

Future deserts and sustainable communities

Thadis W. Box

Rangeland Resources Department, Utah State University, Logan, Utah, USA

Tel: 801-787-8706; E-mail: tbox@cc.usu.edu

ABSTRACT

The extent and intensity of rangeland desertification, and attempts to correct past abuses will be directly related to cultural values and new land uses. These values and land uses will vary regionally and differ with population density and economy of land users. There will be great differences between rich and poor countries. New approaches to sustainable communities must be developed for both.

Our growing understanding of rangelands and better science provide tools to prevent further deterioration of rangeland and improve those already devastated. The ability to stop desertification will not be a technical or scientific fix; it will depend on our ability to develop political, economic, and cultural programs to deliver the technology of developed countries to depleted rangelands in countries unable to provide for their human population.

Key words: desertification, range management, social conditions, soil loss, sustainability.

I ask you to use your imagination. Imagine that you have been invited to spend a week with eighty of the world's leading experts on desertification to think about a problem that affects 40% of the globe's surface. Imagine that every person alive will be affected by the problem and that the future of civilization will depend on how well society addresses it. You have been asked to think in a setting where new landscapes are formed each year, where old landscapes are losing their living skin, and where some plants have not evolved protective secondary plant compounds or other arming mechanisms against grazing. Your host is a country with a written record going back to settlement a millennium ago. Its grazing laws are more than 800 years old. Its heros are its writers. Its former president, ministers, and captains of industry meet with you and encourage you.

You are not dreaming. We are here, guests of Iceland, challenged to think about stopping desertification. We have done fairly well up to this point. There has been a minimum of pouring old wine into new wineskins – reinventing old concepts with new names. We have talked about principles and functions, causes and cures. We have shared the enthusiasm of our hosts.

Now we are being asked to look to the future – a world where many people do not share Iceland's desire to stop land degradation, where those engaged in corporate downsizing and concern for the bottom line have more advocates than those concerned with the land, where many of the dedicated research groups and long term degradation studies are being phased out. But let us not dwell on the negative. Let us seize the opportunity to capture the optimism of our hosts and think about the future.

As I thought about my assignment to focus on the future, it seemed to me that desertification and sustainable communities are part of the same continuum. This paper reflects my biases.

I am an academic, trained in ecology and land use principles, but I believe principles must be applied to real people, under a given set of circumstances, at a specific time. This holds true whether the problem is preventing desertification in Iceland, designing a housing development in New Zealand, or increasing biodiversity around maize fields in the United States.

I am a card-carrying member of the Society for Range Management, who believes that ranges are for butterflies, picnics, pottery shards, broad vistas, ptarmigan hunting, trout fishing, Icelandic horses, Hereford cows, Angora goats, and people. I believe maintaining beauty is as much a goal for range managers as is providing forage.

You can see I have my own internal conflicts about land use, so why is it surprising that there are in the broader society land use conflicts that lead to land degradation? To resolve my conflicts, I fall back on a philosophy and a goal: My philosophy is stated simply in this poem I wrote years ago:

Deed of Trust

Land
own it
use it
control it
a warranty deed
legal
guaranteed
title of
possession
gives opportunity
to use
or abuse
until we return
to the soil
we think we own
but instead
possesses us

Simply put, land does not belong to us, we belong to the land. My goal is to attain sustainable communities based on sound resource management.

Let me share some quotations I have heard here to set the stage of our thinking about the future:

“Iceland’s meadows are part of the national self image; man has altered the face of Iceland.” President Vigdís of Iceland.

“This is a convention about people living on the land, some of them in unbelievable poverty.” Bo Kjellen, Sweden.

“Population growth, poverty, and land degradation breed each other.” Hamid Narjisse, Morocco.

“It is a real challenge to motivate people at all levels to do something about land degradation.” Franklin Cardy, UNEP.

“Human access to rangelands will be the motivator in getting something done about desertification.” Kris Havstad, USA.

To think about the future of land degradation is to think about people, their lives, their culture, their dreams. Stopping desertification is about creating a passion in people to take care of the land.

At this conference we have agreed that much of the world's rangelands are degraded; some are desertified. The causes are largely past human use: plowing, grazing, fuel gathering. These causes are sometimes exacerbated by droughts or other natural events. They are intensified by cultural biases such as gender inequities or a love affair with the horse. But it is human use and population pressure that will drive land degradation in the future.

We have demonstrated a lot of knowledge about what causes desertification and how to fix degraded lands. Our science is improving. We know more about functional ecology. Our efforts are becoming more integrated and we are sharing what we know. Our biological and physical tools are good, but the job of motivating humans to care for land is great.

Past degradation was done for survival, done in the name of progress, done with a misunderstanding of the causes and the consequences. Sometimes it was done in ignorance and greed, but most often it was done to further societal goals.

Times are changing, our culture is changing, and the world's rangelands will be subjected to new uses. If we are to stop desertification and improve degraded rangelands we need to think about changing cultural values, about how land will be used in the future, and about the new worldwide concern for sustainability.

The fight against land degradation is about changing the human mind. It is about valuing land for its beauty and its contribution to tranquility as well as for its firewood and its forage. It is about motivating people to care about the land.

We need think about fixing old scars and preventing new ones on land we represent. Where does land care fit in with changing cultural demands on land.

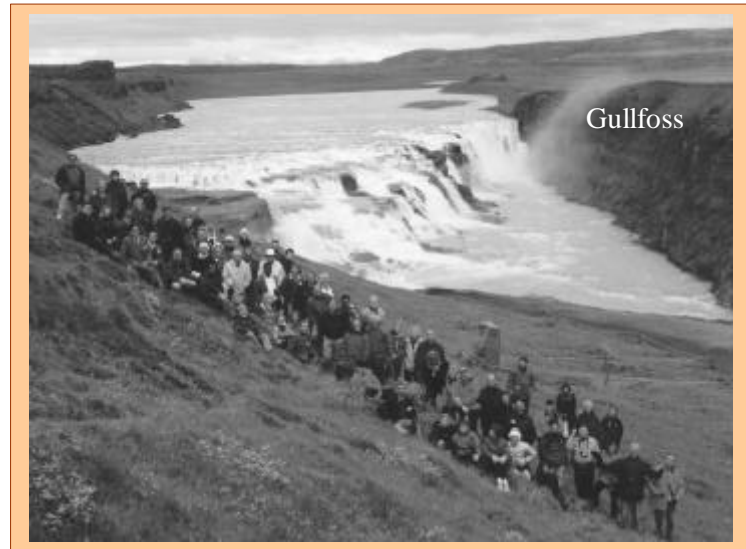
Although we are ecologists who study and teach about change in biotic communities as they become degraded, we often ignore cultural change all around us.

My thesis is that the extent and intensity of rangeland desertification, and attempts to correct past abuses, will be directly related to cultural values and new land uses. These values and land uses will vary regionally and differ with population density and the economy of the land users. In other words, there will be great differences between the rich and poor countries. New approaches to sustainable communities must be developed in both.

I suggested a definition of range management at the International Rangeland Conference in Salt Lake City: Range management is the manipulation of rangeland ecosystems to improve past damage, provide societal needs from those systems, and to keep options open for future generations

This definition implies that long-term sustainability of the system has priority over short-term commodity extraction. Now, two years later, I believe that even that expanded version of range management may be too narrow because it focuses on rangeland ecosystems rather than the sustainability of the human communities that depend on those lands.

It does not state strongly enough the role of esthetics, beauty, and social justice in sustainable communities. Our field trip to Gullfoss showed us that land's value to the human spirit may be as important as its role in producing food. When a young woman is willing to cast herself into destruction to save a waterfall, should not we be willing to sacrifice for a stable landscape with continuing beauty? Should not our care for the land be more important than the commodity that is produced or the industry that it supports?



The quest for a sustainable biosphere is a worldwide movement. It was made popular by world conferences on the environment and now supports a number of bureaucracies.

The quest for sustainable communities is made up of local issues such as providing jobs to keep the kids from leaving home in rural Utah, supplying water for a village in western China, ensuring stable landscapes in Iceland, or maintaining air quality and light that inspired Georgia O'Keefe to capture New Mexico on canvas for the world to enjoy.

The quest for sustainability has many definitions, but all definitions include four concepts: There must be equity for today's land stewards . . . a good living for farmers and foresters. Equity for future generations must leave options open for our grandkids. Long term sustainability must take precedence over short term profit. We must practice environmental enhancement, improve what has been given to us, leave the world better than we found it and become active in improvement.

To manage for sustainability means using land for societal values and shaping the future conditions of landscapes for a full diversity of life, ecological processes, human values, and resource use. It means balancing science with social values, economic feasibility, institutional traditions and political muscle. It means stopping land degradation, keeping the beauty of sunsets, and the solitude of the range.

This leads to a new land management that provides a recipe for preventing and repairing desertification. It suggests a policy that meets the needs of people today without destroying the resources that will be needed in the future.

Stopping desertification depends upon understanding the ecological carrying capacity, determining what people want and need from the land, and maintaining a political and economic system that matches what people want and need with the land's ability to produce it. We spend a lot of time looking at the human impact on the land, but we also need to understand what it is about land that people enjoy.

Papers presented in this volume have outlined the amount and kind of degraded rangelands worldwide. Mistreated lands occur on all continents and under all kinds of conditions. I will try to show the difference between desertification in rich and poor countries with two short poems. First, the poor countries:

**Desertification in
Poor Countries**

a tree cut
a shrub pulled
boils tea
bakes bread
warms against
 blowing wind
sheep starve
sand blows
a child cries
a mother's tear
drops on dry ground

While land is degraded in poor countries for survival, other factors are likely to be more prevalent in the future in rich countries:

**Desertification in
Rich Countries**

four wheelers
made in Japan
bought in U S A
chew hills
above silicone valleys
stock markets
 hit new highs
foreign oil flows
sand blows
a child sighs
imported beer
spills on dry ground

We know that desertification continues in both rich and poor countries, but we have not been able to garner widespread concern in either. While our ecological tools are getting better, we cannot agree on a definition among ourselves. We will never have public enthusiasm for improving the land as long as we try to describe land degradation with fuzzy concepts and measure desertification with tools as ancient as the Viking boats.

While we talk about functional ecology, we have oversold the Clementsian paradigm. We know that simply removing the causes of degradation will not guarantee that desertification will be stopped, much less reverse the situation. Most people still believe that if we just stop doing bad things to the land, it will return to its former state. Well-meaning public support is generally defensive rather than taking an active role in land care to provide the needs of future generations.

Future needs are rather straightforward: food, shelter, security, beauty, cultural enhancement. But the wants to satisfy the cultural demands will be varied, complex, and constantly changing. We live in a world where wants are created by advertising and marketing experts. Modern communications send these “created wants” into even the remotest sections of our globe. Dallas reruns are beamed into isolated villages. Soap operas made in Rio De Janeiro become the standard in rural Mozambique. CNN is now invited into homes where the propaganda machines of the USA and the former USSR failed. While the needs of poor countries will continue to be for food, shelter, and security, the future will find the wants of all people directly influenced by the created wants of the rich. Here is one scenario of what may happen.

Demands from rangelands, those areas that are too hot, too dry, too cold, or too high for crop agriculture or commercial forestry, will increase as the human population changes. Traditionally, those areas have been used for pastoral purposes and subsistence livestock production, ignored by urban dwellers, and given a low priority by national governments. Many of the worlds rangelands are in the poorer nations; those same countries have the highest rate of human population growth.

As the human population increases in the poor countries, more people will be forced to use already depleted lands for subsistence livestock agriculture, fuelwood, and other plant products. Ranges will continue to deteriorate until alternate lifestyles are developed for the people and the pressure reduced on the land.

The worldwide demand for grain will increase, and ranges that are now marginal cropland will be put to the plow. Another cycle of soil loss and reduced productivity will occur in those transition areas between crop regions and true rangelands, especially in developing countries.

Rangelands in the wealthy countries of the world will see an increase in the trend away from using land strictly for livestock production. Rangelands will probably improve in condition as multiple uses and aesthetics replace the traditional quest for maximum livestock production. There is a danger that housing developments and recreational vehicles will extract an even greater damage than livestock if they are not controlled.

The improving conditions of rangelands in rich countries and the further deterioration of land in poor countries continue to be positively correlated with the growing human populations in developing countries and the stable and declining populations in America and Western Europe.

Our growing understanding of rangelands and better science provide tools to prevent further deterioration of rangeland and improve those areas that are already devastated. The ability to stop desertification will not be a technical or scientific fix; it will depend on our ability to develop political, economic, and cultural programs to deliver

the technology of developed countries to depleted rangelands in countries unable to provide for their human population.

Stopping or mitigating desertification will be linked to cultural demands. Cultures change, land use changes, and people will want new things. If what cultures want from the land is not compatible with the ecological base, cultures cannot succeed. Balancing land capability to cultural demands will be controlled by what we can imagine, creativity, vision, and all these are tied to education.

There are some simple steps in education and creating a vision: (1) making people aware of the facts, (2) giving people problem solving skills, (3) providing a bag of tools, and (4) inspiring people to do something to solve the problem.

We need to create new visions and tie science and application together into those simple steps if we are to care for the land as proper stewards. First we need to identify the problem. What is causing desertification of our lands? We need a clear definition of what land degradation is and why people should be concerned about it.

Second we must set priorities. What problems can we tackle that will really make a difference? How can we focus our science on the problem?

Third we must continue to improve our bag of tools. We have made progress in biological and physical sciences as they relate to desertification. Now we should tie ecology, economic development, and social justice together. We need to accept social sciences as land management tools, and improve our application of science to new cultural demands.

Fourth we must inspire people to make something happen, create new visions of what may be. But we are having trouble implementing new visions because we do not know how to relate to our new cultures.

We are products of our own cultures, but our children's children will be living in a different time. We deplore the overgrazing of our grandfather's sheep, but we were not part of his fight for survival. We live in a different time and are faced with different problems. Some years ago I tried to relate the survival actions of New Mexico pioneers with the degraded landscapes in the Organ Mountains with the following poem. I think it describes how our grandchildren may view us.

Stump Near Soledad Canyon

on desert ridge
bare
save yucca
 cacti
 and woody scrub
a stump clings
relict of a gentler time

viejos
cannot remember cedar
on that dry west facing slope
though centuries
the tree grew
 it fell
in modern times

it stood proud
against drought
and twisting wind

a rare
dark green dot
on a purple hill
a pioneer
climbed that hill
 swung his axe
removed the life
that clung to stone

did it make
 vigas for adobe hut
spokes for wagon wheel
fire to warm a newborn babe
in rare Mesilla snow

the axema
judge him not
he was a product
of a harsher time

We will not benefit from judging what our ancestors did to the land. Whether they did it for survival, for the building of our modern society, or out of pure greed does not change the fact that the land's future is in our hands. Our success will be determined by whether we can adjust, change, lead.

If we concentrate on education, unleashing creativity and application of science, we can move to a culture in which social justice is balanced with resource use. We can create a world where desertification is stopped, past abuse repaired, and development is truly sustainable.

Our future is bright if we remember to work for equity for today's generation, a better life for our grandkids, options to remain open for those who follow us and leaving the world better than we found it.

But deserts will continue to grow and land will become more degraded if we do not instill in the human spirit a love for the land to which we belong. If we cannot teach our children that land is more than dirt on their Nike Air Jordan shoes, land will continue to wash away while we meet and read scientific papers to one another.

I leave you now with a salute to Iceland and a challenge.

Iceland

ice
fire
floods
eroded lands
Iceland
young landscapes
old culture
centuries of Norsemen
carved woodlands
into modern cities
geothermal heat
pure water
sagas
songs
traditions
national self image
of mown meadows
future green pastures
in the minds of
scientists
politicians
poets

We resource managers have a special role in preventing future deserts. We are practicing ecologists with knowledge that can be applied. We are the spokespersons for a special kind of land. Let us now turn what we have learned into action. Thank you for allowing me to think out loud about the future of our land.