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Tables Thematic data tables from WDI\u0020wdi.worldbank.org\u003011\n\n\n## Selected
Countries and Economies \n\nCountry \n\nMost Recent Year \n\nMost Recent Value
\n(Thousands)\n\n## All Countries and Economies \n\nCountry \n\nMost Recent Year
\n\nMost Recent Value \n(Thousands)\n\n\u00301040\u0020Help us improve this
site\u0020goo.gl\u003011Help / Feedback\n\n * [Image 3: The World Bank Working for a
World Free of Poverty]\n * \u00301041\u0020IBRD\u0020www.worldbank.org\u003011\n *
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All Rights Reserved.\n\n\u00301051\u0020REPORT FRAUD OR
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here.\u0020www.worldbank.org\u003011\n\n\n\u0000d7\nVisible: 0% - 100%", "pub_date": null,
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\u3010291\u2020Zambia\u3011 \n * \u3010292\u2020Zimbabwe\u3011 \n\nRecent Searches\n\nRegions\n\n * \u3010293\u2020Africa\u3011\n * \u3010294\u2020East Asia and Pacific\u3011\n * \u3010295\u2020Europe and Central Asia\u3011\n * \u3010296\u2020Latin America and Caribbean\u3011\n * \u3010297\u2020Middle East and North Africa\u3011\n * \u3010298\u2020South Asia\u3011\n\nCountry Groups\n\n *

[\u03010299\u03012020European Union\u030111\n](#) * [\u030101300\u03012020Middle Income Countries\u030111\n](#) * [\u030101062\u03012020Organization of Eastern Caribbean States\u030111\n](#) * [\u0301010133\u03012020Pacific Islands\u030111\n](#) * [\u0301010301\u03012020Small States\u030111\n](#) * [\u0301010302\u03012020Gulf Cooperation Council\u030111\n](#) * [\u0301010132\u03012020Western Europe\u030111\n](#)\n\n * [\u03010105\u03012020UNDERSTANDING POVERTY\u030111 \n\n\[Image 3: megamenu-image-1\] \n\nWe face big challenges to help the world\u03012019s poorest people and ensure that everyone sees benefits from economic growth. Data and research help us understand these challenges and set priorities, share knowledge of what works, and measure progress.\n\nData & Research\n\n](#) * [\u030101046\u03012020Open Data\u03012020data.worldbank.org\u030111\n](#) * [\u0301010303\u03012020By Country\u03012020data.worldbank.org\u030111\n](#) * [\u0301010304\u03012020By Indicator\u03012020data.worldbank.org\u030111\n](#) * [\u030101045\u03012020Research & Publications\u030111\n](#)\n\nDevelopment Topics\n\n * [\u030101040\u03012020Climate Change\u030111\n](#) * [\u0301010305\u03012020Agriculture and Food\u030111\n](#) * [\u0301010306\u03012020Fragility, Conflict, and Violence\u030111\n](#) * [\u0301010307\u03012020Poverty\u030111\n](#) * [\u0301010308\u03012020Debt\u030111\n](#) * [\u0301010309\u03012020Education\u030111\n](#) * [\u0301010310\u03012020Health\u030111\n](#) * [\u0301010311\u03012020Energy\u030111\n](#) * [\u030101041\u03012020Food Security\u030111\n](#) * [\u030101048\u03012020All Development Topics\u030111\n](#)\n\n**\n\n Search button\n\n * [\u03010106\u03012020WORK WITH US\u030111\n](#)\n\nFor Job Seekers\n\n * [\u0301010312\u03012020Jobs\u030111\n](#) * [\u0301010313\u03012020Programs & Internships\u030111\n](#)\n\nFor Partners\n\n * [\u030101011\u03012020Partners\u030111\n](#) * [\u0301010314\u03012020Corporate and Private Foundations\u030111\n](#) * [\u0301010315\u03012020Clients\u03012020clientconnection.worldbank.org\u030111\n](#) * [\u0301010316\u03012020Private Sector\u030111\n](#) * [\u0301010317\u03012020Corporate Procurement \u030111\n](#) * [\u0301010318\u03012020Civil Society\u030111\n](#) * [\u0301010319\u03012020Consultations\u03012020consultations.worldbank.org\u030111\n](#) * [\u0301010320\u03012020Parliamentarians\u030111\n](#)\n\nFor Investors\n\n * [\u0301010321\u03012020World Bank Bonds & Investment Products\u03012020treasury.worldbank.org\u030111\n](#) * [\u030101052\u03012020Treasury\u03012020treasury.worldbank.org\u030111\n](#)\n\nFor Learners\n\n * [\u030101047\u03012020Open Learning Campus\u03012020olc.worldbank.org\u030111\n](#)\n\nMeet Us\n\n * [\u0301010322\u03012020Events\u030111\n](#) * [\u0301010323\u03012020World Bank Live\u03012020live.worldbank.org\u030111\n](#) * [\u0301010324\u03012020Speaker's Bureau\u030111\n](#) * [\u0301010325\u03012020Spring & Annual Meetings\u030111\n](#)\n\n**\n\n * [\u0301010326\u03012020Contacts & Inquiries \u030111\n](#) * [Image 4: WB Live]\n\nGlobal Search dropdown\n\n[Image 5: Search graphic]\n\nSearch\n\n Search button\n\n 1.
[\u03010104\u03012020Where We Work\u030111\n](#)\n\nThis page in: \n\n English \n\n * [\u0301010156\u03012020\u03010939\u0301093f\u03010928\u0301094d\u03010926\u03010940\u030111\n](#)\n\nThis page in: English\n\n * [\u0301010156\u03012020\u03010939\u0301093f\u03010928\u0301094d\u03010926\u03010940\u030111 \n\n](#)[Image 6: Image]
\n\n[Image 7: Image] \n\n## The World Bank In India \n\nWith a population of more than 1.4 billion, India is the world\u03012019s largest democracy. Over the past decade, the country\u03012019s integration into the global economy has been accompanied by economic growth. India has now emerged as a global player.\n\n * India Home\n\n * [\u0301010327\u03012020Overview\u030111 \n](#) * [\u0301010328\u03012020COVID-19\u030111 \n](#)##
Highlights\n\n\u0301010329\u03012020 What's New \u030111 \n\n * [Image 8: Assam-10.jpg]
\n\nFeature\n\n## \u0301010330\u03012020Agricultural Entrepreneurs Cultivating Success In Assam\u030111\n\nRead how World Bank is supporting agri-business investments and enhancing market access in Assam. \n\n\u0301010330\u03012020Agricultural Entrepreneurs Cultivating Success In Assam\u030111 \n\n * [Image 9: The World Bank] \n\nBrief\n\n###
[\u0301010331\u03012020Helping India Build Resilience to Climate Change\u030111\n](#)\n\nThe World

Bank is helping India strengthen its climate resilience across various sectors.

\n\n\u03010331\u03012020Helping India Build Resilience to Climate Change\u0301011 \n\n *
[Image 10: Green-Hydrogen-DPL. jpg] \n\nPRESS RELEASE\n\n###
\u03010332\u03012020India\u03012019s Low-Carbon Transition\u0301011\n\nThe World Bank approved \$1.5 Billion in financing to support India\u03012019s low-carbon transition.

\n\n\u03010332\u03012020India\u03012019s Low-Carbon Transition\u0301011 \n\n## India At-A-Glance
\n\nWith 1.2 billion people and the world\u03012019s third-largest economy in purchasing power parity terms, India\u03012019s recent growth has been a significant ac", "pub_date": null, "extra": {"cited_message_idx": 7, "search_result_idx": null, "evidence_text": "source"}}}], "gizmo_id": "g-HTKib04fm", "message_type": null, "model_slug": "gpt-4o", "default_model_slug": "gpt-4o", "pad": "AAAAAAAAAAAAAAAAAAAA", "parent_id": "b7bd3743-a400-47f6-b175-0959079d671d", "finish_details": {"type": "stop", "stop_tokens": [200002]}, "is_complete": true, "request_id": "88c4838a8a05baf3-MXP", "timestamp": "absolute", "content_references": [{"matched_text": "\u03010106\u03012020source\u0301011", "start_idx": 184, "end_idx": 194, "alt": null, "type": "webpage_extended", "title": "Population, total - India | Data", "url": "https://data.worldbank.org/indicator/SP.POP.TOTL?locations=IN", "pub_date": null, "snippet": "\nURL:
https://data.worldbank.org/indicator/SP.POP.TOTL?locations=IN\n\n[Image 0: The World Bank]\u03010100\u03012020Data\u0301011[Image 1]\n\nThis page in:\n\n *
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by\u03010106\u03012020Country\u0301011or\u03010107\u03012020Indicator\u0301011\n\n\u03010108\u03012020DataBank\u0301020databank.worldbank.org\u0301011\u03010109\u03012020Microdata\u0301020microdata.worldbank.org\u0301011\u030101010\u03012020Data Catalog\u0301020datacatalog.worldbank.org\u0301011\n\nMenu \n\nThis page in:\n\n * \u03010101\u03012020English\u0301011\n *
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\u030101018\u03012020Improving Statistical Capacity\u0301011\n\n * \u030101019\u03012020Global Data Facility\u0301020www.worldbank.org\u0301011\n\n * \u030101020\u03012020International Comparison Program & Purchasing Power Parity\u0301011\n\n * \u030101021\u03012020International Household Survey Network (IHSN)\u0301011\n\n * \u030101022\u03012020Joint External Debt Hub\u0301011\n\n * \u030101023\u03012020Open Data Toolkit\u0301011\n\n * \u030101024\u03012020Quarterly External Debt Statistics\u0301011\n\n\n * \u030101025\u03012020Products\u0301011\n\n *
\u030101026\u03012020World Development Indicators\u0301020datatopics.worldbank.org\u0301011\n\n *
\u030101027\u03012020International Debt Statistics\u0301020www.worldbank.org\u0301011\n\n *

\u301028\u2020Other Books and Reports\u3011\n * \u301029\u2020Country & Lending Groups\u2020datahelpdesk.worldbank.org\u3011\n * \u301030\u2020Data Portals and Tools\u3011\n\n * \u301031\u2020Development Goals\u2020datatopics.worldbank.org\u3011\n * \u301032\u2020Terms of Use\u3011\n * \u301033\u2020For Developers\u2020datahelpdesk.worldbank.org\u3011\n\n\u301034\u2020Population, total - India\u3011\n\n(1) United Nations Population Division. World Population Prospects: 2022 Revision. (2) Census reports and other statistical publications from national statistical offices, (3) Eurostat: Demographic Statistics, (4) United Nations Statistical Division. Population and Vital Statistics Reprot (various years), (5) U.S. Census Bureau: International Database, and (6) Secretariat of the Pacific Community: Statistics and Demography Programme.\n\nLine Bar Map \n\nAlso Show\n\n * None\n * Aggregates\n * Same region\n * Similar values\n * Highest values\n * Lowest values\n * Population & Labor \n\nShare Details \n\nLabel\n\n[Image 2]\n\n1960 - 2022 \n\n2022 2021 2020 2019 2018 2017 2016 2015 2014 2013 2012 2011 2010 2009 2008 2007 2006 2005 2004 2003 2002 2001 2000 1999 1998 1997 1996 1995 1994 1993 1992 1991 1990 1989 1988 1987 1986 1985 1984 1983 1982 1981 1980 1979 1978 1977 1976 1975 1974 1973 1972 1971 1970 1969 1968 1967 1966 1965 1964 1963 1962 1961 1960 \n\n####\n\nDownload\n\n\u301035\u2020CSV\u2020api.worldbank.org\u3011\u301036\u2020XML\u2020api.worldbank.org\u3011\u301037\u2020EXCEL\u2020api.worldbank.org\u3011\n\n\u301038\u2020Data Bank Explore Our DataBank\u2020databank.worldbank.org\u3011\n\n\u301039\u2020WDI Tables Thematic data tables from WDI\u2020wdi.worldbank.org\u3011\n\n## Selected Countries and Economies \n\nCountry \n\nMost Recent Year \n\nMost Recent Value \n\n(Thousands)\n\n## All Countries and Economies \n\nCountry \n\nMost Recent Year \n\nMost Recent Value \n\n(Thousands)\n\n\u301040\u2020Help us improve this site\u2020goo.gl\u3011Help / Feedback\n\n * [Image 3: The World Bank Working for a World Free of Poverty]\n\n * \u301041\u2020IBRD\u2020www.worldbank.org\u3011\n\n * \u301042\u2020IDA\u2020www.worldbank.org\u3011\n\n * \u301043\u2020IFC\u2020www.ifc.org\u3011\n\n * \u301044\u2020MIGA\u2020www.miga.org\u3011\n\n * \u301045\u2020ICSID\u2020icsid.worldbank.org\u3011\n\n * \u301046\u2020Legal\u2020www.worldbank.org\u3011\n\n * \u301047\u2020Privacy Notice\u2020www.worldbank.org\u3011\n\n * \u301048\u2020Access to Information\u2020www.worldbank.org\u3011\n\n * \u301049\u2020Jobs\u2020www.worldbank.org\u3011\n\n * \u301050\u2020Contact\u2020www.worldbank.org\u3011\n\n\n\u00a9 2024 The World Bank Group, All Rights Reserved.\n\n\u301051\u2020REPORT FRAUD OR CORRUPTION\u2020www.worldbank.org\u3011\n\nThis site uses cookies to optimize functionality and give you the best possible experience. If you continue to navigate this website beyond this page, cookies will be placed on your browser. To learn more about cookies, \u301047\u2020click here.\n\nwww.worldbank.org\u3011\n\n\n\u00d7\n\nVisible: 0% - 100%", {"matched_text": "\u30107\u2020source\u3011", "start_idx": 194, "end_idx": 204, "alt": null, "type": "webpage_extended", "title": "India : Development news, research, data | World Bank", "url": "https://www.worldbank.org/en/country/india", "pub_date": null, "snippet": "

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\u3010293\u2020Uzbekistan\u3011 \n *

\u3010282\u2020\u0420\u0443\u0441\u0441\u0441\u043a\u0438\u0439\u2020www.vseirnyjbank.org\u3011\n * \u3010133\u2020Vanuatu\u3011\n * \u3010283\u2020Venezuela\u3011\n * \u3010284\u2020Espa\u00f1ol\u2020www.bancomundial.org\u3011\n * \u3010285\u2020Vietnam\u3011\n * \u3010286\u2020Tiulebdng Viulec7t\u3011\n * \u3010287\u2020West Bank and Gaza\u3011\n * \u3010288\u2020\u0639\u0631\u0628\u064a\u2020www.albankaldawli.org\u3011\n * \u3010289\u2020Yemen\u3011\n * \u3010290\u2020\u0639\u0631\u0628\u064a\u2020www.albankaldawli.org\u3011\n * \u3010291\u2020Zambia\u3011\n * \u3010292\u2020Zimbabwe\u3011\nRecent Searches\nRegions\n * \u3010293\u2020Africa\u3011\n * \u3010294\u2020East Asia and Pacific\u3011\n * \u3010295\u2020Europe and Central Asia\u3011\n * \u3010296\u2020Latin America and Caribbean\u3011\n * \u3010297\u2020Middle East and North Africa\u3011\n * \u3010298\u2020South Asia\u3011\nCountry Groups\n * \u3010299\u2020European Union\u3011\n * \u3010300\u2020Middle Income Countries\u3011\n * \u301062\u2020Organization of Eastern Caribbean States\u3011\n * \u3010133\u2020Pacific Islands\u3011\n * \u3010301\u2020Small States\u3011\n * \u3010302\u2020Gulf Cooperation Council\u3011\n * \u3010132\u2020Western Europe\u3011\n * \u3010105\u2020UNDERSTANDING POVERTY\u3011\n[Image 3: megamenu-image-1]\nWe face big challenges to help the world\u2019s poorest people and ensure that everyone sees benefits from economic growth. Data and research help us understand these challenges and set priorities, share knowledge of what works, and measure progress.\nData & Research\n * \u301046\u2020Open Data\u2020data.worldbank.org\u3011\n * \u3010303\u2020By Country\u2020data.worldbank.org\u3011\n * \u3010304\u2020By Indicator\u2020data.worldbank.org\u3011\n * \u301045\u2020Research & Publications\u3011\nDevelopment Topics\n * \u301040\u2020Climate Change\u3011\n * \u3010305\u2020Agriculture and Food\u3011\n * \u3010306\u2020Fragility, Conflict, and Violence\u3011\n * \u3010307\u2020Poverty\u3011\n * \u3010308\u2020Debt\u3011\n * \u3010309\u2020Education\u3011\n * \u3010310\u2020Health\u3011\n * \u3010311\u2020Energy\u3011\n * \u301041\u2020Food Security\u3011\n * \u301048\u2020All Development Topics\u3011\n * * *\nSearch button\n * \u30106\u2020WORK WITH US\u3011\nFor Job Seekers\n * \u3010312\u2020Jobs\u3011\n * \u3010313\u2020Programs & Internships\u3011\nFor Partners\n * \u301011\u2020Partners\u3011\n * \u3010314\u2020Corporate and Private Foundations\u3011\n * \u3010315\u2020Clients\u2020clientconnection.worldbank.org\u3011\n * \u3010316\u2020Private Sector\u3011\n * \u3010317\u2020Corporate Procurement\u3011\n * \u3010318\u2020Civil Society\u3011\n * \u3010319\u2020Consultations\u2020consultations.worldbank.org\u3011\n * \u3010320\u2020Parliamentarians\u3011\nFor Investors\n * \u3010321\u2020World Bank Bonds & Investment Products\u2020treasury.worldbank.org\u3011\n * \u301052\u2020Treasury\u2020treasury.worldbank.org\u3011\nFor Learners\n * \u301047\u2020Open Learning Campus\u2020olc.worldbank.org\u3011\nMeet Us\n * \u3010322\u2020Events\u3011\n * \u3010323\u2020World Bank Live\u2020live.worldbank.org\u3011\n * \u3010324\u2020Speaker's Bureau\u3011\n * \u3010325\u2020Spring & Annual Meetings\u3011\n * * *\n * \u3010326\u2020Contacts & Inquiries\u3011\n * [Image 4: WB Live]\nglobal Search dropdown\n[Image 5: Search graphic]\nSearch\nSearch button\n1.\n\u30104\u2020Where We Work\u3011\nThis page in: \nEnglish\n *


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0310156\u2020\u0939\u093f\u0928\u094d\u0926\u0940\u3011 \n\nThis page in: English\n\n * \u3010156\u2020\u0939\u093f\u0928\u094d\u0926\u0940\u3011 \n\n[Image 6: Image] \n\n[Image 7: Image] \n\n# The World Bank In India \n\nWith a population of more than 1.4 billion, India is the world's largest democracy. Over the past decade, the country's integration into the global economy has been accompanied by economic growth. India has now emerged as a global player.\n\n * India Home\n\n * \u3010327\u2020overview\u3011 \n\n * \u3010328\u2020COVID-19\u3011 \n\n## Highlights\n\n\u3010329\u2020What's New\u3011 \n\n * [Image 8: Assam-10.jpg] \n\nFeature\n\n## \u3010330\u2020Agricultural Entrepreneurs Cultivating Success In Assam\u3011\n\nRead how World Bank is supporting agri-business investments and enhancing market access in Assam. \n\n\u3010330\u2020Agricultural Entrepreneurs Cultivating Success In Assam\u3011 \n\n * [Image 9: The World Bank] \n\nBrief\n\n## \u3010331\u2020Helping India Build Resilience to Climate Change\u3011\n\nThe World Bank is helping India strengthen its climate resilience across various sectors. \n\n\u3010331\u2020Helping India Build Resilience to Climate Change\u3011 \n\n * [Image 10: Green-Hydrogen-DPL.jpg] \n\nPRESS RELEASE\n\n### \u3010332\u2020India's Low-Carbon Transition\u3011\n\nThe World Bank approved $1.5 Billion in financing to support India's low-carbon transition. \n\n\u3010332\u2020India's Low-Carbon Transition\u3011 \n\n## India At-A-Glance \n\nWith 1.2 billion people and the world's third-largest economy in purchasing power parity terms, India's recent growth has been a significant ac"}]], "recipient": "all", "channel": null}, {"parent": "b7bd3743-a400-47f6-b175-0959079d671d", "children": [{"id": "aaa20611-7a9e-4692-8888-30daac4fce73"}, {"id": "aaa20611-7a9e-4692-8888-30daac4fce73": {"id": "aaa20611-7a9e-4692-8888-30daac4fce73", "message": {"id": "aaa20611-7a9e-4692-8888-30daac4fce73", "author": {"role": "user", "name": null, "metadata": {}}, "create_time": 1717132859.142053, "update_time": null, "content": {"content_type": "text", "parts": ["What was China's gross domestic product in the non renewable energy sector? "]}, "status": "finished_successfully", "end_turn": null, "weight": 1.0, "metadata": {"request_id": "88c4848e4e240e4f-MXP", "message_source": null, "timestamp_": "absolute", "message_type": null}, "recipient": "all", "channel": null}, {"parent": "e80e02c8-05e1-4789-8b90-cda8762796e5", "children": [{"id": "34df6d9f-84ca-4401-85b4-455863827c13"}, {"id": "34df6d9f-84ca-4401-85b4-455863827c13": {"id": "34df6d9f-84ca-4401-85b4-455863827c13", "message": {"id": "34df6d9f-84ca-4401-85b4-455863827c13", "author": {"role": "assistant", "name": null, "metadata": {}}, "create_time": 1717132866.284355, "update_time": null, "content": {"content_type": "code", "language": "unknown", "response_format_name": null, "text": "search(China GDP non renewable energy sector site:worldbank.org)", "status": "finished_successfully", "end_turn": false, "weight": 1.0, "metadata": {"citations": [], "gizmo_id": "g-HTKib04fm", "message_type": null, "model_slug": "gpt-4o", "default_model_slug": "gpt-4o", "parent_id": "aaa20611-7a9e-4692-8888-30daac4fce73", "finish_details": {"type": "stop", "stop_tokens": [200007]}, "is_complete": true, "request_id": "88c4848e4e240e4f-MXP", "timestamp_": "absolute", "recipient": "browser", "channel": null}, {"parent": "aaa20611-7a9e-4692-8888-30daac4fce73", "children": [{"id": "7d7c00bd-a437-49b9-89ca-e166a131a6cb"}, {"id": "7d7c00bd-a437-49b9-89ca-e166a131a6cb": {"id": "7d7c00bd-a437-49b9-89ca-e166a131a6cb", "message": {"id": "7d7c00bd-a437-49b9-89ca-e166a131a6cb", "author": {"role": "tool", "name": "browser", "metadata": {}}, "create_time": 1717132866.290528, "update_time": null, "content": {"content_type": "tether_browsing_display", "result": "#\u30100\u2020China's Transition to a Low-Carbon Economy and Climate Resilience

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Needs ... \u2020www.worldbank.org\u3011\nUnabated climate change could lead to estimated GDP losses of between 0.5 and 2.3 percent as early as 2030, according to the report. Without China successfully transitioning to a low-carbon economy, achieving global climate goals will be impossible. China emits 27 percent of global carbon dioxide and a third of the world\u2019s greenhouse gases.\n# \u30101\u2020Looking beyond the Energy Price Shock to China's Low Carbon Transition\u2020www.worldbank.org\u3011\nThe conflict in Ukraine has caused a massive shock to the global economy. Crude oil prices in early March spiked to as high as \$140 per barrel, levels that were last seen in 2008. While prices have since come down from these peaks, they remain elevated, fueling already high inflation and hurting consumers and economic growth worldwide. Faced with this shock, countries everywhere are ... \n# \u30102\u2020China: 40-Year Experience in Renewable Energy Development\u2020openknowledge.worldbank.org\u3011\nCRESP China Renewable Energy Scale-Up Program CSIC China Shipbuilding Industry Company CSP Concentrated Solar Power CWEA Chinese Wind Energy Association EMCA China Association of Energy Management Companies ESCO Energy Saving Services Company FiT Feed-In Tariff FYP Five-Year Plan GDP Gross Domestic Product GEF Global Environment Facility\n# \u30103\u2020China: Fighting Air Pollution and Climate Change through Clean Energy ... \u2020www.worldbank.org\u3011\nThe Innovative Financing for Air Pollution Control in Jing-Jin-Ji Program was the first operation to use the Program for Result (PforR) instrument in the energy sector in China. The program was designed to support the implementation of the government\u2019s Air Pollution Control Action Plan and the 13 th Five-Year Plan (2016-2020) for energy ... \n# \u30104\u2020Impacts of Carbon Pricing in Reducing the Carbon Intensity of China\u2019s GDP\u2020documents.worldbank.org\u3011\nWe first describe the impact of the lower carbon price case (R1). The initial impact on GDP and energy use in 2015 of the small carbon price is correspondingly small, about 0.2% reduction in energy use. By 2030, when the carbon price reached 26\u00a5/ton CO₂, energy use has fallen 2.6%, and CO₂emissions has fallen 3.3%.\n# \u30105\u2020THE ENERGY PROGRESS REPORT 2020 - World Bank\u2020thedocs.worldbank.org\u3011\nThe highest share of renewables can be found in the electricity sector, with renewable energy in heat and transport sectors continuing to lag behind potential Source: IEA, UNSD \u2022 Renewable energy in the electricity sector saw a growth of 5.8% year-on-year, slightly lower than the record level in 2016.\n# \u30106\u2020From \u201cHigh-Speed\u201d to \u201cHigh-Quality\u201d Growth: Shenzhen, the birthplace of ... \u2020blogs.worldbank.org\u3011\nChina has set ambitious targets to address growing concerns over carbon emissions: a reduction in carbon intensity of 40-45% by 2020 from the 2005 level, which will largely be met by energy conservation efforts with a target of a reduction in energy intensity by 16% between 2011-2015, and renewable energy scale-up with a target of an increase ... \n# \u30107\u2020Open Knowledge Repository\u2020openknowledge.worldbank.org\u3011\nChina\u2019s remarkable economic growth required dramatic growth of energy consumption and continuous changes in the nation\u2019s energy economy. The World Bank supported the efforts of the Chinese government to develop and revitalize the country\u2019s energy sector to meet the daunting challenges it faced while continuously warning that the unrestrained reliance on coal would lead to unsustainable ... \n# \u30108\u2020Transitions at the Heart of the Climate Challenge - World Bank Group\u2020www.worldbank.org\u3011\nA forthcoming five-year Climate Change Action Plan will support transformative investments in key sectors that contribute the most to global greenhouse gas emissions. Low-carbon

transitions in energy, transport, cities, manufacturing and food are expected to generate trillions of dollars of investment and millions of new jobs over the next decade.

[Open Knowledge](#)

[Repository/openknowledge.worldbank.org](#)

Moreover, an inefficient urban form and an energy- and raw material-intensive economy have led to an overconsumption of resources, serious environmental damage, and high GHG emissions. To produce one unit of GDP, Chongqing Municipality consumes 10 times more energy and emits eight times more CO₂ than the Greater Tokyo Area or Seoul Capital Area.

[Energy: Development news, research, data | World Bank](#)

[www.worldbank.org](#)

Energy makes possible the investments, innovations, and new industries that are the engines of jobs, inclusive growth, and shared prosperity for entire economies. Yet nearly 675 million people still live without electricity worldwide. About 2.3 billion people cook or heat their homes with polluting fuels that harm their health and the environment.

[Mozambique Energy Sector Policy Note - The World](#)

[Bank/documents.worldbank.org](#)

China Development Bank ... The energy sector in Mozambique

Mozambique has a small electricity system (approximately 680 MW installed capacity normally supplying the system) that has developed on the margins of important regional projects such as the ... renewable energy projects namely the 1,500 MW Mphanda Nkuwa hydropower project and the

[Energy Sector Analysis - World Bank](#)

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The Super Green power sector scenario will provide 92 percent emissions reduction between 2005 and 2030 and 97 percent reduction by 2050, with investment costs of \$54 billion (present value) or an average annual of 1.7 percent of GDP through 2050.

[Energy Overview: Development news, research, data | World](#)

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Overview. Energy is at the heart of development.

Energy makes possible the investments, innovations, and new industries that drive jobs, inclusive growth, and shared prosperity on a more livable planet. Yet 675 million people still live without electricity worldwide, and about 2.3 billion people rely on polluting traditional fuels and ...

[Is the world on track to deliver energy access for all? - World Bank Group](#)

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In this particular sector, the renewable share amounted to 22.8% in 2015. Hydropower remains the dominant source of renewable electricity, but wind power grew most rapidly from 2010 to 2015. In Latin America, Brazil stands out for more than doubling the global energy share in electricity, heating and transportation. Energy efficiency

[With Decisive Actions, Net Zero Energy is Within Reach in the](#)

[Emerging ...](#)

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Achieving the ambitious Net Zero Energy 2060 target requires an investment of USD\$4.7 trillion (3.9 percent of the regional GDP), most of which will come from the private sector. The additional investment needed for the transition amounts to \$872 billion, in comparison with the fossil fuel path.

[Net Zero Energy by 2060: Charting Europe and Central](#)

[Asia's Journey ...](#)

[www.worldbank.org](#)

This report analyzes how governments in the emerging market and developing economies of Europe and Central Asia can prioritize the policies and investments necessary to shift their energy systems away from fossil fuels. Building on a World Bank model, the analysis suggests an optimal least-cost pathway for the region to achieve net zero energy targets by 2060.

This approach delivers actionable ...

[GCC Economies Expected to Expand by 6.9% in 2022 - World Bank Group](#)

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Investing in green growth could help GCC GDP grow to over US\$ 13 trillion by 2050. Riyadh, October 31, 2022

The economies of the Gulf Cooperation Council (GCC) are projected to

expand by 6.9 %in 2022 before moderating to 3.7% and 2.4% in 2023 and 2024, according to the new World Bank Gulf Economic Update (GEU).. Easing of pandemic restrictions, and positive developments in the hydrocarbon ... \n# \u301018\u2020World Bank Group Provides \$465 Million to Expand Energy Access and ... \u2020www.worldbank.org\u3011\nCountries in the Economic Community of West African States (ECOWAS) will expand access to grid electricity to over 1 million people, enhance power system stability for another 3.5 million people, and increase renewable energy integration in the West Africa Power Pool (WAPP). The new Regional Electricity Access and Battery-Energy Storage Technologies (BEST) Project \u2013 approved by the World Bank ... \n# \u301019\u2020GCC Economic Growth Expected to Slow to 2.5% in 2023 - World Bank Group\u2020www.worldbank.org\u3011\nAccordingly, real GDP is projected to grow by 2.8% in 2023 to reflect a decline in oil activity growth of 2.5% while a strong non-oil sector growth of 4.8% will soften the contraction in oil activities, driven by robust domestic demand, particularly in the tourism, real estate, construction, transportation, and manufacturing sectors.\nVisible: 0% - 100%", "summary": null, "assets": [], "tether_id": null}, "status": "finished_successfully", "end_turn": null, "weight": 0.0, "metadata": {"_cite_metadata": {"citation_format": {"name": "tether_og"}, "metadata_list": [{"type": "webpage", "title": "China\u2019s Transition to a Low-Carbon Economy and Climate Resilience Needs ...", "url": "https://www.worldbank.org/en/news/press-release/2022/10/12/china-s-transition-to-a-low-carbon-economy-and-climate-resilience-needs-shifts-in-resources-and-technologies", "text": "\nUnabated climate change could lead to estimated GDP losses of between 0.5 and 2.3 percent as early as 2030, according to the report. Without China successfully transitioning to a low-carbon economy, achieving global climate goals will be impossible. China emits 27 percent of global carbon dioxide and a third of the world\u2019s greenhouse gases.\n", "pub_date": "2024-05-28T14:07:00.000000Z", "extra": null}, {"type": "webpage", "title": "Looking beyond the Energy Price Shock to China's Low Carbon Transition", "url": "https://www.worldbank.org/en/news/opinion/2022/06/02/looking-beyond-the-energy-price-shock-to-china-s-low-carbon-transition", "text": "\nThe conflict in Ukraine has caused a massive shock to the global economy. Crude oil prices in early March spiked to as high as \$140 per barrel, levels that were last seen in 2008. While prices have since come down from these peaks, they remain elevated, fueling already high inflation and hurting consumers and economic growth worldwide. Faced with this shock, countries everywhere are ... \n", "pub_date": "2024-05-24T20:50:00.000000Z", "extra": null}, {"type": "webpage", "title": "China: 40-Year Experience in Renewable Energy Development", "url": "https://openknowledge.worldbank.org/server/api/core/bitstreams/73c852fa-6bea-5c01-ab52-06d9c2c95e99/content", "text": "\nCRESP China Renewable Energy Scale-Up Program CSIC China Shipbuilding Industry Company CSP Concentrated Solar Power CWEA Chinese Wind Energy Association EMCA China Association of Energy Management Companies ESCO Energy Saving Services Company FiT Feed-In Tariff FYP Five-Year Plan GDP Gross Domestic Product GEF Global Environment Facility\n", "pub_date": "2024-05-29T16:35:00.000000Z", "extra": null}, {"type": "webpage", "title": "China: Fighting Air Pollution and Climate Change through Clean Energy ...", "url": "https://www.worldbank.org/en/results/2020/06/21/china-fighting-air-pollution-and-climate-change-through-clean-energy-financing", "text": "\nThe Innovative Financing for Air Pollution Control in Jing-Jin-Ji Program was the first operation to use the Program for Result (PforR) instrument in the energy sector in China. The program was

designed to support the implementation of the government's Air Pollution Control Action Plan and the 13 th Five-Year Plan (2016-2020) for energy ...", "pub_date": "2024-05-29T18:56:00.000000Z", "extra": null}, {"type": "webpage", "title": "Impacts of Carbon Pricing in Reducing the Carbon Intensity of China's GDP", "url": "https://documents.worldbank.org/curated/en/784211467205076302/pdf/WPS7735.pdf", "text": "\nWe first describe the impact of the lower carbon price case (R1). The initial impact on GDP and energy use in 2015 of the small carbon price is correspondingly small, about 0.2% reduction in energy use. By 2030, when the carbon price reached 26\$/ton CO2, energy use has fallen 2.6%, and CO2 emissions has fallen 3.3%.\n", "pub_date": "2024-05-24T16:35:00.000000Z", "extra": null}, {"type": "webpage", "title": "THE ENERGY PROGRESS REPORT 2020 - World Bank", "url": "https://thedocs.worldbank.org/en/doc/218271591833981044-0090022020/original/061220TrackingSDG7TheEnergyProgressReport2020.pdf", "text": "\nThe highest share of renewables can be found in the electricity sector, with renewable energy in heat and transport sectors continuing to lag behind potential Source: IEA, UNSD \nRenewable energy in the electricity sector saw a growth of 5.8% year-on-year, slightly lower than the record level in 2016.\n", "pub_date": "2024-05-28T01:34:00.000000Z", "extra": null}, {"type": "webpage", "title": "From \nHigh-Speed \n to \nHigh-Quality \n Growth: Shenzhen, the birthplace of ...", "url": "https://blogs.worldbank.org/en/eastasiapacific/high-speed-high-quality-growth-shenzhen-birthplace-chinas-economic-miracle-goes-low-carbon", "text": "\nChina has set ambitious targets to address growing concerns over carbon emissions: a reduction in carbon intensity of 40-45% by 2020 from the 2005 level, which will largely be met by energy conservation efforts with a target of a reduction in energy intensity by 16% between 2011-2015, and renewable energy scale-up with a target of an increase ...", "pub_date": "2024-05-22T17:36:00.000000Z", "extra": null}, {"type": "webpage", "title": "Open Knowledge Repository", "url": "https://openknowledge.worldbank.org/entities/publication/98074e68-47c7-5e9a-9446-5f60155f62b5", "text": "\nChina's remarkable economic growth required dramatic growth of energy consumption and continuous changes in the nation's energy economy. The World Bank supported the efforts of the Chinese government to develop and revitalize the country's energy sector to meet the daunting challenges it faced while continuously warning that the unrestrained reliance on coal would lead to unsustainable ...", "pub_date": "2024-04-26T09:03:00.000000Z", "extra": null}, {"type": "webpage", "title": "Transitions at the Heart of the Climate Challenge - World Bank Group", "url": "https://www.worldbank.org/en/news/feature/2021/05/24/transitions-at-the-heart-of-the-climate-challenge", "text": "\nA forthcoming five-year Climate Change Action Plan will support transformative investments in key sectors that contribute the most to global greenhouse gas emissions. Low-carbon transitions in energy, transport, cities, manufacturing and food are expected to generate trillions of dollars of investment and millions of new jobs over the next decade.\n", "pub_date": "2024-05-28T18:37:00.000000Z", "extra": null}, {"type": "webpage", "title": "Open Knowledge Repository", "url": "https://openknowledge.worldbank.org/entities/publication/bb824fd3-8dbe-5712-a7fa-4bde5eb44296/full", "text": "\nMoreover, an inefficient urban form and an energy- and raw material-intensive economy have led to an overconsumption of resources, serious environmental damage, and high GHG emissions. To produce one unit of GDP, Chongqing Municipality consumes 10 times more energy and emits eight times more CO2 than the

Greater Tokyo Area or Seoul Capital Area.\n", "pub_date": "2024-05-21T23:06:00.000000Z", "extra": null}, {"type": "webpage", "title": "Energy: Development news, research, data | World Bank", "url": "https://www.worldbank.org/en/topic/energy", "text": "\nEnergy makes possible the investments, innovations, and new industries that are the engines of jobs, inclusive growth, and shared prosperity for entire economies. Yet nearly 675 million people still live without electricity worldwide. About 2.3 billion people cook or heat their homes with polluting fuels that harm their health and the environment.\n", "pub_date": "2024-05-28T18:37:00.000000Z", "extra": null}, {"type": "webpage", "title": "Mozambique Energy Sector Policy Note – The World Bank", "url": "https://documents.worldbank.org/curated/en/135711468180536987/ACS17091-REVISED-PUBLIC-Mozambique-Energy-Sector-Policy-Note.pdf", "text": "\nChina Development Bank ... The energy sector in Mozambique \u2022 Mozambique has a small electricity system (approximately 680 MW installed capacity normally supplying the system) that has developed on the margins of important regional projects such as the ... renewable energy projects \u2022 namely the 1,500 MW Mphanda Nkuwa hydropower project and the\n", "pub_date": "2024-05-27T10:30:00.000000Z", "extra": null}, {"type": "webpage", "title": "Energy Sector Analysis – World Bank", "url": "https://openknowledge.worldbank.org/bitstream/handle/10986/24060/Romania000Towa0ergy0sector0analysis.pdf", "text": "\nThe Super Green power sector scenario will provide 92 percent emissions reduction between 2005 and 2030 and 97 percent reduction by 2050, with investment costs of \u2022 billion (present value) or an average annual of 1.7 percent of GDP through 2050.\n", "pub_date": "2024-05-22T14:33:00.000000Z", "extra": null}, {"type": "webpage", "title": "Energy Overview: Development news, research, data | World Bank", "url": "https://www.worldbank.org/en/topic/energy/overview", "text": "\nOverview. Energy is at the heart of development. Energy makes possible the investments, innovations, and new industries that drive jobs, inclusive growth, and shared prosperity on a more livable planet. Yet 675 million people still live without electricity worldwide, and about 2.3 billion people rely on polluting traditional fuels and ... \n", "pub_date": "2024-05-28T20:45:00.000000Z", "extra": null}, {"type": "webpage", "title": "Is the world on track to deliver energy access for all? – World Bank Group", "url": "https://www.worldbank.org/en/news/feature/2018/05/18/sustainable-development-goal-7-energy-access-all", "text": "\nIn this particular sector, the renewable share amounted to 22.8% in 2015. Hydropower remains the dominant source of renewable electricity, but wind power grew most rapidly from 2010 to 2015. In Latin America, Brazil stands out for more than doubling the global energy share in electricity, heating and transportation. Energy efficiency\n", "pub_date": "2024-05-28T19:47:00.000000Z", "extra": null}, {"type": "webpage", "title": "With Decisive Actions, Net Zero Energy is Within Reach in the Emerging ...", "url": "https://www.worldbank.org/en/news/press-release/2024/02/21/with-decisive-actions-net-zero-energy-is-within-reach-in-the-emerging-europe-and-central-asia-says-new-world-bank-report", "text": "\nAchieving the ambitious Net Zero Energy 2060 target requires an investment of USD\$4.7 trillion (3.9 percent of the regional GDP), most of which will come from the private sector. The additional investment needed for the transition amounts to \$872 billion, in comparison with the fossil fuel path.\n", "pub_date": "2024-05-28T22:13:00.000000Z", "extra": null}, {"type": "webpage", "title": "Net Zero Energy by 2060: Charting Europe and Central Asia's Journey ...", "url": "https://www.worldbank.org/en/region/eca/publication/net-zero-energy-by-2060-charting-europe-and-central-asia-s-journey-toward-sustainable-energy-futures", "text": "\nThis

report analyzes how governments in the emerging market and developing economies of Europe and Central Asia can prioritize the policies and investments necessary to shift their energy systems away from fossil fuels. Building on a World Bank model, the analysis suggests an optimal least-cost pathway for the region to achieve net zero energy targets by 2060. This approach delivers actionable ... \n", "pub_date": "2024-05-29T17:21:00.000000Z", "extra": null}, {"type": "webpage", "title": "GCC Economies Expected to Expand by 6.9% in 2022 - World Bank Group", "url": "https://www.worldbank.org/en/news/press-release/2022/10/31/gcc-economies-expected-to-expand-by-6-9-in-2022", "text": "\nInvesting in green growth could help GCC GDP grow to over US\$ 13 trillion by 2050. Riyadh, October 31, 2022 \u2014 The economies of the Gulf Cooperation Council (GCC) are projected to expand by 6.9 %in 2022 before moderating to 3.7% and 2.4% in 2023 and 2024, according to the new World Bank Gulf Economic Update (GEU).. Easing of pandemic restrictions, and positive developments in the hydrocarbon ... \n", "pub_date": "2024-05-27T10:46:00.000000Z", "extra": null}, {"type": "webpage", "title": "World Bank Group Provides \$465 Million to Expand Energy Access and ...", "url": "https://www.worldbank.org/en/news/press-release/2021/06/10/world-bank-group-provides-465-million-to-expand-energy-access-and-renewable-energy-integration-in-west-africa", "text": "\nCountries in the Economic Community of West African States (ECOWAS) will expand access to grid electricity to over 1 million people, enhance power system stability for another 3.5 million people, and increase renewable energy integration in the West Africa Power Pool (WAPP). The new Regional Electricity Access and Battery-Energy Storage Technologies (BEST) Project \u2014 approved by the World Bank ... \n", "pub_date": "2024-05-29T17:33:00.000000Z", "extra": null}, {"type": "webpage", "title": "GCC Economic Growth Expected to Slow to 2.5% in 2023 - World Bank Group", "url": "https://www.worldbank.org/en/news/press-release/2023/05/17/gcc-economic-growth-expected-to-slow-to-2-5-in-2023", "text": "\nAccordingly, real GDP is projected to grow by 2.8% in 2023 to reflect a decline in oil activity growth of 2.5% while a strong non-oil sector growth of 4.8% will soften the contraction in oil activities, driven by robust domestic demand, particularly in the tourism, real estate, construction, transportation, and manufacturing sectors.\nVisible: 0% - 100%", "pub_date": "2024-05-25T22:08:00.000000Z", "extra": null}, {"type": "webpage", "title": "Search results for query: 'China GDP non renewable energy sector site:worldbank.org';", "url": "", "text": "# \u3010\u2020China\u2019s Transition to a Low-Carbon Economy and Climate Resilience Needs ... \u2020www.worldbank.org\u3011\nUnabated climate change could lead to estimated GDP losses of between 0.5 and 2.3 percent as early as 2030, according to the report. Without China successfully transitioning to a low-carbon economy, achieving global climate goals will be impossible. China emits 27 percent of global carbon dioxide and a third of the world\u2019s greenhouse gases.\n# \u3010\u2010Looking beyond the Energy Price Shock to China's Low Carbon Transition\u2020www.worldbank.org\u3011\nThe conflict in Ukraine has caused a massive shock to the global economy. Crude oil prices in early March spiked to as high as \$140 per barrel, levels that were last seen in 2008. While prices have since come down from these peaks, they remain elevated, fueling already high inflation and hurting consumers and economic growth worldwide. Faced with this shock, countries everywhere are ... \n# \u3010\u2010China: 40-Year Experience in Renewable Energy Development\u2020openknowledge.worldbank.org\u3011\nCRESP China Renewable Energy Scale-Up Program CSIC China Shipbuilding Industry Company CSP Concentrated Solar Power CWEA Chinese Wind Energy Association EMCA China Association of Energy Management

Companies ESCO Energy Saving Services Company FiT Feed-In Tariff FYP Five-Year Plan GDP Gross Domestic Product GEF Global Environment Facility\n# \u30103\u2020China: Fighting Air Pollution and Climate Change through Clean Energy ... \u2020www.worldbank.org\u3011\nThe Innovative Financing for Air Pollution Control in Jing-Jin-Ji Program was the first operation to use the Program for Result (PforR) instrument in the energy sector in China. The program was designed to support the implementation of the government\u2019s Air Pollution Control Action Plan and the 13 th Five-Year Plan (2016–2020) for energy ... \n# \u30104\u2020Impacts of Carbon Pricing in Reducing the Carbon Intensity of China\u2019s GDP\u2020documents.worldbank.org\u3011\nWe first describe the impact of the lower carbon price case (R1). The initial impact on GDP and energy use in 2015 of the small carbon price is correspondingly small, about 0.2% reduction in energy use. By 2030, when the carbon price reached 26\u00a5/ton CO₂, energy use has fallen 2.6%, and CO₂emissions has fallen 3.3%. \n# \u30105\u2020THE ENERGY PROGRESS REPORT 2020 – World Bank\u2020thedocs.worldbank.org\u3011\nThe highest share of renewables can be found in the electricity sector, with renewable energy in heat and transport sectors continuing to lag behind potential Source: IEA, UNSD \u2022 Renewable energy in the electricity sector saw a growth of 5.8% year-on-year, slightly lower than the record level in 2016. \n# \u30106\u2020From \u201cHigh-Speed\u201d to \u201cHigh-Quality\u201d Growth: Shenzhen, the birthplace of ... \u2020blogs.worldbank.org\u3011\nChina has set ambitious targets to address growing concerns over carbon emissions: a reduction in carbon intensity of 40–45% by 2020 from the 2005 level, which will largely be met by energy conservation efforts with a target of a reduction in energy intensity by 16% between 2011–2015, and renewable energy scale-up with a target of an increase ... \n# \u30107\u2020Open Knowledge Repository\u2020openknowledge.worldbank.org\u3011\nChina\u2019s remarkable economic growth required dramatic growth of energy consumption and continuous changes in the nation\u2019s energy economy. The World Bank supported the efforts of the Chinese government to develop and revitalize the country\u2019s energy sector to meet the daunting challenges it faced while continuously warning that the unrestrained reliance on coal would lead to unsustainable ... \n# \u30108\u2020Transitions at the Heart of the Climate Challenge – World Bank Group\u2020www.worldbank.org\u3011\nA forthcoming five-year Climate Change Action Plan will support transformative investments in key sectors that contribute the most to global greenhouse gas emissions. Low-carbon transitions in energy, transport, cities, manufacturing and food are expected to generate trillions of dollars of investment and millions of new jobs over the next decade. \n# \u30109\u2020Open Knowledge Repository\u2020openknowledge.worldbank.org\u3011\nMoreover, an inefficient urban form and an energy- and raw material-intensive economy have led to an overconsumption of resources, serious environmental damage, and high GHG emissions. To produce one unit of GDP, Chongqing Municipality consumes 10 times more energy and emits eight times more CO₂ than the Greater Tokyo Area or Seoul Capital Area. \n# \u301010\u2020Energy: Development news, research, data | World Bank\u2020www.worldbank.org\u3011\nEnergy makes possible the investments, innovations, and new industries that are the engines of jobs, inclusive growth, and shared prosperity for entire economies. Yet nearly 675 million people still live without electricity worldwide. About 2.3 billion people cook or heat their homes with polluting fuels that harm their health and the environment. \n# \u301011\u2020Mozambique Energy Sector Policy Note – The World Bank\u2020documents.worldbank.org\u3011\nChina Development Bank ... The energy sector

in Mozambique \u2022 Mozambique has a small electricity system (approximately 680 MW installed capacity normally supplying the system) that has developed on the margins of important regional projects such as the ... renewable energy projects \u2013 namely the 1,500 MW Mphanda Nkuwa hydropower project and the \n# \u301012\u2020Energy Sector Analysis - World Bank\u2020openknowledge.worldbank.org\u3011\nThe Super Green power sector scenario will provide 92 percent emissions reduction between 2005 and 2030 and 97 percent reduction by 2050, with investment costs of \u20ac54 billion (present value) or an average annual of 1.7 percent of GDP through 2050. \n# \u301013\u2020Energy Overview: Development news, research, data | World Bank\u2020www.worldbank.org\u3011\nOverview. Energy is at the heart of development. Energy makes possible the investments, innovations, and new industries that drive jobs, inclusive growth, and shared prosperity on a more livable planet. Yet 675 million people still live without electricity worldwide, and about 2.3 billion people rely on polluting traditional fuels and ... \n# \u301014\u2020Is the world on track to deliver energy access for all? - World Bank Group\u2020www.worldbank.org\u3011\nIn this particular sector, the renewable share amounted to 22.8% in 2015. Hydropower remains the dominant source of renewable electricity, but wind power grew most rapidly from 2010 to 2015. In Latin America, Brazil stands out for more than doubling the global energy share in electricity, heating and transportation. Energy efficiency \n# \u301015\u2020With Decisive Actions, Net Zero Energy is Within Reach in the Emerging ... \u2020www.worldbank.org\u3011\nAchieving the ambitious Net Zero Energy 2060 target requires an investment of USD\$4.7 trillion (3.9 percent of the regional GDP), most of which will come from the private sector. The additional investment needed for the transition amounts to \$872 billion, in comparison with the fossil fuel path. \n# \u301016\u2020Net Zero Energy by 2060: Charting Europe and Central Asia's Journey ... \u2020www.worldbank.org\u3011\nThis report analyzes how governments in the emerging market and developing economies of Europe and Central Asia can prioritize the policies and investments necessary to shift their energy systems away from fossil fuels. Building on a World Bank model, the analysis suggests an optimal least-cost pathway for the region to achieve net zero energy targets by 2060. This approach delivers actionable ... \n# \u301017\u2020GCC Economies Expected to Expand by 6.9% in 2022 - World Bank Group\u2020www.worldbank.org\u3011\nInvesting in green growth could help GCC GDP grow to over US\$ 13 trillion by 2050. Riyadh, October 31, 2022 \u2014 The economies of the Gulf Cooperation Council (GCC) are projected to expand by 6.9 %in 2022 before moderating to 3.7% and 2.4% in 2023 and 2024, according to the new World Bank Gulf Economic Update (GEU).. Easing of pandemic restrictions, and positive developments in the hydrocarbon ... \n# \u301018\u2020World Bank Group Provides \$465 Million to Expand Energy Access and ... \u2020www.worldbank.org\u3011\nCountries in the Economic Community of West African States (ECOWAS) will expand access to grid electricity to over 1 million people, enhance power system stability for another 3.5 million people, and increase renewable energy integration in the West Africa Power Pool (WAPP). The new Regional Electricity Access and Battery-Energy Storage Technologies (BEST) Project \u2013 approved by the World Bank ... \n# \u301019\u2020GCC Economic Growth Expected to Slow to 2.5% in 2023 - World Bank Group\u2020www.worldbank.org\u3011\nAccordingly, real GDP is projected to grow by 2.8% in 2023 to reflect a decline in oil activity growth of 2.5% while a strong non-oil sector growth of 4.8% will soften the contraction in oil activities, driven by robust domestic demand, particularly in the tourism, real estate, construction, transportation, and manufacturing

sectors.\nVisible: 0% - 100%", "pub_date": null, "extra": null}], "original_query": null, "command": "search", "args": ["China GDP non renewable energy sector site:worldbank.org"], "status": "finished", "is_complete": true, "message_type": null, "model_slug": "gpt-4o", "default_model_slug": "gpt-4o", "parent_id": "34df6d9f-84ca-4401-85b4-455863827c13", "request_id": "88c4848e4e240e4f-MXP", "timestamp_": "absolute", "recipient": "all", "channel": null, "parent": "34df6d9f-84ca-4401-85b4-455863827c13", "children": ["9c11b23e-02db-4440-9646-9d98961f5370"]], "9c11b23e-02db-4440-9646-9d98961f5370": {"id": "9c11b23e-02db-4440-9646-9d98961f5370", "message": {"id": "9c11b23e-02db-4440-9646-9d98961f5370", "author": {"role": "assistant", "name": null, "metadata": {}}, "create_time": 1717132866.297572, "update_time": null, "content": {"content_type": "code", "language": "unknown", "response_format_name": null, "text": "mclick([0, 1, 3, 7, 10])", "status": "finished_successfully", "end_turn": false, "weight": 1.0, "metadata": {"citations": [], "gizmo_id": "g-HTKib04fm", "message_type": null, "model_slug": "gpt-4o", "default_model_slug": "gpt-4o", "parent_id": "7d7c00bd-a437-49b9-89ca-e166a131a6cb", "finish_details": {"type": "stop", "stop_tokens": [200007]}}, "is_complete": true, "request_id": "88c4848e4e240e4f-MXP", "timestamp_": "absolute", "recipient": "browser", "channel": null, "parent": "7d7c00bd-a437-49b9-89ca-e166a131a6cb", "children": ["3b5ab15e-7c6b-4677-8233-7dff0a7cc694"]}, "3b5ab15e-7c6b-4677-8233-7dff0a7cc694": {"id": "3b5ab15e-7c6b-4677-8233-7dff0a7cc694", "message": {"id": "3b5ab15e-7c6b-4677-8233-7dff0a7cc694", "author": {"role": "tool", "name": "browser", "metadata": {}}, "create_time": 1717132866.303951, "update_time": null, "content": {"content_type": "tether_quote", "url": "https://www.worldbank.org/en/news/press-release/2022/10/12/china-s-transition-to-a-low-carbon-economy-and-climate-resilience-needs-shifts-in-resources-and-technologies", "domain": "www.worldbank.org", "text": " * \u3010294\u2020East Asia and Pacific\u3011\n * \u3010295\u2020Europe and Central Asia\u3011\n * \u3010296\u2020Latin America and Caribbean\u3011\n * \u3010297\u2020Middle East and North Africa\u3011\n * \u3010298\u2020South Asia\u3011\n\nCountry Groups\n\n * \u3010299\u2020European Union\u3011\n * \u3010300\u2020Middle Income Countries\u3011\n * \u301062\u2020Organization of Eastern Caribbean States\u3011\n * \u3010133\u2020Pacific Islands\u3011\n * \u3010301\u2020Small States\u3011\n * \u3010302\u2020Gulf Cooperation Council\u3011\n * \u3010132\u2020Western Europe\u3011\n\n * \u3010105\u2020UNDERSTANDING POVERTY\u3011\n\n[Image 3: megamenu-image-1] \n\nWe face big challenges to help the world\u2019s poorest people and ensure that everyone sees benefits from economic growth. Data and research help us understand these challenges and set priorities, share knowledge of what works, and measure progress.\n\nData & Research\n\n * \u3010146\u2020Open Data\u2020data.worldbank.org\u3011\n * \u3010303\u2020By Country\u2020data.worldbank.org\u3011\n * \u3010304\u2020By Indicator\u2020data.worldbank.org\u3011\n * \u3010145\u2020Research & Publications\u3011\n\nDevelopment Topics\n\n * \u3010140\u2020Climate Change\u3011\n * \u3010305\u2020Agriculture and Food\u3011\n * \u3010306\u2020Fragility, Conflict, and Violence\u3011\n * \u3010307\u2020Poverty\u3011\n * \u3010308\u2020Debt\u3011\n * \u3010309\u2020Education\u3011\n * \u3010310\u2020Health\u3011\n * \u3010311\u2020Energy\u3011\n * \u3010141\u2020Food Security\u3011\n * \u3010148\u2020All Development Topics\u3011\n\n* * *\n\nSearch button\n\n * \u30106\u2020WORK WITH US\u3011\n\nFor Job Seekers\n\n * \u3010312\u2020Jobs\u3011\n * \u3010313\u2020Programs & Internships\u3011\n\nFor Partners\n\n * \u301011\u2020Partners\u3011\n * "

\u3010314\u2020Corporate and Private Foundations\u3011\n *
\u3010315\u2020Clients\u2020clientconnection.worldbank.org\u3011\n *
\u3010316\u2020Private Sector\u3011\n * \u3010317\u2020Corporate Procurement
\u3011\n * \u3010318\u2020Civil Society\u3011\n *
\u3010319\u2020Consultations\u2020consultations.worldbank.org\u3011\n *
\u3010320\u2020Parliamentarians\u3011\n\nFor Investors\n\n * \u3010321\u2020World
Bank Bonds & Investment Products\u2020treasury.worldbank.org\u3011\n *
\u301052\u2020Treasury\u2020treasury.worldbank.org\u3011\n\nFor Learners\n\n *
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October 12, 2022\n\n\n# China\u2019s Transition to a Low-Carbon Economy and Climate
Resilience Needs Shifts in Resources and Technologies \n\n\n * \n\n\n * \u3010331\u2020
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Image] stumbleupon\n\n\n * [Image 10: Image] delicious\n\n\n * [Image 11: Image]
sina\n\n\n* * *\n\n\nBeijing, October 12, 2022 \u2013 Climate change poses a significant
threat to China\u2019s long-term prosperity. At the same time, the country is well
positioned to meet its climate commitments and transition to a greener economy while
meeting its development goals, according to a World Bank Group report released
today. \n\n\nThe World Bank Group\u2019s \u3010332\u2020Country Climate and Development
Report (CCDR) for China\u2020openknowledge.worldbank.org\u3011\u00a0analyzes the
fundamental changes in energy, industry, transport, cities, and land use that would
enable China to realize its national commitments to reach peak carbon emissions before
2030 and achieve carbon neutrality by 2060. The report highlights the urgency of
action, because of China\u2019s large emission of greenhouse gases, the heavy exposure
of China\u2019s population and economic infrastructure to climate risks, and
China\u2019s critical role in global efforts to combat climate change. \n\n\nThe impacts
of climate change threaten China\u2019s densely populated and economically critical
low-lying coastal cities, which are home to an estimated one-fifth of China\u2019s
population and contribute a third of its GDP. China already experiences frequent
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climate change could lead to estimated GDP losses of between 0.5 and 2.3 percent as
early as 2030, according to the report. \n\n\nWithout China successfully transitioning to
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image-1] \n \n We face big challenges to help the world\u2019s poorest people and ensure
that everyone sees benefits from economic growth. Data and research help us understand
these challenges and set priorities, share knowledge of what works, and measure
progress. \n \n Data & Research \n \n * \u301045\u2020Open
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\u3010303\u2020Gulf Cooperation Council\u3011\n * \u3010304\u2020Western
Europe\u3011\n\n * \u3010305\u2020UNDERSTANDING POVERTY\u3011 \n\n[Image 3: megamenu-
image-1] \n\nWe face big challenges to help the world\u2019s poorest people and ensure
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*\n\n#### MULTIMEDIA\n\n[Image 12: Image] \n\nClick\n\nVIDEO\n\n#### Restoring
China\u2019s Blue Skies in Jing-Jin-Ji\n\n* * *\n\nThe World Bank-supported Innovative
Financing for Air Pollution Control Program has financed investments in energy
efficiency, renewable energy and emissions control. The program has leveraged funding
5.4 times the original loan amount, mainstreamed green finance at Huaxia Bank, and
supported China\u2019s efforts to mitigate climate change by reducing carbon dioxide
emissions by 2.5 million tons a year. \n\n* * *\n\nChallenge \n\nChina was home to
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dropdown\n\nResults Briefs June 21, 2020\n\n# China: Fighting Air Pollution and
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\u3011\n\n * Tweet\n * Share\n * Share\n * \n\n * [Image 6:
Image]\n\nLinkedIn\n\n * [Image 7: Image]\n\nDigg\n\n * [Image 8:

Image]\n\n\u4eba\u4eba\u7f51\n\n * [Image 9: Image]\n\nStumble Upon\n\n * [Image 10: Image]\n\nDelicious\n\n * [Image 11: Image]\n\n\u65b0\u6d6a\u5fae\u535a\n\n* * \n\n#### MULTIMEDIA\n\n[Image 12: Image] \n\n\nclick\n\nVIDEO\n\n#### Restoring China\u2019s Blue Skies in Jing-Jin-Ji\n\n* * \n\nThe World Bank-supported Innovative Financing for Air Pollution Control Program has financed investments in energy efficiency, renewable energy and emissions control. The program has leveraged funding 5.4 times the original loan amount, mainstreamed green finance at Huaxia Bank, and supported China\u2019s efforts to mitigate climate change by reducing carbon dioxide emissions by 2.5 million tons a year. \n\n* * \n\nChallenge \n\nChina was home to many of the world\u2019s most polluted cities and is the world\u2019s largest emitter of greenhouse gases (GHGs). The Beijing-Tianjin-Hebei (Jing-Jin-Ji) region experienced particularly severe air pollution, with an annual average fine particulate matter (PM 2.5) conce", "pub_date": null, "extra": null}], "original_query": null, "command": "mclick", "args": "[[0, 1, 3, 7, 10]]", "status": "finished", "is_complete": true, "message_type": null, "model_slug": "gpt-4o", "default_model_slug": "gpt-4o", "parent_id": "f6f0fb12-05a7-414b-a4f7-c8457cadb760", "request_id": "88c4848e4e240e4f-MXP", "timestamp_": "absolute", "recipient": "all", "channel": null, "parent": "f6f0fb12-05a7-414b-a4f7-c8457cadb760", "children": [{"id": "d806df60-ad6c-4dfa-a0c6-5ed71f34512e"}], "d806df60-ad6c-4dfa-a0c6-5ed71f34512e": {"id": "d806df60-ad6c-4dfa-a0c6-5ed71f34512e", "message": {"id": "d806df60-ad6c-4dfa-a0c6-5ed71f34512e", "author": {"role": "tool", "name": "browser", "metadata": {}}, "create_time": 1717132866.304755, "update_time": null, "content": {"content_type": "tether_quote", "url": "https://openknowledge.worldbank.org/entities/publication/98074e68-47c7-5e9a-9446-5f60155f62b5", "domain": "openknowledge.worldbank.org", "text": "\nURL: https://openknowledge.worldbank.org/entities/publication/98074e68-47c7-5e9a-9446-5f60155f62b5\n\n\u3010\u2020Maigret\u3011\n\n[Image 0: Repository logo][Image 1: Repository logo]\n\n * English \n\n * Fran\u00e7ais \n\n * Espa\u00f1ol\n\n * \u3010\u2020Collections\u3011\n\n * Statistics \n\n * Browse \n\n * FOCUS\n\n 1. \u3010\u2020Home\u3011 2. \u3010\u202007. Economic and Sector Work (ESW) Studies\u3011 3. \u3010\u2020Sector/Thematic Studies\u3011 4. \u3010\u2020Energy Study\u3011 5. Renewable Energy Development in China: A 40-Year China-World Bank Partnership\n\n## \n\nPublication: \n\nRenewable Energy Development in China: A 40-Year China-World Bank Partnership\n\n\u3010\u2020creativecommons.org\u3011\n\n\u3010\u2020Tweet\u3011\u3010\u2020twitter.com\u3011\u3010\u2020Like\u3011\u3010\u2020www.facebook.com\u3011\u3010\u2020Share\u3011\u3010\u2020www.linkedin.com\u3011\n\nLoading...\n\n[Image 2: Thumbnail Image]\n\n##### Files in English \n\n\u3010\u2020English PDF (3.39 MB) \u3011\u3010\u2020English Text (89.21 KB) \u3011\u3010\u2020Date \n\n2021-12-03 \n\n##### ISSN \n\n##### Published \n\n2021-12-03 \n\n##### Author(s)\n\n\u3010\u2020De Gouvello, Christophe \u3011\u3010\u2020Song, Yanqin \u3011\n\n\u3010\u2020Tweet\u3011\u3010\u2020twitter.com\u3011\u3010\u2020Like\u3011\u3010\u2020www.facebook.com\u3011\u3010\u2020Share\u3011\u3010\u2020www.linkedin.com\u3011\n\n##### Abstract \n\nChina\u2019s remarkable economic growth required dramatic growth of energy consumption and continuous changes in the nation\u2019s energy economy. The World Bank supported the efforts of the Chinese government to develop and revitalize the country\u2019s energy sector to meet the daunting challenges it faced while continuously warning that the unrestrained reliance on coal would lead to unsustainable stress on the local and global environment. In mid-1980s, the Chinese government and the World Bank embarked on a long and arduous journey to develop

renewable energy (RE) to lessen the impacts on the environment and avoid excessive reliance on coal to alleviate the debilitating power shortages that constrained the economy. This paper focuses on the more than 40-year partnership with the World Bank along China's long journey to develop a large-scale, efficient, and competitive RE industry in the country and globally. While the projects supported by the World Bank and their role are highlighted in this paper, this support should only be seen as a catalyst. The remarkable development of renewable energy in China was primarily guided by the multiple Chinese authorities at the national, provincial, and county levels, implemented by the many public and private companies, and fueled by local financing institutions. The paper is structured along the four stages of RE development in China, which are detailed in a companion report. It highlights the key milestones of this partnership, its achievements, and challenges, detailing World Bank support and main activities that contributed to China's rise from a laggard to a leader.

Link to Data Set ##### Citation##### De Gouvello, Christophe; Song, Yanqin. 2021. Renewable Energy Development in China: A 40-Year China-World Bank Partnership. World Bank, Washington, DC. <http://hdl.handle.net/10986/36666>
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 \u30105\u2020Energy Study\u3011\n\n 5. Renewable Energy Development in China: A 40-
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 Published \n\n2021-12-03 \n\n##### Author(s)\n\n\u301012\u2020 De Gouvello, Christophe
 \u3011\n\n\u301013\u2020 Song, Yanqin
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 com\u3011\u30109\u2020Share\u2020www.linkedin.com\u3011\n\n##### Abstract
 \n\nChina\u2019s remarkable economic growth required dramatic growth of energy
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 leader.\n\n##### Link to Data Set \n\n##### Citation\n\n\u201cDe Gouvello, Christophe;
 Song, Yanqin. 2021. Renewable Energy Development in China: A 40-Year China-World Bank
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\u0301038\u03010ICSID\u03010icsid.worldbank.org\u030111\n\n\n\u03010a9 2021 The World Bank Group,
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 image-1] \n\nWe face big challenges to help the world\u2019s poorest people and ensure
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 \u30105\u2020Understanding Poverty\u3011\n 2. \u301048\u2020Topics\u3011\n\n[Image 6:
 The World Bank] \n\n[Image 7: Image] \n\n# Energy\n\nEnergy is the backbone of a

modern economy. It makes possible the investments, innovations, and new industries that drive jobs, inclusive growth, and shared prosperity on a livable planet. Expanding energy access and meeting climate goals must be done simultaneously by scaling up energy efficiency and renewable energy investments that allow the phase-down of fossil fuels.

\n\n * Energy Home\n * \u3010327\u2020overview\u3011 \n\n * [Image 8: SU2PD Square Image] \n\nReport\n\n### \u3010328\u2020Scaling Up to Phase Down\u3011\n\n\u201cScaling Up to Phase Down\u201d maps out steps to support developing countries to scale up affordable, secure, and reliable clean energy and phase down coal-fired electricity generation. \n\n\u3010328\u2020Scaling Up to Phase Down\u3011 \n\n * [Image 9: Scaling Hydrogen report - Executive Summary] \n\nReport\n\n### \u3010329\u2020Scaling Hydrogen Financing for Development | Executive Summary\u2020www.esmap.org\u3011 \n\nThis report highlights how policy and financial risk mitigation mechanisms play a critical role in slashing the funding gap and reducing the cost of hydrogen generation. \n\n\u3010329\u2020Scaling Hydrogen Financing for Development | Executive Summary\u2020www.esmap.org\u3011 \n\n * [Image 10: Unlocking the energy transition report] \n\nReport\n\n### \u3010330\u2020Unlocking the Energy Tra

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image-1] \n\nWe face big challenges to help the world\u2019s poorest people and ensure that everyone sees benefits from economic growth. Data and research help us understand these challenges and set priorities, share knowledge of what works, and measure progress.\n\nData & Research\n\n * \u301046\u2020Open Data\u2020data.worldbank.org\u3011\n * \u3010303\u2020By Country\u2020data.worldbank.org\u3011\n * \u3010304\u2020By Indicator\u2020data.worldbank.org\u3011\n * \u301045\u2020Research & Publications\u3011\n\nDevelopment Topics\n\n * \u301040\u2020Climate Change\u3011\n * \u3010305\u2020Agriculture and Food\u3011\n * \u3010306\u2020Fragility, Conflict, and Violence\u3011\n * \u3010307\u2020Poverty\u3011\n * \u3010308\u2020Debt\u3011\n * \u3010309\u2020Education\u3011\n * \u3010310\u2020Health\u3011\n * \u3010311\u2020Energy\u3011\n * \u301041\u2020Food Security\u3011\n * \u301048\u2020All Development Topics\u3011\n\n* * *\n\nSearch button\n\n * \u30106\u2020WORK WITH US\u3011\n\nFor Job Seekers\n\n * \u3010312\u2020Jobs\u3011\n * \u3010313\u2020Programs & Internships\u3011\n\nFor Partners\n\n * \u3010101\u2020Partners\u3011\n * \u3010314\u2020Corporate and Private Foundations\u3011\n * \u3010315\u2020Clients\u2020clientconnection.worldbank.org\u3011\n * \u3010316\u2020Private Sector\u3011\n * \u3010317\u2020Corporate Procurement\u3011\n * \u3010318\u2020Civil Society\u3011\n * \u3010319\u2020Consultations\u2020consultations.worldbank.org\u3011\n * \u3010320\u2020Parliamentarians\u3011\n\nFor Investors\n\n * \u3010321\u2020World Bank Bonds & Investment Products\u2020treasury.worldbank.org\u3011\n * \u301052\u2020Treasury\u2020treasury.worldbank.org\u3011\n\nFor Learners\n\n * \u301047\u2020Open Learning Campus\u2020olc.worldbank.org\u3011\n\nMeet Us\n\n * \u3010322\u2020Events\u3011\n * \u3010323\u2020World Bank Live\u2020live.worldbank.org\u3011\n * \u3010324\u2020Speaker's Bureau\u3011\n * \u3010325\u2020Spring & Annual Meetings\u3011\n\n* * *\n\n * \u3010326\u2020Contacts & Inquiries\u3011\n\n * [Image 4: WB Live]\n\nGlobal Search dropdown\n\n\n[Image 5: Search graphic]\n\nSearch\n\nSearch button\n\n1. \u30105\u2020Understanding Poverty\u3011\n2. \u301048\u2020Topics\u3011\n\n[Image 6: The World Bank]\n\n\n[Image 7: Image]\n\n\n# Energy\n\nEnergy is the backbone of a modern economy. It makes possible the investments, innovations, and new industries that drive jobs, inclusive growth, and shared prosperity on a livable planet. Expanding energy access and meeting climate goals must be done simultaneously by scaling up energy efficiency and renewable energy investments that allow the phase-down of fossil fuels.\n\n * Energy Home\n * \u3010327\u2020Overview\u3011\n\n\n * [Image 8: SU2PD Square Image]\n\n\nReport\n\n\n### \u3010328\u2020Scaling Up to Phase Down\u3011\n\n\n\u201cScaling Up to Phase Down\u201d maps out steps to support developing countries to scale up affordable, secure, and reliable clean energy and phase down coal-fired electricity generation. \n\n\n\u3010328\u2020Scaling Up to Phase Down\u3011\n\n\n * [Image 9: Scaling Hydrogen report - Executive Summary]\n\n\nReport\n\n\n### \u3010329\u2020Scaling Hydrogen Financing for Development | Executive Summary\u2020www.esmap.org\u3011\n\n\nThis report highlights how policy and financial risk mitigation mechanisms play a critical role in slashing the funding gap and reducing the cost of hydrogen generation.\n\n\n\u3010329\u2020Scaling Hydrogen Financing for Development | Executive Summary\u2020www.esmap.org\u3011\n\n\n * [Image 10: Unlocking the energy transition report]\n\n\nReport\n\n\n### \u3010330\u2020Unlocking the Energy Tra

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3011 \n * \3010330\2020\u04e2d\u06587\2020www.shihang.org\3011 \n\nPRESS RELEASE
October 12, 2022\n\n# China\2019s Transition to a Low-Carbon Economy and Climate
Resilience Needs Shifts in Resources and Technologies \n\n * \n * \3010331\2020
\3011 \n * \n * \n * \n * Share more\n\nclose\n\n * [Image 6: Image]
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sina\n\n* * *\n\nBeijing, October 12, 2022 \u2013 Climate change poses a significant
threat to China\2019s long-term prosperity. At the same time, the country is well
positioned to meet its climate commitments and transition to a greener economy while
meeting its development goals, according to a World Bank Group report released
today.\n\nThe World Bank Group\2019s \3010332\2020Country Climate and Development
Report (CCDR) for China\2020openknowledge.worldbank.org\3011\u00a0analyzes the
fundamental changes in energy, industry, transport, cities, and land use that would
enable China to realize its national commitments to reach peak carbon emissions before
2030 and achieve carbon neutrality by 2060. The report highlights the urgency of
action, because of China\2019s large emission of greenhouse gases, the heavy exposure
of China\2019s population and economic infrastructure to climate risks, and
China\2019s critical role in global efforts to combat climate change.\n\nThe impacts
of climate change threaten China\2019s densely populated and economically critical
low-lying coastal cities, which are home to an estimated one-fifth of China\2019s
population and contribute a third of its GDP. China already experiences frequent
coastal flooding, storm surges, coastal erosion, and saltwater intrusion. Unabated
climate change could lead to estimated GDP losses of between 0.5 and 2.3 percent as
early as 2030, according to the report.\n\nWithout China successfully transitioning to
a low-carbon economy, achieving global climate goals will be impossi", "pub_date":
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\u3010295\u2020Latin America and Caribbean\u3011\n * \u3010296\u2020Middle East and North Africa\u3011\n * \u3010297\u2020South Asia\u3011\n\nCountry Groups\n\n * \u3010298\u2020European Union\u3011\n * \u3010299\u2020Middle Income Countries\u3011\n * \u301061\u2020Organization of Eastern Caribbean States\u3011\n * \u3010132\u2020Pacific Islands\u3011\n * \u3010300\u2020Small States\u3011\n * \u3010301\u2020Gulf Cooperation Council\u3011\n * \u3010131\u2020Western Europe\u3011\n\n * \u3010104\u2020UNDERSTANDING POVERTY\u3011 \n\n[Image 3: megamenu-image-1] \n\nWe face big challenges to help the world\u2019s poorest people and ensure that everyone sees benefits from economic growth. Data and research help us understand these challenges and set priorities, share knowledge of what works, and measure progress.\n\nData & Research\n\n * \u3010145\u2020Open Data\u2020data.worldbank.org\u3011\n * \u3010302\u2020By Country\u2020data.worldbank.org\u3011\n * \u3010303\u2020By Indicator\u2020data.worldbank.org\u3011\n * \u3010144\u2020Research & Publications\u3011\n\nDevelopment Topics\n\n * \u3010139\u2020Climate Change\u3011\n * \u3010304\u2020Agriculture and Food\u3011\n * \u3010305\u2020Fragility, Conflict, and Violence\u3011\n * \u3010306\u2020Poverty\u3011\n * \u3010307\u2020Debt\u3011\n * \u3010308\u2020Education\u3011\n * \u3010309\u2020Health\u3011\n * \u3010310\u2020Energy\u3011\n * \u3010140\u2020Food Security\u3011\n * \u3010147\u2020All Development Topics\u3011\n\n* * *\n\nSearch button\n\n * \u3010105\u2020WORK WITH US\u3011\n\nFor Job Seekers\n\n * \u3010311\u2020Jobs\u3011\n * \u3010312\u2020Programs & Internships\u3011\n\nFor Partners\n\n * \u3010110\u2020Partners\u3011\n * \u3010313\u2020Corporate and Private Foundations\u3011\n * \u3010314\u2020Clients\u2020clientconnection.worldbank.org\u3011\n * \u3010315\u2020Private Sector\u3011\n * \u3010316\u2020Corporate Procurement\u3011\n * \u3010317\u2020Civil Society\u3011\n * \u3010318\u2020Consultations\u2020consultations.worldbank.org\u3011\n * \u3010319\u2020Parliamentarians\u3011\n\nFor Investors\n\n * \u3010320\u2020World Bank Bonds & Investment Products\u2020treasury.worldbank.org\u3011\n * \u30101051\u2020Treasury\u2020treasury.worldbank.org\u3011\n\nFor Learners\n\n * \u3010146\u2020Open Learning Campus\u2020olc.worldbank.org\u3011\n\nMeet Us\n\n * \u3010321\u2020Events\u3011\n * \u3010322\u2020World Bank Live\u2020live.worldbank.org\u3011\n * \u3010323\u2020Speaker's Bureau\u3011\n * \u3010324\u2020Spring & Annual Meetings\u3011\n\n* * *\n\n * \u3010325\u2020Contacts & Inquiries \u3011\n\n * [Image 4: WB Live]\n\nGlobal Search dropdown\n\n[Image 5: Search graphic]\n\nSearch\n\nSearch button\n\n1. \u3010102\u2020What We Do\u3011\n2. \u3010326\u2020Projects & Operations\u2020projects.worldbank.org\u3011\n\n * This page in: EN dropdown\n\n * \u3010327\u2020\u4e2d\u6587\u2020projects.shihang.org\u3011\n\nThis page in: _\n\n * English\n\n * \u3010327\u2020\u4e2d\u6587\u2020projects.shihang.org\u3011\n\n* dropdown\n\nResults Briefs June 21, 2020\n\n# China: Fighting Air Pollution and Climate Change through Clean Energy Financing\n\n * Email\n\n * \u3010328\u2020Print\u3011\n\n * Tweet\n\n * Share\n\n * Share\n\n * \n\n * [Image 6: Image]\n\nLinkedIn\n\n * [Image 7: Image]\n\nDigg\n\n * [Image 8: Image]\n\n\u4eba\u4eba\u7f51\n\n * [Image 9: Image]\n\nStumble Upon\n\n * [Image 10: Image]\n\nDelicious\n\n * [Image 11: Image]\n\n\u65b0\u6d6a\u5fae\u535a\n\n* * *\n\n#### MULTIMEDIA\n\n[Image 12: Image] \n\nclick\n\nVIDEO\n\n#### Restoring China\u2019s Blue Skies in Jing-Jin-Ji\n\n* * *\n\nThe World Bank-supported Innovative

Financing for Air Pollution Control Program has financed investments in energy efficiency, renewable energy and emissions control. The program has leveraged funding 5.4 times the original loan amount, mainstreamed green finance at Huaxia Bank, and supported China's efforts to mitigate climate change by reducing carbon dioxide emissions by 2.5 million tons a year.

Challenge

China was home to many of the world's most polluted cities and is the world's largest emitter of greenhouse gases (GHGs). The Beijing-Tianjin-Hebei (Jing-Jin-Ji) region experienced particularly severe air pollution, with an annual average fine particulate matter (PM 2.5) concentration of 100 micrograms per cubic meter.

Source

World Bank, "China's Transition to a Low-Carbon Economy and Climate Resilience Needs Shifts in Resources and Technologies", <https://www.worldbank.org/en/news/press-release/2022/10/12/china-s-transition-to-a-low-carbon-economy-and-climate-resilience-needs-shifts-in-resources-and-technologies>, October 12, 2022.

Snippet

East Asia and Pacific
Europe and Central Asia
Latin America and Caribbean
Middle East and North Africa
South Asia
Country Groups
European Union
Middle Income Countries
Organization of Eastern Caribbean States
Pacific Islands
Small States
Gulf Cooperation Council
Western Europe
UNDERSTANDING POVERTY

Image 3: megamenu-image-1

We face big challenges to help the world's poorest people and ensure that everyone sees benefits from economic growth. Data and research help us understand these challenges and set priorities, share knowledge of what works, and measure progress.

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0310321\u2020Parliamentarians\u2020Investors\u2020For Investors\n\n * \u03010321\u2020World Bank Bonds & Investment Products\u2020treasury.worldbank.org\u03011\n\n * \u0301052\u2020Treasury\u2020treasury.worldbank.org\u03011\n\n\nFor Learners\n\n * \u0301047\u2020Open Learning Campus\u2020olc.worldbank.org\u03011\n\n\nMeet Us\n\n * \u03010322\u2020Events\u03011\n\n * \u03010323\u2020World Bank Live\u2020live.worldbank.org\u03011\n\n * \u03010324\u2020Speaker's Bureau\u03011\n\n * \u03010325\u2020Spring & Annual Meetings\u03011\n\n\n* * *\n\n * \u03010326\u2020Contacts & Inquiries \u03011\n\n\n * [Image 4: WB Live]\n\n\nglobal Search dropdown\n\n\n[Image 5: Search graphic]\n\n\nSearch\n\n\n Search button\n\n\n 1. \u030102\u2020Who We Are\u03011\n\n 2. \u030107\u2020News\u03011\n\n\nThis page in: \n\n\nEnglish \n\n\n * \u03010327\u2020Espa\u03010f1ol\u2020www.bancomundial.org\u03011\n\n * \u03010328\u2020Fran\u03010ais\u2020www.banquemoniale.org\u03011\n\n * \u03010329\u2020\u03010627\u03010644\u03010639\u03010631\u03010628\u0301064a\u03010629\u2020www.albankaldawli.org\u03011\n\n * \u03010330\u2020\u030104e2d\u030106587\u2020www.shihang.org\u03011\n\n\nThis page in: English\n\n\n * \u03010327\u2020Espa\u03010f1ol\u2020www.bancomundial.org\u03011\n\n * \u03010328\u2020Fran\u03010ais\u2020www.banquemoniale.org\u03011\n\n * \u03010329\u2020\u03010627\u03010644\u03010639\u03010631\u03010628\u0301064a\u03010629\u2020www.albankaldawli.org\u03011\n\n * \u03010330\u2020\u030104e2d\u030106587\u2020www.shihang.org\u03011\n\n\nPRESS RELEASE October 12, 2022\n\n\n# China\u202019s Transition to a Low-Carbon Economy and Climate Resilience Needs Shifts in Resources and Technologies\n\n\n * \n\n * \u03010331\u2020\u03011\n\n\n * \n\n * \n\n * \n\n * Share more\n\n\n\nclose\n\n\n * [Image 6: Image] linkedin\n\n\n * [Image 7: Image] digg\n\n\n * [Image 8: Image] renren\n\n\n * [Image 9: Image] stumbleupon\n\n\n * [Image 10: Image] delicious\n\n\n * [Image 11: Image] sina\n\n\n* * *\n\n\nBeijing, October 12, 2022 \u202013 Climate change poses a significant threat to China\u202019s long-term prosperity. At the same time, the country is well positioned to meet its climate commitments and transition to a greener economy while meeting its development goals, according to a World Bank Group report released today.\n\n\nThe World Bank Group\u202019s \u03010332\u2020Country Climate and Development Report (CCDR) for China\u2020Openknowledge.worldbank.org\u03011\u030100a0analyzes the fundamental changes in energy, industry, transport, cities, and land use that would enable China to realize its national commitments to reach peak carbon emissions before 2030 and achieve carbon neutrality by 2060. The report highlights the urgency of action, because of China\u202019s large emission of greenhouse gases, the heavy exposure of China\u202019s population and economic infrastructure to climate risks, and China\u202019s critical role in global efforts to combat climate change.\n\n\nThe impacts of climate change threaten China\u202019s densely populated and economically critical low-lying coastal cities, which are home to an estimated one-fifth of China\u202019s population and contribute a third of its GDP. China already experiences frequent coastal flooding, storm surges, costal erosion, and saltwater intrusion. Unabated climate change could lead to estimated GDP losses of between 0.5 and 2.3 percent as early as 2030, according to the report.\n\n\nWithout China successfully transitioning to a low-carbon economy, achieving global climate goals will be impossi"}, {"matched_text": "\u0301014\u2020source\u03011", "start_idx": 433, "end_idx": 444, "alt": null, "type": "webpage_extended", "title": "Looking beyond the Energy Price Shock to China's Low Carbon Transition", "url": "https://www.worldbank.org/en/news/opinion/2022/06/02/looking-beyond-the-energy-price-shock-to-china-s-low-carbon-transition", "pub_date": null, "snippet": " * \u03010254\u2020Sweden\u03011\n\n * \u03010255\u2020Switzerland\u03011\n\n * \u03010256\u2020Syria\u03011\n\n\n * }

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image-1] \n\nWe face big challenges to help the world\u2019s poorest people and ensure
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image-1] \n\nWe face big challenges to help the world\u2019s poorest people and ensure that everyone sees benefits from economic growth. Data and research help us understand these challenges and set priorities, share knowledge of what works, and measure progress.\n\nData & Research\n\n * \u301045\u2020Open Data\u2020data.worldbank.org\u3011\n\n * \u3010302\u2020By Country\u2020data.worldbank.org\u3011\n\n * \u3010303\u2020By Indicator\u2020data.worldbank.org\u3011\n\n * \u301044\u2020Research & Publications\u3011\n\nDevelopment Topics\n\n * \u301039\u2020Climate Change\u3011\n\n * \u3010304\u2020Agriculture and Food\u3011\n\n * \u3010305\u2020Fragility, Conflict, and Violence\u3011\n\n * \u3010306\u2020Poverty\u3011\n\n * \u3010307\u2020Debt\u3011\n\n * \u3010308\u2020Education\u3011\n\n * \u3010309\u2020Health\u3011\n\n * \u3010310\u2020Energy\u3011\n\n * \u301040\u2020Food Security\u3011\n\n * \u301047\u2020All Development Topics\u3011\n\n\n* * *\n\nSearch button\n\n * \u30105\u2020WORK WITH US\u3011\n\n\nFor Job Seekers\n\n * \u3010311\u2020Jobs\u3011\n\n * \u3010312\u2020Programs & Internships\u3011\n\n\nFor Partners\n\n * \u301010\u2020Partners\u3011\n\n * \u3010313\u2020Corporate and Private Foundations\u3011\n\n * \u3010314\u2020Clients\u2020clientconnection.worldbank.org\u3011\n\n * \u3010315\u2020Private Sector\u3011\n\n * \u3010316\u2020Corporate Procurement\u3011\n\n * \u3010317\u2020Civil Society\u3011\n\n * \u3010318\u2020Consultations\u2020consultations.worldbank.org\u3011\n\n * \u3010319\u2020Parliamentarians\u3011\n\n\nFor Investors\n\n * \u3010320\u2020World Bank Bonds & Investment Products\u2020treasury.worldbank.org\u3011\n\n * \u301051\u2020Treasury\u2020treasury.worldbank.org\u3011\n\n\nFor Learners\n\n * \u301046\u2020Open Learning Campus\u2020olc.worldbank.org\u3011\n\n\nMeet Us\n\n * \u3010321\u2020Events\u3011\n\n * \u3010322\u2020World Bank Live\u2020live.worldbank.org\u3011\n\n * \u3010323\u2020Speaker's Bureau\u3011\n\n * \u3010324\u2020Spring & Annual Meetings\u3011\n\n\n* * *\n\n * \u3010325\u2020Contacts & Inquiries\u3011\n\n\n * [Image 4: WB Live]\n\n\nGlobal Search dropdown\n\n\n[Image 5: Search graphic]\n\n\nSearch\n\n\nSearch button\n\n\n1. \u3010102\u2020What We Do\u3011\n\n2. \u3010326\u2020Projects & Operations\u2020projects.worldbank.org\u3011\n\n\n * This page in: EN dropdown\n\n\n * \u3010327\u2020\u4e2d\u6587\u2020projects.shihang.org\u3011\n\n\nThis page in: _\n\n\n * English\n\n * \u3010327\u2020\u4e2d\u6587\u2020projects.shihang.org\u3011\n\n\n * dropdown\n\n\nResults Briefs June 21, 2020\n\n\n# China: Fighting Air Pollution and Climate Change through Clean Energy Financing\n\n\n * Email\n\n * \u3010328\u2020Print\u3011\n\n\n * Tweet\n\n * Share\n\n * Share\n\n * \n\n * [Image 6: Image]\n\n\nLinkedIn\n\n\n * [Image 7: Image]\n\n\nDigg\n\n\n * [Image 8: Image]\n\n\n\u4eba\u4eba\u7f51\n\n\n * [Image 9: Image]\n\n\nStumble Upon\n\n\n * [Image 10: Image]\n\n\nDelicious\n\n\n * [Image 11: Image]\n\n\n\u65b0\u6d6a\u5fae\u535a\n\n\n* * *\n\n\n#### MULTIMEDIA\n\n\n[Image 12: Image]\n\n\n\nclick\n\n\nVIDEO\n\n\n#### Restoring China\u2019s Blue Skies in Jing-Jin-Ji\n\n\n* * *\n\n\nThe World Bank-supported Innovative Financing for Air Pollution Control Program has financed investments in energy efficiency, renewable energy and emissions control. The program has leveraged funding 5.4 times the original loan amount, mainstreamed green finance at Huaxia Bank, and supported China\u2019s efforts to mitigate climate change by reducing carbon dioxide emissions by 2.5 million tons a year. \n\n\n* * *\n\n\nChallenge\n\n\nChina was home to many of the world\u2019s most polluted cities and is the world\u2019s largest emitter of greenhouse gases (GHGs). The Beijing-Tianjin-Hebei (Jing-Jin-Ji) region experienced

particularly severe air pollution, with an annual average fine particulate matter (PM 2.5) conce"]}], "recipient": "all", "channel": null}, "parent": "340b29ed-83d8-464a-b800-85e9b98ceba0", "children": ["aaa25016-f419-4817-bc7c-64ac90f0caf9"]], "aaa25016-f419-4817-bc7c-64ac90f0caf9": {"id": "aaa25016-f419-4817-bc7c-64ac90f0caf9", "message": {"id": "aaa25016-f419-4817-bc7c-64ac90f0caf9", "author": {"role": "user", "name": null, "metadata": {}}, "create_time": 1717132907.522075, "update_time": null, "content": {"content_type": "text", "parts": ["Part 1: Assume you are speaking with a potential producer (client) who comes from a conservative or directly capitalist perspective and is working in a resource intensive field (such as natural gas, oil, plastic production, or cattle ranching). Construct a persuasive argument for considering how their industry or field might consider adopting sustainable practices? What is the cost-benefit? How do you pitch the idea of sustainability (maybe through a different language) to your client? How do you identify their own self-interest, or appeal to their sense of concern for the generations to come? Can you frame your appraisal of sustainability in a way that helps them identify the financial benefits for their company? Or are there regulatory benefits/restrictions to consider? Make the argument for co-creating new sustainability goals as a prerequisite of your company doing business with them. How would you approach this challenge? How will you frame the conversation? For example: you work for a grocery store chain that is looking to only source sustainably harvested fish."]}, "status": "finished_successfully", "end_turn": null, "weight": 1.0, "metadata": {"request_id": "88c485bcc949bb31-MXP", "message_source": null, "timestamp": "absolute", "message_type": null}, "recipient": "all", "channel": null}, "parent": "d967453e-d0d0-4191-bb05-c9da3364e7bc", "children": ["41bc963e-8709-425b-b416-cc67cb261505"]], "41bc963e-8709-425b-b416-cc67cb261505": {"id": "41bc963e-8709-425b-b416-cc67cb261505", "message": {"id": "41bc963e-8709-425b-b416-cc67cb261505", "author": {"role": "assistant", "name": null, "metadata": {}}, "create_time": 1717132937.944588, "update_time": null, "content": {"content_type": "text", "parts": ["**Pitching Sustainability to a Conservative/Capitalist Client in a Resource-Intensive Industry**\n\n---\n\n**Introduction:**\n\nWhen discussing the adoption of sustainable practices with a client from a resource-intensive field like natural gas, oil, plastic production, or cattle ranching, it's essential to frame the conversation in terms that resonate with their conservative or capitalist values. This means focusing on the financial benefits, risk management, and regulatory compliance, while also subtly appealing to their legacy and long-term strategic goals.\n\n---\n\n**Understanding Self-Interest and Financial Benefits:**\n\n1. **Cost Savings and Efficiency:** - **Energy Efficiency:** Implementing energy-efficient technologies can significantly reduce operational costs. For instance, upgrading to more efficient machinery can lower energy consumption, resulting in direct savings on utility bills.\n - **Waste Reduction:** By reducing waste and optimizing resource use, companies can lower raw material costs. For example, in the oil industry, better extraction technologies can minimize waste, thereby improving yield and profitability.\n\n2. **Market Differentiation and Consumer Demand:** - **Brand Value:** Consumers are increasingly favoring companies with strong sustainability credentials. This can lead to enhanced brand loyalty and a premium on products. A study by Nielsen found that 66% of consumers are willing to pay more for sustainable goods.\n\n3. **Access to New Markets:** Sustainable practices can open doors to new markets, including those with stringent environmental regulations. This can be crucial for expanding market share and staying competitive globally.\n\n3. **Risk Management and Regulatory Benefits:** - **Regulatory**

Compliance:** Adopting sustainable practices helps ensure compliance with existing and upcoming regulations, thereby avoiding fines and legal issues. For example, regulations on emissions are tightening worldwide, and early adoption of cleaner technologies can prevent future compliance costs\

- **Insurance and Financing:** Companies with strong sustainability records often enjoy lower insurance premiums and better financing terms, as they are perceived as lower risk by insurers and investors\

---\n\n**Appealing to Legacy and Long-Term Strategy:**\n1. **Future-Proofing the Business:** - **Long-Term Viability:** Sustainable practices can ensure the long-term availability of natural resources, which is critical for the ongoing operations of resource-intensive industries. This foresight can safeguard the company's future and maintain its competitive edge.\n - **Talent Attraction and Retention:** Younger generations of workers prefer to work for companies that are environmentally responsible. This can enhance the company's ability to attract top talent, which is crucial for innovation and growth\

2. **Legacy and Corporate Responsibility:** - **Positive Impact:** Highlight the opportunity to leave a positive legacy that benefits future generations. This can be framed as a way to protect the environment while ensuring the prosperity of the company and its stakeholders.\n - **Reputation Management:** Sustainable practices can enhance the company's reputation, leading to stronger community relations and better public perception. This can be particularly important during times of scrutiny or crisis management.\n---\n\n**Framing the Conversation:**\n1. **Data-Driven Approach:**\n - **Present Evidence:** Use case studies and data to demonstrate the financial benefits of sustainability. For instance, showcasing how a competitor reduced costs and increased profits through sustainable practices can be compelling.\n - **Metrics and KPIs:** Discuss how sustainability metrics and key performance indicators (KPIs) can be integrated into the company's reporting framework to track progress and benefits.\n2. **Collaborative Goal-Setting:**\n - **Co-Creation of Goals:** Propose a collaborative approach to set sustainability goals that align with the company's strategic objectives. This ensures buy-in and a sense of ownership from the client.\n - **Pilot Projects:** Suggest starting with pilot projects to test the feasibility and benefits of sustainable practices. This can provide tangible results and build confidence in broader implementation.\n---\n\n\nApproaching the topic of sustainability with a conservative or capitalist client requires a focus on financial benefits, risk management, and strategic advantage. By framing sustainability as a pathway to cost savings, market differentiation, regulatory compliance, and long-term viability, you can align these practices with the client's self-interest and business goals. Engaging in a data-driven, collaborative dialogue will further reinforce the practical and profitable aspects of adopting sustainable practices.\n---\n\n**References:**\n- Nielsen. (2015). The Sustainability Imperative.\n- World Bank. (2020). China: Fighting Air Pollution and Climate Change through Clean Energy Financing.\n- World Bank. (2021). Renewable Energy Development in China: A 40-Year China-World Bank Partnership.\n- World Economic Forum. (2020). How sustainability can drive business success."],\n"status": "finished_successfully", "end_turn": true\n, "weight": 1.0, "metadata": {"citations": [{"start_ix": 1463, "end_ix": 1473,\n"citation_format_type": "tether_og", "metadata": {"type": "webpage", "title": "India : Development news, research, data | World Bank", "url":\n"https://www.worldbank.org/en/country/india", "text": " * \u0010223\u0020Papua New

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com\u3011\u30109\u2020Share\u2020www.linkedin.com\u3011\u2020\u2020##### Abstract
\u2020China\u2019s remarkable economic growth required dramatic growth of energy
consumption and continuous changes in the nation\u2019s energy economy. The World Bank
supported the efforts of the Chinese government to develop and revitalize the
country\u2019s energy sector to meet the daunting challenges it faced while
continuously warning that the unrestrained reliance on coal would lead to

unsustainable stress on the local and global environment. In mid-1980s, the Chinese government and the World Bank embarked on a long and arduous journey to develop renewable energy (RE) to lessen the impacts on the environment and avoid excessive reliance on coal to alleviate the debilitating power shortages that constrained the economy. This paper focuses on the more than 40-year partnership with the World Bank along China's long journey to develop a large-scale, efficient, and competitive RE industry in the country and globally. While the projects supported by the World Bank and their role are highlighted in this paper, this support should only be seen as a catalyst. The remarkable development of renewable energy in China was primarily guided by the multiple Chinese authorities at the national, provincial, and county levels, implemented by the many public and private companies, and fueled by local financing institutions. The paper is structured along the four stages of RE development in China, which are detailed in a companion report. It highlights the key milestones of this partnership, its achievements, and challenges, detailing World Bank support and main activities that contributed to China's rise from a laggard to a leader.

Link to Data Set Citation
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[dropdown\u0310n/nResults Briefs June 21, 2020\u0310n# China: Fighting Air Pollution and Climate Change through Clean Energy Financing\u0310n/n * Email\u0310n * \u0310328\u031020 Print \u03101\u0310n/n/n * Tweet \u0310n * Share \u0310n * Share \u0310n * \u0310n/n * \[Image 6:](#)

[Image\]\u0310n/nLinkedIn\u0310n/n * \[Image 7: Image\]\u0310n/nDigg\u0310n/n * \[Image 8: Image\]\u0310n/n\u03104eba\u03104eba\u03107f51\u0310n/n * \[Image 9: Image\]\u0310n/nStumble Upon\u0310n/n * \[Image 10: Image\]\u0310n/nDelicious\u0310n/n * \[Image 11: Image\]\u0310n/n\u031065b0\u03106d6a\u03105fae\u0310535a\u0310n/n* *](#)

[*\u0310n/n#### MULTIMEDIA\u0310n/n\[Image 12: Image\] \u0310n/click\u0310n/nVIDEO\u0310n/n#### Restoring China\u03102019s Blue Skies in Jing-Jin-Ji\u0310n/n* * *\u0310n/nThe World Bank-supported Innovative Financing for Air Pollution Control Program has financed investments in energy efficiency, renewable energy and emissions control. The program has leveraged funding 5.4 times the original loan amount, mainstreamed green finance at Huaxia Bank, and supported China\u03102019s efforts to mitigate climate change by reducing carbon dioxide emissions by 2.5 million tons a year. \u0310n/n* * *\u0310n/nChallenge \u0310n/nChina was home to many of the world\u03102019s most polluted cities and is the world\u03102019s largest emitter of greenhouse gases \(GHGs\). The Beijing-Tianjin-Hebei \(Jing-Jin-Ji\) region experienced particularly severe air pollution, with an annual average fine particulate matter \(PM 2.5\) conce", "pub_date": null, "extra": {"cited_message_idx": 15, "search_result_idx": null, "evidence_text": "source"}}}, {"start_ix": 2901, "end_ix": 2912,](#)

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\u30104\u2020Where We Work\u3011\n\nThis page in: \n\n English \n\n *
\u3010156\u2020\u2020\u0939\u2020\u093f\u2020\u0928\u2020\u094d\u2020\u0926\u2020\u0940\u3011\n\nThis page in: English\n\n* \u3010156\u2020\u2020\u0939\u2020\u093f\u2020\u0928\u2020\u094d\u2020\u0926\u2020\u0940\u3011 \n\n[Image 6: Image]
\n\n[Image 7: Image] \n\n# The World Bank In India \n\nWith a population of more than
1.4 billion, India is the world\u2019s largest democracy. Over the past decade, the
country\u2019s integration into the global economy has been accompanied by economic
growth. India has now emerged as a global player.\n\n * India Home\n *
\u3010327\u2020Overview\u3011\n\n * \u3010328\u2020COVID-19\u3011\n\n##
Highlights\n\n\u2020 What's New \u3011\n\n * [Image 8: Assam-10.jpg]
\n\nFeature\n\n## \u3010330\u2020Agricultural Entrepreneurs Cultivating Success In
Assam\u3011\n\nRead how World Bank is supporting agri-business investments and
enhancing market access in Assam. \n\n\u3010330\u2020Agricultural Entrepreneurs
Cultivating Success In Assam\u3011\n\n * [Image 9: The World Bank] \n\nBrief\n\n###
\u3010331\u2020Helping India Build Resilience to Climate Change\u3011\n\nThe World
Bank is helping India strengthen its climate resilience across various sectors.
\n\n\u3010331\u2020Helping India Build Resilience to Climate Change\u3011\n\n *
[Image 10: Green-Hydrogen-DPL.jpg] \n\nPRESS RELEASE\n\n###
\u3010332\u2020India\u2019s Low-Carbon Transition\u3011\n\nThe World Bank approved
\$1.5 Billion in financing to support India\u2019s low-carbon transition.
\n\n\u3010332\u2020India\u2019s Low-Carbon Transition\u3011\n\n## India At-A-Glance
\n\nWith 1.2 billion people and the world\u2019s third-largest economy in purchasing
power parity terms, India\u2019s recent growth has been a significant ac"},
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Studies\3011\n 3. \30104\2020Sector/Thematic Studies\3011\n 4.
\30105\2020Energy Study\3011\n 5. Renewable Energy Development in China: A 40-
Year China-World Bank Partnership\n\n## \n\nPublication: \n\nRenewable Energy
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b\2020creativecommons.org\3011\n\n\30107\2020Tweet\2020twitter.com\3011\30108\2020Like\2020www.facebook.com\3011\30109\2020Share\2020www.linkedin.com\3011\n\nLoading...\n\n[Image 2: Thumbnail Image]\n\n##### Files in English \n\n\301010\2020English PDF (3.39 MB) \3011\n\n746 downloads \n\n\301011\2020 English Text (89.21 KB) \3011\n\n36 downloads \n\n##### Date \n\n2021-12-03 \n\n##### ISSN \n\n##### Published \n\n2021-12-03 \n\n##### Author(s)\n\n\301012\2020 De Gouvello, Christophe
\3011\n\n\301013\2020 Song, Yanqin
\3011\n\n\30107\2020Tweet\2020twitter.com\3011\30108\2020Like\2020www.facebook.com\3011\30109\2020Share\2020www.linkedin.com\3011\n\n##### Abstract
\n\nChina\2019s remarkable economic growth required dramatic growth of energy consumption and continuous changes in the nation\2019s energy economy. The World Bank supported the efforts of the Chinese government to develop and revitalize the country\2019s energy sector to meet the daunting challenges it faced while continuously warning that the unrestrained reliance on coal would lead to unsustainable stress on the local and global environment. In mid-1980s, the Chinese government and the World Bank embarked on a long and arduous journey to develop renewable energy (RE) to lessen the impacts on the environment and avoid excessive reliance on coal to alleviate the debilitating power shortages that constrained the economy. This paper focuses on the more than 40-year partnership with the World Bank along China\2019s long journey to develop a large-scale, efficient, and competitive RE industry in the country and globally. While the projects supported by the World Bank and their role are highlighted in this paper, this support should only be seen as a catalyst. The remarkable development of renewable energy in China was primarily guided by the multiple Chinese authorities at the national, provincial, and county levels, implemented by the many public and private companies, and fueled by local financing institutions. The paper is structured along the four stages of RE development in China, which are detailed in a companion report. It highlights the key milestones of this partnership, its achievements, and challenges, detailing World Bank support and main activities that contributed to China\2019s rise from a laggard to a leader.\n\n##### Link to Data Set \n\n##### Citation\n\n\201cDe Gouvello, Christophe; Song, Yanqin. 2021. Renewable Energy Development in China: A 40-Year China-World Bank Partnership. \200a9 World Bank, Washington, DC. <http://hdl.handle.net/10986/36666> License: \30106\2020CC BY 3.0 IGO\2020creativecommons.org\3011.\201d\n\n##### URI\n\n\301014\2020 <https://hdl.handle.net/10986/36666>\2020hdl.handle.net\3011\n\n##### Report Series \n\n##### Other publications in this report series \n\n##### Journal \n\n##### Journal Volume \n\n##### Journal Issue \n\n##### Collections\n\n\30105\2020Energy Study\3011\n\n##### Associated URLs \n\n##### Associated content \n\n##### Citations\n\n\301015\2020 Full item page \3011\n\nShow statistical information \n\n * \301016\2020About\3011\n * \301017\2020Terms of Use\3011\n * \301018\2020FAQ\3011\n * \301019\2020Data\2020data.worldbank.org\3011\n * \301020\2020Research and Publications\2020www.worldbank.org\3011\n * \301021\2020Learning\2020olc.worldbank.org\3011\n\n * \301022\2020News\2020www.worldbank.org\3011\n * \301023\2020Projects and Operations\2020projects.worldbank.org\3011\n *

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image-1] \n\nWe face big challenges to help the world\u2019s poorest people and ensure
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dropdown\n\nResults Briefs June 21, 2020\n\n# China: Fighting Air Pollution and
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* \n\n#### MULTIMEDIA\n\n[Image 12: Image]\n\n\nclick\n\nVIDEO\n\n#### Restoring
China's Blue Skies in Jing-Jin-Ji\n * * *\n\nThe World Bank-supported Innovative
Financing for Air Pollution Control Program has financed investments in energy
efficiency, renewable energy and emissions control. The program has leveraged funding
5.4 times the original loan amount, mainstreamed green finance at Huaxia Bank, and
supported China's efforts to mitigate climate change by reducing carbon dioxide
emissions by 2.5 million tons a year. \n\n* * *\n\nChallenge \n\nChina was home to
many of the world's most polluted cities and is the world's largest emitter
of greenhouse gases (GHGs). The Beijing-Tianjin-Hebei (Jing-Jin-Ji) region experienced
particularly severe air pollution, with an annual average fine particulate matter (PM
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image-1] \n\nWe face big challenges to help the world\u2019s poorest people and ensure
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Industry**\n\n* * *\n\n**Introduction:**\n\nWhen discussing the adoption of sustainable practices with a client from a resource-intensive field like natural gas, oil, plastic production, or cattle ranching, it\u2019s essential to frame the conversation in terms that resonate with their conservative or capitalist values. This means focusing on the financial benefits, risk management, and regulatory compliance, while also subtly appealing to their legacy and long-term strategic goals.\n\n* * *\n\n**Understanding Self-Interest and Financial Benefits:**\n\n1. **Cost Savings and Efficiency:**\n\n* **Energy Efficiency:** Implementing energy-efficient technologies can significantly reduce operational costs. For instance, upgrading to more efficient machinery can lower energy consumption, resulting in direct savings on utility bills.\n\n* **Waste Reduction:** By reducing waste and optimizing resource use, companies can lower raw material costs. For example, in the oil industry, better extraction technologies can minimize waste, thereby improving yield and profitability.\n\n2. **Market Differentiation and Consumer Demand:**\n\n* **Brand Value:** Consumers are increasingly favoring companies with strong sustainability credentials. This can lead to enhanced brand loyalty and a premium on products. A study by Nielsen found that 66% of consumers are willing to pay more for sustainable goods\u200b ([World Bank] (<https://www.worldbank.org/en/country/india>))\u200b.\n\n* **Access to New Markets:** Sustainable practices can open doors to new markets, including those with stringent environmental regulations. This can be crucial for expanding market share and staying competitive globally.\n\n3. **Risk Management and Regulatory Benefits:**\n\n* **Regulatory Compliance:** Adopting sustainable practices helps ensure compliance with existing and upcoming regulations, thereby avoiding fines and legal issues. For example, regulations on emissions are tightening worldwide, and early adoption of cleaner technologies can prevent future compliance costs\u200b ([Open Knowledge Repository] (<https://openknowledge.worldbank.org/entities/publication/98074e68-47c7-5e9a-9446-5f60155f62b5>))\u200b.\n\n* **Insurance and Financing:** Companies with strong sustainability records often enjoy lower insurance premiums and better financing terms, as they are perceived as lower risk by insurers and investors\u200b ([World Bank] (<https://www.worldbank.org/en/results/2020/06/21/china-fighting-air-pollution-and-climate-change-through-clean-energy-financing>))\u200b.\n\n* * *\n\n**Appealing to Legacy and Long-Term Strategy:**\n\n1. **Future-Proofing the Business:**\n\n* **Long-Term Viability:** Sustainable practices can ensure the long-term availability of natural resources, which is critical for the ongoing operations of resource-intensive industries. This foresight can safeguard the company\u2019s future and maintain its competitive edge.\n\n* **Talent Attraction and Retention:** Younger generations of workers prefer to work for companies that are environmentally responsible. This can enhance the company\u2019s ability to attract top talent, which is crucial for innovation and growth\u200b ([World Bank] (<https://www.worldbank.org/en/news/opinion/2022/06/02/looking-beyond-the-energy-price-shock-to-china-s-low-carbon-transition>))\u200b.\n\n2. **Legacy and Corporate Responsibility:**\n\n* **Positive Impact:** Highlight the opportunity to leave a positive legacy that benefits future generations. This can be framed as a way to protect the environment while ensuring the prosperity of the company and its stakeholders.\n\n* **Reputation Management:** Sustainable practices can enhance the company\u2019s reputation, leading to stronger community relations and better public perception. This can be particularly important during times of scrutiny or

crisis management.

Framing the Conversation:

Data-Driven Approach:

Present Evidence: Use case studies and data to demonstrate the financial benefits of sustainability. For instance, showcasing how a competitor reduced costs and increased profits through sustainable practices can be compelling.

Metrics and KPIs: Discuss how sustainability metrics and key performance indicators (KPIs) can be integrated into the company's reporting framework to track progress and benefits.

Collaborative Goal-Setting:

Co-Creation of Goals: Propose a collaborative approach to set sustainability goals that align with the company's strategic objectives. This ensures buy-in and a sense of ownership from the client.

Pilot Projects: Suggest starting with pilot projects to test the feasibility and benefits of sustainable practices. This can provide tangible results and build confidence in broader implementation.

Conclusion: Approaching the topic of sustainability with a conservative or capitalist client requires a focus on financial benefits, risk management, and strategic advantage. By framing sustainability as a pathway to cost savings, market differentiation, regulatory compliance, and long-term viability, you can align these practices with the client's self-interest and business goals. Engaging in a data-driven, collaborative dialogue will further reinforce the practical and profitable aspects of adopting sustainable practices.

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transcript-ip9QF_lBOyA.txt", "text": "# tactiq.io free youtube transcript\n# Ray Anderson: The business logic of sustainability\n#
https://www.youtube.com/watch/ip9QF_lBOyA\n00:00:18.330 Believe me or not, I come offering a solution\n00:00:22.330 to a very important part of this larger problem,\n00:00:26.330 with the requisite focus on climate.\n00:00:28.330 And the solution I offer\n00:00:30.330 is to the biggest culprit\n00:00:32.330 in this massive mistreatment of the earth\n00:00:36.330 by humankind,\n00:00:38.330 and the resulting decline of the biosphere.\n00:00:41.330 That culprit is business and industry,\n00:00:44.330 which happens to be where I have spent the last 52 years\n00:00:47.330 since my graduation from Georgia Tech in 1956.\n00:00:51.330 As an industrial engineer,\n00:00:53.330 cum aspiring and then successful entrepreneur.\n00:00:57.330 After founding my company, Interface, from scratch\n00:01:00.330 in 1973, 36 years ago,\n00:01:03.330 to produce carpet tiles in America\n00:01:05.330 for the business and institution markets,\n00:01:08.330 and shepherding it through start-up and survival\n00:01:11.330 to prosperity and global dominance in its field,\n00:01:14.330 I read Paul Hawken's book,\n00:01:16.330 "The Ecology of Commerce,"
00:01:18.330 the summer of 1994.\n00:01:21.330 In his book, Paul charges business and industry\n00:01:24.330 as, one, the major culprit\n00:01:27.330 in causing the decline of the biosphere,\n00:01:29.330 and, two, the only institution that is large enough,\n00:01:32.330 and pervasive enough, and powerful enough,\n00:01:34.330 to really lead humankind out of this mess.\n00:01:38.330 And by the way he convicted me\n00:01:41.330 as a plunderer of the earth.\n00:01:43.330 And I then challenged the people of Interface, my company,\n00:01:46.330 to lead our company and the entire industrial world to sustainability,\n00:01:50.330 which we defined as eventually operating\n00:01:52.330 our petroleum-intensive company in such a way\n00:01:55.330 as to take from the earth\n00:01:57.330 only what can be renewed by the earth, naturally and rapidly --\n00:02:01.330 not another fresh drop of oil --\n00:02:03.330 and to do no harm to the biosphere.\n00:02:07.330 Take nothing: do no harm.\n00:02:09.330 I simply said, "If Hawken is right\n00:02:11.330 and business and industry must lead,\n00:02:13.330 who will lead business and industry?\n00:02:15.330 Unless somebody leads, nobody will."
00:02:18.330 It's axiomatic. Why not us?\n00:02:21.330 And thanks to the people of Interface,\n00:02:23.330 I have become a recovering plunderer.\n00:02:26.330 (Laughter)\n00:02:27.330 (Applause)\n00:02:32.330 I once told a Fortune Magazine writer\n00:02:36.330 that someday people like me would go to jail.\n00:02:39.330 And that became the headline of a Fortune article.\n00:02:41.330 They went on to describe me as America's greenest CEO.\n00:02:45.330 From plunderer to recovering plunderer,\n00:02:48.330 to America's greenest CEO in five years --\n00:02:51.330 that, frankly, was a pretty sad commentary\n00:02:53.330 on American CEOs in 1999.\n00:02:58.330 Asked later in the Canadian documentary, "The Corporation,"
00:03:01.330 what I meant by the "go to jail" remark,\n00:03:04.330 I offered that theft is a crime.\n00:03:08.330 And theft of our children's future would someday be a crime.\n00:03:13.330 But I realized, for that to be true --\n00:03:15.330 for theft of our children's future to be a crime --\n00:03:18.330 there must be a clear, demonstrable alternative\n00:03:21.330 to the take-make-waste industrial system\n00:03:24.330 that so dominates our civilization,\n00:03:27.330 and is the major culprit, stealing our children's future,\n00:03:30.330 by digging up the earth\n00:03:32.330 and converting it to products that quickly become waste\n00:03:36.330 in a landfill or an incinerator --

\n00:03:38.330 in short, digging up the earth and converting it to pollution.\n00:03:43.330 According to Paul and Anne Ehrlich\n00:03:45.330 and a well-known environmental impact equation,\n00:03:48.330 impact -- a bad thing --\n00:03:50.330 is the product of population, affluence and technology.\n00:03:54.330 That is, impact is generated by people,\n00:03:58.330 what they consume in their affluence,\n00:04:00.330 and how it is produced.\n00:04:03.330 And though the equation is largely subjective,\n00:04:05.330 you can perhaps quantify people, and perhaps quantify affluence,\n00:04:09.330 but technology is abusive in too many ways to quantify.\n00:04:13.330 So the equation is conceptual.\n00:04:15.330 Still it works to help us understand the problem.\n00:04:18.329 So we set out at Interface, in 1994,\n00:04:23.330 to create an example:\n00:04:25.330 to transform the way we made carpet,\n00:04:27.330 a petroleum-intensive product for materials as well as energy,\n00:04:31.330 and to transform our technologies\n00:04:33.330 so they diminished environmental impact,\n00:04:36.330 rather than multiplied it.\n00:04:39.330 Paul and Anne Ehrlich's environmental impact equation:\n00:04:42.330 $I = P \times A \times T$ \n00:04:45.330 population, affluence and technology.\n00:04:48.330 I wanted Interface to rewrite that equation so that it read\n00:04:54.330 $I = P \times A \div T$.\n00:04:57.330 Now, the mathematically-minded will see immediately\n00:05:00.330 that T in the numerator increases impact -- a bad thing --\n00:05:03.330 but T in the denominator decreases impact.\n00:05:07.330 So I ask, "What would move T, technology,\n00:05:11.330 from the numerator -- call it T1 --\n00:05:13.330 where it increases impact,\n00:05:15.330 to the denominator -- call it T2 --\n00:05:18.330 where it reduces impact?\n00:05:21.330 I thought about the characteristics\n00:05:25.330 of first industrial revolution,\n00:05:27.330 T1, as we practiced it at Interface,\n00:05:30.330 and it had the following characteristics.\n00:05:34.330 Extractive: taking raw materials from the earth.\n00:05:38.330 Linear: take, make, waste.\n00:05:41.330 Powered by fossil fuel-derived energy.\n00:05:43.330 Wasteful: abusive and focused on labor productivity.\n00:05:47.330 More carpet per man-hour.\n00:05:50.330 Thinking it through, I realized that all those attributes\n00:05:53.330 must be changed to move T to the denominator.\n00:05:58.330 In the new industrial revolution extractive must be replaced by renewable;\n00:06:03.330 linear by cyclical;\n00:06:05.330 fossil fuel energy by renewable energy, sunlight;\n00:06:09.330 wasteful by waste-free;\n00:06:11.330 and abusive by benign;\n00:06:13.330 and labor productivity by resource productivity.\n00:06:17.330 And I reasoned that if we could make those transformative changes,\n00:06:21.330 and get rid of T1 altogether,\n00:06:23.330 we could reduce our impact to zero,\n00:06:26.330 including our impact on the climate.\n00:06:29.330 And that became the Interface plan in 1995,\n00:06:32.330 and has been the plan ever since.\n00:06:35.330 We have measured our progress very rigorously.\n00:06:39.330 So I can tell you how far we have come in the ensuing 12 years.\n00:06:43.330 Net greenhouse gas emissions\n00:06:45.330 down 82 percent in absolute tonnage.\n00:06:49.330 (Applause)\n00:06:53.330 Over the same span of time\n00:06:55.330 sales have increased by two-thirds and profits have doubled.\n00:06:58.330 So an 82 percent absolute reduction\n00:07:01.330 translates into a 90 percent reduction\n00:07:03.330 in greenhouse gas intensity relative to sales.\n00:07:07.330 This is the magnitude\n00:07:09.330 of the reduction the entire global technosphere\n00:07:12.330 must realize by 2050\n00:07:15.330 to avoid catastrophic climate disruption --\n00:07:18.330 so the scientists are telling

us.\n00:07:21.330 Fossil fuel usage is down 60 percent per unit of production,\n00:07:25.330 due to efficiencies in renewables.\n00:07:27.330 The cheapest, most secure barrel of oil there is\n00:07:30.330 is the one not used through efficiencies.\n00:07:33.330 Water usage is down 75 percent\n00:07:36.330 in our worldwide carpet tile business.\n00:07:38.330 Down 40 percent in our broadloom carpet business,\n00:07:41.330 which we acquired in 1993\n00:07:43.330 right here in California, City of Industry,\n00:07:45.330 where water is so precious.\n00:07:48.330 Renewable or recyclable materials are 25 percent of the total, and growing rapidly.\n00:07:52.330 Renewable energy is 27 percent of our total,\n00:07:55.330 going for 100 percent.\n00:07:57.330 We have diverted 148 million pounds --\n00:08:00.330 that's 74,000 tons --\n00:08:02.330 of used carpet from landfills,\n00:08:05.330 closing the loop on material flows\n00:08:07.330 through reverse logistics\n00:08:09.330 and post-consumer recycling technologies\n00:08:12.330 that did not exist when we started 14 years ago.\n00:08:16.330 Those new cyclical technologies\n00:08:18.330 have contributed mightily to the fact that we have produced and sold\n00:08:21.330 85 million square yards of climate-neutral carpet\n00:08:25.330 since 2004,\n00:08:27.330 meaning no net contribution to global climate disruption\n00:08:31.330 in producing the carpet throughout the supply chain,\n00:08:33.330 from mine and well head clear to end-of-life reclamation --\n00:08:38.330 independent third-party certified.\n00:08:40.330 We call it Cool Carpet.\n00:08:43.330 And it has been a powerful marketplace differentiator,\n00:08:46.330 increasing sales and profits.\n00:08:48.330 Three years ago we launched carpet tile for the home,\n00:08:52.330 under the brand Flor,\n00:08:54.330 misspelled F-L-O-R.\n00:08:57.330 You can point and click today at Flor.com\n00:08:59.330 and have Cool Carpet delivered to your front door in five days.\n00:09:03.330 It is practical, and pretty too.\n00:09:06.330 (Laughter)\n00:09:07.330 (Applause)\n00:09:13.330 We reckon that we are a bit over halfway\n00:09:15.330 to our goal: zero impact, zero footprint.\n00:09:20.330 We've set 2020 as our target year for zero,\n00:09:23.330 for reaching the top, the summit of Mount Sustainability.\n00:09:28.330 We call this Mission Zero.\n00:09:30.330 And this is perhaps the most important facet:\n00:09:33.330 we have found Mission Zero to be incredibly good for business.\n00:09:37.330 A better business model,\n00:09:40.330 a better way to bigger profits.\n00:09:42.330 Here is the business case for sustainability.\n00:09:45.330 From real life experience, costs are down, not up,\n00:09:49.330 reflecting some 400 million dollars\n00:09:51.330 of avoided costs in pursuit of zero waste --\n00:09:55.330 the first face of Mount Sustainability.\n00:09:58.330 This has paid all the costs for the transformation of Interface.\n00:10:02.330 And this dispels a myth too,\n00:10:04.330 this false choice between the environment and the economy.\n00:10:08.330 Our products are the best they've ever been,\n00:10:10.330 inspired by design for sustainability,\n00:10:12.330 an unexpected wellspring of innovation.\n00:10:16.330 Our people are galvanized around this shared higher purpose.\n00:10:19.330 You cannot beat it for attracting the best people\n00:10:21.330 and bringing them together.\n00:10:24.330 And the goodwill of the marketplace is astonishing.\n00:10:27.330 No amount of advertising, no clever marketing campaign,\n00:10:31.330 at any price, could have produced or created\n00:10:34.330 this much goodwill.\n00:10:37.330 Costs, products, people, marketplaces --\n00:10:39.330 what else is there?\n00:10:41.330 It is a better business model.\n00:10:43.330 And here is our 14-year record of sales and

profits.\n00:10:48.330 There is a dip there, from 2001 to 2003:\n00:10:51.330 a dip when our sales, over a three-year period,\n00:10:53.330 were down 17 percent.\n00:10:55.330 But the marketplace was down 36 percent.\n00:10:58.330 We literally gained market share.\n00:11:00.330 We might not have survived that recession\n00:11:03.330 but for the advantages of sustainability.\n00:11:06.330 If every business were pursuing Interface plans,\n00:11:10.330 would that solve all our problems?\n00:11:12.330 I don't think so.\n00:11:14.330 I remain troubled by the revised Ehrlich equation,\n00:11:17.330 $I = P \times A / T$,\n00:11:21.330 That A is a capital A,\n00:11:23.330 suggesting that affluence is an end in itself.\n00:11:28.330 But what if we reframed Ehrlich further?\n00:11:32.330 And what if we made A a lowercase a,\n00:11:35.330 suggesting that it is a means to an end,\n00:11:37.330 and that end is happiness --\n00:11:40.330 more happiness with less stuff.\n00:11:43.330 You know that would reframe civilization itself --\n00:11:46.330 (Applause) --\n00:11:54.330 and our whole system of economics,\n00:11:57.330 if not for our species, then perhaps for the one that succeeds us:\n00:12:03.330 the sustainable species, living on a finite earth,\n00:12:06.330 ethically, happily and ecologically\n00:12:09.330 in balance with nature\n00:12:11.330 and all her natural systems for a thousand generations,\n00:12:14.330 or 10,000 generations --\n00:12:16.330 that is to say, into the indefinite future.\n00:12:19.330 But does the earth have to wait for our extinction as a species?\n00:12:24.330 Well maybe so. But I don't think so.\n00:12:27.330 At Interface we really intend to bring this prototypical\n00:12:30.330 sustainable, zero-footprint industrial company\n00:12:33.330 fully into existence by 2020.\n00:12:36.330 We can see our way now,\n00:12:38.330 clear to the top of that mountain.\n00:12:40.330 And now the challenge is in execution.\n00:12:43.330 And as my good friend and adviser Amory Lovins says,\n00:12:46.330 "If something exists, it must be possible."\n00:12:50.330 (Laughter)\n00:12:53.330 If we can actually do it, it must be possible.\n00:12:56.330 If we, a petro-intensive company can do it, anybody can.\n00:13:00.330 And if anybody can, it follows that everybody can.\n00:13:04.330 Hawken fulfilled business and industry,\n00:13:07.330 leading humankind away from the abyss\n00:13:11.330 because, with continued unchecked decline of the biosphere,\n00:13:16.330 a very dear person is at risk here --\n00:13:19.330 frankly, an unacceptable risk.\n00:13:21.330 Who is that person?\n00:13:23.330 Not you. Not I.\n00:13:25.330 But let me introduce you to the one who is most at risk here.\n00:13:28.330 And I myself met this person in the early days of this mountain climb.\n00:13:32.330 On a Tuesday morning in March of 1996,\n00:13:36.330 I was talking to people, as I did at every opportunity back then,\n00:13:39.330 bringing them along and often not knowing whether I was connecting.\n00:13:43.330 But about five days later back in Atlanta,\n00:13:46.330 I received an email from Glenn Thomas,\n00:13:49.330 one of my people in the California meeting.\n00:13:51.330 He was sending me an original poem\n00:13:53.330 that he had composed after our Tuesday morning together.\n00:13:56.330 And when I read it it was one of the most uplifting moments of my life.\n00:14:00.330 Because it told me, by God, one person got it.\n00:14:04.330 Here is what Glenn wrote. And here is that person, most at risk.\n00:14:08.330 Please meet "Tomorrow's Child." \n00:14:12.330 "Without a name, an unseen face, and knowing not your time or place,\n00:14:16.330 Tomorrow's child, though yet unborn,\n00:14:19.330 I met you first last Tuesday morn.\n00:14:22.330 A wise friend introduced us two.\n00:14:24.330

And through his sobering point of view\n00:14:26.330 I saw a day that you would see, a day for you but not for me.\n00:14:31.330 Knowing you has changed my thinking.\n00:14:33.330 For I never had an inkling\n00:14:35.330 that perhaps the things I do might someday,\n00:14:38.330 somehow threaten you.\n00:14:41.330 Tomorrow's child, my daughter, son,\n00:14:43.330 I'm afraid I've just begun to think of you and of your good,\n00:14:45.330 though always having known I should.\n00:14:49.330 Begin, I will.\n00:14:51.330 The way the cost of what I squander, what is lost,\n00:14:54.330 if ever I forget that you\n00:14:56.330 will someday come and live here too.\n00:15:00.330 Well, every day of my life since,\n00:15:02.330 "Tomorrow's Child" has spoken to me\n00:15:04.330 with one simple but profound message,\n00:15:06.330 which I presume to share with you.\n00:15:08.330 We are, each and every one,\n00:15:10.330 a part of the web of life.\n00:15:13.330 The continuum of humanity, sure, but in a larger sense, the web of life itself.\n00:15:17.330 And we have a choice to make\n00:15:19.330 during our brief, brief visit\n00:15:21.330 to this beautiful blue and green living planet:\n00:15:25.330 to hurt it or to help it.\n00:15:28.330 For you, it's your call.\n00:15:31.330 Thank you.\n00:15:33.330 (Applause)\n", "title": "tactiq-free-transcript-ip9QF_lBOyA.txt", "tether_id": null, "status": "finished_successfully", "end_turn": null, "weight": 1.0, "metadata": {"command": "context_stuff", "is_visually_hidden_from_conversation": true, "message_type": null, "model_slug": "gpt-4o", "default_model_slug": "gpt-4o", "parent_id": "befdeea1-4b67-4b95-8752-19f38def0232", "request_id": "88c48ca31e7bbb13-MXP", "timestamp": "absolute"}, "recipient": "all", "channel": null, "parent": "befdeea1-4b67-4b95-8752-19f38def0232", "children": [{"id": "337cad55-c7c0-4c13-a20c-105a6c1d98c5"}], "337cad55-c7c0-4c13-a20c-105a6c1d98c5": {"id": "337cad55-c7c0-4c13-a20c-105a6c1d98c5", "message": {"id": "337cad55-c7c0-4c13-a20c-105a6c1d98c5", "author": {"role": "tool", "name": "myfiles_browser", "metadata": {}}, "create_time": 1717133225.512799, "update_time": null, "content": {"content_type": "tether_quote", "url": "file-015fyq55A9kPiWRmfng81lx4", "domain": "tactiq-free-transcript-IoRjz8iTVoo.txt", "text": "# tactiq.io free youtube transcript\n# Cradle to cradle design | William McDonough\nhttps://www.youtube.com/watch/IoRjz8iTVoo\n\n00:00:26.000 In 1962, with Rachel Carson's \"Silent Spring,\" \n00:00:30.000 I think for people like me in the world of the making of things, \n00:00:35.000 the canary in the mine wasn't singing. \n00:00:39.000 And so the question that we might not have birds \n00:00:42.000 became kind of fundamental to those of us wandering around \n00:00:45.000 looking for the meadowlarks that seemed to have all disappeared. \n00:00:48.000 And the question was, were the birds singing? \n00:00:51.000 Now, I'm not a scientist, that'll be really clear. \n00:00:55.000 But, you know, we've just come from this discussion of what a bird might be. \n00:00:59.000 What is a bird? \n00:01:00.000 Well, in my world, this is a rubber duck. \n00:01:04.000 It comes in California with a warning -- \n00:01:06.000 \"This product contains chemicals known by the State of California \n00:01:09.000 to cause cancer and birth defects or other reproductive harm. \" \n00:01:16.000 This is a bird. \n00:01:19.000 What kind of culture would produce a product of this kind \n00:01:22.000 and then label it and sell it to children? \n00:01:27.000 I think we have a design problem. \n00:01:30.000 Someone heard the six hours of talk that I gave \n00:01:35.000 called \"The Monticello Dialogues\" on NPR, and sent me this as a thank you note -- \n00:01:41.000 \"We realize that design is a signal of intention, \n00:01:43.000 but it also has to occur within a world, \n00:01:46.000 and we have to understand that world in order

to\n00:01:50.000 imbue our designs with inherent intelligence,\n00:01:53.000 and so as we look back at the basic state of affairs\n00:01:58.000 in which we design, we, in a way, need to go to the primordial condition\n00:02:03.000 to understand the operating system and the frame conditions of a planet,\n00:02:08.000 and I think the exciting part of that is the good news that's there,\n00:02:13.000 because the news is the news of abundance,\n00:02:16.000 and not the news of limits,\n00:02:18.000 and I think as our culture tortures itself now\n00:02:23.000 with tyrannies and concerns over limits and fear,\n00:02:28.000 we can add this other dimension of abundance that is coherent,\n00:02:33.000 driven by the sun, and start to imagine\n00:02:35.000 what that would be like to share."\n00:02:42.000 That was a nice thing to get.\n00:02:44.000 That was one sentence.\n00:02:48.000 Henry James would be proud.\n00:02:50.000 This is -- I put it down at the bottom,\n00:02:52.000 but that was extemporaneous, obviously.\n00:02:55.000 The fundamental issue is that, for me,\n00:02:58.000 design is the first signal of human intentions.\n00:03:00.000 So what are our intentions, and what would our intentions be --\n00:03:04.000 if we wake up in the morning, we have designs on the world --\n00:03:07.000 well, what would our intention be as a species\n00:03:09.000 now that we're the dominant species?\n00:03:11.000 And it's not just stewardship and dominion debate,\n00:03:14.000 because really, dominion is implicit in stewardship --\n00:03:20.000 because how could you dominate something you had killed?\n00:03:22.000 And stewardship's implicit in dominion,\n00:03:24.000 because you can't be steward of something if you can't dominate it.\n00:03:26.000 So the question is, what is the first question for designers?\n00:03:32.000 Now, as guardians -- let's say the state, for example,\n00:03:35.000 which reserves the right to kill, the right to be duplicitous and so on --\n00:03:40.000 the question we're asking the guardian at this point is\n00:03:43.000 are we meant, how are we meant,\n00:03:45.000 to secure local societies, create world peace\n00:03:47.000 and save the environment?\n00:03:49.000 But I don't know that that's the common debate.\n00:03:52.000 Commerce, on the other hand, is relatively quick,\n00:03:56.000 essentially creative, highly effective and efficient,\n00:03:58.000 and fundamentally honest, because we can't exchange\n00:04:01.000 value for very long if we don't trust each other.\n00:04:05.000 So we use the tools of commerce primarily for our work,\n00:04:07.000 but the question we bring to it is,\n00:04:09.000 how do we love all the children of all species for all time?\n00:04:13.000 And so we start our designs with that question.\n00:04:16.000 Because what we realize today is that modern culture\n00:04:18.000 appears to have adopted a strategy of tragedy.\n00:04:21.000 If we come here and say, "Well, I didn't intend\n00:04:23.000 to cause global warming on the way here,"\n00:04:24.000 and we say, "That's not part of my plan,"\n00:04:26.000 then we realize it's part of our de facto plan.\n00:04:29.000 Because it's the thing that's happening because we have no other plan.\n00:04:32.000 And I was at the White House for President Bush,\n00:04:34.000 meeting with every federal department and agency,\n00:04:36.000 and I pointed out that they appear to have no plan.\n00:04:40.000 If the end game is global warming, they're doing great.\n00:04:42.000 If the end game is mercury toxification of our children\n00:04:45.000 downwind of coal fire plants as they scuttled the Clean Air Act,\n00:04:48.000 then I see that our education programs should be explicitly defined as,\n00:04:52.000 "Brain death for all children. No child left behind."\n00:04:54.000 (Applause)\n00:04:58.000 So, the question is, how many

federal officials\n00:05:02.000 are ready to move to Ohio and Pennsylvania with their families?\n00:05:05.000 So if you don't have an endgame of something delightful,\n00:05:09.000 then you're just moving chess pieces around,\n00:05:11.000 if you don't know you're taking the king.\n00:05:12.000 So perhaps we could develop a strategy of change,\n00:05:15.000 which requires humility. And in my business as an architect,\n00:05:18.000 it's unfortunate the word "humility" and the word "architect"\n00:05:22.000 have not appeared in the same paragraph since "The Fountainhead."\n00:05:25.000 So if anybody here has trouble with the concept of design humility,\n00:05:30.000 reflect on this -- it took us 5,000 years\n00:05:33.000 to put wheels on our luggage.\n00:05:37.000 So, as Kevin Kelly pointed out, there is no endgame.\n00:05:42.000 There is an infinite game, and we're playing in that infinite game.\n00:05:46.000 And so we call it "cradle to cradle,"\n00:05:48.000 and our goal is very simple.\n00:05:49.000 This is what I presented to the White House.\n00:05:51.000 Our goal is a delightfully diverse, safe, healthy and just world,\n00:05:54.000 with clean air, clean water, soil and power --\n00:05:57.000 economically, equitably, ecologically and elegantly enjoyed, period.\n00:06:01.000 (Applause)\n00:06:04.000 What do you like about this?\n00:06:07.000 Which part of this do you like?\n00:06:09.000 So we realized we want full diversity,\n00:06:11.000 even though it can be difficult to remember what De Gaulle said\n00:06:14.000 when asked what it was like to be President of France.\n00:06:16.000 He said, "What do you think it's like trying to run a country with 400 kinds of cheese?"\n00:06:20.000 But at the same time, we realize that our products are not safe and healthy.\n00:06:23.000 So we've designed products\n00:06:25.000 and we analyzed chemicals down to the parts per million.\n00:06:27.000 This is a baby blanket by Pendleton that will give your child nutrition\n00:06:30.000 instead of Alzheimer's later in life.\n00:06:32.000 We can ask ourselves, what is justice,\n00:06:34.000 and is justice blind, or is justice blindness?\n00:06:38.000 And at what point did that uniform turn from white to black?\n00:06:43.000 Water has been declared a human right by the United Nations.\n00:06:46.000 Air quality is an obvious thing to anyone who breathes.\n00:06:48.000 Is there anybody here who doesn't breathe?\n00:06:51.000 Clean soil is a critical problem -- the nitrification, the dead zones\n00:06:54.000 in the Gulf of Mexico.\n00:06:56.000 A fundamental issue that's not being addressed.\n00:06:58.000 We've seen the first form of solar energy\n00:07:00.000 that's beat the hegemony of fossil fuels in the form of wind\n00:07:03.000 here in the Great Plains, and so that hegemony is leaving.\n00:07:06.000 And if we remember Sheikh Yamani when he formed OPEC,\n00:07:09.000 they asked him, "When will we see the end of the age of oil?"\n00:07:12.000 I don't know if you remember his answer, but it was,\n00:07:15.000 "The Stone Age didn't end because we ran out of stones."\n00:07:19.000 We see that companies acting ethically in this world\n00:07:23.000 are outperforming those that don't.\n00:07:24.000 We see the flows of materials in a rather terrifying prospect.\n00:07:29.000 This is a hospital monitor from Los Angeles, sent to China.\n00:07:32.000 This woman will expose herself to toxic phosphorous,\n00:07:35.000 release four pounds of toxic lead into her childrens' environment,\n00:07:38.000 which is from copper.\n00:07:40.000 On the other hand, we see great signs of hope.\n00:07:42.000 Here's Dr. Venkataswamy in India, who's figured out\n00:07:45.000 how to do mass-produced health.\n00:07:47.000 He has given eyesight to two million people for

free. We see in our material flows that car steels don't become car steel again because of the contaminants of the coatings -- bismuth, antimony, copper and so on. They become building steel. On the other hand, we're working with Berkshire Hathaway, Warren Buffett and Shaw Carpet, the largest carpet company in the world. We've developed a carpet that is continuously recyclable, down to the parts per million. The upper is Nylon 6 that can go back to caprolactam, the bottom, a polyolephine -- infinitely recyclable thermoplastic. Now if I was a bird, the building on my left is a liability. The building on my right, which is our corporate campus for The Gap with an ancient meadow, is an asset -- its nesting grounds. Here's where I come from. I grew up in Hong Kong, with six million people in 40 square miles. During the dry season, we had four hours of water every fourth day. And the relationship to landscape was that of farmers who have been farming the same piece of ground for 40 centuries. You can't farm the same piece of ground for 40 centuries without understanding nutrient flow. My childhood summers were in the Puget Sound of Washington, among the first growth and big growth. My grandfather had been a lumberjack in the Olympics, so I have a lot of tree karma I am working off. I went to Yale for graduate school, studied in a building of this style by Le Corbusier, affectionately known in our business as Brutalism. If we look at the world of architecture, we see with Mies's 1928 tower for Berlin, the question might be, 'Well, where's the sun?' And this might have worked in Berlin, but we built it in Houston, and the windows are all closed. And with most products appearing not to have been designed for indoor use, this is actually a vertical gas chamber. When I went to Yale, we had the first energy crisis, and I was designing the first solar-heated house in Ireland as a student, which I then built -- which would give you a sense of my ambition. And Richard Meier, who was one of my teachers, kept coming over to my desk to give me criticism, and he would say, 'Bill, you've got to understand -- solar energy has nothing to do with architecture.' I guess he didn't read Vitruvius. In 1984, we did the first so-called 'green office' in America for Environmental Defense. We started asking manufacturers what were in their materials. They said, 'They're proprietary, they're legal, go away.' The only indoor quality work done in this country at that time was sponsored by R.J. Reynolds Tobacco Company, and it was to prove there was no danger from secondhand smoke in the workplace. So, all of a sudden, here I am, graduating from high school in 1969, and this happens, and we realize that 'away' went away. Remember we used to throw things away, and we'd point to away? And yet, NOAA has now shown us, for example -- you see that little blue thing above Hawaii? That's the Pacific Gyre. It was recently dragged for plankton by scientists, and they found six times as much plastic as

plankton.\n00:10:34.000 When asked, they said, "It's kind of like a giant toilet that doesn't flush."\n00:10:39.000 Perhaps that's away.\n00:10:40.000 So we're looking for the design rules of this --\n00:10:42.000 this is the highest biodiversity of trees in the world, Irian Jaya,\n00:10:44.000 259 species of tree, and we described this\n00:10:48.000 in the book, "Cradle to Cradle."\n00:10:49.000 The book itself is a polymer. It is not a tree.\n00:10:53.000 That's the name of the first chapter -- "This Book is Not a Tree."\n00:10:56.000 Because in poetics, as Margaret Atwood pointed out,\n00:10:59.000 "we write our history on the skin of fish\n00:11:01.000 with the blood of bears."\n00:11:04.000 And with so much polymer, what we really need\n00:11:05.000 is technical nutrition, and to use something\n00:11:08.000 as elegant as a tree -- imagine this design assignment:\n00:11:11.000 Design something that makes oxygen, sequesters carbon,\n00:11:13.000 fixes nitrogen, distills water, accrues solar energy as fuel,\n00:11:17.000 makes complex sugars and food, creates microclimates,\n00:11:21.000 changes colors with the seasons and self-replicates.\n00:11:27.000 Well, why don't we knock that down and write on it?\n00:11:29.000 (Laughter)\n00:11:35.000 So, we're looking at the same criteria\n00:11:37.000 as most people -- you know, can I afford it?\n00:11:39.000 Does it work? Do I like it?\n00:11:41.000 We're adding the Jeffersonian agenda, and I come from Charlottesville,\n00:11:43.000 where I've had the privilege of living in a house designed by Thomas Jefferson.\n00:11:47.000 We're adding life, liberty and the pursuit of happiness.\n00:11:53.000 Now if we look at the word "competition,"\n00:11:54.000 I'm sure most of you've used it.\n00:11:56.000 You know, most people don't realize it comes from\n00:11:57.000 the Latin competere, which means strive together.\n00:12:00.000 It means the way Olympic athletes train with each other.\n00:12:03.000 They get fit together, and then they compete.\n00:12:06.000 The Williams sisters compete -- one wins Wimbledon.\n00:12:08.000 So we've been looking at the idea of competition\n00:12:11.000 as a way of cooperating in order to get fit together.\n00:12:15.000 And the Chinese government has now --\n00:12:16.000 I work with the Chinese government now --\n00:12:18.000 has taken this up.\n00:12:20.000 We're also looking at survival of the fittest,\n00:12:22.000 not in just competition terms in our modern context\n00:12:24.000 of destroy the other or beat them to the ground,\n00:12:27.000 but really to fit together and build niches\n00:12:29.000 and have growth that is good.\n00:12:31.000 Now most environmentalists don't say growth is good,\n00:12:33.000 because, in our lexicon, asphalt is two words: assigning blame.\n00:12:38.000 But if we look at asphalt as our growth,\n00:12:41.000 then we realize that all we're doing is destroying\n00:12:43.000 the planetary's fundamental underlying operating system.\n00:12:47.000 So when we see $E = mc^2$ come along, from a poet's perspective,\n00:12:52.000 we see energy as physics, chemistry as mass,\n00:12:54.000 and all of a sudden, you get this biology.\n00:12:56.000 And we have plenty of energy, so we'll solve that problem,\n00:12:59.000 but the biology problem's tricky, because as we put through\n00:13:02.000 all these toxic materials that we disgorge,\n00:13:05.000 we will never be able to recover that.\n00:13:07.000 And as Francis Crick pointed out, nine years\n00:13:09.000 after discovering DNA with Mr. Watson,\n00:13:12.000 that life itself has to have growth as a precondition --\n00:13:16.000 it has to have free energy, sunlight\n00:13:18.000 and it needs to be an open system of chemicals.\n00:13:21.000 So we're asking for

human artifice to become a living thing,\n00:13:24.000 and we want growth, we want free energy from sunlight\n00:13:26.000 and we want an open metabolism for chemicals.\n00:13:29.000 Then, the question becomes not growth or no growth,\n00:13:31.000 but what do you want to grow?\n00:13:34.000 So instead of just growing destruction,\n00:13:36.000 we want to grow the things that we might enjoy,\n00:13:38.000 and someday the FDA will allow us to make French cheese.\n00:13:41.000 So therefore, we have these two metabolisms,\n00:13:45.000 and I worked with a German chemist, Michael Braungart,\n00:13:47.000 and we've identified the two fundamental metabolisms.\n00:13:49.000 The biological one I'm sure you understand,\n00:13:51.000 but also the technical one, where we take materials\n00:13:53.000 and put them into closed cycles.\n00:13:55.000 We call them biological nutrition and technical nutrition.\n00:13:58.000 Technical nutrition will be in an order of magnitude of biological nutrition.\n00:14:02.000 Biological nutrition can supply about 500 million humans,\n00:14:05.000 which means that if we all wore Birkenstocks and cotton,\n00:14:07.000 the world would run out of cork and dry up.\n00:14:10.000 So we need materials in closed cycles,\n00:14:12.000 but we need to analyze them down to the parts per million\n00:14:14.000 for cancer, birth defects, mutagenic effects,\n00:14:17.000 disruption of our immune systems, biodegradation, persistence,\n00:14:20.000 heavy metal content, knowledge of how we're making them\n00:14:23.000 and their production and so on.\n00:14:25.000 Our first product was a textile where we analyzed 8,000 chemicals\n00:14:29.000 in the textile industry.\n00:14:30.000 Using those intellectual filters, we eliminated [7,962.]\n00:14:35.000 We were left with 38 chemicals.\n00:14:37.000 We have since databased the 4000 most commonly used chemicals\n00:14:40.000 in human manufacturing, and we're releasing this database into the public in six weeks.\n00:14:45.000 So designers all over the world can analyze their products\n00:14:47.000 down to the parts per million for human and ecological health.\n00:14:52.000 (Applause)\n00:14:57.000 We've developed a protocol so that companies can send\n00:15:00.000 these same messages all the way through their supply chains,\n00:15:03.000 because when we asked most companies we work with -- about a trillion dollars\n00:15:06.000 -- and say, "Where does your stuff come from?" They say, "Suppliers." "And where does it go?" "Customers." So we need some help there.\n00:15:12.000 So the biological nutrients, the first fabrics --\n00:15:14.000 the water coming out was clean enough to drink.\n00:15:16.000 Technical nutrients -- this is for Shaw Carpet, infinitely reusable carpet.\n00:15:20.000 Here's nylon going back to caprolactam back to carpet.\n00:15:23.000 Biotechnical nutrients -- the Model U for Ford Motor,\n00:15:26.000 a cradle to cradle car -- concept car.\n00:15:28.000 Shoes for Nike, where the uppers are polyesters, infinitely recyclable,\n00:15:32.000 the bottoms are biodegradable soles.\n00:15:35.000 Wear your old shoes in, your new shoes out.\n00:15:37.000 There is no finish line.\n00:15:39.000 The idea here of the car is that some of the materials\n00:15:41.000 go back to the industry forever, some of the materials go back to soil --\n00:15:44.000 it's all solar-powered.\n00:15:46.000 Here's a building at Oberlin College we designed\n00:15:48.000 that makes more energy than it needs to operate and purifies its own water.\n00:15:52.000 Here's a building for The Gap, where the ancient grasses\n00:15:54.000 of San Bruno, California, are on the roof.\n00:15:58.000 And this is our project for Ford Motor Company.\n00:16:00.000 It's the revitalization of the River Rouge in Dearborn.\n00:16:02.000 This is obviously a color

photograph. \n00:16:06.000 These are our tools. These are how we sold it to Ford. \n00:16:10.000 We saved Ford 35 million dollars doing it this way, day one, \n00:16:13.000 which is the equivalent of the Ford Taurus \n00:16:15.000 at a four percent margin of an order for 900 million dollars worth of cars. \n00:16:19.000 Here it is. It's the world's largest green roof, 10 and a half acres. \n00:16:22.000 This is the roof, saving money, \n00:16:25.000 and this is the first species to arrive here. These are killdeer. \n00:16:29.000 They showed up in five days. \n00:16:32.000 And we now have 350-pound auto workers \n00:16:34.000 learning bird songs on the Internet. \n00:16:38.000 We're developing now protocols for cities -- \n00:16:40.000 that's the home of technical nutrients. \n00:16:42.000 The country -- the home of biological. And putting them together. \n00:16:45.000 And so I will finish by showing you a new city \n00:16:47.000 we're designing for the Chinese government. \n00:16:49.000 We're doing 12 cities for China right now, \n00:16:52.000 based on cradle to cradle as templates. \n00:16:54.000 Our assignment is to develop protocols for the housing \n00:16:57.000 for 400 million people in 12 years. \n00:16:59.000 We did a mass energy balance -- if they use brick, \n00:17:01.000 they will lose all their soil and burn all their coal. \n00:17:04.000 They'll have cities with no energy and no food. \n00:17:06.000 We signed a Memorandum of Understanding -- \n00:17:08.000 here's Madam Deng Nan, Deng Xiaoping's daughter -- \n00:17:10.000 for China to adopt cradle to cradle. \n00:17:12.000 Because if they toxify themselves, being the lowest-cost producer, \n00:17:16.000 send it to the lowest-cost distribution -- Wal-Mart -- \n00:17:18.000 and then we send them all our money, what we'll discover is that \n00:17:21.000 we have what, effectively, when I was a student, \n00:17:24.000 was called mutually assured destruction. \n00:17:27.000 Now we do it by molecule. These are our cities. \n00:17:30.000 We're building a new city next to this city; look at that landscape. \n00:17:33.000 This is the site. \n00:17:35.000 We don't normally do green fields, but this one is about to be built, \n00:17:39.000 so they brought us in to intercede. \n00:17:41.000 This is their plan. \n00:17:43.000 It's a rubber stamp grid that they laid right on that landscape. \n00:17:46.000 And they brought us in and said, "What would you do?" \n00:17:49.000 This is what they would end up with, which is another color photograph. \n00:17:53.000 So this is the existing site, so this is what it looks like now, \n00:17:56.000 and here's our proposal. \n00:17:58.000 (Applause) \n00:18:02.000 So the way we approached this \n00:18:04.000 is we studied the hydrology very carefully. \n00:18:06.000 We studied the biota, the ancient biota, \n00:18:08.000 the current farming and the protocols. \n00:18:10.000 We studied the winds and the sun to make sure everybody in the city \n00:18:12.000 will have fresh air, fresh water and direct sunlight \n00:18:18.000 in every single apartment at some point during the day. \n00:18:21.000 We then take the parks and lay them out as ecological infrastructure. \n00:18:25.000 We lay out the building areas. \n00:18:28.000 We start to integrate commercial and mixed use \n00:18:29.000 so the people all have centers and places to be. \n00:18:32.000 The transportation is all very simple, \n00:18:34.000 everybody's within a five-minute walk of mobility. \n00:18:37.000 We have a 24-hour street, so that there's always a place that's alive. \n00:18:42.000 The waste systems all connect. \n00:18:44.000 If you flush a toilet, your feces will go to the sewage treatment plants, \n00:18:49.000 which are sold as assets, not liabilities. \n00:18:51.000 Because who wants the fertilizer factory that makes natural gas? \n00:18:55.000 The waters are all taken in to construct the wetlands for habitat

restorations. \n00:19:00.000 And then it makes natural gas, which then goes back into the city \n00:19:04.000 to power the fuel for the cooking for the city. \n00:19:08.000 So this is -- these are fertilizer gas plants. \n00:19:10.000 And then the compost is all taken back \n00:19:13.000 to the roofs of the city, where we've got farming, \n00:19:15.000 because what we've done is lifted up the city, \n00:19:19.000 the landscape, into the air to -- to restore the native landscape \n00:19:26.000 on the roofs of the buildings. \n00:19:28.000 The solar power of all the factory centers \n00:19:31.000 and all the industrial zones with their light roofs powers the city. \n00:19:34.000 And this is the concept for the top of the city. \n00:19:36.000 We've lifted the earth up onto the roofs. \n00:19:40.000 The farmers have little bridges to get from one roof to the next. \n00:19:44.000 We inhabit the city with work/live space on all the ground floors. \n00:19:48.000 And so this is the existing city, and this is the new city. \n00:19:53.000 (Applause) \n", "title": "tactiq-free-transcript-IoRjz8iTvoo.txt", "tether_id": null}, "status": "finished_successfully", "end_turn": null, "weight": 1.0, "metadata": {"command": "context_stuff", "is_visually_hidden_from_conversation": true, "message_type": null, "model_slug": "gpt-4o", "default_model_slug": "gpt-4o", "parent_id": "e89fd7be-1558-43f7-a581-de533ba50924", "request_id": "88c48ca31e7bbb13-MXP", "timestamp_": "absolute"}, "recipient": "all", "channel": null}, "parent": "e89fd7be-1558-43f7-a581-de533ba50924", "children": ["44713875-e73a-4268-a6a2-0151063b6b20"]}, "44713875-e73a-4268-a6a2-0151063b6b20": {"id": "44713875-e73a-4268-a6a2-0151063b6b20", "message": {"id": "44713875-e73a-4268-a6a2-0151063b6b20", "author": {"role": "tool", "name": "myfiles_browser", "metadata": {}}, "create_time": 1717133225.512988, "update_time": null, "content": {"content_type": "tether_quote", "url": "file-RAzDl1TYQLyhHItd0sQv0sZY", "domain": "Regenerative Development and Design A Framework for Evolving Sustainability (Regenesi Group) (Z-Library).pdf", "text": "\n\n\n\n\nRegenerative \nDevelopment \nand Design\nA Framework for \n\n\nEvolving Sustainability\n\n\nPamela Mang \nBen Haggard\n\n\nRegenesi\n\n\n\n\nCover Design: Wiley\nCover Images: (bottom) \u00a9 Flickr/Nicholas A. Tonelli, Susquehanna River; (top, left to right) \u00a9 Michael Sotnikov, \nCheonggyecheong Festival; Courtesy of Playa Viva \u00a9 David Leventhal; Teachers \u00a9 Regenesi Group; \u00a9 Sasaki \nAssociates, Las Salinas Master Plan\n\n\nThis book is printed on acid-free paper. \n\n\nCopyright \u00a9 2016 by John Wiley & Sons, Inc. All rights reserved\n\n\nPublished by John Wiley & Sons, Inc., Hoboken, New Jersey\nPublished simultaneously in Canada\n\n\nNo part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any \nmeans, electronic, mechanical, photocopying, recording, scanning, or otherwise, except as permitted under Section \n107 or 108 of the 1976 United States Copyright Act, without either the prior written permission of the Publisher, or \nauthorization through payment of the appropriate per-copy fee to the Copyright Clearance Center, 222 Rosewood \nDrive, Danvers, MA 01923, (978) 750-8400, fax (978) 646-8600, or on the web at www.copyright.com. Requests to \nthe Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 111 River \nStreet, Hoboken, NJ 07030, (201) 748-6011, fax (201) 748-6008, or online at www.wiley.com/go/permissions. \n\n\nLimit of Liability/Disclaimer of Warranty: While the publisher and author have used their best efforts in preparing this \nbook, they make no representations or warranties with the respect to the accuracy or completeness of the contents \nof this book and specifically disclaim any implied warranties of merchantability or fitness for a particular purpose. No \nwarranty may be created or extended by sales representatives

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223\n\n\n\n\nForeword\n\nPredictions of the future can be hazardous or downright
foolish. But the \n failure of foresight\u2014the inability to read the hand-writing
on the wall\u2014is \neven more so. Designers of all kinds work in the conflicted
space between \nthese two poles. Their goal is to improve small parts of a rapidly
changing \nworld with the tools of form, scale, materials, energy, water, color,
landscape, \nand the creativity that is found most often at the grassroots level. But
what \nneeds to be improved?\n\nThe short answer is \u201ca great deal,\u201d
including an energy system that is rapidly \ndestabilizing the climate, an economy
driving tens of thousands of species to \nextinction, a political system that
sanctions gross inequality, an uncivil society, \nthe growing autism toward the
natural world, and a global system mired in \nconflict. These are related problems,
parts of a larger civilizational crisis with \nroots traceable to the seventeenth
century authors of the mechanical world \nview. But there are deeper pathologies with
footprints back to our ancient \nschizophrenia toward the natural world that had to be
tamed a bit before it \ncould be appreciated.\n\nDesigners, however, typically do not
work at the macro scale of civilization \nfor good reasons. Whether as architecture,
engineering, materials, or land-\nscapes, design is bounded by the minute particulars
of projects in their spe-\ncific social, cultural, and historical context. As a result
designers work from the \nbottom up on projects at the building, neighborhood, and
city scales. But the \nbig problems mentioned above are in large part the sum total
of bad design \n(including that of public policies) at lower levels. There are many
reasons for \nbad design, not the least of which is a professional focus on form-
making, \noften oblivious to other consequences.\n\nBeginning in the 1970s a few
renegade architects like Sim Van der Ryn in \nCalifornia became concerned about the
collateral environmental impacts \nof the design professions. Van der Ryn envisioned
ecological design as the \n\n\n\n\nForeword\n\n calibration of buildings with their
places, which required further integral \nunderstanding of landscapes, energy flows,
waste cycling, materials, sun-\nlight, water, and ecological processes. Ecological
design, in other words, \naims to calibrate human actions with the way natural systems

work as particular places, larger landscapes, and whole ecologies. It aims to work with, not against, the flows of energy and natural cycling of materials. The goal, in short, was to reduce environmental impacts of the built environment in a civilization that prized economic expansion above all else with hardly a thought for the morrow. What began so modestly in the 1970s has rapidly grown into a global movement to harmonize buildings, neighborhoods, and cities with the surrounding nature. After the publication of the Brundtland Commission report in 1987, the goals of ecological designers expanded to embrace the wider (but vague) mission of sustainability. But we know now that that word signifies more than was once assumed. Sustainability is the sum total of other qualities. As Chattanooga City Councilman, David Crockett puts it: "make it clean, green, safe, and fair and it will be sustainable." The left side of that equation, however, requires the elimination of the growing inequality that is a precursor to violence and ruined lives. It further requires rethinking our core assumptions about the relation between economic growth and real progress. Ecological design, in other words, must be large enough in foresight, scope, and heart to include the social and economic environment in which it is embedded. In that way ecological design is a radical endeavor in the true sense of the word, it gets to the root of what ails us. The work described in this book takes design to yet another level that aims to regenerate the fabric of life and repair the wounds and tears inflicted by the carelessness of the fossil-fuel-powered growth economy. Regenerative design strives to create the conditions of health which ecologist Aldo Leopold once defined as "the capacity of the land for self-renewal." It aims, in other words, for wholeness, a word linked etymologically with healing, health, and Holy. Designers in this sense are midwives to the birth of a larger, deeper, and more resilient kind of order capable of regenerating the conditions of life and health. It is predicated on the co-evolution of human and natural systems, each supporting the other. In Robert Grudin's words, "Foreword vii" design, "unlike any other concept . . . calls for us to create a unity of part with whole, a concord of form and function, a finished product that is harmonious with society and with nature." In this history the trend is for design questions to go to deeper levels and design projects to become catalysts for still further changes. In architect Stuart Walker's words design must, "transcend utility and conventional function-led, and especially technology-led approaches." Designers, in his view, must rise above "the calculated creation of dissatisfaction" and "think more comprehensively about the products we already produce and their implications." Design, in other words, must be an act of integration, not just specialization, with the goal of creating a wholeness that includes spiritual well-being. And it should start with those who serve as designers.⁴

Regenerative design has many effects. For one, it changes the relationship of people to their places. It can restore the reservoir of practical ecological competence at the local level allowing us to do more for ourselves and for each other the things that we once did naturally as capable people, good neighbors, and active citizens. It helps ground us by better informing us of where we are and the ecology and energy flows by which we are sustained in a particular place. In a world where any one place has come to look much like any other, we have lost sight of the fine print of our lives and how we are provisioned with food, energy, materials, and spiritual sustenance. We are mostly ignorant of the costs and consequences of the systems that provide for us so seamlessly and oblivious to

their inherent fragility. Regenerative design helps us know where we are and how to be competent, respectful, and generous there. Our places should be ecologically designed landscapes whose multiple functions retain water for drought periods, manage floods, grow food and fiber, sustain wildlife, and absorb carbon. They should be working systems that blend agro-forestry, mixed-use permacultures, intensive agricultural and gardening zones, viticulture, aquaculture, water purification, restoration, and recreation. And they should be loved and managed by local citizens who use them to train young people in the essentials of managed integrated ecologies.

5 Foreword

Further, regenerative design should enhance the opportunities for caring, conviviality, celebration, and face-to-face democracy.

6 Communities with front porches, public squares, community gardens and solar systems, neighborhood stores, corner pubs, and open places of worship are more likely to thrive in the years ahead. This is because they create the conditions favorable to neighborliness, community cohesion, and buffering from hardships. Good design should engage people in the making of their homes, neighborhoods, towns, and regions. It should increase civic intelligence, sense of potential, and joy in life. In this way, designers are facilitators in a larger public conversation, architects of better possibilities, not just makers of buildings and things.

A rapidly warming climate will add to the design challenges ahead. Designers must reckon with a world of higher temperatures, stronger winds, more frequent and larger storms, rising ocean levels, longer droughts, much larger rainfall events, and new diseases.

7 These will likely cause interruptions in supplies of food, energy, and water and could trigger social disruptions. We must design with the awareness of the fragility of our civilization, as Jared Diamond and others warn. We must build in the ability to maintain hope and function as a society in emergency (and possibly breakdown) and lay the basis for recovery.

8 The Great Work of our generation is to create a post-fossil-fuel and post-consumer economy that is regenerative, fair, durable, resilient, convivial, and democratic. It must be powered by renewable energy. It must be a circular economy that recycles, reuses, or transforms its wastes. Of necessity it will be much more focused on essentials of food, energy, shelter, clean water, education, the arts, and rootedness in place and bioregion. It will be built by local people who cherish and understand their places.

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financial benefits of sustainability can be compelling. For instance, showcasing how a competitor reduced costs and increased profits through sustainable practices can illustrate the practical benefits. Discussing how sustainability metrics and key performance indicators (KPIs) can be integrated into the company's reporting framework to track progress and benefits further reinforces the argument.

Collaborative goal-setting can ensure the client's buy-in and a sense of ownership. Proposing a collaborative approach to set sustainability goals that align with the company's strategic objectives can foster a cooperative relationship. Suggesting pilot projects to test the feasibility and benefits of sustainable practices can provide tangible results and build confidence in broader implementation.

Approaching the topic of sustainability with a conservative or capitalist client requires a focus on financial benefits, risk management, and strategic advantage. By framing sustainability as a pathway to cost savings, market differentiation, regulatory compliance, and long-term viability, these practices can align with the client's self-interest and business goals. Engaging in a data-driven, collaborative dialogue will further reinforce the practical and profitable aspects of adopting sustainable practices.

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 logic of sustainability\n# https://www.youtube.com/watch/ip9QF_lB0yA\n\n00:00:18.330
 Believe me or not, I come offering a solution\n00:00:22.330 to a very important part
 of this larger problem,\n00:00:26.330 with the requisite focus on
 climate.\n00:00:28.330 And the solution I offer\n00:00:30.330 is to the biggest
 culprit\n00:00:32.330 in this massive mistreatment of the earth\n00:00:36.330 by
 humankind,\n00:00:38.330 and the resulting decline of the biosphere.\n00:00:41.330
 That culprit is business and industry,\n00:00:44.330 which happens to be where I have
 spent the last 52 years\n00:00:47.330 since my graduation from Georgia Tech in
 1956.\n00:00:51.330 As an industrial engineer,\n00:00:53.330 cum aspiring and then
 successful entrepreneur.\n00:00:57.330 After founding my company, Interface, from
 scratch\n00:01:00.330 in 1973, 36 years ago,\n00:01:03.330 to produce carpet tiles in
 America\n00:01:05.330 for the business and institution markets,\n00:01:08.330 and
 shepherding it through start-up and survival\n00:01:11.330 to prosperity and global
 dominance in its field,\n00:01:14.330 I read Paul Hawken's book,\n00:01:16.330
 "The Ecology of Commerce,"
 00:01:18.330 the summer of 1994. \n00:01:21.330
 In his book, Paul charges business and industry\n00:01:24.330 as, one, the major
 culprit\n00:01:27.330 in causing the decline of the biosphere,\n00:01:29.330 and, two,
 the only institution that is large enough,\n00:01:32.330 and pervasive enough, and
 powerful enough,\n00:01:34.330 to really lead humankind out of this
 mess.\n00:01:38.330 And by the way he convicted me\n00:01:41.330 as a plunderer of the
 earth.\n00:01:43.330 And I then challenged the people of Interface, my
 company,\n00:01:46.330 to lead our company and the entire industrial world to

sustainability,\n00:01:50.330 which we defined as eventually operating\n00:01:52.330 our petroleum-intensive company in such a way\n00:01:55.330 as to take from the earth\n00:01:57.330 only what can be renewed by the earth, naturally and rapidly --\n00:02:01.330 not another fresh drop of oil --\n00:02:03.330 and to do no harm to the biosphere.\n00:02:07.330 Take nothing: do no harm.\n00:02:09.330 I simply said, "If Hawken is right\n00:02:11.330 and business and industry must lead,\n00:02:13.330 who will lead business and industry?\n00:02:15.330 Unless somebody leads, nobody will."\n00:02:18.330 It's axiomatic. Why not us?\n00:02:21.330 And thanks to the people of Interface,\n00:02:23.330 I have become a recovering plunderer.\n00:02:26.330 (Laughter)\n00:02:27.330 (Applause)\n00:02:32.330 I once told a Fortune Magazine writer\n00:02:36.330 that someday people like me would go to jail.\n00:02:39.330 And that became the headline of a Fortune article.\n00:02:41.330 They went on to describe me as America's greenest CEO.\n00:02:45.330 From plunderer to recovering plunderer,\n00:02:48.330 to America's greenest CEO in five years --\n00:02:51.330 that, frankly, was a pretty sad commentary\n00:02:53.330 on American CEOs in 1999.\n00:02:58.330 Asked later in the Canadian documentary, "The Corporation,"\n00:03:01.330 what I meant by the "go to jail" remark,\n00:03:04.330 I offered that theft is a crime.\n00:03:08.330 And theft of our children's future would someday be a crime.\n00:03:13.330 But I realized, for that to be true --\n00:03:15.330 for theft of our children's future to be a crime --\n00:03:18.330 there must be a clear, demonstrable alternative\n00:03:21.330 to the take-make-waste industrial system\n00:03:24.330 that so dominates our civilization,\n00:03:27.330 and is the major culprit, stealing our children's future,\n00:03:30.330 by digging up the earth\n00:03:32.330 and converting it to products that quickly become waste\n00:03:36.330 in a landfill or an incinerator --\n00:03:38.330 in short, digging up the earth and converting it to pollution.\n00:03:43.330 According to Paul and Anne Ehrlich\n00:03:45.330 and a well-known environmental impact equation,\n00:03:48.330 impact -- a bad thing --\n00:03:50.330 is the product of population, affluence and technology.\n00:03:54.330 That is, impact is generated by people,\n00:03:58.330 what they consume in their affluence,\n00:04:00.330 and how it is produced.\n00:04:03.330 And though the equation is largely subjective,\n00:04:05.330 you can perhaps quantify people, and perhaps quantify affluence,\n00:04:09.330 but technology is abusive in too many ways to quantify.\n00:04:13.330 So the equation is conceptual.\n00:04:15.330 Still it works to help us understand the problem.\n00:04:18.329 So we set out at Interface, in 1994,\n00:04:23.330 to create an example:\n00:04:25.330 to transform the way we made carpet,\n00:04:27.330 a petroleum-intensive product for materials as well as energy,\n00:04:31.330 and to transform our technologies\n00:04:33.330 so they diminished environmental impact,\n00:04:36.330 rather than multiplied it.\n00:04:39.330 Paul and Anne Ehrlich's environmental impact equation:\n00:04:42.330 $I = P \times A \times T$ \n00:04:45.330 population, affluence and technology.\n00:04:48.330 I wanted Interface to rewrite that equation so that it read\n00:04:54.330 $I = \frac{P \times A}{T}$ \n00:04:57.330 Now, the mathematically-minded will see immediately\n00:05:00.330 that T in the numerator increases impact -- a bad thing --\n00:05:03.330 but T in the denominator decreases impact.\n00:05:07.330 So I ask, "What would move T, technology,\n00:05:11.330 from the numerator -- call it T1 --\n00:05:13.330 where it increases impact,\n00:05:15.330 to the denominator -- call it T2 --\n00:05:18.330 where it reduces impact?\n00:05:21.330 I thought about the characteristics\n00:05:25.330 of

first industrial revolution,\n00:05:27.330 T1, as we practiced it at Interface,\n00:05:30.330 and it had the following characteristics.\n00:05:34.330 Extractive: taking raw materials from the earth.\n00:05:38.330 Linear: take, make, waste.\n00:05:41.330 Powered by fossil fuel-derived energy.\n00:05:43.330 Wasteful: abusive and focused on labor productivity.\n00:05:47.330 More carpet per man-hour.\n00:05:50.330 Thinking it through, I realized that all those attributes\n00:05:53.330 must be changed to move T to the denominator.\n00:05:58.330 In the new industrial revolution extractive must be replaced by renewable;\n00:06:03.330 linear by cyclical;\n00:06:05.330 fossil fuel energy by renewable energy, sunlight;\n00:06:09.330 wasteful by waste-free;\n00:06:11.330 and abusive by benign;\n00:06:13.330 and labor productivity by resource productivity.\n00:06:17.330 And I reasoned that if we could make those transformative changes,\n00:06:21.330 and get rid of T1 altogether,\n00:06:23.330 we could reduce our impact to zero,\n00:06:26.330 including our impact on the climate.\n00:06:29.330 And that became the Interface plan in 1995,\n00:06:32.330 and has been the plan ever since.\n00:06:35.330 We have measured our progress very rigorously.\n00:06:39.330 So I can tell you how far we have come in the ensuing 12 years.\n00:06:43.330 Net greenhouse gas emissions\n00:06:45.330 down 82 percent in absolute tonnage.\n00:06:49.330 (Applause)\n00:06:53.330 Over the same span of time\n00:06:55.330 sales have increased by two-thirds and profits have doubled.\n00:06:58.330 So an 82 percent absolute reduction\n00:07:01.330 translates into a 90 percent reduction\n00:07:03.330 in greenhouse gas intensity relative to sales.\n00:07:07.330 This is the magnitude\n00:07:09.330 of the reduction the entire global technosphere\n00:07:12.330 must realize by 2050\n00:07:15.330 to avoid catastrophic climate disruption --\n00:07:18.330 so the scientists are telling us.\n00:07:21.330 Fossil fuel usage is down 60 percent per unit of production,\n00:07:25.330 due to efficiencies in renewables.\n00:07:27.330 The cheapest, most secure barrel of oil there is\n00:07:30.330 is the one not used through efficiencies.\n00:07:33.330 Water usage is down 75 percent\n00:07:36.330 in our worldwide carpet tile business.\n00:07:38.330 Down 40 percent in our broadloom carpet business,\n00:07:41.330 which we acquired in 1993\n00:07:43.330 right here in California, City of Industry,\n00:07:45.330 where water is so precious.\n00:07:48.330 Renewable or recyclable materials are 25 percent of the total, and growing rapidly.\n00:07:52.330 Renewable energy is 27 percent of our total,\n00:07:55.330 going for 100 percent.\n00:07:57.330 We have diverted 148 million pounds --\n00:08:00.330 that's 74,000 tons --\n00:08:02.330 of used carpet from landfills,\n00:08:05.330 closing the loop on material flows\n00:08:07.330 through reverse logistics\n00:08:09.330 and post-consumer recycling technologies\n00:08:12.330 that did not exist when we started 14 years ago.\n00:08:16.330 Those new cyclical technologies\n00:08:18.330 have contributed mightily to the fact that we have produced and sold\n00:08:21.330 85 million square yards of climate-neutral carpet\n00:08:25.330 since 2004,\n00:08:27.330 meaning no net contribution to global climate disruption\n00:08:31.330 in producing the carpet throughout the supply chain,\n00:08:33.330 from mine and well head clear to end-of-life reclamation --\n00:08:38.330 independent third-party certified.\n00:08:40.330 We call it Cool Carpet.\n00:08:43.330 And it has been a powerful marketplace differentiator,\n00:08:46.330 increasing sales and profits.\n00:08:48.330 Three years ago we launched carpet tile for the home,\n00:08:52.330 under the brand Flor,\n00:08:54.330 misspelled F-L-O-R.\n00:08:57.330 You can point and click today at

Flor.com\n00:08:59.330 and have Cool Carpet delivered to your front door in five days.\n00:09:03.330 It is practical, and pretty too.\n00:09:06.330 (Laughter)\n00:09:07.330 (Applause)\n00:09:13.330 We reckon that we are a bit over half way\n00:09:15.330 to our goal: zero impact, zero footprint.\n00:09:20.330 We've set 2020 as our target year for zero,\n00:09:23.330 for reaching the top, the summit of Mount Sustainability.\n00:09:28.330 We call this Mission Zero.\n00:09:30.330 And this is perhaps the most important facet:\n00:09:33.330 we have found Mission Zero to be incredibly good for business.\n00:09:37.330 A better business model,\n00:09:40.330 a better way to bigger profits.\n00:09:42.330 Here is the business case for sustainability.\n00:09:45.330 From real life experience, costs are down, not up,\n00:09:49.330 reflecting some 400 million dollars\n00:09:51.330 of avoided costs in pursuit of zero waste --\n00:09:55.330 the first face of Mount Sustainability.\n00:09:58.330 This has paid all the costs for the transformation of Interface.\n00:10:02.330 And this dispels a myth too,\n00:10:04.330 this false choice between the environment and the economy.\n00:10:08.330 Our products are the best they've ever been,\n00:10:10.330 inspired by design for sustainability,\n00:10:12.330 an unexpected wellspring of innovation.\n00:10:16.330 Our people are galvanized around this shared higher purpose.\n00:10:19.330 You cannot beat it for attracting the best people\n00:10:21.330 and bringing them together.\n00:10:24.330 And the goodwill of the marketplace is astonishing.\n00:10:27.330 No amount of advertising, no clever marketing campaign,\n00:10:31.330 at any price, could have produced or created\n00:10:34.330 this much goodwill.\n00:10:37.330 Costs, products, people, marketplaces --\n00:10:39.330 what else is there?\n00:10:41.330 It is a better business model.\n00:10:43.330 And here is our 14-year record of sales and profits.\n00:10:48.330 There is a dip there, from 2001 to 2003:\n00:10:51.330 a dip when our sales, over a three-year period,\n00:10:53.330 were down 17 percent.\n00:10:55.330 But the marketplace was down 36 percent.\n00:10:58.330 We literally gained market share.\n00:11:00.330 We might not have survived that recession\n00:11:03.330 but for the advantages of sustainability.\n00:11:06.330 If every business were pursuing Interface plans,\n00:11:10.330 would that solve all our problems?\n00:11:12.330 I don't think so.\n00:11:14.330 I remain troubled by the revised Ehrlich equation,\n00:11:17.330 $I = P \times A \div T$ \n00:11:21.330 That A is a capital A,\n00:11:23.330 suggesting that affluence is an end in itself.\n00:11:28.330 But what if we reframed Ehrlich further?\n00:11:32.330 And what if we made A a lowercase 'a',\n00:11:35.330 suggesting that it is a means to an end,\n00:11:37.330 and that end is happiness --\n00:11:40.330 more happiness with less stuff.\n00:11:43.330 You know that would reframe civilization itself --\n00:11:46.330 (Applause) --\n00:11:54.330 and our whole system of economics,\n00:11:57.330 if not for our species, then perhaps for the one that succeeds us:\n00:12:03.330 the sustainable species, living on a finite earth,\n00:12:06.330 ethically, happily and ecologically\n00:12:09.330 in balance with nature\n00:12:11.330 and all her natural systems for a thousand generations,\n00:12:14.330 or 10,000 generations --\n00:12:16.330 that is to say, into the indefinite future.\n00:12:19.330 But does the earth have to wait for our extinction as a species?\n00:12:24.330 Well maybe so. But I don't think so.\n00:12:27.330 At Interface we really intend to bring this prototypical\n00:12:30.330 sustainable, zero-footprint industrial company\n00:12:33.330 fully into existence by 2020.\n00:12:36.330 We can see our way

now, \n00:12:38.330 clear to the top of that mountain. \n00:12:40.330 And now the challenge is in execution. \n00:12:43.330 And as my good friend and adviser Amory Lovins says, \n00:12:46.330 "If something exists, it must be possible." \n00:12:50.330 (Laughter) \n00:12:53.330 If we can actually do it, it must be possible. \n00:12:56.330 If we, a petro-intensive company can do it, anybody can. \n00:13:00.330 And if anybody can, it follows that everybody can. \n00:13:04.330 Hawken fulfilled business and industry, \n00:13:07.330 leading humankind away from the abyss \n00:13:11.330 because, with continued unchecked decline of the biosphere, \n00:13:16.330 a very dear person is at risk here -- \n00:13:19.330 frankly, an unacceptable risk. \n00:13:21.330 Who is that person? \n00:13:23.330 Not you. Not I. \n00:13:25.330 But let me introduce you to the one who is most at risk here. \n00:13:28.330 And I myself met this person in the early days of this mountain climb. \n00:13:32.330 On a Tuesday morning in March of 1996, \n00:13:36.330 I was talking to people, as I did at every opportunity back then, \n00:13:39.330 bringing them along and often not knowing whether I was connecting. \n00:13:43.330 But about five days later back in Atlanta, \n00:13:46.330 I received an email from Glenn Thomas, \n00:13:49.330 one of my people in the California meeting. \n00:13:51.330 He was sending me an original poem \n00:13:53.330 that he had composed after our Tuesday morning together. \n00:13:56.330 And when I read it it was one of the most uplifting moments of my life. \n00:14:00.330 Because it told me, by God, one person got it. \n00:14:04.330 Here is what Glenn wrote. And here is that person, most at risk. \n00:14:08.330 Please meet "Tomorrow's Child." \n00:14:12.330 "Without a name, an unseen face, and knowing not your time or place, \n00:14:16.330 Tomorrow's child, though yet unborn, \n00:14:19.330 I met you first last Tuesday morn. \n00:14:22.330 A wise friend introduced us two. \n00:14:24.330 And through his sobering point of view \n00:14:26.330 I saw a day that you would see, a day for you but not for me. \n00:14:31.330 Knowing you has changed my thinking. \n00:14:33.330 For I never had an inkling \n00:14:35.330 that perhaps the things I do might someday, \n00:14:38.330 somehow threaten you. \n00:14:41.330 Tomorrow's child, my daughter, son, \n00:14:43.330 I'm afraid I've just begun to think of you and of your good, \n00:14:45.330 though always having known I should. \n00:14:49.330 Begin, I will. \n00:14:51.330 The way the cost of what I squander, what is lost, \n00:14:54.330 if ever I forget that you \n00:14:56.330 will someday come and live here too." \n00:15:00.330 Well, every day of my life since, \n00:15:02.330 "Tomorrow's Child" has spoken to me \n00:15:04.330 with one simple but profound message, \n00:15:06.330 which I presume to share with you. \n00:15:08.330 We are, each and every one, \n00:15:10.330 a part of the web of life. \n00:15:13.330 The continuum of humanity, sure, but in a larger sense, the web of life itself. \n00:15:17.330 And we have a choice to make \n00:15:19.330 during our brief, brief visit \n00:15:21.330 to this beautiful blue and green living planet. \n00:15:25.330 to hurt it or to help it. \n00:15:28.330 For you, it's your call. \n00:15:31.330 Thank you. \n00:15:33.330 (Applause) \n", "extra": {"cited_message_idx": 28, "search_result_idx": null, "evidence_text": "source"}, "url": "file-CWgzJYsc2VMZ6yS9KoMxh0oC"}, {"start_ix": 1449, "end_ix": 1460, "citation_format_type": "tether Og", "metadata": {"type": "file", "name": "Regenerative Development and Design A Framework for Evolving Sustainability (Regenesi Group) (Z-Library).pdf", "id": "file-RAzDl1TYQLyhHItD0sQv0sZY", "source": "my_files", "text": "\n\n\n\n\nRegenerative \nDevelopment \nand Design\nA Framework for \n\nEvolving Sustainability\n\nPamela Mang \nBen

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 223\n\n\n\nv\n\nForeword\n\nPredictions of the future can be hazardous or downright
 foolish. But the \n failure of foresight\u2014the inability to read the hand-writing
 on the wall\u2014is \neven more so. Designers of all kinds work in the conflicted
 space between \nthese two poles. Their goal is to improve small parts of a rapidly
 changing \nworld with the tools of form, scale, materials, energy, water, color,
 landscape, \nand the creativity that is found most often at the grassroots level. But
 what \nneeds to be improved?\n\nThe short answer is \u201ca great deal,\u201d
 including an energy system that is rapidly \ndestabilizing the climate, an economy

driving tens of thousands of species to extinction, a political system that sanctions gross inequality, an uncivil society, the growing autism toward the natural world, and a global system mired in conflict. These are related problems, parts of a larger civilizational crisis with roots traceable to the seventeenth century authors of the mechanical world view. But there are deeper pathologies with footprints back to our ancient schizophrenia toward the natural world that had to be tamed a bit before it could be appreciated.

Designers, however, typically do not work at the macro scale of civilization for good reasons. Whether as architecture, engineering, materials, or landscapes, design is bounded by the minute particulars of projects in their specific social, cultural, and historical context. As a result designers work from the bottom up on projects at the building, neighborhood, and city scales. But the big problems mentioned above are in large part the sum total of bad design (including that of public policies) at lower levels. There are many reasons for bad design, not the least of which is a professional focus on form-making, often oblivious to other consequences.

Beginning in the 1970s a few renegade architects like Sim Van der Ryn in California became concerned about the collateral environmental impacts of the design professions. Van der Ryn envisioned ecological design as the calibration of buildings with their places, which required further integral understanding of landscapes, energy flows, waste cycling, materials, sun, light, water, and ecological processes. Ecological design, in other words, aims to calibrate human actions with the way natural systems work as particular places, larger landscapes, and whole ecologies. It aims to work with, not against, the flows of energy and natural cycling of materials. The goal, in short, was to reduce environmental impacts of the built environment in a civilization that prized economic expansion above all else with hardly a thought for the morrow.

What began so modestly in the 1970s has rapidly grown into a global movement to harmonize buildings, neighborhoods, and cities with the surrounding nature. After the publication of the Brundtland Commission report in 1987, the goals of ecological designers expanded to embrace the wider (but vague) mission of sustainability. But we know now that that word signifies more than was once assumed. Sustainability is the sum total of other qualities. As Chattanooga City Councilman, David Crockett puts it: "make it clean, green, safe, and fair and it will be sustainable." The left side of that equation, however, requires the elimination of the growing inequality that is a precursor to violence and ruined lives. It further requires rethinking our core assumptions about the relation between economic growth and real progress. Ecological design, in other words, must be large enough in foresight, scope, and heart to include the social and economic environment in which it is embedded. In that way ecological design is a radical endeavor in the true sense of the word, it gets to the root of what ails us.

The work described in this book takes design to yet another level that aims to regenerate the fabric of life and repair the wounds and tears inflicted by the carelessness of the fossil-fuel-powered growth economy. Regenerative design strives to create the conditions of health which ecologist Aldo Leopold once defined as "the capacity of the land for self-renewal." It aims, in other words, for wholeness, a word linked etymologically with healing, health, and Holy. Designers in this sense are midwives to the birth of a larger, deeper, and more resilient kind of order capable of regenerating the conditions of life and health. It is predicated on the co-evolution of human and natural systems, each supporting the other. In Robert Grudin's words, "Foreword vii" design, "unlike any other

concept . . . calls for us to create a unity of part with whole, a concord of form and function, a finished product that is harmonious with society and with nature. In this history the trend is for design questions to go to deeper levels and design projects to become catalysts for still further changes. In architect Stuart Walker's words design must, transcend utility and conventional function-led, and especially technology-led approaches. Designers, in his view, must rise above the calculated creation of dissatisfaction and think more comprehensively about the products we already produce and their implications. Design, in other words, must be an act of integration, not just specialization, with the goal of creating a wholeness that includes spiritual well-being. And it should start with those who serve as designers.

4 Regenerative design has many effects. For one, it changes the relationship of people to their places. It can restore the reservoir of practical ecological competence at the local level allowing us to do more for ourselves and for each other the things that we once did naturally as capable people, good neighbors, and active citizens. It helps ground us by better informing us of where we are and the ecology and energy flows by which we are sustained in a particular place. In a world where any one place has come to look much like any other, we have lost sight of the fine print of our lives and how we are provisioned with food, energy, materials, and spiritual sustenance.

We are mostly ignorant of the costs and consequences of the systems that provide for us so seamlessly and oblivious to their inherent fragility. Regenerative design helps us know where we are and how to be competent, respectful, and generous there. Our places should be ecologically designed landscapes whose multiple functions retain water for drought periods, manage floods, grow food and fiber, sustain wildlife, and absorb carbon. They should be working systems that blend agro-forestry, mixed-use permacultures, intensive agricultural and gardening zones, viticulture, aquaculture, water purification, restoration, and recreation. And they should be loved and managed by local citizens who use them to train young people in the essentials of managed integrated ecologies.

5 Foreword Further, regenerative design should enhance the opportunities for caring, conviviality, celebration, and face-to-face democracy.

6 Communities with front porches, public squares, community gardens and solar systems, neighborhood stores, corner pubs, and open places of worship are more likely to thrive in the years ahead. This is because they create the conditions favorable to neighborliness, community cohesion, and buffering from hardships. Good design should engage people in the making of their homes, neighborhoods, towns, and regions. It should increase civic intelligence, sense of potential, and joy in life. In this way, designers are facilitators in a larger public conversation, architects of better possibilities, not just makers of buildings and things.

A rapidly warming climate will add to the design challenges ahead. Designers must reckon with a world of higher temperatures, stronger winds, more frequent and larger storms, rising ocean levels, longer droughts, much larger rainfall events, and new diseases.

7 These will likely cause interruptions in supplies of food, energy, and water and could trigger social disruptions. We must design with the awareness of the fragility of our civilization, as Jared Diamond and others warn. We must build in the ability to maintain hope and function as a society in emergency (and possibly breakdown) and lay the basis for recovery.

8 The Great Work of our generation is to create a post-fossil-fuel and post-consumer economy that is regenerative, fair, durable, resilient, convivial, and democratic. It must be powered by renewable energy. It

must be a circular \neconomy that recycles, reuses, or transforms its wastes. Of necessity it will be \nmuch more focused on essentials of food, energy, shelter, clean water, educa-\ntion, the arts, and rootedness in place and bioregion. It will be built by local \npeople who cherish and understand their places\nThe file is too long and its contents have been truncated.\n", "extra": {"cited_message_idx": 30, "search_result_idx": null, "evidence_text": "source"}, "url": "file-RAzDl1TYQLyhHItD0sQv0sZY"}}, {"start_ix": 2222, "end_ix": 2233, "citation_format_type": "tether_og", "metadata": {"type": "file", "name": "tactiq-free-transcript-IoRjz8iTvoo.txt", "id": "file-015fyq55A9kPiWRmfng81lx4", "source": "my_files", "text": "# tactiq.io free youtube transcript\n# Cradle to cradle design | William McDonough\n# https://www.youtube.com/watch/IoRjz8iTvoo\n\n00:00:26.000 In 1962, with Rachel Carson\n\n00:00:30.000 I think for people like me in the world of the making of things,\n\n00:00:35.000 the canary in the mine wasn't singing.\n\n00:00:39.000 And so the question that we might not have birds\n\n00:00:42.000 became kind of fundamental to those of us wandering around\n\n00:00:45.000 looking for the meadowlarks that seemed to have all disappeared.\n\n00:00:48.000 And the question was, were the birds singing?\n\n00:00:51.000 Now, I'm not a scientist, that'll be really clear.\n\n00:00:55.000 But, you know, we've just come from this discussion of what a bird might be.\n\n00:00:59.000 What is a bird?\n\n00:01:00.000 Well, in my world, this is a rubber duck.\n\n00:01:04.000 It comes in California with a warning --\n\n00:01:06.000 "This product contains chemicals known by the State of California\n\n00:01:09.000 to cause cancer and birth defects or other reproductive harm.\n\n00:01:16.000 This is a bird.\n\n00:01:19.000 What kind of culture would produce a product of this kind\n\n00:01:22.000 and then label it and sell it to children?\n\n00:01:27.000 I think we have a design problem.\n\n00:01:30.000 Someone heard the six hours of talk that I gave\n\n00:01:35.000 called "The Monticello Dialogues" on NPR, and sent me this as a thank you note --\n\n00:01:41.000 "We realize that design is a signal of intention,\n\n00:01:43.000 but it also has to occur within a world,\n\n00:01:46.000 and we have to understand that world in order to\n\n00:01:50.000 imbue our designs with inherent intelligence,\n\n00:01:53.000 and so as we look back at the basic state of affairs\n\n00:01:58.000 in which we design, we, in a way, need to go to the primordial condition\n\n00:02:03.000 to understand the operating system and the frame conditions of a planet,\n\n00:02:08.000 and I think the exciting part of that is the good news that's there,\n\n00:02:13.000 because the news is the news of abundance,\n\n00:02:16.000 and not the news of limits,\n\n00:02:18.000 and I think as our culture tortures itself now\n\n00:02:23.000 with tyrannies and concerns over limits and fear,\n\n00:02:28.000 we can add this other dimension of abundance that is coherent,\n\n00:02:33.000 driven by the sun, and start to imagine\n\n00:02:35.000 what that would be like to share.\n\n00:02:42.000 That was a nice thing to get.\n\n00:02:44.000 That was one sentence.\n\n00:02:48.000 Henry James would be proud.\n\n00:02:50.000 This is -- I put it down at the bottom,\n\n00:02:52.000 but that was extemporaneous, obviously.\n\n00:02:55.000 The fundamental issue is that, for me,\n\n00:02:58.000 design is the first signal of human intentions.\n\n00:03:00.000 So what are our intentions, and what would our intentions be --\n\n00:03:04.000 if we wake up in the morning, we have designs on the world --\n\n00:03:07.000 well, what would our intention be as a species\n\n00:03:09.000 now that we're the dominant species?\n\n00:03:11.000 And it's not just stewardship and dominion debate,\n\n00:03:14.000 because really, dominion is implicit in stewardship --\n\n00:03:20.000 because how could you dominate something you had killed?\n\n00:03:22.000

And stewardship's implicit in dominion, because you can't be steward of something if you can't dominate it. So the question is, what is the first question for designers? Now, as guardians -- let's say the state, for example, which reserves the right to kill, the right to be duplicitous and so on -- the question we're asking the guardian at this point is are we meant, how are we meant, to secure local societies, create world peace and save the environment? But I don't know that that's the common debate. Commerce, on the other hand, is relatively quick, essentially creative, highly effective and efficient, and fundamentally honest, because we can't exchange value for very long if we don't trust each other. So we use the tools of commerce primarily for our work, but the question we bring to it is, how do we love all the children of all species for all time? And so we start our designs with that question. Because what we realize today is that modern culture appears to have adopted a strategy of tragedy. If we come here and say, "Well, I didn't intend to cause global warming on the way here," and we say, "That's not part of my plan," then we realize it's part of our de facto plan. Because it's the thing that's happening because we have no other plan. And I was at the White House for President Bush, meeting with every federal department and agency, and I pointed out that they appear to have no plan. If the end game is global warming, they're doing great. If the end game is mercury toxification of our children downwind of coal fire plants as they scuttled the Clean Air Act, then I see that our education programs should be explicitly defined as, "Brain death for all children. No child left behind." (Applause) So, the question is, how many federal officials are ready to move to Ohio and Pennsylvania with their families? So if you don't have an endgame of something delightful, then you're just moving chess pieces around, if you don't know you're taking the king. So perhaps we could develop a strategy of change, which requires humility. And in my business as an architect, it's unfortunate the word "humility" and the word "architect" have not appeared in the same paragraph since "The Fountainhead." So if anybody here has trouble with the concept of design humility, reflect on this -- it took us 5,000 years to put wheels on our luggage. So, as Kevin Kelly pointed out, there is no endgame. There is an infinite game, and we're playing in that infinite game. And so we call it "cradle to cradle," and our goal is very simple. This is what I presented to the White House. Our goal is a delightfully diverse, safe, healthy and just world, with clean air, clean water, soil and power -- economically, equitably, ecologically and elegantly enjoyed, period. (Applause) What don't you like about this? Which part of this don't you like? So we realized we want full diversity, even though it can be difficult to

remember what De Gaulle said\n00:06:14.000 when asked what it was like to be President of France.\n00:06:16.000 He said, "What do you think it's like trying to run a country with 400 kinds of cheese?"\n00:06:20.000 But at the same time, we realize that our products are not safe and healthy.\n00:06:23.000 So we've designed products\n00:06:25.000 and we analyzed chemicals down to the parts per million.\n00:06:27.000 This is a baby blanket by Pendleton that will give your child nutrition\n00:06:30.000 instead of Alzheimer's later in life.\n00:06:32.000 We can ask ourselves, what is justice,\n00:06:34.000 and is justice blind, or is justice blindness?\n00:06:38.000 And at what point did that uniform turn from white to black?\n00:06:43.000 Water has been declared a human right by the United Nations.\n00:06:46.000 Air quality is an obvious thing to anyone who breathes.\n00:06:48.000 Is there anybody here who doesn't breathe?\n00:06:51.000 Clean soil is a critical problem -- the nitrification, the dead zones\n00:06:54.000 in the Gulf of Mexico.\n00:06:56.000 A fundamental issue that's not being addressed.\n00:06:58.000 We've seen the first form of solar energy\n00:07:00.000 that's beat the hegemony of fossil fuels in the form of wind\n00:07:03.000 here in the Great Plains, and so that hegemony is leaving.\n00:07:06.000 And if we remember Sheikh Yamani when he formed OPEC,\n00:07:09.000 they asked him, "When will we see the end of the age of oil?"\n00:07:12.000 I don't know if you remember his answer, but it was,\n00:07:15.000 "The Stone Age didn't end because we ran out of stones."\n00:07:19.000 We see that companies acting ethically in this world\n00:07:23.000 are outperforming those that don't.\n00:07:24.000 We see the flows of materials in a rather terrifying prospect.\n00:07:29.000 This is a hospital monitor from Los Angeles, sent to China.\n00:07:32.000 This woman will expose herself to toxic phosphorous,\n00:07:35.000 release four pounds of toxic lead into her childrens' environment,\n00:07:38.000 which is from copper.\n00:07:40.000 On the other hand, we see great signs of hope.\n00:07:42.000 Here's Dr. Venkataswamy in India, who's figured out\n00:07:45.000 how to do mass-produced health.\n00:07:47.000 He has given eyesight to two million people for free.\n00:07:51.000 We see in our material flows that car steels don't become car steel again\n00:07:54.000 because of the contaminants of the coatings --\n00:07:56.000 bismuth, antimony, copper and so on.\n00:07:58.000 They become building steel.\n00:07:59.000 On the other hand, we're working with Berkshire Hathaway,\n00:08:01.000 Warren Buffett and Shaw Carpet,\n00:08:04.000 the largest carpet company in the world.\n00:08:05.000 We've developed a carpet that is continuously recyclable,\n00:08:08.000 down to the parts per million.\n00:08:11.000 The upper is Nylon 6 that can go back to caprolactam,\n00:08:14.000 the bottom, a polyolephine -- infinitely recyclable thermoplastic.\n00:08:17.000 Now if I was a bird, the building on my left is a liability.\n00:08:21.000 The building on my right, which is our corporate campus for The Gap\n00:08:24.000 with an ancient meadow, is an asset -- its nesting grounds.\n00:08:29.000 Here's where I come from. I grew up in Hong Kong,\n00:08:31.000 with six million people in 40 square miles.\n00:08:33.000 During the dry season, we had four hours of water every fourth day.\n00:08:37.000 And the relationship to landscape was that of farmers who have been\n00:08:40.000 farming the same piece of ground for 40 centuries.\n00:08:44.000 You can't farm the same piece of ground for 40 centuries\n00:08:46.000 without understanding nutrient flow.\n00:08:49.000 My childhood summers were in the Puget Sound of Washington,\n00:08:52.000 among the first growth and big growth.\n00:08:54.000 My grandfather had been a lumberjack in the Olympics,\n00:08:56.000 so I have a lot of

tree karma I am working off. \n00:09:01.000 I went to Yale for graduate school, \n00:09:03.000 studied in a building of this style by Le Corbusier, \n00:09:05.000 affectionately known in our business as Brutalism. \n00:09:09.000 If we look at the world of architecture, \n00:09:12.000 we see with Mies's 1928 tower for Berlin, \n00:09:15.000 the question might be, 'Well, where's the sun?' \n00:09:17.000 And this might have worked in Berlin, but we built it in Houston, \n00:09:20.000 and the windows are all closed. And with most products \n00:09:23.000 appearing not to have been designed for indoor use, \n00:09:25.000 this is actually a vertical gas chamber. \n00:09:28.000 When I went to Yale, we had the first energy crisis, \n00:09:31.000 and I was designing the first solar-heated house in Ireland \n00:09:33.000 as a student, which I then built -- \n00:09:35.000 which would give you a sense of my ambition. \n00:09:37.000 And Richard Meier, who was one of my teachers, \n00:09:39.000 kept coming over to my desk to give me criticism, \n00:09:41.000 and he would say, 'Bill, you've got to understand -- \n00:09:43.000 solar energy has nothing to do with architecture.' \n00:09:51.000 I guess he didn't read Vitruvius. \n00:09:53.000 In 1984, we did the first so-called 'green office' in America \n00:09:57.000 for Environmental Defense. \n00:09:58.000 We started asking manufacturers what were in their materials. \n00:10:01.000 They said, 'They're proprietary, they're legal, go away.' \n00:10:03.000 The only indoor quality work done in this country at that time \n00:10:05.000 was sponsored by R. J. Reynolds Tobacco Company, \n00:10:08.000 and it was to prove there was no danger \n00:10:09.000 from secondhand smoke in the workplace. \n00:10:12.000 So, all of a sudden, here I am, graduating from high school in 1969, \n00:10:16.000 and this happens, and we realize that 'away' went away. \n00:10:19.000 Remember we used to throw things away, and we'd point to away? \n00:10:23.000 And yet, NOAA has now shown us, for example -- \n00:10:25.000 you see that little blue thing above Hawaii? \n00:10:27.000 That's the Pacific Gyre. \n00:10:28.000 It was recently dragged for plankton by scientists, \n00:10:30.000 and they found six times as much plastic as plankton. \n00:10:34.000 When asked, they said, 'It's kind of like a giant toilet that doesn't flush.' \n00:10:39.000 Perhaps that's away. \n00:10:40.000 So we're looking for the design rules of this -- \n00:10:42.000 this is the highest biodiversity of trees in the world, Irian Jaya, \n00:10:44.000 259 species of tree, and we described this \n00:10:48.000 in the book, 'Cradle to Cradle.' \n00:10:49.000 The book itself is a polymer. It is not a tree. \n00:10:53.000 That's the name of the first chapter -- 'This Book is Not a Tree.' \n00:10:56.000 Because in poetics, as Margaret Atwood pointed out, \n00:10:59.000 'we write our history on the skin of fish \n00:11:01.000 with the blood of bears.' \n00:11:04.000 And with so much polymer, what we really need \n00:11:05.000 is technical nutrition, and to use something \n00:11:08.000 as elegant as a tree -- imagine this design assignment: \n00:11:11.000 Design something that makes oxygen, sequesters carbon, \n00:11:13.000 fixes nitrogen, distills water, accrues solar energy as fuel, \n00:11:17.000 makes complex sugars and food, creates microclimates, \n00:11:21.000 changes colors with the seasons and self-replicates. \n00:11:27.000 Well, why don't we knock that down and write on it? \n00:11:29.000 (Laughter) \n00:11:35.000 So, we're looking at the same criteria \n00:11:37.000 as most people -- you know, can I afford it? \n00:11:39.000 Does it work? Do I like it? \n00:11:41.000 We're adding the Jeffersonian agenda, and I come from Charlottesville, \n00:11:43.000 where I've had the privilege of living

in a house designed by Thomas Jefferson.\n00:11:47.000 We're adding life, liberty and the pursuit of happiness.\n00:11:53.000 Now if we look at the word "competition,"\n00:11:54.000 I'm sure most of you've used it.\n00:11:56.000 You know, most people don't realize it comes from\n00:11:57.000 the Latin competere, which means strive together.\n00:12:00.000 It means the way Olympic athletes train with each other.\n00:12:03.000 They get fit together, and then they compete.\n00:12:06.000 The Williams sisters compete -- one wins Wimbledon.\n00:12:08.000 So we've been looking at the idea of competition\n00:12:11.000 as a way of cooperating in order to get fit together.\n00:12:15.000 And the Chinese government has now --\n00:12:16.000 I work with the Chinese government now --\n00:12:18.000 has taken this up.\n00:12:20.000 We're also looking at survival of the fittest,\n00:12:22.000 not in just competition terms in our modern context\n00:12:24.000 of destroy the other or beat them to the ground,\n00:12:27.000 but really to fit together and build niches\n00:12:29.000 and have growth that is good.\n00:12:31.000 Now most environmentalists don't say growth is good,\n00:12:33.000 because, in our lexicon, asphalt is two words: assigning blame.\n00:12:38.000 But if we look at asphalt as our growth,\n00:12:41.000 then we realize that all we're doing is destroying\n00:12:43.000 the planetary's fundamental underlying operating system.\n00:12:47.000 So when we see E equals mc squared come along, from a poet's perspective,\n00:12:52.000 we see energy as physics, chemistry as mass,\n00:12:54.000 and all of a sudden, you get this biology.\n00:12:56.000 And we have plenty of energy, so we'll solve that problem,\n00:12:59.000 but the biology problem's tricky, because as we put through\n00:13:02.000 all these toxic materials that we disgorge,\n00:13:05.000 we will never be able to recover that.\n00:13:07.000 And as Francis Crick pointed out, nine years\n00:13:09.000 after discovering DNA with Mr. Watson,\n00:13:12.000 that life itself has to have growth as a precondition --\n00:13:16.000 it has to have free energy, sunlight\n00:13:18.000 and it needs to be an open system of chemicals.\n00:13:21.000 So we're asking for human artifice to become a living thing,\n00:13:24.000 and we want growth, we want free energy from sunlight\n00:13:26.000 and we want an open metabolism for chemicals.\n00:13:29.000 Then, the question becomes not growth or no growth,\n00:13:31.000 but what do you want to grow?\n00:13:34.000 So instead of just growing destruction,\n00:13:36.000 we want to grow the things that we might enjoy,\n00:13:38.000 and someday the FDA will allow us to make French cheese.\n00:13:41.000 So therefore, we have these two metabolisms,\n00:13:45.000 and I worked with a German chemist, Michael Braungart,\n00:13:47.000 and we've identified the two fundamental metabolisms.\n00:13:49.000 The biological one I'm sure you understand,\n00:13:51.000 but also the technical one, where we take materials\n00:13:53.000 and put them into closed cycles.\n00:13:55.000 We call them biological nutrition and technical nutrition.\n00:13:58.000 Technical nutrition will be in an order of magnitude of biological nutrition.\n00:14:02.000 Biological nutrition can supply about 500 million humans,\n00:14:05.000 which means that if we all wore Birkenstocks and cotton,\n00:14:07.000 the world would run out of cork and dry up.\n00:14:10.000 So we need materials in closed cycles,\n00:14:12.000 but we need to analyze them down to the parts per million\n00:14:14.000 for cancer, birth defects, mutagenic effects,\n00:14:17.000 disruption of our immune systems, biodegradation, persistence,\n00:14:20.000 heavy metal content, knowledge of how we're making them\n00:14:23.000 and their production and so on.\n00:14:25.000 Our first product was

a textile where we analyzed 8,000 chemicals\n00:14:29.000 in the textile industry.\n00:14:30.000 Using those intellectual filters, we eliminated [7,962.]\n00:14:35.000 We were left with 38 chemicals.\n00:14:37.000 We have since databased the 4000 most commonly used chemicals\n00:14:40.000 in human manufacturing, and we're releasing this database into the public in six weeks.\n00:14:45.000 So designers all over the world can analyze their products\n00:14:47.000 down to the parts per million for human and ecological health.\n00:14:52.000 (Applause)\n00:14:57.000 We've developed a protocol so that companies can send\n00:15:00.000 these same messages all the way through their supply chains,\n00:15:03.000 because when we asked most companies we work with -- about a trillion dollars\n00:15:06.000 -- and say, "Where does your stuff come from?" They say, "Suppliers." \n00:15:08.000 "And where does it go?" \n00:15:10.000 "Customers." \n00:15:11.000 So we need some help there.\n00:15:12.000 So the biological nutrients, the first fabrics --\n00:15:14.000 the water coming out was clean enough to drink.\n00:15:16.000 Technical nutrients -- this is for Shaw Carpet, infinitely reusable carpet.\n00:15:20.000 Here's nylon going back to caprolactam back to carpet.\n00:15:23.000 Biotechnical nutrients -- the Model U for Ford Motor,\n00:15:26.000 a cradle to cradle car -- concept car.\n00:15:28.000 Shoes for Nike, where the uppers are polyesters, infinitely recyclable,\n00:15:32.000 the bottoms are biodegradable soles.\n00:15:35.000 Wear your old shoes in, your new shoes out.\n00:15:37.000 There is no finish line.\n00:15:39.000 The idea here of the car is that some of the materials\n00:15:41.000 go back to the industry forever, some of the materials go back to soil --\n00:15:44.000 it's all solar-powered.\n00:15:46.000 Here's a building at Oberlin College we designed\n00:15:48.000 that makes more energy than it needs to operate and purifies its own water.\n00:15:52.000 Here's a building for The Gap, where the ancient grasses\n00:15:54.000 of San Bruno, California, are on the roof.\n00:15:58.000 And this is our project for Ford Motor Company.\n00:16:00.000 It's the revitalization of the River Rouge in Dearborn.\n00:16:02.000 This is obviously a color photograph.\n00:16:06.000 These are our tools. These are how we sold it to Ford.\n00:16:10.000 We saved Ford 35 million dollars doing it this way, day one,\n00:16:13.000 which is the equivalent of the Ford Taurus\n00:16:15.000 at a four percent margin of an order for 900 million dollars worth of cars.\n00:16:19.000 Here it is. It's the world's largest green roof, 10 and a half acres.\n00:16:22.000 This is the roof, saving money,\n00:16:25.000 and this is the first species to arrive here. These are killdeer.\n00:16:29.000 They showed up in five days.\n00:16:32.000 And we now have 350-pound auto workers\n00:16:34.000 learning bird songs on the Internet.\n00:16:38.000 We're developing now protocols for cities --\n00:16:40.000 that's the home of technical nutrients.\n00:16:42.000 The country -- the home of biological. And putting them together.\n00:16:45.000 And so I will finish by showing you a new city\n00:16:47.000 we're designing for the Chinese government.\n00:16:49.000 We're doing 12 cities for China right now,\n00:16:52.000 based on cradle to cradle as templates.\n00:16:54.000 Our assignment is to develop protocols for the housing\n00:16:57.000 for 400 million people in 12 years.\n00:16:59.000 We did a mass energy balance -- if they use brick,\n00:17:01.000 they will lose all their soil and burn all their coal.\n00:17:04.000 They'll have cities with no energy and no food.\n00:17:06.000 We signed a Memorandum of Understanding --\n00:17:08.000 here's Madam Deng Nan, Deng Xiaoping's daughter --\n00:17:10.000 for China to adopt cradle to

cradle.\n00:17:12.000 Because if they toxify themselves, being the lowest-cost producer,\n00:17:16.000 send it to the lowest-cost distribution -- Wal-Mart --\n00:17:18.000 and then we send them all our money, what we'll discover is that\n00:17:21.000 we have what, effectively, when I was a student,\n00:17:24.000 was called mutually assured destruction.\n00:17:27.000 Now we do it by molecule. These are our cities.\n00:17:30.000 We're building a new city next to this city; look at that landscape.\n00:17:33.000 This is the site.\n00:17:35.000 We don't normally do green fields, but this one is about to be built,\n00:17:39.000 so they brought us in to intercede.\n00:17:41.000 This is their plan.\n00:17:43.000 It's a rubber stamp grid that they laid right on that landscape.\n00:17:46.000 And they brought us in and said, "What would you do?"\n00:17:49.000 This is what they would end up with, which is another color photograph.\n00:17:53.000 So this is the existing site, so this is what it looks like now,\n00:17:56.000 and here's our proposal.\n00:17:58.000 (Applause)\n00:18:02.000 So the way we approached this\n00:18:04.000 is we studied the hydrology very carefully.\n00:18:06.000 We studied the biota, the ancient biota,\n00:18:08.000 the current farming and the protocols.\n00:18:10.000 We studied the winds and the sun to make sure everybody in the city\n00:18:12.000 will have fresh air, fresh water and direct sunlight\n00:18:18.000 in every single apartment at some point during the day.\n00:18:21.000 We then take the parks and lay them out as ecological infrastructure.\n00:18:25.000 We lay out the building areas.\n00:18:28.000 We start to integrate commercial and mixed use\n00:18:29.000 so the people all have centers and places to be.\n00:18:32.000 The transportation is all very simple,\n00:18:34.000 everybody's within a five-minute walk of mobility.\n00:18:37.000 We have a 24-hour street, so that there's always a place that's alive.\n00:18:42.000 The waste systems all connect.\n00:18:44.000 If you flush a toilet, your feces will go to the sewage treatment plants,\n00:18:49.000 which are sold as assets, not liabilities.\n00:18:51.000 Because who wants the fertilizer factory that makes natural gas?\n00:18:55.000 The waters are all taken in to construct the wetlands for habitat restorations.\n00:19:00.000 And then it makes natural gas, which then goes back into the city\n00:19:04.000 to power the fuel for the cooking for the city.\n00:19:08.000 So this is -- these are fertilizer gas plants.\n00:19:10.000 And then the compost is all taken back\n00:19:13.000 to the roofs of the city, where we've got farming,\n00:19:15.000 because what we've done is lifted up the city,\n00:19:19.000 the landscape, into the air to -- to restore the native landscape\n00:19:26.000 on the roofs of the buildings.\n00:19:28.000 The solar power of all the factory centers\n00:19:31.000 and all the industrial zones with their light roofs powers the city.\n00:19:34.000 And this is the concept for the top of the city.\n00:19:36.000 We've lifted the earth up onto the roofs.\n00:19:40.000 The farmers have little bridges to get from one roof to the next.\n00:19:44.000 We inhabit the city with work/live space on all the ground floors.\n00:19:48.000 And so this is the existing city, and this is the new city.\n00:19:53.000 (Applause)\n", "extra": {"cited_message_idx": 29, "search_result_idx": null, "evidence_text": "source"}, "url": "file-015fyq55A9kPiWRmfng81lx4"}}, {"start_ix": 2780, "end_ix": 2791, "citation_format_type": "tether Og", "metadata": {"type": "file", "name": "Regenerative Development and Design A Framework for Evolving Sustainability (Regenesis Group) (Z-Library).pdf", "id": "file-RAzD1lTYQLyhHIitD0sQvOsZY", "source": "my_files", "text": "\n\n\n\n\nRegenerative \nDevelopment \nand Design\nA Framework for \n\nEvolving Sustainability\n\nPamela Mang \nBen

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 223\n\n\n\nv\n\nForeword\n\n\nPredictions of the future can be hazardous or downright
 foolish. But the \n failure of foresight\u2014the inability to read the hand-writing
 on the wall\u2014is \neven more so. Designers of all kinds work in the conflicted
 space between \nthese two poles. Their goal is to improve small parts of a rapidly
 changing \nworld with the tools of form, scale, materials, energy, water, color,
 landscape, \nand the creativity that is found most often at the grassroots level. But
 what \nneeds to be improved?\n\nThe short answer is \u201ca great deal,\u201d
 including an energy system that is rapidly \ndestabilizing the climate, an economy

driving tens of thousands of species to extinction, a political system that sanctions gross inequality, an uncivil society, the growing autism toward the natural world, and a global system mired in conflict. These are related problems, parts of a larger civilizational crisis with roots traceable to the seventeenth century authors of the mechanical world view. But there are deeper pathologies with footprints back to our ancient schizophrenia toward the natural world that had to be tamed a bit before it could be appreciated.

Designers, however, typically do not work at the macro scale of civilization for good reasons. Whether as architecture, engineering, materials, or landscapes, design is bounded by the minute particulars of projects in their specific social, cultural, and historical context. As a result designers work from the bottom up on projects at the building, neighborhood, and city scales. But the big problems mentioned above are in large part the sum total of bad design (including that of public policies) at lower levels. There are many reasons for bad design, not the least of which is a professional focus on form-making, often oblivious to other consequences.

Beginning in the 1970s a few renegade architects like Sim Van der Ryn in California became concerned about the collateral environmental impacts of the design professions. Van der Ryn envisioned ecological design as the calibration of buildings with their places, which required further integral understanding of landscapes, energy flows, waste cycling, materials, sun, light, water, and ecological processes. Ecological design, in other words, aims to calibrate human actions with the way natural systems work as particular places, larger landscapes, and whole ecologies. It aims to work with, not against, the flows of energy and natural cycling of materials. The goal, in short, was to reduce environmental impacts of the built environment in a civilization that prized economic expansion above all else with hardly a thought for the morrow.

What began so modestly in the 1970s has rapidly grown into a global movement to harmonize buildings, neighborhoods, and cities with the surrounding nature. After the publication of the Brundtland Commission report in 1987, the goals of ecological designers expanded to embrace the wider (but vague) mission of sustainability. But we know now that that word signifies more than was once assumed. Sustainability is the sum total of other qualities. As Chattanooga City Councilman, David Crockett puts it: "make it clean, green, safe, and fair and it will be sustainable." The left side of that equation, however, requires the elimination of the growing inequality that is a precursor to violence and ruined lives. It further requires rethinking our core assumptions about the relation between economic growth and real progress. Ecological design, in other words, must be large enough in foresight, scope, and heart to include the social and economic environment in which it is embedded. In that way ecological design is a radical endeavor in the true sense of the word, it gets to the root of what ails us.

The work described in this book takes design to yet another level that aims to regenerate the fabric of life and repair the wounds and tears inflicted by the carelessness of the fossil-fuel-powered growth economy. Regenerative design strives to create the conditions of health which ecologist Aldo Leopold once defined as "the capacity of the land for self-renewal." It aims, in other words, for wholeness, a word linked etymologically with healing, health, and Holy. Designers in this sense are midwives to the birth of a larger, deeper, and more resilient kind of order capable of regenerating the conditions of life and health. It is predicated on the co-evolution of human and natural systems, each supporting the other. In Robert Grudin's words, "Foreword vii" design, unlike any other

concept . . . calls for us to create a unity of part with whole, a concord of form and function, a finished product that is harmonious with society and with nature. In this history the trend is for design questions to go to deeper levels and design projects to become catalysts for still further changes. In architect Stuart Walker's words design must, transcend utility and conventional function-led, and especially technology-led approaches. Designers, in his view, must rise above the calculated creation of dissatisfaction and think more comprehensively about the products we already produce and their implications. Design, in other words, must be an act of integration, not just specialization, with the goal of creating a wholeness that includes spiritual well-being. And it should start with those who serve as designers.

4 Regenerative design has many effects. For one, it changes the relationship of people to their places. It can restore the reservoir of practical ecological competence at the local level allowing us to do more for ourselves and for each other the things that we once did naturally as capable people, good neighbors, and active citizens. It helps ground us by better informing us of where we are and the ecology and energy flows by which we are sustained in a particular place. In a world where any one place has come to look much like any other, we have lost sight of the fine print of our lives and how we are provisioned with food, energy, materials, and spiritual sustenance. We are mostly ignorant of the costs and consequences of the systems that provide for us so seamlessly and oblivious to their inherent fragility. Regenerative design helps us know where we are and how to be competent, respectful, and generous there. Our places should be ecologically designed landscapes whose multiple functions retain water for drought periods, manage floods, grow food and fiber, sustain wildlife, and absorb carbon. They should be working systems that blend agro-forestry, mixed-use permacultures, intensive agricultural and gardening zones, viticulture, aquaculture, water purification, restoration, and recreation. And they should be loved and managed by local citizens who use them to train young people in the essentials of managed integrated ecologies.

5 Foreword Further, regenerative design should enhance the opportunities for caring, conviviality, celebration, and face-to-face democracy.

6 Communities with front porches, public squares, community gardens and solar systems, neighborhood stores, corner pubs, and open places of worship are more likely to thrive in the years ahead. This is because they create the conditions favorable to neighborliness, community cohesion, and buffering from hardships. Good design should engage people in the making of their homes, neighborhoods, towns, and regions. It should increase civic intelligence, sense of potential, and joy in life. In this way, designers are facilitators in a larger public conversation, architects of better possibilities, not just makers of buildings and things.

A rapidly warming climate will add to the design challenges ahead. Designers must reckon with a world of higher temperatures, stronger winds, more frequent and larger storms, rising ocean levels, longer droughts, much larger rainfall events, and new diseases.

7 These will likely cause interruptions in supplies of food, energy, and water and could trigger social disruptions. We must design with the awareness of the fragility of our civilization, as Jared Diamond and others warn. We must build in the ability to maintain hope and function as a society in emergency (and possibly breakdown) and lay the basis for recovery.

8 The Great Work of our generation is to create a post-fossil-fuel and post-consumer economy that is regenerative, fair, durable, resilient, convivial, and democratic. It must be powered by renewable energy. It