Earth Resources Theme
(minerals, hydrocarbons, geothermal energy, and water)

Sobhi Nasir
Director, Earth Sciences Research Centre, Sultan Qaboos University, Oman
IGCP Council meeting, UNESCO, Paris, 17-21 February 2019
Short Biography: Sobhi Nasir

- PhD in Mineralogy/Petrology at Wurzburg University-Germany (1986).
- Joined the Yarmouk University in Jordan in 1987,
- Moved to the UAE University in 1992,
- Qatar University in 1996,
- Sultan Qaboos University, Oman in 2004 - Director of Earth Sciences Research Centre, SQU
- UNESCO Chair for Ophiolite Studies,
- An Adjunct –Professor at Western University
- Research: Exploration for Mineral Resources
- Arabian Plate Lithosphere, Ophiolite, Carbonatite-Kimperlite
- ~ 300 publications, 5 books, 7 awards, Many research funds
Objective of Earth Resources theme within the IGCP

Importance: Earth Resources are the backbone of every economy. 
- Resource use has impacts on the environment,
- The chances of future generations and the developing countries to have access to their fair share of resources are endangered.

Objectives:
- To enhance Innovation, management and Knowledge on natural resources
- To understand origin, occurrence and exploitation of Earth Resources in terms of environmental sustainability.
- To ensure availability of natural resource to future generation.
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<th>Reviewer Name</th>
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<tr>
<td>Mr Nasir, Sobhi</td>
<td>Oman/Canada</td>
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<td>Team Leader/IGCP Council Member</td>
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<td>Mr Beaudoin, Georges</td>
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<td>Mr Pasava, Jan</td>
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<td>Ms Munkhtsengel, Baatar</td>
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# Earth Resources: Active Projects

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<tr>
<th>Project Number</th>
<th>Project Title</th>
<th>Duration</th>
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<tr>
<td>637</td>
<td>Heritage stone designation</td>
<td>2015-2019</td>
<td>Lola Pereira (Spain)</td>
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<td>636</td>
<td>Characterization and sustainable exploitation of geothermal resources</td>
<td>2016-2018</td>
<td>Daniela Blessant (Columbia)</td>
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<td>638</td>
<td>Paleoproterozoic Birimian geology for sustainable development</td>
<td>2016-2020</td>
<td>Moussa Dabo (Senegal)</td>
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<td>665</td>
<td>Sustainable use of black soil critical zone</td>
<td>2018-2022</td>
<td>Daming WANG (China)</td>
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Current state of art and tangible achievements; Examples

Sustainable Use of Earth Resources

**IGCP 665:** Sustainable use of black soil critical zone

70 participants from fourteen countries (China, US, Czech Republic, Russia, Greece, Canada, Ukraine, UK, Australia, Cyprus, Germany, Norway, Argentina, Mongolia).
57% of scientists are female, 43% are male; 57% is under 35 years old.

SDG 2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture

SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity
This strategic project obtained many excellent achievements:

- Made a popular scientific media about global black soil research

- An atlas has been mapped to provide basic data for black soil protection and sustainable using.

- Signed the Initiative on Global Black Soil Critical Zone Geo-Ecological Survey (Shenyang Declaration).

- Comprehensive modeling of global black soil critical zone

- Carbon cycle research of global black soil critical zone

- Microbial research of global black soil critical zone
The future of world earth resources is dominated by two large threats - climate change and population.

Concerns over global warming present an existential threat to human being.

Resources increased from 22 billion tons in 1970 to 70 billion tons in 2010. \( \text{Intern. (Res. Panel, IRP. UN)} \),

Where will the resources come from to sustain that growth?

This will eventually cause a serious shortage of critical resources, risk of conflict, acidification of waters, eutrophication of soil and water, soil erosion and lead to more waste and pollution.
-To continue to develop resources responsibly in the future, we must understand the Earth in all its complexity. The roles of all geoscientists are essential in this process.

-The theme of Earth Resources seeks a broad commitment to fully examine the distribution and discovery of resources and important sustainability issues related to resource extraction.

-To meet the needs of future generations, geoscientists must work with many others to find and develop responsibly the resources we need.
Message: future of Earth Resources

Resource use

Resource consumption will be increased due to increasing demands (Business as usual)

Line of ecological capacity

Current status

2050 and beyond

BAU (Business as usual)

100% Sustainable material

action 1
reduce raw material consumption (enhance resource productivity)
- Half-weight technology
- Long life technology

action 2
recycle resources & use effectively
- Retread technology and services
- Non-pneumatic tire
- Recycled rubber

action 3
expand and diversify renewable resources
- Improvements in rubber productivity
- Diversification of natural resources, such as bio-materials

A Recycled materials
B New input of renewable materials
C Non-renewable materials
Message: future of Earth Resources

THANK YOU