



Environment

Climate Change Community



Gender Community

Solution Exchange for the Climate Change Community

Solution Exchange for the Gender Community

Consolidated Reply

Query: *Understanding migration and global environmental change nexus in India - Advice*

Compiled by [Ramesh Jalan](#), and [Malika Basu](#), Resource Persons

Issue Date: 03 March 2014

From Vandana Aggarwal, Economic Advisor, Ministry of Environment and Forests (MoEF), Government of India, New Delhi

Posted 12 February 2014

I am pleased to initiate a discussion that will throw light on the nexus between migration and global environmental change in India. As Economic Adviser to the Ministry of Environment and Forest (MoEF), Government of India, I am trying to understand better how migration is being influenced by global environmental change; and what policies we need to develop and review so that the nexus is addressed.

Addressing this nexus between Migration and Global Environmental Change in India, UNESCO, the UK Government Office for Science (GOS) and the UK Department for International Development (DFID) are holding a two-day workshop on 4-5 March 2014 in New Delhi. The workshop will explore how the findings of the GOS Foresight report "Migration and Global Environmental Change" (MGEC; 2011; available at <http://www.bis.gov.uk/assets/foresight/docs/migration/11-1116-migration-and-global-environmental-change.pdf>) and other analysis, could inform the thinking of key stakeholders in policy, academia and civil society with a specific interest in this topic.

In particular, the workshop will involve key sectors including planning, environment and forest, rural development, urban development, disaster management, science and technology, tribal

affairs, labour, agriculture, water resources to raise awareness and increase knowledge on the challenges and opportunities that need to be addressed.

The concept note on the above workshop is available at: ftp://ftp.solutionexchange.net.in/public/clmt/resource/res_info_12021401.pdf

Climate change is one of the more pronounced pathways through which global environmental change will express itself. There has been a growing focus on adaptation to climate change in India after the roll out of the National Action Plan on Climate Change (http://pmindia.nic.in/climate_change.php) and the subsequent state level action plans of various states. Climate change adaptation is multi-dimensional and involves the sectors such as agriculture, health, urbanization, water resources among others. Conversely adaptation planning has been routed through various ongoing programs and policies of these ministries. There is however lacunae in acknowledging the nexus between climates change adaptation and migration.

An interdisciplinary and multi-stakeholder approach is required to find solutions for the migration and global environment change nexus and capacities in diverse areas such as sustainable urbanization, climate change adaptation, conflict resolution and humanitarian assistance. This discussion that I have initiated aims to explore points in the current legal and political framework to mainstream migration influenced by global environmental change concerns so that new policies are resilient to a wide range of changes.

Keeping in view the above, I invite members of the Gender Community, Climate Change Community of Solution Exchange and Gender, Youth and Migration (GYM), sub-community of practice of the Gender Community to kindly respond to the following:

- What are the probable pathways through which global environmental change in general and climate change in particular will affect the drivers of migration in India?
- How can migration concerns, be incorporated into various policies and programs of the government that are relevant for climate adaptation?
- What are some of the key gender issues that we need to address while looking at the migration-global environment change nexus?

Responses from members will help to complement the learning from the workshop in furthering the understanding of the nexus between migration and global environmental /climate change.

Contribution of members would be suitably acknowledged by UNESCO. It will also be useful information for MoEF.

I look forward to an engaging and informed discussion.

Responses were received, with thanks, from

1. [Abhishek Mendiratta](#), Jupiter Knowledge Management and Innovative Concepts, New Delhi
2. [Mrinal K Nath](#), Disaster Risk Management Specialist, New Delhi
3. [G Nirmala](#), CRIDA, Hyderabad, Andhra Pradesh, [response1](#); [response 2](#)
4. [Ramesh Kumar Jalan](#), United Nations Development Programme, New Delhi; [response1](#); [response 2](#)
5. [Pradeep Mohapatra](#), UDYAMA, Bhubaneswar, Odisha
6. [Pushpa Achanta](#), Bangalore, Karnataka
7. [Dilruba Haider](#), Climate and Disaster Risk Reduction Community, Solution Exchange Bangladesh, UNDP Bangladesh, Dhaka, Bangladesh

8. [Dipankar Dasgupta](#), DISHA, Kolkata, West Bengal
9. K V Peter, World Noni Research Foundations, Chennai, Tamil Nadu; [first response](#), [second response](#)
10. [Komal Kantariya](#), Gujarat State Disaster Management Authority, Gandhinagar, Gujarat
11. [Swayamprabha Das](#), New Delhi
12. [Krishnan S. Raghavan](#), Technology Transfer Services Group, Asian and Pacific Centre for Transfer of Technology (APCTT), United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), New Delhi
13. [Jai Kumar Gaurav](#), New Delhi
14. [Nibedita Phukan](#), Centre for Health and Social Justice, New Delhi
15. [Maroti Upare](#), Mumbai, Maharashtra
16. [Deva Prasad M](#), Prasadam, Thrissur, Kerala
17. [Anupama Vijayakumar](#), Centre for Social Justice, Ahmedabad, Gujarat
18. [Ahana Lakshmi](#), The Resource and Information Network (TRINet): for the coast, Chennai, Tamil Nadu
19. [Ranjan Panda](#), Water Initiative Odisha, Odisha
- *20. [Laxmi Kant Dadhich](#), Kota, Rajasthan
- *21. [Rambha Mohan](#), Associate-Professor, Chemical/Environmental Engineering, Hyderabad, Andhra Pradesh

**Offline Contribution*

Further contributions are welcome!

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Summary of Responses

It is important to mainstream environment and climate change considerations into migration management policy and practices, and to bring forced migration issues into global environmental and climate change discourse.

Probable pathways through which global environmental change in general and climate change in particular will affect the drivers of migration in India

Some of the pathways through which global environmental change would influence and shape various drivers of migration in India are based on:

- Uncertainties associated with the frequency and intensity of extreme weather events, leading to both short-term and long-term migration.
- Effects of warming and drying in some regions has reduced agriculture potential and undermined 'ecosystem services' such as clean water and fertile soil that is adversely affecting livelihoods, particularly in rural areas which is further exacerbated due to lack of adequate market opportunities and financial support for the prevalent livelihood systems to readjust and rebuild.
- [Coastal livelihood systems](#) (e.g. Gujarat, also in [multiple countries](#)) are witnessing unprecedented changes and decline because of changes in the oceanic ecosystem,

- unsustainable practices for fishing, fluctuating market, sea level rise and natural disasters triggering large-scale out-migration of fishing communities.
- The flash floods of 2013 in the Himalayas have posed a serious threat to a whole array of vibrant and well thriving livelihoods including pilgrimage tourism.
 - Competition over resources and opportunities and the tension between locals vs non-locals/outsideers would increase the vulnerability of migrants.
 - Forced/distressed migration in the context of emerging humanitarian situations in the Maoist affected regions of India, which are coincidentally some of the most natural resource rich regions, poses unprecedented challenges to deal with the internally displaced population (IDP). Finding no assurance either from nature or humans, people are forced to migrate with kith and kin for longer periods.
 - In the coming months, about 1.5 crore farmers who quit agriculture in the past seven years, are likely to trudge back into the villages. Economists are taking this U-turn as a sign of economic slowdown.
 - The rapid rate of urbanization in India and the expanding economic opportunities, attracts and absorbs a large chunk of migrants from rural India.
 - With forest cover depleting, primarily indigenous communities are being displaced and resettled in a hostile environment.
 - For Environmental / Climate Change related disasters people get displaced within the border of their own countries. However, some movement does happen cross border, especially between Bangladesh and India, mainly because of the familial pull factor.

Addressing gender issues in migration-global environment change nexus

Climate is not biased towards any gender; the society, the culture, and the systems are. Climate change is a major threat to sustainable development. While the worst affected are likely to be the poor and the marginalised; women in particular, the intensity of their suffering will be much more. The reasons being, women have to shoulder the burden of household chores, including fetching water and caring for cattle with minimum and rapidly depleting resources; their work load is accentuated by the higher percentage of rural to urban male migration due to financial insecurity in rural areas. Also, issues related with reproductive health will increase due to poor diet; there will be a likely increase in child malnutrition as well.

In many areas of Bundelkhand region of [Madhya Pradesh](#), most men migrate to urban areas in search of livelihoods; women, old age people and children are left behind. In this region, women are deprived of the capacity to cope or learn about their vulnerabilities or rather, being kept out from accessing information. Women from this region also face constraints - both mobility and behavioural restrictions.

The point is, while climate change affects both genders; it does so in different ways. Women and men face dissimilar vulnerabilities due to the different social rules. The vulnerability and capacity of a social group to adapt to climate change depends greatly on the accessibility to assets, resources, knowledge, technology, power, decision-making potential, health, education and food. The more assets people have, lesser is the vulnerability that they face. Several research studies have proven that women tend to have limited access to assets as compared to their male counterparts.

Therefore, climate change and migration certainly needs to focus on women's issues, since their risks and vulnerabilities as well as their resilience are different from men's.

Also, it has been predicted that by 2050, climate change could result in plant species extinctions ranging from 18 - 35%. The potential effect will be vast reduction in the bio-diversity and traditional medicine options. Women often rely on traditional medicine and crop diversity for any

climatic changes and any variability and/or permanent reduction will impact on food security and health.

Migration due to environmental/climate change is as real in India as in any other developing and least developed country. There is an urgent need to adopt a gender responsive approach towards environmental / climate change policies and actions to improve access to skills, education and knowledge. Support is needed at every step to build capacities of women to help them raise their voice and develop their true potential.

Incorporating migration concerns, relevant for climate adaptation, into policies and programs of the government

Extreme climate events, be it the result of man-made environmental destruction, or naturally occurring changes in climate, are forcing people to flee their traditional place of residence with enormous sufferings in points of transit and the points of destination. Climate change is likely to lead to increase the number of climate refugees. It is thus vital that evolving frameworks for climate change adaptation address this issue.

In light of the looming climate migration crisis, many international humanitarian organizations, CSOs and, even the governments of the at-risk countries are demanding protection and resettlement of the forced migrants. Migrants not only need material support but a great deal of rehabilitation in terms of trauma and cultural dislocation.

Understanding the choices, trade-offs and opportunities is essential to design policies which harness the potentials of migration in a changing environment and climate scenario and build the resilience of the migrants and their families. It is pertinent to point out that [migration, NREGA schemes and agriculture are closely related](#) and policies regarding these need to be integrated in a coherent manner.

Further, there is a need for cooperation between countries of the region especially in terms of early warning and sharing of experience, knowledge, and technical expertise. So, while the talk is about environmental / climate change and possible migration, there is a need to evolve policies for regional cooperation between governments, and practitioners as well.

Equally important is to mainstream environment and climate change considerations into migration management policy and practices; and to bring forced migration issues into global environmental and climate change discourse at the national, regional and international level as it poses technical or managerial challenges or presents political challenges.

A public policy research and advocacy group is required on an urgent basis to suggest plans, policies and programs to tackle the challenge of environmental / climate change and migration. For example, [Centre for Policy Research](#) (CPR) has a team focusing on climate change related public policy and is advocating for measures to enhance disaster risk reduction and climate change adaptation in India.

Given the current gaps in appropriate migration policies, more attention needs to be placed on identifying and testing new frameworks for managing potential movements. Attention needs to be given to both sides of the environment change and migration nexus by identifying adaptation strategies that allow people to remain where they currently live and work; emphasizing migration and relocation strategies that protect people's lives and livelihoods.

In view of the migration and vulnerability pattern in coastal areas, it is suggested that the norms of implementation of the [Coastal Regulation Notification, 2011](#) are tightened; rigorous monitoring of the implementation of [Water Act, 1974](#), [Hazardous Substances Notification](#), in view of

depletion of natural resources undertaken. Further, evolution of a legal framework to establish community rights over natural resources is the need of the hour.

Land allotment for coastal communities needs to be included in the [National Land Use Plan](#), [National Land Reform Policy](#), and [National Resettlement and Rehabilitation Policy](#). From the point of view of Socio-Economic Rights, ensuring Right to Food and Right to Education of migrating families is essential.

Comparative Experiences

Gujarat

Migrating Families in Coastal Areas in search of Livelihood and basic needs (from *Anupama Vijayakumar, Centre for Social Justice, Ahmedabad, Gujarat*)

Centre for Social Justice commenced a Coastal Rights program along the coast of Saurashtra. Their visits to villages like Junagadh and Veraval reveal that in certain places, the water near the shore has become warmer than before; the fishermen have to venture out into the deep sea to find substantial fish stock. Many migrate to other coastal areas in search of fish stock. The smaller non-mechanized boat owners, who previously derived their livelihood from fishing around the shores, are out of occupation. The migrating families in coastal areas in search of livelihood are denied the benefits under the Food Security Act and Right to Education Act.

Madhya Pradesh

Women and Men Face Dissimilar Vulnerabilities (from *Nibedita Phukan, Centre for Health and Social Justice, New Delhi*)

In many areas of Bundelkhand region of Madhya Pradesh, most men migrate to urban areas in search of livelihoods. Women, old age people and children are left behind. In this region, women are deprived of the capacity to cope or learn about their vulnerabilities. Women from this region are facing constraints on both mobility and behavioural restrictions. Women and girls in this area face severe droughts and acute water shortage at a much higher scale because they are the primary water collectors, users and managers of water. The decreasing water availability may have secondary effects like less attendance and lower enrolment of girl children in schools. It may also affect women's engagement in income-generation activities because they are most of the time engaged in fetching water. Read more

Odisha

Adverse impact of distress migration in Western Odisha (from *Pradeed Mohapatra, Bhubaneswar, Odisha*)

Udayama is working on distress migration and Climate change. Looking at recurrent floods, droughts, cyclone and hazards, life is always threatened. Finding no assurance either from nature or human, people are being forced to migrate with kith-kin for longer periods. Keeping in view global climate change, distress migration will lead to more social and financial disparities. UDYAMA is trying to minimize adverse impact of distress migration in Western Odisha Particularly in Titlagada and Bonganunda of Bolangir district, with support from SDTT.

West Bengal

Sunderbans – one of the most vulnerable and threatened ecosystems (from *Dipankar Dasgupta, DISHA, Kolkata, West Bengal*)

Sunderbans, is one of the most vulnerable and threatened ecosystems due to climate change impact, human intervention and faulty developmental policies and priorities. Even before the Aila disaster, Sunderbans was becoming increasingly endemic to indebtedness, migration, child labour, women and child trafficking, high incidence of malaria and other diseases as a result of poor nutrition and sanitary conditions. These problems exacerbated manifold after Aila and

brought to the fore the increasing risks, vulnerability, migration and poverty of the communities at risk.

Multiple

Studies show migration, NREGA schemes and agriculture are closely related (*from G Nirmala, CRIDA, Hyderabad, Andhra Pradesh*)

Migration is considered one of the biggest problems of rural development which has a severe impact on agriculture and labour availability. Some NREGA studies have proved migration could be checked with livelihood support; however, it has its own repercussions on agriculture where labour willingness to work on lower wages offered by agriculture has been reduced. Also, as such agriculture policies are looking at mechanisation of agriculture which again may reduce skill of labour for agriculture work. Migration, NREGA schemes and agriculture are closely related and need to be tackled in the same manner as other environmental impacts and concerns are tackled.

International

Multiple

FAO initiatives to address livelihood issues of fishing communities residing near coast and river (*from Maroti Upare, Mumbai, Maharashtra*)

FAO, in different countries have undertaken initiatives to address the livelihood issues of fishing communities. For example, in Bangladesh, FAO implemented a project funded by UNDP, 'Enhancing food security of coastal community of Cox's Bazar district' to provide micro-capital grant for alternative livelihood to affected fishing community. In Sierra Leone, it supported the project, 'Integrated development of rural fishing villages in Shenge region' funded by UNDP and UNCDF, and provided higher power engine fishing boats for fishing in offshore area. In Central Asia i.e. Uzbekistan, Tajikistan, Kyrgyzstan, aquaculture business planning training was conducted for promoting aquaculture as livelihood for fishing community residing near rivers and reservoirs. Read [more](#)

Related Resources

Recommended Documentation

From Vandana Aggarwal, Economic Advisor, Ministry of Environment and Forests (MoEF), Government of India, New Delhi

Migration and Global Environmental Change (MGEC) Future Challenges and Opportunities

Final Project Report; Foresight: Migration and Global Environmental Change; The Government Office for Science, London, United Kingdom; 2011

Available at <http://www.bis.gov.uk/assets/foresight/docs/migration/11-1116-migration-and-global-environmental-change.pdf> (PDF; Size: 6.10 MB)

Report intended for policy makers and professionals whose interests relate to environmental change and the many forms of human migration; also for those working in areas that interact with migration e.g. conflict and security, sustainability of communities, food supply, climate change mitigation and adaptation, etc.

National Action Plan on Climate Change

Available at http://pmindia.nic.in/climate_change.php

Charting out a developmental pathway which is ecologically sustainable, aims to establish an effective, cooperative and equitable global approach based on the principle of

common but differentiated responsibilities and respective capabilities, enshrined in the United Nations Framework Convention on Climate Change (UNFCCC)

From [G Nirmala](#), CRIDA, Hyderabad, Andhra Pradesh

Coastal Regulation Zone (CRZ) Notification, 2011

Notification; by Department of Environment, Forests and Wildlife, Ministry of Environment and Forests, Government of India

Available at <http://moef.nic.in/downloads/public-information/CRZ-Notification-2011.pdf>

Invites objections and suggestions for the declaration of coastal stretches as Coastal Regulation Zone and imposing restrictions on industries, operations and processes in the CRZ

The Water (Prevention and Control of Pollution) Act, 1974

Act; Government of India

Available at <http://www.moef.nic.in/legis/water/wat1.html>

Provides for the prevention and control of water pollution and the maintaining or restoring of wholesomeness of water

Notifications on Hazardous Substances Management

Multiple Notifications; Ministry of Environment and Forests, Government of India

Available at <http://envfor.nic.in/legis/hsm.htm>

Notifications issued in view of depletion of natural resources

National Land Utilisation Policy, 2013

Draft Policy; by Department of Land Resources, Ministry of Rural Development, Government of India

Available at

[http://dolr.nic.in/dolr/downloads/PDFs/Draft%20National%20Land%20Utilisation%20Policy%20\(July%202013\).pdf](http://dolr.nic.in/dolr/downloads/PDFs/Draft%20National%20Land%20Utilisation%20Policy%20(July%202013).pdf) (PDF; Size: 819 KB)

Provides framework for land use planning and management

National Land Reforms Policy, 2013

Draft Policy; by Department of Land Resources, Ministry of Rural Development, Government of India

Available

at

http://dolr.nic.in/dolr/downloads/pdfs/Draft_National_Land_Reforms_Policy_July_2013.pdf (PDF; Size: 519KB)

Suggests a just and equitable method of allotting land on a priority basis to the marginalized, especially marginalized women; also suggests that common property resources supplement the needs of the poor and deprived

The National Rehabilitation and Resettlement Policy, 2007

Resolution; by Department of Land Resources, Land Reforms Division, Ministry of Rural Development, Government of India

Available at <http://www.dolr.nic.in/NRRP2007.pdf> (PDF; Size: 18.50MB)

Suggests that policy must apply to all projects where involuntary displacement takes place; also the adverse impact on affected families - economic, environmental, social and cultural - needs to be assessed in a participatory and transparent manner

From [Pushpa Achanta](#), Bangalore, Karnataka

Tilling and toiling the organic way

Article; by Pushpa Achanta; Deccan Herald, 21 December 2013

Available at <http://www.deccanherald.com/content/375781/tilling-toiling-organic-way.html>

Through cases of women farmers, highlights importance of organic farming, that provides them with alternative model of sustainable agriculture in semi-arid districts of Andhra Pradesh

She is on a mission to conserve water

Article; by Pushpa Achanta; Deccan Herald, 4 January 2014

Available at <http://www.deccanherald.com/content/378321/she-mission-conserve-water.html>

Suggests climate change has had the worst impact on the lives of agrarian communities; women farmers, in particular, need appropriate adaptation strategies to cope during the tough times

Ripples: The Right to Water and Sanitation for Whom

Book; by Pushpa Achanta; Indian Social Institute (ISI), Bangalore; July 2013

Review not available; for more information, please write to Pushpa Achanta at

apushpa@yahoo.com

Discusses the topic of gender, climate change and migration

Post-2015 Framework for Disaster Risk Reduction (from [Dilruba Haider](#), *Climate and Disaster Risk Reduction Community, Solution Exchange Bangladesh, UNDP Bangladesh, Dhaka, Bangladesh*)

Know more at <http://www.unisdr.org/we/coordinate/hfa-post2015>

UNISDR is facilitating the process of developing a post-2015 framework for disaster risk reduction. This process will culminate at the 3rd United Nations World Conference on DRR scheduled to take place in March 2015 in Sendai, Japan

Migration back to villages (from [Ramesh Kumar Jalan](#), *United Nations Development Programme, New Delhi; response 1*)

Article; by Devinder Sharma, DNA, 17 February 2014

Available at: <http://www.dnaindia.com/analysis/column-migration-back-to-villages-1962672> .

Suggests government's lack of focus on agriculture shows its lopsided priorities; but slow economy is likely to force people to return to their villages

From [Komal Kantariya](#), *Gujarat State Disaster Management Authority, Gandhinagar, Gujarat*

Phailin set to trigger distress migration from Ganjam

Article; By Satyasundar Barik; The Hindu; 16 October 2013

Available at: <http://m.thehindu.com/news/national/phailin-set-to-trigger-distress-migration-from-ganjam/article5239958.ece/>

Post-Phailin, experts on migration and activists warn that distress migration is imminent from Ganjam which traditionally sends half a million migrant labourers to Gujarat cities

Opportunities for Private Sector Engagement in Urban Climate Change Resilience Building

Report; Authored by Intelicap; supported by the Rockefeller Foundation; 2010.

Available at <http://www.rockefellerfoundation.org/blog/opportunities-private-sector-engagement>

Aims to identify business opportunities in Urban Climate Change Resilience Building (UCCRB), and to understand the drivers and inhibitors to private sector participation

From [Swayamprabha Das](#), *New Delhi*

IPCC Fourth Assessment Report (AR4), 2007

Available at

http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm

Outlines climate change impacts in six main areas: ecosystem, food, water, health, coasts, and industry, settlement and society

Development, Concepts and Doctrine Centre (DCDC) Global Strategic Trend Programme, 2007-2036

http://www.cuttingthroughthematrix.com/articles/strat_trends_23jan07.pdf (PDF; Size: 6.11MB)

Strategic Trends is part of the UK Ministry of Defence (MoD) Strategic Context Process, from which the Department derives guidance about strategic challenges and opportunities; it foresees large migration flows from sub-Saharan Africa towards Mediterranean, the Middle East and Europe between 2007 and 2036

Climate Change Induced Forced Migrants: in need of dignified recognition under a new Protocol

Article; by Md Shamsuddoha and Rezaul Karim Chowdhury; written to support a campaign of Equity and Justice Working Group Bangladesh (Equitybd); April 2009

Available at <http://www.glogov.org/images/doc/equitybd.pdf> (PDF; Size: 164KB)

Article written to support a campaign of Equity and Justice Working Group Bangladesh (Equitybd), which calls global leaders to develop a new legal instrument under a Protocol to the UNFCCC to ensure social, cultural and economic rehabilitation of the 'climate refugees' through recognizing them as 'Universal Natural Persons'

Environmental change and migration: legal and political frameworks (from [Jai Kumar Gaurav](#), New Delhi)

Article; by Susan F Martin; Environment and Planning C: Government and Policy 30(6) 1045 – 1060; 2012

Available at: <http://www.envplan.com/abstract.cgi?id=c1242j>

Focuses on international legal norms and organizational roles and relations applicable to migration induced by environmental change

From Deva Prasad M, Prasadam, Thrissur, Kerala

Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration) 1972

<http://www.unep.org/Documents.Multilingual/Default.asp?documentid=97&articleid=1503>

Calls for the need for a common outlook and for common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment

The 1951 Refugee Convention

<http://www.unhcr.org/pages/49da0e466.html>

Key legal document in defining who is a refugee, their rights and the legal obligations of states; suggested that the ambit of the definition under the Convention is restrictive and includes only persons who have fled their country in fear of persecution for reasons of race, religion, nationality, membership of a particular social group or political opinion

United Nations Framework Convention on Climate Change, 1992

<https://unfccc.int/2860.php>

International treaty to cooperatively consider what countries could do to limit average global temperature increases and the resulting climate change, and to cope with its impacts

Gender and climate resilient agriculture: an overview of issues (from [G Nirmala](#), CRIDA, Hyderabad, Andhra Pradesh)

Commentary; by G. Nirmala and B. Venkateswarlu; Current Science, Vol 103, NO.9, 10 November 2012 Available at: <http://www.currentscience.ac.in/Volumes/103/09/0987.pdf> (PDF; Size: 33KB)

Argues women suffer a gamut of issues under adverse climatic conditions and a focused debate on gender-responsive adaptations has tremendous potential to offset adverse impacts of climate change

From [Malika Basu](#), Resource Person

Climate Change, Environmental Degradation, and Migration: A Complex Nexus

Article; by Mostafa Mahmud Naser; William and Mary Environmental Law and Policy Review; Vol.36, Issue 3, Article 4; 2012

Available at <http://scholarship.law.wm.edu/cgi/viewcontent.cgi?article=1550&context=wmelpr>

Examines the possible link between environmental change and consequent human migration

The Regional Impact of Environmental Change on Migration Series

Book; by Etienne Piguet and Frank Laczko (eds); Global Migration Issues, Vol. 2, VII; 2014; 253p 29 illus.

Provides a comprehensive overview of the key findings of existing studies on the linkages between environmental change and the movement of people

The Way Forward – Researching the Environment and Migration Nexus

Research Brief; by Marc Stal and Koko Warner with contributions from Jobst Koehler, Robin Bronen, and Etienne Piguet; United Nations University published by United Nations University Institute for Environment and Human Security (UNU-EHS), UNU-EHS. Brief Based on the Outcomes of the 2nd Expert Workshop on Climate Change, Environment, and Migration, 23 - 24 July 2009, Munich, Germany.

Available at <http://www.ehs.unu.edu/file/get/4191>

Highlights how existing migration flows may be affected by climate change in the future; puts emphasis on research to provide best practice solutions to manage the impacts of environmentally induced migration

Recommended Contacts and Experts

Recommended Organizations and Programmes

SAARC Disaster Management Centre (From [Dilruba Haider](#), Climate and Disaster Risk Reduction Community, Solution Exchange Bangladesh, UNDP Bangladesh, Dhaka, Bangladesh)

Contact: Prof. Santosh Kumar, Director, SAARC Disaster Management Centre; # IIPA Campus, I.P. Estate, Mahatma Gandhi Road, New Delhi- 110002; Tel: 91-11-23765516; Fax: 91-11-23765517; dir.sdmc@gmail.com; director@saarc-sdmc.org; <http://saarc-sdmc.nic.in/index.asp>

Centre mandated to provide policy advice, facilitate capacity building services including strategic learning, research, training, system development and exchange of information for effective disaster risk reduction and management in South Asia

UN Human Rights Council (from [Deva Prasad M, Prasadam](#), Thrissur, Kerala)

<http://www.ohchr.org/en/hrbodies/hrc/pages/hrcindex.aspx>

An inter-governmental body within the United Nations made up of 47 States responsible for the promotion and protection of all human rights around the globe; the direct and indirect impact of climate change upon human rights is well acknowledged by its Resolutions 7/23(2008) and 10/4(2009)

Central Research Institute for Dryland Agriculture (CRIDA) (from [G Nirmala](#), Hyderabad, Andhra Pradesh)

Contact: Director, CRIDA (ICAR), Santoshnagar, Hyderabad - 500 059, Andhra Pradesh; Tel: 91 - 040 24532243, 24530161; Fax: 91 -040 24531802, 24535336; admin@crida.in; <http://www.crida.in/>

National Research Institute under the Indian Council of Agricultural Research (ICAR) with a mandate to carry out basic and applied research in rainfed farming.

German Advisory Council on Global Change (from [Swayamprabha Das](#), New Delhi)

#Secretariat at the Alfred-Wegener Institute for Polar and Marine Research (AWI), P.O. Box 12 01 61, 27515 Bremerhaven, FRG; Tel: 49 - 471 - 4831-349; Fax: 49 471 - 4831-218; wbgu@awi-bremerhaven.de; <http://www.awi-bremerhaven.de/WBGU/>

Carries out research, undertake projects related to climate change and environmental impacts

Centre for Policy Research (from [Ramesh Kumar Jalan](#), United Nations Development Programme, New Delhi; response 2)

Dharam Marg, Chanakyapuri, New Delhi – 110021; Tel: 91-11-26115273-76; Fax: 91-11-26872746; cprindia@vsnl.com; <http://www.cprindia.org>

CPR has a team focusing on climate change related public policy and is advocating for measures to enhance disaster risk reduction and climate change adaptation in India

Fisheries Management for Sustainable Livelihood (FIMSUL) Project (from [Maroti Upare](#), Mumbai, Maharashtra)

<https://www.sites.google.com/site/fimsul/>

Project based on a scoping study done by FAO, World Bank and DfID; aims to support the respective Governments in the development of a policy framework for the future management and use of marine fisheries in Tamil Nadu and Puducherry

Recommended Communities and Networks

Asian Cities Climate Change Resilience Network (ACCCRN) (from [Komal Kantariya](#), Gujarat State Disaster Management Authority, Gandhinagar, Gujarat)

Contact: Tamora Chan; #APCO Worldwide - Communication Partner of ACCCRN, Tel: 852-2826 9332; info@accrn.org; <http://www.accrn.org>

A network of ten core cities in India, Indonesia, Thailand and Vietnam, experimenting with a range of activities that will collectively improve the ability of the cities to withstand, to prepare for, and to recover from the projected impacts of climate change

Association for Climate Refugees (ACR) (from [Krishnan S. Raghavan](#), Technology Transfer Services Group, Asian and Pacific Centre for Transfer of Technology (APCTT), United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), New Delhi)

#House 8A/8, Road 14 (New), Dhanmondi R/A, Dhaka – 1209, Bangladesh; Tel: 880-1928-419260; ceo@climateresugeesbd.org; <http://climateresugeesbd.org>

Collective initiative of NGOs and representatives of climate refugees in Bangladesh; cooperates closely with the climate victim communities, local government institutions and other organizations working for climate adaptation and mitigation

Climate Change, Environment and Migration Alliance (CEEMA) (from [Malika Basu](#), Resource Person)

<http://www.ccema-portal.org/>

A multi-stakeholder global partnership aiming to migration considerations to the environment, development, and climate change agendas and vice versa

Recommended Portals and Information Bases

From [Malika Basu](#), Resource Person

Gender Youth Migration (GYM)

<http://www.solutionexchange-un-gen-gym.net/>

A one-stop window and portal for development practitioners working on migration issues integrating gender and youth perspective

Asia Pacific Migration and Environment Network (APMEN)

<http://www.apmen.iom.int/en/>

Online information sharing platform dedicated to migration environment and climate changes issues in the Asia-Pacific

Recommended Tools and Technologies

Recommended Training Courses

Recommended Upcoming Events

National Workshop on Migration and Global Environmental Change in India, 4-5 March 2014, New Delhi

Organized by UNESCO, GO Science, DFID; Venue: India Habitat Centre (IHC), Lodhi Road, New Delhi; Contact Person: Marina Faetanini, Programme Specialist, Social and Human Sciences, UNESCO New Delhi; # B5/29 Safdarjung Enclave, New Delhi-110029, India; Tel: 91-11-2671 3000; Fax: 91-11-2671 13001-2; m.faetanini@unesco.org

Concept Note available at:
ftp://ftp.solutionexchange.net.in/public/clmt/resource/res_info_12021401.pdf (PDF; Size: 138 KB)

The workshop will explore how the findings of the Foresight: Migration and Global Environmental Change (MGEC), Final Project Report, The Government Office for Science, London (2011) and other analysis, might inform the thinking and actions of experts and decision makers and discuss the potential implications for India and neighboring countries

Related Consolidated Replies

Managing the challenge of Climate and Natural Disaster Refugees, from Suvobrata Ganguly, Core Sector Communiqué, Kolkata, West Bengal (Experiences; Examples). Climate Change Community, Solution Exchange India. Issued on 16 December 2011.

Available at: <ftp://ftp.solutionexchange.net.in/public/clmt/cr/cr-se-clmt-drm-04111101-public.pdf> (PDF; Size: 306KB)

Provides suggestions for tackling the challenge faced by climate and natural disaster refugees including managing the logistics of feeding and sheltering

Developing Climate Responsive Approaches to Managing Disaster Risk, from Amit Tuteja, SEEDS, New Delhi for Alliance for Adaptation and Disaster Risk Reduction (*Experiences; Advice*). Disaster Management & Climate Change community, Solution Exchange India. Issued on 30th June, 2010.

Available at: <ftp://ftp.solutionexchange.net.in/public/clmt/cr/cr-se-drm-clmt-28051001.pdf> (PDF Size: 276 KB)

Provides suggestions for developing strategies to manage disaster risks.

Responses in Full

[Abhishek Mendiratta](#), Jupiter Knowledge Management and Innovative Concepts, New Delhi

Climate Change and its associated migration is a very serious and important subject. We have communities and sub communities to discuss but something concrete in this sector can only

happen when we have authentic research indicating migration is actually happening due to climate change.

Disaster and climate change are interrelated but the research should establish that disaster is happening because of climate change.

Lack of research and economic analysis of the consequences of climate change, disaster and migration is the reason why it is not a priority.

When we see migration and climate change in gender perspective, Climate is not biased towards any gender nor is nature. Hence we should first address the problems of migrants, then only we can go deep into the problems of Gender related issues.

Climate is even not biased to youth/old. Hence when objectives will be clear than only we can achieve something. Hence, I recommend concrete research before planning these kinds of issues.

Mrinal K Nath, Disaster Risk Management Specialist, New Delhi

In South Asian countries ever increasing population in general and climate change in particular is going to play a major role in migration. For Example:

- Due to the global warming sea levels are increasing and from 1880 to 2010 there is increased by 20 cm and if the present situation of emission continues then according to scientists it will rise further.
- The highest point in the Lakshadweep islands is 15m and average height of all the islands is about 5m from mean sea level. If the world community will not be able to cap the global warming then migration from these islands to the main land will happen.
- There is no pull factor to encourage anyone for migration but all the push factors will work to displace people from its own land.
- Monsoon is going to be erratic and many parts of India will receive low rain causing drought and crop failure. The rural to urban migration will increase phenomenally.
- Frequent and bigger flood and cyclone disasters will lead to migration from coastal areas to other parts of India which may not necessarily be a rural to urban migration.
- The biggest problem India has to face is the huge Bangladeshi influx as with 1 m rise in sea level 33% of Bangladesh is going to submerge. This will lead to millions of people coming to India.

In near future any development programme of the government has to be related with climate change adaptation as:

- The rural to urban migration will happen due to the failure of crops, in that situation the relevance of multimillion dollar river linking project brightens. Because, with the rainfall distribution patten changing, the volume of water in each of the big rivers will change, which only can be solved with river linking and controlled distribution.
- Food, water and health are the main three sectors where mankind will suffer highest due to climate change. So, the existing policies and programmes have to address these issues. There is a need for extensive research to ensure how various government programmes can be made appropriate to the situation.
- The frequency and magnitude of the climate induced natural disasters will increase phenomenally. So, the government at any level has to integrate DRR projects with development projects to reduce vulnerability.

The gender issues will remain same as today but intensity of suffering will be much more with changing climate as indicated below:

- As usual in India the percentage of male rural to urban migration will be higher due to crop failure and financial insecurity in rural areas. The females have to take the burden of household with minimum resources.
- The scarcity of potable water will increase with increasing drudgery of the rural women to fetch water. There will be lack of fodder for the cattle causing more problem for the women to take care of the cattle.
- Issues related with reproductive health will increase due to poor diet and child malnutrition is also likely to increase substantially.

The global warming affects are based on models only and scientists are yet not sure how much temperature will increase by the year 2100 AD which is again directly proportional to the cap on the emissions.

There is ample need of research on the adaptation mechanisms which can't be adopted from other parts of the world, because of socio-cultural and topographical variability and then only the government policies and programmes will become target oriented.

G Nirmala, CRIDA, Hyderabad, Andhra Pradesh

Migration is considered one of the biggest problems of rural development which has a severe impact on agriculture and labour availability.

Keeping in view the adverse impacts of climate change scenario it has become highly pronounced. There is shift in livelihoods and also agriculture as livelihood itself is under severe threat causing food insecurity.

Central Research Institute for Dryland Agriculture (CRIDA) is working on climate change vulnerability and adaptation. It has developed vulnerability atlas and for details, director@crida.in may be contacted.

NREGA studies have proved migration could be checked with livelihood support, however it has its own repercussions on agriculture where labour willingness to work on lower wages offered by agriculture has been reduced and as such agriculture polices are looking at mechanisation of agriculture which again may reduce skill of labour for agriculture work.

Migration, NREGA schemes and agriculture are closely related and need to be tackled in the same manner as other environmental impacts and concerns are tackled.

Ramesh Kumar Jalan, United Nations Development Programme, New Delhi; response 1

I would like to share with you the highlights of a news article published today in DNA on **"Migration back to villages: The government's lack of focus on agriculture shows its lopsided priorities"**. The article is available at: <http://www.dnaindia.com/analysis/column-migration-back-to-villages-1962672> .

- ✓ **In the coming months, about 1.5 crore farmers who quit agriculture in the past seven years, are likely to trudge back into the villages.**
- ✓ In normal circumstances such a massive reverse migration — from the cities back to the villages — would have been a sign of inclusive growth.
- ✓ **However, economists are taking this U-turn as a sign of economic slowdown.** A report by CRISIL put this as an indicator of the slowing economy as a result of which people are being forced to return to their villages.
- ✓ In the seven-year period between 2005 and 2012, according to CRISIL, an estimated 3.7 crore farmers quit agriculture. Economists view this trend as a sign of economic growth.

- ✓ In other words, while 50 lakh farmers are forced out of agriculture every year, growing farm unemployment is being considered as a sign of economic growth.
- ✓ How can pushing farmers out of agriculture sector and then finding an alternative employment for these millions displaced from agriculture constitute economic growth?
- ✓ Nevertheless, we are told that an estimated 70 lakh jobs are created in the non-farm sector. Considering that most of the non-farm jobs are in construction, what is not being told is that these menial jobs are temporary and do not carry any social security. Construction sector employs daily-wage earners, and for the farmers who find employment in the construction industry, this is no stable employment.
- ✓ All this is happening at a time when a bountiful monsoon has resulted in a record food grain production this year. In fact, agriculture is going to be the saviour of the Indian economy in 2013-14.
- ✓ At a time when there is an all-round doom and gloom — industrial output failing to keep pace, manufacturing sector declining, joblessness growing, fiscal deficit mounting and the current account deficit growing to a worrisome level — it is only agriculture that provides a glimmer of hope and yet, all out efforts are being made to shift the population out of agriculture.
- ✓ **On an average, 2,500 farmers quit farming every day to join the army of landless workers.**
- ✓ Since the agriculture sector happens to be the biggest employer, why don't the policymakers try to make agriculture a more productive and economically viable profession? Why can't farmers be provided with a higher income so that they stay on the farms?
- ✓ Translocating a massive population from the rural to urban areas is only leading to the collapse of the cities and at a time of jobless growth, these farmers are only providing cheap and readily available labour force for the real estate and construction industry.
- ✓ Uprooting more people from agriculture will only add to more and more people in poverty, and lead to under-employment.
- ✓ Food security requirements can be met by food imports, and given the emphasis on land acquisition for the industry, real estate and highways, the task of producing food for the population will become more and more difficult. Already there are indications that India will turn into an importer of rice in the next three years.
- ✓ With no jobs being created in the manufacturing sector, why should we deprive people from their only means of livelihood: farming?
- ✓ A Planning Commission report released early this year underlines the contradictions in India's growth story. At a time when GDP was galloping at 8-9 per cent between 2005 and 2010, the report shows 140 lakh people were displaced from agriculture.

[Pradeep Mohapatra](#), UDYAMA, Bhubaneswar, Odisha

Migration Issue in western Odisha generally and Bolangir in particular is one of the challenging aspects for all of us. Despite substantial efforts by government and non-government organizations to reduce distress migration, it has become more sensitive, but there are many ways to reduce migration for which collaborative ventures are needed.

UDYAMA is working on this distress migration and Climate change since 2000. Generally Migration is good, as people are moving out for better income, amenities and livelihoods. However, things are really very much bad when distress migration is undertaken. Looking at recurrent floods, droughts, cyclone and hazards, life is always threatened. Finding no assurance either from nature or human, people are being forced to migrate with kith-kin for longer periods. Keeping in view global climate change, distress migration will lead to more social and financial disparities.

We at UDYAMA are trying to minimize adverse impact of distress migration in Western Odisha Particularly in Titlagada and Bonganunda of Bolangir district, with support from SDTT.

Few important aspects that need to be considered are as follows:

- Base line Survey, Identification, Registration, cooperation of local Sarapach, Providing I-cards counter-signed by Sarapach,
 - Life skill training based on interest of youth; Linking with NIOS for vocational accreditation
 - Organising interaction with block level official for MNREGS etc.
-

Pushpa Achanta, Bangalore, Karnataka

Thank you for the important and interesting insights thus far. Two of my stories on women, adaptive agriculture and **migration** in the arid regions of Andhra Pradesh published in the Deccan Herald are available at:

- <http://www.deccanherald.com/content/375781/tilling-toiling-organic-way.html>
- <http://www.deccanherald.com/content/378321/she-mission-conserve-water.html>

Incidentally, I have discussed the topic of gender, climate change and migration in my book titled "**Ripples: The Right to Water and Sanitation for Whom**", published in July 2013 by the [Indian Social Institute](#), Bangalore.

Dilruba Haider, Climate and Disaster Risk Reduction Community, Solution Exchange Bangladesh, UNDP Bangladesh, Dhaka, Bangladesh

I don't agree entirely with [Abhishek Mendiratta](#) when he says that: '.....Climate is not biased towards any gender....'. Climate is not biased, the society, the culture, and the system are.

There have been several studies done on climate change vulnerabilities and impacts on women in the south west Bangladesh which show that women are hit more with climate change impacts compared to their male counterparts, due to their socio-economic status.

Therefore, when we discuss climate change and migration we certainly need to focus on women's issues, since their risks and vulnerabilities as well as their resilience are different from men's. Need to remember that a 'straight jacket' strategy and solutions would not fit all.

Secondly, I remember the Climate Change Community in India and Bangladesh ran a similar query two years ago on climate and disaster related refugee issue. The predominant message coming out of that discussion was that people do not necessarily migrate due to climate change and disasters; there are hosts of other reasons.

For Climate Change and disaster people get displaced within the border of their own countries. Thus climate refugee perhaps is not that critical an issue, except perhaps for island countries like the Maldives.

I think climate refugee is just a notion that is being used by the poor and developing countries. Having said that, I believe some movement does happen cross border, especially between Bangladesh and India, mainly because of the familial pull factor. When the families are devastated by sudden onrush of flood water from upstream (e.g. the flood of 2000 in South West Bangladesh), sometimes do migrate to India where they have relatives to shelter and help them out.

The percentage of such people is probably nominal; as far as I hear from the field; I can't say that with certainty since I am not aware of any study done on this factor.

On this note, I would like to emphasise the point of regional cooperation between countries. There are consultations going on amongst the DRR practitioners throughout the world since 2012 to shape up the post 2015/ post HFA DRR Framework.

As part of that the SAARC Disaster Management Centre floated a consultation between practitioners of India and Bangladesh on priorities of the region for post HFA framework. The discussion was jointly hosted by Disaster Management Community of India and Climate and Disaster Risk Reduction Community of Bangladesh.

Most of the members of these two communities invariably emphasised on the great need for cooperation between the countries of the region especially in terms of early warning and sharing of experience, knowledge, and technical expertise. So, while we talk about climate change and possible migration, let's talk about regional cooperation between governments, and practitioners as well.

Dipankar Dasgupta, DISHA, Kolkata, West Bengal

Based on my personal experience of working & interacting with various stakeholders in the Sunderbans, West Bengal, which is one of the most vulnerable & threatened ecosystems in this country due to climate change impact, human intervention & faulty developmental policies & priorities.

However, even before the Aila disaster, Sunderbans was becoming increasingly endemic to indebtedness, migration, child labour, women & child trafficking, very poor nutritional status especially amongst children & women, high incidence of TB, malaria & other diseases as a result of poor nutrition & sanitary conditions.

These problems exacerbated manifold after Aila and brought to the fore the increasing risks, vulnerability, migration and poverty of the communities at risk.

K V Peter, World Noni Research Foundations, Chennai, Tamil Nadu; first response

I quite agree with [Dilruba Haider](#). During natural calamities like flood, drought, hurricanes and typhoons the worst hit in inaccessible villages, sea shores and mountains are women and children.

They act as human barricades between huts and roaring flood waters and waves. Natural disasters and climate change are interrelated.

With rise in global temperature, there is rise in sea water levels. With melting of snows and ice river water flow increases and leads to flooding. People living near flooding rivers are affected. Drift of glaciers and its melting are studied in India.

Komal Kantariya, Gujarat State Disaster Management Authority, Gandhinagar, Gujarat

Some of the pathways through which global environmental change would influence and shape various drivers of migration in India are based on:

- Uncertainties associated with the frequency and intensity of extreme weather events impact the decision making process for migration, both at the household and community level. Decision spans a wide spectrum, from temporary relocation to displacement through to migration, both short-term and long-term.
- Understanding the choices, trade-offs and opportunities across this spectrum is essential to better design policies which harness the potentials of migration in a changing climate scenario and build the resilience of the migrants and their families.

- Declining productivity of the asset base on which livelihood systems are dependent. Agriculture, one of the primary livelihood sectors in rural India, is also one of the most climate-sensitive sectors. Erratic weather patterns, pest outbreak, increasing salinity and many more such factors leading to crop failure and erosion of the livelihood asset base are present. Further aggravating the situation is the lack of adequate market opportunities and financial support for these livelihood systems to readjust and rebuild.
- Coastal livelihood systems have also been witnessing unprecedented changes and decline because of a changing oceanic ecosystem, unsustainable harvesting practices, fluctuating market and natural disasters. Cyclone Phailin (October 2013) in coastal Odisha has triggered large-scale out-migration of fishing communities. Further details are available at: <http://m.thehindu.com/news/national/phailin-set-to-trigger-distress-migration-from-ganjam/article5239958.ece/> .
- Mountain ecosystems and the livelihood systems are also facing a similar situation. The floods of 2013 in the Himalayas have posed a serious threat to a whole array of vibrant and well thriving livelihoods including that of pilgrimage tourism. Such natural disaster induced displacement and migration need to be well documented and these issues should be considered as part of the larger policy measures of Disaster Management and resilience building.
- Appropriate disaster risk reduction (DRR) measures, including financial and risk transfer mechanisms, would address such issues of distress and forced migration. State Disaster Management Authorities (SDMAs) could catalyse discussion around these issues and influence appropriate policy changes.
- Conflicts of various nature and intensity would be linked to migration. Competition over resources and opportunities and the tension between locals vs non-locals/outside (migrants) would make the process of migration a highly challenging and riskier endeavour and would further increase the vulnerability of the migrants.
- Forced migration in the context of emerging humanitarian situations in the left wing extremism (LWE) affected regions of India, which are coincidentally some of the most natural resource rich regions, poses unprecedented challenges to deal with the internally displaced population (IDP) and help them rebuild their livelihood in a situation where the entire livelihood asset is quite different from the one they have been living with and adapted to. The other challenge is with regard to addressing the adaptation needs of the development-induced displaced (DID) population in many parts of India.
- The Foresight Report identifies five different but inter-linked mobility outcomes and proposes plausible policy measures to address these. A context specific set of mobility outcomes taking in to account the larger geographical and socio-political and cultural dimensions of India could be developed to better inform climate change adaptation policies.
- Of significant importance is the rate of urbanization in India and the expanding economic opportunities, which attracts and absorbs a large chunk of migrants from rural India. Urban development policies need to innovate appropriate institutional mechanisms ensuring availability of and accessibility to facilities of health, water, electricity, housing and education. Further marginalization and discrimination in the cities would not only increase their economic vulnerability but will also impact the well-being of their families and dependents back home.
- Climate adaptation and mitigation initiatives in the cities, which attracts substantial investments from the private sector through emerging business opportunities, could be better designed and developed to further facilitate skill development of the migrants to prepare them for new and emerging sectors in a low-carbon economy.
- Private sector could play a leading role in this through innovation and exploring new market opportunities at the bottom of the pyramid. A report (Opportunities for Private Sector Engagement in Urban Climate Change Resilience Building. Intellcap, 2010), supported by the Rockefeller Foundation as part of the Asian Cities Climate Change

Resilience Network (ACCCRN), identifies a set of economic opportunities for the private sector in the urban resilience programme. Such opportunities could further be explored and supported to help better integrate the migrants in to the overall urban economy.

The proposed workshop is a timely initiative to further explore the inter-linkages and emerging dynamics of migration in India in the context of global environmental change. This would also help to identify and explore new opportunities for inter-departmental and inter-ministerial coordination to address some of the issues mentioned above.

Swayamprabha Das, New Delhi

Climate change will significantly affect migration in three distinct ways:

- ✓ First, the effects of warming and drying in some regions will reduce agriculture potentials and undermine 'ecosystem services' such as clean water and fertile soil.
- ✓ Second, the increase in extreme weather events-in particular, heavy precipitation and resulting flash or river floods in tropical regions.
- ✓ Finally, sea level rise will permanently destroy extensive and highly productive low-laying coastal areas that are home to millions of people who will have to relocate permanently.

In addition to this, in many countries, one cumulative impact of climate change will be to increase the potential for violent conflict. People have started arguing that the Darfur conflict that caused massive scale of displacement began as an ecological crisis, arising at least in part from climate change.

In this relation the Fourth Assessment Report of IPCC (IPCC AR4), published in 2007, outlines climate change impacts in six main areas: ecosystem; food; water; health; coasts; and industry, settlement and society.

The IPCC Assessment Reports also recognizes that the developing countries and the poorest people will suffer the most from climate change because of unfavourable geography, limited assets, and a greater dependence on climate-sensitive sources of income, like agriculture.

Some of the impacts could be in the form of new challenges and others could emerge as old threats made more severe by climate change. For instance, along with other extreme weather events like flooding and tropical cyclone, sea level rise is an impending threat to the coastal areas in Bangladesh which has long and densely populated coastlines with many low-lying remote islands.

In the severe climate change scenario, sea level rise poses an existential threat that would inundate low lying areas, in particular- 18 percent of Bangladesh's total land, directly impacting 11 percent of the country's population. Salt water intrusion from sea level rise in low-lying agricultural plains, along with other hazards, could lead to 40 percent decrease in food grain production and would increase forced migration to the urban slum areas. Ingress of salt water into the aquifer is also an added threat.

Estimates show that with just a 1 to 2 degree increase in temperature would force physical dislocation of more than 35 million people in Bangladesh. It's a question of survival for such low-laying coastal countries and low-laying islands nations, for instance it's a concern of existence of the people of the Maldives that are located only few meters above sea level.

Reports suggests, about 85 per cent of the Maldives' main island, which contains the capital Male, would be swamped. Most of the Maldives would be turned into sandbars, forcing 300,000 people to flee to India or Sri Lanka, or any other country of choice! Vietnam could lose 500,000 hectares of land in the Red River Delta and another 2 million hectares in the Mekong Delta,

displacing roughly 10 million people. In West Africa, up to 70 per cent of the Nigerian coast would be inundated by a one-meter rise, affecting more than 2.7 million hectares and pushing some beaches three kilometers inland. Gambia's capital, Banjul, would be entirely submerged. In the Mediterranean, Egypt would lose at least 2 million hectares of land in the fertile Nile Delta, displacing 8–10 million people, including nearly the entire population of Alexandria. The demise of this historic city would cost the country over \$32 billion, close to a third of its annual gross national product (GNP) in 1999. South American cities would suffer some of the worst economic effects. In Guyana 600,000 people would be displaced – 80 per cent of the population. The cost would be \$4 billion, or 1,000 per cent of Guyana's tiny GNP.

The results of modelling longer-term changes in coastlines as a result of rising sea-levels suggest that governments may be required to support mass movements of coastal population. Some recent studies already suggested that climate change induced migrants could potentially cross international borders. For example, the Development, Concepts and Doctrine Centre Global Strategic Trend Programme of the UK's Ministry of Defence foresee large migration flows from sub-Saharan Africa towards Mediterranean, the Middle East and Europe between 2007 and 2036.

The German Advisory Council of Global Change projects mass migration to the United States from the Caribbean islands and Central America and many migration flows within Central America.

Meantime, in light of this looming climate migration crisis, many international humanitarian organizations, CSOs and, even the governments of the at-risk countries are demanding protection and resettlement of the forced migrants work in practice.

For instance, in August 2006, the government of the Maldives organized a meeting of the representatives of governments, environmental and humanitarian organizations and United Nations organizations on the resettlement and protection of 'climate refugees'.

Therefore, it is important to mainstream environment and climate change considerations into migration management policy and practices, and to bring forced migration issues into global environmental and climate change discourse. The protection of climate refugees should be seen as a global problem and a global responsibility.

Further details are available in the paper which can be found at: <http://www.glogov.org/images/doc/equitybd.pdf>.

Ramesh Kumar Jalan, United Nations Development Programme, New Delhi; response 2

Based on the Query on Managing the Challenge of Climate and Natural Disaster Refugees – Experiences; Examples, posted in November, 2011, the following points related to migration and its nexus with environmental / climate change were highlighted:

- There is a great deal of uncertainty regarding the linkages between migration and climate change as there are often multiple and complex reasons leading to migration. However, it is essential to develop policies, plans and programs that would help tackle the challenge of climate change and natural disaster refugees.
- Migrants and refugees not only need material support but a great deal of rehabilitation in terms of trauma and cultural dislocation. Therefore, suitable provisions for counselling and enhancing the cultural acceptance of migrants would be required.
- India can cope with the challenge of feeding the climate refugees by increasing the areas under agriculture and enhancing its productivity. As approximately 68.35 million hectare

- land in India is designated as wastelands and there is a need to utilize it for producing food.
- Several developing countries including India are attractive investment destinations for Multi-national Companies. Therefore, it is possible to mobilize private sector finance for developing programs and infrastructure for feeding & sheltering the climate and natural disaster refugees.
 - A public policy research & advocacy group is required on an urgent basis to suggest plans, policies and programs to tackle the challenge of climate change and natural disaster refugees. For example Centre for Policy research has a team focusing on climate change related public policy and is advocating for measures to enhance disaster risk reduction and climate change adaptation in India.
 - **Sustained effort and support from multiple agencies is required to ensure a safe and sustainable future for climate change and natural disaster refugees.**

[Krishnan S. Raghavan](#), Technology Transfer Services Group, Asian and Pacific Centre for Transfer of Technology (APCTT), United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), New Delhi

Extreme climate events – be it the result of environmental destruction by people, or naturally occurring changes in climate – are forcing people to flee their traditional place of residence with enormous sufferings in points of transit and the points of destination . ACR (Association for Climate Refugees), a network of NGOs have been making some efforts in seeking answers to basic questions, like how and where the people have been made refugees, who the refugees are, and how many there are.

Mass scale forced displacement has been caused by tidal floods in the exposed coastal area and loss of land due to erosion in the main land river basins. The population living in South and South-East Asia on the coastline extending from the east coast of India to Myanmar have been buffeting by annual cyclones from the Bay of Bengal and ever increasing tidal floods.

Cyclones not only result in human casualties and destruction of property, but also leave behind perpetual tidal floods. Notably, over the last few years deadly cyclones have been commonplace: Cyclone Sidr of 2007, Nargis of 2008, Aila of 2009, and Laila of 2010.

Research reveals that the tidal flood water level has risen by 1 meter over 5 years (2004 to 2008) and it rose by an additional meter in 2009 and in 2010 it continues to rise further.

Around one million people have been rendered homeless due to river erosion in the mainland river basins over the last three decades, as the Brahmaputra-Jamuna continues to widen because of obstruction from upstream sediment and poor downstream erosion management.

NGOs affiliated with ACR working in the mainland river basin report observing people forced to flee their traditional place of residence due to increasing river erosion. Bangladesh is comprised of 64 districts, out of which 22 are at risk of climate-induced displacement.

The poorer people who used to live in exposed locations are the climate refugees and they are 6 million in number as of May, 2010. The poorest people who live in the extremely exposed locations in the coastal belt and the mainland river basins of Bangladesh will be the first to become climate refugees in upcoming years.

The remaining 397 upazilas, which are not dangerously exposed on the coastline, still are at sea-level and will perhaps generate another 2.1 million climate refugees. Thus, the total number of climate refugees in Bangladesh as of May 2010 stands at 6 million, out of which at least 1 million

are living in Dhaka. The total number of climate refugees in Bangladesh is expected to increase to 7.5 million by the end of 2010.

In one way or another, all exposed upazilas are generating climate refugees, but some are more immediately and particularly exposed..

The Finance Minister of Bangladesh Government has said, "We are asking all our development partners to honour the natural right of persons to migrate. We can't accommodate all these people – this is already the most densely populated country in the world," in a video interview with the Guardian. Repeated cyclones and tidal floods have substantially destroyed the life line of coastal dwellers.

More than 200 NGOs in Bangladesh are working for the resettlement of the climate refugees. NGOs are continuing to negotiate projects with potential donors on climate refugee issues.

Conclusion

Climate change is likely to lead to increase the number of climate refugees, and it is vital that evolving frameworks for climate change adaptation address this issue so that national and international communities can peacefully resettle climate refugees.

Climate change ignores country borders making it a global problem; however, we cannot ignore country borders and have to begin to work regionally and globally for mutual benefits and interests. We welcome suggestions and assistance for effective and efficient resettlement of climate refugees.

Jai Kumar Gaurav, New Delhi

I am sharing with you the highlights of the paper on "**Environmental change and migration: legal and political frameworks**", the abstract of which is available at: <http://www.envplan.com/abstract.cgi?id=c1242j>

The above paper focuses on international legal norms and organizational roles and relations applicable to migration induced by environmental change.

Movements stemming directly and indirectly from environmental factors related to climate change—including, for example, movements resulting from intensified drought and desertification affecting livelihoods, rising sea levels, intensified acute natural disasters, and competition for resources that result in intensified conflict are examined.

The analysis focuses on the extent to which legal and institutional responses affect patterns of mobility, especially in slow-onset situations, and the extent to which governance, more generally, affects the likelihood that people will migrate as a result of environmental factors, especially in humanitarian emergencies.

It concludes that immigration policies, governance, and the level of development in affected countries play a crucial role in determining the responses to natural hazards and conflict. They also help determine if migration poses technical or managerial challenges or presents political challenges.

Given the current gaps in appropriate migration policies, more attention needs to be placed on identifying and testing new frameworks for managing potential movements. Attention needs to be given to both sides of the environment and migration nexus:

- Identifying adaptation strategies that allow people to remain where they currently live and work;

- Identifying migration and relocation strategies that protect people's lives and livelihoods when they are unable to remain.

Nibedita Phukan, Centre for Health and Social Justice, New Delhi

Climate change is a major threat to sustainable development. The worst affected by this drastic change are the poor and marginalised sections of the society. Here, it would be important to note that global climate change affects both genders in different ways. It was assumed that the negative impacts of climate change and mitigation measures are similar on both women and men. Clearly, it is not so.

Women and men face dissimilar vulnerabilities due to the different social rules and not due to the fact that they are naturally weaker. The vulnerability and capacity of a social group to adapt to climate change depends greatly on the accessibility to assets, resources, knowledge, technology, power, decision-making potential, health, education and food. The more assets people have, lesser is the vulnerability that they face. In many areas of research, it has been proved that women tend to have limited access to assets as compared to their male counterparts.

In many areas of Bundelkhand region of Madhya Pradesh, most men migrate to urban areas in search of livelihoods, women, old age people and children are left behind. In this region women are deprived of the capacity to cope or learn about their vulnerabilities or rather, being kept out from accessing information. Like most of the rural areas in India, women from this region are facing constraints on both mobility and behavioural restrictions.

Women and girls in this area face severe droughts and acute water shortage at a much higher scale because they are the primary water collectors, users and managers of water. If water availability reduces the livelihoods of their families, it will be jeopardise and increase their workloads. The decreasing water availability may have secondary effects like less attendance and lower enrolment of girl children in schools. It may also affect women's engagement in income-generation activities because they are most of the time engaged in fetching water.

If we look at natural disasters and their subsequent impacts there are more women killed than men. Climate variability plays a critical role in epidemics across the globe and as a result, vector-borne diseases are increasing at an alarming rate. Women have less access to health facilities than men and their workloads increase because they have to spend more time caring for their sick family members.

It has been predicted that by 2050, climate change could result in plant species extinctions ranging from 18 - 35%. The potential effect will be vast reduction in the bio-diversity and traditional medicine options. Women often rely on traditional medicine and crop diversity for any climatic changes and any variability and/or permanent reduction will impact on food security and health. In Bundelkhand, rural women in particular are responsible for food production since the men often migrate from this area.

Less rainfall and drought have reduces crop harvest in this area. Women are already more vulnerable to the nutritional problem in Bundelkhand. The National Family Health Survey data shows that 70 percent of the women and 82.6 percent children (6-35 months) in Madhya Pradesh are anaemic.

Interventions related to risk reduction of climate change and social security should pay special attention to the need to enhance the capacity of women to manage climate change risks with a view to reducing their vulnerability and maintaining or increasing their opportunities for development.

There is an urgent need to adopt a gender responsive approach towards climate change policies and actions to improve access to skills, education and knowledge.

Support is needed at every step to build the capacities of women to help them raise their voice and develop the potential capital to demand access to risk management instruments.

Maroti Upare, Mumbai, Maharashtra

We must thank [Krishnan Srinivasaraghavan](#) for sharing information of Climate Refugees in Bangladesh which has highlighted impact of coastal and riverine migration. The impact is more on fishing community which resides near coast and river for earning their livelihoods. It is observed that the issue has not been given much serious thought in India as Bangladesh. In India more than 10 million fishing community people including those involved in supporting services will be impacted by coastal climate change. This has relation with loss of livelihood hence this issue needs to be addressed at local, regional and international level.

I would like to share my work experiences for rehabilitating them as given below:

- In Bangladesh FAO implemented project 'Enhancing food security of coastal community of Cox's Bazar district in Bangladesh' which was funded by UNDP. The project provided micro-capital grant for alternative livelihood to affected fishing community for settling them.
- In Sierra Leone, Shenge region island community provided higher power engine fishing boats for fishing in offshore area and settling at other places which are not affected by tides. The project 'Integrated development of rural fishing villages in Shenge region of Sierra Leone' funded by UNDP and UNCDF.
- In Vietnam fish cage culture is promoted in streams for providing livelihood of people affected near rivers in Northern provinces i.e. Ho Beann La etc.
- In Central Asia i.e. Uzbekistan, Tajikistan, Kyrgyzstan conducted aquaculture business planning training under TCP project of FAO for promoting aquaculture as livelihood for fishing community residing near rivers and reservoirs.
- Prepared project 'Improving access to fisheries sector for microfinance and insurance in Central Asia' which addressed climate change issues to arrest mobility. Project prepared for FAO covers Tajikistan, Uzbekistan, Kyrgyzstan and Kazakhstan, which is seeking assistance from donors for funding.
- In India World Bank supported 'Fisheries Management for Sustainable Livelihood (FIMSUL) project' in Tamil Nadu has studied these aspects but not initiated pilot projects. This need to be addressed by implementing pilot projects.

The above experiences tell that India needs comprehensive planning for rehabilitating coastal and riverine refugees with enhanced livelihoods where local, regional and international effort in terms of strategy, capacity building, technical support, funding and implementation is needed.

I shall be happy to share my experiences if required, with any organization.

Deva Prasad M, Prasadam, Thrissur, Kerala

In this context of 'Understanding migration and global environmental change nexus in India' through the human rights approach it is important to look at the need for recognising climate refugees from a legal perspective.

The impact of climate change would include a large number of hostile environmental situations such as floods, storms, droughts, desertification, and the rising level of the sea. These would especially affect populations in the developing countries due to the lack of infrastructure and enabling socio-economic framework to mitigate these adverse conditions. Further, the rising sea level would put in danger many island nations in the Pacific and Asia regions.

These hostile situations would affect a multitude of human rights, particularly, social and economic rights such as the rights to food, health, housing, and livelihood. The direct and indirect impact of climate change upon human rights is well acknowledged by Resolutions 7/23(2008) and 10/4(2009) of the Human Rights Council.

The lack of protection in the event of a grave breach of human rights owing to climate change would lead to a situation of extreme vulnerability, especially of the marginalised communities of various developing countries.

These extreme conditions may induce them to resort to migration. Factors such as poverty, gender, minority, and disability would further add to the vulnerability of people who would be forced to migrate.

Migrants seeking refuge would fall under the unrecognised category of climate refugees. The rapid rate at which climate change causes crises, warrants a dire need for a rights-based perspective to be brought into the international climate change governance regime.

A justice and equity argument also supports recognition and the adoption of a rights-based approach towards climate refugees, as the people affected by climate change induced displacement are mostly from developing and least developed countries, which have historically had a minor role in carbon emission.

The impediment in the quest for recognition of the acceptance of the climate refugee is the vacuum in the existing policy and legal framework - there is no clarity as to the definition or the institutional mechanisms which could be used in tackling the problem.

There is no obligation on the states that could be traced from the legal or policy framework relating to international environmental law (including the climate change regime) or that of international refugee law.

We can trace the link between a safe environment and human rights back to the Stockholm Declaration, 1972. Yet, there is no express right to environment evolving out of international environmental law.

The ambit of the definition under the Refugee Convention, 1951, is quite restrictive and only includes persons who have fled their country in fear of persecution for reasons of race, religion, nationality, membership of a particular social group or political opinion.

There is also no uniform definition that is based on any international consensus regarding what would constitute a climate refugee. This adds to the difficulty of developing any effective regime to tackle the issue and impedes the development of any norms or policies as a part of the international climate change regime aimed at by the Conference of Parties ("the COP") of the United Nations Framework Convention on Climate Change.

The victims of climate induced displacement are totally devoid of any human rights protection as there is no obligation on the states to accept climate refugees and the victims of climate induced displacement would have to wait for the charity or mercy of other countries.

In the climate change negotiations, climate change induced migration needs to be accepted as an adaptation strategy of last resort. This would help in the paradigm shift from thinking of climate change refugees as being just a secondary issue.

The climate change negotiation process should pro-actively try to build consensus among the state parties to agree upon a definition for climate refugees. A uniformly accepted definition would help in the recognition of the importance of tackling the issue of climate refugees and further push the international community to address the issue of developing a policy and legal framework: may be by way of a separate Optional Protocol under the United Nations Framework Convention on Climate Change that would place an obligation on the states to provide shelter for climate refugees.

It would be a good strategy for India to initiate discussion at the global stage regarding creation of a framework for climate refugees.

G Nirmala, CRIDA, Hyderabad, Andhra Pradesh

Central Research Institute for Dryland Agriculture (CRIDA) has taken up a project entitled “**National initiative for climate resilient agriculture**”. For details on the kind of project, objectives etc. please visit <http://www.nicra-icar.org/>.

Some relevant gender issues are discussed in the Current Science journal with regards to climate change (Current Science vol. 103 no.9, 10 November, 2012. pp 987-988). The commentary is available at: <http://www.currentscience.ac.in/Volumes/103/09/0987.pdf>.

Anupama Vijayakumar, Centre for Social Justice, Ahmedabad, Gujarat

Environment Change induced Migration in Saurashtra: An overview

Environmental change can occur due to climate change and degrading activities to the environment such as industrialization, depletion of natural resources and pollution.

Centre for Social Justice has commenced a Coastal Rights program carried out along the coast of Saurashtra. The information gathered from our visits to villages in Junagadh and Veraval reveal that in certain places, the water near the shore has become warmer than before. Where fish could be caught earlier near the shore, the fishermen have to venture out into the deep sea to find substantial fish stock, requiring them to stay for longer periods of time.

The cases of accidental deaths at sea hence increase. They often have to migrate to other coastal areas in search of fish stock. The smaller non-mechanized boat owners, who previously derived their livelihood from fishing around the shores, are out of occupation.

The rampant industrialization that has happened around the once flourishing coast of Saurashtra, has left the coast in an ecologically fragile state. The land is being eroded away in places such as Jaffrabad in Amreli district, due to rising sea levels.

The inhabitants of the region are worried about the lack of a protection wall, while their houses stand dangerously close to the rising sea. Looking at environmental change induced migration from a Socio-Economic Rights point of view, the migrating families in coastal areas in search of livelihood are denied the benefits under the Food Security Act and Right to Education Act.

Nivasi Shalas are residential schools where the children of migrant workers are provided a safe space to stay back and study while their parents migrate. The Government of Gujarat has sanctioned the construction of Nivasi Shalas a while back, but these have not been established in the coastal areas in Saurashtra. The migrating families need to be provided with roaming ration cards to ensure food security.

In view of the migration and vulnerability pattern in the coastal areas of Saurashtra, we suggest:

- Tightening of norms of implementation of the Coastal Regulation Notification, 2011

- Rigorous monitoring of the implementation of Water Act, 1974, Hazardous Substances Notification, in view of depletion of natural resources
- Evolution of a legal framework to establish community rights over natural resources.
- Evolving norms for Critical Vulnerable Coastal Areas
- Ensuring the safety of communities from rising sea levels, by construction of protection walls based on relevant scientific calculations
- Land for habitation and necessary facilities such as fish drying yards to be provided where land has been eroded. Land allotment for coastal communities to be included in the National Land Use Plan, National Land Reform Policy, and National Resettlement and Rehabilitation Policy
- Building disaster resilience of communities including a perspective of local knowledge.
- From the point of view of Socio-Economic Rights, ensuring Right to Food and Right to Education of migrating families by focussing on construction of Nivasi Shalas and provision of Roaming Ration Cards to the families.

Ahana Lakshmi, The Resource and Information Network (TRINet): for the coast, Chennai, Tamil Nadu

This is just to add to your note regarding FISHERIES MANAGEMENT FOR SUSTAINABLE LIVELIHOODS (FIMSUL) in Tamil Nadu, that pilot projects are being initiated under FIMSUL II which is now a component of the World Bank's Tamil Nadu and Puducherry, Coastal Disaster Risk Reduction Project (CDRRP) Project.

K V Peter, World Noni Research Foundations, Chennai, Tamil Nadu; second response

Dev Prasad has flagged the issue so important in the discussion on climate change. Migrants and climate refugees are as real in India as in any developing and least developed countries.

With forest cover depleting, intrusion into forests increasing and green cover reducing the real occupants of forests- tribals and primitives-are displaced and brought to a hostile environment.

On the other side there is migration for better wages and living conditions to developed economies. Here also uneducated labourers are the worst hit. Detailed studies are needed.

Ranjan Panda, Water Initiatives Odisha, Odisha

We have been working on climate change and migration in Odisha's drought prone and coastal erosion belts for about two decades now.

A district in Odisha whose forest resources have vastly depleted and where distress migration is a common feature, this is the only area from where people don't migrate because of the good quality Kendu leaf and other forest produce. The government should think of reviving the traditional water harvesting structures instead of a large scale project.

The future provision of water for irrigation and drinking will suffer as industry will encroach on it. This has happened for Hirakud dam and is going to be the case with the Rengali reservoir. Historically, large dam projects have not been able to meet even half of the targeted command area for irrigation. Further details are available at: <http://www.downtoearth.org.in/content/protests-continue-lower-suktel-dam-site>

For this discussion, I am sharing one of my articles published as a cover story in the Terra Green magazine in August 2011. It's about sad realities of climate refugees. It is available at: http://www.teriin.org/pdf/TG_Aug2011.pdf

Laxmi Kant Dadhich, Kota, Rajasthan

climate change has a direct concern to weather conditions arising out of cloud formation thereby altering the conditions of air flow .While studying role of forests along with its ecosystem services one can easily find the change and establish the change shown by the indicators such as the pollinators, biodiversity imbalance and have the quantification by reduced number of species available in the area.

With a single tree running out of the life by way of its cutting invites loss of air, water and soil and also the habitat loss for many of the micro and macro flora and fauna resulting in a great loss of biodiversity and the micro environment and micro ecology.

What has rightly been pointed out in this discussion about the environmental and ecological refugee where the number is going to increase all because of the man-made activities including the wars for water.

Women , children and the old population is going to the most sufferer for them special disaster help program shall be the need of the hour as part of climatic adaptation and this shall basically need the attention of the world environmental governance.

Many issues have already been covered by various researchers and experts in the field and are cited above. I do agree to most of them.

Rambha Mohan, Associate-Professor, Chemical/Environmental Engineering, Hyderabad, Andhra Pradesh

Climate/global environmental changes- their adverse effects, are part of Bio-diversity imbalances that is compelling migration of agricultural dependent communities and forest resources dependent tribes. In my view, there is nexus between Special economic zone (SEZ) projects, irrigation projects, industrial-mining projects, urbanization projects etc., and the Government is working against the UN international protocols/resolutions on climate changes, thereby neglecting the protective measures to address migrants and their issues

A complete overhaul of, for example, MOEF programmes in terms of auditing, scheduling and implementation is necessary to arrest migration on account of climate or environmental changes.

Many thanks to all who contributed to this query!

If you have further information to share on this topic, please send it to Solution Exchange for the Climate Change Community in India at se-clmt@solutionexchange-un.net.in with the subject heading "Re: [se-clmt] Query: Query Subject - Query Type. Additional Reply."

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