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Siemens releases study on sustainable infrastructure in London

- **First comprehensive analysis of costs and potentials of greenhouse gas abatement technologies in a city**
- **Identified reduction potential for London in 2025: ~20 megatonnes CO₂ (~44 percent reduction compared to 1990)**
- **Additional investments required annually: less than 1 percent of London's total economic output until 2025**
- **About two-thirds of the necessary investments would pay for themselves**

London can meet international greenhouse gas reduction targets without a dramatic shift in its citizens' lifestyle. This is a central finding of the study "Sustainable Urban Infrastructure" presented today in London at the Siemens Media Summit. Adopting currently available technologies could reduce annual CO₂ emissions in the British metropolis by nearly 44 percent – almost 20 megatonnes (Mt) – by 2025 compared to 1990. Working with Siemens, the international management consultants McKinsey & Company analysed more than 200 technological levers that reduce greenhouse gas emissions, water usage and waste disposal in the city. The study shows that the adoption of many technologies for reducing greenhouse gases also makes good economic sense. Almost 70 percent of the potential abatement could be achieved with the help of technologies that would pay for themselves, largely by reducing energy costs.

Major cities play a decisive role in fighting climate change: Over half of the world's population lives in urban centres today, and the number is likely to grow to nearly 60 percent by 2025. Cities are responsible for some 80 percent and, therefore, a disproportionate share of the world's greenhouse gas emissions. Confronting this challenge, London has set ambitious goals in combating climate change: By the year

2025, it aims at reducing greenhouse emissions by 60 percent compared to the reference year of 1990 set in Kyoto.

The newly released study for the first time comprehensively examines the costs and potentials of technological levers to reduce greenhouse gases for a city– from the point of view of decision-makers (investors, homeowners, consumers, companies and others).

The findings: Overall, greenhouse gas emissions from buildings, transport and energy supplies can be reduced by around 44 percent by 2025, compared to 1990 – enabling London to meet its Kyoto target (-12 percent by 2012), the EU goal (-20 percent by 2020) as well as the national reduction target set by the UK government (-30 percent by 2025). Beyond that, a combination of additional regulatory changes, lifestyle change brought about by other means, and future technological innovation could also help the city bring its goal of reducing greenhouse gas emissions by 60 percent by 2025 into reach. “With the help of technologies available today, London could not only fulfil its international obligations, but come close to meeting its own ambitious climate goals without a massive shift in its citizens’ lifestyle,” commented Siemens CEO Peter Löscher on the study findings.

The study also shows that investments in these technologies can make good economic sense: Nearly 70% of the identified saving potentials of nearly 20 Mt of CO₂ could be achieved with technologies that would pay for themselves through their energy savings. Until 2025, an incremental total investment of around €41 billion – an amount less than one percent of London’s total economic output – would be needed to implement all the identified technologies. This is roughly in line with the findings of Nicholas Stern’s 2006 report (Stern Report), which places the cost of slowing the impact of greenhouse gases at up to one percent of global GDP per year. Should nothing be undertaken, the Stern Report estimates that an unchecked rise in global temperatures could cost up to 5-10 percent of the global GDP.

Study findings for sustainable infrastructure

- The biggest saving potential lies in buildings, which generate some two-thirds of London’s entire CO₂ emissions. By the year 2025, savings of around 10 Mt of CO₂ could

be achieved in London's buildings alone. Overall, investments of roughly €20 billion would be necessary. Nearly 90 percent of these pay off for those making the investment decisions. Energy-efficient lighting in London households is the single most cost-efficient measure and would cut CO₂ emissions by 400,000 metric tonnes, saving €270 per tonne abated. The greatest reduction – a total of 4.5 Mt – could be achieved through improved insulation.

- Greenhouse gas emissions from transport could be reduced by 25 percent or roughly 3 Mt CO₂ a year by 2025. This would require investments totalling €12.5 billion. Automobile fuel-efficiency offers by far the greatest saving potential (1.2 Mt CO₂). In public transport, which is already more efficient, an additional 400,000 tonnes of CO₂ could be saved with measures such as a switch to hybrid buses.
- After exploiting all technological levers in buildings and transport, CO₂ emissions from energy supply could be reduced by a further 6.2 Mt. At the local level, the use of various combined heat and power systems offers by far the greatest savings potential at 2.1 Mt CO₂ a year by 2025. An additional 3.7 Mt CO₂ could be eliminated by measures related to the national grid mix: For example, increasing the share of power generation with gas (instead of coal) would cut London's emissions by 1.2 Mt CO₂. The increased use of renewable energy sources above and beyond previously defined targets would reduce London's CO₂ balance by another 800,000 tonnes of CO₂.
- London currently loses over 30% of its water production through leakages in its 4,800-kilometer distribution system – the equivalent to the volume needed to fill about 350 Olympic swimming pools every day. Savings on the demand side would therefore be especially effective: For every litre of water saved by consumers, nearly one-and-a-half litres less need to be filtered and pumped into the system. A total of around 65 million cubic meters of water – approximately 13% of the city's total consumption – could be saved through economically sensible measures every year by 2025.
- In view of high and rising landfill fees and taxes in England, there are also economically interesting alternatives to waste treatment. In addition to recycling, there are a number of technologies that use household garbage to generate electricity – either by converting it into biogas or by burning it. The energy generated in this way can supply thousands of households with electricity and heat.

The study also shows: Nearly 75 percent of these technological changes are controlled by consumers – whether individuals or businesses. Therefore, cities at all levels need to address not only what they can do to directly reduce CO₂ emissions but also how they can promote greater adoption of these technologies by consumers. Depending on the technology, this can be achieved through changes in regulation, taxes, subsidies, access to capital and provision of reliable information, as well as marketing and campaigning to raise public awareness and encourage consumers to make choices that are both economically and environmentally sound. Cities can also help bring together the various stakeholders who need to cooperate in order to make change happen.

The study's methodology:

The study "Sustainable Urban Infrastructure" identifies technological levers for reducing greenhouse gas emissions and their costs in the three sectors buildings, transportation and energy supply. The economic evaluation has been made from the point of view of decision-makers – that is, of those who invest in the abatement levers (businesses, homeowners, car buyers, etc.). More than 200 individual levers were analysed using uniform, cross-sector methodologies. To estimate potential savings, the study assumed a maximum, realistic implementation rate for the relevant technologies (capture rate) and compared the resulting emissions with those to be expected if today's rate of implementation were to continue unchanged into the future. The report did not take into account changes in individual behaviour that are above and beyond purchasing decisions (such as turning down thermostats or changing driving behaviour to save petrol).

Siemens AG (Berlin and Munich) is a global powerhouse in electronics and electrical engineering, operating in the industry, energy and healthcare sectors. The company has around 400,000 employees (in continuing operations) working to develop and manufacture products, design and install complex systems and projects, and tailor a wide range of solutions for individual requirements. For over 160 years, Siemens has stood for technical achievements, innovation, quality, reliability and internationality. In fiscal 2007, Siemens had revenue of €72.4 billion and income from continuing operations of €3.9 billion (IFRS). Further information is available on the Internet at: www.siemens.com.

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MENJAWAB TANTANGAN MEGACITY DENGAN INOVASI TEKNOLOGI

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Pandangan mata dunia mengarah ke kota London, Inggris, khususnya terkait masalah issue lingkungan hidup dalam hal memerangi imbas pemanasan global. London merupakan salah satu megacity dengan berbagai permasalahan dan layak dijadikan acuan dalam menghadapi tantangan di masa depan bagi seluruh kota besar dunia. Setidaknya, 80 persen polusi dunia (efek rumah kaca) ditimbulkan oleh kota-kota besar. London akan dijadikan “kota percobaan” dalam mengukur kemampuan dunia menghadapi efek pemanasan global.

Berdasarkan study berjudul “Sustainable Urban Infrastructure – London: A view to 2025” masalah pengelolaan tata kota dan infrastruktur dalam menghadapi berbagai persoalan yang muncul di sebuah kota “urban” terkait transportasi, energi, sumber daya air, pengelolaan sampah, dst. Istilah “Megacity” dibakukan untuk mendefinisikan sebuah kota yang dipadati lebih dari 10 juta penduduk. Sementara definisi lain menyebutkan, kepadatan penduduk atau kepadatan populasi mencapai lebih dari 2.000 orang per kilometer persegi.

“London dianggap mewakili sebuah kota besar yang punya karakteristik sesuai atau menyerupai kota-kota besar lainnya di dunia dengan kompleksitas persoalan yang mirip. London juga dianggap mampu mencapai target-target pengelolaan lingkungan hidup standar internasional – tanpa harus terlalu ‘menekan’ penduduknya untuk mengubah gaya hidup mereka secara drastis. Siemens AG dari Jerman bekerjasama dengan McKinsey & Company mengupas persoalan dan tantangan kota London terkait issue-issue lingkungan hidup. Judul kajiannya “Sustainable Urban Infrastructure” dan nantinya metode penelitian serta realisasi kebijakan Pemerintah Kota London akan menjadi acuan dalam menangani permasalahan megacity di seluruh dunia. Kajian ini cukup menghasilkan kesimpulan bahwa dengan kebijakan yang agresif di berbagai sektor, London mampu mereduksi 70 persen dari tingkat polusi yang dihasilkan dengan memanfaatkan teknologi tinggi. Setidaknya, kajian McKinsey & Co., serta Siemens, mencakup 200 riset dan inovasi teknologi yang dapat digunakan untuk mereduksi tingkat polusi atau imbas rumah kaca di kota besar seluruh dunia,” demikian menurut Peter Loescher, President and CEO Siemens AG.

Tantangan yang dihadapi kota-kota besar dunia umumnya serupa, yaitu masalah populasi, kepadatan populasi, penyebaran populasi, sektor usaha atau ekonomi formal dan informal, begitu juga dengan merebaknya kemiskinan, meningkatnya angka kriminalitas, dan tentu saja gesekan-gesekan masalah sosial lainnya. Megacity, dapat merupakan sebuah kota yang sungguh-sungguh berdiri sendiri. Bisa juga dua kota atau bahkan beberapa kota yang semakin lama semakin padat dan ‘bersatu’ membentuk sebuah megacity yang begitu kompleks. Pada tahun 2030, menurut kajian PBB, 3 dari 5 penduduk dunia, tinggal di kota besar. Persoalan inilah yang harus dihadapi.

Tantangan yang harus dihadapi, cukup dengan membayangkan, apa yang akan terjadi jika belasan bahkan puluhan juta jiwa berada dalam sebuah kawasan tertentu secara bersamaan. Tahun 2000, tercatat ada 18 megacity yang harus menampung lebih dari 10 juta jiwa sekaligus setiap hari, misalnya Tokyo, New York, Mexico, Buenos Aires, Bombay, Sao Paulo, Karachi. Tokyo (Greater Tokyo Area) kini,

bahkan telah dipenuhi 35 juta jiwa, ini setara dengan penduduk Canada. Tahun 2025 nanti, menurut kajian Far Eastern Economic Review, di Asia terdapat 10 megacity dengan total penduduk lebih dari 20 juta tiap kota, termasuk Jakarta (24,9 juta jiwa), Dhaka (25 juta jiwa), Karachi (26,5 juta jiwa), Shanghai (27 juta jiwa) dan Bombay (33 juta). Menurut analisis China, penduduk yang tinggal di kota-kota besar China akan mencapai 800 juta jiwa pada tahun 2020.

Data The Brinkhoff, menyebutkan: sembilan megacity di urutan pertama: Tokyo, Jepang, (33,600,000), Seoul, Korea Selatan (23,400,000), Mexico City (22,400,000), New York City, USA (21,961,994), Mumbai (21,600,000), New Delhi (21,500,000), São Paulo, Brazil (20,600,000), Los Angeles, USA (18,000,000), Shanghai, China (17,500,000). Kota-kota berpenduduk pada lainnya: (dalam juta): Osaka (16.7), Cairo (16.1), Buenos Aires (16.0), Calcutta (Kolkatta) (15.7), Metro Manila (15.6), **Jakarta (15.1)**, Karachi (15.1), Dhaka (12.6), Beijing (12.8), Lahore (12.7), London (12.5), Paris (12.0), Istanbul (11.8), Rio de Janeiro (11.5), Tehran (10.2), Lagos (10.1), Moscow (10.1), Bangkok (10.1).

Untuk masalah tantangan megacity, studi dilakukan oleh GlobeScan dan MRC McLean Hazel, tentu masih disupport oleh Siemens untuk pendanaannya. Riset dilakukan oleh sekitar 500 tenaga ahli di seluruh dunia dan mencakup 25 megacity. Yang diprioritaskan pertama kali adalah mengurai masalah transportasi umum. Ini permasalahan yang begitu kompleks, karena terkait perkara tata ruang hingga dana yang sangat besar untuk menghadirkan system sarana transportasi umum yang memadai.

Kota-kota besar dengan puluhan juta kendaraan, telah mencemari lingkungan dengan tingkat polusi yang sangat mengerikan. Ini harus menjadi prioritas. Setelah itu, bagaimana setiap kota besar mampu memenuhi supply energi. Salah satu hasil inovasi Siemens, yaitu pembangkit listrik tenaga angin. Teknologi ini sudah lama dikuasai manusia, tetapi kini dengan inovasi yang mutakhir, serta penempatan di laut lepas (off shore) turbin pembangkit listrik tenaga angin semakin efektif. London sendiri memesan puluhan turbin pembangkit listrik buatan Siemens. Ini merupakan pemecahan paling efisien dan yang pasti ramah lingkungan.

London Sustainable Exhibition

London Sustainable Exhibition dibuka oleh Peter Loescher, President & CEO Siemens AG dan Richard Barnes, Statutory Deputy Mayor of London (Deputy Wali Kota London). Lokasi Exhibition berada di ruang terbuka persis di sebelah City Hall, bangunan unik yang berada di tepian Sungai Thames.

Ribuan pengunjung dapat menyaksikan berbagai Inovasi Teknologi hasil R&D Siemens yang khusus mengembangkan sumber daya energi alternatif yang ramah lingkungan. Antara lain Wind Turbine mutakhir yang kini telah mendapat pasaran sangat baik di negara-negara Eropa dan Amerika Serikat.

“Berdasarkan inovasi teknologi, dunia mampu menjawab berbagai tantangan terkait kelangkaan dan mahalnya sumber energi. Dari hasil pengembangan di sektor energi ramah lingkungan, Siemens AG pada tahun 2007 mampu memperoleh laba bersih hingga mencapai 17 miliar Euro. Potensi perolehan laba dari sektor energi alternatif begitu terbuka, karena belum banyak perusahaan global yang terjun ke bisnis serupa,” demikian ungkap Peter Loescher lebih lanjut.