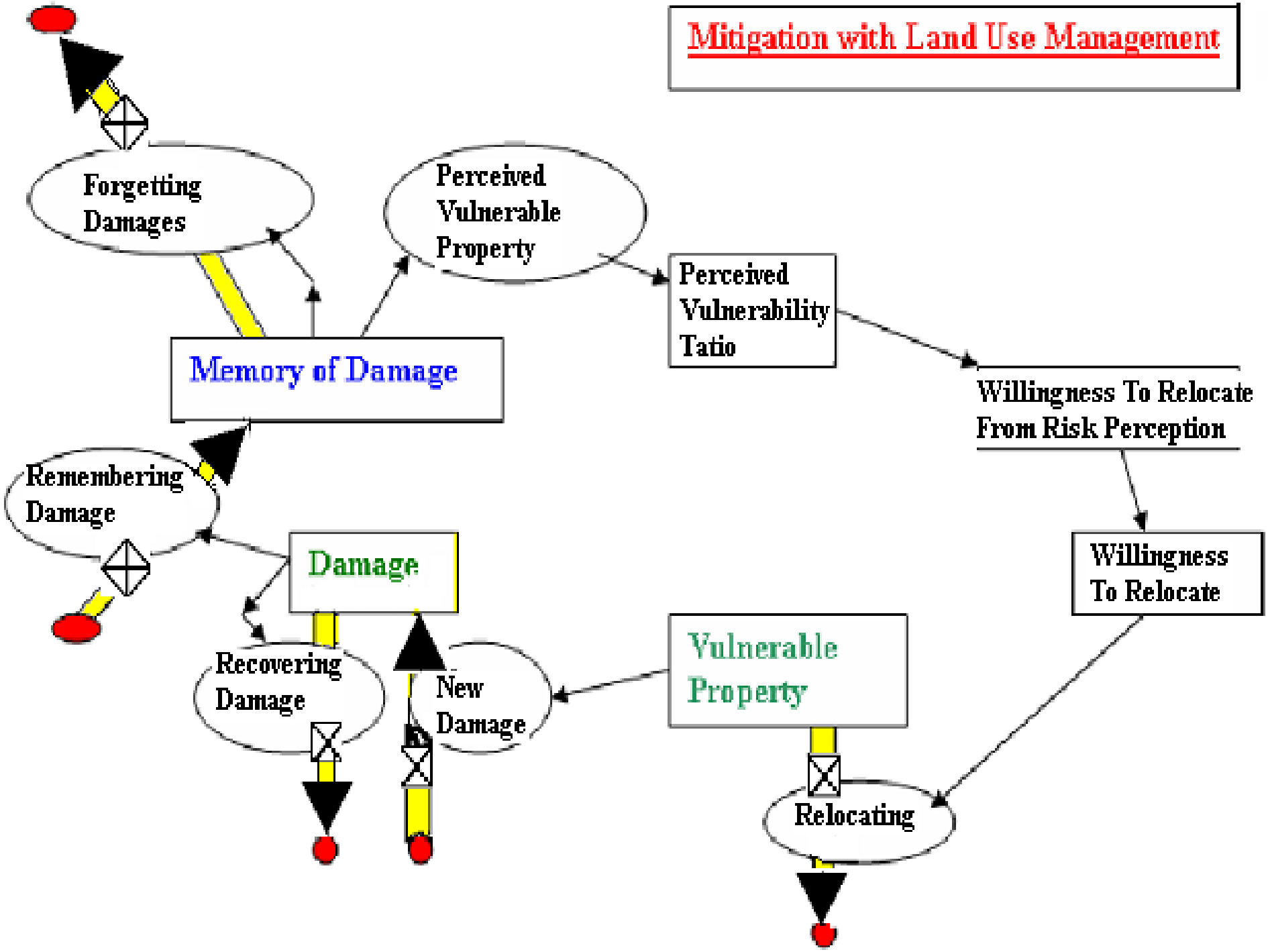
Disaster Management

2. Vensim Modeling

by

Dr Engr. Javed Yunas Uppal

Pakistan Foundation for the Advancement of Engineering and Technology


Mitigation with Land Use Management
Forgetting Damages
Perceived Vulnerable Property
Perceived Vulnerability Tatio
Memory of Damage
Willingness To Relocate From Risk Perception
Remembering Damage
Damage
Willingness To Relocate
Recovering Damage
New Damage
Vulnerable Property
Relocating

Disaster Mitigation with Land Use Management

- **Flood hazards can be *Mitigated with Land Use Management loop*.**
- **The management loop has three main stocks:**
- ***1. Vulnerable property*,**
- ***2. Damage*, and**
- ***3. Memory***
- ***of damage*.**

Vulnerable property **is the property exposed to damage during a flood.**

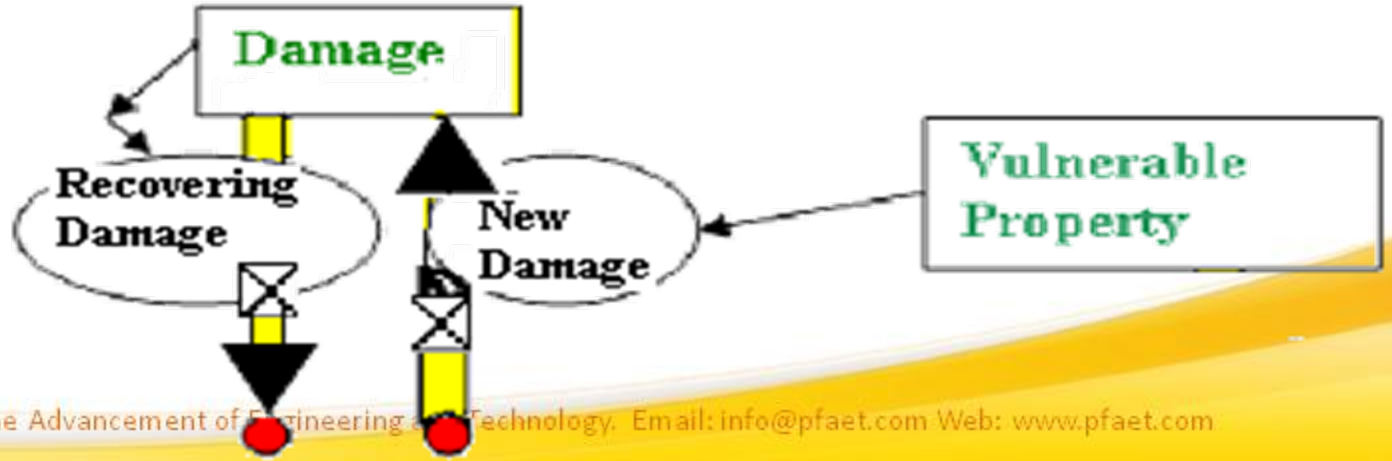
Its magnitude is the total value of the damaged structures.

As the level of *vulnerable property* increases, the potential for damage also increases.

During an event, a fraction of the vulnerable property will become damaged.

This rate of *new damage* increases the level of *Damage* in a community.

Too swift "return to normalcy" after a disaster, meaning reduction in the recovery time, and increasing the rate of *recovering damage*, may also have some adverse consequences.

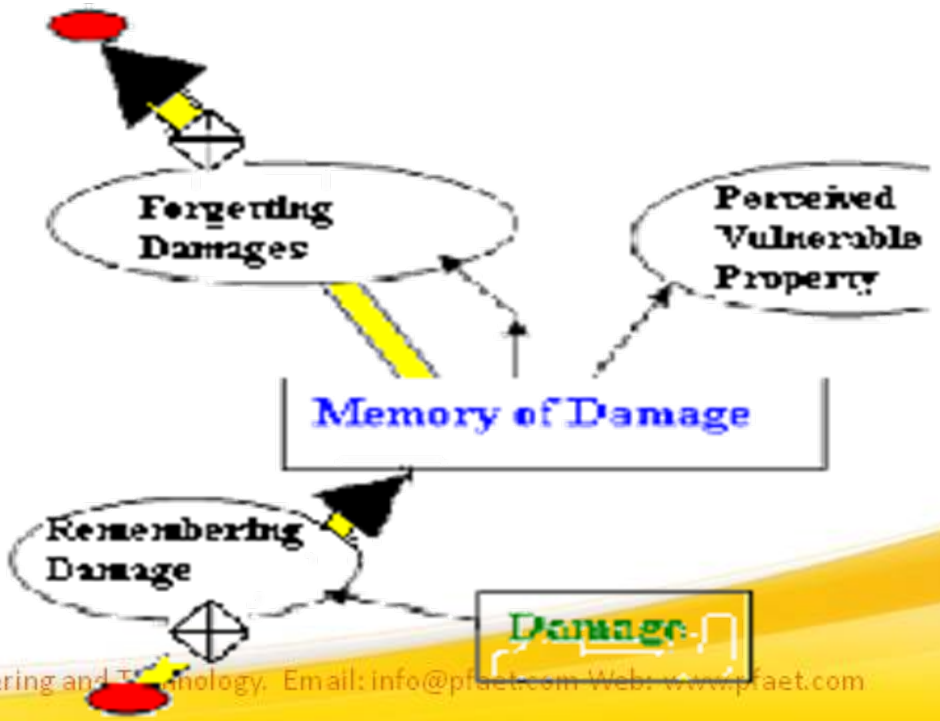


The decisions made after disaster will depend on how well the event is remembered and what lessons are learned.

The *Mitigation with Land Use Management* continues with the *Memory of Damage* stock.

A fraction of the *damage* incurred during a disaster is remembered.

Rate of *remembering damage* is influenced by news coverage and the information provided.



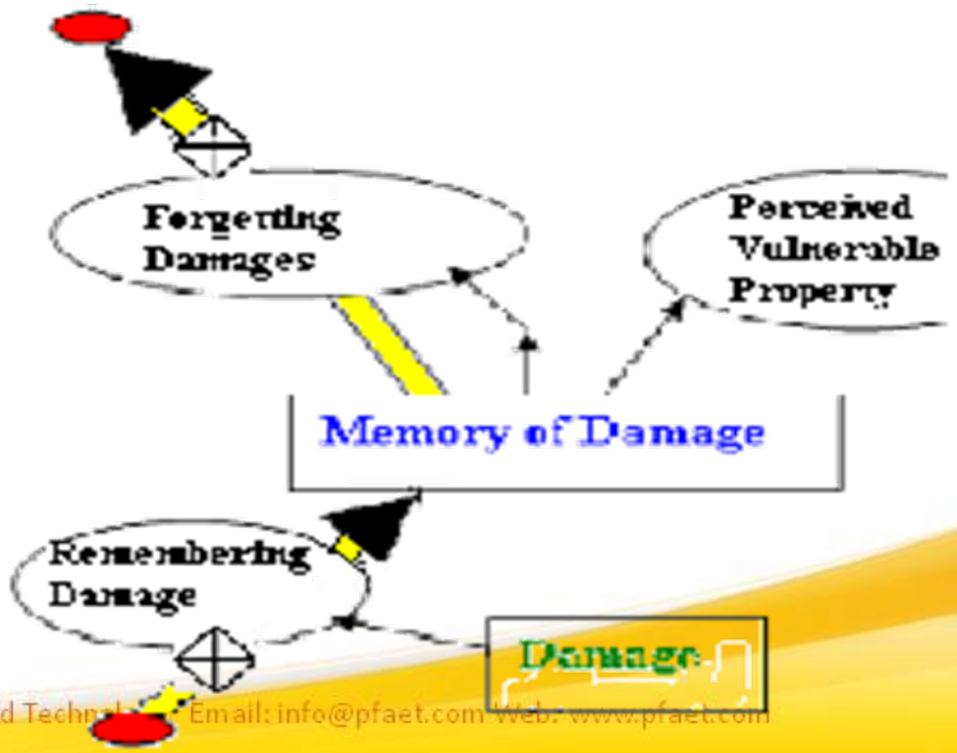
After an event, memories of damage fade quickly.

As the time to forget damage decreases, the *rate of forgetting damage* will increase, thus reducing the *memory of damage*.

Where perceived damage is lower, perceptions of actual problem will decrease.

It is important to keep the *rate of remembering damage* up.

We need to impress upon the administration to make wise land use decisions.



The *perceived extent of vulnerable property* is influenced by the Memory of damage.

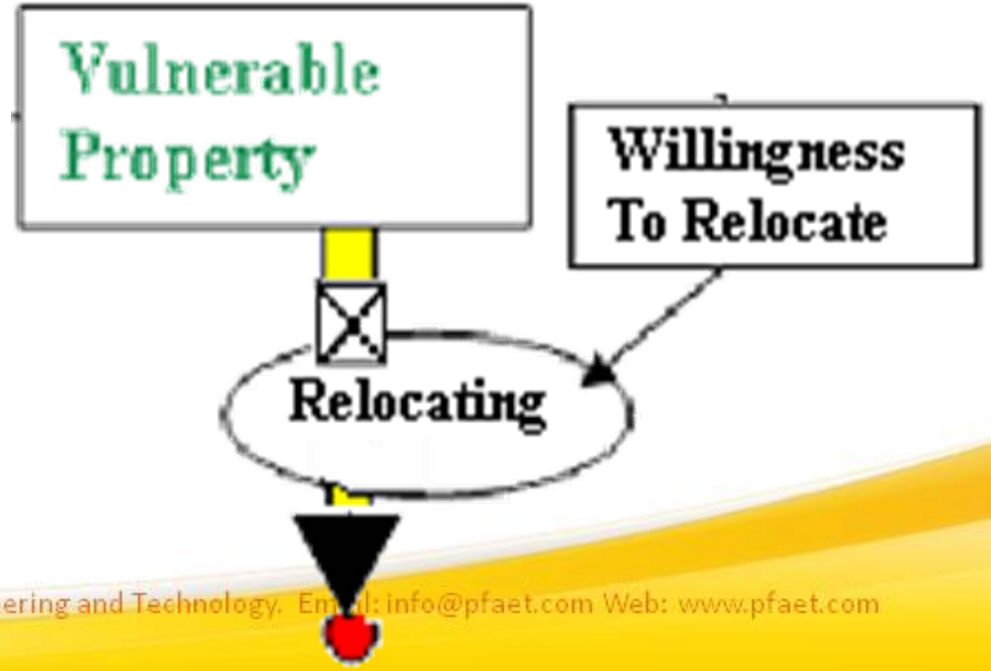
As this knowledge increases, more property owners have more perception of their risk.

The *perceived vulnerability ratio* is a ratio of perceived vulnerable property to actual vulnerable property.

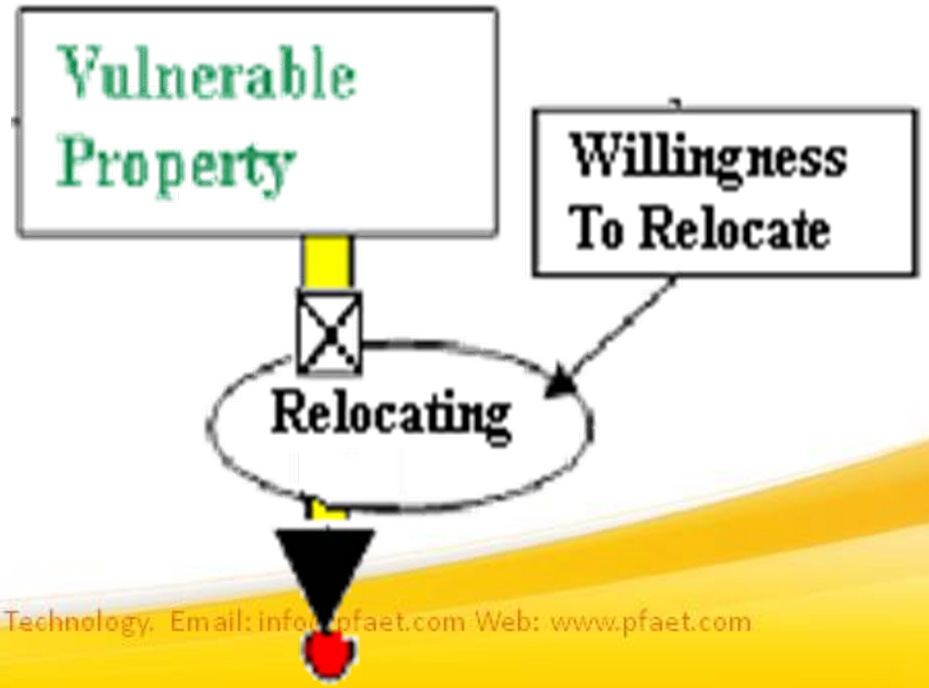
Below =a low one perception of the risk.

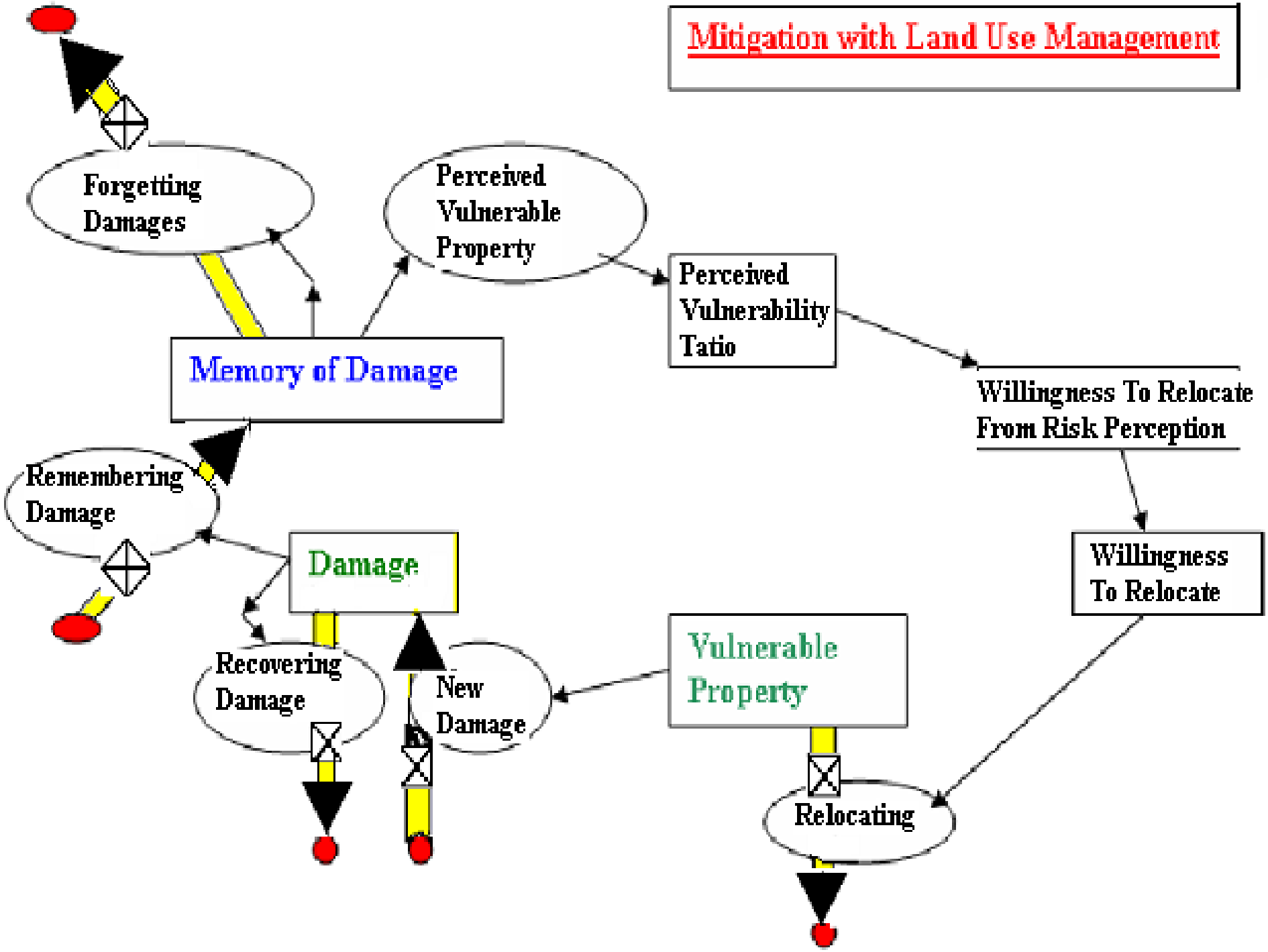
Greater = people than are willing one to relocate.

The effective way to minimize damage during a flood is to reduce extent of Vulnerable Property.
This is done by increasing risk perception. Govt buying out properties in hazardous land also increases *willingness to relocate*.
The local government may also face reduction in the revenue.
Higher levels of government has to intervene through grants to encourage Relocation.



As the *willingness to relocate* increases, property owners are more willing to Relocate to safer locations, and thus, the level of *Vulnerable Property* will decrease over time, along with the potential for *new damage* during the next event. This completes the *Mitigation with Land Use Management* loop; a balancing loop that results safer situation for the next event.

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