



International Network for Bioresources Management (INBM)

Simply put, bio-resources are free gifts of nature. All animals, including mankind, and depend on bio-resources (plants and animals) for food, fiber, firewood, fodder, medicine, timber, honey, ecological and entertaining services and many other daily necessities for domestic as well as commercial and industrial purposes. Increasing global warming owing to the rise in green house gases, burning of fossil fuels, deforestation, land degradation, illegal poaching and hunting, uncontrolled urbanization, and so on are human activities leading to overexploitation and scarcity of bio-resources, especially those that are endangered. Clearly therefore, bio-resources need to be conserved (used sustainably and protected).

Sufficient research inputs are directed globally towards reducing global warming and saving the bio-resources. However, research results are published most in such journals that are not easily available to common researchers. This realization motivated us to establish an international network of researchers in the subject of bio-resources. The network is expected to help network members communicate among themselves about the recent advances in the field of bio-resources conservation and management. With invitations of the first-named author in particular through the LinkedIn to join this network, over 200 persons showed interest to join the network while another 120 persons 'liked' the proposition. Contact e-mail addresses have been received already from a total of 75 persons and professional profiles of 40 individual scholars from across many countries. The INBM has been divided into three parts: professional profiles; general suggestions/innovations; and discussions and conclusions. In the appendix, the list of persons interested to join and the mailing addresses have been included.

Brief Professional Profiles of Network Members by Country

Cameroon

1. Liyong Emmanuel Sama

Coordinator/CEO, CIRMAD, Bamenda, North West Region, Cameroon

Email: esama_1@yahoo.co.uk; lesama@cirmad.net; Tel: (+237) 677 984 046

Mr. Sama is the Founder/Coordinator of CIRMAD, for biodiversity conservation and civil society work, Bamenda, Northwest Region, Cameroon. He completed his graduation

in Wildlife Management from IUB, Cameroon. He held several posts as Conservator of Kilum/Ijim Plantlife Sanctuary, Oku, Cameroon, Conservator of Kagwene Gorilla Sanctuary, Njikwa, Cameroon S 2010 to date: Coordinator of Centre for Indigenous Resources Management and Development (CIRMAD), Chief of Section of Wildlife/Protected Areas, Service of Forestry & Wildlife-Mezam, Bamenda, Chief of Section of Wildlife/Protected Areas, Service of Environment and Forestry – Ndian, Chief Game Guard (ranger), Korup National Park, Cameroon.

He trained 206 Rangers of Cross River National Park, Nigeria under a WCS-Nigeria consultancy, Conservation education in the communities of Kagwene Gorilla Sanctuary with WCS-Cameroon, fourteen Rangers of Mbe Mountains Conservation Area/AMWS, Nigeria for WCS-Nigeria, did the 1st ever field surveys on Medicinal Wildlife in Cameroon (N. W. Region); produced a historic poster of medicinal wildlife species; organized the historic Bamenda Symposium on Sustainable Medicinal Wildlife; organized a training seminar on sustainable medicinal wildlife use; produced *Medicinal Wildlife Palaver*, the first action movie for conservation education, produced a historic poster of the Nigeria-Cameroon chimpanzee for conservation education, created thirteen Chimp Survival Clubs with the support of Pittsburgh Zoo & PPG Aquarium, Sacramento Zoo and Chester Zoo in around 4 chimp habitat sites of the Bamenda Highlands, Enlisted and trained eleven Community Eco-guards for Kom-Wum Forest Reserve, with support of the WWF-EFN.

Gambia

2. Samba Bajie

Programme Officer, National Ozone unit, Gambia; Email: basavarajkh@gmail.com

Mr. Bajie is working as Programme Officer, National Environment Agency, Gambia, West Africa. He joined the National Environment Agency in November 2009 as a Programme Officer at the National Ozone unit implementing the Vienna Convention and the Montreal Protocol on the protection of the Ozone Layer. He also served as a member of the Climate Change task team. The team represented the National Environment Agency in Climate programs and worked on the inventory of Green House Gas Emission of the country as part of The Gambia's third national communication to the climate change convention. The team also worked on the assessment of submissions by major Agricultural projects to ensure that such projects prepare environmental and social



safeguards as part of their implementation

With a Master degree in Natural Resources and Environmental Management, he has broadened his knowledge in the Social, Economic and Environmental linkages for sustainable development taking into considerations increasing global population especially in developing countries, the earth's carrying capacity, depletion of forest and other natural resources needed for our livelihoods and that of generations yet unborn.

His current employment in governance sector has armed him with skills on administrative justice that can be used in formulating or directing policies for the judicious use of natural resources and protecting the environment for future generations. The above national and international commitments are his major motivations in his passion for environmental issues to better serve his country and humanity as evident in his thesis research entitled "Root crop farming system adaptation to climate change in Ikwerre local government area, Nigeria."

3. Bevin-Treffert-Lufino

Environmental Specialist/Engineer, Ronald Ross General Hospital (RRGH), Zambia

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Mr. Lufino is working as Environmental Specialist/Engineer, Ronald Ross General Hospital (RRGH), Zambia. His key qualification is Member of Engineering Institute of Zambia. He completed his BSc. in Environmental Studies from Mulungushi University, Kabwe.

He is in-charge with responsibility to work closely with the Environment, Permitting, and Engineering teams to develop, review, and oversee water, wastewater, Medical waste, solid waste, and air quality management programs to support permitting, construction and operations at Ronald Ross General Hospitals, to support Environmental management initiatives including policy planning, corporate reporting and due diligence, develop and implement procedures ensuring the operation maintains compliance with all corporate and regulatory approvals, practices and standards at the hospital, develop and implementation of regulatory compliance programs involving; Compliance with Federal regulations such as World Health Organisation (WHO), Training for compliance, Support and development of an Environmental Management System (EMS) and related activities such as Fire safety Programs, Learnt how to conduct Epidemiological research at the Hospital, and did statistical analyses and wrote reports.

Mr. Lufino worked with environmental field staff to develop and implement environmental operational controls and programs and coordinated Environmental assessments, monitor and report programs with consultants and field staff. He developed and reviewed an occupational Health and safety

policy for the Ronald Ross General Hospital, developed and supported emissions measurement and reporting systems, including water quality control, medical waste management and Greenhouse Gas (GHG). He obtained his BSc (Honors) degree in Geography and Environmental Studies in 2012.

Kenya

4. Joseph Hitimana

Lecturer, University of Kabianga, Rawanda, Kenya

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Mr. Hitimana is holding the responsibility of Agricultural Dean at School of Natural Resource & Environmental Management University of Kabianga. He is pursuing his Ph.D. in forestry at University of Eldoret. He is specialized in several professional courses on GPS and GIS training course, participatory project planning, managing national forest statistics, applied biometrics in tropical forestry, Swiss Cooperation, Montpellier, France, aerial photo-interpretation and cartography. He was actively involved in research projects viz., factors affecting adoption of agroforestry tree fodder species, their nutritive value and farmers' preference in the dry parts of Kericho and Bomet counties, short rotation forestry for mitigating degradation of wetlands and natural vegetation in the lake victoria basin, feasibility study for the development of out-grower tree schemes in Kenya, changing roles and status of forest and tree products and impacts on resource management and rural livelihoods: the case of Kenya and Nigeria.

Mr. Hitimana was also involved in such projects as Community-Based Natural Resource Management Plan for Ngutuk-Ongiron, Natural Resources Management (NRM) Plans For pastoralists communities in Samburu, Participatory Natural Resources Management (PNRM) Plans for Kimana And Olgulului Group Ranches, Kilimanjaro Heartland, Kenya, Community-based natural resource management (CBNRM) plan, Kinigi, International Gorilla Conservation Programme, of African Wildlife Foundation (AWF), Development of national forestry inventory guidelines, forest resource assessment tools and cartography in Rwanda.

5. Stephen Kimani

Principal Scientist, Agriculture and Livestock Research Organization, Kenya

Email: 2skimani@gmail.com

Mr. Kimani has a B.Sc (Agric, at Nairobi University), an M.Sc (Plant Science, at McGill University), and PhD (Crop Physiology at University College Dublin). He is a career agriculturalist, with over 30 years experience in East Africa and beyond, and is highly respected in many agricultural related organizations. He has worked for Kenya Agriculture and Livestock Research Organization (KALRO) since 1984, in



many capacities rising from an Assistant Research officer to Principal Research Scientist. Stephen is experienced in the agricultural sector and has published in Natural Resource Management, Integrated Soil Fertility management (ISFM), and in Crop-Livestock interactions. In addition, Stephen has carried out his research projects in collaboration with CGIAR centres, such as International Livestock Research Institute (ILRI), Tropical Soil Biology and Fertility Programme TSBF of CIAT; International Potato Center (CIP), CIMMYT, ICRISAT and local non-governmental organizations(NGO's).

6. Mnjama Davis

Biologist, Agricultural Sector, Kenya; Email: mnjamadavis@yahoo.com

Mr. Mnjama Davis is a biologist working with Agriculture Sector Development Support Programme in Kenya. He is working in the coastal county called Taita Taveta. He is deployed as an Environment Resilience and Social Inclusion Officer. His work includes creation of awareness on Climate Change and Global Warming, promoting Climate Change Adaptations and supporting involvement of Women and Youth in agriculture sector among stakeholders and partners by use of Geographic Information systems to map and analyze issues, value chains suitability mappings using SMCE, gender and social inclusion analyses.

7. Agevi Humphrey

Ph.D Scholar, Department of Biological Sciences Centre for Kakamega Tropical Forest Studies (CEKATFOS) Masinde Muliro University of Science and Technology(MMUST); Email: hagevi@mmust.ac.ke

Mr. Humphrey is currently in the final year of his PhD in environmental Biology at Moi University. He is focusing on the determination of carbon stocks and stock changes in agroforestry practices in Western Kenya. He is a lecturer in the Department of Biological Sciences at Masinde Muliro University of Science and Technology (MMUST). He teaches and supervises undergraduate projects to students pursuing B.Sc. in Environmental Science and B.Sc. in Natural Resources Management. He is also a researcher at the Centre for Kakamega Tropical Forest Studies (CEKATFOS) within the university that studies climate change dynamics and interfaces of forests and forest adjacent communities (FAC). He has been involved in a number of trainings of communities and community groups on seed nursery establishment and management, proposal writing, advocacy skills, process of forest management planning among other topics. He has also published on the same issues.

8. Abraham Kipkorir Kibet

Financial Advisor at Old Mutual Life Assurance Company, Eldoret, Kenya

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Mr. Abraham Kipkorir Kibet is currently working as Financial Advisor at Old Mutual life Assurance company Eldoret from April-Aug 2016. He has been a class representative and played a leadership role. He carried out his internship in Vi-agroforestry Kisumu project tasked with promoting land use, environment and climate change management, capacity building and training of resource persons, providing demand driven services to community. He has done his Bachelor of Science in Agroforestry and Rural development, from University of Eldoret, Eldoret. He has also done an e-course 'Estimating GHG and Carbon Sequestration in Agriculture, Forestry and Other Land Use with EXACT. Currently he is also a Volunteer at Kenya Red Cross Malindi Branch and also a Volunteer Graduate Assistant at G-united programme.

Malawi

9. Sharif Innocent Mgwira

Project Collaborator, Department of Environmental Science, Bunda College, Lilongwe, Malawi

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Mr. Mgwira is Project Collaborator at the Department of Environmental Science, Bunda College, Lilongwe, Malawi. He had completed his MSc in Environment and Climate Change, Lilongwe University of Agriculture and Natural Resources, Bunda College. He was engaged as a collaborator for 'Governance effectiveness for uptake of climate smart agricultural practices in the lowlands of Malawi' and also worked as a Data Management/Analyst Consultant for understanding farmer circumstances on herbicide weed control and performance among smallholder farmers practicing conservation agriculture in Malawi, Mozambique, and Zambia. As a survey manager at Mycotoxin Laboratory, Chitedze Research Station, he was responsible for designing research, data collection tools, and data entry templates, training research assistants, and data quality management. As a Project Officer for the Lilongwe River Rehabilitation Project, he provided training and other extension services to community members in relation to the project activities.

Morocco

10. Mohamed Farhaoui

Head, Water Production Department, Meknes Prefecture, Morocco

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Mr. Farhaoui is working as the Head of the Water Production Department, Meknes Prefecture, Morocco under Government Administration. Earlier he worked at the National Office of Drinking Water, ONEE, ONEE Branche Eau. He completed his education from Moulay Ismail University.

Zimbabwe

11. John Mudekwe

Research Scientist, Zimbabwe; Email: mudekwe.john@gmail.com



com; Cell: +263 78 541 7915

Mr. Mudekwe is working as a research scientist and forest manager. He had an experience of over 28 years in tropical and sub-tropical Africa in management of natural forests. He is experienced and skilled in establishment and management of greenfield projects, focusing on nursery production, tree breeding and tree improvement, tree nutrition and silviculture operations in strategic and annual plantation and timber conversion planning and execution activities. He had an extensive experience and skills in the management of natural forests for promoting sustainable management and providing leadership on the environmental, social and economic dimensions of the forests, including their contributions to poverty reduction and food security and nutrition, strengthening the role of forests in climate change mitigation and adaptation

Australia

12. Bob Holderness Roddam

Urban Natural Areas Research, Tasmania, Australia; Email: rholdern@utas.edu.au

Mr. Roddam is working currently at School of Land and Food, University of Tasmania, Urban Natural Areas Research, Australia, a political organization. Earlier, he worked at Neighbourhood Watch Tasmania Inc, Adult Education Board, Hobart Community Legal Service Inc. He completed his higher education from University of Tasmania.

13. Richard Musgrove

Project Manager Soils and Aquaculture Organisation

Northern Gulf Resource Management Group, Australia

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Mr. Musgrove is a people, contract and project manager, and a scientist and science communicator. He embraces a good challenge, is fascinated by language, and thoroughly enjoys working with a broad range of stakeholders and in multicultural environments. Over a highly successful career spanning more than two decades he had experienced and accomplished the following:

As Operations Manager at Northern Gulf Resource Management Group, facilitated delivery of many critical NRM outcomes, and established and maintained strong and productive stakeholder relationships and contact networks. He had oversight of all contracts, programs and projects, including reporting.

Across two years, he took the lead in bringing \$900,000 of program funding into the organization; \$600,000 through Queensland Department of Natural Resources and Mines, split between tropical horticulture and savanna grazing programs and a \$300,000 program on feral animal control in collaboration with Biosecurity Queensland and the four Northern Gulf Regional Shire councils, the latter contributing

equivalent in-kind support.

As Science Communicator and Knowledge Broker at the Reef and Rainforest Research Centre, in Cairns, he played a major part in the organisation and management of the First National Environmental Research Program Tropical Ecosystems Hub/Reef Rescue R&D Conference, Cairns, 7-10 May 2013.

As a Senior Scientist at the South Australian Research and Development Institute (SARDI) he spent 18 years working closely with wild fisheries and aquaculture industries in South Australia and other states. He delivered significant outcomes for these industries, particularly in the post-harvest sphere, secured in excess of \$15M in funding and in-kind support, and prepared and published more than 35 research papers, reports and feature articles.

His key strengths include: effective staff management, efficient budgeting and highly successful contract and project oversight and management; culturally sensitive and respectful engagement with traditional owners and within multicultural environments.

14. Kaitlyn Brodie

Working in an NGO in Lao PDR, Cambewarra, NSW; Email: kaitlynbrodie@outlook.com

Mr. Brodie is working in an NGO in Lao PDR, Cambewarra, NSW that produces ceramic drinking water filters for a sale through a vendor model in rural-remote communities and schools. He has completed his Masters in 2017 in Integrated Water Management, University of Queensland. He developed a quality control system to test ceramic water filters, a monitoring and evaluation system for filter quality and filter installation, provides technical Support and Advice for filter installation projects and filter production. He carries out field baseline investigations in remote Lao villages followed by installation and monitoring and evaluation of the effectiveness of ceramic water filters in improving health and quality of life. He is involved in preparation and writing of technical documents – work plans, reports, calculations, permit applications and cost estimates, writing funding proposals. He worked with head office communications team to develop high quality communications materials published on the Abundant Water website and social media.

15. Abul Kalam Samsul Huda

Associate Professor, Science and Health, Western Sydney University, Australia

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Dr. Huda is working as Associate Professor, Science and Health, Western Sydney University, Australia. He obtained his Ph.D in Agronomy, 1978, University of Missouri, Columbia, USA, M.Sc (Agriculture), 1974, G. B. Pant University of Agric and Technology, Pantnagar, India, B. Sc (Agric) Hons (1st class first



in order of merit) 1971, Visva-Bharati University, India. His areas of research work include “Food Security and Climate Variability related Risk Analysis/Opportunity Management research, Decision-Making, International Research Project Development and Capacity Building”. Earlier he worked as Senior lecturer (1995-2002) and as Lecturer (1992-94). He also worked as Research Scientist, South Australian Department of Primary Industries (1991-92); Agroclimatologist and Modeller, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad, India; Senior Research Assistant, Department of Soil Science, G.B. Pant University of Agriculture and Technology, Pantnagar, India. He entered as Visiting Professor, University of California, Davis, USA. Out of his 253 publications, 128 are in refereed journals.

He is the recipient of awards viz., Fellow of the American Society of Agronomy (awarded in 2005); Prestigious and highly competitive National Research Scholarship awarded by Government of India for PhD research and by Indian Council of Agricultural Research for M. Sc. He exhibited leadership roles in National and international research projects and symposia organisation e.g. “Capturing the benefits of seasonal climate forecasts in agricultural management” during the American Society of Agronomy (ASA) annual meetings, 2-5 Nov 2014, Long Beach, CA, USA, Agronomy Award Selection Committee, American Society of Agronomy (2007-13), Editorial Committee Membership: Crop and Pasture Science, CSIRO Publishing, (2009-2016); Journal of Agrometeorology, India (2008- till date).

He holds the Membership in professional societies viz., American Society of Agronomy; Indian Association of Agrometeorologists; International Society of Agricultural Meteorology. He initiated or contributed to attract Research Funding of over \$4 million through 22 projects during stay at Western Sydney University. He is presently working on the research project “Impact assessment of climate variability and climate change on crop water productivity of wheat at selected Indian and Australian locations”. Improving Food Security in Qatar, Safeguarding Food and Environment in Qatar (SAFE-Q)

He has carried out such projects as: Better understanding constraints to smallholder adoption of agricultural technologies from the perspective of knowledge providers in Cambodia, Food Security and Climate Change in Australia, India and China, The effects of climate change on pests and diseases of major food crops in India, Bangladesh and Australia, Climate Risk Management in Rural Communities in Developing Countries of the Asia-Pacific Region including Cambodia, Bangladesh, India and China, Climate and crop disease risk management: An international initiative in the Asia Pacific region, Climate and risk management in agriculture related businesses: An international initiative between Australia and India were successfully completed under his supervision.

Bangladesh

16. Dr. S.M.Jalil

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Dr. Jalil has completed his PhD (2010) in development management, with research on ‘development of forestry in the context of Bangladesh forestry situation with people’s participation,’ from Preston University, USA, and his Masters from Oxford University, U.K. In the Bangladesh Forest College Chittagong, as Professor, taught soil conservation, watershed management, forest ecology economy. forest silviculture, management and administration from 1974 to 1978. In the Jagannath College, Dhaka, as Assistant Professor of Botany, taught B.sc and I. Sc classes in plant ecology (July 1963 – August 1964). He worked on various tree species and their environment in Chittagong and Chittagong Hill Tracts under the Forest Research Institute, Chittagong, from 1970 to 1972.

He was involved in preparation of national forestry master plan in the light of tropical forestry action program/plan and with reference to environmental situation of Bangladesh in implementation of the first participatory forestry with benefit-sharing of ADB financed community forestry project implementation strategy that was developed on the basis of social, economic and environmental conditions of the country, in formulating and evaluating forestry programmes on the basis of study on environment and economic impact upon society, and in identifying projects requiring assistance from international agencies and submission of proposals relating thereto.

He was also responsible in preparing memoranda, reports and briefs, various aspects of forestry and environment, in re-structuring department of forestry for institutional strengthening and re-constitute legal aspects for dealing forest. He developed an afforestation technology for afforesting newly accreted char-land seasonally submerged under water, review of the socio economic survey report of Upa-jilla Banayan and nursery development project.

As Assistant Chief Conservator of Forest, he performed the job of planning forestry projects, acted as GOB nominated counterpart in the preparation of 20 years national forestry master plan, in the light of operational principle tropical forest conservation program. He was the author of books Aushustha Prokriti in Bengali (Nature is Sick), and Shukhe-Dhukhe Padma Nadi (Pain and Pleasure of River Padma).

He worked as Co-Team Leader, on impact evaluation of coastal green belt project sponsored by IMED, Ministry of Planning, Bangladesh, worked on behalf of Research, Evaluation Associated Development (READ) Ltd, Bangladesh (2004), and also as a National Consultant, FAO, Bangladesh, Flood damage and rehabilitation need assessment for forestry sector of Bangladesh (28 September to 8 November 1999).

He has participated actively in several training programmes and



workshops. viz., Training on regional project implementation and administration, Manila, Philippines, 1997 (ADB), Training on socio-economic analysis and formulation of investment proposal of watershed management, Kathmandu, Nepal, 1990 (FAO-sponsored). He attended many seminars, workshops and conferences viz., Top management seminar on business Strategy in the context of Current Turbulent world situation. Sponsored by Rapport Bangladesh limited. 2012, Year of the tiger conference in USA, 1998.

During his service period of 32 years, he worked in various environments of forests, forest institutes and experienced magnificently different times with environmentally different job for management of natural resources particularly forest resources. He had published several research publications in reputed national and international journals. He also acted as President, Forestry & Environment forum, Bangladesh, Member, East West Center, Honolulu, USA, and Member, Oxford University Society, U. K.

17. Dr. Rafiqul Haider

Divisional Officer (Head of the Division), Bangladesh Forest Research Institute (BFRI), Bangladesh; Email: haider_bfri@yahoo.com

Dr. Haider is working as Divisional Officer (Head of the Division), Bangladesh Forest Research Institute (BFRI), Non-timber Forest Products Division, Bangladesh Chittagong, Bangladesh. He started his career as Researcher in the area of Coastal afforestation management at Bangladesh Forest Research Institute (BFRI), Chittagong, Bangladesh. Subsequently his research focus was shifted to conservation of medicinal plants including conservation of other non-timber forest products like bamboo, cane and patipata (*Schumannianthus dichotoma*). They are able to conserve the germplasm of about 200 medicinal plants in the conservation plots of BFRI, Chittagong.

Greece

18. Dr. Valasia Iakovoglou Dimotikou Stadiou, Forest Scientist, Greece

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Dr. Iakovoglou's educational and research experience is related to forest science with emphasis on tree responses with an application to ecological issues. Currently she works as teaching assistant with the Technologiko Ekpadeftiko Idryma Anatolikis Makedonias & Thraki (EMaTTech), Greece. Specifically, she investigated tree physiological responses as affected by the immediate biotic and abiotic environment under laboratory and field (natural and managed) conditions. Her Master's research was in urban forestry. Specifically, she studied the influence of anthropogenic impacts on tree growth for a large number of tree species as reflected by the influence of their immediate environment. The study was based on spatial

sampling according to a human population gradient that was conducted in five mid-western states of USA.

Her Ph.D investigation was on "Impact of seed sampling by selecting specific parents and seed sizes on the physiological and morphological characteristics of the produced seedlings" in order to improve seedling quality for more successful reforestation and restoration efforts. This work benefited people who were associated with seedling production and restoration since it showed that proper genetic seed sources and specific seed sizes should be a priority to grow suitable seedlings for field plantings in order to properly restore and conserve biodiversity in ecosystems.

She also investigated the effect of altered atmospheric conditions on the metabolism of recalcitrant seeds and their further seedling performance. Since her graduation, she had continued her research activities, by being involved in many diverse projects. Many of those focused on climate change and innovative ways for restoration and conservation of forest ecosystems by studying trees, with emphasis on biodiversity issues, particularly for highly vulnerable ecosystems such as protected areas. Specifically, one of the projects (IKYDA "NESTOS-Water") investigated the effect of climate change on biodiversity levels and plant performance for the NATURA (protected areas of European Union) riparian areas of the Nestos River Delta. Another project (LIFE09 NAT/GR/000326) emphasised on maintaining biodiversity levels through innovative seedling production techniques that increased the quality and quantity of the transplanted seedlings and ultimately improve the regeneration success for 26 forest species at three highly burned sites. In another project, the biotic and abiotic factors were also studied in relation to the production levels of agricultural and forested ecosystems (CORPERATION NSRF "VALASIA").

Further, the effect of climate change was also investigated based on plant responses under controlled altered light quality levels (FP7-SME, "REGEN-FOREST"). Furthermore, she was also involved in a policy decision making project in regards to «Biosafety of forest transgenic trees», where more than 25 courtiers participated in order to address ecological implications on the introduction of GMTs in plantations (COST "Action FP0905"). In addition, she had many years of teaching experience; she was responsible for both undergraduate and graduate courses. Specifically, at the undergraduate level he was responsible for courses like a) Plant physiology, b) Plant morphology/Anatomy, c) Forest Ecology, d) Urban Forestry, e) Landscape Restoration, f) Landscape planting and Landscape Architecture, g) Managing ecosystems through Ecosystem Based Approaches.

India

19. Pradeep Khanna

Principal Chief Conservator of Forests & Head of Forest Force, Gujarat, India.



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Mr. Khanna, retired as Principal Chief Conservator of Forests & Head of Forest Force, Gujarat had experience of managing and developing varied ecosystems, with specialization in AIFC from Indian Forest College Dehradun, MF from Yale University and MSc in physics from University of Roorkee. He was actively involved in bringing about sustainable development with Promotion and Facilitation of Community Participation in Ecosystem Management. The diverse ecosystems managed include – Tropical Moist Deciduous Forests, Tropical Dry Deciduous Forests, Gir National Park - last home of Asiatic lion, The Great and Little Ranns' of Kutch - unique ecosystem, Marine National Park in Gulf of Kutch, wetlands and Grasslands of Saurashtra. He built a dedicated team and pursued Community/Participatory approach to Forest and Wildlife management and natural resources. He appraised projects for environment, forest and wildlife concerns and was a member of the Gujarat Coastal Zone Management Authority.

Mr Khanna is the first Chairperson of Gujarat State Lion Conservation Society. He significantly contributed to the efficient conservation of Asiatic Lion; Promotion of Joint Forest Management (JFM) in Gujarat; Engaged government systems to obtain policy decisions for enhancing community share in JFM, developed ecotourism policy for Gujarat, took drive to make available genetically superior propagules including clonal seedlings for higher growth rate and enhanced carbon sequestration; Developed and Pursued the programme for Vulture Conservation. His lead in Mangrove Afforestation Programme resulted in two-and-half-fold increase (427 sq km in 1987 to 1058 sq km in 2011) in Mangrove cover in Gujarat. Apart from these he was involved in supervision of the research on estimating Carbon stock /sequestration in forests, mangrove forests, Coral Reef Ecosystem and selected tree species outside forests, estimation of GHG emission, effect of climate change on ecosystems, study of impact of Global Warming on disaster pattern in Gujarat.

20. Maroti Arjuna Upare

International Fisheries Consultant, FAO; Email: u_maroti@hotmail.com

Mr. Upare is an International Fisheries Bio-resources Development Expert. He is former General Manager of National Bank for Agriculture and Rural Development (NABARD). He was instrumental for proactive credit policy formulation and implementation in India. Before joining NABARD, he was Managing Director of Vidarbha Regional Fisheries Cooperative Federation Nagpur where he set up efficient cooperative network. He was born in village Velabai Taluka Wani in Yeotmal district. He also worked as Fisheries and Credit Expert in FAO. Presently, he is working as International Fisheries Consultant for FAO and World Bank Projects in India and Central Asia. He is Fisheries Advisor for community-based tank management projects in Karnataka,

Orissa, Andhra Pradesh, Telangana, West Bengal and Assam Agriculture Competitiveness Projects funded by the World Bank.

Mr. Upare has guided and implemented fisheries development projects covering aquaculture, insurance, credit, microfinance, marine resources management, and governance by working in various countries: Sierra Leone, Malawi, Vietnam, Bangladesh, Tajikistan, Uzbekistan, and Kyrgyzstan besides India in projects funded by UNDP, World Bank, FAO, and IFAD. He designed and implemented insurance package for marine fisheries in Sierra Leone and for aquaculture in Vietnam. He represented India in global conferences on aquaculture, insurance, microfinance, marketing, livelihoods, and climate change.

He had wide interest in education, after Postgraduate study in Fisheries Science from Central Institute of Fisheries Education, Mumbai. Further he studied Law and management. He studied Fisheries Planning and Management in Hull University of United Kingdom. Gold medal is awarded every year by his name to merit student in Fisheries Economics at the Fisheries University, Mumbai. His publications in FAO on Microfinance for coastal fisheries, review of world aquaculture insurance, guideline for microenterprise development for inland fisheries sector are referred worldwide. About 20 publications on Fisheries Finance and Management were published by FAO and fifty popular articles were published in various magazines.

21. Somnath Choudhury

Agricultural Advisor, Maharashtra, India

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Mr. Choudhury is a competent, diligent and detail-oriented professional with strong academic credentials: M.Sc (Agri)– Agrometeorology coupled with B.Sc. (Ag) from Indira Gandhi Krishi Vishwa Vidyalaya, Raipur, offering a gratifying career span of over ten years in the field of agricultural research, extension and projects. Currently, he is spearheading a project on Establishment of Climate Change Network in Indian Agriculture. With functional exposure to optimal utilization of available resources, versatile leadership and mentorship, ability to build team cohesion, inspire and empower individuals to strive toward ever-higher levels of achievement, he is now spearheading functions as State Agricultural Advisor in Maharashtra Government.

Mr. Choudhury displayed credentials in managing NGOs, initiating and managing the projects including financial aspects, undertaking extension and networking with different stakeholders like community, NGOs, government organizations, and international agencies. He enjoys the rare balance of innovative edge and technical competence, combined with strong ideological acumen and executive-level capabilities. Professional record demonstrates successful and enriched association with renowned educational/research institutes.



22. Basavaj Honnappa

Manager, Vrutti, Karnataka, India; Email: basavarajkh@gmail.com; Mobile: +919019011219

Mr. Honnappa is working as Manager, Vrutti, Karnataka, India. He completed his post-graduation in Microbiology from Gulbarga University, Gulbarga. He has done a PG diploma in ecology and environment from Indian Institute of Ecology and Environment. His domain of experience and expertise covers the thematic areas of Natural Resources Management (NRM), Sustainable Farming, Watershed Development and Management, Livestock Development, Integrated Water Resources Management (IWRM), Community Organisation, Project Management, Evaluation and Documentation. He had provided support to the institutions in preparing project proposals, suitable assignments for generating funds, formulating training modules and develop educational materials on the trainings, monitoring the progress of work, organize reviews and supervise project teams, guided the project team for planning, implementation, monitoring, capacity building of the team and fund management.

Honnappa has 22 years of experience in social development mainly in rural parts of India. His experience provided him with an opportunity to work with a range of different stakeholders from community-based organisations, non-governmental organisations (BAIF, Outreach and Prawarda), district, state and central governments (GOI, GOK, ZP, TP), National (NABARD, GOK, Watershed Department, Agriculture Department, JSYS) and international funding agencies (SDC-IC, SCAIF, FORD Foundation, European Union, Missereor).

23. Dr. M. Gunasekaran

Landscaping Consultancy Manager, Green Paradise, Tamil Nadu, India

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Dr. Gunasekaran has his own Landscaping Consultancy. He is involved mostly in landscape designing, horticultural activities, gardening activities- lawn, rock garden, lilly pond, hedge, waterfalls, and fountain. He obtained his PhD in botany from Salim Ali Centre for Ornithology and Natural History of Bharathiar University, Coimbatore, and his M.Sc. (Botany) from Annamalai University, Chidambaram. He had completed several trainings and diploma courses in horticulture nursery management. He had a total of 14 years' experience in research field. He started his career as a Research Scholar at Salim Ali Centre for Ornithology and Natural History, Coimbatore. He had successfully completed several landscaping/arboretum projects of Indian Navy, Indian Oil Corporation, District Collectorate, and other governmental organizations.

He acted as a principal investigator of projects concerned with the taxonomical studies of the flora and fauna in Noyyal river basins, assessment of crop pattern change and flora

and fauna in Sultur small tank area, Palladam Taluk, funded by Public Works Department-WRO, Government of Tamil Nadu, studies on sustainable collection methods of MFP's and selected medicinal plants in Coimbatore, Gudalur, Nilgiri North and Sathiyamangalam Forest Divisions, status survey on globally threatened *Cycas circinalis* L. in Sathiyamangalam wildlife sanctuary and forest division, socio-economic and biodiversity evaluation in Periakallipatti TAP village, Erode District, Tamil Nadu Forest Department, funded by Forest Department, biodiversity documentation of Thadiankudisai spice tourism circuit, Kodai Hills, Dindigul District, Tamil Nadu, funded by UNDP and Government of India.

Dr Gunasekaran has published several research articles on conservation of biodiversity in flora and fauna. He organized several training programmes on conservation of birds and reptiles and wild life, medicinal plants and flora of forest regions of Tamil Nadu. He was one of the authors of the book entitled Birds of Coimbatore Forest Division, published by Forest Department, the Government of Tamil Nadu. He has membership of several professional bodies as Botanical Garden Conservation International, London; International Association of Botanic Gardens, Shanghai; The Palaeobotanical Society, Luknow; Indian Society for Prevention of Cruelty of Animals, Coimbatore; Fellow in Theosophical Society, Varanasi, India, and a trustee of Protect Our Environment Trust Coimbatore, India. His extra-curricular activities are in conducting and participating wildlife surveys and trekking programs in Western Ghats Region, India.

24. Kausalya Ramachandran

Principal Scientist in Geography, ICAR-CRIDA, Hyderabad, India; Email: kausalya@crida.in

Dr. Kaushalya Ramachandran is presently working as Principal Scientist in Geography at ICAR-CRIDA located in Hyderabad, Telangana, India. She had over 34 years of research and teaching experience in the area of NRM, watershed development and implementation and assessment of agricultural sustainability and climatic vulnerability in rainfed agriculture in India. She served as ICAR National Fellow from 2005 till 2016 and developed a *Framework for Evaluating Sustainability of Watershed Projects in Rainfed regions* and have developed a DSS for monitoring and evaluation of watershed projects called *Jal-DSS* using Open-source GIS, R statistics and Java. A copy of the DSS has been placed at the institute website www.crida.in/Jal-DSS.zip for public dissemination and open use.

She was a DAAD Fellow and a DAAD Visiting Scientist at the University of Saarland, Saarbruecken, Germany during 1994-1995 and was conferred Doctorate in Geography in the area of *Application of GIS and Remote Sensing for Environment Impact Assessment*. In 2006 the Indian Council of Agricultural Research, Ministry of Agriculture, Government of India, conferred Punjabrao Deshmukh Best Women Scientist Award. In 2008 the Global Land Project (GLP) endorsed her



research work on assessing sustainability of land management practices and in 2014 their research on assessing agricultural vulnerability due to climate change using time-series NDVI data composites, was awarded the Asia Geo-spatial Excellence award.

She had published many books and papers in Indian and International journals. She is an active member of several associations and networks like IHDP, GLP, DFG, DAAD, INSA, GISIndia, PERN, UNCCD, Geo-spatial World and the Indo-German Bilateral Collaboration program. Dr. Kaushalya's interest is Application of GIS and RS techniques for EIA & Use of Geo-informatics for vulnerability assessment studies under climate change scenarios. She is open to collaboration and support to NRM research initiatives.

25. Dr. Satvant Saini

Expert Field Ecologist, IORA, Ecological Solutions Pvt Ltd, INDIA
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Dr. Satvant Saini has been associated with IORA for last about one year. Prior to IORA, she has worked in Madhya Pradesh State Forest Research Institute, Jabalpur as an expert field ecologist and have 22 years of research experience in the field of forest policies, forest resources assessment, development of sustainable harvesting techniques of some commercially important NTFPs, community mobilization, provide training programmes for sustainable management of forest resources, monitoring and management of various development works, biodiversity assessment of various forest areas, inventory of grasslands in wildlife Protected Areas, floral and faunal diversity assessment, environmental impact assessment and management plan, preparation of wildlife conservation plan for various project areas. Dr. Saini has worked extensively across states (three states) namely Madhya Pradesh, Chattisgarh and Uttar Pradesh. During her research career she has published about 40 research papers in various scientific journals, also received the MP State's Young Scientist award (1989) and national scholarships, i.e., Research Associateship award of CSIR, Government of India (2003-08), Woman Scientist award of Department of Science and Technology, Government of India (2008-11). She worked in more than 22 research projects of forestry sector as a key member and has the capacity to lead the project independently.

Iran

26. Afrooz Alimohamadi

Personal Department of Agriculture and Environmental Sciences

University of Payame, Noor, Iran, Tehran

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Dr. Alimohamadi is working at Personal Department of Agriculture and Environmental Sciences, University of

Payame, Tehran, Iran. He completed his PhD from Islamic Azad University (Science and Research Branch). His research work was on "Investigation on Genetic Diversity in *Populus nigra* Plantations Using Molecular and Morphological markers". He had his Masters degree in Forestry from Tarbiat Modares University (The Faculty of Natural Resources and Marine Sciences). His areas of research interest Forest Genetic, Genecology, Biodiversity, Forest Ecology and Nanotechnology. He is also involved in teaching the courses on "Advanced Statistics Methods, Research Methods, Forest Ecology, Biodiversity, Forest Protection, Forestry, Dendrology.

Mexico

27. Dr. Humberto Gonzalez Rodriguez

Professor, Universidad Autónoma de Nuevo Leon,

Facultad de Ciencias Forestales (School of Forest Sciences), Nuevo León, México

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Dr. González-Rodríguez is working as Professor at the Universidad Autónoma de Nuevo León, Facultad de Ciencias Forestales (School of Forest Sciences), Nuevo León, México. He has received his Ph.D in Plant Physiology from Texas A&M University in 1993 under the advice of Dr. Wayne R. Jordan and Dr. Malcolm C. Drew. He teaches, in different elective courses and semesters, Chemistry, Plant Physiology, Plant Ecophysiology, Plant Nutrition and Statistics. He is currently working on water relations and plant nutrition in native trees and shrubs, northeastern Mexico, used for different forestry and agroforestry purposes. Besides, his collaborative research lines litter-fall and nutrient deposition in different forest ecosystems through different litter-fall components such as leaves and branches, nutrient deposition by means of throughfall and stemflow, litter-fall decomposition and nutrient release under different environmental conditions and forest ecosystems, stand characteristics and plant diversity indices, ruminal degradation and its relationship to leaf chemical composition, leaf pigment and wax content in different trees and shrubs, and carbon and nitrogen content in leaf tissue under different environmental conditions.

As author or co-author, Dr. Rodríguez has published nearly 120 research papers through double blind peer reviewed journals indexed in different database, edited about a dozen books and participated in 15 chapters in books of different editorial houses. Currently, he has got about 600 cites to 70 research papers.

28. Dr. Ratikanta Maiti

Visiting Research Scientist, Forest Science Faculty, UANL,



Mexico

Email: ratikanta.maiti@gmail.com

Dr. Maiti, PhD, DSc, is a renowned botanist of international repute with specialization in crop physiology and botany. He worked for nine years as a Senior Botanist in Jute Agricultural Research Institute, Barrackpore (ICAR), West Bengal, India, and for ten years as a Senior Plant Physiologist at International Crop Research Institute for semiarid tropics (ICRISAT), Patancheru, Hyderabad, India. He worked as senior professor and Senior Research Scientist in (CONACYT) for 18 years and in two universities of MEXICO for 20 years. Recently, he worked as Visiting Research Scientist in Forest Science Faculty, UANL, Mexico, especially focused on Autoecology and Ecophysiology of Woody Plant Species at Linares, Northeast Mexico. He also worked on medicinal plants used traditionally in Mexico.

Dr. Maiti has established an international network of researchers working on bio-resources and stress management. He is Chief Editor of three international journals: International Journal of Bio-resources and Stress Management, International Journal of Economic Plants, and Chronicle of Bio-resource Management. He has published more than 450 research papers and 42 books. He guided more than 70 theses including those at bachelor's, masters and doctorate levels. He received several international awards such as International Scientist Award offered by IBC, Cambridge and Ethno-botanist Award 2003 sponsored by Friends University, USA. and UNDP and gold medal for India 2008 offered by ABI. Recently, since 2016, he has been an editor of three books published by international publishers, viz., *Autoecology and Ecophysiology of Woody Shrubs and Trees*, John Wiley and Sons, *Applied Biology of Woody Plants*, American Academic Press, and *Bio-resources and Stress Management*, Springer.

29. Dr. Rahim Foroughbakhch Pournavab

Coordinator, Masters and Doctorate Programmes, Biology Faculty, UANL, Mexico

Email: rahimforo@hotmail.com

Dr. Pournavab has obtained his PhD in Quantitative Ecology, Centre National de la Recherche Scientifique (CNRS France), and Post-doctorate from Centre National de la Recherche Agronomique (INRA-France) where he developed research lines on population dynamics of vegetation in mediterranean zones. He participated as Research Scientist in the project of European Community in mediterranean region on the production of forage (1991-1992) and on the use and exploitation of plants of mediterranean zones for the production of forage for livestock with participation of France, Italy, Belgium, and Greece. He was involved in the Institute of Silviculture and Management of Renewable Natural Resources as Professor and Research Scientist of la Universidad Autónoma de Nuevo León México (1981-1990) where his main lines of research were in the inventory of forest species and

management of natural resources (thorn scrub) of northeast Mexico with special emphasis on the production of timber, fire wood and forage of trees at the regional level.

Dr Pournavab participated in twelve research projects on the domestication of species, management and exploitation of woody and non woody plants and ecological restoration of degradable ecosystem with the help of Consejo Nacional de Ciencia Tecnología (CONACYT), la Secretaría de Educación Pública (SEP), DEMARNAT, CONAFOR and local government. with participation of University of (Germany), Oxford Forestry Institute, University of Adelaide, Australia and University of Santiago of Chile. He is the founder member of Forest Science Faculty (1986) and creator of Agroforestry department of the faculty (1987). He worked as Head of the department of Agroforestry of Forestry faculty (1987-1991), UANL, Mexico Member. He is the recipient of Senior Research Scientist Award, by CONACYT and University of Nuevo Leon, Mexico for his contribution in research.

Dr. Pournavab worked as Research Advisor and Coordinator for four years in the project of research on seeds biology, genetic productions and vegetative propagation of Candelilla (*Euphorbia antisyphilitica* Zucc.) in Multiceras SA de CV industry under abiotic stress of arid zones of northeast of Mexico. He developed simple technology for plant productions and their establishment and adequate management with the objective to produce major quantity of wax in Coahuila State of Mexico. He is well-versed in adapting existing approaches and developing new technology to overcome limitations in bioenergy and forest producing (wood, firewood, fence for construction and fodder).

He executed varied livelihoods projects in timber and non-timber forest products, medicinal plants, handicraft clusters supported by the governmental organizations (SEMARNAT, CONAFOR, CONACYT) to utilize low cost technology for Research & Development and to find techniques and solutions for enhanced productivity. He has several research publications in journals, conferences/symposia/seminars, articles and book/chapter at national and international levels. He always looks forward to adopt and adapt to the new wave of research technology for its day-to-day application.

30. Dr. Julia Verde-Star

Research Professor, Faculty of Biological Sciences, UNAL, Mexico

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Dr. Verde-Staris a Research Professor in the Faculty of Biological Sciences of the UANL. She has so far directed 52 theses: Bachelors (16), masters (14) and PhD (22). She has taught at half upper, upper and graduate levels in the CBTA 50 of Anahuac, N.L., in School of Graduates of Normal Upper and in UANL, in Faculty of Chemical Sciences. She entered the system national of researchers as researcher national level II in 1985. Her line of research is natural products chemistry



evaluating the biological, antibacterial, antifungal, anti-inflammatory, cytotoxic, antioxidant or hypoglycemic activity of extracts of plants and the isolation and identification of these active principles. The basic objective of the research was to find out new options for drugs developed from the natural products. She handled several projects with financial support of CONACYT, SEP and UANL.

With a fitting PROMEP profile, Dr. Verde-Star has secured several first places with these research undertakings in state and national contests and has presented about 300 works in scientific congresses, forum, symposia and meetings in Mexico and other countries such as United States, Canada, Cuba, Brazil, Chile, Germany, and Holland. She has published more than 80 research articles and contributed to 6 chapters in a book. She was also the President of ANICyT, (Association Neolonesa of Researchers, Scientists and Technologists), President of the Chemical Society of Mexico. She has served on editorial boards of scientific journals and local newspapers, and actively participated in the doctoral committee of the UANL.

Currently, Dr. Verde-Star is a member of the Citizen Council of the Institute State of Women and Assistant Director of Services Professional in the Faculty of Biological Sciences at the UANL. She has also served as a Member of the H. Board of Government of the UANL during 1997-2008), took charge of the Secretariat for the past six years and served as the President, 2005 - 2008. She belongs to the Group of Founder Teachers of the postgraduate course in the School of Biological Sciences where she held the position of Director of the Graduate School for 17 years (1989-2006). She has contributed to the creation of the first doctoral program in the faculty of biology and also in the faculties of nursing, chemical science and physics and mathematics at the UANL. She has participated actively in the training of biologists, chemical bacteriologists, parasitologists, bachelors in food science, master in sciences and doctors of sciences in the field of chemistry of natural products and biotechnology.

Nepal

31. Dr. Ek Raj Ojha

College Head, GEMS Institute of Higher Education (GIHE), Kathmandu, Nepal

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Dr. Ojha is currently working as College Head at the GEMS Institute of Higher Education (GIHE) in Kathmandu. He completed his PhD (1995) and MSc (1990) both in Rural and Regional Development Planning. He has gained extensive professional experience working for many reputed educational and development institutions in Nepal and abroad. He is the recipient of World Who Is Who Medal (for contributions made

as an outstanding talented achiever in the field of Ecosystem and Human Society Development) from Who's Who Institute, California. Dr. Ojha has published over half a dozen books and many research articles. He has travelled widely and presented papers at several international/world conferences on issues concerning development.

Dr. Ojha was the Founder Chairman of Centre for Rural Research and Development, Lalitpur, Nepal. He worked as Visiting Professor, 2003-2015: Sustainable Development for MSc (Climate Change and Development); Sustainable Rural Development for MA (Rural Development); Rural Development, and Rural Development and Conservation for MSc (Natural Resources and Rural Development) at Tribhuvan University; Managerial Economics for MBA, and Economic Planning and Policies for BBA study programs at Sikkim Manipal University; Microeconomics for BBA program at American International University; Economic Development, and Nepalese Economy for BBA and BBS programs at Kathmandu University; Policy analysis; community development, forestry resources studies at Indiana University, Bloomington. As Associate Director of Human and Natural Resources Studies Centre of KU, he coordinated academic, financial, and management activities for creation and operation of the Centre and for MA (HNRM). He also held the posts of Development Economist, USAID, Kathmandu; United Nations Researcher, United Nations Centre for Regional Development, Japan; Head of Economics Faculty, and Extended Essay Coordinator, IB Diploma Program, Kathmandu.

Till 2003, Dr Ojha was Senior Associate Professor at KU and taught Environmental Economics for MSc (Environmental Science), Entrepreneurship for BEngg (Computer; Electrical; Mechanical) and B.Sc. (Env Sc; Pharmacy), Human Dimensions of Development for MA (Human and Natural Resources Management) students. He had undertaken training courses in monitoring and evaluation of agricultural and rural development projects, project analysis, agricultural project planning, computer application, institutional analysis and design, forestry resources, and environmental economics for development policy. Dr. Ojha has supervised over 100 postgraduate research works on various dimensions of (rural) development.

Dr. Ojha bears membership in many national and international institutions and served several times in the advisory committee of World Futures Studies Federation. As Development Planning Advisor (West Seti Hydroelectricity Project, Nepal) for ADB/Manila and as Senior Development Consultant / Team Leader, he was actively involved in community development; reproductive health; integrated rural settlements planning and management; land conservation and soil fertility management; solid waste management; livelihood improvements in refugee settlements; poverty alleviation); curriculum development – development economics, rural development, human and natural resources management; promoting agriculture; and



access to justice. During higher education days, he served as President for two consecutive terms, Editor of *Everest*, and *ASTECH* magazines; *Chairman*, Literary and Publications Committee; *Representative*, Human Settlement Department Program, AIT.

32. Thakur Prasad Pandit

Project Coordinator, Ministry of Population and Environment, Nepal

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Mr. Pandit is working as Project Coordinator for Thematic Lead for Public Health and WASH: National Adaptation Plan (NAP) Formulation Process, Ministry of Population and Environment, since May 2016, providing support towards reducing climate change vulnerability and integrate the adaptation measures into the development planning processes. He completed his MA (Anthropology) from Nepal in 2004, and Master of Civil Engineering (Water and Sanitation) from Ukraine in 1990. He worked as Civil Engineer in the Department of Water Supply and Sanitation, Government of Nepal (1991 – 2013) and was involved in survey, design and implementation of water supply and sanitation projects in rural and urban contexts.

Mr. Pandit has extensive experience and knowledge in rainwater harvesting, water quality improvement systems, environmental sanitation systems. He was engaged specifically in policy and field level assignments, and completed over 50 WATSAN projects during his tenure in the government service of 22 years, specifically in sanitation related programs, ecological sanitation for conservation of the nutrients available in the human waste. He also worked as Senior WATSAN Engineer: International Centre for Environmental Management (ICEM), 2013-2015, Hanoi, Vietnam, two projects in Nepal viz., mainstreaming climate change risks in infrastructure development planning; and technical assessment of traditional water sources. As a Regional Coordinator: Nepal Climate Change Support Program (2015-2016), Government of Nepal, he worked for technical backstopping, monitoring and quality assurance of Local Adaptation Plan of Actions (LAPAs) in four districts in areas relating to health, forestry, disaster prevention/control, agriculture, irrigation, water supply, and sanitation.

New Guinea

33. Isimel Aquila Tuembe

Disaster Officer, Papua New Guinea; Email: isimel2011@hotmail.com

Mr. Tuembe is currently working as a Disaster Officer (Humanization Coordinator with Oxfam, Papua New Guinea). He has strong background knowledge and understanding in Fisheries Management (Bachelor in Fisheries Resource Management) and Climate Science (Post-graduate Diploma in Climate Change). Working in disaster and humanitarian

field, he is trying to link it with the management of natural environment so that they pave the way for the protection and sustainability of the natural resources.

Greece

34. Dr. Valasia Iakovoglou Dimotikou Stadiou

Forest Scientist, USA; E-mail: viakovoglou@yahoo.com

Dr. Stadiou's educational and research experiences are related to forest science with emphasis on tree responses with an application to ecological issues. Specifically, he had investigated tree physiological responses as affected by the immediate biotic and abiotic environment under laboratory and field (natural and managed) conditions. His Master's research was in urban forestry. Specifically, he studied the influence of anthropogenic impacts on tree growth for a large number of tree species as reflected by the influence of their immediate environment. The study was based on spatial sampling according to a human population gradient that was conducted in five mid-western states of USA.

Dr. Stadiou's PhD investigation was on the impact of seed sampling by selecting specific parents and seed sizes on the physiological and morphological characteristics of the produced seedlings in order to improve seedling quality for more successful reforestation and restoration efforts. This work benefited people who were associated with seedling production and restoration since it showed that proper genetic seed sources and specific seed sizes should be a priority to grow suitable seedlings for field plantings in order to properly restore and conserve biodiversity in ecosystems.

He also investigated the effect of altered atmospheric conditions on the metabolism of recalcitrant seeds and their further seedling performance. Since his graduation he had continued his research activities by being involved in many diverse projects. Many of those focused on climate change and innovative ways for restoration and conservation of forest ecosystems by studying trees, with emphasis on biodiversity issues, particularly for highly vulnerable ecosystems such as protected areas. Specifically, one of the projects (IKYDA "NESTOS-Water") investigated the effect of climate change on biodiversity levels and plant performance for the NATURA (protected areas of European Union) riparian areas of the Nestos River Delta. Another project (LIFE09 NAT/GR/000326) emphasized on maintaining biodiversity levels through innovative seedling production techniques that increased the quality and quantity of the transplanted seedlings and ultimately improve the regeneration success for 26 forest species at three highly burned sites. In another project, the biotic and abiotic factors were studied in relation to the production levels of agricultural and forested ecosystems (CORPERATION NSRF "VALASIA").



Further, the effect of climate change was also investigated based on plant responses under controlled altered light quality levels (FP7-SME, "REGEN-FOREST"). Furthermore, he was also involved in a policy decision-making project in regards to biosafety of forest transgenic trees, where more than 25 courtiers participated in order to address ecological implications on the introduction of GMTs in plantations (COST "Action FP0905"). In addition, he had many years of teaching experience in both undergraduate and graduate courses. At the undergraduate level, he was responsible for courses like Plant Physiology, Plant Morphology/Anatomy.

New Zealand

35. Shane Orchard

Natural Resource Scientist & Policy Analyst, New Zealand

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Mr. Orchard is an environmental researcher in water resource management specializing in integrated coastal and river basin management. His experience includes over 20 years in environmental science, policy analysis, and applied research. His particular area of focus is on approaches to bridging the science-policy interface. Research interests include the application of ecosystem and community-based approaches to natural resource issues. He has worked extensively on the management of land-water boundaries and more recently on freshwater-saline interfaces to develop management solutions in environments where cross boundary thinking is essential.

Mr. Orchard completed his Master's in conservation biology, eco-toxicology, in 1994, and B.Sc. in biology, and chemistry. He has also done a Post-graduate Diploma in Maori Resource & Environmental Management, 2009 from Massey University. He is an expert in networks, viz., IUCN Commission Member Commission on Ecosystem Management, IUCN Commission Member World Commission on Protected Areas, IUCN Geo-heritage Specialist Group, IUCN Ecosystem Services Thematic Group, International Association for Landscape Ecology Policy Working Group.

He also hold a memberships in research groups viz., Waterways Centre for Freshwater Management, University of Canterbury and Lincoln University, New Zealand, Marine Ecology Research Group, University of Canterbury, New Zealand, Ngāi Tahu Research Centre, University of Canterbury, New Zealand and Professional Memberships in Environment Institute of Australia and New Zealand, New Zealand Association for Resource Management, Institution of Professional Engineers of New Zealand. He is affiliated also to International Association for Impact Assessment and Society for Conservation Biology.

Philippines

36. Evans Ndadzungira

Volunteer in Ecosystems Works for Essential Benefits, Philippines

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Mr. Ndadzungira, currently working as a volunteer in the Philippines, has completed BSc (Honors) in Wildlife Management from Chinhoyi University of Technology, Zimbabwe. As a Volunteer, he is involved in the protection, conservation and management of watersheds and forest ecosystems. He is working with a local NGO called Ecosystems Work for Essential Benefits and is involved in the formulation and implementation of watershed management plans in the Philippines in partnership with the Department of Environment and Natural Resources. His interests are mainly directed towards the conservation of both aquatic and terrestrial ecosystems for the development of socio-economic well being of poor rural communities to address the climate change related effects on the livelihoods of rural communities. At the moment he has been working towards helping communities with climate resilient projects, mainly on agroforestry and ecotourism for livelihoods so as to alleviate poverty

Russia

37. Natalya Sergeevna Ivanova

Senior Researcher of Botanical Garden of the Urals Branch of the Russian Academy of Sciences, Yekaterinburg 620144, Russia; E-mail: i.n.s@bk.ru

Ms. Ivanova has been working at the Botanical Garden of the Urals Branch of the Russian Academy of Sciences for more than 20 years. Sustainable forest management, biodiversity of forest vegetation, impact of climate change on forest ecosystems, reforestation after felling and fires, modeling of forest stand impact on the subordinate layers, modeling of forest ecosystem dynamics are main directions of her research. She is actively involved in developing a new methodology – a synthesis of ecology and synergetics. Several objective quantitative methods have been developed for evaluating stability of forests which allowed forecasting the forest dynamics and reforestation. These approaches are universal which could be used for all forests of the world in order to construct quantitative models of real situations, to forecast vegetation structure changes, as well as to plan for sustainable environmental management.

38. Ekaterina Sergeevna Zolotova

Chemist and Researcher, Botanical Garden of the Urals Branch of the Russian Academy of Sciences, Russia; E-mail: afalinakate@gmail.com

Ms. Zolotova is working as a Chemist and PhD Researcher at the Laboratory of Population Biology of Tree Species and the Forest's Dynamics of the Botanical Garden of the Urals Branch of the Russian Academy of Sciences. She completed her graduation from the Chemistry Department of the Ural State University. Her field of specialization is Environmental



Chemistry, Chemical Expertise and Environmental Security and her dissertation of research work is Typological Features of Vegetation and Soil in Zauralsky Hilly Piedmont Province. Her research interests are in ecology, forestry, soil science, phytosociology, biogeochemistry, classification and typology of forest ecosystems, natural and anthropogenic dynamics of forest vegetation, sustainable forest management, mathematical modeling and forecasting.

Serbia

39. Sinisa Jovanovic

President, National Forestry and Related Sectors Cluster, Serbia

Email: stratmen.sinisa@gmail.com

Mr. Jovanovic is working as President, National Forestry and Related Sectors Cluster, Serbia in an NGO, linking civil sector organization and institutional forestry organizations in Serbia. They develop their activities in "everything in and around forest" which includes sustainable resource management, alternative energy, agroforestry and rural development.

One of his strongest areas of interest is forest fire protection based on ground and aerial monitoring with drones. He developed a fixed wing drone with 3-4 hours flying time specialized for forestry monitoring. He also explored usage of rotary wings aircrafts as a supplementary possibility. He established National Unmanned Aerial Vehicles Cluster (bespilotne.org) to support development of drone usage and related legal framework. As a result, flying of drones is fully regulated which a good basis for further development of remote sensing.

Mr. Jovanovic had a wide network of nature protection NGOs across Serbia and strong support in the area of climate changes. He is also a member of the Serbian Rural Development Network where he tried to contribute to better management of private forests as a part of rural development. He is much interested in networking with other EU countries and significantly contribute to the development of the remote sensing using different aerial devices.

Synthesis from Profiles

From the profiles enlisted above, it is found that about forty professionals from eighteen countries across the world have wide range of experiences in different specializations. Most of them specialize in forest science, a few in crop and plant physiology, very few in chemistry, and one in development planning. The countries represented include: Australia, Bangladesh, Cameroon, Gambia, India, Kenya, Iran, Malawi, Mexico, Morocco, Nepal, New Zealand, Papua New Guinea, Philippines, Russia, Serbia, and Zimbabwe, revealing a large diversity in education, experiences, and geographical regions. Their experiences range from three to 25 years and some of them are seasoned experts in

their own area of specialization. Most of them have science background: agro-climatologists, technical scientists, chemists, engineers, ecologists, silviculturists, agro-climatologists, tree and crop physiologists. The areas of specialized covered include climate change effects, modeling carbon stock, carbon sequestration, ecology, silviculture, natural resource management, rural/regional development, biochemists, wild life conservation, and so on. They are working on vast arrays of plants and crops adapted in wide range of climatic regions starting from tropical, arid, semiarid and temperate cool climates.

There is a great necessity and possibility to harness the vast repository of the knowledge and experiences the presented professionals possess. We feel strongly that extensive training should be given to school children, forest science specialists, foresters to take effective measures for conservation and sustainable use of bio-resources. We need them to adopt suitable strategy for efficient conservation and sustainable use of bio-resources. Insignificant attention has so far been directed to biotic and abiotic stresses affecting bio-resources and this anomaly must be overcome. For instance, intensive plantation of trees preferably with high carbon sequestration capacity should be undertaken to reduce HGGs and global warming.

A multidisciplinary approach to conservation and sustainable use of bio-resources should be adopted for which an integrated and concerted contribution of professionals from diverse and interrelated subject areas is essential and most valuable. We should therefore have more and more contributors from across the world and that is expected to happen in the network through production and distribution of this publication.

Some Bio-resources Management Related Brief Viewpoints

Natalya Sergeevna Ivanova

In the process of constructing of a generalized model of vegetation formation on clear-cuts, we introduced the basic concepts and equations of the theory of catastrophes, following the sequence of analysis and building a mathematical model. A combination of theoretical assumptions and experimental data enables us to construct a quantitative mathematical model that takes into account regional and habitat peculiarities of vegetation dynamics after clear-cutting. This model allows you to make quantitative predictions of real situations. Within the framework of a catastrophe theory, we have formalized the existence of alternative lines of successional dynamics (cuttings and forests) in a habitat, and we have proposed quantitative methods for assessing recovery sustainability, providing an informed prediction of the state of the objects described. One of these methods is the construction of potential functions.



Local and global stability of the forest ecosystem is determined by type of the potential functions (presence of minima and maxima). Another method is the calculation of the distance from the separatrix. The farther the system is located from the separatrix the less likely a change of state. Our calculations show a satisfactory agreement of theory and experimental data. This reflects the perspectives of the catastrophe theory for describing, analyzing and forecasting forest ecosystems dynamics, sustainability assessment and crises identification. Our work will initiate a multidisciplinary approach to study forest vegetation dynamics, which provides a reasonable prediction of the state of the objects described. Our approach is universal and can be used for all forests of the world in order to construct quantitative models of real situations, to forecast vegetation structure changes, as well as to plan for sustainable environmental management.

Basava Rao

Ways to conserve bioresources

Based on my experience of the past 25 years working on natural resources with communities in rural parts of India (Karnataka, Telangana, Maharashtra, Gujarat and others), I wish to put forward the following points:

Importance of conserving the bioresources

The life and livelihoods of the human beings, animals and any creature on the earth depends on bio-resources such as soil, water, and vegetation. All these resources are interdependent. If one is spoiled or exhausted others will naturally get spoiled or become unproductive. For example, if water resources get reduced, it will lead to reduced trees and in turn soil will not be much productive and loss of soil will be more. Once the bio-resources are exploited or exhausted the life on earth will be under threat.

Causes of bioresources reduction

- Lack of awareness on conservation, management and better use of bioresources.
- Overuse for the sake of luxury and earn money (for example, creating artificial habitats and removing the forests to create massive farm lands cutting valuable trees to earn money, killing tigers elephants for sake of animal parts)
- No obligation on conservation of bioresources in private farm lands. They are all subsidized and supported under the government schemes and projects.
- No strict adherence to the laws already existing in the country (for example every 30 x 40 site house owns a bore-well and draws water in whatever the way they can. As per law there should be a minimum of 100 m from one bore-well to another and also every 3-5 acre farm lands having their own bore-wells for irrigation).
- Use of excessive chemicals is changing soil flora and fauna and poisoning the soil and the food, fruits and vegetables

grown in it.

Ways to conserve bioresources

- Bioresources (water, soil and vegetation) owned by private farmers are also considered as common property resources. The farm owners should use them more productively and not overuse them.
- There are two types of lands, one is common (government owned) and another is private (owned by individuals). Common lands are managed by government. The government has to focus on bio-resource conservation in government lands and the private land-owners should also be made responsible for conserving bio-resources in their own lands. There should statutory obligation to maintain minimum number of trees (at least 100 large trees aged 8-10 years in each one hectare of land, based on local suitability). On private lands, the private land-owners should create rain water harvesting structures based on their water consumption requirements for the crops. For example, if the farmer is growing paddy and using x liters of water for the crop, he should create water harvesting structures on his field to harvest rain water. This should be made obligatory.
- Payments for the conservation done by individual farm owners. The individual farm owners who are maintaining minimum number of trees are to be financially compensated for conservation based on number age of trees. The forest laws in India are not much conservation-friendly.
- Farm owners who are overusing water and not making conservation structures should be penalized and charged for the water use.
- Planting a minimum number of trees within farm boundaries should be made obligatory. All farm subsidies or support from government should be stopped for non-compliance.
- Strict rules must be enforced to stop tree felling. In India, road widening projects are felling 100-150 year old trees all along the highways.
- Strict action on saw mills and also farm owners or individuals should be taken for felling a tree without reason.
- Water management methods such as mulching, fodder grasses plantations, and wind breaks are to be created.
- Organic farming, sustainable agriculture practices and integrated farming models are to be adopted on individual lands for sustained livelihood of farming families since many farmers have been perceiving farming as not being a viable option for their livelihoods and almost 10 percent farmers have left farming in the past one decade. Animals (goats, sheep and dairy animals) should be component of sustainable agriculture.
- Subsidized electricity in India in some states like Telangana and Karnataka is also causing excessive extraction and use of ground water.
- Forest laws in India are not farm-friendly. A farmer growing sandal tree should be given permission to grow and cut it after maturity without any legal hassle.



- Watershed-based approach and ridge to valley approach to soil, water and vegetation conservation have proved to be successful. Such models are implemented on loan-basis not on grants.
- Involving community, creating awareness among grassroots level village farmers, creating business models and linking to the market can make bio-resources conservation methods and strategies successful.

Shane Orchard

Effective methods are those that address the underlying factors contributing to the vulnerability of bio-resources at each of the levels of biodiversity of interest. To be sustainable, such methods must recognize the social dimensions of the environment. The most effective methods will therefore be those that socialize or build upon existing conservation ethics across all communities of interest, thereby securing motivation, buy-in, and a shared interest in achieving conservation objectives.

Thakur Pandit

The waste products at household level are not being fully utilized for economic benefits. There is a large scope of utilization of the locally generated waste materials. So is the scope for innovation and action for improvement of the livelihood at the marginalized communities.

The human waste (urine and fecal matters), if managed and treated properly, is one of the best examples of bio-resources awaiting proper utilization for agriculture. There are already technologies developed and promoted to build on for mass promotion. The innovation is required for devising strategies and socio-economic tools that could help to motivate the marginalized communities for proper utilization and taking sustainable benefits from human waste at the household level. The cultural and institutional barriers are to cross leaving a large space for innovation.

An assessment of existing and potential bio-resources at the community level will be an entry point for supporting local people to appraise and utilize their lost or underutilized waste products. So innovations need to start at community level.

Annex – I

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