

The potential for housing improvements to reduce vector-borne diseases and the challenges of scale-up

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Wednesday 30th June 2021

What's the problem?

- Vector-borne diseases are a major environmental threat to countries in the tropics & their economies
- Building out vectors *and designing healthier homes in general* will lead to more resilient dwellings, villages, towns and cities

The basic split



Rural/Peri-urban
= malaria



Urban/Peri-urban
= dengue & worse

But note emerging threat
of malaria transmitted by
An. stephensi

Historical evidence that housing improvements work

THE NEW PROPHYLAXIS AGAINST MALARIA: AN ACCOUNT OF EXPERIMENTS IN LATIUM.

BY PROFESSOR ANGELO CELLI.

(Specially translated for THE LANCET from the *Supplemento al Policlinico*, Anno VI., N. 51.)

THE modern theory of the propagation of malaria by means of mosquitoes had scarcely been confirmed experimentally when, in my lectures in May and June of 1899 and shortly afterwards in book form,¹ I gave an exposition of the new epidemiology and the prophylaxis following from it. This, I pointed out, in order to be completely successful must be directed against (1) the causes bringing about infection, either by (a) destroying these (by disinfection of the blood of malarious persons and by the destruction of mosquitoes) or (b) by preventing their entrance into the human organism (by protection of dwelling-houses and of the exposed parts of the body); and (2) against the predisposing causes (organic, physical, and social). In view of the arduous nature of any attempt to battle against the latter set of causes I endeavoured (even before the commencement of the malarial season of 1899) to put into practice those only of the prophylactic measures which have for their aim the suppression of the direct causes of the epidemic, that is to say, the causes bringing about infection. I was even then persuaded, and am now more than ever convinced, that a complete and certain prophylaxis by disinfection of the blood by means of quinine is practically impossible, although Koch, and later Gosio, and at first Grassi also, believed in its efficacy. And I had likewise come to the conclusion, through my own and Casagrandi's researches,² that although the destruction of the mosquito in the aquatic and the aerial stages of its existence is in itself not a difficult thing, this is not practicable on a large scale, chiefly because there is not the same immediate material advantage in killing insects which are injurious to man that there is in destroying those which are injurious, for example, to the grape-vine.

My first prophylactic experiments of 1899 had consequently for their object the testing of the means best

7/181 malaria cases in people in intervention houses

200/217 malaria cases in people living in control houses

Angelo Celli A La nuova profilassi della malaria nel Lazio. *Supplemento al Policlinico* 1900a;6:1601–1606

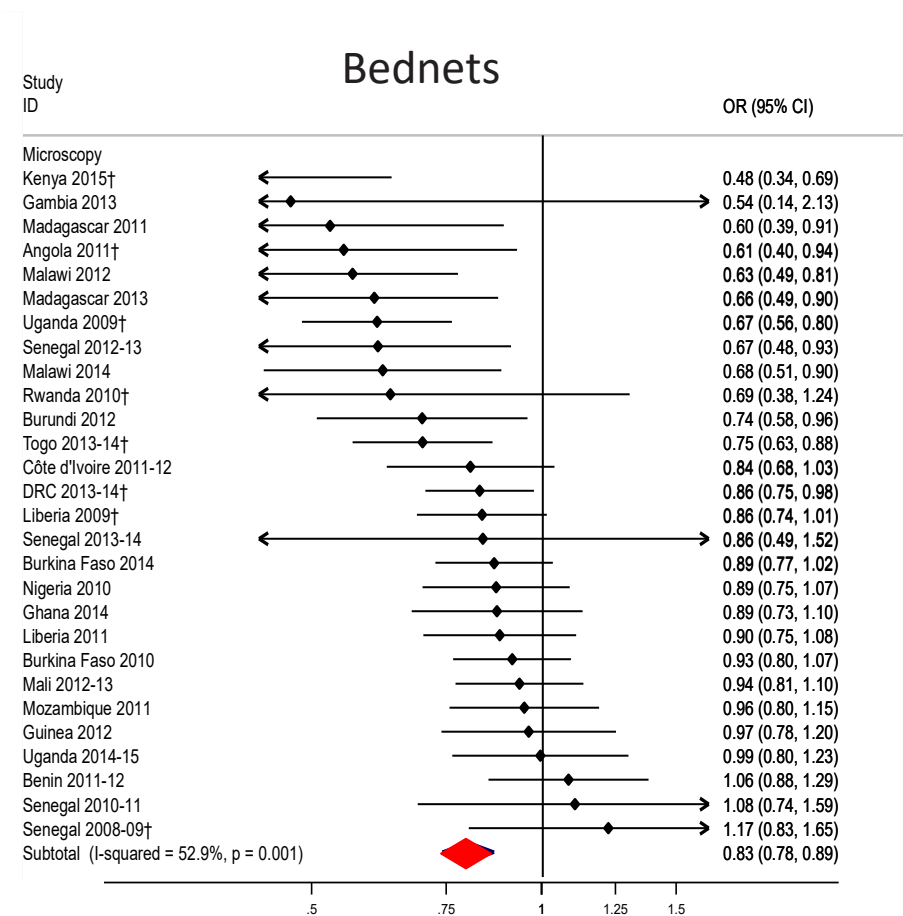
Systematic review on malaria and housing

Tusting *et al.* 2015 *Malaria J* 14: e209

- 15,526 studies reviewed
- 53 studies included
- 47% lower risk of infection with good housing
- 45-65% lower risk of clinical malaria with good housing

Malaria risk in 29 surveys in sub-Saharan Africa

Tusting *et al.* 2017, *PLoS Medicine*, 14, e1002234.



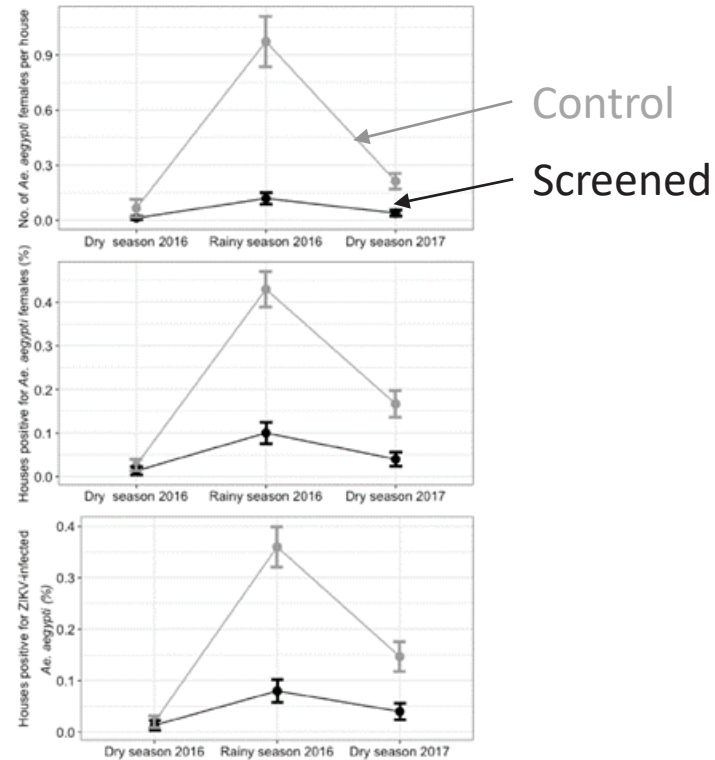
17% reduction

Also effective against *Aedes* mosquitoes...

Screened houses \approx 80% less infested with *Aedes* females



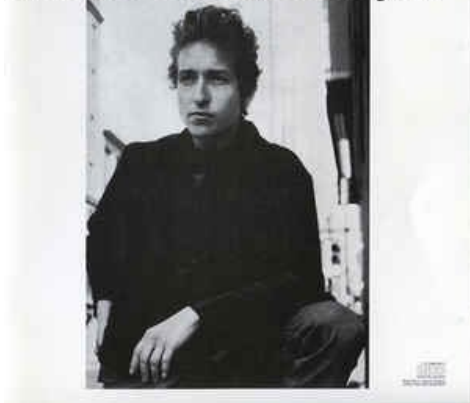
Aedes aegypti proof-houses



Aedes aegypti numbers

Scale-up

Another side of Bob Dylan



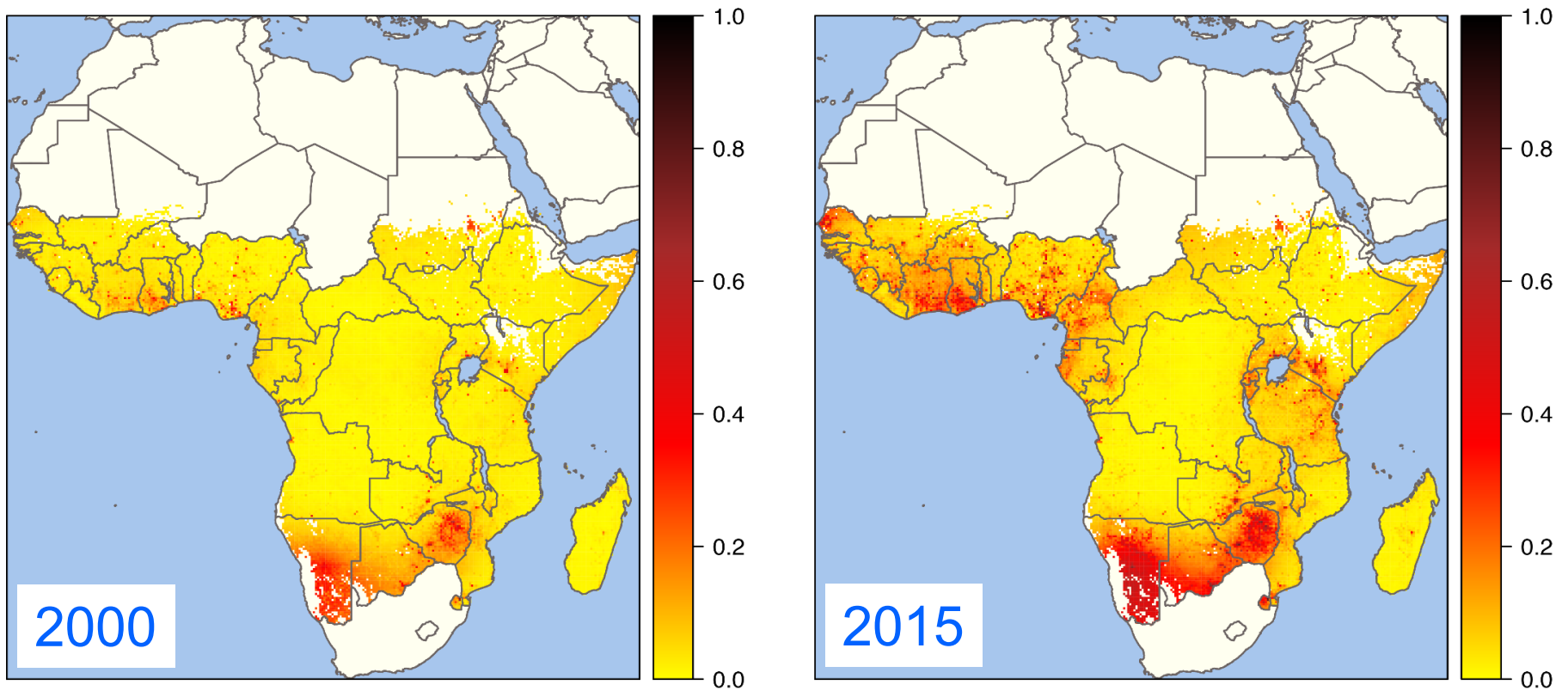
*"I'm not the one you want, babe
I'm not the one you need"*

"It Ain't Me Babe" from Another Side of
Bob Dylan, 1964

Opportunities

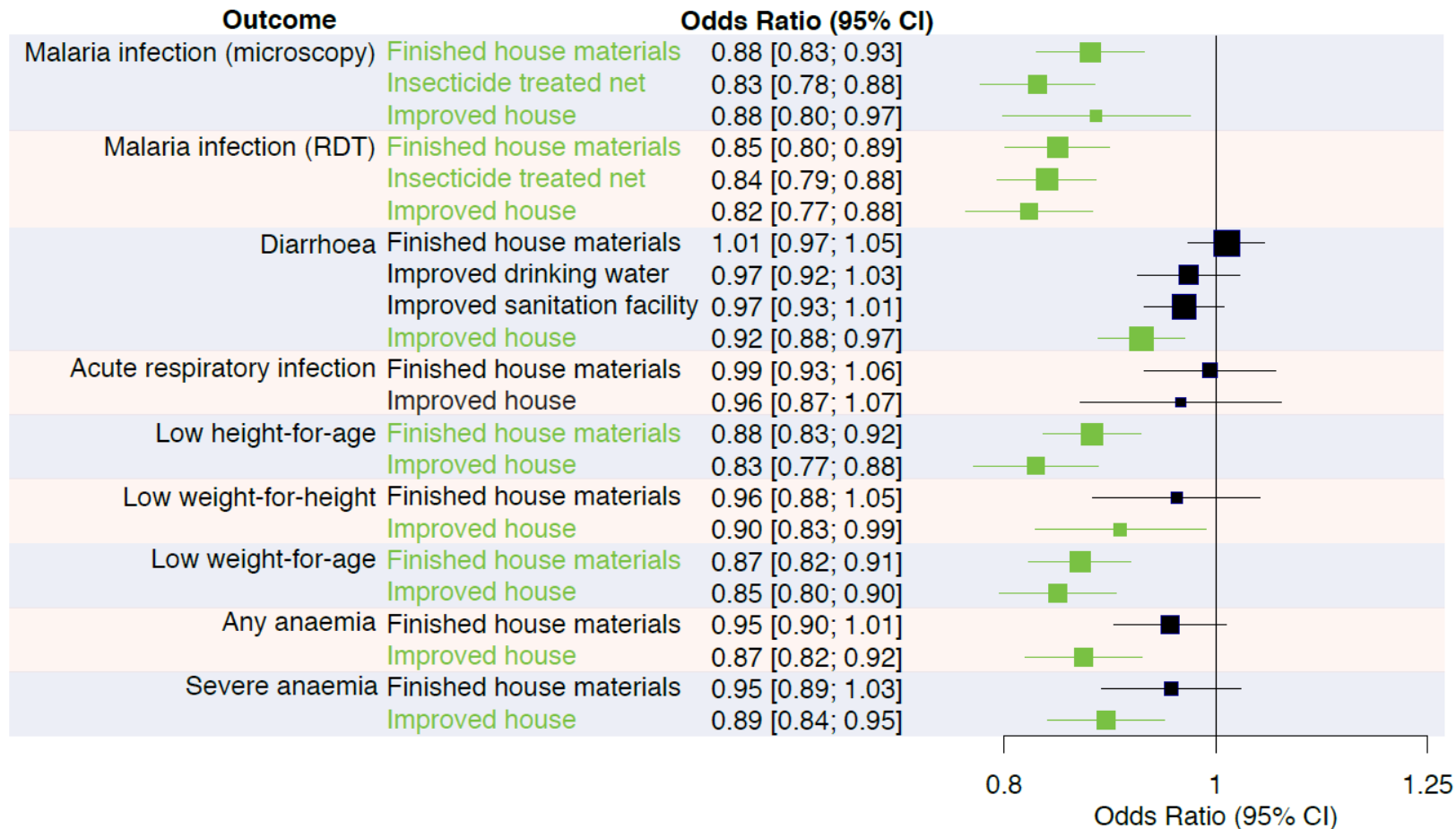
- People are doing it for themselves, harness this growth
- Improved housing has co-benefits in addition to protecting against VBDs
- **COVID-19** coupled with the **CLIMATE CRISIS** is concentrating minds – build back better

Prevalence of improved housing doubled in sub-Saharan Africa from 2000 to 2015



Predicted prevalence of housing with finished building materials, improved water & sanitation and sufficient living area

Improved housing is associated with better child health in sub-Saharan Africa

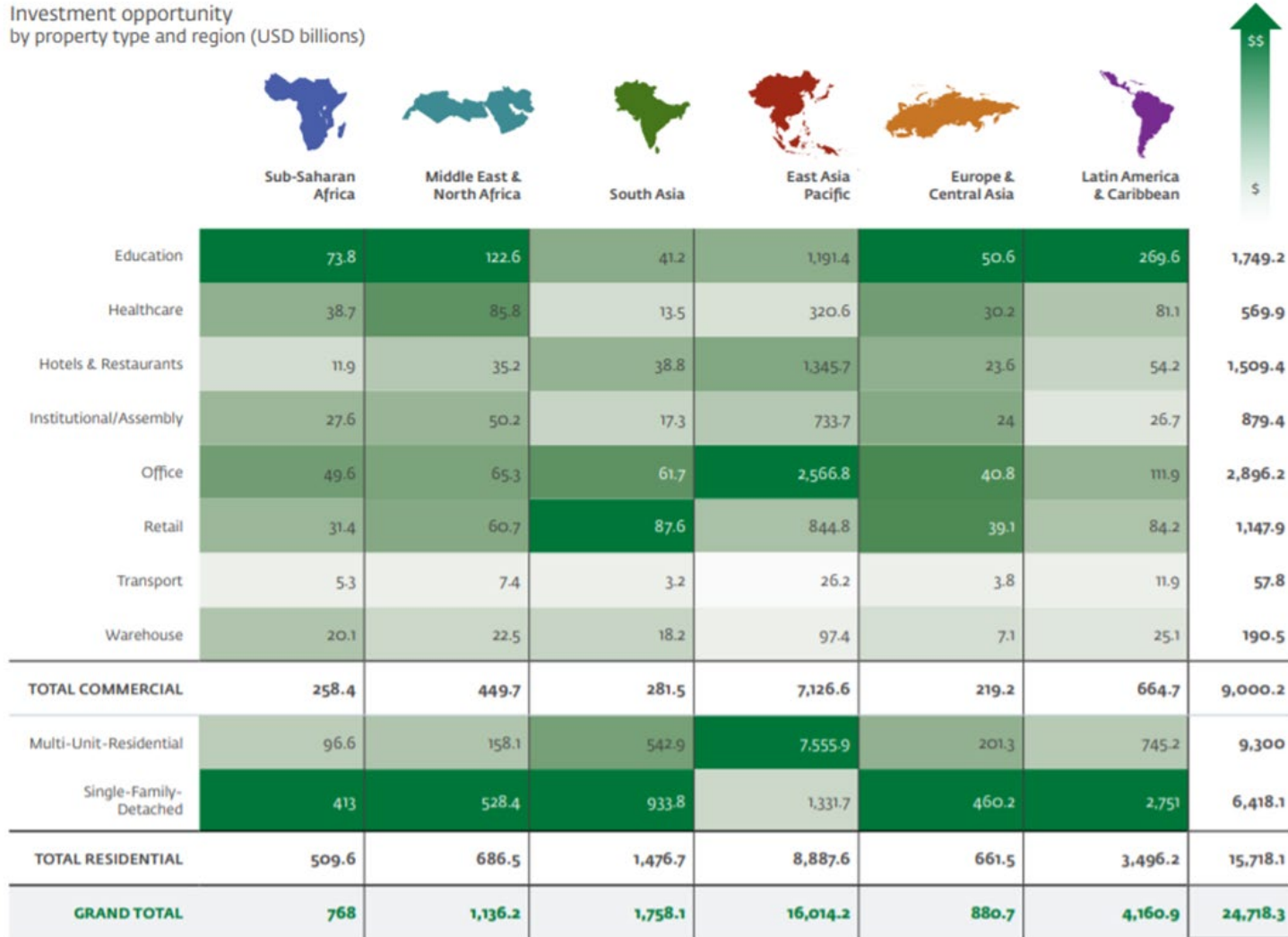


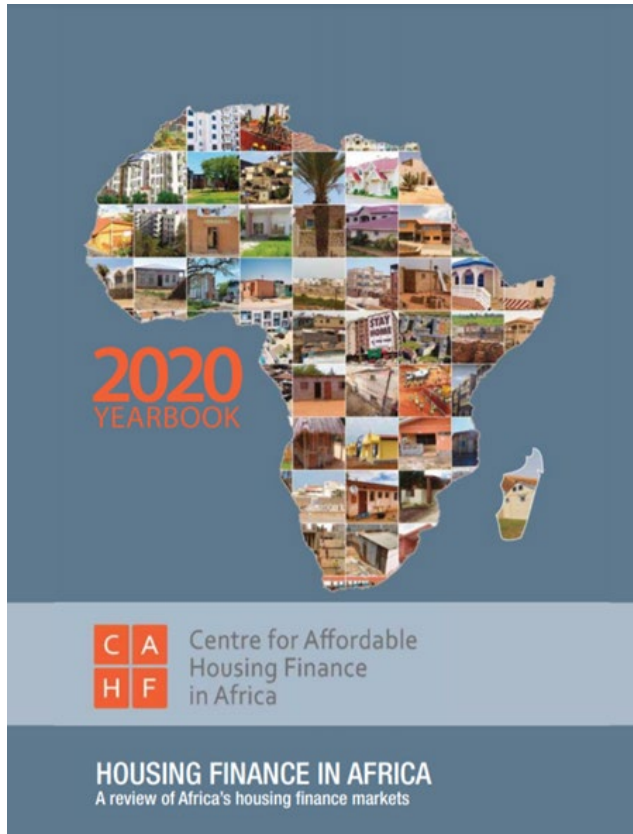
Data are from 824,694 children aged 0-5 years surveyed in 54 DHS surveys, 21 MIS surveys and 2 AIDS Indicator Surveys dating from 2001 to 2017 in 33 countries.

Green Buildings

A FINANCE AND POLICY BLUEPRINT FOR EMERGING MARKETS

Investment opportunity
by property type and region (USD billions)





Centre for Affordable Housing Finance in Africa (2020). 2020 Yearbook: Housing Finance in Africa. Johannesburg, South Africa.

<http://housingfinanceafrica.org/>

Find out more information on the housing finance sector of The Gambia, including key stakeholders, important policies and housing affordability:

- [Macroeconomic Overview](#)
- [Access to Finance](#)
- [Affordability](#)
- [Housing Supply](#)
- [Property Markets](#)
- [Policy and Regulation](#)
- [Opportunities](#)
- [Availability of data on housing finance](#)
- [COVID-19 response](#)
- [Websites](#)



iBUILD Virtual Marketplace



Challenges/Next steps

- Demonstration houses: Star Homes project
- Funding – accessing the money that is going into housing, especially green building
- Microfinance and remittances
- **Informal settlements**
- Support for city leaders and mayor: devolved power and fiscal backing



Star Homes: low carbon, healthy and sustainable

Acknowledgments:

