Nokia due diligence update
Prepared for IUCN by Emma Duncan
September 2010

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Nokia due diligence report: summary

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1. Introduction

IUCN is exploring opportunities for engaging with Nokia (hereafter referred to as "Nokia" or "the company") on issues. IUCN China undertook a due diligence on Nokia in 2008, ahead of engaging with the company on a watershed management programme in Miyun County. The present report extends on this existing due diligence, specifically looking at: environmental impacts of mobile devices and accessories; health risks associated with mobile devices; industry and government initiatives, regulations, and commitments for reducing the environmental impact of mobile devices; and Nokia's work to reduce the environmental impacts of its mobile phones, operations, and supply chain. It also updates the reputational analysis of Nokia in the media.

2. Environmental impact of mobile devices and accessories

2.1. Overview

Various studies, including several conducted by or in cooperation with Nokia, have investigated the environmental impact of mobile phones over their lifecycle. A 2007 report[1] from the European Commission's Integrated Product Policy (IPP) Pilot Project on Mobile Phones concludes that the component manufacture phase and use phase have the biggest environmental impacts, and that the most important environmental issue for all lifecycle phases is energy consumption — with one analysis finding that carbon emissions account for 94% of the Ecological Footprint of a mobile phone[2]. Nokia's own Life Cycle Assessment, which reports environmental impact in terms of energy use and greenhouse gas emissions, says that emissions from the total energy consumption for creating, using, and recycling a typical Nokia mobile device are equal to driving 167 km in a typical family car (not including accessories, packaging, user guides, and Nokia corporate overhead including travel (which together increase emissions by 20%), and not including energy consumed by mobile networks and other infrastructure)[3].

Reports from other groups, including from UK sustainable development group Forum for the Future[4], additionally name the extraction and processing of raw materials and end-of-life phases, together with running networks, as being most responsible for the environmental impacts of the mobile telecommunications industry.

The only specific information found on the biodiversity impacts of mobile phones were preliminary studies suggesting that electromagnetic radiation from base stations may affect wildlife behaviour and reproduction, and a suggestion that the siting of base stations may similarly affect biodiversity.

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[1] http://ec.europa.eu/environment/ipp/mobile.htm, first stage final report
[2] http://ec.europa.eu/environment/ipp/mobile.htm, European Commission IPP Pilot Project on Mobile Phones first stage final report
[3] http://www.nokia.com/environment/devices-and-services/creating-our-products/environmental-impact
[4] http://www.forumforthefuture.org/files/earthcalling.pdf

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2.2.

2.2.1. Components
A mobile phone is made of 500–1,000 components, most of which are made of a large number of materials, including metals, plastics, glass, and ceramics. The basic components are:
- Handset: case, display or screen with glass cover, keypad, antenna
- Printed circuit board: integrated chips, resistors, capacitors, and wires
- Battery
- Microphone
- Speaker.

2.2.2. Materials
A typical mobile phone contains:[5]
- Plastics (40%)
- Glass and ceramics (15%)
- Copper and compounds (15%)
- Nickel and compounds (10%)
- Potassium hydroxide (5%)
- Cobalt (4%)
- Lithium (4%)
- Carbon (4%)
- Aluminium (3%)
- Steel, ferrous metal (3%)
- Tin (1%)
- Bromine, cadmium, chromium, lead, manganese, silver, tantalum, titanium, tungsten, zinc (minor constituents; <1%)
- Antimony, arsenic, barium, beryllium, bismuth, calcium, fluorine, gallium, gold, magnesium, palladium, ruthenium, strontium, sulphur, yttrium, zirconium (microconstituents; <0.1%).

Nokia states that its mobile phones contain:
- Plastic (45%)
- Metals (35%)
- Other metals (35%; including iron, aluminium, lithium, cobalt, gold, silver, palladium, platinum)
- Glass and ceramics (10%)
- Battery electrodes (9%)
- Precious metals (0.11%)
- Other non-metals (0.9%)

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[5] http://www.basel.int/industry/mppi/MPPI%20Guidance%20Document.pdf

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2.2.3. Toxic substances
Toxic substances and chemicals present in mobile devices include, or have included in the past:
- Heavy metals (e.g., lead, mercury, cadmium, chromium, and beryllium)
- Brominated flame retardants
- Antimony
- Phthalates

Polyvinyl chloride (PVC; not hazardous in itself, but releases dioxins and furans when burned
Nokia has reportedly said that bromine is responsible for most of the embedded toxicity in a mobile phone[6] (see also section 5.3 for substances no longer present in Nokia mobile phones).

2.3. Impact of different lifecycle phases on biodiversity
The main lifecycle phases of mobile devices and accessories are:
- Extraction and processing of raw materials
- Component manufacture
- Transport of components to an assembly plant
- Product assembly
- Transport of the final product to a sales outlet
- Use
- End-of-life.

This section summarizes the environmental impact of these phases.

2.3.1. Extraction and processing of raw materials
Most raw materials for electronic products are obtained through extractive activities such as mining. Mining operations account for around 6% of the Ecological Footprint of a mobile phone[7], with mining for gold reportedly accounting for most of the impacts during this lifecycle phase[8]. Many coltan (ore containing tantalum) mines in the Democratic Republic of Congo are located in Kahuzi Biega National Park; mining in the country has been associated with serious ecosystem degradation as well as militia activity and human rights abuse[9].

The main impacts of extractive activities on biodiversity are:[10]

- *Habitat loss*
  Through removal of habitat and geological features by extractive activities, as well as storage of large quantities of solid waste (tailings) produced in the processing of metal ores.
- *Hydrological changes*
  Through removal of geological features by extractive activities, the use of water for processing extracted raw materials, and erosion of exposed land and tailings (which can cause sedimentation of creeks, rivers, and offshore areas).
- *Air, water and soil pollution*
  Through toxic or harmful emissions (such as dust, acids, cyanide, solvents, and sulphur dioxide) released during raw material processing, as well as exposure of metal sulphides to the atmosphere by mining, which react with oxygen to form sulphuric acid and heavy metal oxides.
- *Climate change*
  Through the use of large amounts of fossil-fuel-based energy required for processing of some materials, as well as through transportation. The raw materials and component manufacture phases together account for

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[6] http://www.forumforthefuture.org/files/earthcalling.pdf
[7] http://ec.europa.eu/environment/ipp/mobile.htm, IPP Pilot Project on Mobile Phones first stage final report
[8] http://www.forumforthefuture.org/files/earthcalling.pdf
[9] http://www.forumforthefuture.org/files/earthcalling.pdf
[10] http://www.ifc.org/ifcext/sustainability.nsf/AttachmentsByTitle/BiodivGuide_SectorSummary_Mining/$FILE/Mining.pdf

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57% of total energy use, and 78% of total greenhouse gas emissions, over the lifecycle of a typical Nokia mobile device [11].

- *Increased access to previously undeveloped and remote areas*
  Through roads or other infrastructure built for mining and other extractive operations, which can facilitate further damaging activities including small-scale mining, hunting, logging, and fishing.

Some of the plastics used to manufacture Nokia products are derived from biomaterials produced from agricultural crops. Impacts of agriculture on biodiversity include: [12,13,14]

- *Habitat loss*
  Through clearing of natural habitats for farming land, and especially for intensive monoculture, as well as erosion and salinization.
- *Climate change*
  Through the release of greenhouse gases from fertilizers, land burning, agricultural residues, and ploughing.
- *Hydrological changes*
  Through excessive water use and freshwater withdrawal for irrigation.
- *Water and soil pollution*
  Through the use of pesticides and fertilizers.
- *Genetic erosion of crop species*
  Through the replacement of traditional and local species and varieties with more universally farmed varieties.

Most of these impacts are at a local scale, occurring at and around mining or agricultural operations. The major exception is climate change, which has a regional and global impact on biodiversity and ecosystems.

2.3.2. Component manufacture
The component manufacture phase has a large environmental impact, primarily from energy consumption by manufacturing processes. Component manufacturing processes also use large amounts of chemicals and water. The components with the highest environmental impacts are printed circuit boards (also called printed wiring boards), integrated circuits, and liquid crystal displays (LCD)[15]; one study reportedly concluded that 40–50% of the environmental impacts over the entire lifecycle of a mobile phone occur from manufacturing printed circuit boards and integrated circuits[16]. The main impacts of these component manufacturing processes on biodiversity are:[17,18]

- *Climate change*
  Through the use of fossil-fuel-based energy for manufacturing processes. The raw materials and component manufacture phases together account for 57% of total energy use, and 78% of total greenhouse gas emissions, over the lifecycle of a typical Nokia mobile device [19].

- *Air, water, and soil pollution*
  Through the release of toxic or harmful chemicals or their breakdown products (such as solvents, photo-initiator chemicals, flame retardants, phthalates, heavy metals, and nonyl phenols) during manufacturing processes and/or from manufacturing waste. In a 2007 report[20], Greenpeace concluded that commonly used wastewater treatment processes are unable to deal with many of the chemicals used in component manufacturing processes, including certain brominated flame-retardants and heavy metals.

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[11] http://www.nokia.com/environment/devices-and-services/creating-our-products/environmental-impact
[12] http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm
[13] http://assets.panda.org/downloads/agwaterusefinalreport.pdf
[14] http://cmsdata.iucn.org/downloads/agriculturalecosystems_2.pdf
[15] http://ec.europa.eu/environment/ipp/mobile.htm, European Commission IPP Pilot Project on Mobile Phones first stage final report
[16] http://www.secret-life.org/cellphones/cell_environment.php
[17] http://www.greenpeace.org/international/Global/international/planet-2/report/2007/2/cutting-edge-contamination-a.pdf
[18] http://ec.europa.eu/environment/ipp/mobile.htm, IPP Pilot Project on Mobile Phones first stage final report
[19] http://www.nokia.com/environment/devices-and-services/creating-our-products/environmental-impact
[20] http://www.greenpeace.org/international/Global/international/planet-2/report/2007/2/cutting-edge-contamination-a.pdf

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2.3.3. Product assembly

2.3.4. *T*he main assembly processes include components placement, soldering components to printed circuit boards, assembling the mechanical and electromechanical parts and components, programming, testing, packaging the body with the battery and charger, and dispatching to the retailer.

2.3.5.

2.3.6. The main impacts of these processes on biodiversity are: [21,22]

2.3.7. *Climate change*
Through the use of fossil-fuel-based energy for assembly. Nokia factories account for 4% of total energy use and 2% of greenhouse gas emissions over the lifecycle of a typical Nokia mobile device [23].

2.3.8. *Air, water, and soil pollution*
Through the release of toxic or harmful chemicals or their breakdown products (such as flame retardants, heavy metals, and nonyl phenols) during assembly processes and/or from waste *Transport*

2.3.9. *Transport accounts fo*r about 11% of energy consumption in the lifecycle of a mobile phone, with 6% from transportation of components from suppliers to assembly plants and 5% from transportation of phone*s to custo*mers[24]. Other transportation includes the sourcing of raw materials for phone components from around the world and travel related to business operations. Airfreight accounts for almost all the environmental impacts of transportation phases[25]. The main impact of transport on biodiversity is:

2.3.10. *Climate change*
Through the use of fossil fuels. Transportation accounts for 11% of total energy use and 7% of greenhouse gas emissions over the lifecycle of a typical Nokia mobile device [26].

2.3.11. Use

2.3.12.   The use phase has a large environmental impact, primarily from energy consumption. Nokia only considers use of the mobile device in its lifecycle assessment; however, a network infrastructure — comprising a radio network with radio base stations and radio network control equipment, a core network with switches, routers, servers and workstations, and transmission equipment — is also required for using mobile devices and requires a large amount of energy. In terms of the mobile device, the majority of environmental impacts in the use phase come from standby (no-load) power consumption by phone chargers.

2.3.13.

2.3.14.   Impacts of the use lifecycle phase and the running of network infrastructure on biodiversity include:

2.3.15. *Climate change*
Through the use of fossil-fuel-based energy for mobile device use, standby charger use (i.e., leaving chargers plugged in when not in use), interactions between customers and mobile operators (such as billing), and running network infrastructure.

The use phase of a typical Nokia mobile device accounts for 27% of total energy use and 12% of greenhouse gas emissions over the device's lifecycle[27]. According to one report, approximately 50% of the lifecycle energy consumption of a mobile phone is wasted as no-load power consumption of the charger[28].

Annual CO_2 emissions per subscriber for a 3G mobile phone system are equivalent to driving a car for 250–380

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[21] http://www.greenpeace.org/international/Global/international/planet-2/report/2007/2/cutting-edge-contamination-a.pdf

[22] http://ec.europa.eu/environment/ipp/mobile.htm, IPP Pilot Project on Mobile Phones first stage final report

[23] http://www.nokia.com/environment/devices-and-services/creating-our-products/environmental-impact

[24] http://www.forumforthefuture.org/files/earthcalling.pdf

[25] http://ec.europa.eu/environment/ipp/mobile.htm, IPP Pilot Project on Mobile Phones first stage final report

[26] http://www.nokia.com/environment/devices-and-services/creating-our-products/environmental-impact

[27] http://www.nokia.com/environment/devices-and-services/creating-our-products/environmental-impact

[28] Assuming that the in-use life time of a mobile phone is two years, charging happens every second day, and the charger is left plugged in after the phone is charged; http://ec.europa.eu/environment/ipp/pdf/ipp_voluntary_agree_summary.pdf

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km[29]. Another calculation states that the energy required to transmit mobile phone calls across the network is about three times that required to manufacture and charge the phone for a typical 2-year lifetime, and that the emissions from 1 hour of mobile phone talk-time per day for a year are equivalent to the emissions from flying from London to New York[30]. *Changes to wildlife behaviour and reproduction*
Through exposure to electromagnetic radiation from base stations (suggested for house sparrows[31] and honey bees[32] in preliminary studies) and the siting of base stations (which may, e.g., affect ecologically sensitive areas and/or bird migration[33])

2.3.16. End-of-life

2.3.17.   Although mobile phones have a technical life span of 10 years, the average turnover in the developed world is 18–24 months. In the US, 130 million mobile phones are thrown out each year and in Europe 105 million phones are replaced each year[34].

2.3.18.

2.3.19.   Different materials in used mobile devices can be recovered for reuse, recycling or energy generation. Present end-of-life treatments are optimized to recover copper and precious metals, with the environmental benefits of such recycling far exceeding the benefits of recycling any other component, including plastic. Recovery and recycling of plastic components (the largest percentage of mobile phones by weight and volume) was not previously widely practised due to technical diff*iculties, lack of infrastructure etc.; however,* a higher percentage of plastics in phones must now be recovered in the EU under the Waste from Electrical and Electronic Equipments (WEEE) Directive.[35]

2.3.20.

2.3.21.   However, only a small percentage of unwanted mobile phones are recycled — just 3–5% according to a 2008 Nokia survey[36,37]. Most are kept in the owner's home or thrown away, where they are incinerated or end up in landfill. Electronic waste (e-waste) is the fastest-growing component of the municipal solid waste stream[38]. It forms 4% of municipal waste in Europe[39] and is increasing at 3–5% a year, almost three times faster than the total waste stream[40]. E-waste in developing countries is expected to triple over the next five years[41].

2.3.22.

2.3.23.   According to Greenpeace, mobile phones and computers form the "biggest e-waste problem" as these are the most frequently replaced electronic products; however, in the IPP Pilot Project on Mobile Phones 2005 report[42], Nokia cites studies saying that mobile phones comprise just 0.12% of collected e-waste in Switzerland and 0.06% of e-waste by weight in Norway.

2.3.24.

2.3.25.   The main impact of e-waste on biodiversity is:[43]

2.3.26.   *Air, water, and soil pollution*
Through toxic or harmful emissions (such as heavy metals, dioxins, and furans) released during improper handling during disposal (incineration, landfill) and recycling.

[29] http://ec.europa.eu/environment/ipp/mobile.htm, IPP Pilot Project on Mobile Phones first stage final report
[30] from *How Bad Are Bananas? The Carbon Footprint of Everything* by Mike Berners-Lee (2010, Profile Books Ltd); published at http://www.guardian.co.uk/environment/green-living-blog/2010/jun/09/carbon-footprint-mobile-phone
[31] http://www.livingplanet.be/Everaert_and_Bauwens_EBM_2007.pdf
[32] http://www.i-sis.org.uk/MobilePhonesVanishingBees.php
[33] http://www.forumforthefuture.org/files/earthcalling.pdf
[34] http://www.forumforthefuture.org/files/earthcalling.pdf
[35] http://ec.europa.eu/environment/ipp/mobile.htm, IPP Pilot Project on Mobile Phones first stage final report
[36] http://www.idc.com/getdoc.jsp?containerId=prUS22477810
[37] http://www.nokia.com/press/press-releases/showpressrelease?newsid=1234291
[38] http://www.greenpeace.org/international/en/campaigns/toxics/electronics/the-e-waste-problem/
[39] http://ec.europa.eu/environment/ipp/mobile.htm, IPP Pilot Project on Mobile Phones first stage final report
[40] http://www.greenpeace.org/international/en/campaigns/toxics/electronics/the-e-waste-problem/
[41] http://www.greenpeace.org/international/en/campaigns/toxics/electronics/the-e-waste-problem/
[42] http://ec.europa.eu/environment/ipp/mobile.htm, IPP Pilot Project on Mobile Phones first stage final report
[43] http://www.greenpeace.org/international/en/campaigns/toxics/electronics/the-e-waste-problem/where-does-e-waste-end-up/

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Export of e-waste (including mobile devices and accessories) from developed countries to developing countries for recycling has been cited as a particular problem, as laws to protect workers and the environment may be inadequate or not enforced in developing countries. This export arose because many developed countries do not have the capacity to deal with the quantity and/or hazardous nature of e-waste they generate, and because it is cheaper to recycle waste in developing countries. Such export is sometimes in violation of international law.[44]

3. Nokia's environmental policies and performance

3.1. Overview

Nokia states that it aims to be a leading company in terms of environmental performance, and that it takes sustainability into account in everything it does. It works to minimize the environmental impact of products, services, and operations throughout their lifecycle, through improved product design, improved production processes, and increased material reuse and recycling.

The company says it has significantly reduced the environmental impact of its products over the years. It cites the recently launched Nokia X2, saying the impact of this and similar recently launched devices is a third of the impact of the Nokia 3310 launched a decade ago;

Nokia's environmental efforts focus on:

- Substance management
  Aims to reduce the amount of substances of concern through working with the supply chain and exploring opportunities for using new, more environmentally friendly materials, such as bioplastics or recycled metals and plastics.

- Energy efficiency
  Ensuring devices use as little energy as possible; reducing the energy consumption of operations; and agreeing on energy efficiency targets with key suppliers.

- *Device take back and recycling*
  Aims to increase consumer awareness of recycling, offer superior recycling in all markets, and promote the recycling of used devices through specific initiatives and campaigns.

- Promoting sustainability through services and software
  Developing eco-services for phones to help people to make sustainable choices and consider the environment in their everyday lives.

Its Environmental Management System additionally aims improve environmental performance regarding water consumption, air emissions, ozone-depleting substances, waste management, and packaging. The system is certified according to the ISO 14001 standard and covers production sites and large offices.

Nokia says its environmental work is based on global principles and standards, that its targets are not driven by regulatory compliance but go way beyond legal requirements, and that environmental issues are fully integrated in its business activities and are every employee's responsibility.

The remainder of this section provides an overview of Nokia's strategies, targets and performance related to environmental performance in specific areas. **Supply chain**
Nokia sources components, materials, and services in two categories:

- Direct sourcing: material supply for products, such as components, parts, packaging, software development and research and development
- Indirect sourcing: equipment and services purchased for the company's own use, including office furniture and computers, catering, IT consultancy, and marketing.

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[44] http://www.greenpeace.org/international/en/campaigns/toxics/electronics/the-e-waste-problem/where-does-e-waste-end-up/

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The company's suppliers are located around the world. The main countries and regions for supplier locations are: Austria, Belgium, Brazil, Canada, China, Czech Republic, Denmark, Finland, France, Germany, Hungary, India, Ireland, Israel, Italy, Japan, Malaysia, Mexico, Morocco, Netherlands, Philippines, Poland, Portugal, Singapore, Slovakia, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Ukraine, UK, USA and Vietnam.

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3.1.1. Policies

Nokia Code of Conduct
The *Nokia Code of Conduct* states: "Nokia requires its business partners, subcontractors, or suppliers to comply with applicable laws and regulations. Nokia encourages its partners, subcontractors, or suppliers to strive beyond legal compliance in areas such as governance, human rights and the environment. Nokia incorporates ethical, social and environmental criteria in its procurement agreements and commits to monitoring the performance of its partners and to taking immediate and thorough remedial steps in cases where the ethical performance of its business partners comes into question."

Nokia Supplier Requirements
These requirements are based on international standards (ISO 14001, SA 8000, OHSAS18001, PCMM and ILO, and UN conventions), and define specific expectations for all suppliers in terms of environmental, labour, and health and safety issues. In terms of the environment[45], they require all suppliers to:

- Have a certified environmental management system in place (for example, ISO 14001)
- Comply with material restrictions, set by applicable law and Nokia
- Continuously maintain records of full raw material content data (materials, substances and compounds) of products supplied to Nokia or of materials used in implementing the services provided to Nokia
- Manage any waste generated
- Identify and measure the environmental consequences and impacts of its operations and products/ services
- Run continuous improvement programs to address environmental impacts, particularly focusing on efficient use of energy and materials, avoiding the use of hazardous materials, promoting waste minimization, and improving treatment and control of waste emissions affecting air, water, and soil
- Consider environmental aspects in all phases of product development and whenever possible, reduce or eliminate negative environmental impacts
- Comply with Nokia product environmental requirements (e.g., *Nokia Substance List*, environmental requirements for Nokia products; see section 5.3)
- Make all reasonable attempts to reduce or eliminate hazardous constituents from the product, to promote efficient use of materials (i.e., to reduce waste), to improve energy efficiency of the product and to promote recycling.

3.1.2. Compliance
Compliance with the *Nokia Supplier Requirements* is monitored through regular system assessments. All new suppliers must undergo such assessments, as well as suppliers who have undergone significant organizational changes and those considered to be at highest risk of non-compliance or with a strong need for development. Key suppliers are generally assessed every two years.

Nokia also carries out in-depth assessments to gain more insight into how a supplier is managing and performing against the ethics, environment, labour, and health and safety requirements defined in *Supplier Requirements*. Such assessments can be carried out for new and strategically important suppliers, suppliers identified as having significant or potential risks (from risk assessments, system assessments, feedback from sourcing personnel or third parties), and suppliers located in a new country where Nokia has little knowledge of potential issues of concern.

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[45] http://www.nokia.com/corporate-responsibility/supply-chain/nokia-supplier-requirements/environment

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3.1.3. Performance highlights

- At the end of 2009, 92% of direct suppliers' sites — which accounted for more than 98% of hardware purchasing expenditure during the year — were certified to ISO 14001.

- In 2009, 93% of commodity suppliers had company-level reduction targets for energy, carbon dioxide (equivalent), water, and waste in place. Such suppliers have the highest environmental impact from a lifecycle analysis perspective, and represent 70% of Nokia's overall hardware expenditure.

- From July 2009, Nokia began replacing its previous supplier self-assessment system with that developed by GeSI and EICC (see section 4.1.6).

3.2. Raw materials

3.2.1. Strategy

- Nokia's main objective is to know all the substances in its products, not just those that raise concerns, and that all substances are safe for people and the environment when used in the proper way

- Meeting health and environmental regulatory requirements is a basic requirement, but the company aspires to go beyond legislation and compliance

- Nokia follows the precautionary principle, which may lead it to voluntarily take steps, e.g. to substitute substances of concern with safer alternatives, where feasible alternatives are available

- Nokia aspires to proactively drive the development and efficient use of more sustainable materials.

Nokia does not source or buy metals directly, and points out there are typically four to eight supplier layers between Nokia and any mining activities. Nokia says it is very concerned about poor practices at some mine operations and is actively working to tackle these issues, through:

- Increasing supply chain transparency of these materials

- Understanding the commitments of each supply chain tier

- Working at an industry level (through the Global e-Sustainability Initiative and the Electronics Industry Citizenship Coalition extractives working group) and with stakeholders

- Working with suppliers to understand how it can promote standards and use alternative new substances, such as biomaterials.

3.2.2. Targets
The *Nokia Substance List*, which is updated every year, identifies substances that are banned, restricted, or targeted for reduction with the aim of phasing out their use in products. Due to time constraints, a full list of these substances and their target for phase-out is not listed here; however the list includes:

- Beryllium oxide and all other beryllium compounds

- Eight phthalates (of which six are restricted based on EU regulation)

- Brominated flame retardants and other compounds of bromine, chlorine, and antimony trioxide

- PVC

- Lead

- Tantalum derived from illegally mined coltan

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3.2.3. Performance highlights

- The 5140i was the first EU RoHS compliant mobile phone in the market, and all new mobile devices have complied with the Directive from 2006

- All new mobile devices and chargers have been free of PVC from 2006, and of brominated and chlorinated compounds and antimony trioxide from 2010

- Mobile devices and accessories do not contain substances included in the current EU candidate list of Substances of Very High Concern

- First mobile phone manufacturer with full material declaration for mobile devices

- Introduced the Nokia 3110 Evolve, whose cover also contains 50% bioplastics made from renewable sources

- More than 95% of packaging is made of renewable, paper-based materials, of which up to 60% is recycled content

- Around 30% of materials used to construct a new factory in Romania were made from recycled materials

3.3. Energy efficiency and use

3.3.1. Strategy
The company's climate strategy involves:

- Reducing its own CO_2 footprint

- Raising consumer awareness on measures they can take to reduce their own footprint

- Driving best industry practices

- Influencing other industries to make full use of the potential of ICT and mobility in reducing emissions.

The company notes it is not an energy-intensive company, with most CO_2 emissions from mobile phones occurring during component manufacturing by its suppliers or in the use phase by customers.

3.3.2. Internal targets

Products and services
- Reduce the average charger's no-load power consumption by 50% from 2006 level by the end of 2010 (communicated under WWF Climate Savers Program

- Continue to study new technologies which will use renewable energy resources, such as solar panels and kinetic energy

- Continue to look ways to reduce data centre energy consumption

Operations (including suppliers and service providers)
- Ensure that improvement in energy efficiency meet and exceed the general efficiency targets per units manufactured

- Ensure that all key suppliers set energy efficiency and CO_2 reduction targets

- Reduce CO_2 emissions associated with logistics by 20% below 2008 level by 2012

Facilities
- Create 6% of new energy savings in technical building maintenance systems between 2007 and 2012 compared to 2006 (communicated under WWF Climate Savers Program)

- In 2009–2010, begin deploying green electricity purchases to those countries where Nokia operates and where buying green electricity makes the most impacts on CO_2 savings.

- Reduce CO_2 emissions through these measures by a minimum of 10% in 2009 and by a minimum of 18% in 2010, compared to 2006.

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Work and management practices
- Reduce work-related travel and commuting by increasing remote work and remote working possibilities and reduce office space to gain savings in energy consumption and CO_2 emissions.
- Offer employees the possibility to offset their air travel CO_2 emissions
- Utilize energy-saving technologies in offices and in office equipment/hardware.

Participation in external initiatives
- Continue to investigate opportunities to join further voluntary initiatives promoting energy efficiency across the industry
- Provide solutions and influence policy makers to realise the role and potential of ICT in reducing economies overall energy consumption when addressing climate change policies.

3.3.3. External targets.

WWF's Climate Savers Program
In addition to the commitments mentioned above (section 5.4.2), under this programme Nokia committed to:

- Use green electricity for 25% of total Nokia electricity consumption for the period 2007–2009, with an aim to increase it to 50% in 2010.

European Commission IPP Pilot Project on Mobile Phones
Under voluntary agreements made in stage 5 of the project[46], Nokia committed to:

- Introduce an environmental index for product energy efficiency by 31 October 2008
- Add a visual reminder on phone screens to unplug the charger from 2008, with all new product lines/families having the reminder in 2009
- Meet the requirements of the EU Code of Conduct for External Power Supplies, and include this requirement in supplier requirements.

See section 4.1.3 for further information on these commitments.

GSMA's Universal Charging Solution (UCS) initiative
In a commitment made under this initiative, in 2007 Nokia agreed that the majority of chargers shipped will meet efficiency targets set out by the OMTP (Open Mobile Terminal Platform).

See section 4.1.12 for further information on these commitments.

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[46] http://ec.europa.eu/environment/ipp/pdf/ipp_voluntary_agree_summary.pdf

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3.3.4. Performance highlights

Products and services
- Reduced the average no-load energy consumption of chargers by over 80% over the past decade, and of best-in-class chargers by over 95%
- Says it is on track to meet its 2010 target of reducing no-load charger consumption by 50% from 2006 levels
- Based on the IPP Pilot Project on Mobile Phones voluntary agreement (section 4.1.3), Nokia together with other manufacturers created and began using a Mobile Device Charger Energy Rating at the end of 2008
- All new Nokia chargers meet, or go beyond, the highest criteria of voluntary agreements such as the EU Code of Conduct and US Environmental Protection Agency's Energy Star, as well as the highest four and five star criteria of the IPP Pilot Project on Mobile Phones. For example, the newest chargers use up to 90% less power in no-load mode than the Energy Star requirement.
- First mobile manufacturer to put alerts into mobile devices reminding people to unplug their chargers once they are fully charged; such alerts incorporated across the entire mobile devices range from end 2008.
- Introduced a power save mode in some new devices
- First company to introduce a solar powered mobile phone, the Nokia 1610 Plus, in 1997

Operations
- Cumulative operational energy savings between 2007 and 2009 already met the 2012 target to save 6% of technical building maintenance systems' energy consumption
- Improved energy efficiency of employee PCs, resulting in an estimated 7% reduced energy consumption during 2008-2010
- Covered 35% of electricity in 2009 with renewables, by buying renewable electricity certificates for 100% of consumption in Finland, North America, and France; as well as smaller-scale certificates for the Australia office
- Overall, reduced CO_2 emissions by 7% compared to 2008 and 12% compared to 2006 (16% when excluding NAVTEQ, which was not part of Nokia when the targets were set) through renewable energy purchases and energy efficiency measures
- Included LEED Gold certification in the specification of key real estate projects, both new construction and major renovation
- Smaller sales packages, improved packaging efficiency during transportation, and use of alternative modes of transportation to reduce CO_2 emissions from logistics
- Reduced annual air-travel-related CO_2 emissions by 41% in 2009 compared to 2008
- Voluntary carbon offset scheme for flights on Nokia business, with payments funding a balanced portfolio of projects around the world that focus on renewable energy and energy efficiency

3.4. Solid waste

3.4.1. Strategy
Nokia's goal is to reduce all waste to a minimum, especially the waste destined to end up untreated in landfills and, as much as possible, to find uses for the waste produced, through improved procurement practices, reuse of materials, and better recycling. The company says that 65–80% of the materials in a Nokia mobile phone can be recycled to make new products, and that it works with qualified recyclers to ensure that obsolete devices are treated and disposed of properly at the end of their lives.

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3.4.2. Performance highlights

Products
- Started a pilot that gave customers the option of buying mobile devices without chargers (N79 in Nokia online stores in UK, Spain, Italy and France)

- Packaging is 100% recyclable

- Introduced fully renewable materials in the Nokia 3110 Evolve

- Nokia flagship stores, 5,000 Nokia Care points in around 85 countries globally, and some retailers take back Nokia mobile devices and components. Nokia also offers people in some countries the possibility to mail phones free of charge to a Nokia authorised recycler.

Operations
- Production scrap, invalid or obsolete components, mobile devices from Nokia employees, and old IT equipment are all recycled

- New factory in Romania factory has a best practice waste management system, including dedicated recycling of materials such as cardboard, paper, plastic, glass, and metals

- Around half of the construction waste for the Romania factory was reclaimed and recycled

- Overall, increased the waste utilization rates for the whole company, including offices, from 84% in 2008 to 91% in 2009; this includes solid waste that is reused directly, recycled into materials, or used as a source of energy.

3.5. Water

3.5.1. Strategy & targets
Water at Nokia facilities is mainly used for sanitary and catering purposes, and to a smaller extent in gardening and facilities management, such as cooling towers. Production processes do not consume water. **Performance highlights**

- Introduced water-saving devices and systems in a new factory in Romania that save 30% of water compared with an ordinary factory

3.6. Biodiversity

3.6.1. Strategy & targets
The *Nokia Sustainability Report 2009* says that biodiversity issues are growing in importance in the company's environmental focus areas; however, see note below re engagement opportunities.
Performance
Nokia says its activities in facilities do not cause significant impacts on biodiversity. It names two facilities (leased office in San Diego, USA and owned factory in Manaus, Brazil) as being located next to a local wildlife protection area and close to a non-protected, high biodiversity area, respectively, and says it is following local requirements and taking voluntary action to avoid negative impacts on local biodiversity.

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Reputation

3.7. Overview

Nokia appears to have a good reputation, . The Nokia entry on Wikipedia does not mention any controversies, the company has been named as Dow Jones Sustainability Index World Technology Supersector Leader for the last two years, and it was ranked top in each of Greenpeace's quarterly greener electronics rankings in 2009. However, not many online media articles were found on the environmental features of Nokia products.

3.8. CSR performance indicators

Good performance

- Named as Dow Jones Sustainability Index World Technology Supersector Leader (2009 and 2010)

- Listed on the FSTE4Good index

- Named as one of the top 5 mobile device manufacturers in terms of sustainability policies and practices (along with Apple, LG, Samsung, and Sony Ericsson) by the International Data Corporation (IDC); cited as being particularly strong in the area of recyclable materials and as having gone the furthest in the use of recycled materials (2010)[47]

- Received first GSMA (mobile communications industry association) CEO Award for Outstanding Environmental Contribution (2009)

- Included in the group of 12 best-performing companies in the Carbon Disclosure Project performance rating, and one of the six disclosure score leaders with the 5th-highest score among 111 information technology companies (2009)

- Top in each of Greenpeace's quarterly greener electronics rankings (2009)

- Winner "Best Green Internal Communications" Green Award[48], which recognizes companies that have used marketing and communications campaigns to promote the issue of environmental sustainability in a creative manner (2008)

- Nokia India awarded V&D 100 Green Company of the Year Award (2009)

3.9. Online media

Most online media articles and Nokia-related blogs[49] were reviews or announcements about Nokia products and operating systems. Some mentioned recent market share loss by Nokia, the declining share price, a law suit with Apple over patent issues, and management changes including the appointment of former Microsoft executive Stephen Elop as the new Nokia CEO, replacing Olli-Pekka Kallasvuo.

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[47] http://www.idc.com/getdoc.jsp?containerId=prUS22477810
[48] http://www.greenawards.co.uk/home
[49] http://www.nokiaphoneblog.com/, http://mynokiablog.com/, http://nokiaexperts.com/

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Articles below, were found that positively mentioned Nokia's environmental work. These were:

- Five product reviews mentioning environmental features (E7[50], 3110 Evolve[51],[52], N97 Eco[53], Eco Sensor Concept[54]) (note that most product reviews found did not mention any environmental features)
- Articles on the launching of Nokia's Take Back Program in New York[55], Lebanon[56] and India[57], which aims to raise environmental awareness and provide practical solutions for recycling of mobile phones and accessories; and article on a Nokia recycling event in the US[58]; and one article generally on Nokia and recycling[59]
- Two articles on Nokia's ranking in Greenpeace's Guide to Greener Electronics[60],[61]
- One article on Nokia developing a mobile phone that recharges without mains power[62]

One 2009 academic article on the evolution of collaborative corporate political activity by Nokia in the EU says that the company "has so far been one of the few companies in the electrical and electronics industry that have lobbied for the collection of material data also beyond the scope of existing legislation, i.e., the RoHS requirements" and that Nokia has adopted a positive, rather than combative, approach towards environmental policy-making[63].

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[50] http://www.articlesnatch.com/Article/Environmental-Features-Of-The-Nokia-E7/1585064
[51] http://www.intomobile.com/2007/12/05/nokia-3110-evolves-into-environment-friendly-device/
[52] http://techtickerblog.com/2007/12/04/nokia-3110-evolve-is-environment-friendly/
[53] http://www.shinyshiny.tv/2009/01/nokias_n79_eco.html
[54] http://www.zegreen.com/environment/nokia-connecting-people-with-their-environment/
[55] http://www.inhabitat.com/2007/11/07/nokia-recycling-program-launches-in-nyc/
[56] http://www.iloubnan.info/environment/actualite/id/47586/titre/Take-Back-Program:-Nokia-and-AFDC-join-efforts-to-raise-awareness-on-mobile-recycling
[57] http://techglimpse.com/index.php/recycle-your-old-mobiles-says-nokia.php
[58] http://www.abs-cbnnews.com/entertainment/12/12/08/celebrities-join-nokias-e-recycling-campaign
[59] http://www.piranet.com/recycling/recycle-your-mobile-phone-help-environment/
[60] http://www.physorg.com/news194071134.html
[61] http://news.softpedia.com/news/Nokia-is-The-Most-Environment-Friendly-Manufacturer-42066.shtml
[62] http://www.guardian.co.uk/environment/2009/jun/10/nokia-mobile-phone
[63] http://onlinelibrary.wiley.com/doi/10.1111/j.1468-5965.2008.01834.x/pdf

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4. Methodology

Except where indicated, the information on Nokia in this report was taken from the Nokia global website[64] and the *Nokia Sustainability Report 2009*[65].

Internet searches
The following search engines were queried (English results only) over the period of 30 September–1 October 2010:

- Google
- Google News

The following search terms were used:
Nokia; Nokia environment; Nokia controversy; Nokia biodiversity

5. Conclusion /Summary

The materials used in Nokia products and processes must be safe to people and the environment. Meeting health and environment regulatory requirements is a priority and a basic requirement for them. Nokia is an industry leader in substance management. They promote innovative and sustainable material choices and work on this in close collaboration with suppliers. (e.g. their use of bio plastics in their covers since 2007). Other recent product launches (The Nokia C7 and the Nokia C6-01) both introduce innovations in sustainable use of materials. (bio paints). Packaging is 100 % recyclable. All of the materials in Nokia devices can be used again to make new products or generate energy, so nothing is wasted.

Nokia is growing rapidly and has identified a need to work with environmental organisation like IUCN to further their ambition in environmentally sound developments. One main component of this is to match their vast media / customer channels to communicating environmental issues. We are developing a "frame" partnership with Nokia which allows us to identify particular projects, programmes and potential opportunities. This may well include opportunities to influence some of their direct impacts noted above. We are currently developing a partnership for support in the following areas -:

Areas of Co Operation with IUCN-:

- Miyun Watershed, sponsorship for 2 years including communications

- Save Our Species. A founding corporate partner alongside GEF and the World bank, (funding and communications) to deliver on the ground species conservation. (see www.SOSpecies.org)

- Further sponsorship and communication support for Balkila watershed project in the Himalayas, identifying opportunities to address issues of climate change and natural resource loss , aligning the goals of both organisations.

- Potential future work, Nokia's Biodiversity impact assessment.

There are strong links between IUCN's mission and programme and the interest of Nokia to fund, communicate and engage on the principle projects listed above. As a progressive sector leader in a fairly low impact sector the results of this report should not pose any risks to IUCN . The above represents an updated due diligence

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[64] http://www.nokia.com/
[65] http://nds1.nokia.com/NOKIA_COM_1/Corporate_Responsibility/Sustainability_report_2009/pdf/sustainability_report_2009.pdf

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following on from a similar report for the Miyun watershed funding. Both reports present a generally positive view of the potential engagement between IUCN and Nokia. The report also serves as a benchmark for identifying further areas of collaboration.