SUSTAINABLE DEVELOPMENT FRAMEWORKS AND USE OF ICTS FOR SMART DEVELOPMENT AND PROTECTION OF THE ENVIRONMENT

Economic And Social Commission For Western Asia

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ITU RDF, Amman, 23-24 March 2015

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SUSTAINABLE DEVELOPMENT FRAMEWORKS

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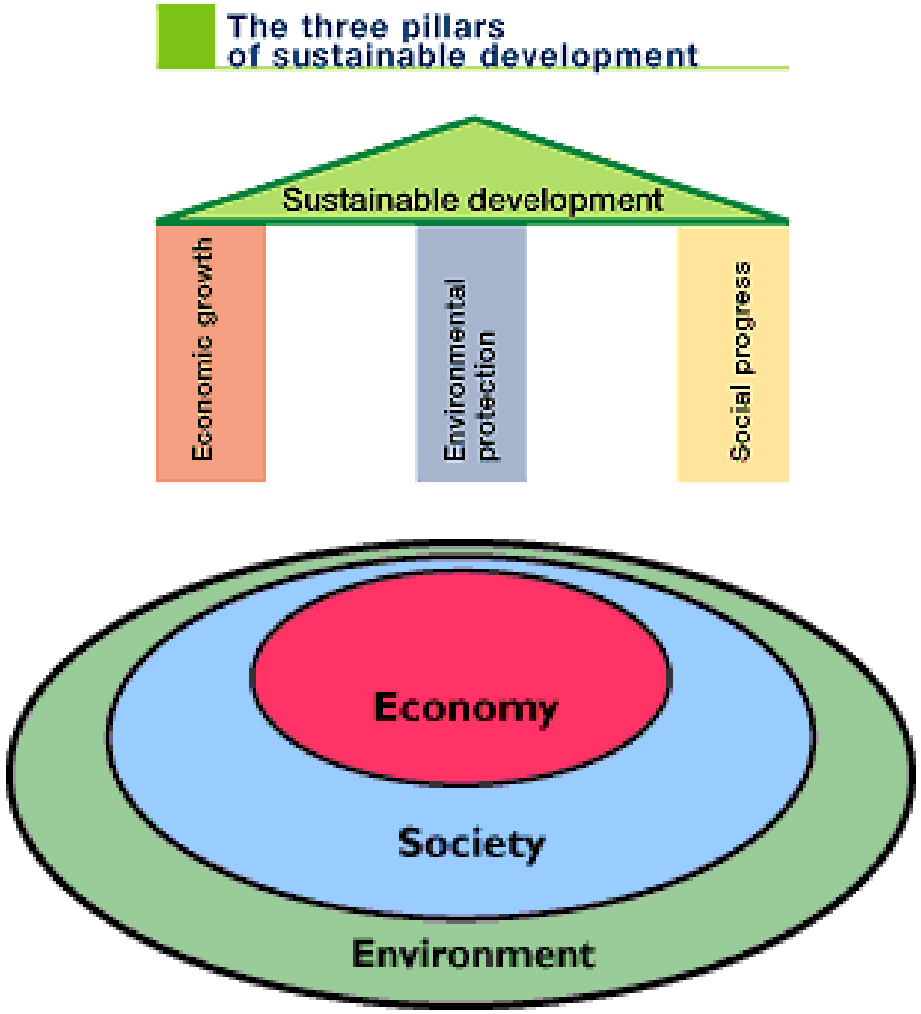
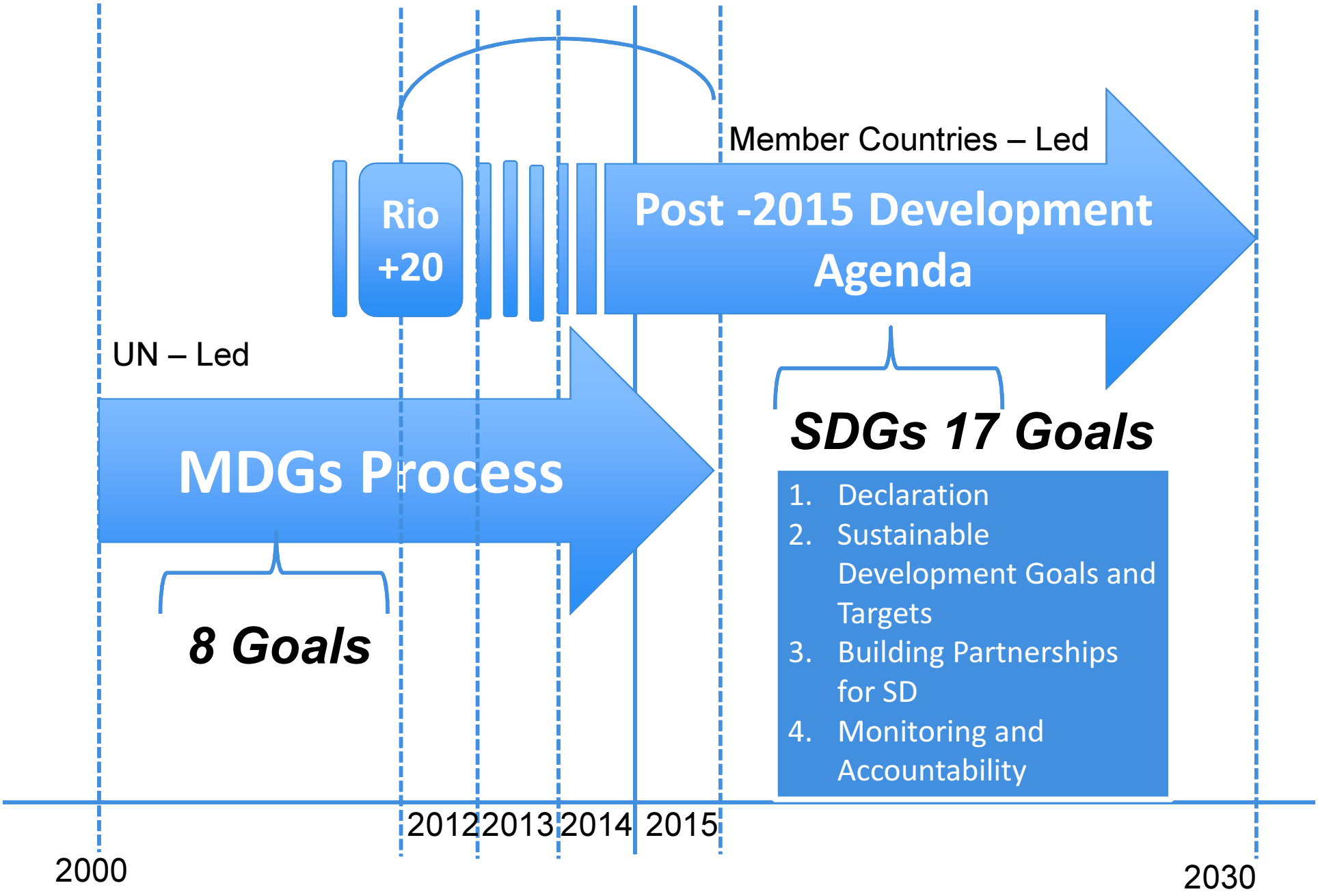
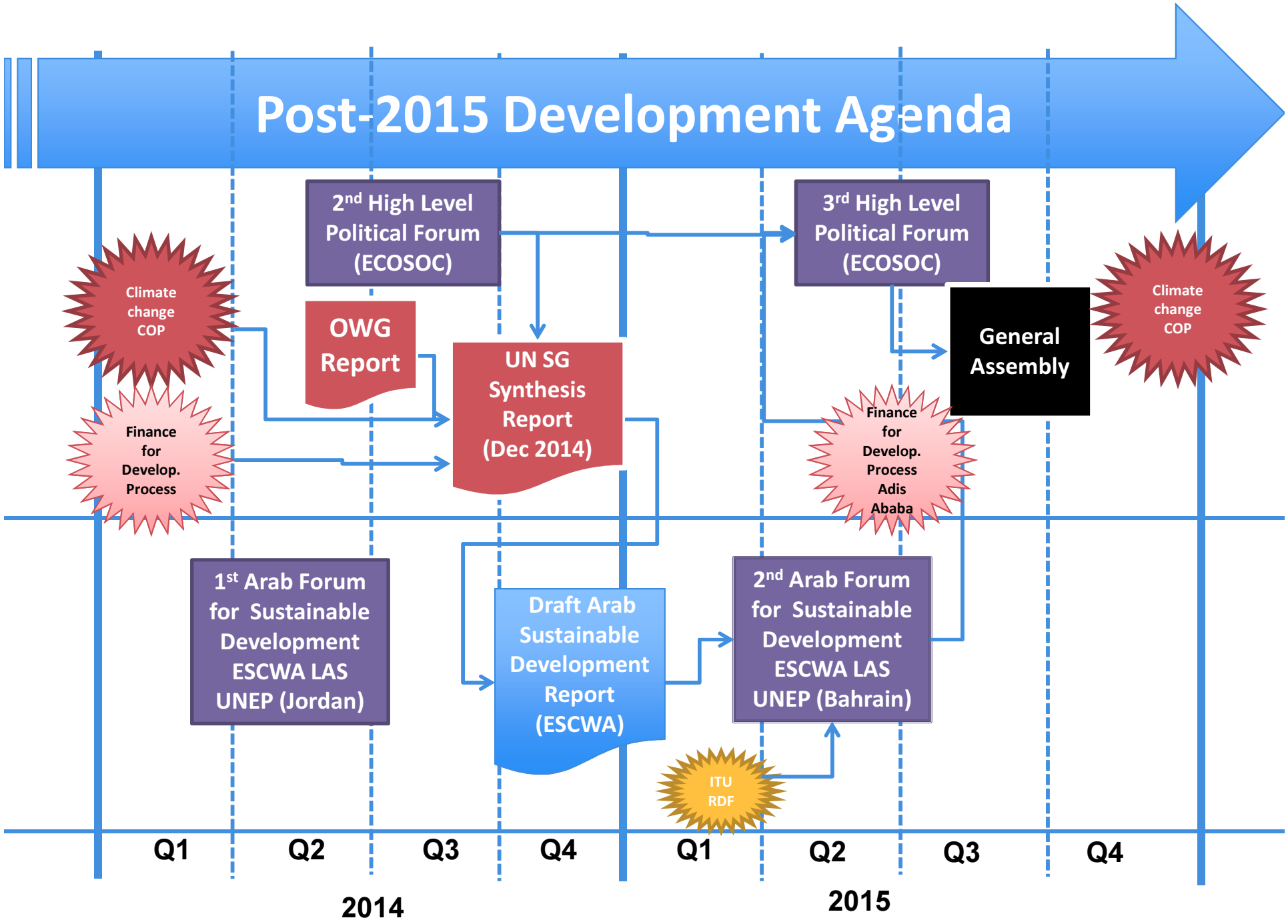


From MDGs to SDGs




Post-2015 Development Agenda
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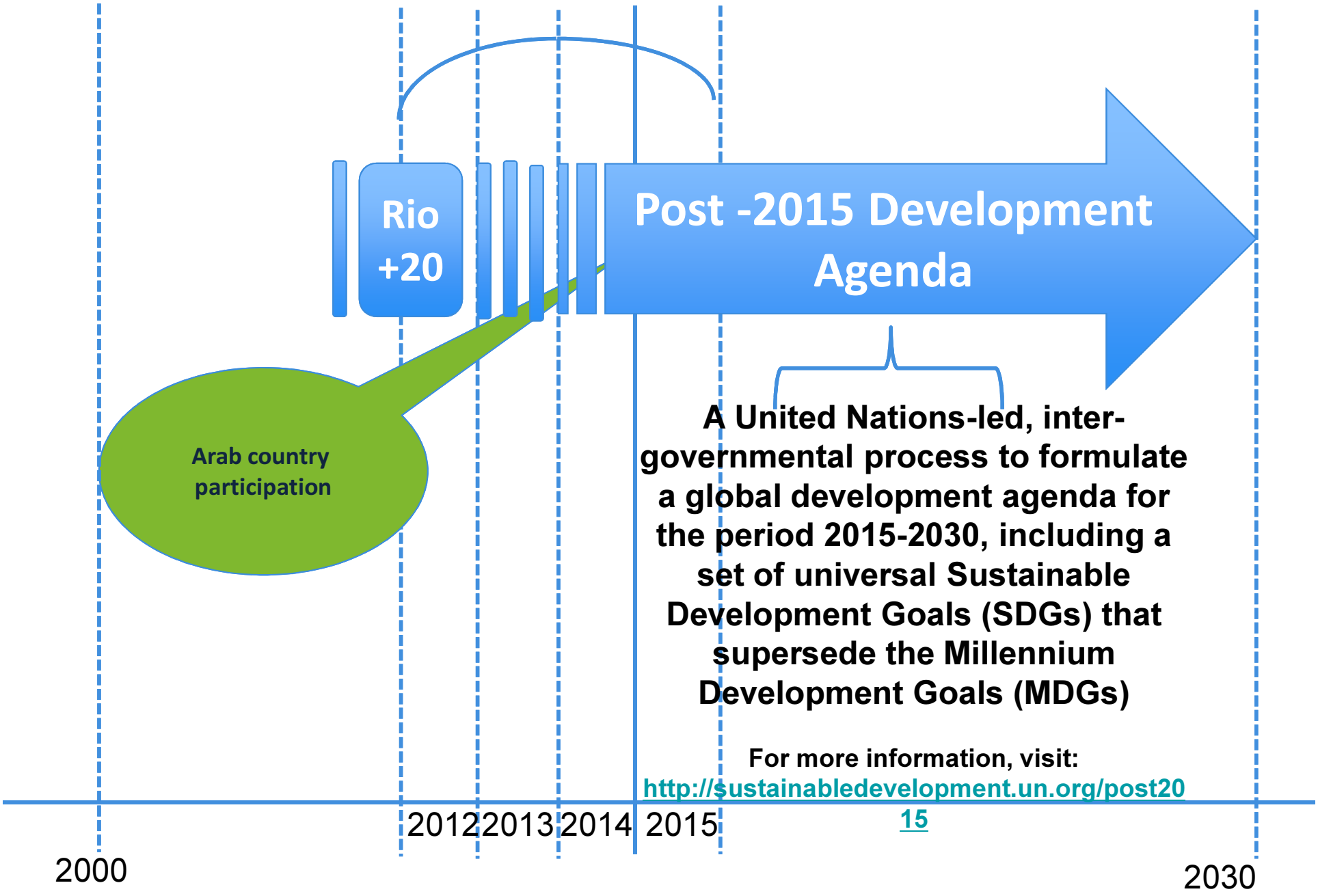
From MDGs to SDGs



Sustainable Development Goals

Goal 1 End poverty in all its forms everywhere
Goal 2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Goal 3 Ensure healthy lives and promote well-being for all at all ages
Goal 4 Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Goal 5 Achieve gender equality and empower all women and girls
Goal 6 Ensure availability and sustainable management of water and sanitation for all
Goal 7 Ensure access to affordable, reliable, sustainable and modern energy for all
Goal 8 Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
Goal 9 Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
Goal 10 Reduce inequality within and among countries

Sustainable Development Goals

Goal 11 Make cities and human settlements inclusive, safe, resilient and sustainable
Goal 12 Ensure sustainable consumption and production patterns
Goal 13 Take urgent action to combat climate change and its impacts*
Goal 14 Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Goal 15 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
Goal 16 Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
Goal 17 Strengthen the means of implementation and revitalize the global partnership for sustainable development

** Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change*

The Six Pillars of Sustainable Development Goals

People-Dignity-Prosperity-Justice-Partnerships-Planet

ARAB REGIONAL PROCESS AND PERSPECTIVES ON THE POST-2015 DEVELOPMENT AGENDA

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An Arab consultative process …
Approaches & outcomes

Wide range regional consultations from Rio+20 till now …

Build ***evidence-based*** regional perspectives on post-2015 agenda components based on ***critical reading and analysis***

- SDGs from an Arab Perspective (4/2014)
- Consultation meetings on SDGs and accountability: Chair's summary (9/2014)
- Two inter-regional reports with Regional Commissions (2013 & 2014)
- Coordinated approach through RCM (e.g. issues briefs) and Regional UNDG

Strong political backing

- Cairo Declaration on ICPD Beyond 2014 (6/2013)
- Briefings to different LAS Arab ministerial councils: Amman (4/2014) & Sharm el Sheikh declarations (10/2014)
- Cairo Declaration on Women in the post-2015 (2/2014)
- Meetings with the Arab Group in NY

Multi-stakeholder involvement

- Arab Forum for Sustainable Development (4/2014)
- CSO consultations and involvement

Building a regional perspective on post-2015 …

Complexities and challenges faced during consultations

Priority shift towards a top concern: Conflicts and instability

- 41% of Arab countries have suffered at least one conflict in past 5 years
- One of the highest incidences of terrorism
- The highest rate of refugees in the world, equivalent to 2.1% of the population (including IDPs, the figure rises to 5%)

Contrasting development needs

- The per capita GDP of Qatar was 62 times that of Yemen in 2011
- The region features some of the most generous donors of the world and some of the most aid dependent (e.g. Palestine 18% of GNI)
- Middle income countries struggle with tighter fiscal space
- Disparities in social and cultural dimensions such as women rights
- Wide disparities in MDG performance

Weak institutional capacities

- Tendency towards silo approach: Lack of coherence within the same country
- Lack of coherence between regional CSO networks and national CSOs
- Difficulties associated with data availability, credibility and consistency
- No assessment of MDGs process

Challenge of building consensus / national talking to the global: Where is the regional?

A critical reading of the OWG outcome document through a regional lens

Positive aspects

General alignment of priorities and integration

- Overall, the proposed SDGs are comprehensive and aligned with most regional priorities: Poverty, inequality, peaceful societies and effective institutions, gender, water, energy, food security …
- The SDGs are also generally aligned with global agendas (e.g. Beijing & ICPD)
- Integration of the three pillars and cross-referencing between the goals (e.g. water under cities, health, SCP; women under food, education, growth …)

Inclusive and open process

- Arab government participation in the OWG has been visible: 6 Arab countries members of the OWG + participation as members of the G77
- An open and transparent process for all countries and major groups
- Extensive consultation with different groups

Means of implementation

- A dedicated goal on MoI (goal 17) in addition to MoI targets under each goal

A critical reading of the OWG outcome document through a regional lens

Issues of concern

As an inter-governmental process, achieving a common denominator has ***compromised*** issues such as …

Refugees and IDPs

- The issue is not addressed separately in the OWG outcome document (only migration is part of goal 10)
- This is an issue of great magnitude for the region, which accounts for 53% of the world's refugees and 37% of the entire global displaced population

Ending occupation

- Reference to right of self determination in chapeau
- Yet no reference in goal 16 or its targets to ending all forms of colonial domination and foreign occupation

Enablers of peace

- The language used in relation to adherence to international law by all stakeholders is weak ("promote")
- Countering terrorism is referred to in MoI target 16.a within the framework of "capacity building"
- Role of women in conflict resolution was disregarded

Means of implementation

- Language in targets (e.g. on financing and technology) not strong enough
- No call for fundamental changes but rather "encourage", "promote", "substantially reduce"….
- No reference to building regional partnerships

Incomplete rights-based approach

- Mix between rights-based targets (e.g. Labor rights, reproductive rights) and targets that only refer to "access" (e.g. access to education, water, energy …)

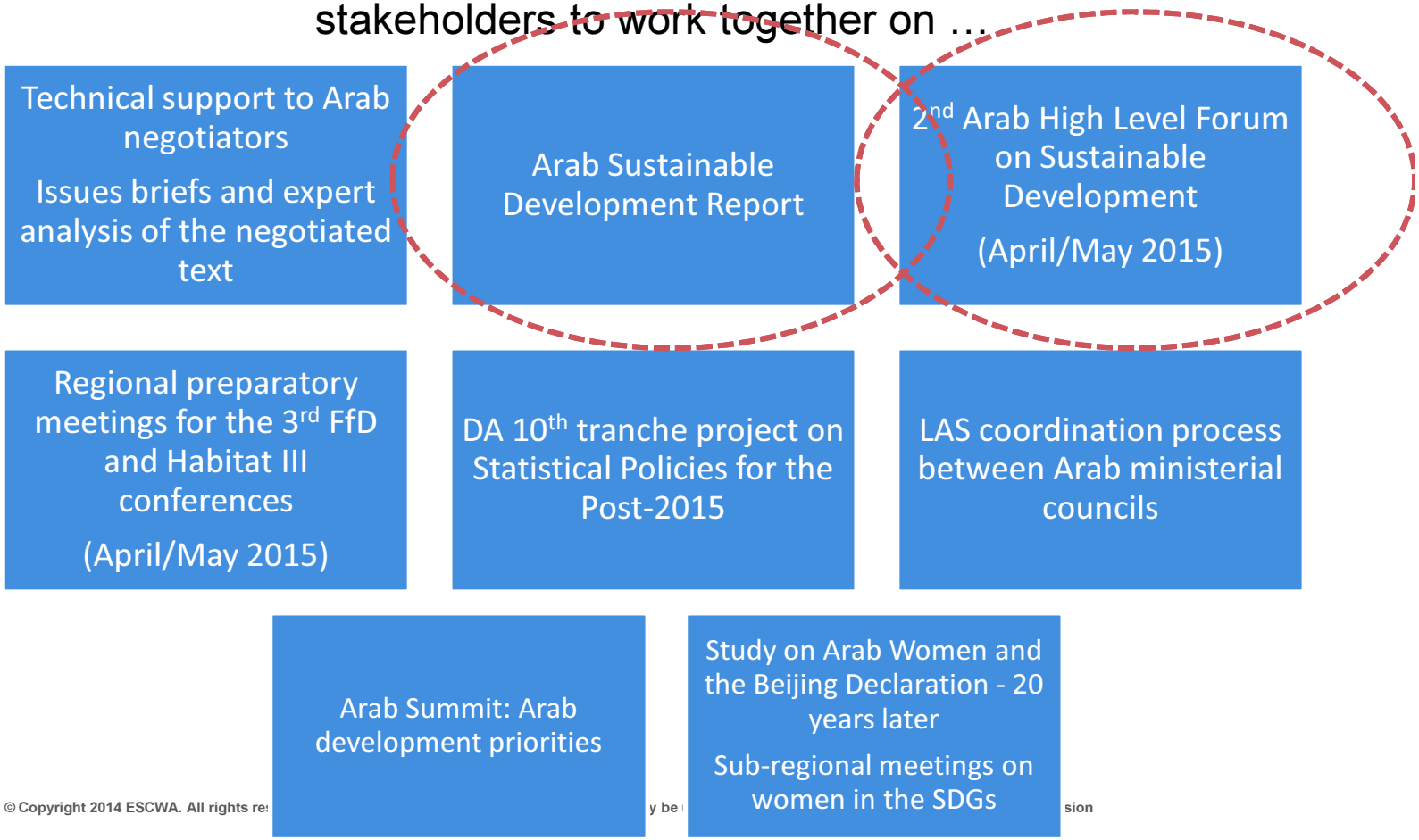
Monitoring

- Heavy data requirements and the need for capacity building

Looking forward

Key areas of focus in 2015

ESCWA, UNEP, LAS along with RCM members and other stakeholders to work together on …



TECHNOLOGY & RDI FOOTPRINT IN THE SDGS

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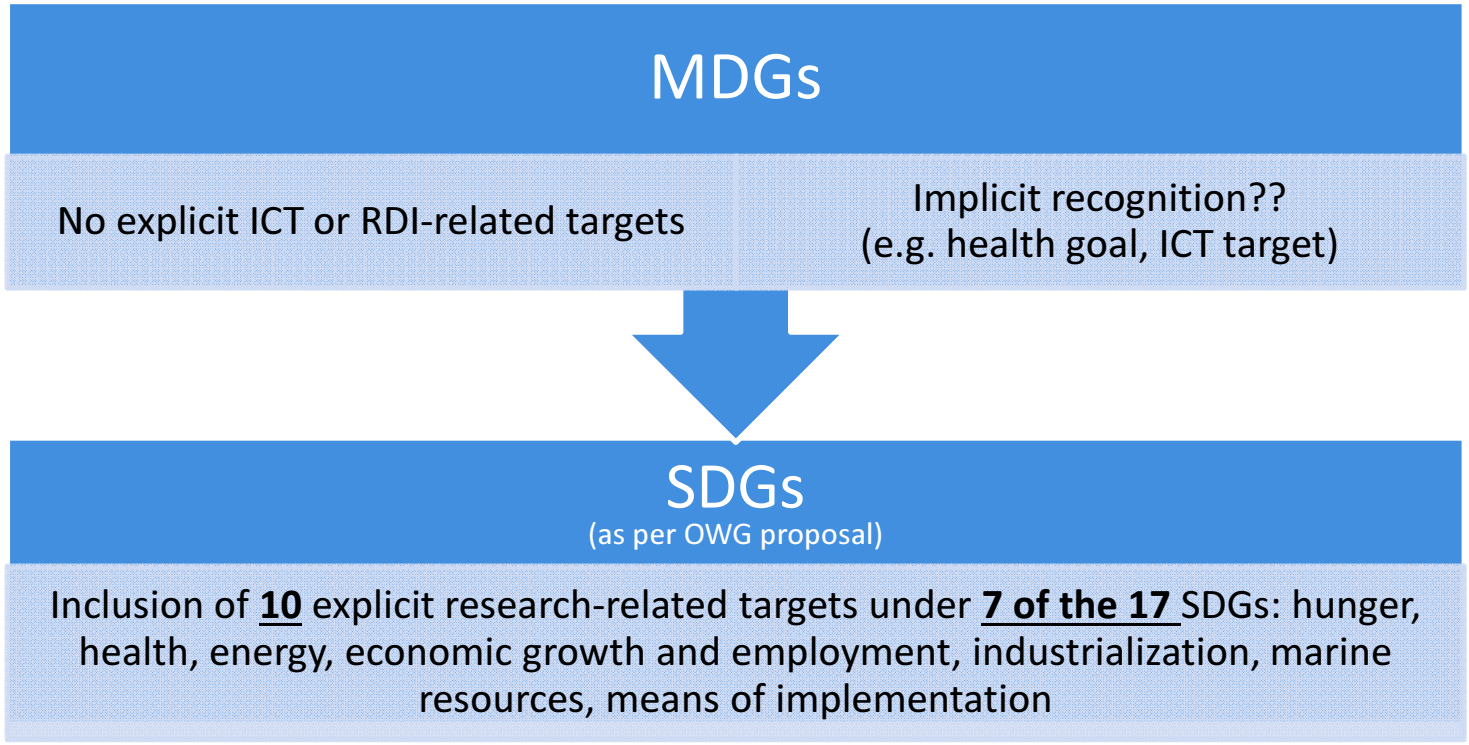
From MDGs to SDGs

A big step from the MDGs …



Will the inter-governmental negotiations of the agenda, to be completed by September 2015, retain these targets?

Hunger, health, energy

Goal	RDI and Technology-related target(s)
Goal 2. End **hunger**, achieve **food** security and improved nutrition and promote sustainable **agriculture**	2.a Increase investment, including through enhanced international cooperation, in rural infrastructure, **agricultural research** and extension services, **technology development** and plant and livestock gene banks […]
Goal 3. Ensure **healthy** lives and promote well-being for all at all ages	3.b Support the **R&D of vaccines and medicines** for the communicable and non-communicable diseases that primarily affect developing countries […]
Goal 7. Ensure access to affordable, reliable, sustainable and modern **energy** for all	7.a By 2030, enhance international cooperation to facilitate access to **clean energy research and technology**, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology […]

Source: Extracted from the OWG proposal (http://sustainabledevelopment.un.org/sdgsproposal)

Economic growth, industrialization, marine resources

Goal	RDI and Technology-related target(s)
Goal 8. Promote sustained, inclusive and sustainable **economic growth**, full and productive **employment** and decent work for all	8.2 Achieve higher levels of economic productivity through diversification, **technological upgrading and innovation**, including through a focus on high-value-added and labour-intensive sectors
Goal 9. Build resilient **infrastructure**, promote inclusive and sustainable **industrialization** and foster **innovation**	9.5 Enhance **scientific research**, upgrade the **technological capabilities** of industrial sectors […] including by increasing the **number of R&D workers** per 1 million people by [x] percent and public and private **R&D spending**
	9.b Support **domestic technology development, research and innovation** in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities
Goal 14. Conserve and sustainably use the oceans, seas and **marine resources** for sustainable development	14.a Increase **scientific knowledge, develop research capacity and transfer marine technology** […]

Source: Extracted from the OWG proposal (http://sustainabledevelopment.un.org/sdgsproposal)

Means of implementation

Goal	RDI and Technology-related target(s)
Goal 17. Strengthen the **means of implementation** and revitalize the global **partnership** for sustainable development	17.6 Enhance North-South, South-South and triangular regional and international cooperation on and **access to science, technology and innovation** […] including through a global **technology facilitation mechanism** when agreed upon
	17.7 Promote the development, transfer, dissemination and diffusion of **environmentally sound technologies** to developing countries on favorable terms, including on concessional and preferential terms, as mutually agreed
	17.8 Fully operationalize the **technology bank and science, technology and innovation capacity-building mechanism** for least developed countries by 2017 and enhance the use of **enabling technology, in particular ICT**

Source: Extracted from the OWG proposal (http://sustainabledevelopment.un.org/sdgsproposal)

Technology footprint in the SDG reports

Both, the "Synthesis Report" of the Secretary General on the Post 2015 Agenda and the current version of the "Open Working Group Report on SDG Goals" stress on the importance of technology for the realization of the Post-2015 vision.

Technology footprint in the SDG reports

Based on these reports it is possible to pinpoint the footprint of technology in the SDGs in the following areas:

Objective 1: Promote the role of RDI and transfer of technology for improving productivity, diversification of economy and creation of new job opportunities especially in developing countries.

(Ref. to SDG Goals: Goal 9, and 4.b, 5.b, 8.2, 8.3, 12.a)

Objective 2: Use of technology as a mean for the implementation of the SDGs.

(Re. to SDG Goals: Mainly Goal 17/Technology: 17.6, 17.7, 17.8)

Objective 3: Improve the access to clean and environmentally sound technologies.

ITU-ESCWA JOINT INITIATIVE ON:

USE OF ICTS FOR SMART AND SUSTAINABLE DEVELOPMENT AND PROTECTION OF THE ENVIRONMENT

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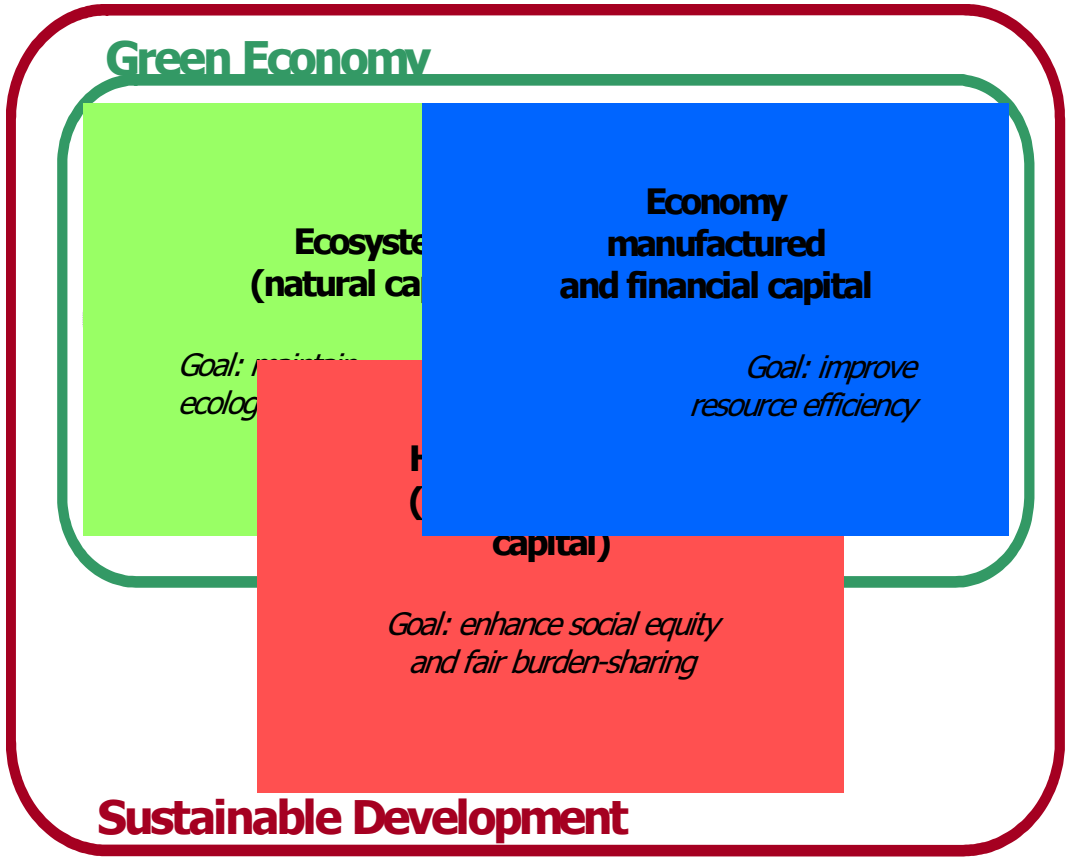
Protection of the Environment - Green Economy



Goal 6 Ensure availability and sustainable management of water and sanitation for all
Goal 7 Ensure access to affordable, reliable, sustainable and modern energy for all
Goal 13 Take urgent action to combat climate change and its impacts*
Goal 14 Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Goal 15 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss .

Protection of the Environment - Climate Change, a Global Challenge

- Major Environmental Issue, and a growing crisis and a global challenge that is facing the world development in general and the livelihoods of communities

- The danger of Climate Change stems from its irreversible impact on the environment that will affect the survival of people and societies

- Earth Processes at Risk - Fossil fuel emissions tracking surface warming – Emissions from land use growing more slowly

- Affects Rural and marginalized communities; Impacts current and future generations

- The danger of Climate Change stems from its irreversible impact on the environment that will affect the survival of people and societies

- Therefore, it was an important part of the MDG's, Rio, etc; and of the post 2015 development framework SDG's Other UN Processes

Goal 13 Take urgent action to combat climate change and its impacts*

Response to Climate Change

- The main two components to respond to Climate Change:

Adaptation: Process of building capacities of societies to cope with the risks of Climate Change on human and natural resources, and This include options such as: technologies, change of behavior in the use of resources, early warming systems, disaster response and relief, and resource conservation and management.

"*Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities*" (IPCC, 2001).

Mitigation: Reducing carbon dioxide emissions to mitigate the rise in global temperature and the possible impact on climate change. Mitigation measures include the use of clean technologies

Role of ICTs in Climate Change

- Allow mitigating and adapting CC.
- Allow for better measurement of CC
- Remote sensing
- Monitoring and early warning systems
- ICT's are low pollutants by nature
- Allow smart cities and home-bound activities
- Reinforces communal awareness,making CC a global concern
- Connecting the world
- Crowd-sourcing (i.e. social media)
- Whistle blowing tool

ESCWA efforts in region

- RIO+20 regional integrated participation and follow up
- New Technology Transfer regional Centre
  - Promoting National TT Offices
  - Innovation in Renewable Energy & others
  - Smart Cities Directives
- Promoted Green help desks for industry at national levels
- Measurement of the Arab region.
- Promotion of smart sectors for smart societies notion SSSS
- Promotion of Smart Cities concept

Overview of ICTs for Climate Change Adaptation – Implications on the Water Resources Sector

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Climate change impacts on Water Resources Sector

- Change of precipitation rates, in time and space, particularly on the scale of individual river basins.

- Variability of surface runoff and flow regimes in the rivers.

- Occurrence of extreme events of flooding and drought cycles .

- Deterioration of water quality in the rivers and in coastal areas due to seawater rise and intrusion in groundwater storages.

- Socio-economic impacts as low water in the rivers and droughts would have severe consequences on most sectors such as agriculture, energy and drinking water intakes.

All of those impacts need models and information; and hence need Information Technology

Adaptation technologies

- Most adaptation measures involve the use of technology which include not only infrastructure and equipment but also knowledge and practices.

- Adaptation technologies can be defined as "*the application of technology in order to reduce the vulnerability, or enhance the resilience, of a natural or human system to the impacts of climate change*" (UNFCCC, 2005)

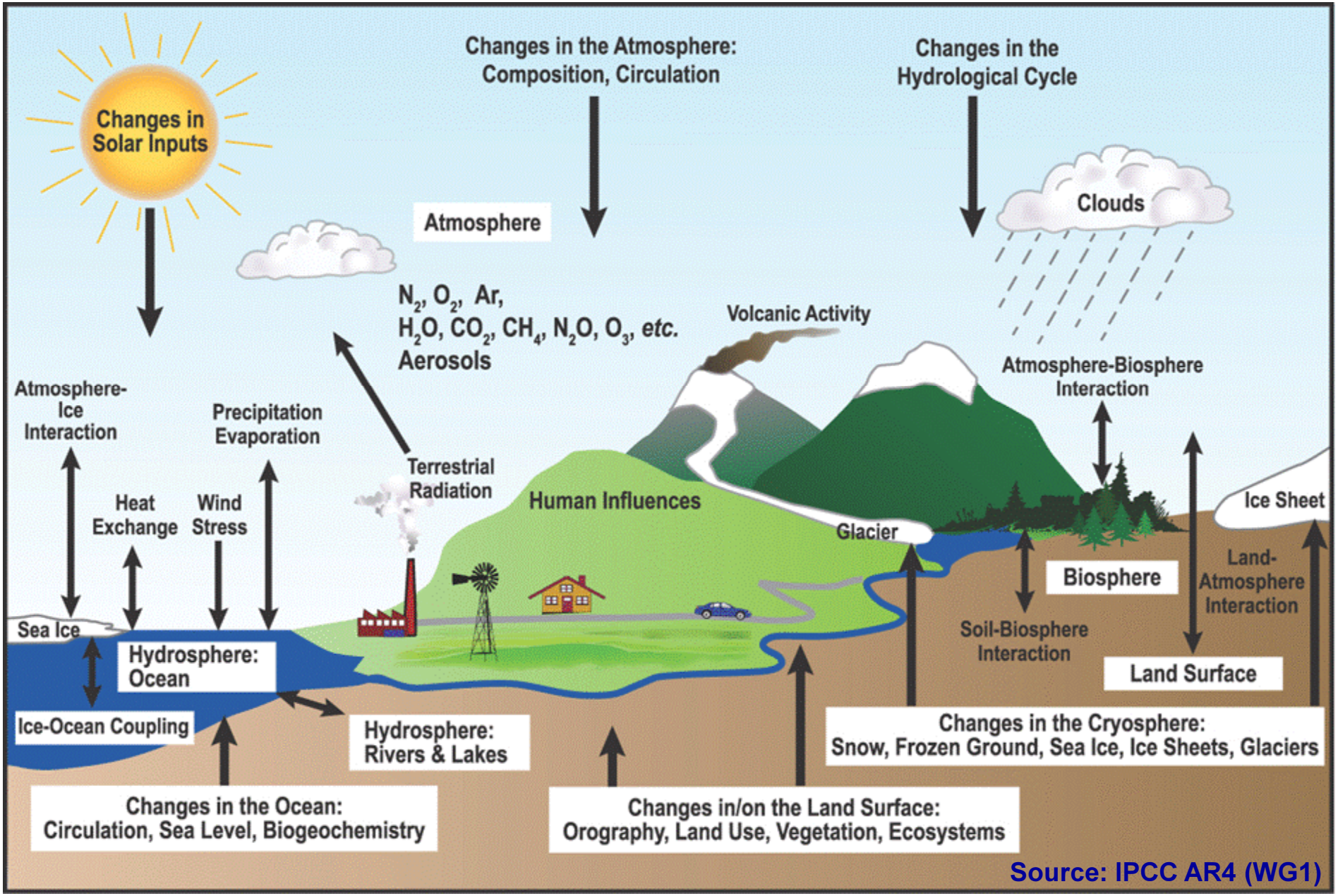
Applications of modern technologies in Climate Change impacts assessments

- Climate change simulation and modeling (climate models) -->> Requires ICT

- Impact assessment of CC on water resources and related sectors (model applications, use of GIS and remote sensing, etc.) -->> Requires ICT for mapping different spatial variables

- Data and information management (databases) -->> RKHs - Requires ICT

All of those Processes are included in the Developed Regional Climate Models for the Arab Region (used by ESCWA SDPD /Partners)



Adaptation Measures technologies can be classified as:

- Hard technologies (e.g. new constructions, different types of equipments, seawalls and drip irrigation techniques, etc.)

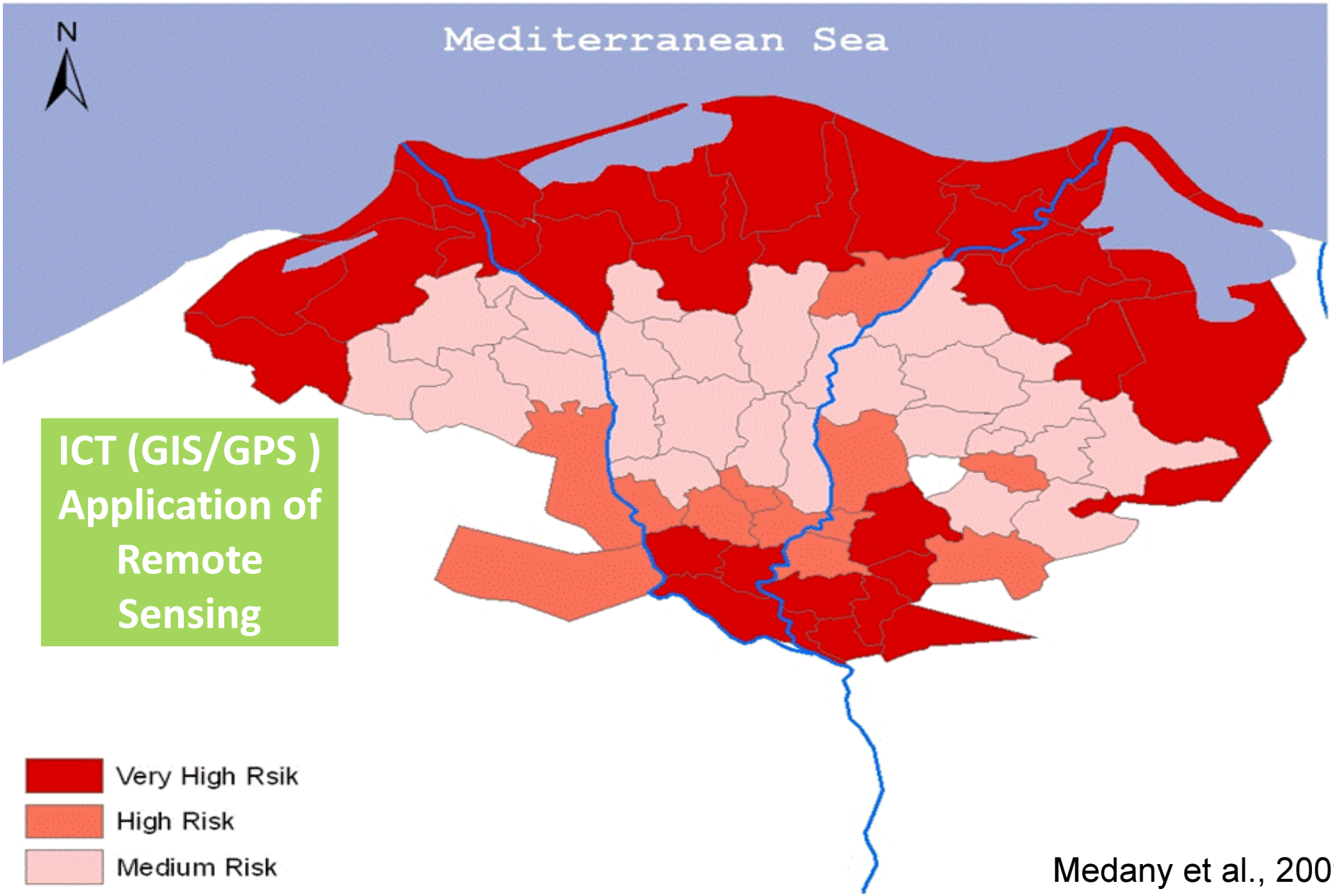
- Soft technologies (e.g. more concerned with management options, knowledge, know-how, organizational capacity, etc.)

- A combination of both e.g. **Early warning systems** that combine hard technologies such as measuring devices and information technology and soft technologies like strengthening awareness and promoting evacuation.

Measures - Traditional, High and Modern – (UNFCCC, 2009)

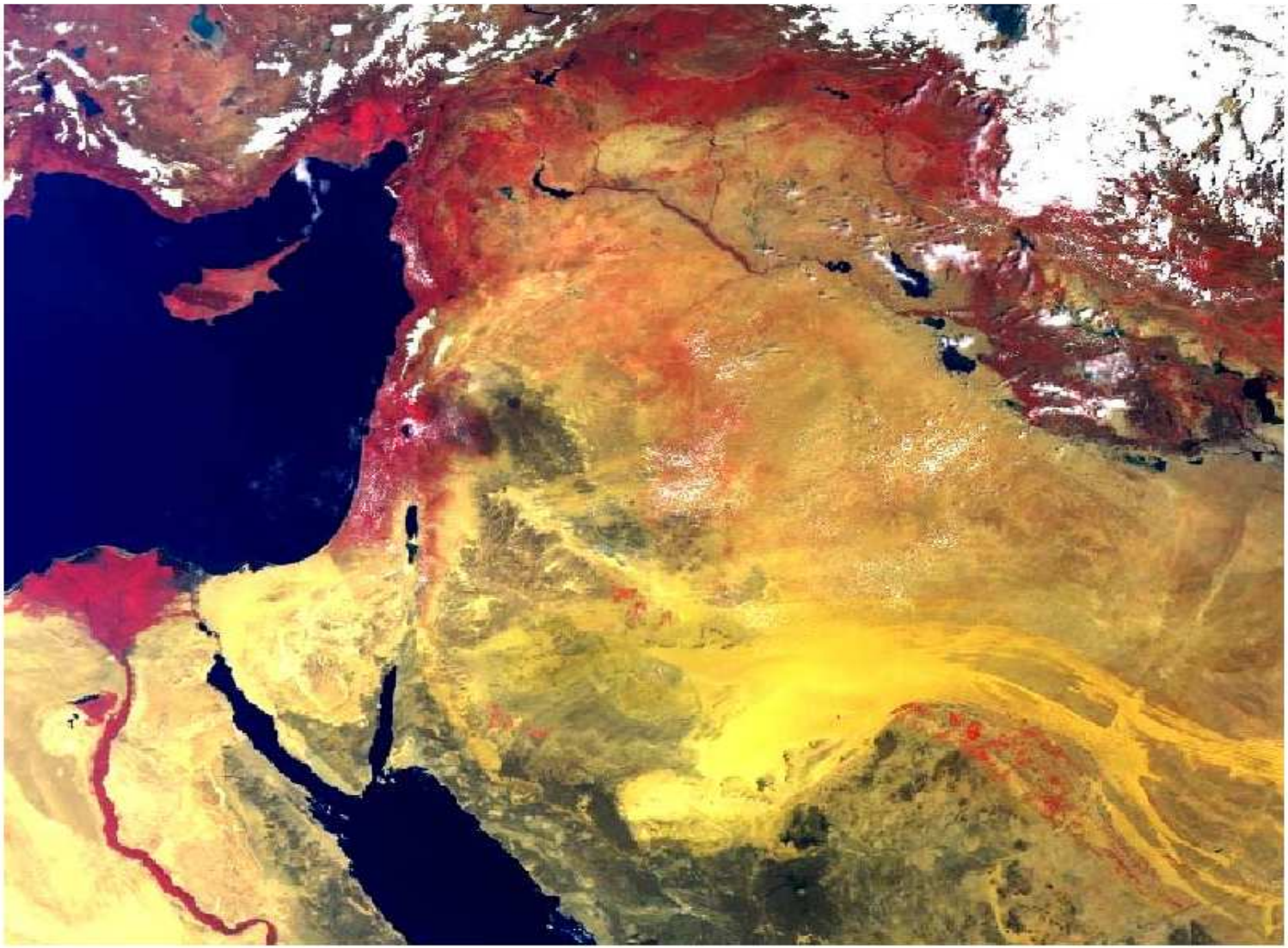
Category	Technology
Traditional/ indigenous technology	Water harvesting
	Spate irrigation
	Maintenance and construction of reservoirs and wells
	Gravity irrigation systems
Modern technology	Drip irrigation
	Groundwater recharge of wells
	Wastewater treatment
	Water transfer
	Water quality control
High technology	Desalination
	Early warning flood systems
	Real time flood forecasting using modeling and computer simulation

Vulnerability Index for Nile Delta - Egypt



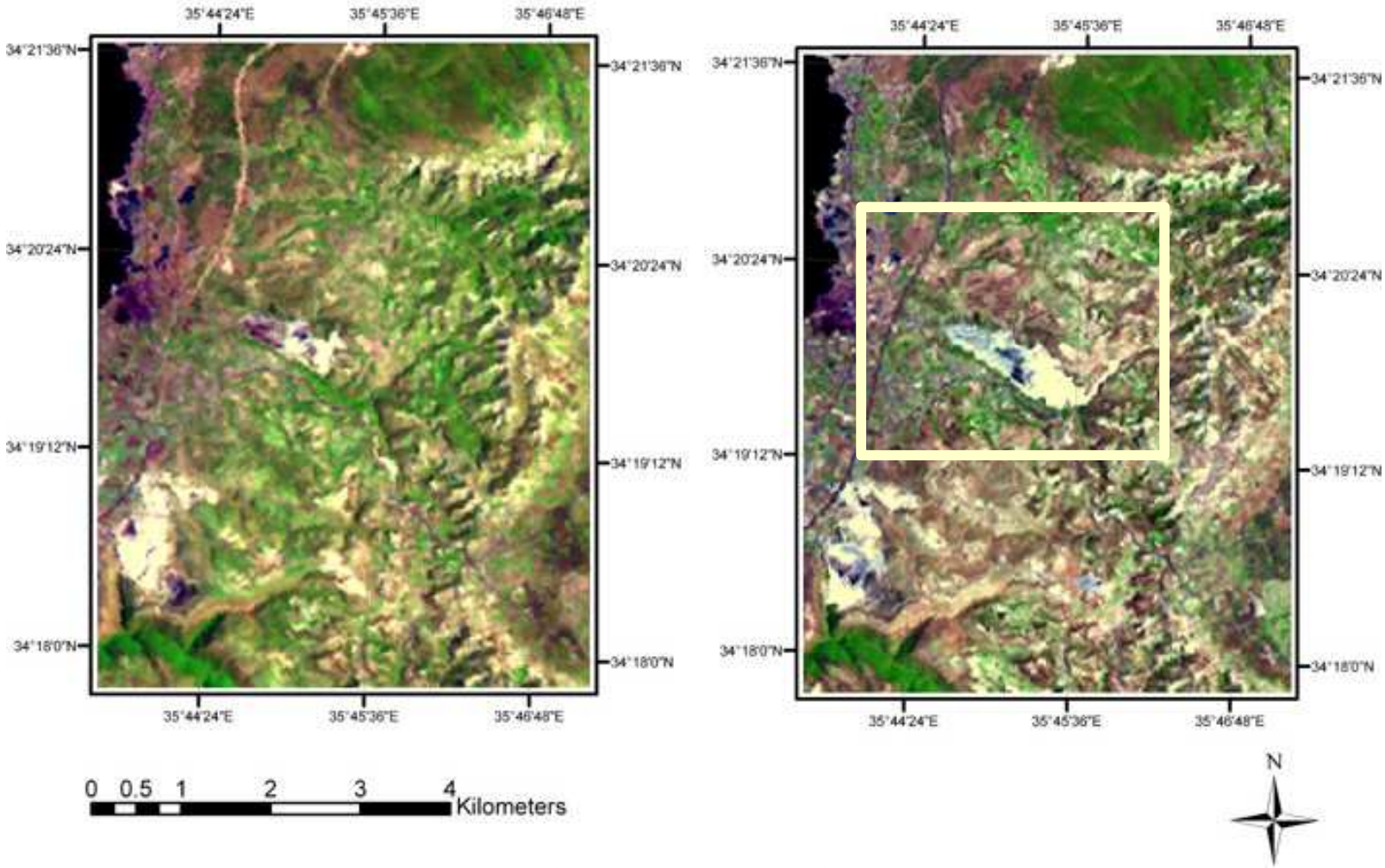
Medany et al., 2009

Land Degradation & Land Use Classification
(False colors)
ICT (GIS/GPS) Application of Remote Sensing



Land Deforestation - (Tue colors Imagery)
ICT (GIS/GPS) Application of Remote Sensing

1987 Local deforestation? 2000



Landsat TM (5-4-3) sub-scenes from 26.5.87 (left) and 26.5.2000 (right) showing the foothills of the Lebanon Mountains

Overview of ICTs for Climate Change Mitigation – Insights from the Energy Sector

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Much of this segment of the presentation can be found in the ITU publication by Richard Labelle: "*m-environment – ICTs for abating climate change and promoting Green Growth and sustainable development*" available online on the ITU site

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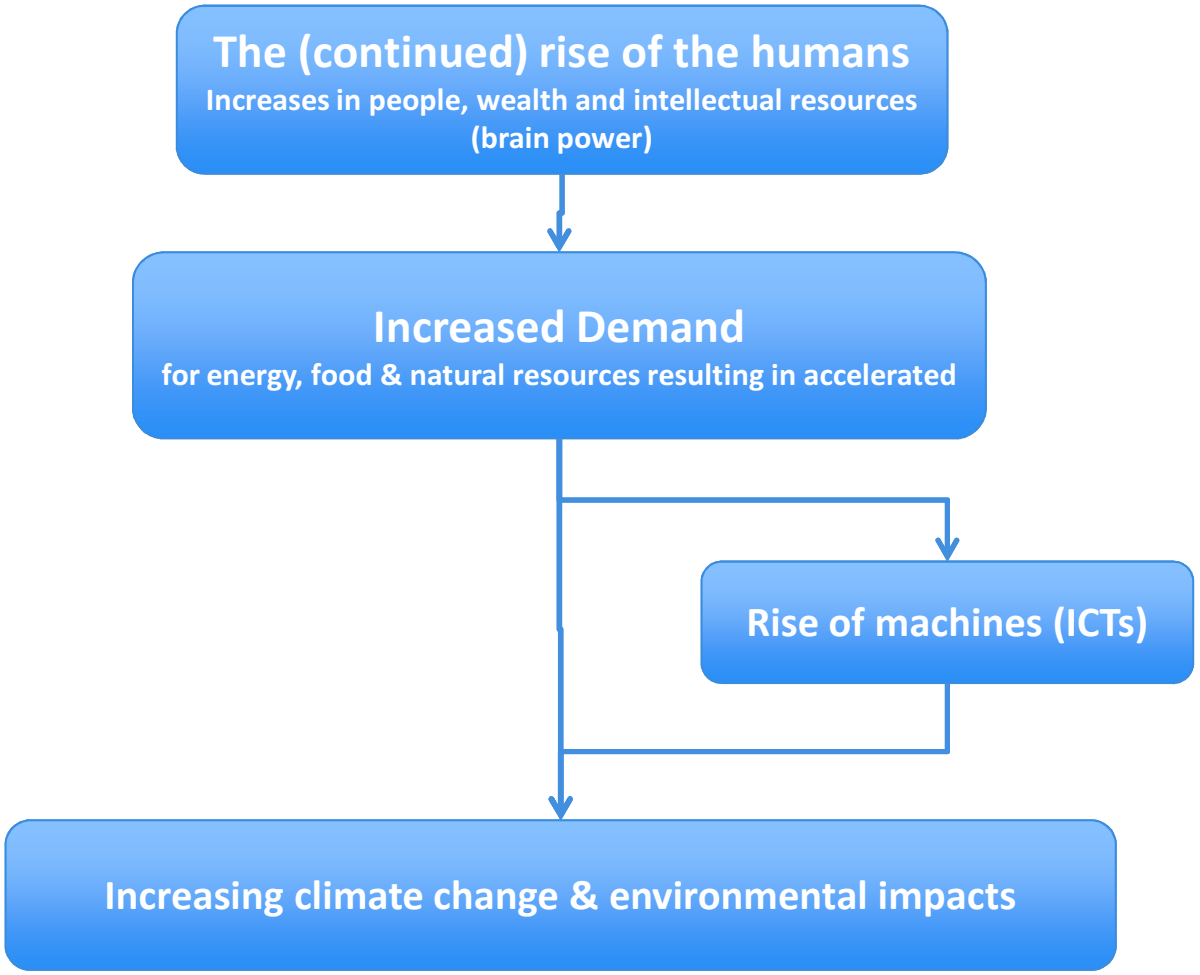
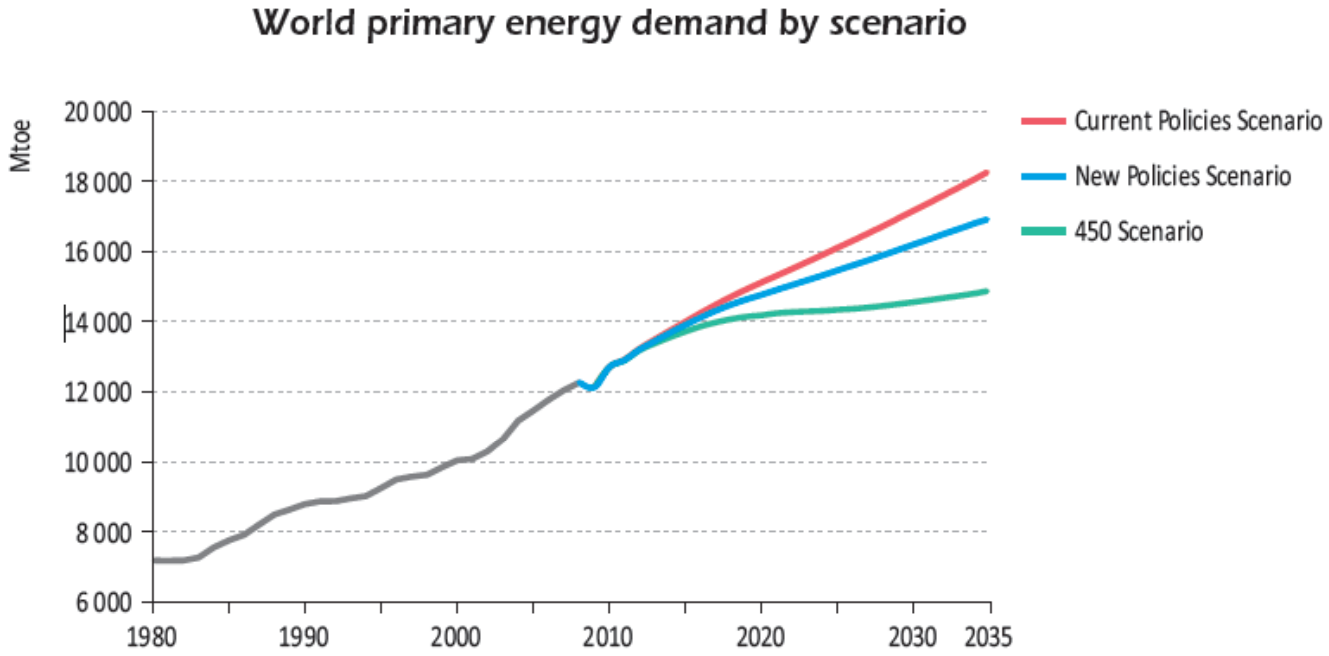
Obvious Trends and Causal Relations



World primary energy demand by IEA scenario

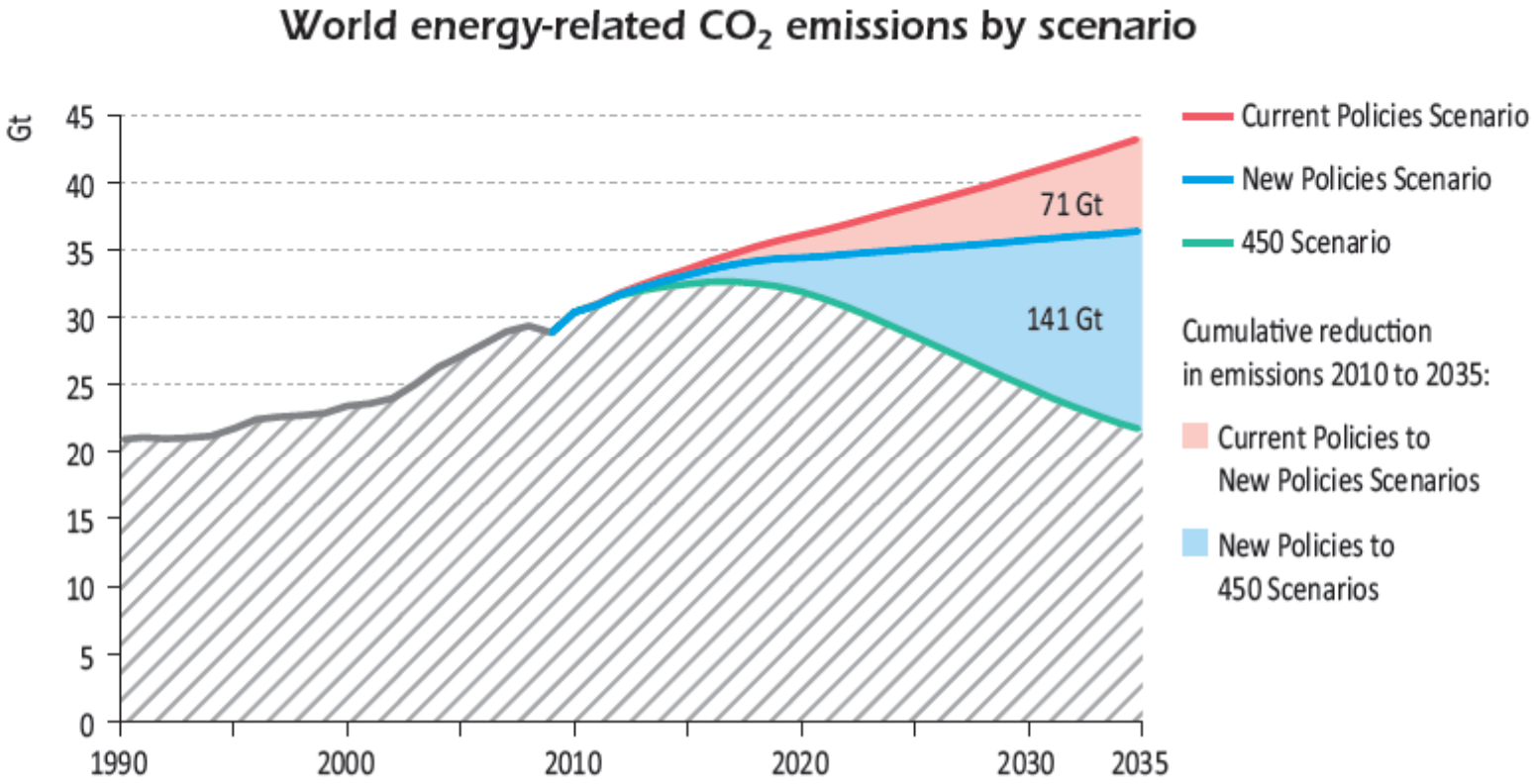


1. Compound average annual growth rate.

- **New Policies Scenario**: A scenario in the *World Energy Outlook* that takes account of broad policy commitments and plans that have been announced by countries, including national **pledges to reduce greenhouse-gas emissions** and **plans to phase out fossil-energy subsidies**, even if the measures to implement these commitments have yet to be identified or announced. This broadly serves as the IEA baseline scenario.
- **450 Scenario**: A scenario presented in the *World Energy Outlook* that sets out an energy pathway consistent with **the goal of limiting the global increase in temperature to 2°C** by limiting **concentration of greenhouse gases in the atmosphere to around 450 parts per million of CO_2**.

IEA. 2011. World Energy Outlook 2011. IEA/OECD, Paris. 666 pp.

Energy related CO2 emissions by IEA scenario



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The negative impact of ICTs on GHG emissions

- Energy consumption from using ICTs
  - About 2-3 % of total emissions, growing to 6 %
  - Same as aviation industry
  - PCs & peripherals
  - Telecoms infrastructure
  - Data centers
  - ICT use is increasing and so are GHG emissions from ICTs

The positive impact of ICTs on GHG emissions

- ICT enabling effects
  - ICTs can save 5 times as much C as they consume – but likely much more
  - Essential for enhanced earth observation
- Reducing GHG emissions from all stages of the ICT life cycle
  - and especially during their production, use and disposal
- Making greater using ICTs to mitigate vegetation related emissions
  - through the greater use of ICT based earth observation and management systems and networks
- Encouraging the development and adoption of ICT based enabling technologies
  - to reduce GHG emissions.

key contributions of ICT to climate change mitigation (1/2)

Infrastructure innovation

1. Increase energy efficiency of Buildings/infrastructure through intelligent systems & design
2. Reduce the energy use of the manufacturing sector through intelligent systems, design and business models
3. Enable smarter management of energy supply and demand
4. Sustainable energy production

Source: "THE CONTRIBUTION OF ICT TO CLIMATE CHANGE MITIGATION", Information Technologies and Telecoms Industry Partnership; Simon Mulcahy, Head of IT Industries, Global Leadership Fellow, World Economic Forum

key contributions of ICT to climate change mitigation (2/2)

Behavioral change & green enablement

5. Enable carbon accounting and the tracking of Green House Gas emissions through the Supply Chain
6. Enable virtual meetings

Energy efficiency of ICT products and solutions

7. Increase energy efficiency of data centres and electronic devices

Source: "THE CONTRIBUTION OF ICT TO CLIMATE CHANGE MITIGATION", Information Technologies and Telecoms Industry Partnership; Simon Mulcahy, Head of IT Industries, Global Leadership Fellow, World Economic Forum

GeSI : Global e-Sustainability Initiative

GeSI
GLOBAL e-SUSTAINABILITY INITIATIVE

Governance

GeSI Board

Luis Neves, Deutsche Telekom - GeSI Chairman

Chris Lloyd, Verizon - GeSI Vice-Chairman

Danilo Riva, ETNO - GeSI Treasurer

Malcolm Johnson, International Telecommunication Union

Matilda Gennvi Gustafsson, Ericsson

Andreas Harker, Swisscom

Joan Krajewski, Microsoft

Gabrielle Ginér, British Telecom

Yves Nissim, Orange

The enabling effect of ICTs - SMART opportunities:

(GeSI : Global e-Sustainability Initiative)

Industry

- Smart motors
- Industrial process automation
- Dematerialization (reduce production of DVDs, paper)

  **Dematerialization breaks down into all sectors except power.)*

Transport

- Smart logistics
- Private transport optimization
- Dematerialization (e-commerce; Videoconferencing, teleworking)
- Efficient vehicles (plug-ins and smart cars)
- Traffic flow monitoring planning and simulation

Buildings

- Smart logistics

  * *Reduces warehousing space needed through reduction in inventory.*
- Smart buildings
- Dematerialization (teleworking)
- Smart grid * *reduces energy used in the home through behavior change*

Power

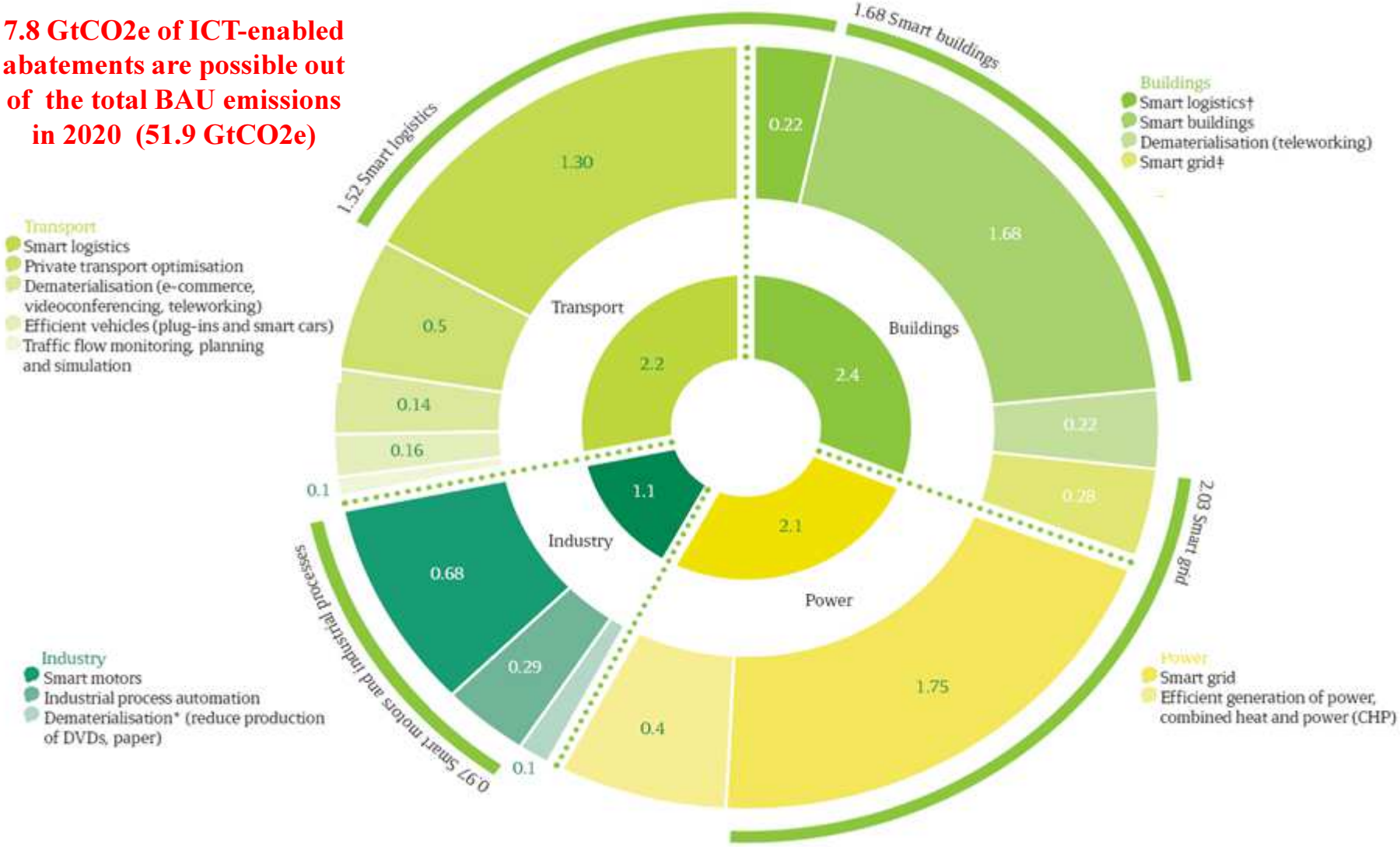
- Smart grid
- Efficient generation of power,
- Combined heat and power (CHP)

The Climate group and GeSI. 2008. *Smart 2020: Enabling the low carbon economy in the information age*. 87 pp. http://www.smart2020.org/

The enabling effect of ICTs - SMART opportunities:

(GeSI : Global e-Sustainability Initiative)

7.8 GtCO2e of ICT-enabled abatements are possible out of the total BAU emissions in 2020 (51.9 GtCO2e)



The Climate group and GeSI. 2008. *Smart 2020: Enabling the low carbon economy in the information age*. 87 pp. http://www.smart2020.org/

Conclusion

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Implementation of SDGs in the Arab region: Technology Perspectives

In order to realise the role of technology in achieving the SDGs the following has to be considered in the Arab region:

- Formulation of policy and strategy for ICT and RDI system development, as well as increased allocated funding, and promotion of the systems' social and economic development role.

- Implementation of sound technology strategies and the creation of linkages between academia, the private sector and NGOs, that take into account best practices and lesson learned from other countries.

- Participation and collaboration at global level to establish the suggested global online platform and technology bank.

Examples of selected actions that the TDD could undertake

- Institutionalize regional and national mechanisms for the development and/or transfer of environmentally sound/green technologies that will support sustainable development in the region.
- Encourage EMC's to make spending on R&D more efficient, especially on themes related to sustainable development.
- Improve the legal and regulatory frameworks, paying close attention to issues that are related to intellectual property rights
- Leverage the capacity of science, technology and innovation to foster the development of high value-added products and to smooth the transfer towards knowledge-based economies.
- Ensure access to a fast and affordable ICT infrastructure
- Promote the development of local content and the better utilization of tacit and explicit knowledge.

THANK YOU

Economic And Social Commission For Western Asia

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40 YEARS