

Arnold Mwanzu

Majengo endelevu, vifaa endelevu na Usimamizi wake

Orodha

Sustainable buildings, equipment, and management.

A checklist¹

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Kwa ajili ya mradi wowote wa ujenzi, kama vile kazi yoyote ngumu kwa jumla, orodha hutoa njia muhimu ya kuthibitisha kwamba kila kitu kimezingatiwa. Ingawa haiwezi kudai kuwa kamili, orodha ifuatayo ya maswala ya mipango, ujenzi, na pia uendeshaji kazi wa maktaba, imeundwa ili kusaidia kuhakikisha kuwa kila kitu kimezingatiwa.

For any construction project, just as for any complex undertaking in general, a checklist provides a useful means of confirming that everything has been considered. Although it cannot claim to be exhaustive, the following list of aspects of planning, construction, and also library operation, is designed to help ensure that everything has been considered.

1	Mpango wa mradi, fedha	1	Project planning, finance
	<ul style="list-style-type: none">• Majadiliano ya mapema ya malengo ya kudumu kufanywa pamoja na mteja na kuanzishwa kwa vigezo• Mwelekeo juu ya ufafanuzi wa 'jengo la kijani': kiuchumi, mazingira ya kirafiki, uhifadhi wa rasilimali. Ngazi ya juu ya faraja kwa watumiaji, mazingira mazuri na ushirikiano bora katika jamii zao za kitamaduni kwa mfano mazingira ya jirani• Uanzishaji wa malengo ya mazingira ya wafadhili au wateja		<ul style="list-style-type: none">• Early discussion of sustainability goals with the client and the establishment of criteria• A sense of direction on the definition of a 'green building': economical, environmentally friendly, resource saving. High level of comfort for users, a healthy environment with optimal integration into their socio-cultural i. e. neighbourhood surroundings.• Establishment of the environmental goals of the sponsors or clients

¹ Transl. from English into Kiswahili by Arnold Mwanzu.

<ul style="list-style-type: none"> • Kuzingatia na kutia maanani usawa wa jengo kimazingira, ujenzi, operesheni, matengenezo, uharibifu na ovyo, usawa wa hewa Carbon Monoxide • Malengo ya hesabu ya gharama za uendeshaji • Uzingatio kamili wa Kurudi-juu-ya-Uwekezaji • Gharama za mzunguko wa maisha • Uumbaji wa orodha ya mahitaji ya ustawi na uendelevu • Kuzingatia kuongezeka kwa thamani ya mali (kupitia vyeti) • Kuzingatia msaada wa fedha unaopatikana 	<ul style="list-style-type: none"> • Preliminary consideration of the ecological balance of a building, construction, operation, maintenance, demolition and disposal, CO₂ balance • Targets for the calculation of operating costs • Comprehensive consideration of ROI (Return-on-Investment) • Life cycle costs • Creation of a list of sustainability desirables • Consideration of the increase in the value of the property (through certification) • Consideration of financial support available
<p>2 Utoaji zabuni</p>	<p>2 Tendering</p>
<ul style="list-style-type: none"> • Sekta ya umma inapaswa kuwa mfano kiigizo, haswa kwa kituo cha elimu na kitamaduni kama vile maktaba • Kuunda vigezo maalum vya uendelevu • Ufafanuzi wa vidokezo vya maktaba kimazingira • Taarifa ya malengo maalum ya kimazingira • Mahitaji ya mtazamo kamili wa maswala ya uendelevu • Uihakikisho wa vyeti 	<ul style="list-style-type: none"> • The public sector should be a role model, especially for an educational and cultural facility such as a library • Formulation of specific criteria for sustainability • Definition of the ecological footprint of the library • Statement of specific environmental objectives • Requirement for a holistic view of sustainability issues • Verification of certificates
<p>3 Eneo la maktaba</p>	<p>3 Site / location</p>
<ul style="list-style-type: none"> • Vigezo vya kiikolojia vinavyohusiana na mali na mazingira yake (urithi wa uharibifu, hali ya hewa, uzalishaji, kelele) • Matumizi ya rasilimali wakati wa ujenzi • Miundombinu (kuungana na usafiri wa umma) • Upatikanaji (pia gharama ya kibali cha tovuti na matengenezo) • Sehemu za usafiri binafsi (baiskeli) 	<ul style="list-style-type: none"> • Ecological criteria relating to the property and its surroundings (contamination legacy, climatic conditions, emissions, noise) • Resource use during construction • Infrastructure (connections to public transport) • Access (also costs for site clearance and maintenance) • Places for personal transport (bicycles)

<ul style="list-style-type: none"> • Kupanda vijani kama maua/nyasi/miti kwenye eneo la maktaba na mazingira yake • Kuongeza dhana maalum za ujenzi na nishati 	<ul style="list-style-type: none"> • Greening of site and surrounding area • Optimisation of site specific construction and energy concepts
<p>4 ujenzi</p>	<p>4 Construction</p>
<ul style="list-style-type: none"> • Miundombingu: njia za kuingia na kutoka na kuhifadhi vitu. • Athari za kelele na kimazingira katika maeneo ya karibu • Uchaguzi wa wanakandarasi wa ujenzi na vifaa vya ujenzi kutoka eneo jirani • Kutoa zabuni za vifaa na taratibu za ujenzi: vigezo vya mahitaji ya uendelezaji na kuweka vyeti maanani 	<ul style="list-style-type: none"> • Infrastructure: entranceways and exits, storage of materials • Noise and environmental impact on the immediate surroundings • Choice of building contractors and equipment from the surrounding region • Tendering for materials and processes: demand sustainability criteria and take certificates into account
<p>5 Jengo</p>	<p>5 The building</p>
<p>5.1 Muundo</p>	<p>5.1 Structure</p>
<ul style="list-style-type: none"> • Uendelezaji kupitia ukubwa ('majengo kubwa') • Nje kwa jengo kiuchumi / ngozi ya ujenzi, majengo yaliyobuniwa kwa akili na ukandaji • Nafasi iliyo wazi kama kipengele cha kawaida cha maktaba • Kutumia hisia nzuri ya nafasi ili kupunguza matumizi ya nafasi • Kupunguza matumizi ya nafasi ya teknolojia ya ujenzi kupitia utaratibu wa akili • Upunguzaji wa matumizi ya nishati kupitia ukandaji wa maeneo kulingana na mahitaji mbalimbali ya kazi ya kila maktaba (kuhusiana na udhibiti wa hali ya hewa, mwangaza na vifaa vya sauti) • Matumizi ya maeneo ya paa (paa za kijani na nishati ya jua) • Uhifadhi mkubwa wa rasilimali za kuhifadhi (pamoja na matumizi katika maeneo ya umma) • Ujenzi ulio na urahisi wa matengenezo 	<ul style="list-style-type: none"> • Sustainability through compactness ('fat buildings') • Economic exteriors / building skin, intelligent building design and zoning • The atrium as a typical feature of libraries • Using a pleasing sense of space to minimise space use • Minimizing the space consumption of building technology through intelligent arrangement • Minimisation of energy use through zoning of areas according to different requirements of each individual library function (with regard to climate control, lighting and acoustics) • Use of roof areas (green roofs and solar energy) • Extensive resource saving compact storage (including use in public areas) • Maintenance-friendly construction
<p>5.2 Muonekano wa Jengo</p>	<p>5.2 Facades</p>

<ul style="list-style-type: none"> • Matumizi ya kudumu ya faade (kuota, nishati ya jua) • Vigezo vya nishati (uwekezaji wa joto) • Kubandika madirisha • Ulinzi wa miundo kutoka kwa jua kutumia madirisha ya ujuzi • Vipande vya kusagwa (daraja mbili) 	<ul style="list-style-type: none"> • Sustainable use of the facade (greening, solar energy) • Energy criteria (thermal insulation) • Window installation • Structural protection from sunlight using deep lying windows • Absorbent facades (double facades)
<p>5.3 Vifaa vya ujenzi</p>	<p>5.3 Building materials</p>
<ul style="list-style-type: none"> • Ubora wa kikaboni wa vifaa • Vifaa na ujenzi unaofaa kwa afya njema (vifaa visivyo na madhara) • Tabia za matengenezo, huduma za ujenzi • Kudumu / Urefu • Kufadhiliwa au Kurekebishwa • Urahisi wa kuchakata na kusafisha • Idadi ya vifaa vya kusagwa zilizotumiwa, kwa mfano alumini, chuma 	<ul style="list-style-type: none"> • Ecological quality of the materials • Materials and construction conducive to good health (non-hazardous materials) • Maintenance characteristics, building servicing • Durability / Longevity • Repairability • Ease of recycling and cleaning • Proportion of recycled material used, e. g. aluminium, steel
<p>5.4 Hali ya kujenga</p>	<p>5.4 Building climate</p>
<ul style="list-style-type: none"> • Epuka matumizi makubwa ya mashini ya hewa (Kiyoyozi) • Tofauti ya dhana ya hali ya hewa kulingana na kazi ya maktaba • Matumizi ya saruji: joto la msingi la saruji • Uingizaji hewa wa asili • Ubora wa hewa ndani ya jengo: Magonjwa ya jeraha ya jengo: vifaa vya madhara na gesi • Matumizi tena ya hewa kutoka vyumba vya fotokopi / nakala na hali ya hewa • Dirisha yenye ubora wa glazing (insulation ya joto) • Mlango wa maktaba na hali ya hewa ya ndani ya jengo: milango inayozunguka, vestibules • Epuka baridi ya bandia • Kuinga jua • Maswala ya kimaumbile ya kuinga jua: madirisha ya chini 	<ul style="list-style-type: none"> • Avoid major use of air-conditioning • Differentiation of the climate concept according to library function • Use of concrete: core temperature of concrete • Natural ventilation • Interior air quality: Sick building syndrome: harmful materials and gases • Re-use of air from print / copy rooms and air conditioning • Window glazing quality (thermal insulation) • Library entrance and interior climate: revolving doors, vestibules • Avoid artificial humidification • Solar protection • Structural aspects of solar protection: low-lying windows

5.5 Kawi, Mwangaza	5.5 Energy, light
<ul style="list-style-type: none"> • Mchana / mwangaza wa bandia • Nguvu: uwiano wa umeme kutoka vyanzo vya nishati mbadala • Joto yenye ufanisi wa kawi • Kuokoa umeme – kwa kutengeneza umeme (photovoltaics) • Fanya matumizi ya nishati/umeme kuonekana ili kupunguza kiwango cha matumizi: mita za nishati • Kuhifadhi Joto • Solar au geothermics • Wilaya inapokanzwa • Baridi: baridi usiku, thermal activation kwa miundo ya jengo • Vibandili vya joto • Uingizaji hewa: uingizaji hewa wa asili (Viyoyozi asili) • Kuleta Mwangaza asili kwenye jengo • Vifaa maalum kwa maambukizi ya mwanga • Udhibiti wa taa ufanisi (paneli za kudhibiti) • Mfumo wa taa na sensor ya harakati • Udhibiti wa mwangaza kibinafsi kwenye maeneo ya kusoma • Swichi za umeme , pia kwenye sehemu za kusoma/wasomaji • Nuru/Mwangaza kama inavyohitajika: hatua ya kugeuza, swichi ili kutoa mwanga wa kipimo cha chini • Chanzo cha mwangaza (ufanisi wa nishati, gharama ya maisha, kurekebisha) • Upunguvu wa utumiaji maji moto • Matumizi ya maji ya kijivu na mvua (vyoo, umwagiliaji) • Makala ya kuokoa Maji (WCs, vifaa vya bafu) 	<ul style="list-style-type: none"> • Daylight / artificial light • Power supply: proportion of electricity from renewable energy sources • Energy-efficient heating • Electricity saving – electricity generation (photovoltaics) • Make energy use visible in order to reduce usage levels: energy meters • Heat recovery • Solar or geothermics • District heating • Cooling: night cooling, the thermal activation of building structures • Heat exchangers • Ventilation: natural ventilation • Bring natural light into the building • Translucent materials for light transmission • Efficient lighting controls (control panels) • Lighting system with movement sensors • Individual light control of reading places • Electric light switches, also for reader places • Light as needed: step switching, dimmer switches • Light source (energy-efficiency, life cycle costing, recycling) • Reduction of warm water use • Use of grey and rainwater (toilets, irrigation) • Water saving features (WCs, wash basin equipment)

<p>6 Kuweka inavyo faa ndani mwa jengo: chanzo, uimara, uwezo wa kusafisha, kuchakata</p>	<p>6 Interior fittings: source, durability, cleaning capabilities, recycling</p>
<ul style="list-style-type: none"> • Sakafu ilivyomalizwa na mazulia • Acoustic baffles • Mbao: asili, jinsi gani, vyeti • Samani za Maktaba • Samani za ofisi • Usawa wa mazingira • Matumizi ya vifaa vinavyoweza kutengenezwa tena na vinavyoweza kutumika tena 	<ul style="list-style-type: none"> • Floor finishes and carpets • Acoustic baffles • Wood: origin, how cultivated, certificates • Library furniture • Office furniture • Eco-balance • Use of renewable and reusable materials
<p>7 Teknolojia ya habari na teknolojia ya kijani (Green IT)</p>	<p>7 Green information and communication technology (Green IT)</p>
<ul style="list-style-type: none"> • Matumizi ya umeme, uzalishaji, kuchakata • Mashini ndogo za kompyuta badala ya PCs (kuokoa umeme, muda mrefu wa maisha) • Usimamizi wa mbali • Vyeti vya vifaa: Nyota ya Nishati • Printers: matumizi ya umeme, utumizi wa wino • Soketi zinazotumiwa kwa PC na printa kuwa na uwezo wa kuwashwa/kuzimwa • Ufumbuzi wa Programu za kupunguza matumizi ya nishati (kusimama wakati hayatumiki) • Kupunguza matumizi ya karatasi, kuondolewa kwa karatasi ya mafuta 	<ul style="list-style-type: none"> • Power consumption, production, recycling • Thin clients instead of PCs (power-saving, longer lifespan) • Remote management • Hardware certificates: Energy Star • Printers: power usage, use of ink • Switchable sockets for PCs and printers • Software solutions to optimize energy consumption (Stand-by) • Reduction in the use of paper, waiver for thermal paper
<p>8 Huduma za watumizi wa maktaba</p>	<p>8 User services</p>
<ul style="list-style-type: none"> • Huduma za Reprographic (skanning badala ya uchapishaji), ukubwa wa digital, uchapishaji mara mbili • Hot desking (dawati za habari zilizo na urahisi wa kutumika kama mahali pa kazi nje ya nyaraka za kupeana habari kwa wasomi) • Mbadala ya mifuko ya plastiki katika maktaba • Kahawa ya maktaba: China si plastiki, bidhaa za Fairtrade nk. • Kukodisha 'vifaa vingine' visivyo vya kitabu: vitu ambavyo havihitajiki kila 	<ul style="list-style-type: none"> • Reprographic services (scanning instead of printing), the primacy of digital, double-sided printing • Hot desking (flexible information desks usable as workplaces outside of information desk times) • Alternatives to plastic bags in the library • Library café: china not plastic, Fairtrade products etc. • Lending of 'other' non-book-materials: things not needed daily (from laptops to garden tools)

siku (kutoka kwa kompyuta hadi kwenye zana za bustani)	
9 Uendelezaji wa maktaba	9 Library management
9.1 Vyeti vya usimamizi wa mazingira (ISO 14000)	9.1 Environmental management certificates (ISO 14000)
<ul style="list-style-type: none"> • Wafanyakazi waliohamasishwa na kushirikishwa • Kufuata kisheria • Kuendelea na Uboreshaji • Wajibu wa malengo endelevu • Uwazi wa gharama na matumizi • Faida ya ushindani 	<ul style="list-style-type: none"> • Motivated and involved employees • Legal compliance • Continual improvement • Responsibility for sustainable goals • Transparency of cost and use • Competitive advantage
9.2 Facility Management	9.2 Facilities management
<ul style="list-style-type: none"> • Kutenganisha taka na kuchakata • Makampuni ya kusafisha • Vifaa vya kusafisha: matumizi ya kiuchumi • Kusafisha ('Green Cleaning': sakafu, vituo vya usafi) • Kuepuka bidhaa za kemikali za kusafisha jengo • Matumizi ya bidhaa zisizo na sumu, za maji badala ya bidhaa za mafuta; ambavyo havina harufu ya marashi, haibadilishwa • Vifaa vya usafi (taulo, nk) • Usafishaji wa vyombo na ufungaji • Usafishaji wa betri, vifaa vya umeme na vipengele • Sauti wakati wa kusafisha - kusafisha kutumia vacuum kleaner • Matumizi ya bulb ya mwangaza nyepesi • Matumizi ya taa ya kusagwa/kutengenezwa tena kutoka kwa taa iliyotumika: Fluorescent na taa za kuokoa nishati, pia LED 	<ul style="list-style-type: none"> • Waste separation and recycling • Cleaning firms • Cleaning materials: economic usage • Cleaning ('Green Cleaning': floors, sanitary facilities) • Avoidance of chemical products for cleaning the building • Use of non-toxic, water-based rather than oilbased, products; perfume-free, biodegradable • Sanitary supplies (towels, etc.) • Recycling of containers and packaging • Recycling of batteries, electrical devices and components • Noise during cleaning routines – vacuum cleaning • Lightbulb use • Lightbulb recycling: fluorescent and energy saving lamps, also LED
9.3 Ofisi ya maktaba ya kijani	9.3 The green library office
<ul style="list-style-type: none"> • Ununuzi kijani (kuzingatia mazingira) 	<ul style="list-style-type: none"> • Green procurement

<ul style="list-style-type: none"> • Kusafirisha kwa meli kuzingatia mazingira au swala la 'Green' • Matumizi ya watengenezaji vitabu wa mitaa (usawa wa hewa ya karbon monoxide) • Vitumizi vya ofisi na vifaa (asili, matumizi ya nishati, kuchakata) • wauzaji kutoka mitaa • Wauzaji waliyothibitishwa • Wafuzaji wa vitabu na kusambaza(usawa wa carbon monoxide, vifaa vya kufunga) • makao ya ya pamoja yawafanyikazi • Kupunguza matumizi ya karatasi • ifadhi ya kisasa • Vifaa vya ofisi ya kijani • Kupunguza taka na kutengana kwa taka (karatasi, plastiki, kioo, betri, vyombo vya habari vya hifadhi ya kisasa) • Kusaga makridi ya printer • Kuepuka bidhaa zilizo na sumu, hatari, au vigumu kubandika yaliyomo • joto ambayo inaweza kugeuzwa wakati watumizi hawapo • Jikoni ya wafanyakazi : vifaa vya umeme vinavyoookoa nishati, ufanisi wa maji ya moto, bidhaa za fairtrade nk • Mafunzo yakujua kwa wafanyakazi 	<ul style="list-style-type: none"> • Green shipping • Use of local bookbinders (CO₂ balance re transport) • Office supplies and equipment (origin, energy consumption, recycling) • Local suppliers • Certified suppliers • Book suppliers and delivery (CO₂ balance, packing materials) • Hot-desking • Reduction in use of paper • Digital archiving • Green office supplies • Waste reduction and separation of waste (paper, plastic, glass, batteries, digital storage media) • Recycling printer cartridges • Avoidance of products with poisonous, harmful, or difficult to recycle contents • Heating that can be turned down during periods of absence • Staff kitchens: energy-saving electrical appliances, energy-efficient hot water production, fairtrade products etc. • Awareness training for employees
<p>10 Mikakati ya kimalengo</p>	<p>10 Strategic goals</p>
<ul style="list-style-type: none"> • Uwazi wa gharama za nishati: uwazi hujenga akiba • Kudhibiti kwa kupunguza • Malengo yaliyokubaliana ya kuokoa nishati • Mipango yakuwatuza wafanyakazi bora • Kuathiri washirika wa biashara (wahubiri, wauzaji wa vitabu) • Kusisitiza lengo la kupata watumizi wapya • Ushirikiano wa kimikakati 	<ul style="list-style-type: none"> • Transparency of energy costs: transparency creates savings • Controlling for reducing • Agreed targets for energy saving • Reward and incentive schemes • Influencing business partners (publishers, booksellers, suppliers) • Addressing new target audiences • Strategic partnerships

11 Utafutaji soko na uhusiano na umma	11 Marketing and PR
<ul style="list-style-type: none"> • Ustawi na utambulisho wa kampuni • Motto: "Picha ya kijani ni picha nzuri" • Maktaba yaanapaswa kuongoza kwa mfano (mkamilifu na mfano mwema) • Kushinda wateja / watumiaji wa maktaba juu ya uendelevu • Washiriki wadau zaidi juu ya uendelevu (kusaidia / mashirika ya fedha, Marafiki wa Maktaba nk) • Athari kubwa ya kuzidisha • Hati ya utendaji wa nishati iliyoonyeshwa kwenye mlango wa maktaba ya uhusiano ya umma • Uhusiano na umma kwa shughuli za mazingira ya maktaba • Ushirikiano na mipango ya wadhamini • Habari za mazingira kwa mfano. Sehemu ya kijani katika taarifa za kila mwaka 	<ul style="list-style-type: none"> • Sustainability and corporate identity • Motto: "A green image is a good image" • Libraries should lead by example (proactive and exemplary) • Win library customers / users over to sustainability • Win wider stakeholders over to sustainability (supporting / funding agencies, Friends of the Library etc.) • High multiplier effect • The energy performance certificate displayed at the library entrance (PR) • PR with and for the ecological activities of the library • Co-operation with sponsor initiatives • Environmental news e.g. a green section in annual reports
12 Vyeti 12.1 Vyeti vya jumba la kijani	12 Certificates 12.1 Green building certificates
<ul style="list-style-type: none"> • LEED (kiwango cha Marekani)² • BREEAM (kiwango cha Uingereza)³ • Green Star Rating System⁴ • DGNB Deutsches Gütesiegel Nachhaltiges Bauen e.V.⁵ • Energieausweis nach EnEV⁶ • European Energy Award⁷ • Solarbundesliga⁸ 	<ul style="list-style-type: none"> • LEED (US standard)² • BREEAM (UK standard)³ • Green Star Rating System⁴ • DGNB Deutsches Gütesiegel Nachhaltiges Bauen e.V.⁵ • Energieausweis nach EnEV⁶ • European Energy Award⁷ • Solarbundesliga⁸
12.2 Usimamizi wa Kimazingira	12.2 Environmental management

² <http://new.usgbc.org/leed> (2013/2/19).

³ www.breeam.org/ (2013/2/19).

⁴ www.gbca.org.au/green-star/rating-tools/ (2013/2/19).

⁵ www.dgnb.de/(2013/2/19).

⁶ www.enev-online.de/ (2013/2/19).

⁷ www.european-energy-award.org (2013/2/19).

⁸ www.solarbundesliga.de (2013/2/19).

<ul style="list-style-type: none"> • ISO 14000 (ya kibiashara, ya kimataifa, isiyo ya sheria)⁹ • EMAS (Eco-Management and Audit Scheme) der EU¹⁰ 	<ul style="list-style-type: none"> • ISO 14000 (commercial, international, without legal nature)⁹ • EMAS (Eco-Management and Audit Scheme) of the EU¹⁰
12.3 Vyeti vya vifaa	12.3 Product certificates
<ul style="list-style-type: none"> • Kulingana sanasana na vyeti vya vifaa vya kigerumani, pia kuna vyeti vya kitaifa kwenye nchi zingine nyingi 	<ul style="list-style-type: none"> • According to specifically German product certificates there are national product certificates in many other countries.

References

Antonelli, M., & McCullough, M. (eds.) (2012). *Greening Libraries*. Los Angeles, CA: Library Juice Press.

Fachkonferenz der Bibliotheksfachstellen in Deutschland (2012). *Handreichung zu Bau und Ausstattung Öffentlicher Bibliotheken*. Neustadt. www.bibliotheksportal.de/fileadmin/user_upload/content/themen/architektur/dateien/Handreichung_gesamt.pdf (2013/2/19).

McBane Mulford, S., & Himmer, N. A. (2010). *How green is my library?* Santa Barbara, CA: Libraries Unlimited.

Miller, K. (2010). *Public libraries going green*. Chicago: American Library Association.

Wagner, S., & Scherer, J. (2007). Green building management and sustainable maintenance. In K. Latimer & H. Niegaard (eds.), *IFLA Library Building Guidelines: Development and Reflections* (pp. 203–214). München: Saur.

Walker, M. (2009). *100 ways to make your library a little greener*. BachelorDegreeOnline [Blog], April 21. www.bachelorsdegreeonline.com/blog/2009/100-ways-to-make-your-library-a-little-greener/ (2013/3/5).

⁹ www.iso.org/iso/home/standards/management-standards/iso14000.htm (2013/2/19).

¹⁰ www.emas.de/ (2013/2/19).