PRCA BOOK OF PROCEEDINGS 2022

ISBN: 978-93-92774-00-3

In Collaboration With

LOKNETE DR. BALASAHEB VIKHE PATIL
(PADMA BHUSHAN AWARDEE)
PRAVARA RURAL EDUCATION SOCIETY'S
PRAVARA RURAL COLLEGE OF ARCHITECTURE
LONI

Council of Architecture

SPPU Pune

NTACH Ahmednagar Centre Maharashtra Chapter

ATTESTED
Principal
Maratha Vidya Prasarak Samaj's
COLLEGE OF ARCHITECTURE
Nashik

CONTENTS

PREFACE

ACKNOWLEDGEMENT

COMMITTEES

THEME I: CONSERVATION

i. Evaluating Settlement form and pattern of Estado da India (Old Goa), A mediaeval Portuguese town using guidelines for medieval cities by Morris A.E.J.- *by Ar.Ajit Madkaikar & Ar.Pramod Joglekar* 1

ii. Changing landscape of Vetal tekadi, Pune- *by Ar.Anuja Gurjar & Ar.Nikita Mahajani* 12

iii. Understanding Secret Landscape along River Kukadi near Nighoj, At Ahmednagar District- *by Prof.Asmita Joshi, Ar.Anagha Kotkar & Dr.Sharvey Dhongde* 20

iv. Hindu mythological festivals: A boon or curse to nature- *by Ar.Bhakti Umbarkar & Ar.Mukta Gokhale* 32

v. Conservation and Promotion of Rural heritage of historic town Aundh (District-Satara) for Cultural Tourism.- *by Ar.Maithili kulkarni & Ar.yogita Pandit* 43

vi. Understanding Nature-Culture Relation in Temple Settings at Konkan, Maharashtra- *by Ar.Manjiri Shendye & Ar.Poorva Patil* 56

vii. Three New Gadhegals from Karvenagar and Dongargaon, District Pune,- *by Ar.Nikita Mahajani & Ar.Anuja Gurjar* 66

viii. NAADBRAMH"'Soundscape of a Temple precinct' Case – Temples of Ahmednagar, Maharashtra- *by Ar.Shreekrishna Dolase & Ar.Mukta Gokhale-Kulkarni* 71

ix. To Outline the "Cultural Landscape" of the Krishna River in Maharashtra and emphasize the need for planning Conservation Strategies for the same so as to conserve associated "Rural Heritage" at a Regional Scale- *by Ar.Yogita Pandit & Ar.Maithili Kulkarni* 94

x. Development of dado Ornamentation in Mughal Architecture- *by Ar.Ruchita Gharate* 105

ATTESTED
PRINCIPAL
Maratha Vidya Prasarak Samaj's
COLLEGE OF ARCHITECTURE
Nashik

ISBN: 978-93-92774-00-3

THEME II: CURRENT ISSUES IN RURAL AND REGIONAL PLANNING

i. Innovative Ideas for using vernacular building materials in rural area: A case of Maharashtra- *by Ar.Piyush Agrawal & Ar.Mitushee Sawarkar* 111

ii. Architecture as Nuclei of Social Systems: Past and Future.- *by Dr.Seemantini Chaphalkar* 120

iii. The impact of lockdown on the movement of disable people in rural region, Akola- *by Ar.Shwetali Kotkar* 131

iv. Urban agriculture as a strategy to alleviate heat island effect in the rural-urban fringe of Pune- *by Ar.Krutika Madkaiker & Dr.Madhuri Kumari* 154

v. Study of the concept of critical Regionalism in the cultural buildings designed by Charles Correa- *by Ar.Apoorva Lohiya* 159

vi. Educating and empowering through rural architecture- *by Dr.Aparna Dixit & Dr.Rutuja Jagtap*

THEME III: ECONOMY

i. Study of traditional occupation of Vadar community with new transform- *by Prof.Anupama Sonpitale* 170

ii. agro-waste usage as building construction material- *by Ar.Kanchan Shelar* 185

iii. Impact of achitecture on rural economy.- *by Ar.Madhuri Patil & Ar.Amit Pisolkar* 193

iv. Roadmap for strengthening Rural Development: A Case of Ribandar, Goa.- *by Prof.Pradnya Patki & Prof.Neha Joshi* 202

THEME IV: ENVIRONMENT

i. Alternative building construction techniques for climate responsive buildings- *by Ar.Anju Ahirwal & Ar.Inder Prakash Arya* 212

ii. Creating inclusive and sustainable public open spaces : A step towards making smart villages in India- *by Ar.Pritam Ahirrao & Ar.Smita Khan* 219

iii. Role of opening in different climatic zones in India to make the building sustainable- *by Ar.Janhavi Wakchaure* 231

iv. Comparative analysis of various methods used for mapping carbon footprint of a region.- *by Ar.Ketki Manolkar* 236

ATTESTED
PRINCIPAL
Maratha Vidya Prasarak Samaj's
COLLEGE OF ARCHITECTURE
Nashik

ISBN: 978-93-92774-00-7

Comparative analysis of various methods used for mapping carbon footprint of a region

Ar. Ketaki Parag Manolkar

Assistant Professor, MVPS's College of Architecture, Savitribai Phule Pune University, India

Phone no. : 7507921777, E mail : ketakimanolkar@cansnashik.org

Abstract : The term 'carbon footprint' is now been widely used by organizations, companies, regions, cities and nations. With climate change high up on global, political and corporate agenda, carbon footprint calculations are gaining considerable importance and have become one of the important environmental aspects of regional planning. For estimating carbon footprint different tools are being used ranging from basic online calculators to more scientific methodologies such as life-cycle analysis and input-output based methods. However it has been observed from literature review, that while estimating carbon footprint the basic terminology is generically interpreted depending on various factors such as intent of estimation, data availability, scale of the entity etc. Large variations in the spectrum of the terminology interpretation ranges from direct carbon dioxide (CO2) emissions to full life-cycle greenhouse gas (GHG) emissions. There is also variation in the unit in which carbon footprint is expressed for various entities. This paper comparatively analyses the methodologies used in carbon footprint mapping of three cities as case studies and critically reviews the variation in protocols regarding the mapping approach, type of emissions, unit of measurement, emission sources, potential gases and system boundaries under consideration. It finally concludes into suggestive approach for devising a methodology for mapping carbon footprint of an administrative ward level of a region in Indian context.

Keywords: carbon footprint, greenhouse gas emissions, life-cycle analysis, regional planning, administrative ward.

1. Introduction :

Recognizing the global reach of Green House Gas (GHG) pollutants, more than 160 countries have signed the Kyoto protocol , which pledges GHG emissions reductions of at least 5% relative to 1990 levels. (Ramaswami 2008). Green house gas emissions are result of day today human activities that are mainly influenced by lifestyles, choice of technologies, choice of products made and technologies chosen for their production. Polulation in any region is responsible for multidisciplinary activities at various sectoral levels. The activities are largely interlinked as well as linked with the activities taking place outside the geopolitical boundaries, but are responsible for GHG emissions for the needs of the region. Hence if GHG mitigation measures are to be implemented, measuring these emissions becomes important at regional level. It is observed from literature review, that there is a large variation in the definitions used for the term carbon footprint by various companies, organizations, NGO's, consultancies, businesses and city level inventories. The definition mainly is driven by the goal for which carbon footprint quantification is to be done. Data availability and scale of the entity are other governing factors. Accordingy the protocols for various studies are observed to be devised in terms of type of emissions, unit of measurement, emission sources, potential gases and system boundaries under consideration. There is no commonly accepted standard or protocol that is followed globally when it comes to carbon footprint mapping of a region. Decisions taken with respect to the

ATTESTED
PRINCIPAL
Maratha Vidya Prasarak Samaj's
COLLEGE OF ARCHITECTURE
Nashik

TERI, (2010), Environment Status Report 2009-2010, Report by TERI, Pune Municipal Corporation, Pune.

Tukker, A. and Jansen, B. (2006). "Environmental impacts of products: A detailed review of studies". Journal of *Industrial Ecology* 10(3): 159.

UNFCC, (2006), *Kyoto Protocol*; United Nations Framework Convention on Climate Change, Accessed 10.8.2021.

URS Corporation Ltd.(2009), A Study to Determine the Carbon Footprint of the City of London, Report by URS Corporation Ltd., London.

Wiedmann T., Barrett J. and Lenzen M. (2007). "Companies on the Scale - Comparing and Benchmarking the Footprints of Businesses". International Ecological Footprint Conference, May 8-10, 2007, Cardiff, UK.

Wiedmann, T. and Minx, J. (2008). A Definition of 'Carbon Footprint'. In: C. C. Pertsova, *Ecological Economics Research Trends*: Chapter 1, pp. 1-11, Nova Science Publishers, Hauppauge NY.

WRI, (2004), The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard; World Resources Institute and World Business Council for Sustainable Development: Washington, DC.

ATTESTED
PRINCIPAL
Maratha Vidya Prasarak Samaj's
COLLEGE OF ARCHITECTURE
Nashik