

Institutional options available to ensure that Index-based Flood Insurance (IBFI) is socially inclusive in Bihar, India



Picture: Early stage of the Flood in Muzaffarpur in 2017
(Photo credit: Anoj Kumar (IWMI))

Flood disaster is one of the greatest challenges affecting the livelihoods of the people of Bihar, India, hampering interventions aimed at addressing poverty, nutrition and health issues. Small and marginal farmers, tenant farmers and female-headed households are the most vulnerable to floods. Past insurance schemes implemented in Bihar, including both conventional and index-based flood insurance (IBFI) schemes, have been

largely biased towards larger farmers. As a result, such schemes failed to reach the small and marginal farmers, and other vulnerable groups, despite them being the most in need of risk transfer mechanisms (Singh and Singh 2013). An institutional mapping was followed by interviews conducted with key stakeholders engaged in crop insurance schemes. Based on these interviews, this brief attempts to highlight the existing

institutional mechanisms that can support tenant farmers and other vulnerable groups to gain access to IBFI. It also explains how the line agencies of the Government of India (GoI) and the State Government of Bihar (GoB) could use the identified institutional mechanisms to support the future upscaling of IBFI schemes.

KEY RECOMMENDATIONS

- Develop a partnership with a local nongovernmental organization (NGO) in order to quickly build trust in IBFI, reduce the cost of implementation and ensure inclusivity.
- Pay attention to community awareness-raising activities to enable the involvement of illiterate, women, and small and marginal farmers in the program.
- Use existing institutions (Bihar State Disaster Management Authority [BSDMA], Department of Agriculture, Directorate of Horticulture, Water Resources Department (WRD), Cooperative Department, Rural Development Department (RDD), and educational institutions), field staff and volunteers to take advantage of their skills and available facilities to enhance insurance literacy and clarity on IBFI.
- Allocate sufficient time for mobilizers/NGOs to educate the community about the complex IBFI product. The private sector can play a prospective role by developing videos and other promotional tools with community participation to explain the IBFI product and process.
- Create procedures to obtain the support of existing field staff for IBFI, in part to provide the authorization for tenant cultivation.
- Ensure the general public have access to field-level data on rainfall, floodwater levels, river water levels and crop damage, generated by various field officers, to increase the transparency of IBFI.

THE CONTEXT

Bihar, blessed with rich fertile soils and abundant water resources, is located in the Indo-Gangetic Plains in the Eastern region of India. The economy of the state is dominated by agriculture, which employs around 81% of the population. The area under cultivation as a proportion of the total area is as high as 60%, as compared to only 47% for the country as a whole (National Census 2011). However, Bihar is prone to multiple and frequent disasters of various types, predominantly floods and droughts. As such, 74% of the geographical area of North Bihar is considered to be prone to floods.

About 80% of the farmers in Bihar are small and marginal farmers having an average landholding of 0.4 hectares (ha). Sharecropping and other tenure arrangements are most common among 90% of the farmers in both the owner-operators and landless categories, without any formal documents to prove ownership of the areas they cultivate. Landownership is mostly vested with men and they carry out the majority of the agricultural activities. The population consists of 10-12% of female-headed households. About 16-20% of the population belongs to scheduled castes and scheduled tribes (SC&ST), and 25-30% of the people are from ethnic minorities. The levels of literacy vary from 60% to 90% depending on the village context.

The Government of India (GoI), in collaboration with the State Government of Bihar (GoB), has been implementing various insurance schemes since the 1980s, aiming to transfer the risks associated with natural disasters, but the performance of crop insurance schemes

in the state was unsatisfactory (Singh and Singh 2013). The past schemes were mainly biased towards large farmers, and small and marginal farmers failed to receive benefits from the schemes (Singh and Singh 2013). The latest crop insurance scheme called Pradhan Mantri Fasal Bima Yojana (PMFBY) implemented nationwide was terminated by the GoB in 2018 due to unsatisfactory levels of claim disbursement to the farmers. It is to be replaced by the Crop Assistance Program (CAP). The PMFBY was unable to reach tenant and marginal farmers due to the requirement of land titles and written tenancy agreements. It is also a well-known fact that the provision of relief or crop assistance at a time of a major natural disaster is beyond the capacity and resources of the government (United Nations 2008).

The International Water Management Institute (IWMI) pilot tested the IBFI project in Muzaffarpur district, Bihar, India, in the 2017 Kharif season among 200 farmers. IBFI used innovative technology, such as remote sensing, to improve the accuracy and efficiency of insurance schemes by estimating flooded areas and crop losses through digital mapping. In comparison, conventional insurance schemes use estimates of the individual farmer's yield loss to calculate the amount of compensation. Advances in satellite technology help avoid the drawbacks of high transaction costs to estimate compensation, thereby expanding the potential reach of insurance policies to rural areas that were previously considered uninsurable (Matheswaran et al. 2019). However, ex-post evaluation findings show that a weakness of the scheme was its inability to reach all farmers in all segments of the community. As such, the scheme was not fully inclusive.

¹Small farmers earn their livelihoods cultivating 0.5 acres (0.2 ha) to 2.5 acres (1 ha) of land, and marginal farmers cultivate less than 0.5 acres (0.2 ha) (Singh et al. 2014).



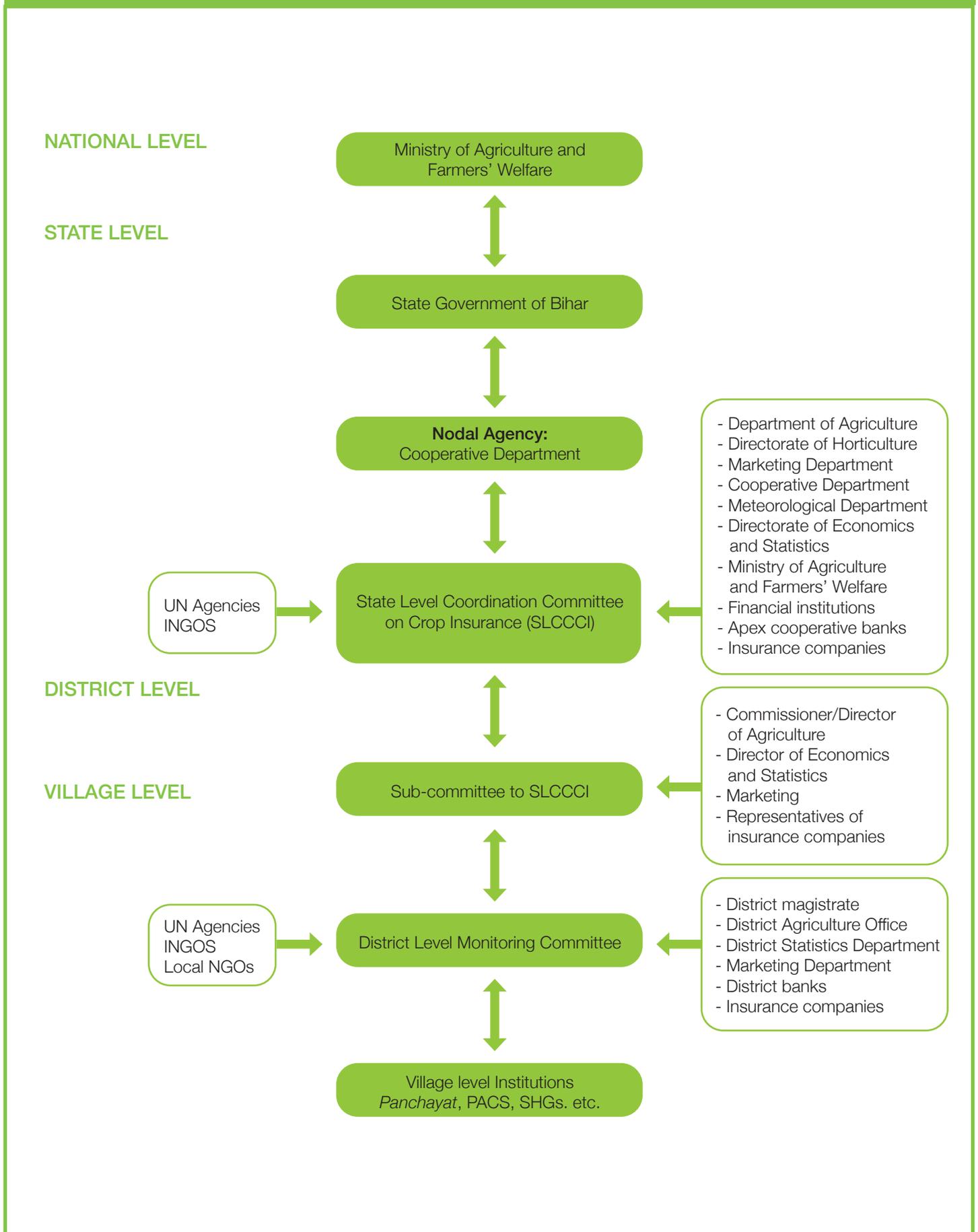
A typical village occupied by marginal farmers in Muzaffarpur district, Bihar, India.
(Photo credit: Anoj Kumar)

INSTITUTIONAL ARRANGEMENTS FOR CROP INSURANCE

In Bihar, a multitude of agencies are playing active roles in disaster risk reduction (DRR) and disaster management directly and indirectly at different levels. The major stakeholders engaged in crop insurance schemes are illustrated in

Figure 1. The Ministry of Agriculture and Farmers' Welfare is the line ministry of the central government linking the state government's ministry related to agriculture and farmers' welfare, including crop insurance.

FIGURE 1: INSTITUTIONAL ARRANGEMENTS FOR AGRICULTURE INSURANCE IN BIHAR



Notes: UN - United Nations; NGO - Nongovernmental organization; INGO - International nongovernmental organization; PACS - Primary Agricultural Cooperative Societies; SHG - Self-help Groups.

The Cooperative Department of GoB is the nodal department mandated to deal with crop insurance. The Department of Agriculture, Directorate of Horticulture, Water Resources Department (WRD), Rural Development Department (RDD), and local and international NGOs are the major stakeholders at the state level promoting agricultural development, farmer empowerment and livelihood enhancement. The Disaster Management Department (DMD), Bihar State Disaster Management Authority (BSDMA), WRD and the Meteorological Department are involved in providing data and information, capacity building related to disasters and distribution of relief. These agencies have the capacity to play an important role to support the upscaling of the IBFI scheme by addressing farmers' distrust in crop insurance, building capacities on insurance and risk transfer, sharing data and providing support to address inclusive issues.



Picture: Farmer enrollment to IBFI at village level
(Photo credit: Mohamed Aheeyar, IWMI)

USE THE INSTITUTIONAL NETWORK FOR CAPACITY BUILDING, SENSITIZATION AND UPSCALING

There is a well-developed institutional network for capacity building, sensitization and upscaling.

Several agencies and NGOs are involved in providing training and capacity building on agricultural innovations, DRR, and disaster mitigation at various levels. These agencies have the necessary physical and human resources to fulfill the delegated tasks. Government interventions are needed to sensitize and capacitate these organizations to utilize the resources provided at field level to build awareness on risk transfer mechanisms and the potential benefits of crop insurance to simplify the promotion of IBFI:

- BSDMA has a network of over 1,000 master trainers stationed throughout the state (one per three Panchayat areas) to support the mandate of providing training and capacity building on DRR and disaster mitigation to the relevant stakeholders.

- The Cooperative Department has formed democratically elected Primary Agricultural Cooperative Societies (PACS) at Panchayat level. PACS are responsible for ensuring input supply, crop insurance, farm credit and marketing of agricultural produce. PACS are linked to District Central Cooperative Banks (DCCBs) and Apex level State Cooperative Bank (SCB).
- RDD has a volunteer force of 'Village Resource Persons' (VRPs) to mobilize the community to reach their projects to the vulnerable people. VRPs being a local institution have a rich knowledge of social dimensions of the village and agricultural practices.
- The Directorate of Horticulture and Department of Agriculture are mandated to provide regular training to farmers on new technologies, post-harvesting practices, micro-irrigation, etc., through their network of regular field officers and contracted field staff. The Department of Agriculture has appointed village-level field officers (Kishan Salaka) to facilitate and coordinate field-level activities, data collection and provide training to farmers. The village-level field officers are vertically linked with the Block Agriculture Officers (BAO) and the District Agriculture Officers

(DAO). The network of "Kishan Salaka" is a good resource to create awareness of IBFI among the farming community, given that the appropriate arrangements are made with the Department of Agriculture.

- The Indian Council of Agricultural Research (ICAR) has established 39 Krishi Vigyan Kendras (KVKs) (farmer education centers) throughout Bihar to serve as agricultural knowledge centers for farmers, women farmers, rural youth and extension functionaries. One of the main functions of the KVKs is to organize regular training programs for farmer Self-help Groups (SHGs) and federated organizations of SHGs. This network of KVK resource centers aims to create awareness on agricultural extension services through their routine training programs conducted for the farmers and officers at the district level. IBFI could be included as a component of these training programs.
- Bihar has the D. N. Singh Training Institute for Cooperative Societies, two agricultural universities, five agricultural colleges and one horticulture college engaged in training, awareness creation and capacity building of farmers and other stakeholders.

In addition to government agencies, there are a number of NGOs working closely with vulnerable people to enhance their standards of living.

- An NGO called 'JEEVIKA' is working closely with RDD to facilitate the implementation of rural livelihood projects of RDD. JEEVIKA has a network of institutions starting from SHGs formed by 10-15 households. At the next stage, 15-20 SHGs are amalgamated to form village level organizations (VOs). Cluster level organizations (CLOs) have been created through the integration of 30-50 VOs. Therefore, JEEVIKA has the capacity and awareness of community vulnerabilities, and has the necessary institutional arrangements to conduct awareness building and mobilization of people.

- OXFAM India has established a volunteer network in three districts of Bihar, including Muzaffarpur. The network already has 90 volunteers covering 40 villages to facilitate various rural development programs of both the government and NGOs. The volunteers have been provided training on social inclusiveness, water, sanitation and hygiene (WASH), and linking the community with various government rural development programs.

- An NGO called Integrated Development Foundation (IDF) has a network of 96 local NGOs referred to as "Mission DRR" working in 10 districts of Bihar, including Muzaffarpur. Since these local NGOs are grassroots-level organizations, they are well known by local people and this has helped to build a level of trust.

Capable private sector entities are available to offer services to promote IBFI, by developing appropriate promotional materials and videos suited to diverse communities. A private company named 'Digital Green' is currently working with 'JEEVIKA' and Oxfam India to provide tailor-made solutions to create awareness with an understanding of the local context, and to build the technology so that it is suited to and for the community.



Picture: Baghmata River running across Muzaffarpur, Bihar, India
(Photo credit: Mohamed Aheeyar, IWMI)

MECHANISMS FOR DATA COLLECTION, SHARING, AND COMMUNICATION

Established procedures, mechanisms and field staff are in place to generate and disseminate data, and communicate from the field level to the upper management and vice versa.

- BSDMA disseminates flood management information such as flood water levels, rainfall, forecasts of rainfall, and river water levels. The agency disseminates this information to its one million mobile subscribers to assist with disaster preparedness and management.
- Kishan Salaka and contracted field staff of the Department of Agriculture are regularly collecting data on extent of the area cultivated, yield levels and area of crop damage.

- WRD has appointed Khalasi (conductor) at every 5 square kilometers (km²) of the river embankment to collect water/flood level data, and provide information on the condition of embankments across the state. Data collected by the conductors are a good source of independent verification of flood levels. The possibility of using the manual flood data collected by the conductors to improve the transparency and clarity of the IBFI product must be tested.
- Gram Panchayats play a greater role during natural disasters by assessing the damage, selecting the vulnerable people for government relief programs and coordinating relief distribution.

INSTITUTIONS TO MAKE THE PRODUCT INCLUSIVE

Small farmers are generally price sensitive, cash constrained, not always financially literate, and understandably cautious to trust unfamiliar financial products and institutions. Therefore, successful scaling up of IBFI requires sustained interventions and the significant involvement of local partners (Burke et al. 2010). Patt et al. (2010) disclosed that the trust of farmers in organizations providing crop insurance services is one of the most important determinants of the demand for insurance in developing countries. Using the services of an appropriate local NGO working in the area, with a special focus on the development of vulnerable people, is a convenient way to build the trust and promote the insurance product to small, marginal and tenant farmers. The local NGOs usually operate with sufficient knowledge and data on the

vulnerable segments and social strata of the community, and this helps to easily identify, target and mobilize the vulnerable communities and make the scheme more inclusive. This, however, requires the formation of correct partnerships, allocation of sufficient time for mobilization during project implementation and provision of adequate finance. The expertise of NGOs in social mobilization is a key asset to stimulate special efforts to ensure equity and inclusiveness. The NGOs could also play a dominant role in promoting the IBFI product given the high levels of disparity that exist in literacy and other inequalities, which demand diverse approaches to create awareness among the heterogeneous communities in the pilot areas. The linkages with the Gram Panchayat institution would further strengthen the mobilization process and inclusive development given their understanding of the village profile and different categories/vulnerabilities of the population.

There are several potential ways to include the tenant/landless farmers into the IBFI scheme via the existing institutions. One of the possibilities is to use the local Panchayat to certify the land that is being cultivated by a particular farmer in a given season. This is dependent on the willingness of the Panchayat leader to provide his/her endorsement in the local context, without rent-seeking. Similarly, local NGOs working in particular villages may be able to certify the area cultivated by a tenant. Also, the government could provide instructions to the agricultural field officer (Kishan Salaka) to authorize the cultivated area and type of crop cultivated by the farmer, following a similar practice to that adopted for registering farmers to the latest government crop assistance program for disaster compensation. Engaging with SHGs and savings/credit groups during the roll out of the scheme would enable the involvement of marginalized people, especially women.

REFERENCES

- Burke, M.; de Janvry, A.; Quintero, J. 2010. Providing index-based agricultural insurance to smallholders: Recent progress and future promise. Available at http://siteresources.worldbank.org/EXTABCDE/Resources/7455676-1292528456380/7626791-1303141641402/7878676-1306270833789/Parallel-Session-5-Alain_de_Janvry.pdf (accessed on September 20, 2019).
- GoI (Government of India). 2015. All India report on agricultural census of India 2010-11. New Delhi, India: Agriculture Census Division, Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India. Available at <http://agcensus.nic.in/document/ac1011/reports/air2010-11complete.pdf> (accessed on September 20, 2018)
- Matheswaran, K.; Alahacoon, N.; Pandey R.; Amarnath, G. 2019. Flood risk assessment in South Asia to prioritize flood index insurance applications in Bihar, India. *Geomatics, Natural Hazards and Risk* 10(1): 26-48. <https://doi.org/10.1080/19475705.2018.1500495>
- Patt, A.; Suarez, P.; Hess, U. 2010. How do small-holder farmers understand insurance, and how much do they want it? Evidence from Africa. *Global Environmental Change* 20(1): 153-161. <https://doi.org/10.1016/j.gloenvcha.2009.10.007>
- Singh R.K.P.; Singh K.M. 2013. An overview of agricultural credit and crop insurance in Bihar. Munich Personal RePEc Archive (MPRA) Paper No. 46901. Available at <http://mpra.ub.uni-muenchen.de/46901/> (accessed on September 20, 2019).
- Singh, R.K.P.; Kumar, A.; Singh, K.M.; Kumar, A. 2014. Agricultural production performance on small farm holdings: Some empirical evidences from Bihar, India. Paper presented at the 8th International Conference of Asian Society of Agricultural Economists (ASAE), Savar, Bangladesh, October 15-17, 2014. Available at <https://mpra.ub.uni-muenchen.de/59680/> (accessed on September 20, 2019).
- United Nations. 2008. Syria drought appeal. New York, USA: Office for the Coordination of Humanitarian Affairs (OCHA). Available at https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=2ahUKEwj96dGrxt7kAhV47XMBHbFuCfAQFjABegQIAhAC&url=https%3A%2F%2Fwww.unocha.org%2Fsites%2Ffms%2FCAP%2F2008_DroughtAppeal_Syria.doc&usg=AOvVaw3bNRW0MCIMY0relohfiOP (accessed on September 20, 2019).
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