

SEACAP

Overview of innovative techniques in environmentally-aware recovery for infrastructure, and reducing future risk and serving the poorest most vulnerable communities



26-27 January 2009, Kobe Japan

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Overview

- 1. Preparation**
- 2. Mitigation**
- 3. Response**
- 4. Recovery**

Reference Context

- Slope instability in Laos**

1. Preparation

Step 1

- Appropriate infra standards & specs
- Guidelines
- Inventory

Step 2

- Hazard – Risk Assessments
- Prioritize

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ
ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນາຖາວອນ

GUIDELINES

Slope Maintenance Site Handbook

ຄູ່ມືປະຈຳສະໜາມ
ການສ້າງແປງຕະຝັ່ງເຈື່ອນ



ກະຊວງໂຍທາທິການ ແລະ ຂົນສົ່ງ

ກັນຍາ 2008



Inventory Hazards

Scott
Wilson

Inventory Species



Hazard

Risk

Failure in cut slope and original slope above

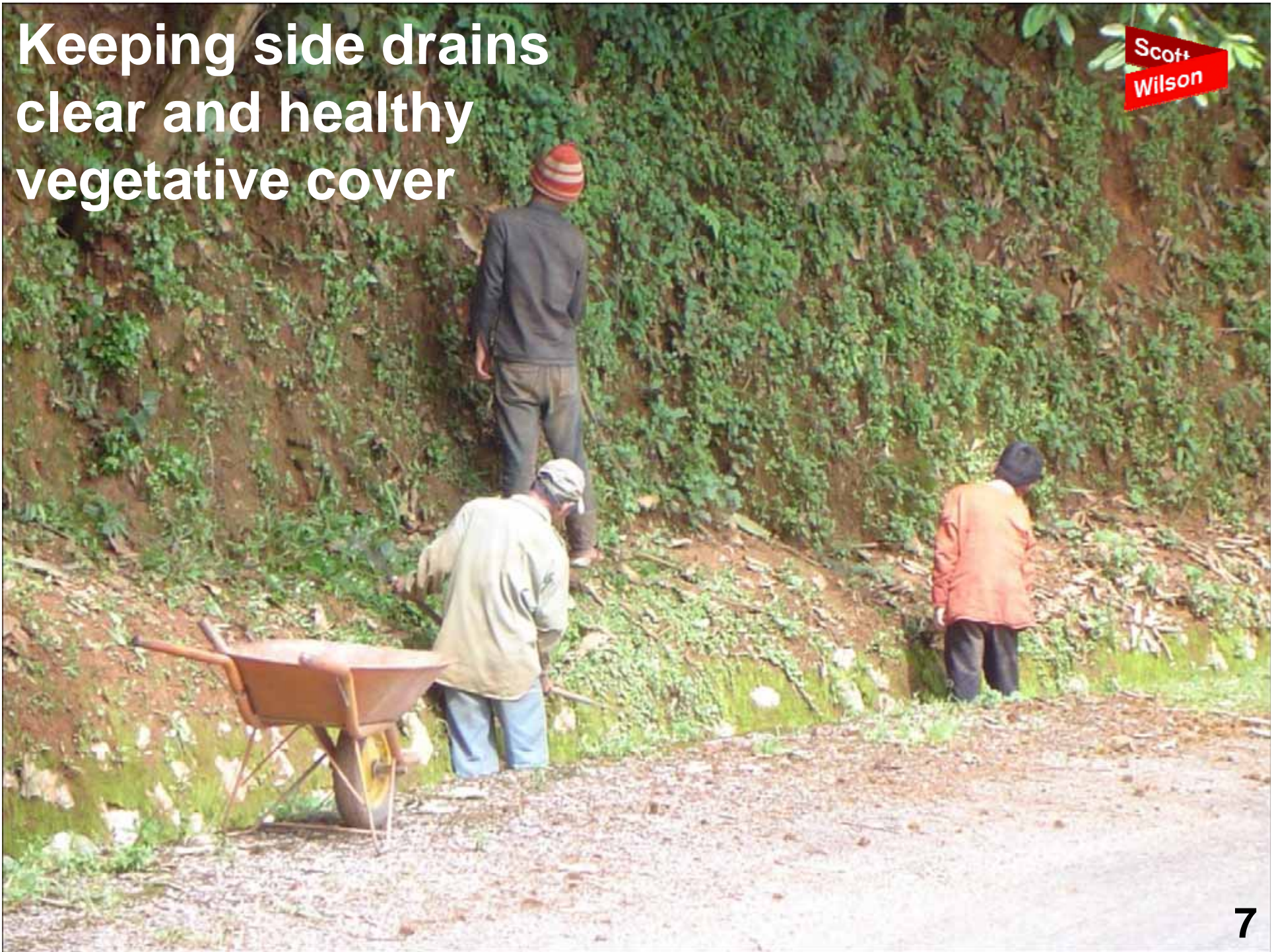
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2. Mitigation

- Address top priority risks
- Low cost activities
 - Routine maintenance
 - CLEAN DRAINS
- Apply appropriate standards
 - Adjust road width to minimize environmental impact.
- Bio-engineering
 - Stabilize the earth surface

Keeping side drains clear and healthy vegetative cover

Scott
Wilson



Scott
Wilson

Erosion of the fill slope
Blocked drain





Rounded stone



Angular stone 1

Local Materials



Angular stone 2



Dressed stone

Live Check Dam



3. Response

- Use existing capacity & practice
 - Scale up
- Identify useful materials and preserve for recovery operations
 - Concrete, stone, brick...
- Avoid causing new hazards
 - Dumping over the hill side

**Dumping up-slope spoil has
surcharged the
down-slope
which will
fail.**

**Scott
Wilson**

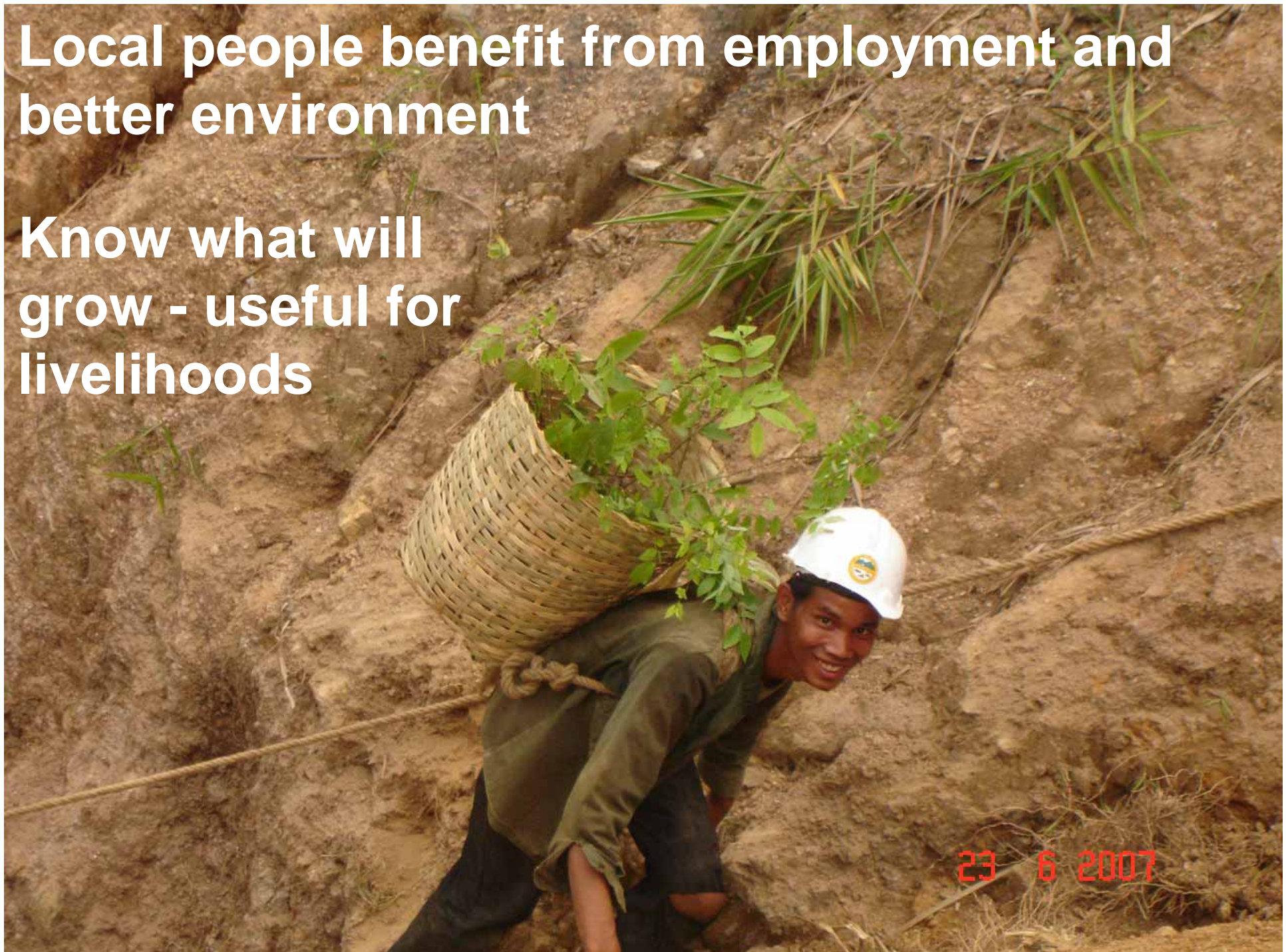


4. Recovery

- Sustainability:
 - Correct basic assumptions.
 - Maintenance burden manageable.
- Regularize practice

Local people benefit from employment and better environment

Know what will grow - useful for livelihoods



Combination of species with complimentary properties

Wilson



Bio and civil engineering to restore stability

Scott
Wilson



Bio and civil engineering to restore stability



Thank you!

