1	2	3
5.	Madhya Pradesh and Chhattisgarh	23177
6.	West Bengal, Odisha, Sikkim, Andaman and Nicobar	41710
7.	Assam and Arunachal Pradesh	8995
8.	Delhi, Haryana and Chandigarh	25098
9.	Uttar Pradesh and Uttarakhand	57207
10.	Andhra Pradesh	34396
11.	Punjab and Himachal Pradesh	88992
12.	Jammu and Kashmir	6102
13.	Tamilnadu and Pondicherry	38392
14.	Bihar and Jharkhand	22428
15.	Nagaland, Meghalaya, Manipur, Mizoram and Tripura	4611
16.	Kerala and Lakhadweep	18678
	TOTAL NO. OF TOWERS	4,95,550

Promotion of green telecom sector

3164. SHRIMATI VASANTHI STANLEY : Will the Minister of COMMUNICATIONS AND INFORMATION TECHNOLOGY be pleased to state:

(a) the contribution of Information and Communication Technology (ICT) sector to reduce country's carbon dioxide emission; and

(b) the steps the Ministry is taking to promote green telecom sector?

THE MINISTER OF STATE IN THE MINISTRY OF COMMUNICATIONS AND INFORMATION TECHNOLOGY (SHRI SACHIN PILOT) : (a) and (b) The Department of Electronics and Information Technology does not deal with any matter directly related to Green Telecom Sector, the Department has, however, supported following R&D projects on Green Electronics, Information and Communication Technology:

Some of the on going projects

(i) "Development of ICT Technologies for Smart Building with Low Carbon Emissions" to develop technologies and tools for design, development

and maintenance of Illumination control, HVAC (Heating, Ventilation and Air Conditioning), Air Quality measurements and Control Systems for Buildings is being implemented jointly at C-DAC, Chennai and C-DAC, Bangalore.

(ii) "Development of Lead Free X-ray absorbing coating materials for CRT TV" to replace the hazardous lead contain in CRT glass shell with environment friendly phospho-silicate glass composite/ phosphate composite as an X-ray absorbing coating has been completed at C-MET, Pune. The second phase of the project entitled, "Development of Prototypes Aprons, Glass sheets and Curtains from Lead-Free X-ray absorbing materials" is now being carried out at C-MET, Pune.

(iii) "Novel recovery and conversion of Plastics from Waste Electrical and Electronic Equipment Directive (WEEE) to value added products" to develop an environmentally friendly process to obtain recycled plastics from e-waste (ABS, HIPS, PP, PVC, PC) and also to develop value added products from waste plastic is being implemented at CIPET, Bhubneswar- an autonomous academic institute under Department of Chemical & Petrochemicals, Ministry of Chemicals & Fertilizers, Government of India.

In order to promote green electronics and clean energy DietY is implementing projects on alternate sources of energies. These include:

(iv) "Hybrid Solar Cells based on Organic Polymers and Inorganic Nano particles" is being carried out by C-MET, Pune in collaboration with MBIL, Greater Noida.

(v) Project on "Fabrication of solar cells based on Chemical Bath Deposition (CBD) technique" has been initiated to implement at Sibsagar College, Joysagar, Assam.

(vi) The project entitled "Nature-inspired low cost organic and their nano composites based photovoltaic solar cells" is being carried out at University of Allahabad.

(vii) DeitY is also supporting a project on "Solar cells based on quantum dots and organic semiconductors: Hybrid devices" for implementation at IACS, Kolkata.

To decrease the energy required for lights, work on LED, OLEDs is being actively carried out. These include:

(viii) A project entitled "Ultra Violet Light Emitting Diodes grown by Molecular Beam Epitaxy for Solid State Lighting" is being implemented at University of Calcutta, Kolkata to develop Ultraviolet Light Emitting Diode (LED) from III-V Nitride materials, Quantum wells and Quantum Dots and Fully packaged Ultraviolet LED devices.

(ix) Another project on "Innovative Light Extraction Technology for White OLEDs" is being pursued jointly by IIT (Delhi), IIT (Roorkee) and Moser Baer India Ltd., Noida to develop a proof of concept device using a novel light out-coupling strategy for White OLED device for which the overall optical out-coupling equals or exceeds twice (>=2X) that of current standard device.

(x) Another project entitled "Fabrication and Characterization of Blue OLED" is being carried out at NITK, Surathkal.

(xi) The work towards reducing e-waste by replacing hardware with more green materials a project on "Organic Film Transistors" is being pursued at NCL, Pune.

Concluded projects

(i) "Development of processing technology for recycling and reuse of electronic waste" to develop an indigenous technology to recover metal contents from e-waste with a recovery rate of 90% has been successfully implemented at National Metallurgical Laboratory, Jamshedpur, India, an R&D laboratory under the Council of Scientific and Industrial Research (CSIR). The pilot plant testing for 1 MT of PCB has also been carried out successfully.

(ii) "Establishment of Testing facilities for the Hazardous Substances as per EU RoHS" to create a testing and certification facility for hazardous raw materials used for manufacturing electronic components at C-MET, Hyderabad. This testing and certification is helping Indian Electronics companies for selling their products in domestic markets, as well as, exporting the products in developing countries.

(iii) In order to promote green electronics, a project on "Development of lead free thick film thermal sensors using RuO_2 based nano size complex material" has been implemented at C-MET, Pune.

(iv) Another project on "Oxide films and Nanostructures for Advanced Sensors & Energy Systems, Infrastructure development for dye-sensitized solar

cell" has been successfully implemented at NCL, Pune to design protocol of 2 cm^2 solar cell modules with 7% efficiency established. Higher area (10 cm^2).

(v) A project on "Growth of dilute III-V-nitride materials for mid-infra-red opto-electronic devices" has been successfully implemented at Calcutta University, Kolkata to develop technology for growth of InAsN, GaAsN, GaSbBi, InSbBi by Liquid Phase Epitaxy (LPE) and Material Characterisation by EDX measurements, fabrication of InAsN photodiode.

(vi) Earlier, DIT had also implemented a program on environment management system for Information Technology industry with financial support from UNDP and MCIT. A comprehensive document entitled 'Environment Management system for Information Technology industry in India' was prepared and widely circulated among industries in India. It gave details of various technologies to be used for improving the hazardous waste management and reduction in use of hazardous substances in the production of electronic goods. The workshop to create awareness in the field of electronics environment on 'Environmental Management in Electronics Industry' was also conducted at New Delhi. Another technical seminar was also conducted in Bangalore on 'Environmental Management in Printed Circuit Board Industry'.

Maintaining the country's position in BPO sector

3165. SHRIMATI GUNDUSUDHARANI : Will the Minister of COMMUNICATIONS AND INFORMATION TECHNOLOGY be pleased to state:

(a) whether it is a fact that India is still world's BPO hub;

(b) if so, the details of BPO export revenue earned during last three years, year-wise and service-wise;

(c) whether it is also a fact that Philippines, South Africa and other countries are fast approaching India to grab its position; and

(d) if so, how the NASSCOM and the Ministry are planning to keep the country ahead in the BPO sector?

THE MINISTER OF STATE IN THE MINISTRY OF COMMUNICATIONS AND INFORMATION TECHNOLOGY (SHRI SACHIN PILOT) : (a) and (b) Yes, Sir. As per National Association of Software and Services Companies (NASSCOM), the details of BPO export revenue earned during last three years, year-wise and service wise is as given below: -