

# Environmentally sustainable business

# Environmental issues are center stage



# Let's aim high – net positive impact on the environment



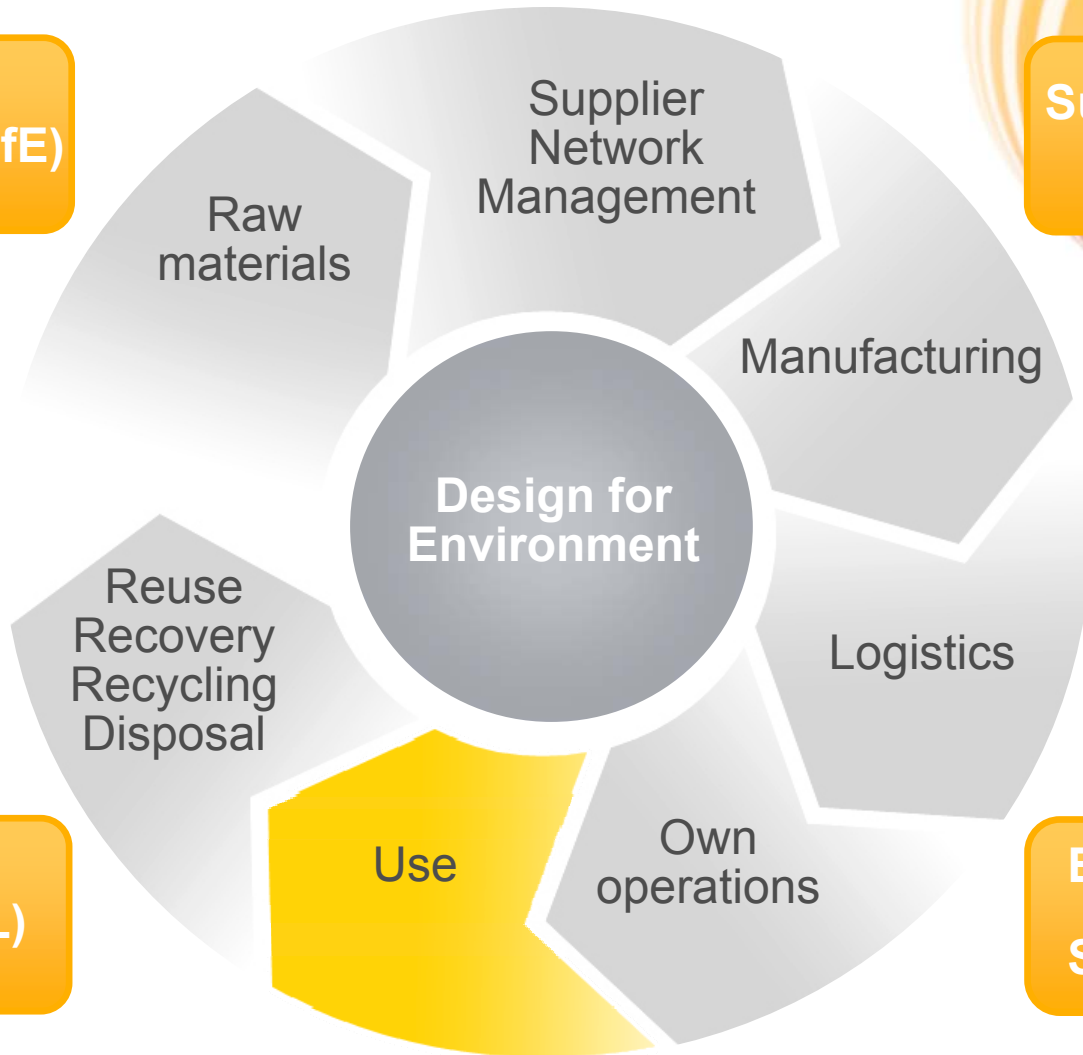
**Minimize**  
Life-cycle thinking

**Combine**  
Environmentally sustainable business solutions

**Maximize**  
Expansion and innovations for use of communications technology and services in the society

# Basis for our environmental work – life-cycle thinking and long experience

**Design for Environment (DfE)**



**Supplier Network Management**

**End-of-Life Practices (EoL)**

**Environmental Management Systems (EMS)**

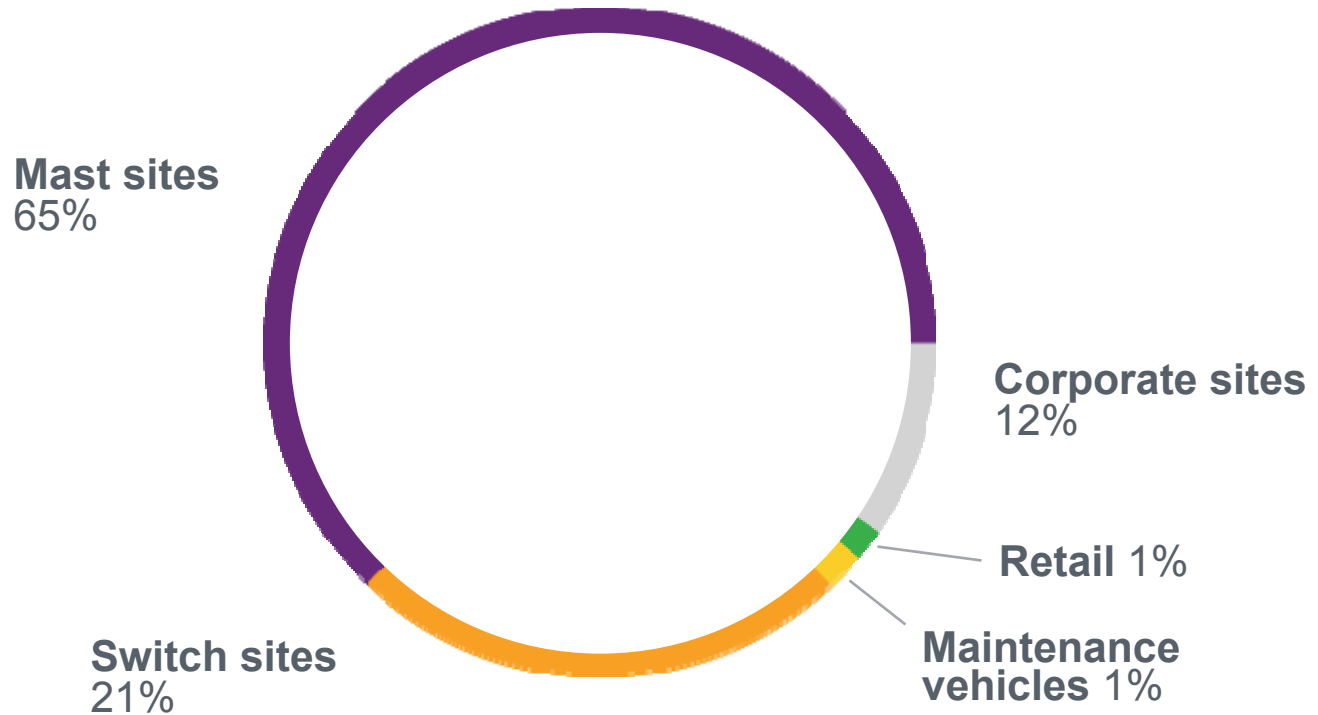
Minimize

# CSPs' energy use is mostly in the network...

Minimize

## Communications Service Providers (CSP)

~ 86% of a CSP's energy is used by the Network



Source: ABI Research

# CSPs' are announcing environmental targets

Minimize



Reduce intensity of GHG emissions by 15%, by 2012



By 2020, reduce worldwide CO2 emissions per unit of BT's contribution to GDP by 80% from 1996 levels



Reduce CO2 emissions for Deutsche Telekom Group by 20% below 2006 levels by 2020



Reduce CO2 emissions for FT Group by 20% below 2006 levels by 2020



30% increase (vs 2007) of the eco-efficiency indicator for 2008: the objective for 2008 is 1,130 Bit/Joule (the value for 2007 is 873 B/J)



Reduce absolute CO2 emissions by 50% against the 2006/07 footprint baseline, by 2020

Source: GeSI report SMART2020

RS9

same here, add minimize  
Rounaja Saara, 11/18/2009

# Case example: Western European GSM network

## Current Network

- 10000 BTS sites, 5 year old equipment
- 70/30 split indoor/outdoor sites
- 4+4+4 and 2+2+2

## Energy consumption

- Energy consumption 171 GWh/year
- Cost 20.5 M€/year

## Objective

- Reduce energy consumption
- With existing sites and hardware

## Methods used

- Decrease cooling in indoor sites
- DTX and night time power saving features

## Result

- 51 GWh energy saving per year (-30%)
- 6.1 M€ decrease in electricity bill

## What does saving 51 GWh energy mean?

- 26 000 tons less CO2 emissions
- 5000 households yearly energy consumption
- If produced with coal, 6 000 tons coal saved



# Case example: Western European GSM network

## Current Network

- 10000 BTS sites, 5 year old equipment
- 70/30 split indoor/outdoor sites
- 4+4+4 and 2+2+2

## Energy consumption

- Energy consumption 171 GWh/year
- Cost 20.5 M€/year

## Objective

- Reduce energy consumption
- With existing sites and hardware

## Methods used

- Decrease cooling in indoor sites
- DTX and night time power saving features

## Result

- 51 GWh energy saving per year (-30%)
- 6.1 M€ decrease in electricity bill

## With New Hardware:

- 109 GWh saving (-64%)
- 13.1 M€ decrease in electricity bill
- 55 000 tons less CO2 emissions

# Nokia Siemens Networks and environment: key milestones

Drive to build competitive advantage from environmental performance

First phase of Energy Efficiency solution launched



Global partnership signed with WWF

Renewable energy announced for being the first choice for remote base station sites by 2011



First infrastructure vendor to join WWF's Climate Savers programme

Second phase of Energy Solutions launched

April 07

Nov 07

Jan 08

Mar 08

Jun 08

Nov 09

# Award winning products and first-class environmental commitment

## CTIA E-Tech Awards 2009

- Greenest Network Innovation  
Flexi Multiradio Base Station

## Global Mobile Awards 2009

- Best Technology Advance Winner  
Flexi Multiradio Base Station
- Outstanding Environmental Contribution  
Nokia Group
- Green Mobile Award  
Environmentally Sustainable Business initiative  
(nominee)

## Sustainable Energy Europe Awards 2009

- Market Transformation  
Flexi Base Station (nominee)

## Dow Jones Sustainability Index 2009

- Supersector Leader in the Technology category
- Nokia Siemens Networks included in the review  
as a business segment of Nokia

“This is a good example of how technological innovation can contribute to improved energy efficiency and profitability, while reducing a company’s ecological footprint. The fight against climate change requires all the ingenuity and commitment that the corporate sector has to offer”.

Jean-Paul Jeanrenaud, Director of Corporate Relations at WWF International



# **Nokia Siemens Networks Energy Solutions offering**

## **How we are helping CSPs' achieve their business & environmental targets**

# 3 reasons why energy efficiency matters

## Energy efficiency = OPEX efficiency

- In mature markets, up to 10% of network OPEX is used on energy
- In developing markets, it can be from approx. 15% up to even 30% of networks OPEX for energy
- Fossil fuel prices remain volatile with high dependency

## Lack of electricity supply

- Networks are expanding into rural and suburban areas – grid availability and/or quality is challenging
- 1.6bn people lack access to grid electricity (“off-grid”)
- An additional 1bn people have unreliable access (“bad-grid”)

## Climate change

- Average temperature is increasing annually
- Carbon emissions remain the second largest contributor to green house gas emissions after methane
- Ethical purchasing behavior among consumers becoming mainstream

# Nokia Siemens Networks Energy Solutions: an innovative combination of services and systems

## Understand and propose

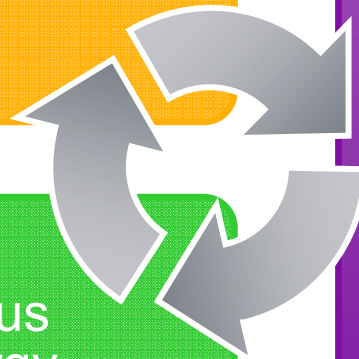
Current energy system analysis and efficiency improvement proposal

## Operate and maintain

OPEX reduction via continuous improvement of network energy efficiency

## Deliver

Complete reliable energy solution by combining efficient services and energy systems

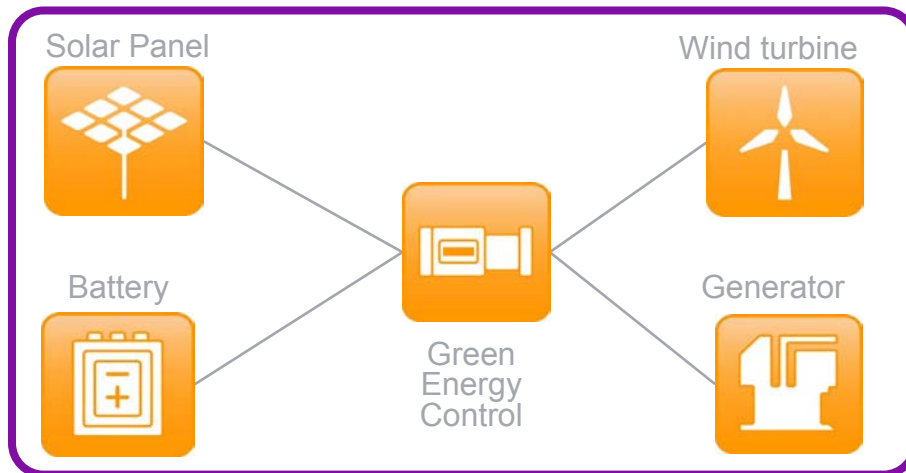


# Nokia Siemens Networks Off-Grid Site Solution

## Customer opportunities:

- Cover new potential markets in rural and remote areas

- Reduces generator runtime up to 1/10th (solar hybrid)
- Saves up to 20K liters/year on a typical off grid site
- Provides connectivity to rural/remote areas



Renewable energy sources and green energy control to manage the site



# Nokia Siemens Networks Energy Modernization

## Customer opportunities:

- Energy OPEX reduction with minimum CAPEX investment

- Increases battery life from 2.5 to greater than 5 years
- Reduces toxic waste (lead, other chemicals)
- Optimizes energy consumption in cooling and air-conditioning

BlueStar Battery



SiteStar Cabinet

0.9m and 1.8m high cabinets for optimal battery cooling at very low power consumption

Improved battery back up solution





# Nokia Siemens Networks Green Energy Control

## Customer opportunities:

- Reduce OPEX by remotely managing energy sources

- Allows remote monitoring and controlling of energy consumption at site
- Up to 70% of OPEX savings
- Up to 50% reduction of carbon footprint



Interfaces all power sources and smartly manages performance remotely



# SMART2020: Enabling the low carbon economy in the information age

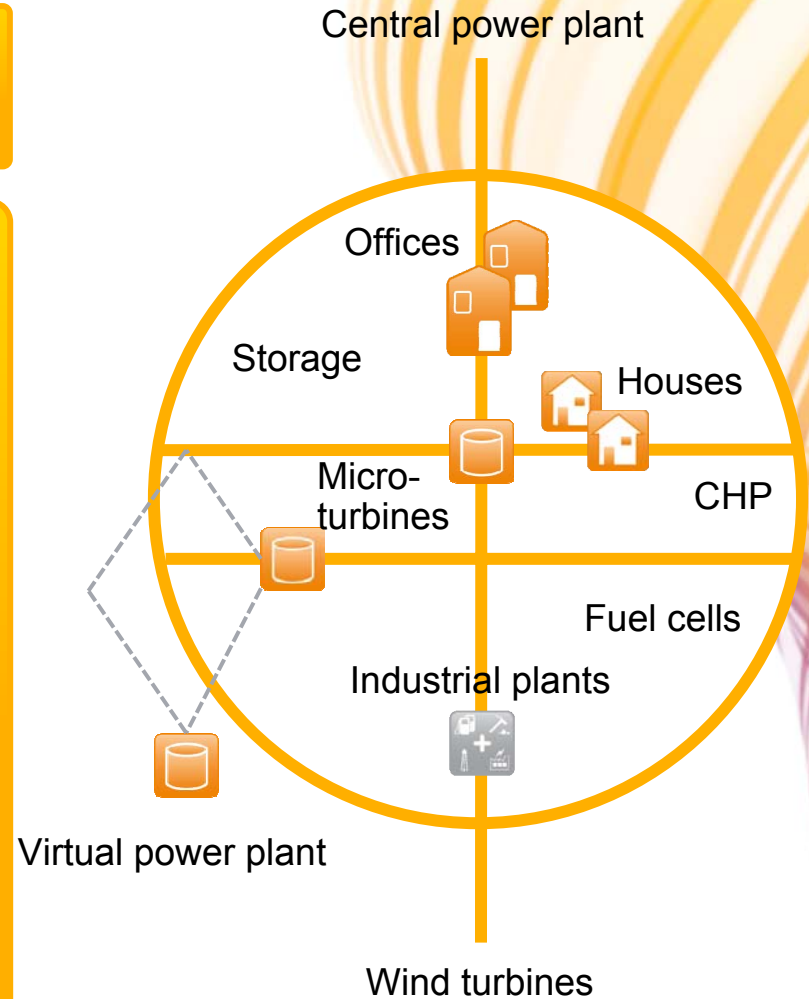
Maximize

A report by The Climate Group on behalf of the Global eSustainability Initiative (GeSI)

- **ICT's own sector footprint currently is two per cent of global emissions and will almost double by 2020**
- This is countered by the sector's unique ability to
  - monitor and maximize energy efficiency both within and outside of its own sector
- **ICT could cut CO2 emissions by up to five times ICTs own footprint**
- The biggest and most accessible opportunities identified: smart motors, smart logistics, smart buildings and smart grid.

# Use of telecom expertise and technologies in the energy sector

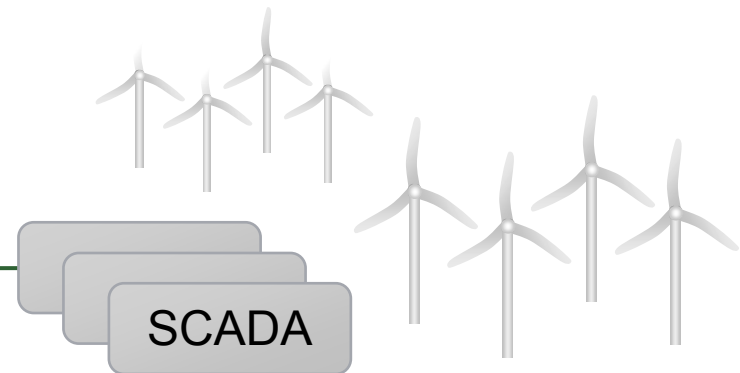
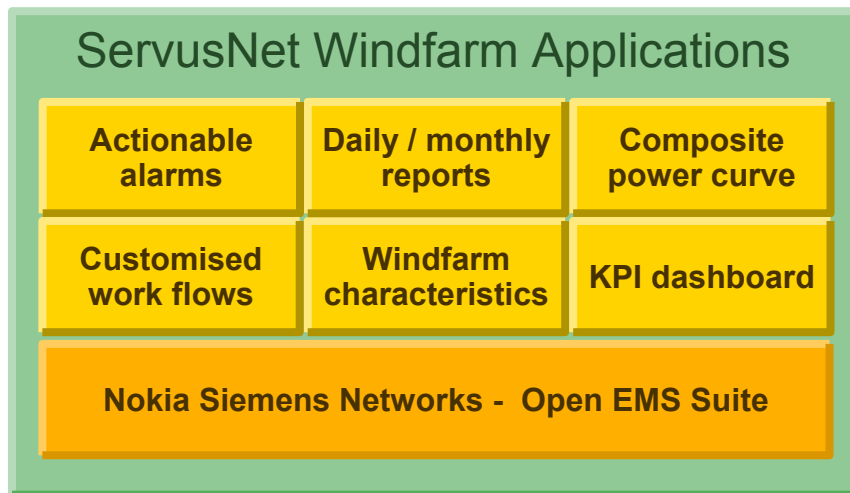
- Electricity grids partly based on decisions 120 years ago
- Telecom sector has expertise and technology required by intelligent power grids and smart meters
- Nokia Siemens Networks aims to apply its existing charging, mediation, service management and network management solutions, and to work with third parties, to exploit opportunities in the intelligent energy market.



# Nokia Siemens Networks and ServusNet

## Efficiency for wind parks

- ServusNet's solution helps operators address
  - Maximizing energy production
  - Reducing operating costs
  - Enhancing production planning accuracy
- Nokia Siemens Networks helps ServusNet with
  - A common management system for different technologies and different vendors
  - Fast time to market by decoupling integrations from applications
  - In-built scalability and high availability
  - Reduced risk with open mainstream IT technologies



# Let's aim high – net positive impact on the environment



**Minimize**  
Life-cycle thinking

**Combine**  
Environmentally sustainable business solutions

**Maximize**  
Expansion and innovations for use of communications technology and services in the society