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*Regional and International Cooperation in Central Asia and South Caucasus:  
Recent Developments in Agricultural Trade  
IAMO and Samarkand Agricultural Institute, 2-4 November 2016, Samarkand*

# Alleviating Tajikistan's vulnerability to climate change: An agricultural policy approach

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# Tajikistan's extreme vulnerability

*“Tajikistan is the most vulnerable among all 28 countries in the World Bank's Europe and Central Asia (ECA) region”*

*Adapting to climate change in Europe and Central Asia,  
World Bank (2009)*

# What is vulnerability?

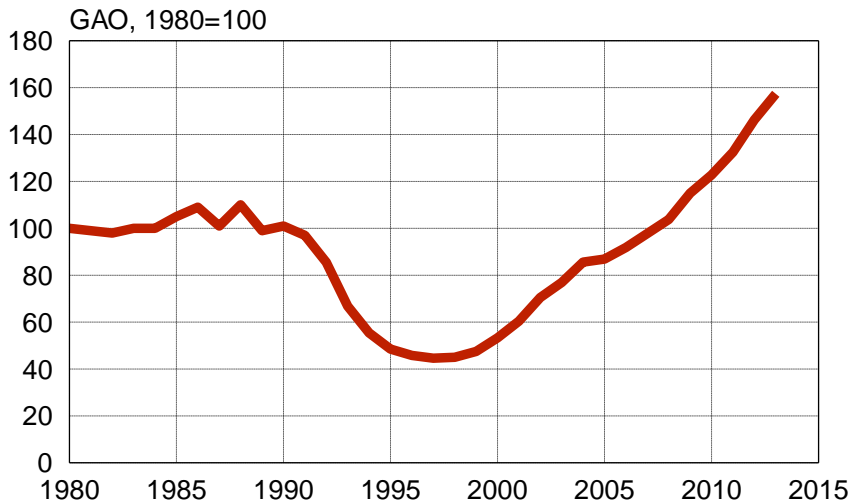
- An individual or household is *vulnerable to risks* (e.g., risks associated with climate change) if these risks may result in a loss of well-being to a level below some threshold
- Vulnerability is a function of
  - *Exposure to risks* – natural factors
  - *Sensitivity to risks* – natural and household factors
  - *Adaptive capacity* (ability to recover) – household factors (physical and human capital)

# Vulnerability factors of rural population in Tajikistan

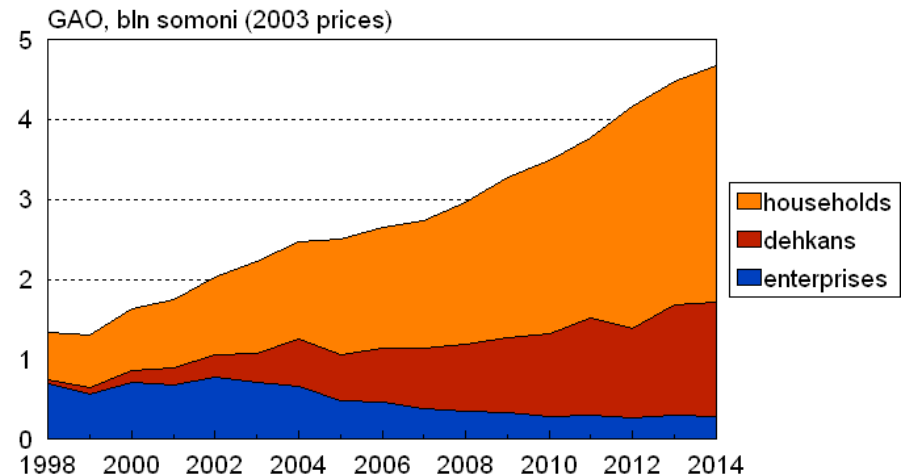
- Low incomes (51% poor)
- Small farms: small cultivated area, small number of animals (0.3 ha in household plots, 3-20 ha in family dehkan farms, 1-3 cows)
- Low production technology: low crop and livestock yields
- Acute dependence on irrigation
- Soil degradation, steep slopes

# Reforms strengthened individual farms and led to recovery

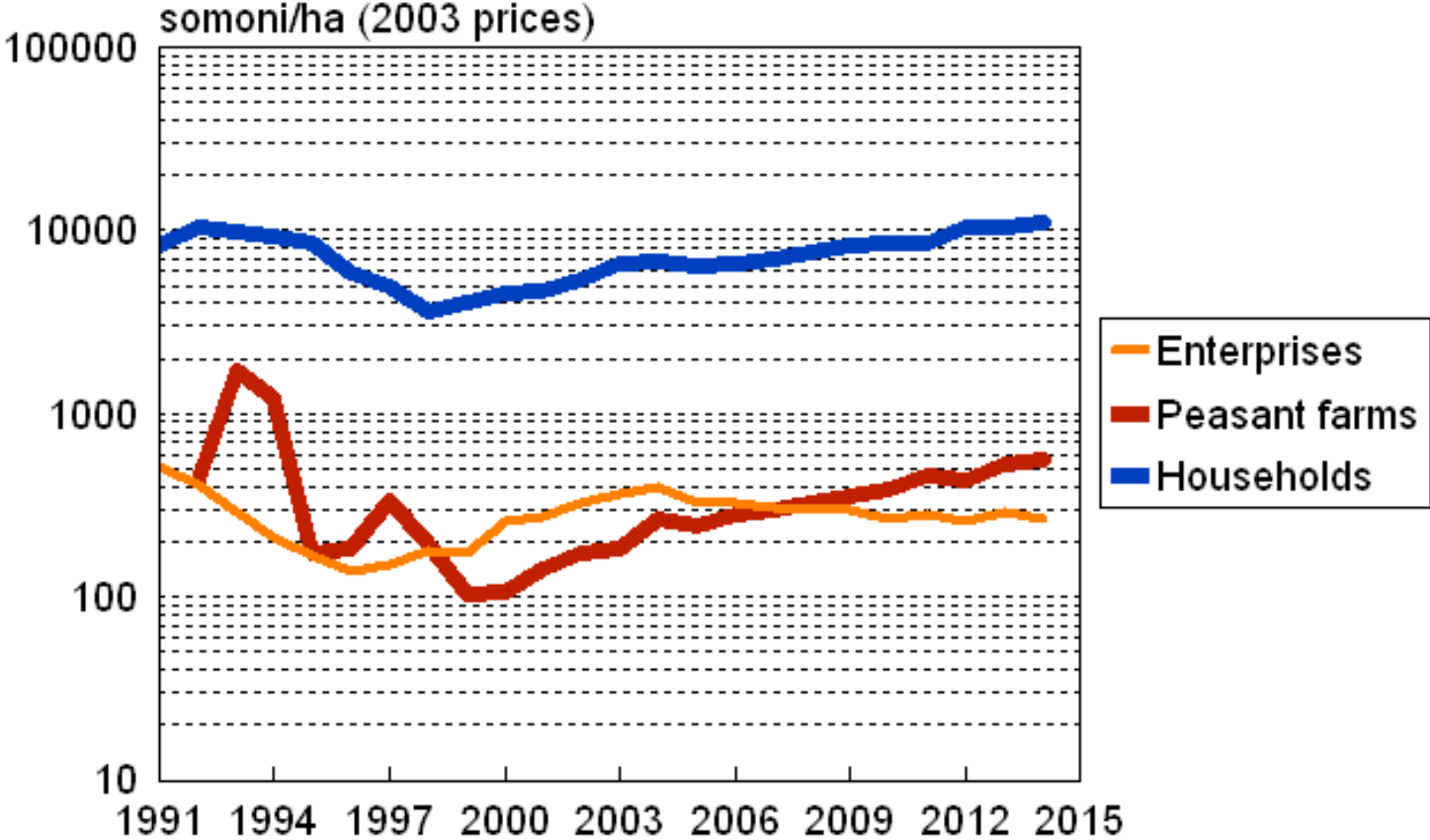
## Agricultural output 1980=100



## Growth driven by individual sector



# Individual-sector farms achieve higher productivity



# Income – households' primary tool to reduce vulnerability

- Income generation requires *resources*
  - Land, labor, livestock, trees, machinery, fertilizers
  - Information, knowledge, education
- Resources are deployed for *production*
  - Outcome depends on physical and human capital
  - Efficiency depends on farm organization
- Output allocated to
  - Consumption
  - *Sales – commercialization*

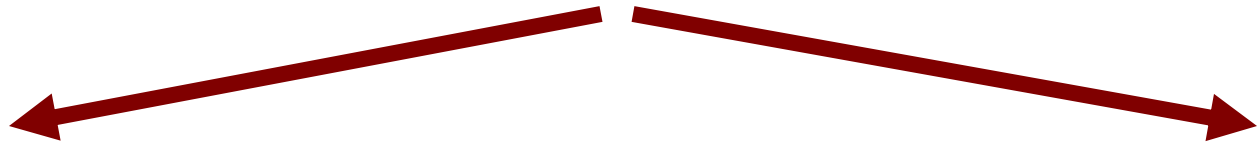


# Evidence-based findings on factors that increase income

- Family income and wellbeing increase
  - with *farm size*
  - with *commercialization*
- *Commercialization increases with farm size*

# The benefits of land reform for the rural population

More land to smallholders



*Higher well-being*

*Higher commercialization*



# Policy conclusion I: More attention to small family farms

- Household plots contribute the greatest share of agricultural output, **attain highest productivity**
- Household plots are consistently ignored as “non-commercial, low-technology subsistence farms”
- Household plots and small family farms are the most vulnerable – **and yet resilient** – segment of agricultural sector
- *Size of very small farms should increase to increase income and reduce vulnerability*

# How to get more land to small farms?

- Distribution from state reserve
- Development of land markets
  - Allow land transactions: leasing and subleasing, transferability of land shares
  - Institute simple and transparent registration procedures, with minimum transaction costs
  - Guarantee contract enforcement

*Land markets allow size adjustment: land flows from passive or inefficient users to active, efficient users*

# Growing through “conquest of the desert”



# How to improve milk yields in household farms?

- More attention to *feed*
  - Grasses and processed feed
  - Common grazing near the village
  - Use of herder (chaban) services
- More attention to *animal health* – vet services
- More attention to *genetics* – artificial insemination

# The “curse of smallness”

- Difficulties with sale of products
- Difficulties with purchase of inputs
- Access to machinery
- Access to credit and insurance
- Access to water and irrigation systems

# Policy conclusion II: Support development of market services

- Best practice experience to combat the curse of smallness:
  - Establishment of farmer-owned service cooperatives (supply, marketing, machinery)
  - Pasture-management associations
  - Water-user associations



# Diversification: standard tool to reduce risk and vulnerability

- Diversification of income sources
  - Wage jobs outside agriculture
  - Entrepreneurial activities:
    - Processing
    - Non-agricultural cottage industries
    - Business development
- Diversification of crop mix
  - Less monoculture (cotton/wheat)
  - More horticulture (vegetables, fruits)
    - *Ideal for home processing: canning, jams, dried fruits*

# Three groups of products in one family farm



# Diversification of both income sources and farm products

## Main income sources

Income source	% respondents
Agriculture only	25
Agriculture and other sources	52
Non-ag sources overweigh agriculture	17
Don't know	6

## Structure of product sales

	Dehkan farms, %	Household plots, %
Cotton	36	0
Grain	21	10
Vegetables	30	15
Fruits	5	17
Milk	3	20
Animals	5	36
Meat	0.1	1.5

PPCR Field Survey, May 2011

# Policy conclusion III: Facilitating diversification

- Eliminate production targets on cotton, wheat
- Stop hukumat intervention in farm decisions
- Allow exercising land use rights without restrictions
- Allow free mobility of goods across oblast/raion lines
- *Scrupulously observe the full intent of “freedom to farm” provisions*

# Conclusions: Improving Adaptive Capacity to Climate Change

- Emphasis on support for small family farms – the most vulnerable and yet the most resilient sector in agriculture
- Policies to support development of market services (marketing, input supply, access to credit)
- Policies to encourage diversification of income sources and product mix

# Vulnerability to climate change is a subset of general vulnerability

*“In terms of hazards and impacts we can expect more of the same... except more intensely and more frequently and **perhaps in different places**”*

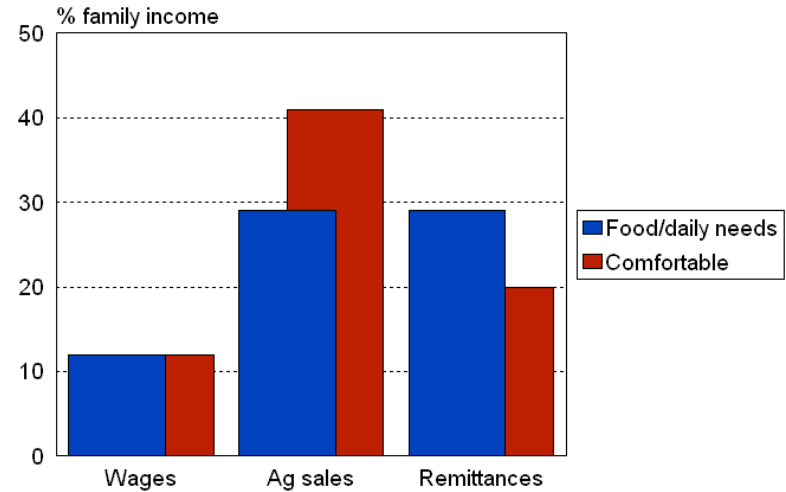
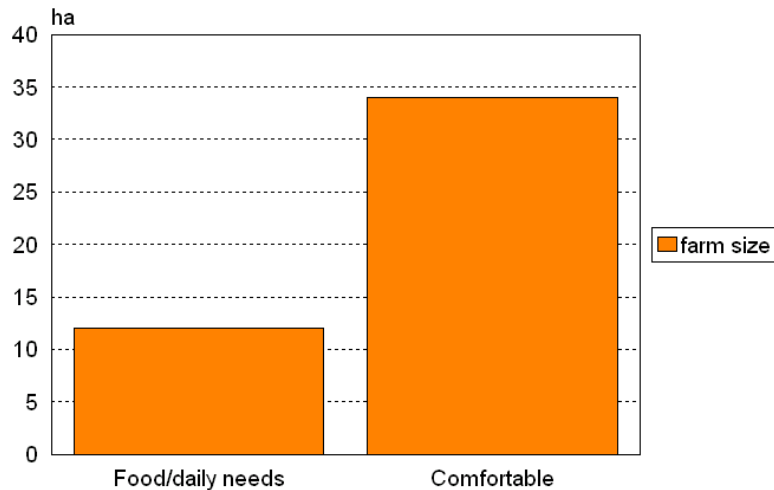
Philip Buckle, Dushanbe, 5/04/2011

**ANNEX: GRAPHS FOR DOWNLOAD**

# Wellbeing, farm size, and commercialization in Tajikistan

Wellbeing increases with farm size

Wellbeing increases with commercialization

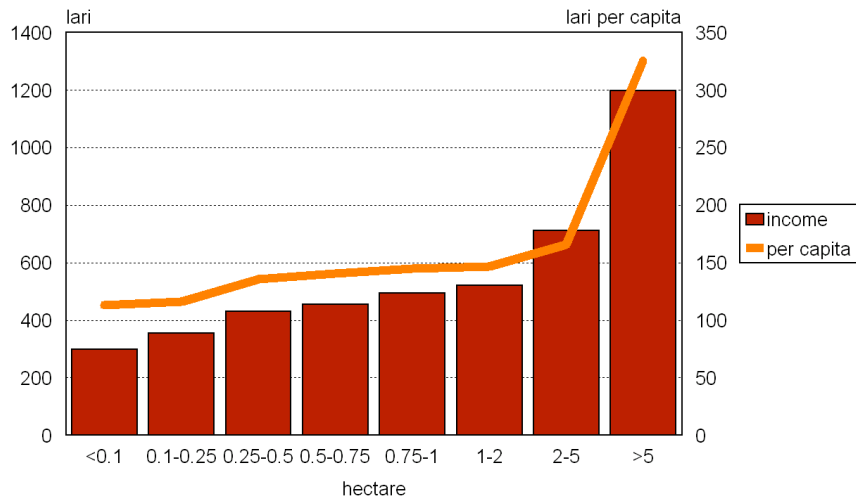


PPCR field survey, May 2011

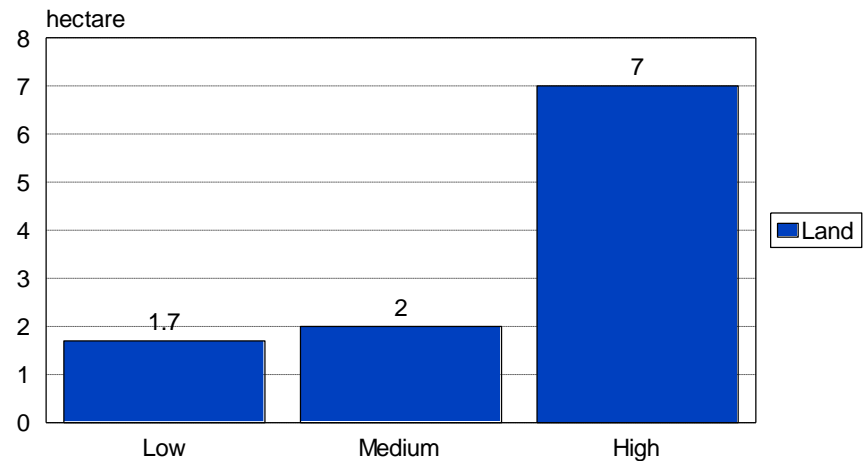


# Family income and well-being increases with farm size

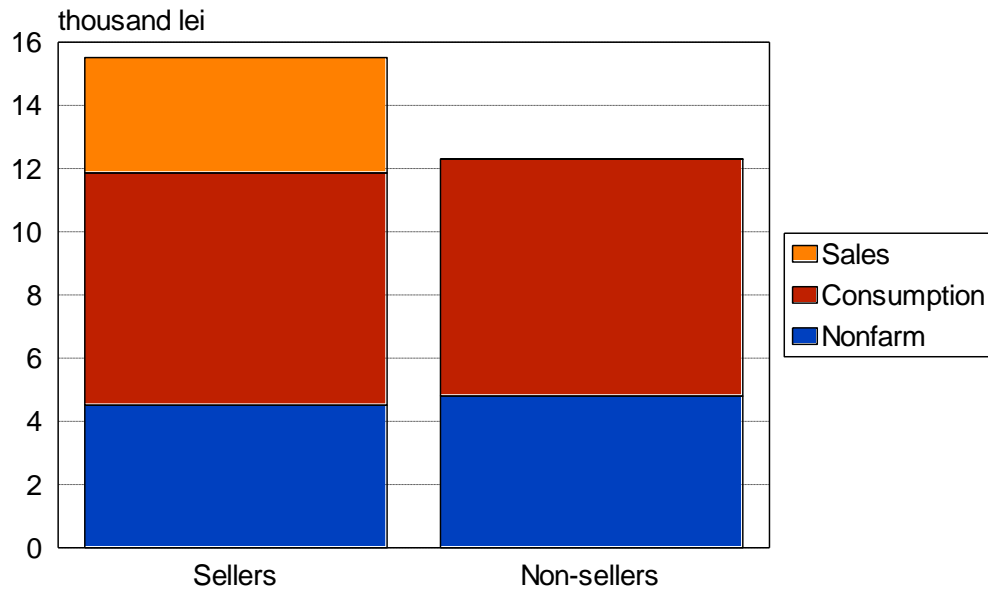
Georgia Household Survey 2009: income and farm size



Azerbaijan WB survey 2003: well-being and farm size

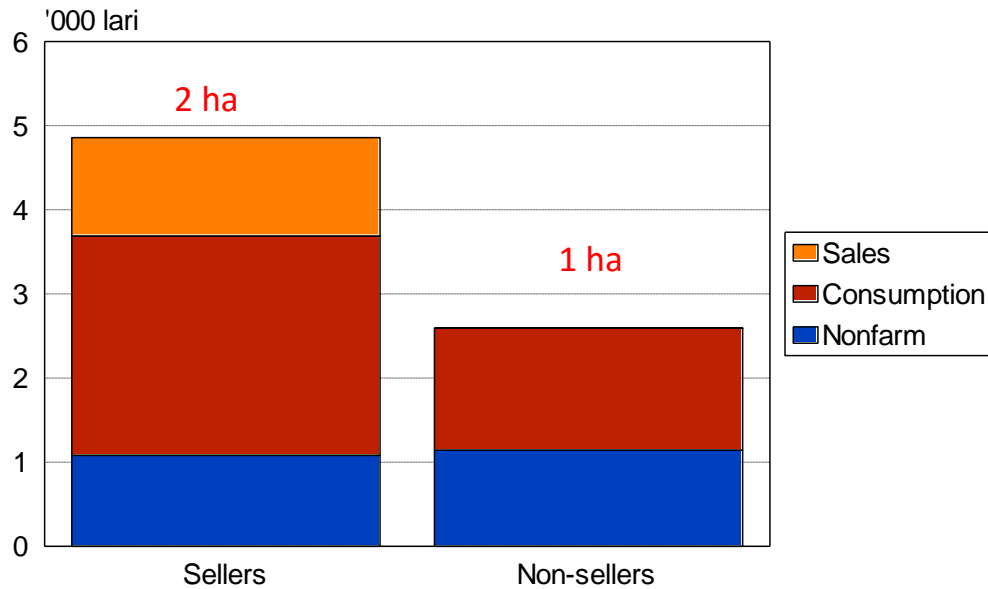


## Moldova 2000

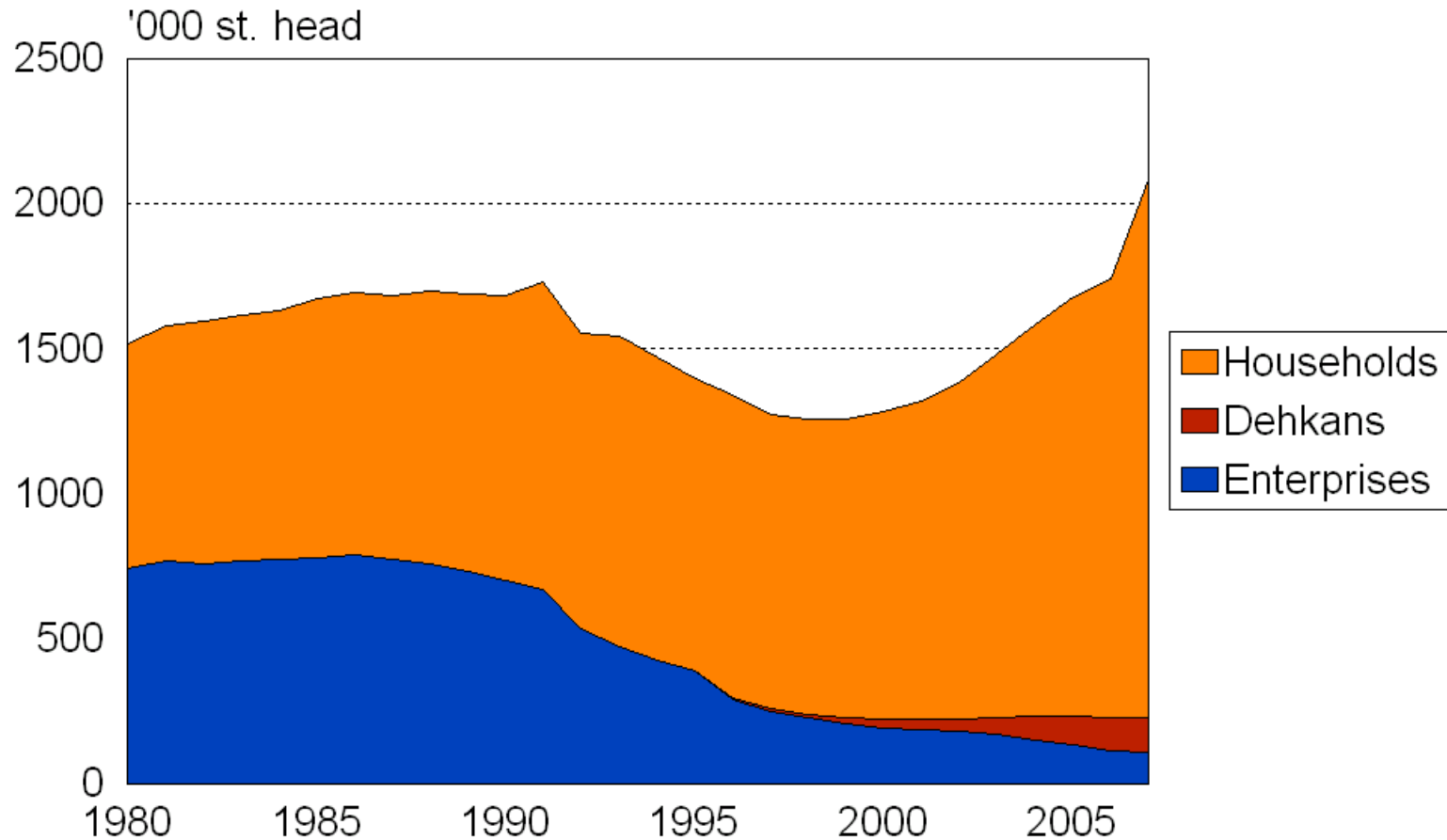


Commercialization  
increases family income

## Georgia 2003

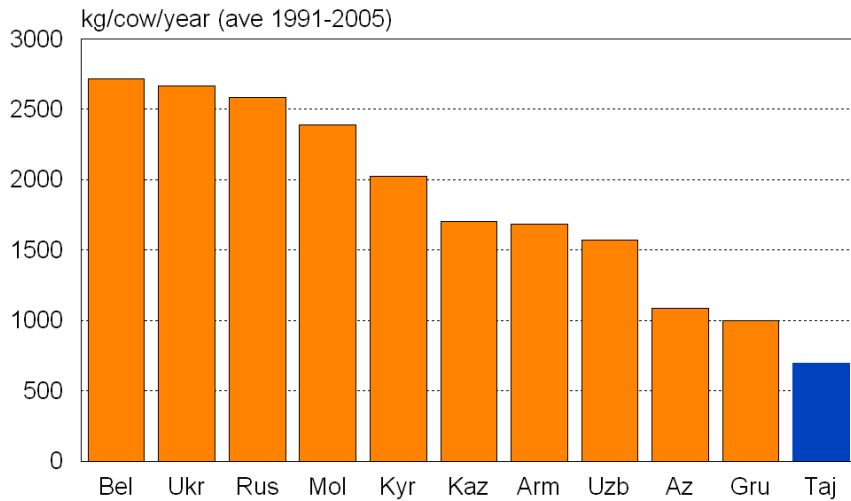


# Virtually all livestock in the household sector: 1-2 head/family



# Difficulties in the livestock sector

## Milk yields lowest in CIS



## Area in feed crops declining

