    |
|---|-----------|------------|
| Population (year 2001)                            | 1,830,330 | 82,074,780 |
| Fixed telephone lines per 100 inhabitants         | 6,57      | 62,48      |
| Mobile cellular subscriptions per 100 inhabitants | 49,39     | 128,27     |
| Computers   | 23,94     | 65,54      |
| Internet users                                    | 5,33      | 75,33      |

International Telecommunication Union

## M3

### Research as home work (in two groups)

#### First group

Ask students (of your partner school) in Windhoek (online Forum at the E-Learning-Center [www.epiz-berlin.de/moodle](http://www.epiz-berlin.de/moodle))

- How many students have got a mobile phone?
- How many of them have a new phone and how many a used one?
- What do they do if their mobile phone is broken?
- How do they load their battery?

#### Second group

Desk research on mining in Namibia (internet)

- Which minerals and metals are mined in Namibia that are contained in mobile phones?
- What is the amount of minerals mined per year?
- Are there other minerals mined in Namibia and what are they used for?
- To which countries does Namibia export its mineral?

#### Possible answers

- Namibia produces: gold, silver, zinc, copper, lead, tin – all these metals are used to produce mobile phones, with the exception that due to an EU regulation (RoHS) the use of the toxic heavy metal, lead, is not allowed in the electronics industry
- Namibia produces diamonds and uranium, but these resources are not used to produce mobile phones – only some extremely expensive mobile phones contain diamonds as adornments
- Namibia is part of the international exploitation and trade industry of minerals, and its share in the Uranium market is increasing. This goes along with ecological problems and low labour standards.

**M 4**  
**Rap song**

**make IT fair**  
**Lyrics and song: EL D**

Behind every product there's a supply chain  
You need to know about it, it's part of the game  
And you participate in it  
So let's get with it  
And take a small trip through business

Hi!  
I work in a mine in Congo, Africa  
Got to provide, so I work all the time  
I'm digging up a mineral, it's called coltan  
and it's essential to all calling  
even though I'm ten years old I'm hacking boulders  
all the while supervised by scary soldiers  
I make two dollars a day  
but what can I say  
I have no choice but to get paid

Hey!  
I'm a businessman, and those are my planes you see  
I fly minerals from Congo to Kigali  
Who asks questions? It isn't me  
I just chill in my hotel with a Martini

[make it fair, make it fair, you gotta make it fair,  
make it fair  
make it fair, make it, you gotta make it, make it] 8x

Hello,  
I work in Beijing, 10 hours daily, in a factory  
Forced to work overtime, I'm tired and not happy, see  
can't complain, cause I remember that night  
when everybody who joined the trade union got fired!  
when I wanna sleep, there's six people in my room  
can't afford a bigger place so I'll have to make do  
even worse, I can't afford to get ill  
cause it's too expensive to buy medicine and pills

Hello,  
I run a company in China  
A factory that makes batteries for your fashion  
accessories  
I got big clients, they appreciate my prices  
more than anything they appreciate my silence  
Cause' customers don't really want to know  
they want a cheap new phone with games and  
videos  
but why blame me? somebody will supply  
it's the rules of the game, don't ask why!

make it fair, make it fair, you gotta make it fair,  
make it fair  
make it fair, make it, you gotta make it, make it

so I just told you bout the links in the chain  
may have made you start to think bout change  
so why not decide to buy responsibly  
put the »|« into IT

you can make a big change by starting small  
reconsider whether you need a new phone at all  
get educated on the real cost of your purchase  
such actions serve a real purpose

Behind every product there's a supply chain  
You need to know about it, it's part of the game  
And you participate in it  
Get with it, of course  
and logon to [makeitfair.org](http://makeitfair.org)

make it fair, make it fair, you gotta make it fair,  
make it fair  
make it fair, make it, you gotta make it, make it