

Bab V

Kesimpulan

Penelitian ini telah mendeskripsikan bagaimana upaya UNDP dalam meningkatkan efisiensi energi pada gedung komersial di India yang merupakan pertanyaan penelitian. Pada awalnya dijelaskan permasalahannya secara rinci dan upaya yang sudah dilakukan pemerintah. Namun ternyata upaya tersebut belum berhasil. Sulitnya permasalahan untuk diselesaikan karena permasalahan supply, demand, perkembangan ekonomi dan demografi serta urbanisasi di India. Sehingga UNDP hadir untuk membantu India menyelesaikan permasalahan tersebut. Untuk dapat mengetahui upaya yang dilakukan UNDP, perlu diketahui lebih dalam tentang UNDP. Setelah itu diketahui upaya yang dilakukan UNDP untuk meningkatkan efisiensi energi pada gedung komersial di India.

Penelitian ini menemukan empat macam upaya yang dilakukan UNDP dalam meningkatkan efisiensi energi pada gedung komersial di India. Upaya yang pertama adalah dengan meningkatkan kapasitas lembaga yang ada. Kedua adalah peningkatan kapasitas teknis dan keahlian bagi teknisi dan penyedia layanan. Selanjutnya peningkatan jumlah gedung komersial baru yang sesuai dengan ecbc. Dan yang terakhir adalah pengadaan produk informasi dan pengetahuan yang tersedia dan mudah diakses / dibagikan tentang praktik terbaik terkait teknologi dan tindakan bangunan efisiensi energi.

Pada upaya yang pertama dalam meningkatkan kapasitas lembaga, UNDP membuat pelatihan agar para personel mampu menegakkan dan menerapkan ECBC. Kapasitas personel dikembangkan dalam menegakkan dan menerapkan

ECBC. Untuk mencapai hal tersebut maka kapasitas dari departemen pembangunan dalam berbagai level ditingkatkan. Para pemangku kepentingan diberikan seminar agar mengerti tentang penerapan ECBC. Dalam menjadikan ECBC sebagai sesuatu yang wajib, dibutuhkan juga penguatan mekanisme dan struktur dalam implementasinya dan informasi terkait harus disebarkan secara merata kepada pemangku kepentingan melalui media-media yang ada.

Upaya yang selanjutnya dilakukan adalah peningkatan kapasitas teknis dan keahlian bagi teknisi dan penyedia layanan. Pada upaya ini pelatih dan yang akan dilatih diberikan seminar dan pelatihan menggunakan kurikulum dengan modul agar dapat mengerti dengan baik terkait ECBC. Materi pelatihan juga diberikan di institusi yang dipilih BEE. Alat-alat dan materi penunjang yang memadai juga diberikan untuk membantu keefektifan penerapan ECBC menjadi wajib. Alat-alat dan materi tersebut meliputi buku, pedoman dan laboratorium untuk menguji material bangunan.

Gedung baru yang sesuai dengan ECBC juga jumlahnya dinaikkan dengan membangun model bangunan untuk menjadi contoh. Model bangunan ini diadakan di lima zona iklim India yang berbeda agar dapat dijadikan contoh untuk masing-masing iklim. Dengan adanya contoh bangunan ini maka dapat terlihat dengan jelas bagaimana gedung yang sudah sesuai dengan ECBC. Bagaimana mereka berfungsi dengan baik dan menunjukkan hasil bahwa pada gedung tersebut memang terjadi efisiensi energi. Sudah ada 14 model yang dibangun dan masih ada yang akan menyusul.

Pengadaan produk informasi juga diberikan agar dapat dengan mudah dibaca oleh orang-orang yang membutuhkan. Produk informasi tersebut mudah diakses dan dibagikan agar dapat dibaca dan dilakukan bagaimana membangun gedung yang sesuai dengan ECBC.

Upaya yang dilakukan UNDP tersebut sudah masuk dalam fungsi-fungsi organisasi internasional menurut Karns dan Mingst yaitu informasi, operasional, penciptaan aturan dan supervisi aturan. UNDP melakukan berbagai fungsi yang sesuai dengan fungsi-fungsi tersebut. Selain itu upaya tersebut juga sesuai dengan pendekatan capacity development dari UNDP. Dan upaya tersebut juga dilakukan sebagai bentuk bantuan UNDP terhadap India untuk mendukung pelaksanaan rezim internasional.

UNDP sudah membantu India dalam menyelesaikan permasalahan energi pada gedung komersial di India. Ada empat upaya yang dilakukan. Selain membantu India untuk menyelesaikan permasalahan energi, UNDP juga sudah membantu India dalam melaksanakan komitmen global untuk terus menghemat energi yang dimiliki.

DAFTAR PUSTAKA

Buku

A Mingst, Karen. *International Organizations: The Politics and Processes of Global Governance*. Lynne Rienner. 2004.

Archer, Clive. *International Organizations: Third Edition*. (London: Routledge: 2001).

Dunne. Tim. *The Globalization of World Politics*. (Oxford: Oxford University Press. 2001).

Hansen, David., et al. *Advanced Controls and Communications for Demand Response and Energy Efficiency in Commercial Buildings*. 2006.

Jackson, Robert., dan Sorensen, Georg. *Introduction to International Relations: Theories and Approaches - Fifth Edition*. (Oxford: Oxford University Press 2013).

Jain, Andrudh K. *Measuring the effect of fertility decline on the maternal mortality ratio*. 2011

Murphy, Craig N. *The United Nations Development Programme: A Better Way?*. (New York Cambridge University Press. 2006).

Oshiba, Ryo. *International Regimes*. <https://www.eolss.net/Sample-Chapters/C04/E6-32-05-04.pdf>

Yoshimatsu, Hidetaka. *International Regimes. International Society, and Theoretical Relations*. 1998. <http://www.agi.or.jp/workingpapers/WP1998-10.pdf>

Jurnal

Chaturvedi, Vaibhav. et al. *Long term building energy demand for India: Disaggregating end use energy services in an integrated assessment modeling framework*. [https://web.stanford.edu/group/emf-research/new-emf.stanford.edu/files/docs/273/Modeling_India_\(Chaturvedi\)_.pdf](https://web.stanford.edu/group/emf-research/new-emf.stanford.edu/files/docs/273/Modeling_India_(Chaturvedi)_.pdf)

Creswell , Joh W. *Research Design: Qualitative and Quantitative Approaches*. (California: SAGE Publications. Inc). 1994.

Evans, M., et al. *Building Energt Efficiency in India: Compliance Evaluation of Energy Conservation Building Code*. 2014.
https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-23217.pdf

Escrivá, Guillermo. *Basic Actions to Improve Energy Efficiency in Commercial Buildings in Operation*. *Energy and Buildings*. Vol. 43. Issue 11. 2011.

Kaja, Nagaraju. *A Review Of Energy Consumption In Residential Sector In India; Possibilities For Energy Conservation*. <http://oaji.net/pdf.html?n=2017/488-1530337289.pdf>

Karns, Margaret P., dan Mingst, Karen A. *International Organization: The Politics and Processes of Global Fovernance*. (London:Lynne Rienner Publishers. Inc. 2004).

Koch, M. *World Organizations: (re-) conceptualizing international organizations*. *World Political Science Review*, 11(1). <http://dx.doi.org/10.1515/wps-2015-0003>

L Dubash, Navroz., et al. *India's energy and emissions future: analysis of model scenario*. 2018. <http://iopscience.iop.org/article/10.1088/1748-9326/aacc74/pdf>

Sasidhar, N. *Geographical Area and Its Effective Utilization*

Seth, Sanjay., et al. *Energy Efficiency Improvements in Commercial Buildings*. Issue 1 & 2.

Sarma, Bhaskar. *Energy Efficiency in India – Challenges and Lessons*. 2014.
https://unfccc.int/files/bodies/awg/application/pdf/2_india_revised.pdf

Sharma, Mohit., et al. *Long-term carbon dioxide and hydrofluorocarbon emissions from commercial space cooling and refrigeration in India: a detailed analysis within an integrated assessment modelling framework*. 2016.
https://ideas.repec.org/a/spr/climat/v143y2017i3d10.1007_s10584-017-2002-4.html

Artikel/Website

BEE India. *About BEE*. <https://beeindia.gov.in/content/about-bee>

BEE India. *About Us*. <https://www.beeindia.gov.in/content/about-us>

BEE India. *ECBC User Guide*. 2011.
<https://beeindia.gov.in/sites/default/files/ECBC%20User%20Guide%20V-0.2%20%28Public%29.pdf>

BEE India. *UNDP-GEF-BEE Project on Commercial Buildings*.
<https://beeindia.gov.in/sites/default/files/private%20-selection%20criteria%20.pdf>

Bhawan, BEE India. *Energy Conservation Building Code (ECBC) Compliance and Beyond a Pilot Study*.
https://cleanenergysolutions.org/sites/default/files/documents/ecbc_released_version.pdf

British Geological Survey. *Dalam Bahasa Inggris. definisi efisiensi energi adalah 'Energy efficiency. means using less energy to provide the same level of energy. What is energy efficiency?*

<https://www.bgs.ac.uk/discoveringGeology/climateChange/CCS/whatIsEnergyEfficiency.html>

Building Performance Network. *RESIDENTIAL BUILDINGS IN INDIA: ENERGY USE PROJECTIONS AND SAVINGS POTENTIALS*. Global. 2014.
<http://www.gbpn.org/newsroom/report-residential-buildings-india-energy-use-projections-and-savings-potentials>

Business Standard. *Slowdown not to affect India's nuclear plans*. 2013.
https://www.business-standard.com/article/economy-policy/slowdown-not-to-affect-india-s-nuclear-plans-109012100091_1.html

Business Today. *5 sectors on a Hiring Spree*.
<https://www.businesstoday.in/moneytoday/careers/retail-infrastructure-healthcare-sectors-to-hire-more-in-india/story/19528.html>

CEIC. India Electricity: *Demand and Supply*.
<https://www.ceicdata.com/en/india/electricity-demand-and-supply>

Census India. *Provisional Population Total*. Census of India 2011.
http://www.censusindia.gov.in/2011-prov-results/paper2/data_files/India2/Table_3_PR_UA_Cities_1Lakh_and_Above.pdf

DNA India. *With 68 billionaires. India rank 7th globally; Mumbai leads India with 30*. 2015. <https://www.dnaindia.com/business/report-with-68-billionaires-india-ranks-7th-globally-mumbai-leads-in-india-with-30-2067378>

Donev, J.M.K.C., et al. *Energy Education - Energy security*. 2016.
https://energyeducation.ca/encyclopedia/Energy_security

Enerdata. *Global Energy Statistical Yearbook 2018*.
<https://yearbook.enerdata.net/total-energy/world-consumption-statistics.html>

Energy Efficiency. UNDP.

<https://www.undp.org/content/undp/en/home/ourwork/climate-and-disaster-resilience/sustainable-energy/energy-efficiency/>

ET Bureau. *BEE Plans 'Energy Conservation Building Code for Residential Units'*. <https://economictimes.indiatimes.com/industry/energy/power/bee-plans-energy-conservation-building-code-for-residential-units/articleshow/65523464.cms>

Global Wind Energy Council. *Global Wind Statistics 2017*. https://gwec.net/wp-content/uploads/vip/GWEC_PRstats2017_EN-003_FINAL.pdf

Government of India (Ministry of Power). *Energy Efficiency*. <https://powermin.nic.in/en/content/energy-efficiency>

Gupta, Surbhi. *These are Mumbai's 5 tallest buildings*. 2017. <https://www.proptiger.com/guide/post/mumbais-top-5-tallest-buildings>

Hinge, Adam., et al. *Comparing Commercial Building Energy Use Around The World*

India Code. *The Energy Conservation Act 2001*. https://indiacode.nic.in/handle/123456789/2003?view_type=browse&sam_handle=123456789/1362

Indian Power Sector. *Upcoming Hydro Power*. <http://indianpowersector.com/power-station/hydro-power-plant/upcoming-hydro-power-plant/>

Integrative Design Solution. *Energy Efficiency Improvements in Commercial Buildings (UNDP-GEF-BEE) IDS Content*. <http://www.ids-pl.com/energy-efficiency.html>

International Energy Agency. *Benefits of Energy Efficiency*. <https://www.iea.org/topics/energyefficiency/benefits/>

International Energy Agency. *Energy Efficiency*.
<https://www.iea.org/topics/energyefficiency/>

International Energy Agency. *India Energy Outlook 2015*.
https://www.gita.org.in/attachments/reports/indiaenergyoutlook_weo2015.pdf

International Energy Agency. *What is Energy Security?*.
<https://www.iea.org/topics/energysecurity/whatisenergysecurity/>

International Energy Outlook. *Energy Efficiency in India*.
<https://www.iea.org/topics/energyefficiency/e4/india/>

Khan, Sobia. *Housing demand across top 8 cities during 2016-2020 estimated at 4.2 million units*. 2016. <https://economictimes.indiatimes.com/wealth/real-estate/housing-demand-across-top-8-cities-during-2016-2020-estimated-at-4-2-million-units-report/articleshow/55894124.cms>

Kumar, Sumit. *Energy Conservation Act 2001*. 2010.
<http://indianpowersector.com/home/2010/10/energy-conservation-act-2001/>

Lakshmi, Rama. *New millionaires hope to serve as role models for India's lower caste*. 2011. https://www.washingtonpost.com/world/new-millionaires-emerge-as-role-models-for-indias-lower-castes/2011/04/03/AFesUMfD_story.html?noredirect=on

Lallanilla, Marc. *Greenhouse Gasses: Causes. Causes. and Environmental Effects*. 2019. <https://www.livescience.com/37821-greenhouse-gases.html>

Legislative Department. *Energy Conservation Act 2001*.
<http://legislative.gov.in/actsofparliamentfromtheyear/energy-conservation-act-2001>

Majumdar, Mili. *Energy efficiency in buildings: implementation challenges and way forward*. 2012.
<https://economictimes.indiatimes.com/blogs/IssuesonSustainableHabitats/energy-efficiency-in-buildings-implementation-challenges-and-way-forward/>

Maps of India. *Delhi NCR Maps*. <https://www.mapsofindia.com/maps/delhi/delhi-ncr-map.html>

Maps of India. *Industries in Delhi*. <https://www.mapsofindia.com/delhi/industries-in-delhi.html>

Mathur, Ajay. *India' Policy and Challenges on Energy Efficiency and Climate Mitigation*.
<https://ndma.gov.in/images/cbt/presentations/Dr.Ajay%20Mathur%2013.10.11.pdf>

Mingst, Karen. *International Organization*.
<https://www.britannica.com/topic/international-organization>

Ministry of Health of Family Welfare. *National Population Policy 2000*. 2002.
<https://mohfw.gov.in/sites/default/files/26953755641410949469%20%281%29.pdf>

Ministry of Law and Justice. *The Constitution (Sixty-Ninth Amendment) Act, 1991*. 2014. <https://indiacode.nic.in/coiweb/amend/amend69.htm>

Ministry of Law, Justice and Company Affairs. *Energy Conservation Act 2001*.
<https://powermin.nic.in/sites/default/files/uploads/ecact2001.pdf>.

Ministry of Power, India. *Energy Efficiency*.
<https://powermin.nic.in/en/content/energy-efficiency>

Ministry of Power, India. *Energy Efficiency*.
<https://powermin.nic.in/en/content/energy-efficiency>

Ministry of Power. *Energy Conservation Act 2001*. <https://powermin.nic.in/en/content/rulesregulations-under-energy-conservation-act-2001>

Ministry of Power. *Executive Summary on Power Sector*. 2018. http://www.cea.nic.in/reports/monthly/executivesummary/2018/exe_summary-09.pdf

Mission and Vision. *Ministry of New and Renewable Energy*. <https://mnre.gov.in/mission-and-vision-2/achievements/>

Ministry of Power. *Power Situation*. 2012. <http://pib.nic.in/newsite/PrintRelease.aspx?relid=81243>

Mumbai Mirror. *Kudankulam Nuclear Plant Begins Power Generation*. 2013. <https://mumbaimirror.indiatimes.com/news/india/Kudankulam-nuclear-plant-begins-power-generation/articleshow/24524616.cms>

Nakaskar, Rashmi. *Mumbai, a land of opportunities*. 2011. <https://timesofindia.indiatimes.com/city/mumbai/Mumbai-a-land-of-opportunities/articleshow/9292526.cms?referral=PM>

Natural Resource Defense Council. *Global Warming 101*. <https://www.nrdc.org/stories/global-warming-101#warming>

Observer Research Foundation. *India's Low Carbon Transition*. <https://www.oecd.org/environment/cc/g20-climate/collapsecontents/ORF-India-low-carbon-transition.pdf>

OECD. *Urbanization*. <https://stats.oecd.org/glossary/detail.asp?ID=2819>

Planning, Delhi. *Economic Survey*. <http://delhiplanning.nic.in/Economic%20Survey/ES%202005-06/Chpt/9.pdf>

Punjab Energy Development Agency. *Energy Conservation Building Code*.
<http://peda.gov.in/energyconservationbuilding.aspx>

Roy, Barun. *Victims of urbanisation: India, Indonesia and China*. 2012.
<https://www.rediff.com/business/slide-show/slide-show-1-column-victims-of-urbanization-india-indonesia-china/20120615.htm>

Rupera, Prashant. *This gujarat village is harvesting a sunny crop*. 2016.
<https://energy.economictimes.indiatimes.com/news/renewable/this-gujarat-village-is-harvesting-a-sunny-crop/53473954>

Sarma, Sonali. *Energy Conservation Building Code: A Steps Towards Energy Efficient Building Construction*. 2017. <http://gosmartbricks.com/energy-conservation-building-code-a-step-towards-energy-efficient-building-constructions/>

The Global Development Research Center Website. *Capacity Building The UNDP Approach*. <http://www.gdrc.org/uem/undp-cb.html>

The Indian Express. *Mumbai richest Indian city with total wealth of 820 billion, Delhi comes second: Report*. 2017.
<http://indianexpress.com/article/india/mumbai-richest-indian-city-with-total-wealth-of-820-billion-delhi-comes-second-report-4544685/>

The World Counts. *Consumption of Electricity*.
http://www.theworldcounts.com/counters/interesting_facts_on_energy/consumption_of_electricity

Times of India. *India's population to surpass that of China around 2024*. 2017.
<https://timesofindia.indiatimes.com/india/indias-population-to-surpass-that-of-chinas-around-2024-un/articleshow/59257045.cms>

UNDP India. *About Us: Legal Framework*.
<http://www.in.undp.org/content/india/en/home/about-us/legal-framework.html>

UNDP India. *About US*. <http://www.in.undp.org/content/india/en/home/about-us.html>

UNDP India. *Development and Promotion of Solar Based Process*.
http://www.in.undp.org/content/india/en/home/operations/projects/environment_and_energy/market_developmentandpromotionofsolarconcentratorsbasedprocesshe.html

UNDP India. *Efficiency Improvements in the Brick Industry*.
http://www.in.undp.org/content/india/en/home/operations/projects/environment_and_energy/energy_efficiencyimprovementsintheindiabrickindustry.html

UNDP India. *Energy Efficiency in the Indian Railway System*
http://www.in.undp.org/content/india/en/home/operations/projects/environment_and_energy/improving_energyefficiencyintheindianrailwaysystem.html

UNDP. *About Us: Our Leadership*.
<http://www.undp.org/content/undp/en/home/about-us/our-leadership.html>

UNDP. *Achieving Sustainable Energy for All in the Asia Pacific*.
<https://www.undp.org/content/dam/indonesia/docs/envi/APRC-EE-2013-SE4ALL.pdf>

UNDP. *Annual Work Plan 2015*.
https://www.undp.org/content/dam/india/docs/EnE/energy_efficiency_improvements_in_commercial_buildings_AWP2015.pdf

UNDP. *Annual Work Plan. 2012*.
https://www.undp.org/content/dam/india/docs/energy_efficiency_improvements_in_commercial_buildings_AWP2012.pdf

UNDP. Background on the goals.

<https://www.undp.org/content/undp/en/home/sustainable-development-goals/background.html>

UNDP. *Climate and Disaster Resilience*.

<https://www.undp.org/content/undp/en/home/climate-and-disaster-resilience.html>

UNDP. *Country Programme Action Plan between the Government of India and the United Nations Development Programme*.

https://www.undp.org/content/dam/india/docs/country_programme_action_plan.pdf

UNDP. *Democartic Governance and Peacebuilding*.

<https://www.undp.org/content/undp/en/home/democratic-governance-and-peacebuilding.html>

UNDP. *Democartic Governance Reader*.

https://www.undp.org/content/dam/aplaws/publication/en/publications/democratic-governance/oslo-governance-center/democratic-governance-reader/DG_reader-2009.pdf

UNDP. *Disaster Risk Reduction*.

<https://www.undp.org/content/undp/en/home/climate-and-disaster-resilience/disaster-risk-reduction.html>

UNDP. *Energy Benchmarks for Commercial Buildings*.

https://beeindia.gov.in/sites/default/files/Flyer_22nd%20Jan.pdf

UNDP. *Energy Efficiency Improvements in Commercial Building*. Factsheet.

http://www.in.undp.org/content/dam/india/docs/energy_efficiency_improvements_in_commercial_buildings_factsheet_project.pdf

UNDP. *Energy Efficiency*. <https://www.undp.org/content/undp/en/home/climate-and-disaster-resilience/sustainable-energy/energy-efficiency.html>

UNDP. *Implementing Energy Efficiency in Buildings*.
https://www.undp.org/content/dam/india/docs/ICEEB%202015_Compendium.pdf

UNDP. *Overview of UNDP's Approach to Support Capacity Development*.
UNDP. 2009.
https://www.undp.org/content/dam/aplaws/publication/en/publications/capacity-development/undp-capacity-development-presentation_august-2009/Capacity%20Development%20UNDP%20August%202009.pdf

UNDP. *Supporting Capacity Development UNDP Approach*.
https://www.undp.org/content/dam/aplaws/publication/en/publications/capacity-development/support-capacity-development-the-undp-approach/CDG_Brochure_2009.pdf

UNDP. *Sustainable Development Goals*.
<https://www.undp.org/content/undp/en/home/sustainable-development-goals.html>

UNFCCC *What is Paris Agreement?*. <https://unfccc.int/process-and-meetings/the-paris-agreement/what-is-the-paris-agreement>

United Nations Development Programme. *UNDP Brochure 2014*.
https://www.undp.org/content/dam/undp/library/corporate/brochure/UNDP-Brochure-2014_EN.pdf.

United Nations. *Energy*. <https://sustainabledevelopment.un.org/topics/energy>

United Nations. *UNDP Strategic Plan. 2018-2021*. <http://undocs.org/DP/2017/38>

University of Southern California. *Research Guides*.
<https://libguides.usc.edu/writingguide/qualitative>

US Department of Energy. *International Energy Outlook. US Department of Energy*. 2009.
<http://www.indiaenvironmentportal.org.in/files/international%20energy%20outlook.pdf>

W, Fox., dan.M.S., Bayat. *A Guide to Managing Research*. Juta Publications. 2007.

William Chung et al. *Benchmarking the energy efficiency of commercial buildings*. *Applied Energy*: Volume 83. Issue 1. January 2006.

World Atlas. *The Largest Country in The World*.
<https://www.worldatlas.com/articles/the-largest-countries-in-the-world-the-biggest-nations-as-determined-by-total-land-area.html>

World Energy Outlook. *IEA*. 2015.

World Population Review. *India Population*.
<http://worldpopulationreview.com/countries/india-population/>

Worldometers. *Indian Population*. <http://www.worldometers.info/world-population/india-population/>

Yep, Eric. *India's Widening Energy Deficit*. 2011.
<https://blogs.wsj.com/indiarealtime/2011/03/09/indias-widening-energy-deficit/>

Yu, S. et al. *Building Energy Efficiency in India: Compliance Evaluation of Energy Conservation Building Code*. US Department of Energy. 2014.
https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-23217.pdf