



## **DREAM II Conference**

**Adama, Ethiopia**

**15 -18 March 2022**

# The Need for Coordination and Cooperation: the Case of Gully Control near Jigjiga Town

Dr. Abdulkadir Imam

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# Gully development near Jigjiga Town

- Challenges
- Area
- Efforts
- Way Ahead



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# 1. Challenges

- ▶ Extensive gully development near Jigjiga (Sheik Ali Gure, Boldid-Karamara, etc.) – threatening the future of the city
- ▶ Damaging productive arable and grazing lands
- ▶ Damaging infrastructures such as water supply systems, roads, etc.
- ▶ Extending to the city at rate of about 70m per year at Sheik Ali Gure locality, and can encroach upon Jigjiga town.
- ▶ Draining shallow ground water, hampers access to field, farm operation and transport



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# Damaged water supply system





# Extensive arable land affected by gully development



# Gully development from 2003 to 2021



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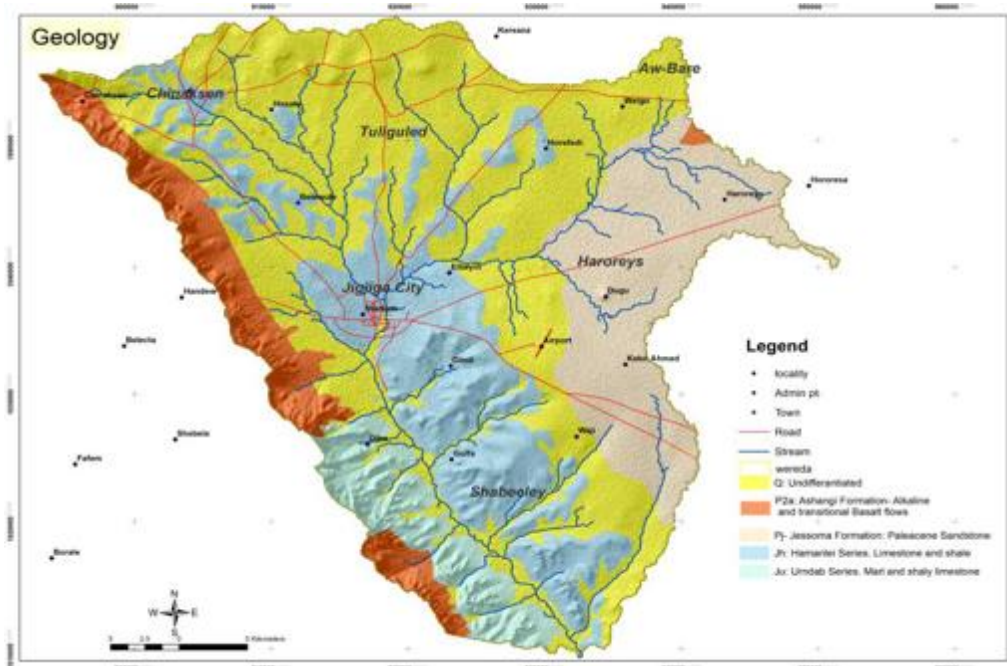
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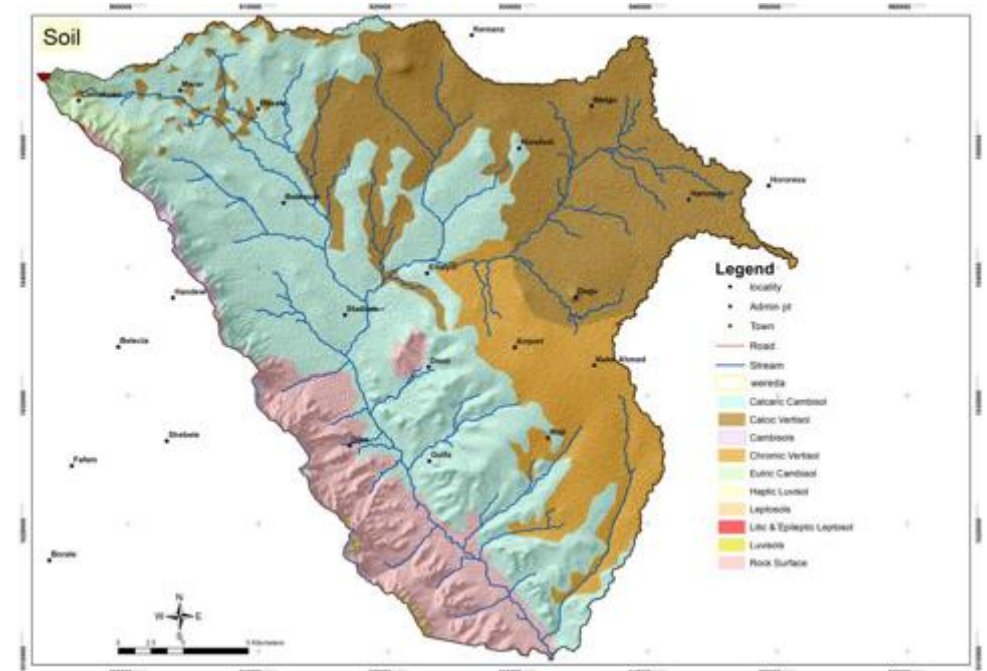


## 2. Area

- The watershed of Jigjiga has an area of 1500 sq.km.
- Some of the contributing factors to gully development are:



i. Geological formation: characterized by soluble and karstic carbonate rocks underlying the recent sediments.



ii. Soils types: dominantly sandy on the surface and clayey at depth with erosive and dispersive nature.

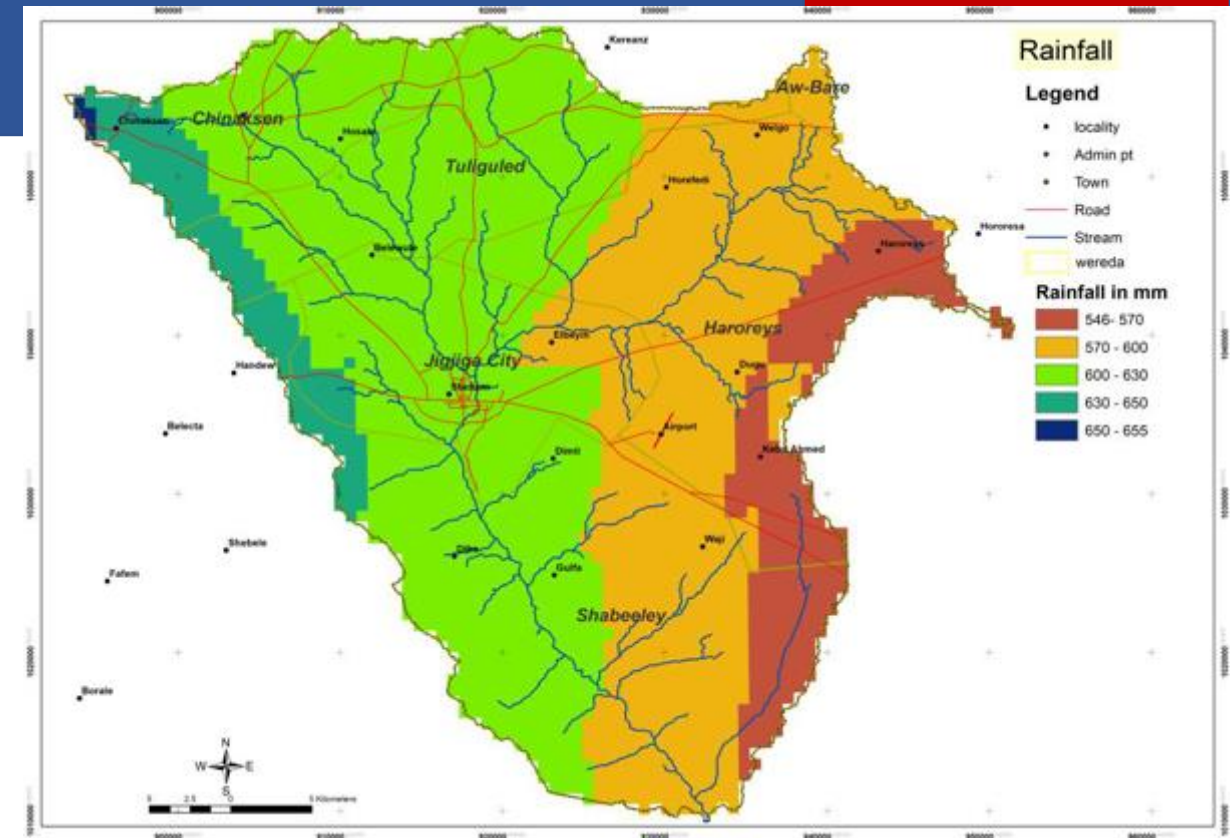
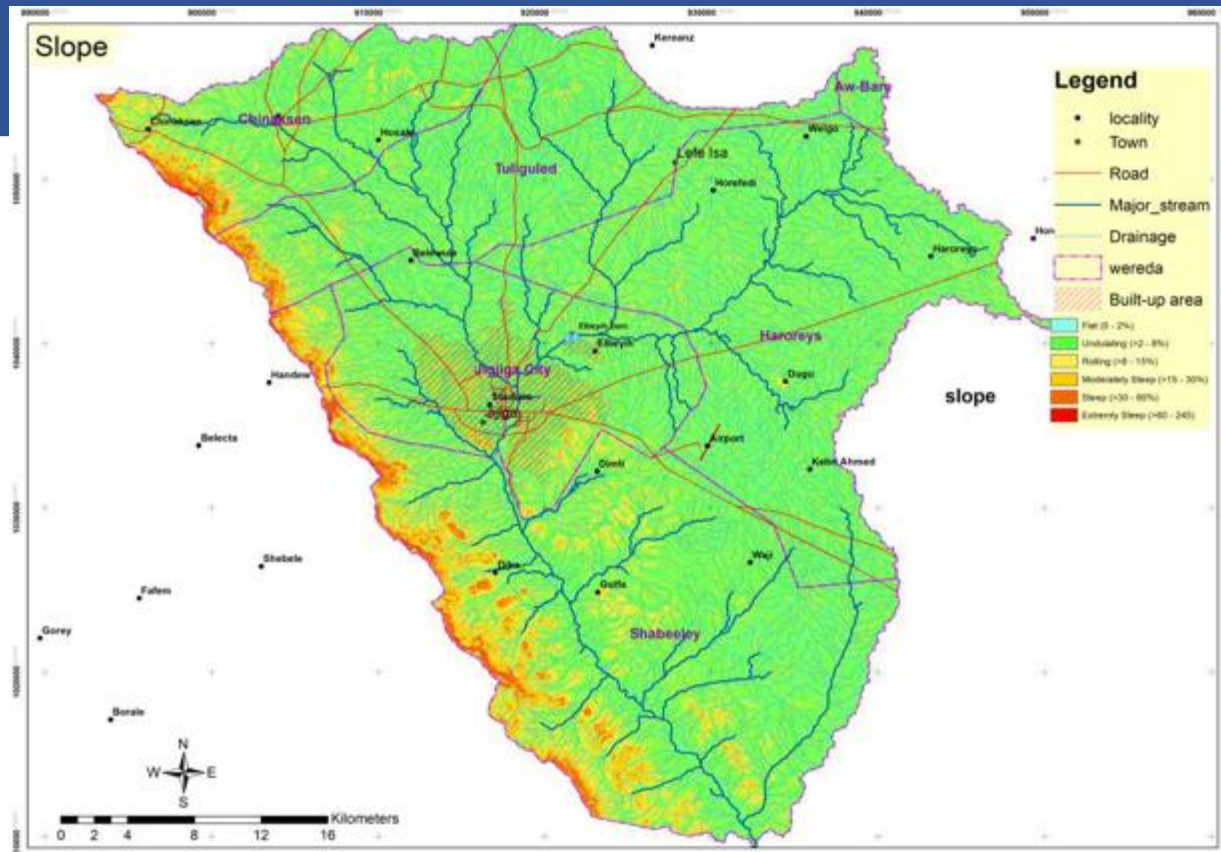


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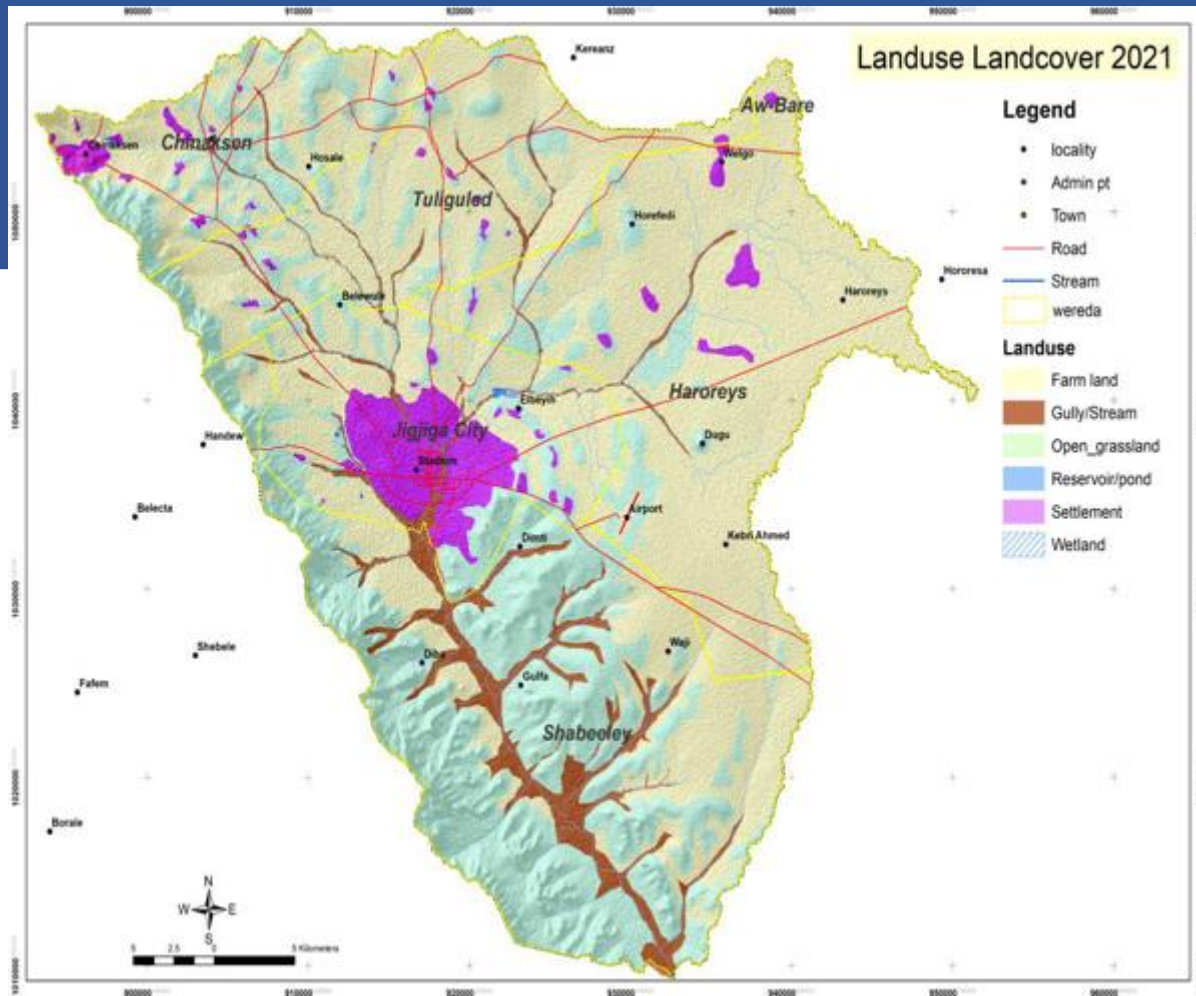
...area



iii. Topography: the high altitude of the western and northeastern part of the watershed and the undulating nature of the remaining parts

iv. Rainfall: the elevated western and northeastern parts of the watershed receive more rainfall and the high intensity rainfall frequently occurring in recent years causes flood hazard and gully development.

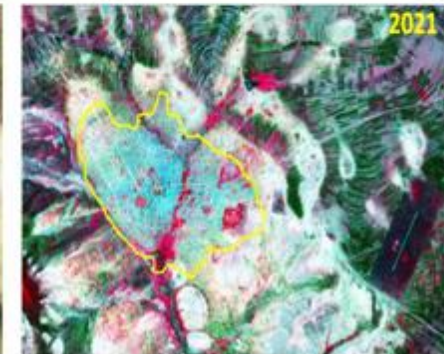




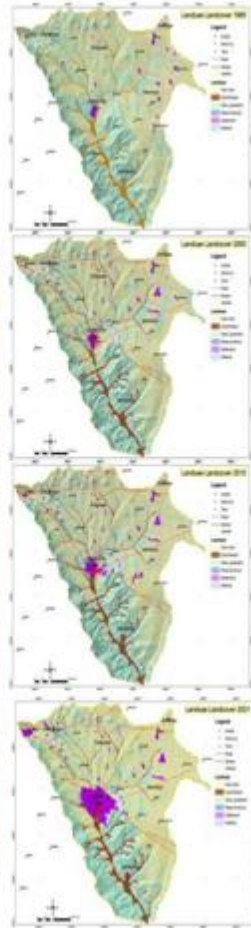
## Land use-Landcover Conversion

- Half a decade ago, Jigjiga town had had an area of only 150 of ha.
- The biggest leap in its growth is seen during the current decade. Other settlements have also grown during this period.
- Most of the landuse conversion is from agriculture to settlement

Dominant LULC Type	1985	2000	2010	2021	Change in percent		
					1985-2021	2000- 2021	2010-2021
Farm land	86391	87193	87593	84640	-2.03	-2.93	-3.37
Gully/vulnerable areas	6731	6777	7250	8461	25.70	24.84	16.69
Open, grass and bush land	56899	55128	52407	50101	-11.95	-9.12	-4.40
Reservoir/pond/wetland		83.25	92.7	92.7		11.35	0.00
Settlement	1990	2433	3562	7892	296.64	224.42	121.58



Source: Copernicus Sentinel data 2021, processed by ESA; Landsat-4 image courtesy of the U.S. Geological Survey



### v. Deforestation and changing land use/cover

- ▶ The main land use in the watershed is cultivation and is taking more land from the natural covers
- ▶ Growing urban area is consuming other land use types
- ▶ Deforestation at the upper catchment, quarry for construction materials and poorly planned access roads to such sites



### 3. Efforts



- ▶ There has been efforts of gully control and land restoration measures using physical structures such as water spreading weirs and check dams.
- ▶ some are relatively successful, e.g., Boldid-Karamara sites



- ▶ The successful ones are contributing to the soil & water conservation efforts with visible moisture differences at the upstream and downstream of the structures helping the farmers to grow crops.



# ...efforts

- ▶ at some sites such efforts have failed, e.g., Sheik Ali Gure site.
- ▶ **In general, the existing interventions are not adequate to address the gully challenges as compared to the scale and complexity of the current problem, urging for more coordinated actions.**
- ▶ awareness is still low, capacity is limited, efforts are fragmented and coordination is weak

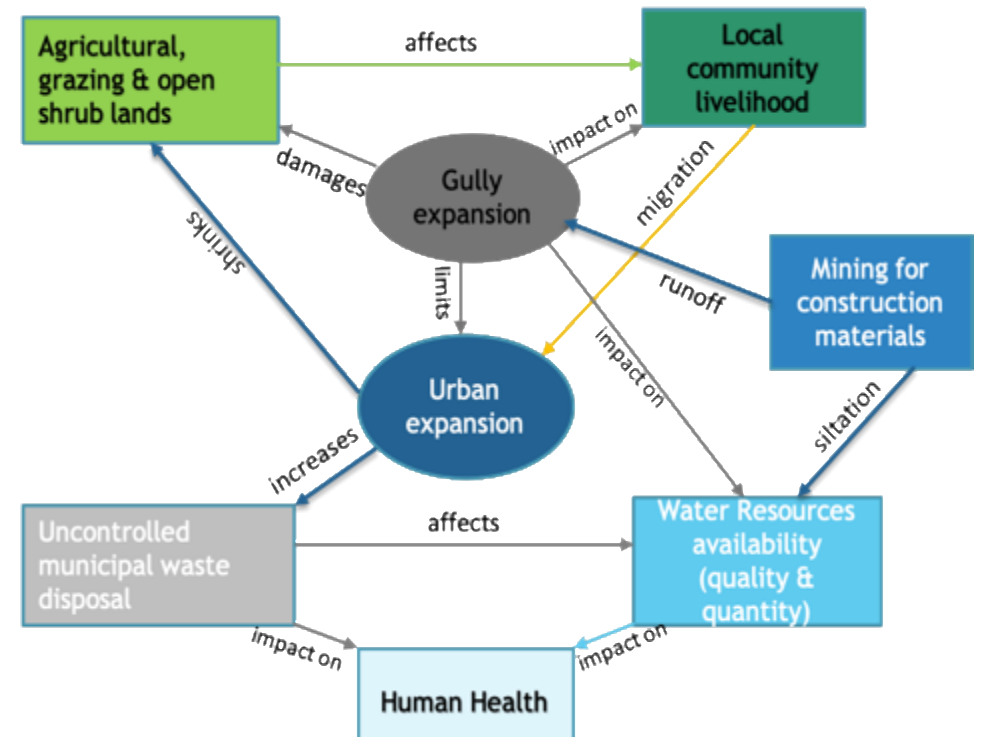


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# 4. Way Ahead

- ▶ The solution is beyond single measures
- ▶ A larger area based effort and coordination is required with high level support
- ▶ Promote practical problem solving cooperation
- ▶ Combine available resources in area planning
- ▶ Make stakeholder cooperation plan



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