
Dr Shadrack Ralekeno Moephuli
President & CEO
ARC TEAM

- **Council (Board)**
  - Mr. Jonathan Godden – Chairperson
  - Prof. Michael Kahn – Chair of R & D
  - Prof. Thoko Mayekiso – Deputy Chair: R & D
  - Mr. Mzolisi Dyasi – member
  - Dr. Joyce Chitja – member

- **Management --- Dr. S. R. Moephuli: CEO**
  - Ms. Anati Canca – Technology Transfer
  - Dr. Mohammed Jeenah – R & D
  - Ms. Makgomo Umlaw – HR
  - Mr. Frans Monkwe – Chief Information Officer
  - Mr. Gabriel Maluleke
OBJECTIVES OF THE ARC AS PER ACT

➢ To CONDUCT RESEARCH, DEVELOPMENT & TECHNOLOGY TRANSFER IN ORDER TO:

➢ Promote agriculture & industry;
➢ Contribute to better quality of life;
➢ Facilitate/ensure natural resource conservation
Policy Mandate Considerations

➢ Government’s National Priority
  • Medium Term Strategic Framework
  • New Growth Path
    – Industrial Policy Action Plan
  • DAFF Strategic Plan for Agriculture
    – Strategy for Small Holders
    – Zero Hunger Campaign
  • Comprehensive Rural Development Programme
  • Ten Year Plan for Science and Technology
  • Bio – Economy Strategy

➢ African Agenda (NEPAD)
  • Consolidated Science and Technology Plan of Action
  • Comprehensive African Agricultural Development Plan
Institutional Reviews (2006)

• Management process to identify necessary changes in operations and to implement them;
• Consistency & interconnectedness of KPI with actual results achieved
• Poor record of disseminating results of own research
• Need to establish formal partnerships with HEIs
• Review effectiveness in planning and implement continuous improvement in strategic thinking
• Ensure alignment of design, structure and coordination of internal business units
• Conduct customer satisfaction reviews (e.g. CSIR & MINTEK models)
Institutional Review -- continued

- **Transformation:**
  - HR,
  - Culture,
  - Research agenda

- **Capacity development strategy**

- **Career paths for junior & middle ranking staff**

- **Rewards & incentives to encourage innovation, knowledge & technology generation**

- **External communication strategy** integral to annual strategic plans & KPIs
COUNCIL STRATEGIC REVIEW

- Growth in agriculture – increased productivity
- Food Security (Zero Hunger Campaign)
- Bio – security
- Job Creation
- Optimal Technology Platform/s
- Support Government’s Development Agenda
- SADC integration i.t.o. markets & resources
- Bio – economy (water, climate, carbon footprint, energy, sustainable & healthy production methods etc)
- Agrarian Reform Agenda
- Small – Holder Farmers
- R & D Across Value Chain
POTENTIAL IMPACTS ON ARC STRATEGY

- **CLIMATE CHANGE**
  - Emergence and management of new pests & diseases
  - Utilization of water resources & ability to replenish
  - Energy sources and utilization
  - Biodiversity conservation – preservation of genetic resources

- **POPULATION NEEDS**
  - Increased demand for food -- **FOOD SECURITY**
  - Reducing post – harvest losses
  - Food distribution systems

- **URBANIZATION**
  - Protein demands
  - Changes in land use and impact on agricultural production & productivity

- **SCIENCE AND TECHNOLOGY DEVELOPMENTS**

- **SUCCESSFUL AGRARIAN TRANSFORMATION**

- **ECONOMIC COSTS OF BUSINESS**

- **REGULATORY SYSTEMS**
## ARC SWOT Analysis

### Strengths
- Specialised mandate
- Geographic spread
- Skilled scientific staff
- International recognition
- Areas of excellence
- Diverse research expertise
- Unique geographic location SA
- Experience with applied technologies
- Knowledge of agriculture in SA

### Weaknesses
- Obsolescent infrastructure
- Ageing ICT infrastructure, unable to provide service needs
- Inadequate funding resources
- Lack of critical mass of scientists
- External communication lacking
- Marketing ARC is lacking
- Lack of experience with small holder farm production systems
ARC SWOT ANALYSIS

OPPORTUNITIES
• Presence of economically important diseases
• Favourable Government policy
• Interventions through value chain
• Potential of large small holder farmers & projects
• Intellectual Property with potential exploitation
• Ability to focus on Extension
• Unique organization lead agriculture
• Changing demographics & food demands

THREATS
• Continued inadequate funds
• Poor ICT infrastructure & systems
• Decline in external income
• Inability to recruit skilled scientists
• Poor perceptions about ARC
• Failure to perform scientifically
• Failure of land reform programme
• Lack of critical mass of scientists
UNDERSTANDING UNCERTAINTIES & POTENTIAL IMPACTS ON ARC STRATEGY

- Funding
- Scientific and Technical capacity
- Policy and legislative changes
- Regional Food Security
- Nature and form of competition for resources (funds, expertise etc)
- Changes in farming systems and players
- Impact of international players on agricultural systems
- Changing education and training landscapes
- Social and economic changes in SA and Region
- Cost of business for ARC (e.g. exchange rate, other input costs)
PROPOSED STRATEGIC OBJECTIVES

1. To ensure sustainable use & mgt of natural resources
2. To enhance nutrition & food security
3. To improve ability of the sector to manage & mitigate agricultural risks
4. To improve efficiency and competitiveness of the sector
5. To ensure support for a transformed agrarian landscape
6. To improve operational & organizational efficiency & effectiveness
## ARC ALIGNMENT TO DAFF STRATEGIC GOALS

### ARC OBJECTIVES
- Sustainable use of natural resources
- Enhance nutrition, food security & safety
- Enhance ability of sector to manage & mitigate risks
- Technology Transfer
- Organisational growth & sustainability

### DAFF GOALS
- Sustainable use of natural resources
- Increase profitable production of food, fibre & timber products
- Increased contribution …
- National regulatory & risk management systems
- A transformed & united sector
- Effective Governance
PROPOSED PROGRAMMES

1. Crop production, improvement & protection
2. Animal production, Improvement & health
3. Natural Resource Management
4. Agriculture Engineering
5. Agro – processing, food technology & safety
6. Small – holder agricultural development
7. Agricultural economics, business development & commercialization
8. Training & Extension
9. Administration & corporate affairs
EXAMPLE SUB – PROGRAMMES

- NATURAL RESOURCE MANAGEMENT
  - Renewable Energy
  - Conservation Agriculture
  - Prediction & management of risks & disasters (drought, floods, pests etc)
  - Water management and irrigation
  - Monitoring & Characterization of natural resources & eco – systems
  - Maintenance & use of National Public Good Assets

- SMALL – HOLDER AGRICULTURAL DEVELOPMENT
  - Production systems (farming systems) (including aquaculture)
  - Land use planning and management
  - Impact assessment for continuous learning & improvement
  - SMME development & Incubators
  - Agricultural Development Centres (market access, production & processing, training centres etc)
<table>
<thead>
<tr>
<th>PROGRAMME</th>
<th>INDICATORS</th>
</tr>
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<tbody>
<tr>
<td>Broadening food base</td>
<td>Publications</td>
</tr>
<tr>
<td>Breeding, physiology etc</td>
<td>IP registered</td>
</tr>
<tr>
<td>Plant health</td>
<td>Cultivars</td>
</tr>
<tr>
<td>Forage production</td>
<td>Increased yields</td>
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<tr>
<td></td>
<td>No. of farmers using cultivars</td>
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<tr>
<td></td>
<td>Licensing of IP</td>
</tr>
<tr>
<td></td>
<td>Information disseminated</td>
</tr>
<tr>
<td></td>
<td>Agricultural productivity (tn/Ha)</td>
</tr>
</tbody>
</table>
INDICATORS FOR ARC

SCIENCE COUNCIL
- Innovation in science
- Basic/fundamental research
- Applied research (technologies)
- Intellectual assets
- Skilled scientists & engineers
- Volume & quality publications
- Scientist ratings
- Number of PhDs
- Number of doctoral fellows
- Number of postdoc fellows
- Scientific awards

AGRIC. DEVELOPMENT
- Economic link to Innovation
- Applied research
- Technology Transfer/dissemination
- Intellectual Asset Use
- Agricultural Production & productivity
- Food Security – hunger
- Environmental Sustainability
- Import Substitution
- Export Promotion
- Agrarian Transformation
- New products (vaccines, cultivars etc)
KEY ISSUES TO CONSIDER

- Emphasis on Research & Development
- Delivering on Value Chain
- Multi-sectoral across value chain
- Leadership on Agricultural Research
  - Partnerships
  - Funding arrangements
  - Coordination
- Clear link to national priorities
  - Food Security
  - Job Creation and Competitiveness
  - Skills development
NEW FOCUS ON RESEARCH AND TECHNOLOGY TRANSFER FOR DEVELOPMENT

- Small Holder Farmers
- Agro-processing
- Nat Resources and Economic Support
  - Conservation Agriculture
  - Climate Change
  - Renewable Energy
  - Water Resource management
- Linking Research with Extension
Smallholder Agriculture Development

• Two areas of focus
  – Support to smallholder farmers in respect of
    • Establishment of agri-enterprise incubators
    • Smallholder enterprise support to provide services related to land-use and farm enterprise planning
    • Impact assessment studies on ARC interventions in support of smallholder farmers
  – R&D focused on smallholder farming
    • Farming Systems research
    • Needs based research
    • Technical and information support
Training and Extension

• 2 pronged approach
  a. Intensification of training delivery to farmers and extension officers – ongoing
    • Includes train-the-trainer, accreditation of skills programmes and qualifications and capacity building in agricultural colleges
  b. Coordination of the public extension service, leading to review of the system with possible management changes
    • Includes policy review and the development of new models
Crop Production Improvement and Protection

Increase sustainable food production at lower cost

Crops Programme

Breeding
- Higher yields
- Drought Tolerant
- Improved Quality
- Longer season

Production Systems
- Optimal production technology
- Including resource poor farmers
- Lower inputs
- Shelf-life extension
- Solve Fermentation problems
- New yeasts/wild yeasts & malolactic bacteria

Broadening the food base
- Niche crops (herbal teas)
- New production areas
- New production methods

Plant Health
- Monitoring and identification of pests & diseases
- Integrated control measures

Export Markets
Improved Livelihoods
Import Substitution
Food Security
Job Creation

Improved Livelihoods

Export Markets

Food Security

Job Creation

Import Substitution
Improving Nutrition and Food Security

- Sweet Potato
  - Resource poor in Elsenburg, Fort Cox & Roodeplaat
  - Improved yield up to 10 tons/hectare
  - Plants distributed to 50 schools in N West province
  - Cotlands in Eastern Cape have added it in their nutrition and health plan
  - Negotiate with DoE to introduce sweet potato in feeding scheme

- Drip irrigation,
  - Mukondeni village,
  - Vhembe for 100 families –
  - Increase in vegetable production
Ag Economics and Commercialization

• IP management addressing protection and commercialisation
  – Use licensing, with specific attention paid to Smallholder farmers

• Ag economics
  – Economic Impact assessments on R & D
  – Decision support to the ARC remains a core function
  – Developing capacity for advice on policy and decision making

• Service provision
  – Scientific expert advice and biometry services
Growing Our Fruit Exports

- Access to ARC technologies & information to all farmers, especially resource poor

- Early Blush Pears - **Cheeky™**
  - Estimate to cover 37% of blush peers in 2012
  - Potential to add R354m/yr to economy
  - Secure 3611 farm jobs

- Nectarine – **Colorburst™**
  - has potential for R16 million profit per year,
  - increase of 120 jobs on the farms
Agro – processing for Value Addition

- **Food and Non – Food Processing**
  - Breeding cultivars for optimized processing
  - Processing methods
  - Food based approaches

- **Animal Product Development**
  - Food safety
  - Animal product processing methods
  - Equipment design

- **Post – Harvest Processing**
  - Post – harvest pathology and physiology
  - Biological control of post – harvest diseases
  - Cold chain technologies

- **Analytical & Diagnostic Services**
  - Residue testing
National Animal Recording Improvement Scheme (NARIS)

- Customer service is central to the improvement of the NARIS. The third ARC strategy is to improve customer service and continue to regard its clients as a priority:
  - Currently, the ARC communicates directly with breed societies and indirectly with other farmers through regional advisory committees of the NARIS.

- The ARC will extend its coordination to include provincial representatives from the departments of agriculture, representatives of resource poor farmers as well as commercial farmers who are not represented. The ARC will develop a monitoring and evaluation (M & E) framework to manage the NARIS.

- Furthermore, the ARC will extend the NARIS to new farmers including commercial and resource poor producers.

- The initiatives such as Kaonafatso ya Dikgomo will be strengthened with the empowerment of extension officers and farmers organisation to collect data for the NARIS.

- The inclusion of commercial producers is viewed as market expansion for the NARIS and will assist in improving productivity countrywide.
ARC ANIMAL IMPROVEMENT

Members of Advisory Committees
Registering Authorities
- Holsteins
- Santa Getrudis

Other Breed Societies

Government Departments
- Provincial Departments of Agriculture
- Department of Rural Development and Land Reform
- Department of Local Government and Traditional Affairs

Commodity /Interest Groups
- NAFU
- NERPO
- RPO
- MPO
- Wool Growers Association
- SAPPO
- SAPPA

Institutions of Higher Learning

Animal registration
- Births
- Parentage
- Ownership
- Testing/ verification
- Minimum breed standards
- Herd analysis
- Breeding operation matters

INTERGIS
Quantitative and Genomic trait analysis

Integration of registration and performance data as well as data editing functions on INTERGIS

Animal recording and improvement

1. Beef Scheme
   - Phase A
   - Phase B
   - Phase C
   - Phase D
   - Phase E

2. Kaonafatso ya Dikgomo Scheme
   - Phase A
   - Phase B
   - Phase D
   - Phase E

3. Dairy Scheme

4. Small Stock Scheme

5. Pig and poultry Scheme
Animal Performance Recording

economic impact of R4.7bil/yr

Beef Industry

Dairy Industry

R3.32bn

R1.36bn
ARC AREAS OF PRIORITY INDUSTRIES

**Start with**
- Commodities that have a competitive advantage and ARC know – how: innovation, solutions to further growth: collaborate & de-bottleneck
- Industries that are important for desired outcomes but are not yet competitive: lead the way

**Cross-Cutting Issues**
- New & improved technologies
- Technology Transfer
- Support Agric. Development
- Competitiveness of SA Agric.
- Mitigate Agricultural risks
- Organizational Sustainability

**Product Portfolio**

**Total Value Chain**
- Horticulture
- Livestock
- Ornamental
- Grains
- Industrial

**Hydroponics**

**Cross-Section**
- Primary Agriculture
- Processing
- Packaging / Value add

**Scientific solutions**
- Research & Development
- Human Capital Development
- Knowledge Infrastructure
- Technology Platforms
- Enablers for Innovation
STRENGTHENING HUMAN RESOURCES

- **Research and science leadership**: identify training initiatives in research and science leadership skills, research career management, innovation, Intellectual Property management and commercialisation management.

- **Pipeline development**: introduce higher numbers of students into the research and science career through bursaries, internships, postdoctoral fellowships and professional development programmes.

- **Operations support**: streamline HR processes such recruitment, performance management, retention and remuneration to deliver objectives.

- **Non core skills**: Identify a range of training and development options both formal and informal that will benefit and develop employees who are not core.
Employee Qualifications

- % of research staff (817)
- % of total number

- Researchers with PhD Degrees
- Researchers with M degree
- Prof Vets and Eng
- Employees enrol for MSc/PhD degrees
- Employees enrol for Mtech & Dtech...
- Employees enrol for eng/med/vet...
## PDP PROGRAM

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<th>Level</th>
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<th>Female</th>
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<td>TOTAL</td>
<td>31</td>
<td>28</td>
<td>59</td>
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CRITICAL SUCCESS FACTORS

- Successful funding strategy/models
- Ability to attract & retain high quality researchers and create critical mass
- Performance & monitoring system
- Knowledge & Information management system
- Effective & efficient use of resources (Asset Plan)
- Support from Government (policy & resources)
- Realignment of organizational structure to strategy
- Successful stakeholder interaction/management
- Effective communication
- Effective & efficient technology transfer
Finance Strategy
Key Finance Considerations

- Trend Analysis
- Key Budget Assumptions
- Budget 2012/13
- Key strategic issues
- Challenges
- Key Focus Areas
PURPOSE

To ensure that the ARC’s business is maintained and sustained and that the ARC makes effective use of all financial resources at its disposal to achieve its strategic objective.
## KEY BUDGET ASSUMPTIONS

<table>
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<tr>
<th>Budget Item</th>
<th>Forecast 2011/12 R’m</th>
<th>Growth</th>
<th>Budget 2012/13 R’m</th>
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<tr>
<td>Baseline PG growth</td>
<td>466</td>
<td>6%</td>
<td>475</td>
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<td>- PG adjustment</td>
<td>15</td>
<td>563%</td>
<td>102</td>
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<tr>
<td>- Economic Competitiveness Support</td>
<td>0</td>
<td>100%</td>
<td>68</td>
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<tr>
<td>Operational PG funding</td>
<td>511</td>
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<td>694</td>
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<tr>
<td>Baseline- Capex</td>
<td>155</td>
<td>(55%)</td>
<td>71</td>
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<tr>
<td>FMD-Capex</td>
<td>44</td>
<td>140%</td>
<td>105</td>
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<td><strong>Total Funding 2012/13</strong></td>
<td><strong>709</strong></td>
<td><strong>23%</strong></td>
<td><strong>870</strong></td>
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<td>Personnel Costs</td>
<td>523</td>
<td>12%</td>
<td>586</td>
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<td>Other Operating Costs</td>
<td>291</td>
<td>40%</td>
<td>406</td>
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</table>
Operating Costs Vs Parliamentary Grant (Excluding Capex)

- Other Operating Costs
- Personnel Costs
- Parliamentary Grant-Operational-Adj
- Parliamentary Grant-Operational-New Projects
- Operational PG
## ARC Parliamentary Grant Trends

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<th>08/09</th>
<th>% Inc</th>
<th>09/10</th>
<th>% Inc</th>
<th>10/11</th>
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<th>15/16</th>
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<td><strong>Baseline-DAFF</strong></td>
<td>R'm</td>
<td></td>
<td>R'm</td>
<td></td>
<td>R'm</td>
<td></td>
<td>R'm</td>
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<td>Current</td>
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<td>12%</td>
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<td>397</td>
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<td>419</td>
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<td>Adjustment</td>
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<td>19%</td>
<td>56%</td>
<td>102</td>
<td>24%</td>
<td>127</td>
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<td><strong>Ringfenced Projects-DAFF</strong></td>
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<td></td>
<td>R'm</td>
<td></td>
<td>R'm</td>
<td></td>
<td>R'm</td>
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<td>Climate Monitoring</td>
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<td>Crop forecasting</td>
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<td>6%</td>
<td>16</td>
<td>6%</td>
<td>15</td>
<td>5%</td>
<td>17</td>
<td>6%</td>
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<td>6%</td>
<td>19</td>
<td></td>
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<tr>
<td><strong>New Funded Projects-DAFF</strong></td>
<td>R'm</td>
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<td></td>
<td>R'm</td>
<td></td>
<td>R'm</td>
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<td>Animal vaccine development</td>
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<td>Crop production and agro-processing</td>
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<td>Kaonafatso ya dikgomo</td>
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<td></td>
<td>13</td>
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<td>40%</td>
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<td>47</td>
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<td>49</td>
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<td></td>
<td>408</td>
<td>12%</td>
<td>456</td>
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<td>511</td>
<td>36%</td>
<td>694</td>
<td>14%</td>
<td>794</td>
<td>12%</td>
<td>891</td>
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<td>R'm</td>
<td></td>
<td>R'm</td>
<td></td>
<td>R'm</td>
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<td>R'm</td>
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<tr>
<td>Current</td>
<td>81</td>
<td>(29%)</td>
<td>57</td>
<td>86%</td>
<td>106</td>
<td>87%</td>
<td>199</td>
<td>(12%)</td>
<td>176</td>
<td>(58%)</td>
<td>75</td>
<td>6%</td>
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<td>14%</td>
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<td>8%</td>
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<td>5%</td>
<td>71</td>
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<td>6%</td>
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<td>100%</td>
<td>88</td>
<td>(100%)</td>
<td>105</td>
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<td>869</td>
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<td>590</td>
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<td>709</td>
<td>23%</td>
<td>870</td>
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<td>869</td>
<td>12%</td>
<td>970</td>
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</table>
ARC CONSOLIDATED BUDGET 2012/13

Expenditure
Personnel: (R586m)
Operating Costs: (R406m)
Depreciation: (R25m)
Total: (R1 017m)

Revenue
PG: R870m
External: R316m
Other: R18m
Total: R1 203m

ADD
Depreciation: R25m
WC Movement: (R80m)
Total: R55m

Cash at Beginning Of Year
Total: R197m

Surplus
R 186m

Cash Ex Ops
R131

Net Cash for Year
R11m

Cash end of Year
R218m

Includes:
Income received in advance; Deferred capex

Capex
(R110m)
Total
(R110m)
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<tr>
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<td>1 017</td>
<td>1 203</td>
<td>1 226</td>
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<td>Parliamentary Grant</td>
<td>590</td>
<td>709</td>
<td>870</td>
<td>869</td>
<td>970</td>
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<tr>
<td>Baseline-Operational</td>
<td>484</td>
<td>511</td>
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<td>794</td>
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<tr>
<td>Baseline-Capital</td>
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<td>176</td>
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<td>79</td>
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<td>292</td>
<td>316</td>
<td>338</td>
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<td>Other Income</td>
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<td>1 017</td>
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<td>23</td>
<td>25</td>
<td>27</td>
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<td>Impairment of fixed property</td>
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<tr>
<td>Net Surplus/(Deficit)</td>
<td>59</td>
<td>180</td>
<td>186</td>
<td>89</td>
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### AGRICULTURAL RESEARCH COUNCIL - MTEF FINANCIAL PROJECTIONS

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<th>2010/11</th>
<th>2011/12</th>
<th>2012/13</th>
<th>2013/14</th>
<th>2014/15</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>R' m</td>
<td>R' m</td>
<td>R' m</td>
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<td>R' m</td>
</tr>
<tr>
<td><strong>Cash resources</strong></td>
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<tr>
<td>(net of bank overdraft)</td>
<td>163</td>
<td>197</td>
<td>218</td>
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<tr>
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<td>1 218</td>
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<td>1 058</td>
<td>1 218</td>
<td>1 346</td>
<td>1 449</td>
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### CASH FLOWS

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<th>2014/15</th>
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<td><strong>Net cash flow from</strong></td>
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<td>operating activities</td>
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<td>130</td>
<td>131</td>
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</tr>
<tr>
<td>Cash and cash equivalents at</td>
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<td>163</td>
<td>197</td>
<td>218</td>
<td>128</td>
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<td>beginning of year</td>
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<tr>
<td>Cash and cash equivalents at</td>
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<td>197</td>
<td>218</td>
<td>128</td>
<td>58</td>
</tr>
<tr>
<td>end of year</td>
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IMPROVEMENTS PAST 5 YEARS

- Financial discipline
- Cash Management
- Unqualified audits
- New competent Staff members
- Supply chain policies and procedures
Key Strategic Issues (Financial)

1. External Income Growth
2. Cost Containment (Other Operating Costs)
   - improvement and standardization of costing and pricing
   - improvement in project management
3. Replacement and upgrading of infrastructure
4. Improving organizational processes to eliminate adverse audit findings.
Key Challenges for ARC

- External Income growth.
- Limited funding for capex.
- Limited funding to fill the required number of critical vacancies.
- ARC competitiveness for skills
COMMENTS/QUESTIONS

• Engage each other for innovation
• Thinking out of the box
• Work within current Govt & other stakeholder planning cycles
• Need to continually reassess plan
• Critical Success Factors yearly for 5 yrs

• MAKING OUR STRATEGY SUSTAINABLE

THANK YOU